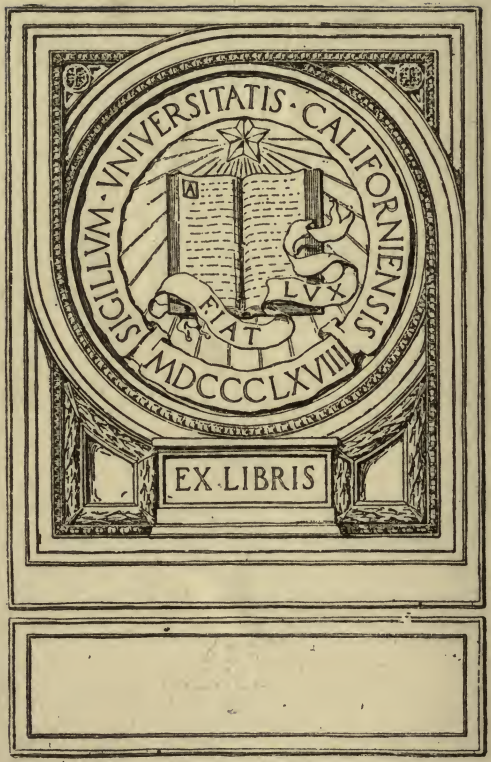
SMALL ARMS
INSTRUCTORS MANUAL
1918



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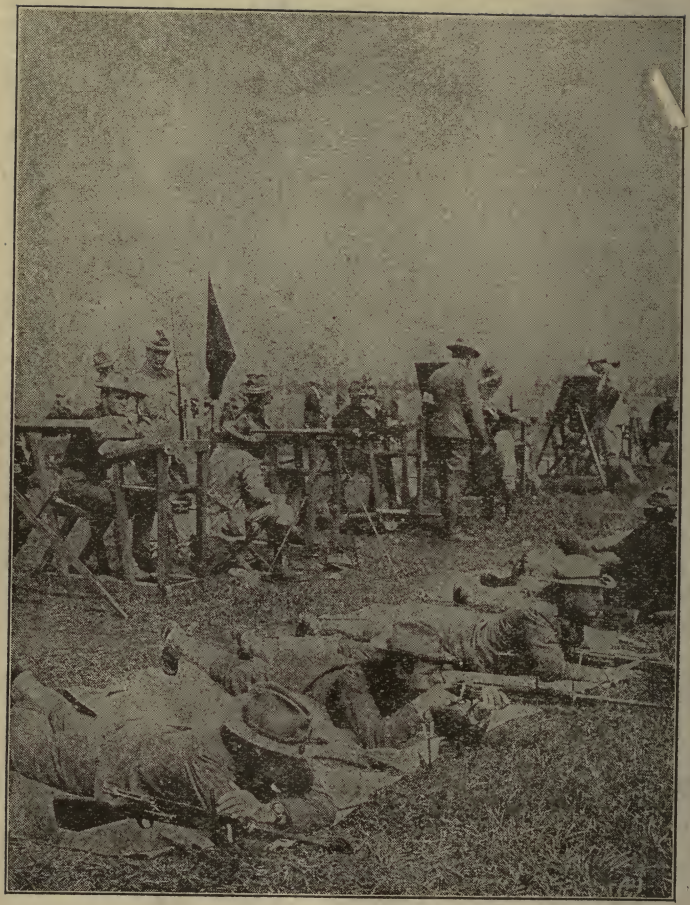

KNOWN DISTANCE PRACTICE.

A Typical Firing Line on the New Jersey State Rifle Range during a National Competition at Sea Girt, N. J.

SMALL ARMS INSTRUCTORS MANUAL

AN INTENSIVE COURSE

INCLUDING

OFFICIAL "C SPECIAL COURSE"; U. S. RIFLE, MODEL 1917; U. S. RIFLE, MODEL 1903 (*SPRINGFIELD*); U. S. RIFLE, MODEL 1898 (*KRAAG*); AUTOMATIC PISTOL, MODEL 1911; REVOLVERS, CAL'S. .45 AND .38; OFFICIAL FIRING COURSES; DESIGNATION OF TARGETS; FIRE DIRECTION AND CONTROL; USE OF COVER

COMPILED BY THE

SMALL ARMS INSTRUCTION CORPS

REGINALD H. SAYRE, Capt. Res. N.G.N.Y.
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GERARD P. HERRICK, Ex-Ord. Serg't N.G.N.Y.
Executive Committee

WITH AN INTRODUCTION BY

CAPTAIN C. C. GRIFFITH, C.A.C., U.S.A.

1918

E. P. DUTTON & COMPANY
NEW YORK

EDITORS' NOTE

This book is not expected to take the place of the War Department Documents and regular courses, which are so perfectly and fully laid out in various volumes, except in the present emergency. But there is no abbreviated and yet complete basic course in one volume such as is made necessary and desirable to meet present conditions efficiently.

Under supervision of officers of the Regular Army we have therefore gathered the government data together in concise form, also taking into account Entente documents based on experience in the present war, placing in one handy pamphlet the essentials of present requirements in the use of Small Arms, as an intensive course to save time and obtain uniformity in the elementary work.

SMALL ARMS INSTRUCTION CORPS

REGINALD H. SAYRE,
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Executive Committee.

October 1st, 1917.
30 West 44th Street, N. Y. City.

LETTER

(Extract from a Letter to the Editors.)

From the standpoint of a former guardsman, graduate of Plattsburg, and Captain in the National Army, I feel confident that the book will be a great time saver and help to the officers in the basic training of the New Army in the use of small arms.

In view of this fact, I shall strongly recommend it to the serious consideration of my fellow officers, and am only too glad to have been of some assistance.

ALFRED ROELKER,
Captain Cavalry, N. A.

Camp Upton,
Long Island, N. Y.
Oct. 4th, 1917.

INTRODUCTION

This volume on Small Arms has aimed at a standardized, basic and intensive course of instruction which it is believed will produce in the briefest possible time that quality of proficiency demanded by the present crisis.

Several of the most experienced shots and coaches in the United States, working in conjunction with some of the Regular Army Instructors at the first Officers' Training Camp at Plattsburg, N. Y., have compiled from twenty or more works on Small Arms and Musketry, the parts vitally applicable to the present situation.

The U. S. Army Manual of Small Arms Firing has supplied the framework of the book to which have been added many helpful suggestions from modern foreign works, notes from the Schools of Musketry, Ordnance Pamphlets, et cetera. This matter has been selected, condensed, simplified and formulated for purposes of intensive instruction. Advantage has been taken of the experience gained at the Officers' Training Camps and the time saving qualities of standardization have been applied.

It is hoped that the effort and time spent by competent riflemen and Army Instructors in compiling this book will prove of assistance to the officers of the New Army, and will help them to proceed to put their knowledge in form for the most efficient instruction in the

present emergency, without the loss of time which would otherwise be necessary.

In following this work, the instructor can feel confident that he is conforming absolutely to the latest approved methods used and taught in the U. S. Army.

C. C. GRIFFITH,
Captain, C. A. C., U. S. A.

Plattsburg, N. Y.
Sept. 10, 1917.

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SMALL ARMS INSTRUCTORS MANUAL

INTRODUCTORY

SMALL ARMS INTENSIVE COURSE

I

GENERAL NOTE

The conditions, training and development to become a good shot are:

First of all it is necessary for one to develop the *muscles* used in firing. After skill in *aiming* and *sighting* is acquired, the muscle development must go on in combination with practice in aiming. The soldier will soon acquire proficiency in holding the rifle aimed upon the mark and *squeezing* the trigger, without losing the aim. At this stage, much has already been accomplished toward ultimate proficiency. Indoor or outdoor range practice will then show how well the ground work has been laid. In the later stages the soldier must learn the *influence of wind, light,* mirage, etc., with the knowledge and ability to *adjust his sights* accordingly. This will include estimating the velocity of wind and the effect of the same velocity from the various angles. It is of the utmost importance that the *rifle be kept in perfect condition* so that results can be depended upon.

II

SPECIAL PRECAUTIONS

Do not point a weapon, loaded or unloaded, in any direction where an accidental discharge might do harm.

When first picking up either a rifle or a pistol, see that it is not loaded.

With the rifle, pull back the bolt smartly, see that there is no cartridge in the breech (if necessary, inserting the little finger). Also see that the magazine is empty.

With the pistol, take out the magazine, draw back the slide and see that there is no cartridge in the breech or in the magazine. Insert the magazine.

When the rifle or pistol is carried loaded, the safety lock should be at "safe."

Under no circumstances should the firing pin be let down by hand on a cartridge.

When loading from the magazine, to obtain positive ejection, and to insure the bolt catching the top cartridge in the magazine, the bolt must be drawn fully to the rear.

It is essential for the proper working and protection of all cams that they be kept well cleaned and lubricated.

See that the cartridges are kept free from grit or dust and do not corrode in the clips.

Never leave a rag in the barrel.

In case of a misfire, it is unsafe to raise the bolt handle immediately, as it may be a case of hang fire. In such cases, wait a few seconds, when the bolt may be opened with perfect safety.

III

HINTS TO INSTRUCTORS

The purpose in the fire training of a company should be to produce uniform proficiency rather than expertness on the part of a few.

The attention of the instructor should be concentrated on the poorer shots and he should be particular to avoid discouraging them.

Be careful to refrain from any form of comment that may dishearten the recruit.

Faults must not, however, be overlooked or allowed to become formed habits.

The instructor should avoid keeping the squad in tiring positions while making explanations or correcting errors.

Until the soldier has heard a thing at least three times he will not remember it.

In the early part of the training, unless for some special reason, squads will not consist of more than seven men who will be assembled around the instructor in a semicircle.

The key notes of instruction are

1. Explain
2. Illustrate
3. Get imitation
4. Test

Explanations are necessary, but they should be limited to short explicit statements. Chief reliance however should be placed upon practical demonstration.

Formal commands are seldom required except in collective firing instruction; the motions of firing being usually performed independently, and eventually each man will be required to use his own judgment.

Accuracy should be emphasized at all stages of training before rapidity.

The essential points of the firing positions are to be insisted upon from the beginning as the foundations of fire discipline.

The importance of Sighting, and Position and Aiming Drills cannot be too persistently impressed upon the soldier. If these exercises are carefully practiced, the soldier, before firing a shot at a target, will have learned to aim his piece correctly, to hold his rifle steadily, to squeeze the trigger properly, to assume the position best adapted to the particular conformation of his body, and will have acquired the quickness in manual dexterity required for handling the piece in rapid fire. This knowledge cannot be so successfully acquired upon the target ground.

PART I

THE RIFLE

NOTE—Chapters I to VIII inclusive prepare for the Intensive Course or new "C SPECIAL COURSE," prescribed by the War Department to be used for the National Army, which is designated as "Changes" to be added to Appendix II, S.A.F.M., 1913, and given in Chapter IX.

"This course will be prescribed for the quick training of troops in rifle practice, when time or facilities for the regular courses are not available.

"Success cannot be expected, nor can proficiency in rifle practice be attained by a company in this course, unless it has been thoroughly instructed and each man should satisfactorily pass the prescribed tests (given in Chapter IX) before he fires a shot on the range. Without this thorough preliminary course, and satisfactorily passing these tests, it is a waste of ammunition to let the soldier fire ball cartridges on the range."

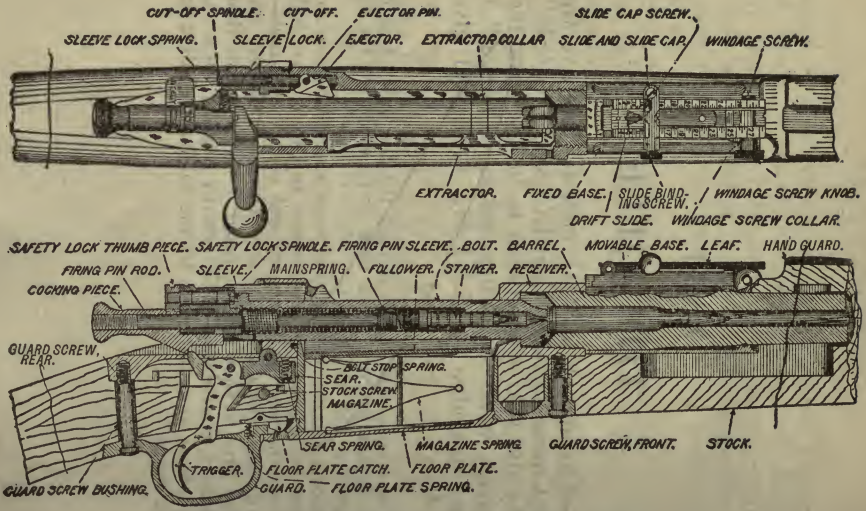


FIG. 1.

FIG. 2.

UNITED STATES RIFLE, MODEL 1903 (SPRINGFIELD).

FIG. 1.—Breech Mechanism, Top View.

FIG. 2.—Breech Mechanism, Longitudinal Section.

CHAPTER I

(Prepares for Official Test I. See Chap. IX)

NOMENCLATURE OF THE RIFLE, MODEL 1903

U. S. Rifle, Caliber .30, Model 1903, for 1906 Ammunition (Figs. 1 and 2.)

(See War Document, No. 1923, for fuller description)

1. **PARTS.** The Rifle consists of 93 parts, of which the chief are:

2. **BARREL.** Muzzle, Breech, Chamber, Bore (.30), Lands, Grooves.

3. **RECEIVER.** Magazine Opening and Cut-off, Clip-slots, Bolt-stop, Ejector.

4. **BOLT MECHANISM.** Bolt, Handle, Locking-lugs, Safety-lug, Sleeve, Sleeve-lock, Firing-pin, Firing-pin-sleeve, Striker, Main-spring, Cocking-piece, Extractor, Extractor-collar, Safety-lock.

5. **MAGAZINE.** Floor-plate, Magazine-spring, Follower.

6. **TRIGGER.** The lever used to release the Firing-pin and fire the rifle.

7. SIGHTS. The Front Sight.

The Rear Sight consists principally of: A Movable Base with a Windage Screw and a Hinged Leaf with Open Battle Sight for use when the Leaf is down. When vertical, the Leaf exposes the Drift Slide (or Elevation Slide) with a Peep-hole, a Field View or triangle open-sight just above, and another open sight above that, all three located in the movable Drift Slide for altering Elevation. The Leaf is graduated from 100 to 2,850 yards. The lines just below the numbers are 100 yard divisions, the longer of the short lines are 50 yard, and the shorter, 25 yard divisions.

8. STOCK. Butt, Small of Stock, Balance and Handguard; two Sling Swivels and a Leather Sling; a Stacking Swivel near the muzzle; Butt Plate with receptacle for Oiler and Thong Case or "Pull-through" Container. This oil is for lubricating working parts only.

9. AMMUNITION. Model 1906, Caliber .30, Ball Cartridge, consisting of Case, Primer, Charge of smokeless powder and Bullet. Muzzle velocity 2700 feet per second.

CHAPTER II

(Prepares for Official Test II)

OPERATION OF THE RIFLE, MODEL 1903

10. BOLT MECHANISM. The bolt mechanism moves backward and forward and rotates in the well of the receiver. When the rifle is used as a single loader, the bolt carries a cartridge, placed by the hand in front of it, into the chamber. When used for magazine fire, the effect of drawing the bolt all the way to the rear and forcing it forward, is to cock the piece, eject a cartridge, and place another cartridge in the chamber.

The piece being loaded and cocked, is ready to be fired, if the Safety-lock is turned to the left showing *Ready*. To prevent the piece from being fired, turn the Safety-lock all the way to the right showing the word *Safe*. This can be done only when the piece is cocked. Also, while the Safety-lock is in a vertical position, the rifle cannot be fired.

The bolt mechanism operates as follows: To open the bolt, raise the handle as far as possible and pull directly to the rear until it is stopped.

To close the bolt, push the handle vigorously straight forward as far as it will go, and turn the handle down, being careful not to jam the bolt by lateral pressure.

The piece may be cocked either by raising the bolt handle and then immediately turning it down, or by pulling the cocking-piece directly to the rear until it catches. The bolt-handle must be turned all the way down before firing. The opening and closing of the bolt should each be done by one continuous motion and practiced frequently for rapid firing.

11. MAGAZINE MECHANISM. The magazine mechanism includes the Floor-plate, Follower, Magazine-spring, Cut-off.

The magazine will contain as many as 5 cartridges and feed them, one by one, as wanted, to the barrel chamber.

12. TO LOAD THE MAGAZINE. See that the cut-off is up, showing *On,* and draw the bolt fully to the rear. Place either end of the loaded clip in the clip slot in the receiver, and with the thumb of the right hand near the base of the cartridge, press smartly down into the magazine until the top cartridge is caught by the right edge of the receiver. The magazine can be filled, if empty or partly filled, by inserting cartridges one by one.

Pushing the bolt forward, after loading the magazine, ejects the clip and puts one cartridge into the chamber, leaving four only in the magazine.

To Put Five Cartridges in the Magazine and One in the Barrel. Proceed as in paragraph "To Load the Magazine," but remove clip by hand; then push down and hold top cartridge with thumb of the left hand while advancing the bolt about half an inch, and turn magazine cut-off *Off;* then with the right hand, insert another cartridge in the barrel and close bolt.

13. TO UNLOAD. See that the magazine cut-off Thumb-piece is up, which puts the magazine *On*. Turn Safety up and move bolt alternately backward and forward until all the cartridges are ejected.

After the last cartridge is ejected, the follower rises and holds the bolt open to show that the magazine is empty, the chamber is then closed by pressing the follower down as the bolt is pushed forward, to free the bolt, and thrusting the bolt home. The Safety is turned to *Ready* and the trigger is pulled.

14. CUT-OFF. When the cut-off is turned down, the magazine is *Off,* and the rifle converted into a single loader, whether the magazine is full or empty.

When the cut-off is turned up, the magazine is *On* (the bolt can be drawn fully to the rear, permitting the top cartridge to rise high enough to be caught in its forward movement). As the bolt is closed, this cartridge is pushed forward into the chamber, being held up during its passage by the pressure of those below. The last one in the magazine is held up by the follower, the rib on which directs it into the chamber.

When the bolt is closed, the cut-off may be turned up or down. When the bolt is in its rearmost position, to pass from the *Loading from the Magazine* to *Single Loading,* it is necessary to force the top cartridge or follower below the reach of the bolt, to push the bolt slightly forward and to turn the cut-off down, showing *Off.*

15. JAMS. If cartridges jam, take out magazine, as described hereafter under "To Dismount Magazine Mechanism."

16. TO REMOVE THE BOLT. Place the cut-off at the center notch; cock the arm and turn the safety lock to a vertical position, raise the bolt handle and draw out the bolt.

17. TO DISMOUNT BOLT MECHANISM. To take bolt apart proceed as follows:

Hold bolt in the left hand, press sleeve lock with the

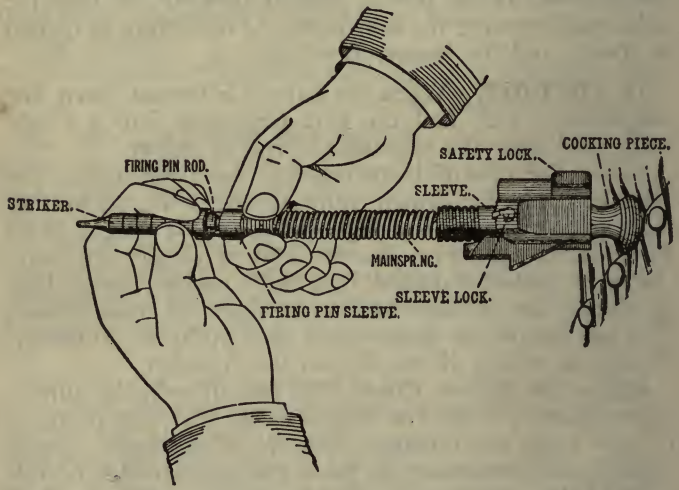


FIG. 3.—Disconnecting Striker and Firing Pin, Model 1903.

thumb of right hand to unlock sleeve from bolt, and unscrew sleeve by turning to the left.

Hold sleeve in left hand and draw cocking-piece back

with middle finger and thumb of right hand, turn safety lock down to the left with the forefinger of the right hand in order to allow the cocking piece to move forward in sleeve, thus partially relieving the tension of main spring. With the cocking piece against the breast, draw back the firing pin sleeve with the forefinger and thumb of right hand and hold it in this position (Fig. 3), while removing the striker with the left hand; remove firing pin sleeve and mainspring; pull firing pin out of sleeve.

Pick up bolt, turn the extractor to the right, forcing its tongue out of its groove in the front of the bolt and force the extractor forward and off the bolt with the thumb of the right hand.

18. TO ASSEMBLE BOLT MECHANISM. Grasp with the left hand the rear of the bolt, handle up, and turn the extractor collar with the thumb and forefinger of the right hand until its lug is on a line with the safety lug on the bolt; take the extractor in the right hand and insert the lug on the collar in the undercuts in the extractor by pushing the extractor to the rear until its tongue comes in contact with the rim on the face of the bolt (a slight pressure with the left thumb on the top of the rear part of the extractor assists in this operation); turn the extractor to the right until it is over the right lug; take the bolt in the right hand and press the hook of the extractor against the butt plate or some rigid object, until the tongue on the extractor enters its groove in the bolt.

With the safety lock turned down to the left to permit the firing pin to enter the sleeve as far as possible, assemble the sleeve and firing pin, place the cocking piece against the breast and put on main spring, firing-pin-

sleeve, and striker. Hold the cocking piece between the thumb and forefinger of the left hand, and by pressing the striker point against some substance not hard enough to injure it, force the cocking piece back until the safety lock can be turned to the vertical position with the right hand; insert the firing-pin in the bolt and screw up the sleeve (by turning it to the right) until the sleeve lock enters its notch on the bolt.

See that the cut-off is at the center notch; hold the piece under floor plate in the fingers of the left hand, the thumb extending over the left side of the receiver; take bolt in right hand with safety lock in a vertical position and safety lug up; press rear end of follower down with left thumb and push bolt into the receiver; lower bolt handle; turn safety lock and cut-off down to the left with right hand.

19. TO DISMOUNT MAGAZINE MECHANISM. With the bullet end of a cartridge press on the floor plate catch (through the hole in the floor plate), at the same time drawing the bullet to the rear; this releases the floor plate. If it sticks, strike it toward the butt with the flat of the hand.

20. TO ASSEMBLE MAGAZINE MECHANISM. Reverse operation of dismounting.

21. THE USE OF THE RIFLE SLING IN FIRING. The gun sling may be used to steady the aim in the various positions but is seldom used in field service. It is adjusted as follows: Release the outside hook and fasten it in the holes nearest to the butt swivel. Release the other hook (of the other strap) and readjust it near the end so that the loop will be about opposite the

comb of the stock. The length must be adjusted to the arm. Holding the rifle in the right hand at the small of the stock, pass the left arm through the upper loop beyond the elbow; then pass the left hand under the stock, grasping the stock with the left hand in front of the trigger guard, the straps passing to the right of the wrist. Take up slack in the sling by drawing back the left arm and pressing the wrist to the right. Be careful to exert the same pressure for each shot. Adjust position to one of ease, firmness and steadiness.

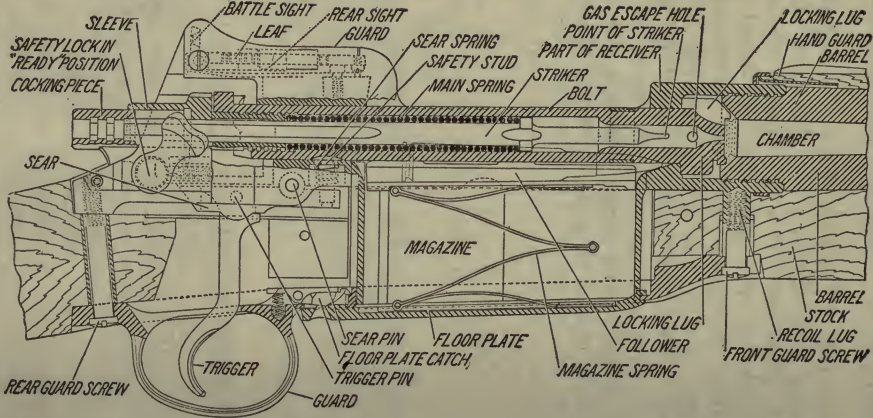


FIG. 3a.—United States Rifle, Model 1917. Longitudinal section.

CHAPTER III

(Prepares for Official Test I. See Chapter IX)

NOMENCLATURE OF THE RIFLE, MODEL 1917

U. S. Rifle, Caliber .30, Model 1917, for 1906 Ammunition (Fig. 3a.)

22. PARTS. The Rifle consists of 86 parts of which the chief are:

23. BARREL. Muzzle, Breech, Chamber, Bore (.30), Lands, Grooves. (Lands and grooves, 5 in number, are of equal width and make one turn in 10″ left handed.)

24. RECEIVER. Magazine-opening, Clip-slots, Bolt-stop (attached to left rear end of the receiver), Ejector, Safety-lock (attached to right and rear end of receiver).

25. BOLT MECHANISM. Bolt, Handle, Locking-lugs, Sleeve, Striker, Main-spring, Cocking-piece with Dismounting-hook, Extractor, Extractor-collar.

26. MAGAZINE. Floor-plate, Magazine-spring, Follower.

27. TRIGGER. The lever used to release the Striker and fire the rifle—(Sear, Sear-spring and Safety-stud are actuated by trigger).

28. **SIGHTS. The Front Sight.**

The Rear Sight has no allowance for drift nor adjustment for wind but consists of a Hinged Leaf with a Slide, with a "Peep" in it. The slide is latched by a Spring Catch in adjustable positions on the leaf for different ranges. The ranges on the leaf are from 200 to 1600 yards, with notches for each hundred yard "setting." The "setting" for the range is read from the lines in the beveled opening near the top of the slide, which are aligned with lines on the leaf opposite the numbers designating the hundreds of yards.

The leaf carries a Battle Sight which is a "peep" formed on the leaf and which is in position when the leaf is laid down. The fixed sighted range of this Battle Sight is 400 yards.

29. STOCK. Butt, Small of Stock, Pistol Grip, Balance and Hand Guard; two Sling Swivels and a Leather Sling; a Stacking Swivel near the muzzle, Butt Plate with receptacle for Oiler and Thong (or "Pull-Through") container. This oil is for lubricating working parts only.

30. AMMUNITION. Model 1906, Caliber .30, Ball Cartridge, consisting of Case, Primer, Charge of smokeless powder and Bullet. Standard muzzle velocity about 2700 feet per second.

CHAPTER IV

(Prepares for Official Test II)

OPERATION OF THE RIFLE, MODEL 1917

31. BOLT MECHANISM. The bolt mechanism moves backward and forward and rotates in the well of the Receiver when the magazine is full. The effect of drawing the bolt all the way to the rear and then forcing it forward, and the handle down, is to eject a cartridge and place another cartridge in the chamber and cock the piece. The piece when loaded and cocked is ready to be fired if the Safety-lock is left "forward." To prevent the piece from being fired, turn the Safety-lock "back" and down. This can be done only when the piece is cocked.

The bolt mechanism operates as follows:

To open the bolt, raise the handle as far as possible, and pull directly to the rear until it is stopped.

To close the bolt, push the handle vigorously straight forward as far as it will go, and turn the handle down strongly, being careful not to jam the bolt by lateral pressure. The piece is cocked by raising the bolt handle and drawing the bolt back about 1" (or until a distinct snap is heard) then forcing bolt forward and handle down into position. The bolt handle *must be turned all*

the way down before firing, for otherwise the safety stud on the sear will not enter the interlock slot on the bolt and the trigger cannot be pulled.

32. MAGAZINE MECHANISM. The magazine will contain as many as five cartridges and feed them one by one, as wanted, to the barrel chamber.

33. TO LOAD THE MAGAZINE. Draw the bolt fully to the rear. Place either end of the loaded clip in the clip slot of the receiver and with the thumb of the right hand near the base of the cartridge, press smartly down into the magazine until the top cartridge is caught by the right edge of the receiver. The magazine can be filled, if empty or partly filled, by inserting cartridges one by one. Pushing the bolt forward, after loading the magazine, ejects the clip, puts one cartridge into the chamber and cocks the piece.

To Put Five Cartridges in the Magazine and One in the Barrel. Proceed as in paragraph "To Load the Magazine," but remove clip by hand, then push down top cartridge and hold it with thumb of left hand, while advancing the bolt about half an inch; then, with the right hand, insert another cartridge in the barrel and close the bolt.

34. TO UNLOAD. Put the Safety forward and move the bolt alternately backward and forward until all the cartridges are ejected.

After the last cartridge is ejected, the follower rises and holds the bolt open to show that the magazine is empty. The chamber is closed by pressing the follower down, as the bolt is pushed forward, to free the bolt, and by thrusting the bolt home; and the trigger is pulled to leave the piece uncocked.

35. JAMS. If cartridges jam, take out magazine, as described hereafter, under "To Dismount Magazine Mechanism."

36. TO REMOVE THE BOLT. (NOTE: See that the chamber and magazine are empty.) With the Safety in the forward position, raise the bolt handle; then with the left, first finger and thumb, hold out the Bolt Stop and draw the bolt directly back and out. During this operation the rifle may be supported on the knees or by holding the butt under the right arm pit.

37. TO REPLACE THE BOLT. Reverse the operations, lining up the extractor with the solid lug on the end of bolt.

38. TO DISMOUNT BOLT MECHANISM. The bolt having been removed, grip the rear end of the bolt in the right hand and with the left thumb, pressing on the extractor ring, rotate the bolt in an anti-clockwise direction until the extractor is in line with the gas escape hole. This raises the tongue on the extractor out of the groove at the front end of the bolt. The extractor can then be pushed forward and off by the right thumb.

Hook a loop of string or the "cleaning thong" on the dismounting hook, which is on the cocking piece lug, and, holding the bolt in the left hand and the string in the right, draw the cocking piece to the rear until the lug clears the end of the bolt. Then, by a rotary movement of the right hand counterclockwise, unscrew the sleeve from the bolt and withdraw the sleeve, cocking piece and striker from the bolt. Grasp the sleeve with the left hand, and, while holding the point of the striker against a piece of wood or a similar surface, force the

sleeve toward the point of striker, compressing the mainspring until the lug on the cocking piece clears the lug slot in the sleeve. Then give the cocking piece a quarter turn in either direction to disengage it from the striker, and draw it off the rear. Relieve the spring from stress slowly and remove it and the sleeve from the striker.

39. TO ASSEMBLE BOLT MECHANISM. Slide the main spring over the striker. Hold the point of the striker against a piece of wood or a similar surface and, placing the sleeve against the end of the spring, with the flats in the bore registering with the flats in the striker, compress the spring by forcing the sleeve toward the point of the striker. Holding the sleeve with the spring fully compressed, replace the cocking piece on the end of the striker, locking it by a quarter turn so that its lug aligns with the lug-slot in the sleeve. Then let the sleeve return to position slowly under the action of the spring. Holding the bolt in the left hand, start the threads on the barrel of the sleeve into the threads in the end of the bolt. Holding a loop of string in the right hand as before, hook it on the dismounting hook and draw the cocking piece outwardly. Then, by a clockwise rotary movement of the right hand, screw the sleeve home on the bolt. Place the lug in the half cock notch. Slide the extractor to place in line with the gas escape holes, engaging the undercut lug on the extractor with the ears on the ring and lifting the hook so that the tongue will slide over the end of the bolt. To assist in this operation, press down on the extractor with the right thumb half way between the "Extractor Lug" and the "Back Rest." Turn the extractor so that it lies over the unslotted or solid lug and replace the

bolt in the receiver. Push the follower down and close and lock the bolt and pull the trigger.

40. TO DISMOUNT MAGAZINE MECHANISM. With the bullet end of a cartridge, press on the floor plate catch (through the hole in the floor plate) at the same time drawing the bullet to the rear; this releases the floor plate. If it sticks, strike it towards the butt with the flat of the hand. Pull the ends of the spring from the undercuts on the follower and floor plate. The narrower end of the spring will be found on the follower.

41. TO ASSEMBLE MAGAZINE MECHANISM. Reverse the operation of dismounting.

42. THE USE OF THE RIFLE SLING IN FIRING. See last section in Chapter II.

CHAPTER V

(Prepares for Official Test III)

CARE OF THE RIFLE AND PISTOL

43. IMPORTANCE OF CLEANING. The care of the rifle and pistol is of the utmost importance. Beyond ordinary caution, it principally consists of cleaning thoroughly after firing, as the powder gases are highly corrosive.

They should be cleaned immediately after each day's shooting in the field, (as well as at noon, when shooting on a range,) *and daily for several days thereafter.*

If not possible to clean the rifle immediately, pull through an oily rag and clean at first opportunity.

The worst part of the powder fouling cannot be seen, nor be removed by oil.

44. TO CLEAN THE ACTION AND EXTERIOR OF THE RIFLE. Clean bolt, magazine and exterior with any oily rag, wiping off surplus.

45. OBJECT OF CLEANING THE BORE. To remove the fouling to get a chemically clean surface, and then cover this surface with a film of oil to prevent rusting.

46. TO CLEAN THE BORE WITH WEIGHT, THONG AND BRUSH OR GAUZE. First Method (*Powder*

Fouling): If possible, plug bore at breech and fill with soda solution and leave to soak for twenty minutes to remove *powder fouling,* then wash out with clean water, *or*

SECOND METHOD: With well oiled brush or gauze, drop the weight through from breech and pull through three or four times. Wipe dry with cloth patch of a size to pass snugly but easily through the bore. Then, either swab out three or four times with patches soaked in "Hoppe No. 9" solution, or pour through from the breech five or six pints of very hot or soapy water, being careful not to get it into the mechanism.

After either method, dry thoroughly until patches come out "clean," or continue to come out with a bluish green stain. By "clean" is meant not absolutely free from discoloration, but free from evidence of powder or metal fouling.

If these dry patches come out clean, run through an oily rag, *or*

If these dry patches do not come out clean, but continue to come out with a bluish green stain, this shows *Metal Fouling* from the bullet, then pull through an oily rag and take the rifle to the armorer at the first opportunity.

The ammonia or other special solutions for removing *Metal Fouling* should only be used by experienced men.

47. TO CLEAN THE BORE WITH A ROD INSTEAD OF THONG. Proceed as above except that the liquids can be pumped up into the barrel with the rod and a rag from a can, and the bore scrubbed. *Always insert* the rod from the breech after removing the bolt, so as to avoid wear or injury to rifle at the muzzle.

After firing, clean the rifle daily for several days and until, after the oil is wiped out, the first dry patch comes out clean.

48. TO CLEAN THE PISTOL. The above principles apply also for the Automatic Pistol. Also clean the chamber of the pistol, using the soda solution.

49. IMPORTANT POINTS. Never leave rag or other plug **in the barrel** to avoid blowing up the piece or causing rust by holding moisture between the oily rag and the bore.

Keep sight lowered when not in use.

Keep **piece uncocked** except when loaded.

For trouble with **trigger pull,** take rifle to the armorer.

Cartridges are kept **in magazine** only when necessary.

Bolts are **not** to be **exchanged** except to try and extract a stuck cartridge.

If necessary in muddy or dusty country, **cover** muzzle and **mechanism** with a cloth or old sock but *never* put a plug in the muzzle. In dusty country, do not keep mechanism oily, but dry and clean.

The **bayonet** must be **wiped** before returning to scabbard, after it has been oiled or the rifle has been fired with the bayonet fixed.

Keep ammunition dry and clean and out of extreme temperatures.

Misfire: (a) From defective ammunition; **try again** or in another rifle; (b) from defective rifle; **take rifle to armorer.**

Examine sights and loading mechanism and "fix" or **try bayonet before** going into **action.**

CHAPTER VI

(Prepares for Official Tests VII and VIII)

SIGHTING EXERCISES

50. TRAJECTORY (Fig. 4.) The bullet, in traveling from the barrel to the mark, does not go in a straight line but in a curve like a baseball and is influenced by—

(1.) Gravity (3.) Bullet Drift to right
(2.) Wind (4.) Rifle jump to left

In the Model 1903, Jump and Drift are automatically corrected by the angle at which the drift slide rises in

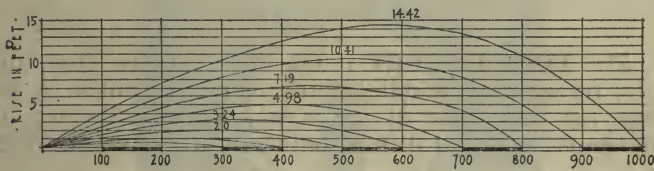


FIG. 4.—Curves of Trajectories of Rifle Bullets for Different Ranges. For Model 1903.

taking elevation. In the Model 1917, there is no such correction.

The rear sight Elevation is for counteracting the influence of gravity. In the Model 1903, the windgauge

is used to counteract the influence of the wind. In the Model 1917, there is no windgauge, but corrections, when necessary, are made by aiming off.

The bullet describes a vertical curve which is constantly changing and becoming more pronounced as it approaches the end of its flight, due to the decrease in the forward velocity, caused by the resistance of the air, and the increase of the downward velocity caused by gravity.

Gravity is counteracted by elevating the line of the barrel above the Line of Sight enough to compensate for the distance through which the bullet will fall. This is done by raising the slide in the rear sight.

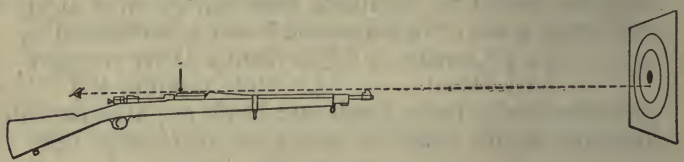


FIG. 5.—Line of Sight.

51. LINE OF SIGHT is the line of vision from the eye, through the middle of the rear sight notch, at its top, (or the center of the peep), touching the top of the front sight and thence continuing to the mark. (Fig. 5.)

52. POINT OF AIM. (Figs. 6 and 6a.) To give the greatest uniformity, a point just below the mark, and not the mark, is preferable as the Point of Aim, as a more definite sight can be taken with the contrast which a line of light or different color, between the front sight and the mark or bull's-eye, gives. As it is impossible

FIG. 6.—Normal Sight, Showing Point of Aim

FIG. 6a.—Peep Sight, Showing Point of Aim.

to always know, if touching the mark with the top of front sight, how much of front sight is seen, the term "on the mark or bull's-eye" will be understood to mean an aim, taken: just below the mark, showing a fine line of light between the mark and the top of the front sight.

53. NORMAL SIGHT. The top of the front sight should be level with the top of the open rear sight and in the middle of its notch (Fig. 6) for Model 1903.

The corresponding position for the peep sight in either Model 1903 or 1917 is when the middle of the top of the front sight is in the center of the peep (Fig. 6a).

Always take the same amount of front sight, as this is essential for good shooting.

To raise the line of fire,

either

Increase the elevation of the rear sight

or

Aim at a higher point on the target.

The first method is much the better when possible. Always put the *top* of the front sight, not the *bull's-eye* or mark, in the *center* of the peep hole, otherwise the Normal Sight will not be obtained and there will be no uniformity in sighting.

54. BATTLE SIGHT. The BATTLE SIGHT on the Model 1903 Rifle is the open notch on top of the leaf slide when the leaf is down.

In the Model 1917, it is a "peep" sight.

This sight is provided so that the soldier will have a reasonable mean elevation for use at close ranges, when he has not time, or neglects, to change the sight eleva-

tion. It might therefore be regarded as an "Instinctive Sight."

55. IMPORTANT POINTS. Never cant the piece.

Always take the **same amount of front sight,** more will shoot higher, less will shoot lower.

Always have **front sight** in the **middle of rear sight;** with front sight to the left, the rifle shoots to the left; and to the right, it shoots to the right.

56. SIGHTING APPARATUS. (1.) **Sighting Bar** (See Fig. 7). (a) A bar of wood about 1 by 2 inches by 4 feet with a thin slot one inch deep cut across the edge about 20 inches from one end;

(b) A front sight of tin or cardboard ½x3 inches tacked to the end nearer the slot and projecting 1 inch above bar;

(c) An eye piece of tin or cardboard 1x3 inches tacked to the other end of, and projecting 1 inch above, the bar, with a very small hole (0.03 inch) one half inch from top of part projecting from the bar;

(d) An open rear sight of tin or cardboard 1½x3 inches, with a U shaped notch ¾ inch wide, cut in the middle of one of the long edges. This is placed in the slot on the bar. (A slight bend of the part of the tin fitting in the slot will give enough friction to hold the sight in any part of slot in which it is placed);

(e) A peep rear sight of tin or cardboard 3x3 inches, with a peep hole ¾ inch in diameter cut in the center. This replaces the open sight, when the peep sight is used.

Carefully blacken all pieces of tin and cardboard and the top of the bar. Nail the bar to a box about 1 foot

high and place on the ground, table, or other suitable place. Then adjust the open (or peep) rear sight in the slot and direct the bar upon a bull's-eye (preferably an X or Y target) placed about 5 yards from the bar. No

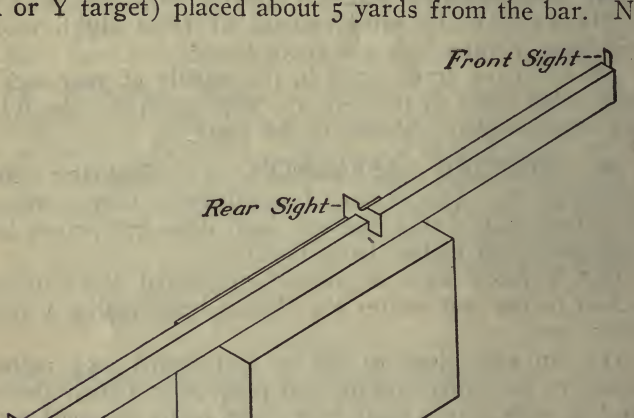


FIG. 7.—Sighting Bar.

other than the sight desired can be seen. Errors, etc., are shown by manipulating the open and peep rear sights.

(2.) **Target Machine** consists of a mounting for a miniature target and jointed arms on which a service rifle is mounted, such that moving the rifle to the line of sight in aiming at an *aiming target* situated some 20

feet away, moves a pin in unison with it, which points at a *miniature target* exactly as the line of sight on the rifle points at the *aiming target.* When the trigger is pulled, the miniature target impales itself upon the pin in the same relative position as a bullet would have hit the aiming target.

(3.) **Aiming Rod Device (Hollifield).** This is a device often used for practice in aiming and trigger squeeze in both slow and rapid fire.

It consists of a mechanical arrangement in the rifle and a miniature target whereby pulling the trigger of the rifle marks the point of aim on the target.

This apparatus has been officially adopted by the United States Army and can be obtained on requisition, or can be purchased direct from the Hollifield Target Practice Company, Middletown, N. Y.

(4.) **Belgian Aiming Device,** consists of a reflector cage on the rifle by which the instructor can see the reflection of both sights and the object aimed at, so as to judge of the accuracy and steadiness of the soldier's aim. The device is placed just back of the rear sight.

57. FIRST SIGHTING EXERCISE. Sighting Bar.

Using the Sighting Bar, represent the normal open sight and the normal peep sight and require each man in the squad to look at them.

Using the Sighting Bar, describe and represent the usual errors of sighting and require each man in the squad to look at them, such as

(a.) Front sight too high or too low
(b.) Front sight to right or left of middle of notch or peep
(c.) Canting

58. SECOND AND THIRD SIGHTING EXERCISES, COMBINED. Triangle of sighting.

A soldier acting as marker is provided with a pencil and a small rod, bearing a disk of white cardboard about 3 inches in diameter, with a black bull's-eye (a black paster is best) placed in the center with a hole just large enough to admit the point of a lead pencil. The soldier sighting, with a fixed sighting bar or rifle on a fixed rest, and using the peep sight, directs the marker to move the disk to the right, left, higher, lower, until the Line of Aim is established, when he commands *"Mark."* At the command *"Mark,"* being careful not to move the disk, the marker records through the hole in its center the position of the disk and then withdraws it. Then being careful not to disturb the sights, repeat the operation until three marks have been made.

Join the three points as determined as above, by straight lines, mark with the soldier's name, and call his attention to the triangle thus formed. The shape and size of this triangle will indicate the nature and the variations made in aiming.

59. FOURTH SIGHTING EXERCISE. Canting.

This exercise is a demonstration of the effect of *canting* the piece. The soldier must be impressed with the necessity of keeping the sights vertical when aiming, and not canting the piece to the right or left. Explain to the soldier that if the piece is canted to the right, the bullet will strike to the right and below the point aimed at, even though the rifle be otherwise correctly aimed and the sights correctly set. Similarly, if the piece is canted to the left, the bullet will strike to the left and low. This can be explained by showing that the elevation fixes

the height of the point where the bullet will hit the target, and that windage fixes the point to the right or left; i. e., the elevation gives vertical effects and windage horizontal effects. Let a pencil (or rod) held vertical represent the elevation; now, if the pencil is turned to the right 90 degrees, or horizontal, all of the elevation has been taken off, causing the shot to strike low and changed into windage, causing the shot to strike to the right.

This effect may be demonstrated as follows: Use the sighting rest with the rifle firmly held in the notches, the bolt removed. Paste a black paster near the center of the bottom line of the target. Sight the rifle on this mark, using about 1,600 yards elevation, then, being careful not to move the rifle, look through the bore and direct the marker to move the disk until the bull's-eye is in the center of the field of view and command *"Mark."* Next turn the rest with the rifle on its right side, and with the same elevation sight on the same paster as above, then being careful not to move the rifle, look through the bore and again direct the marker to move the disk until the bull's-eye is in the center of the field of view and command *"Mark."* Not considering the fall of the bullet, the first mark represents the point struck with the sight vertical, the second mark represents the point struck, low and to the right, using the same elevation and the same point of aim, when the piece is canted 90 degrees to the right.

Different degrees of canting the piece can be represented by drawing an arc of a circle through the two marks with the paster as a center. The second mark will be at a point on this arc corresponding to the degrees

of canting the piece. Emphasis will be laid upon the fact that this effect of canting increases with the distance from the target.

60. ALLOWANCE EXERCISE. Aiming Down for Change of Elevation.

With the enemy at over 550 yards, there is time to alter elevation of sights.

When raising or lowering sights in firing up to 550 yards is inadvisable, in the field, the battle sight is used and allowance is made by aiming down as follows:

(a) At an approaching upright, or kneeling, enemy, aim at his feet.

(b) At a prone enemy, aim a full foot below.

Aiming Off for Wind.

Altering the wind gauge is not the usual means for allowing for wind in many cases in the field, and cannot be done with Model 1917. Against close formations neglect windage. When aiming off for the wind, remember that a man's breadth, when facing you, is about two feet wide. Make windage allowance in one breadth, two breadths, etc., of a man, as in following rough table:

Rough Table for Right Angle Winds.

Range	Velocity of Wind in Miles per Hour		
	Mild, 10 Miles	Fresh, 20 Miles	Strong, 30 Miles
500	2 ft.	4 ft.	6 ft.
800	5 ft.	10 ft.	15 ft.
1600	8 ft.	17 ft.	25 ft.
1200	12 ft.	24 ft.	36 ft.

Example: Assuming a range of 800 yards and a mild wind of 10 miles per hour, the table shows that a bullet is blown 5 feet off the mark. Therefore, with such a wind from the left, the soldier should aim to the left 5 feet or 2½ "breadths" of a man at that distance.

Aiming Off for Enemy Moving At Right Angles.

(a) Ranges up to 500 yards, aim

About 1 ft. in front per 100 yds. at a man walking
About 2 ft. in front per 100 yds. at a man at "double time"
About 3 ft. in front per 100 yds. at a horseman trotting
About 6 ft. in front per 100 yds. at a horseman galloping

(b) Range over 500 yards, aim

At the head of a column of troops moving to either flank.

About 6 lengths ahead of Airplanes.

At the nose of the envelope of Airships.

Exercise for Battle Sight of Model 1903. Aiming down to counteract Battle Sight, or long range elevation, for short ranges:

With an adjustable rest for rifle, the "Sighter" is instructed to estimate and sight and set rifle some multiple, such as one-half *the width of bull's-eye* below the bull's-eye. When done, the instructor looks through the sights and directs marker, with disk bull's-eye, to "mark" when disk is in normal position to sights. The distance thus measured is compared and corrected, the Sighter looking through the sights at the new correct point.

In the same way, "Mark" the estimated aim, once the width and then twice the *width* of bull's-eye below mark.

Note. If practice in "Aiming Off" is desired, left and right estimated aims can be taken and corrected as in "Aiming Down Exercise," preceding.

CHAPTER VII

(Prepares for Official Tests V, VI and IX)

POSITION AND AIMING DRILLS

61. TO LOAD. Being in line or skirmish line at halt. 1. **With dummy** (blank or ball) **cartridges,** 2. **Load.**

At the command load each trooper faces half right and carries the right foot to the right, about 1 foot, to

FIG. 8.—To load.

such position as will insure the greatest firmness and steadiness of the body, raises or lowers the rifle and drops it into the left hand at the balance, left thumb extended along the stock, muzzle at the height of the

FIG. 9.—Position of "Load."

breast, and, in Model 1903, turns the cut-off up. With the right hand he turns and draws the bolt back, takes a loaded clip (Fig. 8) and inserts the end in the clip slots, places the thumb well back on the powder space of the top cartridge, the fingers extending around the rifle and tips resting on the magazine floor-plate; forces the cartridges into the magazine by pressing down with the thumb; without removing the clip thrusts the bolt

home, turning down the handle; turns the safety lock to the "Safe"; and carries the hand to the small of the stock. (Fig. 9.)

A skirmish line may load while moving, the rifle being held as nearly as practicable in the position of load.

If kneeling or sitting, the position of the piece is similar; if kneeling, the left forearm rests on the left thigh; if sitting, the elbows are supported by the knees; if lying down, the left hand steadies and supports the piece at the balance, the toe of the butt resting on the ground, the muzzle off the ground.

For reference, these positions (standing, kneeling and lying down) are designated as that of *Load.*

For instruction in loading: 1. **Simulate,** 2. **Load.**

With the **Model 1903,** this is executed as above described, without cartridges, except that the Cut-off remains "off" and the handling of cartridges is simulated.

With the **Model 1917,** it can be executed as above described, without cartridges, if the Follower is held down by the *Follower Depressor,* issued for this purpose.

FIG. 9a.—Follower Depressor for Model 1917.

Follower Depressor. The Depressor is to be used only in Exercises. (Fig. 9a.)

Its object is to hold the Follower down clear of the bolt.

The Depressor is inserted into the Magazine edgewise, forcing the Magazine Follower down and is then turned laterally into normal position and allowed to rise with the Follower. The edges of the Depressor engage the sides of the Magazine opening in the Receiver and since the top plate of the Depressor is troughed, sufficient clearance for the movement of the Bolt is afforded.

The recruits are first taught to *simulate* loading and firing. After a few lessons dummy cartridges may be used. Later, blank cartridges may be used.

62. EXERCISE—LOADING MAGAZINE FROM BELT. The soldier will be exercised in loading from the belt, pockets fastened, with a clip of dummy cartridges, in position of Standing, Kneeling, Sitting, Prone.

63. TO UNLOAD. Take the *Position of Load,* turn the safety lock up and move bolt alternately back and forward until all the cartridges are ejected, taking care to do this slowly to avoid scattering or injuring the cartridges. After the last cartridge is ejected, the chamber is closed by first thrusting the bolt slightly forward to free it from the stud holding it in place when the chamber is open, pressing the follower down and back to engage it under the bolt, and then, thrusting the bolt home, the safety lock is turned to ready, and *the trigger is pulled.* The cartridges are then picked up, cleaned and returned to the belt, and the rifle is brought to the order.

The position of *Ready* is the same as the *Position of Load* except that the safety is turned to *Ready.*

64. POSITION EXERCISE, STANDING. The squad being in the *Position of Load,* the instructor commands: 1. **Position,** 2. **Exercise.** At the last command, without

moving the body or eyes, raise the rifle smartly to the front of the right shoulder to the full extent of the left arm, elbow inclined downward, the barrel nearly horizontal, muzzle slightly depressed, heel of the butt on a line with the top of the shoulder.

FIG. 10.—Position of Aiming, Standing.

Two. Bring the piece smartly against the hollow of the shoulder, without permitting the shoulder to give way, and press the rifle against it, mainly with the right hand, only slightly with the left, the forefinger (second joint) of the right hand resting lightly against the trigger, the rifle inclined neither to the right nor left. At the same time bring the left elbow well under the rifle; right elbow as high as the shoulder. (Fig. 10.)

Three. Resume the position of *Ready.*

Remarks. The instructor should endeavor to give to each man an easy and natural position

The butt of the piece must be pressed firmly, but not too tightly, into the hollow of the shoulder and not against the muscles of the upper arm. If held too tightly, the pulsations of the body will be communicated to the piece; if too loosely, the recoil will bruise the shoulder. If only the heel or toe touches the hollow of the shoulder, the recoil may throw the muzzle down or up, affecting the position of the hit. While both arms are used to press the piece to the shoulder, the left arm should be used to direct the piece and the right forefinger must be left free to squeeze the trigger.

65. MUSCLE EXERCISE. Note—Men must not be unduly fatigued by the exercises or exercised when tired.

First Exercise.

One. Move rifle from position of *Ready* to *Aim* (Pressing smartly against the shoulder).

Two. Return to *Ready.*

Note. Interval between *One* and *Two,* will be progressively increased until rifle can be held at shoulder for two minutes without fatigue.

Second Exercise.

One. Bring rifle to *Aim.*

Two. Drop right hand.

Three. Replace right hand and drop left hand.

Note. The commands *Two* and *Three* should be given at intervals of about 10 seconds.

66. AIMING EXERCISE. The instructor will first

direct the sights to be adjusted for the lowest elevation, and subsequently for the different longer ranges.

The instructor commands: 1. **Aiming.** 2. **Exercise.**

At the last command, execute the first and second motion of the Position Exercise. (Par. 64.) (Fig. 10.)

Two. Bend the head a little to the right, the cheek resting snugly against the stock to assist the "hold" and avoid bruising the jaw; the left eye closed, the right eye looking through the rear sight at a point slightly below the mark.

Three. Draw a moderately long breath, let a portion of it escape, then, with the lungs in a state of rest, slowly raise the rifle with the left hand, being careful not to incline the sight to either side, until the line of sight is directly on the mark; hold the rifle steadily directed on the mark for a moment (7 to 10 seconds); then, without command, and just before the power to hold the rifle steadily is lost, drop the rifle to the position of *Ready* and resume the breathing.

Remarks. Some riflemen prefer to extend the left arm. Such a position gives greater control over the rifle when firing in a strong wind or at moving objects. It also possesses advantages when a rapid as well as accurate delivery of fire is desired. Whatever the position, whether standing, kneeling, sitting or prone, the piece should rest on the palm of the left hand, never on the tips of the fingers, and should be firmly grasped by all the fingers and the thumb.

Lowering the head too far to the front, to bring the eye into the Line of Sight, brings it near the right hand, which grasps the stock. When the piece is discharged, this hand is carried by the recoil to the rear and, when

the head is in this position, may strike against the nose or mouth. This often happens in practice, and, as a result of this blow often repeated, many men become gun-shy or flinch, or close their eye at the moment of firing. Much bad shooting, ascribed to other causes, is really due to this fault. Raising the right elbow at right angles to the body elevates the right shoulder, and lifts the piece so that it is no longer necessary to incline the head materially to the front in order to look along the sights.

As changes in the elevation of the rear sight will necessitate a corresponding change in the position of the soldier's head when aiming, the exercise should not be held with the sight adjusted for the longer ranges until the men have been practiced with the sights as they would generally be adjusted for off hand firing.

The soldier must be cautioned that, while raising the line of sight to the mark, he must fix his eye on the mark and not on the front sight. If this plan be not followed, when firing is held on the range at long distances the mark will generally appear blurred and indistinct.

The rifle must be raised slowly, without jerk, and its motion stopped gradually. In retaining it directed at the mark, care must be taken not to continue the aim after steadiness is lost; this period will probably be found to be short at first, but will quickly lengthen with practice. No effort should be made to prolong it beyond the time that breathing can be easily restrained. Each soldier will determine for himself the proper time for dismounting the aim.

67. TRIGGER SQUEEZE EXERCISE. The trigger should be *squeezed,* not pulled, the hand being closed

upon itself as a sponge is *squeezed,* the forefinger sharing in this movement. The forefinger should be placed as far around the trigger as to press it with the second joint. By practice the soldier becomes familiar with the trigger *squeeze* of his rifle, and knowing this, he is able to judge at any time, within limits, what additional pressure is required for its discharge. By constant repetition of this exercise he should be able finally to *squeeze* the trigger to a certain point beyond which the slightest movement will release the sear. Having *squeezed* the trigger to this point, the aim is corrected and the additional pressure is applied and the discharge follows.

Exercise. The instructor commands: 1. **Trigger Squeeze.** 2. **Exercise.** At the command **Exercise,** the soldier will execute the first motion of the Aiming Exercise. (Par. 66.)

Two. The second motion of the Aiming Exercise.

Three. Draw a moderately long breath, let a portion of it escape, hold the breath and slowly raise the rifle with the left hand, until the line of sight is on the mark, being careful not to incline the sights to either side. Contract the trigger finger *gradually, slowly* and *steadily,* increasing the pressure on the trigger while the aim is being perfected. In most trigger pulls there are two distinct stages: 1. *The Slack;* 2. *The Creep or Drag* ending at the *Critical Point.* After the slack is taken out and the creep begins, continue the gradual increase of pressure required to release the point of the sear which should be done almost insensibly, the *pull* sliding along through the *creep* without causing any deflection of the rifle. After one has shot a rifle a few times, he will get to know how long the creep is, and so, when

the critical point is approaching. This will enable him to make the release of the firing pin and the perfection of the aim take place at the same time, which is important in firing in a heavy side wind or at a movable mark, where the aim cannot be held steadily. Continue the aim for a moment after release of the firing pin, and observe if any change has been made in the direction of the line of sight to note errors of sight due to pulling or flinching.

Remarks. By frequent practice in this exercise, each man may come to know the exact instant his firing pin will be released. He must be taught to hold the breath, bring the sights to bear upon the mark, and squeeze the trigger all at the same time.

A good test of proper trigger *squeezing* is to balance a coin on the hood of the front sight while *squeezing* the trigger.

68. RAPID FIRE EXERCISE. (To be done with Model 1903 with cut-off "off"; and may be done with Model 1917 with the Follower held down by means of the *Follower Depressor* issued for this purpose.) It is recommended that this exercise be given with the bayonets fixed (by the command: **Fix Bayonet**) as, in the field, the soldier must usually be ready to use the bayonet immediately after firing.

Object. The object of this exercise is to teach the soldier to load and aim quickly and at the same time accurately in all the positions he will be called upon to assume in range practice. This may be done with the "Aiming Rod Device" (Hollifield) or the Belgian Aiming Device.

The instructor commands: 1. **Rapid-fire Exercise**; 2.

Commence firing. At the first command, the first and second motions of the Trigger-Squeeze Exercise are performed. At the second command, the soldier performs the third motion of the Trigger-Squeeze Exercise, *squeezing* the trigger without destroying the aim or the position of the piece, but at the same time without undue deliberation. He then, if possible without removing the rifle from the shoulder, holding the piece in position with the left hand, grasps the handle of the bolt with the right hand, rapidly draws back the bolt, closes the chamber, aims, and again *squeezes* the trigger. This movement is repeated until the trigger has been *squeezed* five times, when, without command, the piece is brought back to the position of *Ready*.

When the soldier has acquired some facility in this exercise, he will be required to repeat the movement ten times, and finally, by using dummy cartridges, he may, by degrees, gain the necessary quickness and dexterity for the execution of the Rapid Fire required in range firing.

Manipulation of the Breech Mechanism. To hold the piece to the shoulder, and at the same time manipulate the breech mechanism with the proper facility, are learned only after much practice. Some riflemen, especially men who shoot from the left shoulder, find it easier, in rapid firing, to drop the piece to the position of load after each shot. While at first trial this method may seem easier, it is believed, that, with practice, the advantage of the former method will be apparent.

Note. Some of the best shots in the United States, instead of letting go of the bolt handle to grasp the small of the stock, and pull the trigger with the first finger,

retain their hold on the bolt handle with their thumb and first finger, *pressing* the trigger with the second finger. In this method the hand grasps the bolt handle at all times with great firmness, second finger extended. The trigger finger presses the trigger with the same caution and deliberation. (The equivalent of the *Squeeze* is obtained by using the grip of the thumb and first finger on the bolt as a fulcrum, instead of the thumb over the small of the stock.) In this method much time is saved and steadiness gained by not changing the grip of the bolt handle to the small of the stock, each time the trigger is pulled.

In all magazine fire, rapidity combined with accuracy is best secured by extreme quickness in operating the bolt mechanism and ample deliberation in aiming and pressing the trigger.

69. POSITION AND AIMING DRILL, KNEELING. These exercises will be repeated in the kneeling position by causing the squad to kneel by the command, **Kneel.** (Fig. 11.) The exercise will be executed as prescribed for "Standing," except that at the command **Two** in the Position Exercise the soldier will rest the left elbow on the left knee, the point of the elbow in front of the knee-cap. The paster (bull's-eyes) for the Kneeling Exercise should be at 2½ feet from the ground.

Remarks. Frequent rests will be given during practice in these exercises kneeling, as the position, if long continued, becomes constrained and fatigues the soldier unnecessarily.

In raising the rifle to the mark in the second and third exercises, the position of the left hand should not be changed, but the left forearm should be brought toward

the body and at the same time the body bent slightly to the rear.

When aiming kneeling, there is, from the nature of the position, a tendency to press the butt of the rifle against the upper arm instead of against the hollow of the shoulder; this will necessitate inclining the head considerably to the right to get the line of sight, and by

FIG. 11.—Position of Aiming, Kneeling.

bringing the rifle so far to the rear will, if the thumb is placed across the stock, cause it to give by the recoil a blow upon the nose or mouth. To avoid this, the thumb can be placed along the top of the stock, on the right of the receiver.

These difficulties may be avoided by advancing the right elbow well to the front, at the same time raising it so that the arm is about parallel with the ground. The hollow of the shoulder will then be the natural place for the rifle butt, and the right thumb will be brought too far from the face to strike it in the recoil.

Some riflemen prefer, by bending the ankle, to rest

the instep flat on the ground, the weight of the body coming more on the upper part of the heel; this obviates any tendency of the right knee to slip; or by resting the right side of the foot on the ground, toe pointing to the front, to bring the weight of the body on the left side of the foot. These positions are authorized.

Choice of Position. In firing kneeling, the steadiness obtained depends greatly upon the position adopted. The peculiarities of the conformation of the individual soldier exert, when firing kneeling, a greater influence than when firing standing, sitting or prone. The instructor should, therefore, carefully endeavor, noticing the build of each soldier, to place him in the position for which he is best adapted and which will exert the least tension or strain upon the muscles or nerves. It should be remembered, however, that without the rest of the left elbow on the knee, forward of the knee cap, this position possesses no advantage of steadiness over the standing position.

Kneeling Position; When Taken. The kneeling position can be taken more easily than the sitting or the prone position. It is, therefore, the position naturally assumed when a soldier, who is standing or advancing, has to make a quick shot at a moving or disappearing object and desires more steadiness than can be obtained standing.

70. POSITION AND AIMING DRILL, SITTING DOWN. In many cases the men, while able to kneel and hold the piece moderately steady, can obtain in a sitting position much better results.

To practice the soldier in the preceding exercises in a sitting position the squad being formed in a single rank,

with an interval of one pace between files, the rifle should first be brought to *Order arms;* the instructor then commands: **Sit down.**

At this command make a half face to the right and, assisted by the left hand on the ground, sit down, facing slightly to the right, the left leg directed toward the front, right leg inclined toward the right, both heels, but not necessarily the bottoms of the feet, on the ground, the right knee slightly higher than the left; body erect and carried naturally from the hips; at the same time drop the muzzle of the piece to the front, and to the position of the first motion of load, right hand upon the thigh, just in front of the body, the left hand slightly above, but not resting upon, the left leg.

The exercise will be executed as heretofore prescribed, except that at the command **Two** (*Position Exercise*), the soldier will rest the left elbow on the left knee, the point of the elbow in front of the knee cap and the right elbow against the left (or inside) of the right knee, at the same time inclining the body from the hips slightly forward.

For the Aiming and Trigger-Squeeze Exercises, the pasters, used as aiming points, will be 2½ feet from the floor or the ground.

To afford the men rest, or, on the completion of the Kneeling or Sitting Down Exercises, the instructor will command **Rise,** when the men rise, face to the front, and resume the *Order arms.*

71. POSITION AND AIMING DRILL, PRONE. From the nature of the position, it is not practicable to execute these exercises according to the method followed when standing or kneeling. Instruction will, however,

always be given with reference to the position, to the manner of assuming it, and to aiming and squeezing the trigger.

For this purpose the squad being formed as specified "Sitting Down" (the black pasters therein mentioned being about 12 inches from the ground), the squad will be brought to *Order arms.* Then (the squad either standing or kneeling) the instructor commands: **Lie**

FIG. 12.—Position of Aiming, Prone.

Down, which will be executed as prescribed in the Drill Regulations; except that the body should be inclined as little as possible and the toes turned out with heels close to the ground to diminish vulnerability. (Fig. 12.)

Note. When lying down in action in the open, keep the face on the ground.

Move as little as possible in any position.

Remain *absolutely immovable,* when halting in "Attack," except when acting as "Observer" or firing.

An immovable object is extremely difficult to see, while the slightest movement immediately attracts the eye.

Being at *Ready,* the instructor then commands: 1. **Trigger-Squeeze, 2. Exercise.**

At the latter command, carry the left elbow to the front and slightly to the right, the left hand under the barrel at the balance, weight of the body mainly supported by the left elbow, the right resting lightly on the ground.

Two. Slide the rifle, with the right hand, through the left hand to the front, until the left hand is a little in front of the trigger guard; at the same time raise the rifle with both hands and press it against the hollow of the shoulder.

Three. Direct the rifle upon the mark and carry out the further details of aiming and squeezing the trigger as prescribed in "Trigger-Squeeze Exercise."

Then resume the position, *Lying Down,* with the face close to the ground.

As soon as the men have acquired with accuracy the details of the position they will be practiced, without the numbers, in aiming and squeezing the trigger at will; after which the rapid-fire exercise in the prone position will be practiced, the necessary skill and dexterity being acquired by degrees.

To afford the men rest, or on completion of the exercise, the instructor will command: **Rise.**

In the prone position, when aiming, the left elbow should be well under the barrel, the other elbow somewhat to the right, but not so far as to induce any tendency to slip on the ground. (Fig. 12.)

The greater changes in elevation required in first directing the rifle on the object, should be given by altering the position of the left hand under the barrel, the slightest changes only by advancing or withdrawing the shoulder.

72. POSITION AND AIMING DRILL FROM COVER. (Fig. 13.) Instruct the soldier to assume the firing position for an under-rifle-rest, such as sand bags, parapet or wall.

Fig. 13.—Aiming from Cover.

Also from a side-rifle-rest, such as a tree, vertical edge of wall, door, window, etc.

CHAPTER VIII

DEFLECTION AND ELEVATION CORRECTION DRILLS

73. ELEVATION. With the Rear Sight Leaf down, the Battle Sight of Model 1903 rifle is a notch and has a fixed elevation of 547 yards. The Battle Sight of the Model 1917 rifle is a "peep" and has a fixed elevation of 200 yards. This sight is used when time is so important there is no opportunity to set the sights. The Drift Slide must be dropped to the bottom of the Sight Leaf when the Battle Sight of Model 1903 is used.

In Model 1903, with the Leaf up, the movable Slide contains sight openings, the peep hole, open triangle or field view, and the upper notch in the upper edge of the Drift Slide. To set an elevation, loosen the Slide Binding Screw and bring the line passing through the center of the sight opening in a line with the line on the side of the Leaf under the number indicating the range desired, then tighten the Slide Binding Screw. The numbers stand for hundreds of yards,—for example, 8 stands for 800 yards. Between these long lines are some shorter ones which divide the 100-yard division into 50 and 25 yards.

In Model 1917, with the Leaf up, the movable Slide

contains a "peep" only. To set an elevation, release the Spring Latch, bring one of the lines in the beveled opening near the top of the Slide even with the line on the Leaf opposite the number indicating the range desired, release the Spring Latch into the corresponding notch of the Leaf. The numbers stand for hundreds of yards and there are no smaller divisions or intermediate notches.

74. WINDAGE. (For Model 1903 only, as the Model 1917 has no wind gauge.) The movable base is a wind gauge moved by a screw and graduated toward the butt end with the main and sub-divisions between zeros at both ends of the scale. Each of the small divisions is called a "Point."

Moving the scale to the right, past the *right line* on the fixed base, is called taking *right wind* and is to counteract the effect of a wind from the right. Moving the scale to the left passing the *left line* on the fixed base is taking *left wind.* One small division is one point of "left wind"; two small divisions, two, etc. In other words, to counteract the effect of wind, move the wind gauge to windward.

Note. The long lines which mark every third point on wind gauge are only to assist in counting the number of points taken. The soldier should be practiced in sight setting for designated distance and windage. *Rapidity* as well as *accuracy* is important. The soldier should eventually be able to adjust correctly for given elevation and windage in five seconds.

75. RULE FOR ELEVATION. A convenient rule for estimating number of inches up or down on the target

that a 25-yard change in elevation will change the position of the next shot is:

Number of hundreds of yards of range squared and divided by 4. (Figs. 14, 15, 16, 17.)

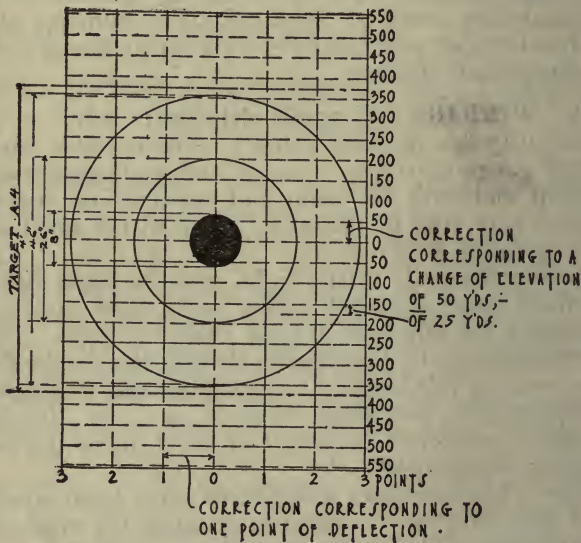


FIG. 14.—Target A—4 ft. x 6 ft.
Range 200 yards.

Example. At 600-yard range, 6 squared equals 36, divided by 4 equals 9, or the number of inches that a change of 25 yards' elevation will raise or lower the shot on the target.

76. RULE FOR WINDAGE. (For Model 1903 only.) A convenient rule for estimating the necessary ¼ points of windage for a first shot is:

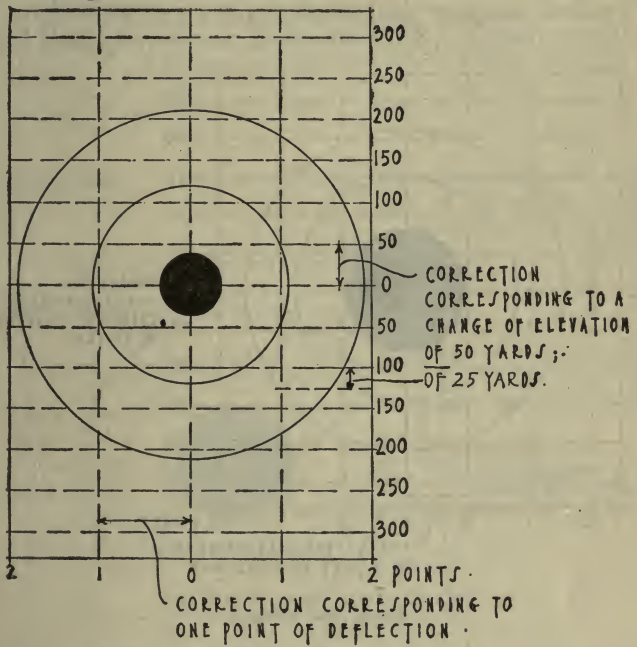


FIG. 15.—Target A. Range 300 yards.

Range in hundreds of yards multiplied by the estimated velocity in miles per hour divided by ten. This is for 9 and 3 o'clock winds.

Example. At 600-yard range, wind 10 miles per hour, 6 x 10 equals 60; divided by 10 equals 6 quarter points of wind or one and one-half points of left windage for a 9 o'clock wind, or right windage for a 3 o'clock wind.

Winds from 2, 4, 8 and 10 o'clock require very little less

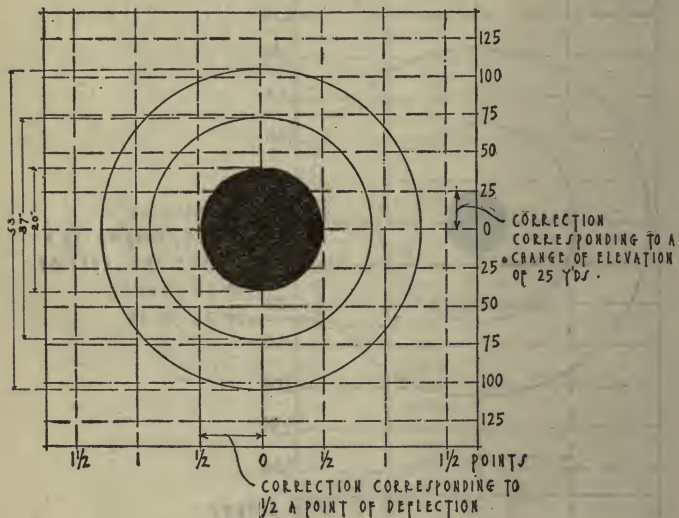


FIG. 16.—Target B—6 ft. x 6 ft. Range 500 yards.

windage than the above. Winds from 11, 1, 5 and 7 o'clock require one-half the above amount.

The taking of ¼ point of wind results in moving the line of fire laterally upon the target one inch for each 100 yards of range.

Example.

¼ point at 200 yds. moves bullet 2 inches, or 1 point, 8 inches (Fig. 14)
¼ point at 300 yds. moves bullet 3 inches, or 1 point, 12 inches (Fig. 15)
¼ point at 500 yds. moves bullet 5 inches, or 1 point, 20 inches (Fig. 16)
¼ point at 600 yds. moves bullet 6 inches, or 1 point, 24 inches (Fig. 17)

Remember: If you hit below the mark raise the Elevation Slide; if you hit to the right of the mark, move

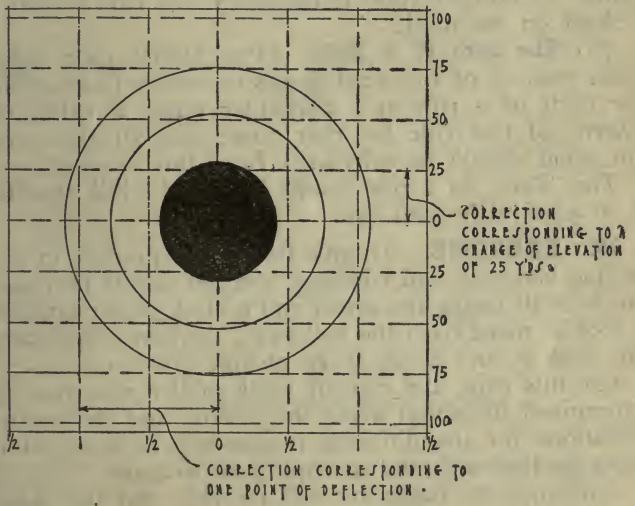


FIG. 17.—Target B. Range 600 yards.

the windage to the left or aim to the left of the mark; and vice versa.

77. BLACKING SIGHTS. The sights should be black. If bright they should be taken to the armorer for blacking.

78. ADJUSTING THE SIGHTS. (a) **Elevation.** The graduations of the rear sight are often incorrect and the elevation often varies with conditions. The correction necessary for each particular rifle at any range is found by shooting it at that range, and is constant with the same ammunition, when firing under the same conditions. If no correction is necessary, the rifle is said to "Shoot on the mark."

(b) **The Zero of a Rifle.** (For Model 1903 only.) That reading of the wind gauge necessary to overcome the drift of a rifle at a particular range is called the "Zero" of that rifle for that range, and all allowances for wind should be calculated from this reading.

The "Zero" of a rifle should be found while shooting it on a perfectly calm day.

79. EXERCISE. To give the soldier practice in correcting elevation and windage, a target should be placed on the wall facing the squad and a black paster attached a foot or more from the bull's-eye, then on a horizontal line with it, and finally in an oblique direction.

For this drill, the rifle of each soldier who has not determined by actual firing the "Zero" and the correct elevations for the different ranges will be assumed to shoot on the mark and to require no windage.

Announce the range and tell the men that the paster represents the position of an assumed hit and require

each man to correct his sight so as to bring the next hit into the bull's-eye. This exercise should be repeated daily during Gallery Practice, until the men have ac-

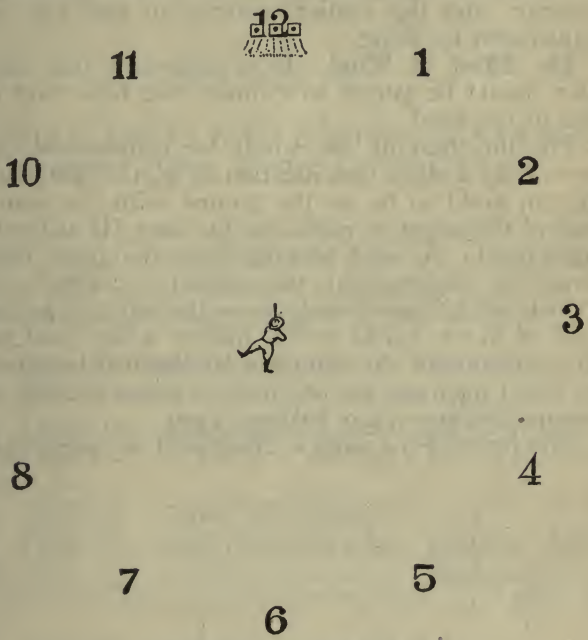


FIG. 18.—Imaginary Horizontal Clock Face.

quired accuracy in making corrections for all ranges up to 1,000 yards.

When the men have learned how to adjust their sights,

this exercise should be carried on in connection with Gallery Practice. The rear sight on each rifle is given an incorrect setting in elevation and windage by the instructor, and the soldier required to find the correct adjustment by firing.

The Effect of Wind. Is is important that the soldier should be taught to estimate the force and direction of the wind.

The direction of the wind, for convenience, is expressed by a clock-face notation (Fig. 18), the clock being supposed to lie on the ground with the hour XII toward the target or mark and the hour III at the firer's right hand. A wind blowing from the front (that is, from the direction of the target) is called a "XII o'clock wind," one directly from the left and across the field of fire is called a "IX o'clock wind," and so on. The direction of the wind can be obtained by observing its effect upon smoke, on trees, or grass or dust, or by wetting the finger and holding it up.

The force of the wind is designated in miles per hour.

CHAPTER IX

OFFICIAL TESTS AND KNOWN DISTANCE FIRING OF C. SPECIAL COURSE

"The soldier is first given a thorough course of preliminary practice (as outlined in Chapters I to VIII, inclusive). He is then, before being allowed to fire a shot on the target range, given the following tests:"

80. TEST I. NOMENCLATURE OF THE RIFLE in so far as is necessary for its efficient care and use.

81. TEST II. ASSEMBLING AND DISSEMBLING OF THE RIFLE in so far as is necessary for its efficient care and use.

82. TEST III. CARE OF RIFLE.

83. TEST IV. SIGHTING-SETTING: NORMAL AND PEEP, with and without deflection. Maximum time limit of 10 seconds in each of not less than 5 consecutive trials.

84. TEST V. FIRING POSITIONS:

(a) Standing,
(b) Kneeling,
(c) Sitting,
(d) Prone,

(e) From parapet, wall top, or other under-rifle rest,
(f) From vertical edge of wall, door, window, tree or similar position.

85. TEST VI. LOADING FROM BELT, pockets fastened, with a clip of dummy cartridges in position.

Standing Kneeling Sitting Prone	Maximum time limit of 10 seconds each in best 5 out of 7 consecutive trials.

86. TEST VII. SIGHTING. With rifle in sighting rest (Third Sighting Exercise, Chap. VI).

Normal Sight Peep Sight	Proficiency required in 3 consecutive triangles of sighting with each. Distance 20 feet; no side of triangle to exceed ½ inch.

87. TEST VIII. AIMING COMBINED WITH TRIGGER SQUEEZE. Test by means of:

(a) Target Machine,
(b) Aiming Rod Device,
(c) Belgian Aiming Device, or
(d) Perforated Bull's-eye over instructor's eye.

(Methods used, to be noted by abbreviations M, R, B, and P, respectively.)

(a) Standing,
(b) Kneeling,
(c) Sitting, and
(d) Prone.

88. TEST IX. RAPID LOADING, AIMING AND

FIRING. Load from belt and simulate fire with two clips of dummy cartridges. Tested by means of

(a) Aiming Rod Device, or
(b) Belgian Aiming Device, or
(c) Perforated Bull's-eye over instructor's eye.

(Methods used to be denoted by abbreviations R, B, and P, respectively.)

In positions:

Standing,
Kneeling,
Sitting, and
Prone.

Time of each:

1 minute,
1 minute, 10 seconds,
1 minute, 10 seconds, and
1 minute, 20 seconds, respectively.

89. TEST X. FLINCHING. In prone position. The rifle will be so manipulated by the instructor that the man under test does not know whether or not it is loaded. Service ammunition to be used.

90. KNOWN DISTANCE PRACTICE, AMMUNITION ALLOWANCE. An annual allowance of 150 rounds per man is authorized for Known Distance Practice, which includes Short Range Practice, Midrange Practice and Practice with Telescopic Sights.

91. SHORT RANGE PRACTICE CONDITIONS. All firing from a typical trench, bayonet fixed except as noted, rifle resting on parapet.

92. INSTRUCTION PRACTICE.

TABLE I.—SLOW FIRE.

Range, Yards	Time	Shots	Target	Position and Type of Trench	Sight
100	No limit	10	A-4	Prone	Leaf
200	No limit	10	A-4	Standing	5 Leaf and 5 Battle sight
300 *	No limit	15	A-4 (Fig. 14)	Standing	10 Leaf and 5 Battle sight

* One-half of firing with leaf sight at this range will be with bayonet not fixed.

105 points out of possible 175 in Slow Fire at bull's-eye target necessary to advance to Slow Fire at figure target.

TABLE 2.—SLOW FIRE.

Range, Yards	Time	Shots	Target	Position and Type of Trench	Sight
100	No limit	5	Head	Prone	Leaf
200	No limit	5	F	Standing	Leaf
300	No limit	5	F (Figs. 19 and 19a)	Standing	Leaf

9 hits out of possible 15 required to advance to Rapid Fire.

TABLE 3.—RAPID FIRE.

Range, Yards	Time	Shots	Target	Position and Type of Trench	Sight
100	1 minute	10–20 (*)	Head	Prone	Leaf
200	1 minute	10	F	Standing	Leaf
300	1 minute	10	F	Standing	Leaf

* 18 hits out of possible 40 required to advance to Record Practice.

Soldiers who fail to make the necessary points to advance are given further instructions and practice to the limit of the ammunition allowance.

PROCEDURE, RAPID FIRE as prescribed for C. Special Course. There will be but one man firing at each target. The officer in charge of the line will command **Lie Down,** if the firing is to be at 100 yards, and then commands **Load.** The magazine will be filled, the piece loaded with one cartridge therefrom, and the safety lock turned to *Safe.* When all is ready in the pit, the targets to be fired upon will be drawn fully down (the rear targets being blank or targets of another class than those being fired upon), and a red flag hoisted at the center target. When the red flag is displayed, the officer in charge of the firing line will command **Ready,** when the safety lock will be turned to the ready and the position of *Ready* assumed, with the sling, if used, on the arm. The officer in charge of the firing line will then call so that all may hear, **Ready on the right; ready on the left.** When the

officer in charge calls out, **Ready on the right,** etc., any one who is not ready must call out, **Not ready on target—.** If any soldier fails to so call, it will be assumed that he is ready, and if he fails to fire when the target appears he will be given a total miss for that score.

The firing line being ready, the pit is signaled or telephoned, *Ready on the firing line.* When this signal is received in the pit, the red flag is waved and lowered and five seconds thereafter the targets appear, remaining in sight one minute and then disappear. As soon as any part of the target appears, the soldier begins to fire and attempts to fire 10 shots, reloading with a full clip which is taken from the belt, and continues to fire until 10 shots are fired or until the target disappears.

Each unfired cartridge counts a miss.

In case of a defective cartridge or a disabled piece, or when more than 10 hits are made on a target, the practice is repeated.

At all ranges, in rapid fire, firing is from a full clip, and the second clip must be loaded from the belt. In case a clip jams or breaks, cartridges may be loaded singly.

At the expiration of the time limit, the target is pulled down and marked, all hits being given their proper value. In case of more than 10 hits on a target, the target will not be marked but the firing line will be notified and the firing on that target repeated. In case a soldier fires on the wrong target, only such shots as he may have fired on his own target will be counted on his score. He will be given misses for the remainder of his score.

In firing rapid fire, if more than one target is used, the first order of men at the firing point will fire together, one

man at each target, all targets being fired upon at one time.

93. RECORD PRACTICE.

TABLE 4.—RAPID FIRE.

Range, Yards	Time	Shots	Target	Position and Type of Trench	Sight
100	1 minute	10–20 (*)	Head	Prone	Leaf
200	1 minute	10	F	Standing	Leaf
300	1 minute	10	F	Standing	Leaf

* At this range the soldier must fire 10 rounds; he may fire as many more as he can up to 20 rounds and receive credit for every hit he makes. Soldier is penalized 1 point for each round less than ten that he does not fire.

Total shots, 130.

94. MID-RANGE PRACTICE. For all men who have made 25 hits or more in Record Practice.

TABLE 5.—SLOW FIRE.

Range	Time	Target	Shots	Position
500	No limit	B	10	Prone
600	No limit	B (Fig. 16)	10	Prone

Every effort will be made to teach the men the effect of wind, light, and temperature, and the value of small changes in elevation and windage.

No report of this firing will be required, although a record of it will be kept in each company.

95. PRACTICE WITH TELESCOPIC SIGHTS. After Mid-range Practice has been completed, the four best enlisted shots of the company will fire with telescopic sights, not to exceed 40 rounds per man firing.

"This practice is intended for long ranges only, but it may be found necessary, until the rifles are accurately sighted and the elevations known, to start at shorter ranges and work back, no range being left until the target can be hit at that range. This part of the practice will be at the discretion of the officer conducting the firing. Target B may be used if found necessary to fire at ranges shorter than 1,000 yards." At 1,000 yards and over Target C is used.

"At 1,000 yards each man will fire 20 shots for record. No report of the firing will be required, although a record of it will be kept in the company. This record will show the number of the rifle with which the score was made, the elevation and the windage used at the various ranges, and the force and direction of the wind at the time of firing. The data will then be available when further practice is held with this particular rifle and sight. Practice may be held at 1,200 yards where a suitable range is available." (S. A. F. M. 1913.)

96. COMBAT PRACTICE. Combat practice, individual and collective, will be fired by an organization after the completion of the Known Distance Practice.

An annual allowance of 50 rounds of ammunition per

man, to be expended under the direction of the regimental commander, is authorized for this practice.

97. TARGETS. Target A-4 is the A target (Fig. 14) cut down to 4 feet square.

The Head Target is the top of the E target cut off 12 inches from the top. (Fig. 19.)

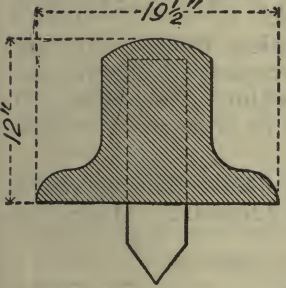


FIG. 19.—Head Target.

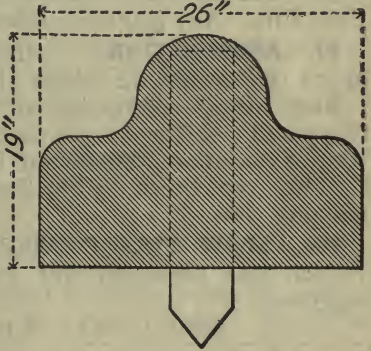


FIG. 19a.—Target F.

CHAPTER X

GALLERY PRACTICE

98. RIFLE. U. S. Caliber .30 or .22 or any rifle for Slow Fire. Any magazine rifle for Rapid Fire.

99. AMMUNITION. Reduced charge for .30 caliber; or .22 caliber for .22 caliber rifle.

Note. For Construction of Gallery Ranges, information may be obtained from the Secretary of the National Rifle Association, Woodward Building, Washington, D. C., also from the E. I. Du Pont de Nemours Co., Wilmington, Del.

100. SLOW FIRE COURSE. The following course (which was prescribed for the Organized Militia) is suggested:

TABLE I.—(S.A.F.M., 1913, PAGE 202)

Range, Feet	Targets	Position	Minimum Number of Shots
50	The iron gallery target issued by the Ordnance Dept., or one similar thereto, or paper target X.	Prone	10
50	do	Sitting / Kneeling	10 — 5 Sitting / 5 Kneeling
50	do	Standing	10

Note. Where it is impracticable to use ranges of 50 feet, gallery practice may be conducted at a greater distance at a target whose dimensions and divisions have been proportionately increased.

Firing will be by scores of five consecutive shots. Except in case of accidents, a score once begun will be completed.

Qualification in Gallery Practice, Slow Fire. At least 90 points out of a possible 150.

Target X is an "A" target reduced to 8″ wide and 12″ high; black circular bull's-eye 1 1-3″; center ring, 4 1-3″ diam.; inner ring 7 2-3″ diam.; outer, remainder.

Value of hits:

Bull's-eye	5	Inner	3
Center	4	Outer	2

Aiming Bull. (Fig. 20.) As the sight on the Model 1903 rifle allows for drift, jump and elevation with service ammunition, in using reduced ammunition at reduced ranges, allowance must be made by substituting an aiming bull underneath, and to one side of, the actual bull.

The location of this aiming bull is best fixed by shooting a group of shots, aiming at the actual bull of the target, and then placing the aiming bull as much below and to one side of the actual bull as the mean of the group of shots is above and to the other side of the actual bull.

When the aiming bull's-eye is in place, the actual bull's-eye should be white, except for a fine black line around the edge.

The above test must be made separately for Peep and Battle Sights, and for each kind of rifle.

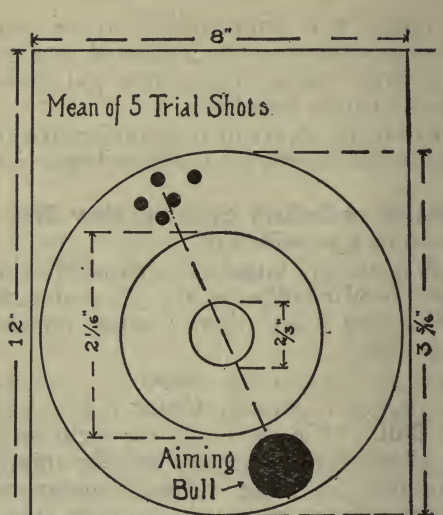


FIG. 20.—Example of Aiming Bull for Target X.

101. RAPID FIRE COURSE.

Method for Rapid Firing. The disappearing target is not used in Rapid Fire in this course.

In Rapid Fire each man takes position standing in front of the target assigned to him.

The officer in charge of the line will command, **Load.** The magazine will be filled, and the piece loaded with

TABLE 1*a*.—(ADAPTED FROM CHANGE'S S.A.F.M. 6, PAGE 4)

(If U. S. Rifle, the Battle Sight only will be used)

Ranges, Actual	Ranges, Simulated	Target	Position	Score	Time
50 ft.	200 yds.	×	Kneeling from standing	10	1 min.
50 ft.	300 yds.	×	Prone from standing	10	1 min. 10 sec.

one cartridge therefrom, and the safety lock turned to *Safe*.

When all are ready, the officer in charge of the firing line will command, **Ready,** and the safety lock will be turned to the "Ready," and the position of *Ready, Standing,* assumed.

At command or signal, **Commence Firing,** he takes the prescribed position (kneeling or prone), opens fire, fires 5 shots, reloads the magazine without command and endeavors to fire 5 shots more.

The command or signal, **Cease Firing,** is given at the expiration of the time limit, when all firing ceases.

Qualification in Gallery Practice, Rapid Fire. At least 60 points out of a possible 100.

PART II

AUTOMATIC PISTOL, CALIBER .45, MODEL 1911

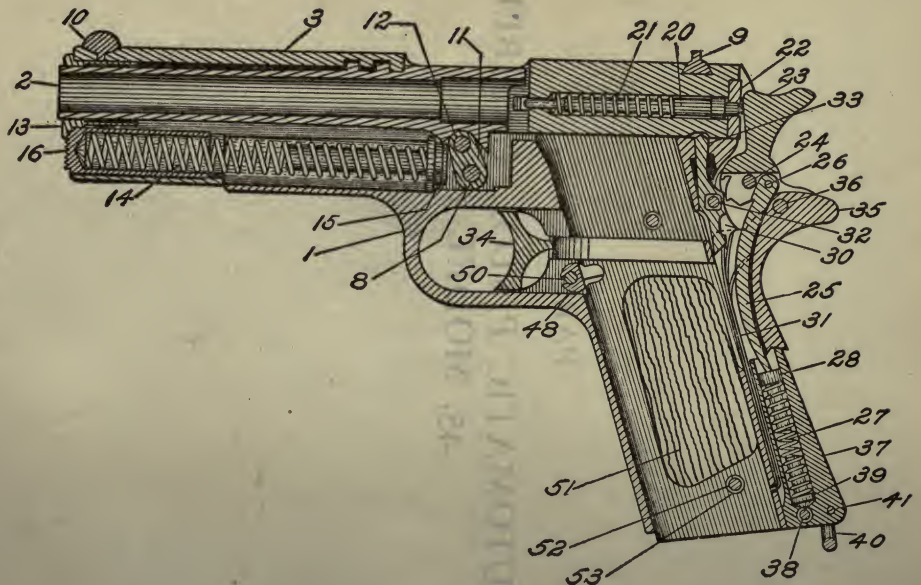


FIG. 21.—Automatic Pistol, Model 1911.

CHAPTER I

NOMENCLATURE AND CARE OF THE PISTOL

102. PARTS. There are 53 parts to the pistol as follows (Fig. 21):

1. Receiver
2. Barrel
3. Slide
4. Plunger tube
5. Slide top plunger
6. Plunger spring
7. Safety lock plunger
8. Slide stop
9. Rear sight
10. Front sight
11. Link
12. Link pin
13. Barrel bushing
14. Recoil spring
15. Recoil-spring guide
16. Plug
17. Extractor
18. Ejector
19. Ejector pin
20. Firing pin
21. Firing-pin spring
22. Firing-pin stop
23. Hammer
24. Hammer pin
25. Hammer strut
26. Hammer strut pin
27. Mainspring
28. Mainspring cap
29. Mainspring-cap pin
30. Sear
31. Sear spring
32. Sear pin
33. Disconnector
34. Trigger
35. Grip safety
36. Safety lock
37. Mainspring housing
38. Housing pin

39. Housing-pin retainer
40. Laynard loop
41. Laynard loop-pin
42. Magazine tube
43. Magazine base
44. Magazine pins (2)
45. Magazine loop
46. Magazine spring
47. Magazine follower
48. Magazine catch
49. Mazagine catch spring
50. Magazine catch lock
51. Stocks, right and left
52. Stock screws (4)
53. Screw bushings (4)

The six principal Parts of the pistol are: Receiver, Magazine, Barrel, Slide, Grip-safety, Safety-lock.

The Receiver (1) has suitable guides for the reciprocating Slide (3) and a hollow handle in which the magazine is inserted.

Miscellaneous data concerning pistol:

Weight, 2 lbs. 7 oz. Trigger Pull, 6 to 7½ lbs.

Length, 8.593". Bore, .445", called .45 caliber.

Rifling grooves, 6, making revolution in 16 inches.

103. AMMUNITION. Ball Cartridge Caliber .45 (see War Document No. 1866).

104. CARE OF PISTOL. (See Care of Rifle, Part I.)

CHAPTER II

OPERATION OF THE PISTOL

105. METHOD OF OPERATION. A loaded magazine is placed in the handle and the slide (3) drawn fully back and released, thus bringing the first cartridge into the chamber (if the slide is open, push down the slide stop (8) to let the slide (3) go forward). The hammer (23) is thus cocked and the pistol is ready for firing.

If it is desired to make the pistol ready for instant use and for firing with the least possible delay the maximum number of shots, the magazine being empty, draw back the slide (3), insert a cartridge by hand into the chamber of the barrel (2), allow the slide (3) to close, and lock the slide (3) and the cocked hammer (23) by pressing the safety lock (36) upward, and insert a loaded magazine. The slide (3) and hammer (23) being thus positively locked, the pistol may be caried safely at full cock, and it is only necessary to press down the safety lock (36) (which is located within easy reach of the thumb) when raising the pistol to the firing position.

The grip safety (35) is provided with an extending horn, which not only serves as a guard to prevent the hand of the shooter from slipping upward and being struck or injured by the hammer (23) but also aids in accurate shooting by keeping the hand in the same

position for each shot; and, furthermore, permits the lowering of the cocked hammer (23) with one hand by automatically pressing in the safety grip (35) when the hammer (23) is drawn slightly beyond the cocked position. In order to release the hammer (23), the grip safety (35) must be pressed in before the trigger (34) is pulled.

106. TO DISMOUNT AND ASSEMBLE PISTOL. Remove the magazine by pressing the magazine catch (49).

Press the plug (16) inward and turn the barrel bushing (13) to the right until the plug (16) and the end of the recoil spring (14) protrude from their seat, releasing the tension of the spring (14). As the plug (16) is allowed to protrude from its seat, the finger or thumb should be kept over it, so that it will not jump away or be lost or strike the operator. Draw the slide (3) rearward until the smaller rear recess in its lower left edge stands above the projection on the thumb piece of the slidestop (8); press gently against the end of the pin of the slide stop which protrudes from the right side of the receiver (1) above the trigger guard and remove the slide stop (8).

This releases the link (11), allowing the barrel (2), with the link (11) and the slide (3), to be drawn forward together from the receiver (1), carrying with them the barrel bushing (13), recoil spring (14), plug (16), and recoil-spring guide (15).

Remove these parts from the slide (3) by withdrawing the recoil-spring guide (15) from the rear of the recoil spring (14) and drawing the plug (16) and the recoil spring (14) forward from the slide (3). Turn plug (16) to right to remove the recoil spring (14).

Turn the barrel bushing (13) to the left until it may be drawn forward from the slide (3). This releases the barrel (2) which, with the link (11), may be drawn forward from the slide.

To Assemble. Reverse the process.

107. SAFETY DEVICES. It is impossible for the firing pin (20) to discharge or even touch the primer, except on receiving the full blow of the hammer (23).

The pistol is provided with two automatic safety devices:

(1) The (automatic) disconnector (33) which positively prevents the release of the hammer (23) unless the slide (3) and barrel (2) are in the forward position and safely interlocked. This device also controls the firing and prevents more than one shot from following each pull of the trigger (34).

(2) The (automatic) grip safety (35) at all times locks the trigger (34) unless the handle is firmly grasped and the grip safety (35) pressed in.

The pistol is in addition provided with a safety lock (36) by which the closed slide (3) and the cocked hammer (23) can be at will positively locked in position.

108. IMPORTANT POINTS. 1. Never place the *trigger finger within* the trigger *guard* until it is intended to fire and the pistol is pointed toward the target.

2. *Do not carry the pistol* in the holster with the hammer *cocked* and safety lock on *excepting* in an *emergency.* If the pistol is so carried in the holster cocked and safety lock on, the butt of the pistol should be rotated away from the body when withdrawing the pistol from the holster, in order to avoid the displacing of the safety lock.

3. The *trigger* should be *squeezed* with the *forefinger.* If the trigger is squeezed with the second finger, the forefinger extending along the side of the receiver is apt to pass against the projecting pin of the slide stop and cause a jam when the slide recoils.

4. Care must be exercised in *inserting* the *magazine* to insure its engaging with the magazine catch.

5. *Pressure* must be *entirely relieved from* the *trigger* after each shot, in order that the trigger may reëngage the sear.

6. *To remove cartridges not fired,* disengage the magazine slightly, and then extract the cartridge in the barrel by drawing back the slide.

7. The *pistol* must be *kept clean,* free from rust and properly oiled. Excessive oil left in the mechanism will cause the parts to gum and work stiffly.

8. Care must be exercised to insure that the *disconnector* is properly *assembled* in the *sear.*

9. The *hammer* should *not* be *snapped* when the pistol is partially disassembled.

10. The *stocks* need *never* be *removed,* as the pistol can be dismounted and assembled without removing them.

11. *Do not use a hammer* either in assembling or dismounting the pistol.

12. Reasonable care should be taken to see that the *magazine* is *not dented* or otherwise damaged.

13. *Careless handling* of the pistol or revolver is the cause of many accidents and results in broken parts of the mechanism. The following rules will, if followed, prevent much trouble of this character:

(a) On *taking* the *pistol from* the *armrack* or holster,

take out the magazine and see that it is empty before replacing it; then draw back the slide and make sure that the piece is unloaded. Observe the same precaution after practice on the target range, and again before replacing the pistol in the holster or in the armrack. When taking the pistol from the armrack or holster and before returning it to the same, open the cylinder and eject empty shells and cartridges. Before beginning a drill and upon arriving on the range observe the same precautions.

(b) On a range, neither *load nor cock* the weapon *until* the moment of *firing* nor until a run in the mounted course is started.

(c) When not otherwise directed, *always keep* the *pistol* or the revolver in the position of *Raise Pistol,* except when it is pointed on the target.

(d) *Do not place the weapon* on the *ground* where sand or earth can enter the bore or mechanism.

(e) *Before loading* the *pistol,* draw back the slide and look through the bore to see that it is *free from obstruction. Before loading* the *revolver,* open the cylinder and look through the bore to see that it is free from obstruction.

(f) *Do not point the weapon in any direction where an accidental discharge may mean harm.*

(g) Keep the *working parts* properly lubricated.

CHAPTER III

NEW MANUAL OF THE PISTOL

109. (1) WHEN A LANYARD IS USED, the snaps are attached to the butt of the pistol and the magazine, the lanyard is passed over the head, and the sliding loop drawn snug against the arm-pit. The lanyard should then be of such length that the arm can be extended without constraint.

110. (2) TO RAISE PISTOL, *the Pistol being in the holster.* 1. **Raise,** 2. **Pistol** (Fig. 22).

Raise. Unbutton the flap of the holster with the right hand and grasp the stock, back of the hand outward.

Pistol. Draw the pistol from the holster; reverse it, muzzle up, the hand holding the stock with the thumb and the last three fingers, forefinger outside the guard, barrel to the rear and inclined to the front at an angle of 30 degrees, hand as high as the neck and 6 inches in front of the point of the right shoulder. This is the position of *raise pistol,* and it may similarly be taken from any position.

111. (3) TO LOWER PISTOL. 1. **Lower,** 2. **Pistol.** At the command, **Pistol,** lower the pistol without changing the grasp and rest the hand and pistol on the right thigh, back of hand up, muzzle in front of right knee.

When dismounted, lower the pistol without changing

the grasp of the hand by the side and nearly extended, back of hand to the right, barrel inclined to the front and downward.

This position will not be used in close order mounted.

FIG. 22.—Raise Pistol.

112. (4) TO WITHDRAW MAGAZINE, *Pistol in any position.* 1. **Withdraw,** 2. **Magazine.**

At the command, **Magazine,** turn back of left (rein) hand down, place pistol, barrel down, in left hand (on reins) and clasp barrel in full grip of left hand, thumb clasped over barrel in front of trigger guard, butt of pistol up, barrel pointing to the left front and slightly downward. With tip of right forefinger press stud, re-

leasing magazine, and then place tip of same finger under projection in front of magazine base. Raise magazine about an inch, then close thumb and second finger on sides of magazine, giving a secure grasp with which it can be drawn from socket in the butt and placed inside the belt (in pocket of shirt or otherwise disposed of without throwing it away). Right hand then grasps stock back of hand to the left.

113. (5) TO OPEN CHAMBER, *the Pistol in any Position.* 1. **Open,** 2. **Chamber.**

Carry the pistol to the left hand (if not already there) barrel to the left, front end of slide grasped between thumb and forefinger of left hand; right hand grasping stock, back of hand up, right thumb under slide stop. Hold left hand steady and push forward with right hand till slide reaches end of stroke; engage slide stop, and come to *Raise Pistol.* Should the pistol be cocked and locked, it will be unlocked so that the slide can move.

114. (6) TO CLOSE CHAMBER, 1. **Close,** 2. **Chamber.**

At the command, **Close Chamber,** release slide stop with right thumb and let hammer down gently. To let hammer down, pull downward with point of right thumb till hammer presses against the grip safety and forces it home, then while continuing this pressure on hammer, pull trigger, and while continuing pull on trigger, let hammer down; while letting hammer down, grasp stock firmly between the palm and last three fingers to prevent pistol rotating in hand.

115. (7) TO INSERT MAGAZINE, 1. **Insert,** 2. **Magazine.** Lower pistol into left hand as in *Withdraw Magazine,* grasp magazine with tip of right forefinger on pro-

jection at base of magazine, withdraw from pocket and insert in pistol. To make sure that the magazine is home, strike base of magazine with palm of right hand. Bring the pistol to the position of *Raise Pistol.*

116. (8) TO RETURN PISTOL, *being at Raise Pistol.* 1. **Return,** 2. **Pistol.** Lower the pistol and raise the flap of the holster with the right thumb; insert the pistol in the holster and push it down, button the flap with the right hand. If the pistol is loaded and cocked, the command, 1. **Lock,** 2. **Pistol,** must precede the command, *Return.*

117. (9) TO LOAD, *having Loaded Magazine in Pistol, Pistol in any Position, Chamber Empty.* 1. **Load,** 2. **Pistol.**

Place pistol in left hand, barrel down, butt of pistol up, barrel pointing to the left and downwards, slide grasped between thumb and forefinger. Push forward with right hand until slide is fully open, then release slide allowing it to move forward and load cartridge in chamber. Come to *Raise Pistol.* If the last shot in the magazine has been fired, to reload, same command, but execute *Withdraw Magazine, Insert Magazine, Close Chamber.* As soon as the pistol is loaded it will be immediately locked by the commands, 1. **Lock,** 2. **Pistol.** Should the command for locking pistol be inadvertently omitted it will be locked without command.

118. (10) TO UNLOAD PISTOL, *being in any position, Loaded.* Execute by the commands, 1. **Withdraw Magazine,** 2. **Open Chamber,** 3. **Close Chamber,** 4. **Insert Magazine.**

119. (11) TO INSPECT PISTOL, *it being in the holster.* 1. **Inspection,** 2. **Pistol.**

Execute *Raise Pistol.*

To inspect pistol more minutely add, 3. **Withdraw Magazine,** 4. **Open Chamber.**

To avoid accidents, individual men out of ranks, in barracks or camp, will first *Withdraw Magazine* and then open chamber, whenever the pistol is removed from the holster for cleaning, for examination or for any other purpose. Accidental discharges will not occur if the above rule is always observed, and failure to observe it must be considered a military offense, whether or not accidents result.

120. PRECAUTION. Whenever men fall in ranks with the automatic pistol, the officer or non-commissioned officer in charge will command:

1. **Raise,** 2. **Pistol**
1. **Withdraw,** 2. **Magazine**
1. **Open,** 2. **Chamber**
1. **Close,** 2. **Chamber**
1. **Insert,** 2. **Magazine**
1. **Return,** 2. **Pistol**

When falling in (dismounted), the above commands are given after the chambers of rifles have been opened and closed, and the *Order* resumed, the rifle being held against the left wrist. The commander of any troop or detachment thereof is responsible for giving the necessary commands to put the pistols in a safe condition.

121. THE PISTOL, with cartridges in chamber, **IS HABITUALLY CARRIED** cocked and locked, whether in the hand or in the holster. The hammer will not be lowered while the cartridge is in the chamber.

In campaign, the pistol should habitually be carried with a magazine in the socket loaded with seven ball cartridges, chamber empty; hammer down. The extra magazine should also be loaded with seven ball cartridges each.

122. WHEN ACTION SEEMS IMMINENT, the pistol should be loaded by command. It may then be returned by command to the holster till the time for its use arrives.

123. RECRUITS ARE FIRST TAUGHT the motions of loading and firing without using cartridges. However, the automatic action and the effect of ball cartridges in operating the slide cannot be taught without firing ball cartridges.

Practice without cartridges is very necessary to acquire facility in the exact movements of the manual, and in aiming, holding and trigger squeeze.

To execute the movements without cartridges, first *Withdraw Magazine, Open Chamber,* and examine both pistols and magazines to assure that none contain ball cartridges.

124. PISTOL ASSUMED LOADED. The automatic Pistol must, at all times, be assumed to be loaded with ball cartridges until an inspection has disclosed that it is not so loaded.

All the movements in loading pistol should be practiced without looking at it. In order to do this successfully, it is necessary to know exactly where the magazines are carried so that the hand may find them without fumbling; also, since the projection at the front of the magazine base is on the same side as the bullets, and the magazine must be inserted in the socket with these to the front,

the magazine should be carried in the pocket with the projection to the left and should be withdrawn from the pocket with the same grasp as is prescribed for *Withdraw Magazine.*

This manual must be practiced with all the precision and exactness required for the Manual of the Rifle; thus accidents will be reduced to a minimum and familiarity with the pistol gained.

CHAPTER IV

MUSCLE EXERCISES

125. IN ORDER TO SHOOT WELL with the pistol or revolver, the muscles of the hand and arm must be well developed and under control of the mind. This development and control can only be secured by practice, and to secure them the following exercises will be practiced daily, the number of times each exercise is repeated being gradually increased as the muscles become developed.

126. FIRST EXERCISE. One. *Arms sideward, palms up.* **Two.** *Raise.* **Three.** *Finger Exercise.* **Four.** *Close.* **Five.** *Open.* Close and open the fingers vigorously, separating the fingers when open. Resume the Position of a Soldier at the command, **Halt.** Vary the exercise by turning the palms to the front, down, and to the rear.

127. SECOND EXERCISE. One. *Arms sideward, palms up.* **Two.** *Raise.* **Three.** *Wrist Exercise.* **Four.** *Up.* **Five.** *Down,* or **Four.** *Front.* **Five.** *Rear.* Bend the wrist according to the command, keeping the fingers extended and joined. Resume the Position of a Soldier at the command, **Halt.** Vary the exercise as in First Exercise.

128. **THIRD EXERCISE.** **One.** *Right arm forward.* **Two.** *Raise.* **Three.** *Forefinger Exercise.* **Four.** *Close.* **Five.** *Open.* Close and open the forefinger vigorously without moving the other fingers, which are held tightly closed as in gripping the pistol. Resume the Position of a Soldier at the command, **Halt.**

CHAPTER V

POSITION INSTRUCTION

129. POSITION DISMOUNTED. Stand firmly on both feet, body perfectly balanced and erect, facing the target, the feet far enough apart to insure firmness and steadiness of position (about 8 to 10 inches); weight of body borne squarely upon both feet; right arm extended toward the target straight without stiffness; left arm hanging naturally.

130. THE GRIP. Grasp the stock as high as possible with the thumb and last three fingers, the forefinger alongside the trigger guard, the thumb extended along the stock. The barrel, hand, and forearm should be as nearly in one line as possible when the weapon is pointed toward the target. The grasp should not be so tight as to cause tremors of the hand or arm to be communicated to the weapon, but should be firm enough to avoid losing the grip when the recoil takes place.

The force of recoil of pistol or revolver is exerted in a line above the hand which grasps the stock. The lower the stock is grasped the greater will be the movement (or jump) of the muzzle caused by the recoil. This not only results in a severe strain upon the wrist but in loss of accuracy.

If the hand be placed so that the grasp is on one side

of the stock, the recoil will cause a rotary movement towards the opposite side.

The releasing of the sear causes a slight movement of the muzzle generally to the left. The position of the thumb along the stock overcomes much of this movement. The soldier should be encouraged to practice this method of holding until it becomes natural.

To do uniform shooting, the weapon must be held with exactly the same grip for each shot. Not only must the hand grasp the stock at the same point for each shot, but the tension of the grip must be uniform.

131. THE TRIGGER SQUEEZE. The trigger must be squeezed in the same manner as in rifle firing. The pressure of the forefinger on the trigger should be steadily increased and straight back, and not sideways. The pressure should continue to that point beyond which the slightest movement will release the sear. Then, when the aim is true, the additional pressure is applied and the pistol fired.

Only by much practice can the soldier become familiar with the trigger squeeze. This is essential to accurate shooting. It is the most important detail to master in pistol or revolver shooting.

132. AIMING. Except when delivering Rapid or Quick Fire, the rear and front sights of the pistol are used in the same manner as the rifle sights. The normal sight is habitually used (Fig. 23), and the line of sight is directed upon a point just under the bull's-eye at "6 o'clock." The front must be seen through the middle of the rear sight notch, the top being on a line with the top of the notch. Care must be taken not to cant the pistol to either side.

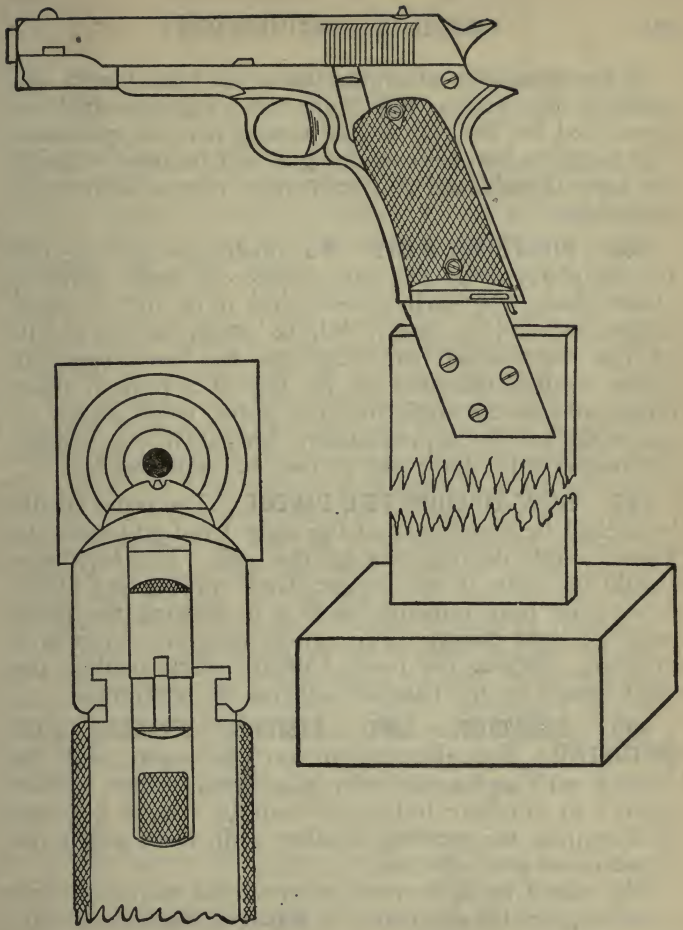


FIG. 23.—Pistol, Normal Sight. FIG. 24.—Pistol Sighting Rest.

If the principles of aiming have not been taught, the soldier's instruction will begin with sighting drills as prescribed for the rifle so far as they may be applicable. The sighting bar with open sight will be used to teach the normal sight and to demonstrate errors likely to be committed.

133. SIGHTING REST. To construct a sighting rest for the pistol (Fig. 24), take a piece of wood about 10 inches long, 1¼ inches wide and 9/16 inches thick. Shape one end so that it will fit snugly in the handle of the pistol when the magazine has been removed. Screw or nail this stick to the top of a post or other object at such an angle that the pistol, when placed on the stick, will be approximately horizontal. A suitable sighting rest for the revolver may be improvised.

134. HOW TO COCK THE PISTOL. The pistol should be cocked by the thumb of the right hand and with the least possible derangement of the grip. The forefinger should be clear of the trigger when cocking the pistol. Some men have difficulty at first in cocking the pistol with the right thumb. This can be overcome by a little practice. Jerking the pistol forward while holding the right thumb on the hammer will not be permitted.

135. POSITION AND AIMING DRILLS, DISMOUNTED. For this instruction the squad will be formed with an interval of 1 pace between files. Black pasters to simulate bull's-eyes will be pasted opposite each man on the barrack or other wall, from which the squad is ten paces distant.

The squad being formed as described above, the instructor gives the command, 1. **Raise,** 2. **Pistol,** and cau-

tions, *Position and Aiming Drill, Dismounted.* The men take the positions described in Section 129, except that the pistol is held at *Raise Pistol.*

Trigger-Squeeze Exercise. The instructor cautions, *Trigger-Squeeze Exercise.* At the command, **Ready,** cock the weapon with the thumb. At the command, 1. **Squad,** 2. **Fire,** slowly extend the arm until it is nearly horizontal, the pistol directed at a point about six inches below the bull's-eye. At the same time put the forefinger inside the trigger guard and gradually "feel" the trigger. Inhale enough air to comfortably fill the lungs and gradually raise the piece until the line of sight is directed at the point of aim, i.e., just below the bull's-eye at 6 o'clock. While the sights are directed upon the mark, gradually increase the pressure on the trigger until it reaches the point where the slightest additional pressure will release the sear. Then, when the aim is true, the additional pressure necessary to fire the piece is given so smoothly as not to derange the alignment of the sights. The weapon will be held on the mark for an instant after the hammer falls and the soldier will observe what effect, if any, the squeezing of the trigger has had on his aim. As it is generally impossible to hold the arm perfectly still, each time the line of sights is directed on the point of aim a slight additional pressure is applied to the trigger until the piece is finally discharged at one of the moments when the sights are correctly aligned upon the mark.

When the soldier has become proficient in taking the proper position, the trigger squeeze should be executed at will. The instructor prefaces, **At Will,** and gives the command, **Halt,** at the conclusion of the exercise, when

the soldier will return to the position of *Raise Pistol.*

At first, this exercise should be executed with deliberation, but gradually the soldier will be taught to catch the aim quickly and to lose no time in beginning the trigger squeeze and bringing it to the point where the slightest additional pressure will release the sear. (It has even been found practicable to discharge 5 aimed shots in five seconds.)

Remarks. In service few opportunities will be offered for slow aimed fire with the pistol, or revolver, although use will be made of the weapon under circumstances when the accurate pointing and rapid manipulation are of vital importance.

In delivering a rapid fire, the soldier must keep his eyes fixed on the mark and, after each shot, begin a steadily increasing pressure on the trigger, trying at the same time to get the sights as nearly on the mark as possible before the hammer again falls. The great difficulty in quick firing with the pistol lies in the fact that when the front sight is brought upon the mark, the rear sight is often found to be outside the line joining the eye with the mark. This tendency to hold the pistol obliquely can be overcome only by a uniform manner of holding and pointing. This uniformity is to be obtained only by acquiring a grip which can be taken with certainty each time the weapon is fired. It is this circumstance which makes the position and aiming drills so important. The soldier should constantly practice pointing the pistol until he acquires the ability to direct it on the mark in the briefest interval of time taking aim and at close quarters without taking aim, can get practical results. In other words, the pistol in this exercise may

be accurately pointed instead of accurately aimed. In night firing, pointing the pistol is the only method that can be used and is practical and effective.

Quick Fire Exercise. Being at *Raise Pistol* Chamber and Magazine empty. **Quick Fire Exercise: One.** *Lower the forearm* until it is nearly horizontal, pistol pointing at the target. **Two.** *Thrust the pistol forward* to the position of aim, *snapping the pistol* just before the arm reaches its full extension. Then look through the sights to verify the pointing. **Three.** *Return to Raise Pistol* and *cock the pistol.*

To Draw and Fire Quickly, Snap Shooting. With the squad formed as previously described except that the pistol is in the holster unloaded, but cocked and locked, and the flap, if any, buttoned, the instructor cautions, *Quick Fire Exercise,* and gives the command, 1. **Squad,** 2. **Fire.** At this command, each soldier, keeping his eye on the target, quickly draws his pistol, unlocks the safety with his right thumb, thrusts the pistol towards the target, squeezes the trigger, and at the same instant the weapon is brought into the line with the eye and the objective, increases the pressure, releasing the sear. To enable the soldier to note error in pointing, the weapon will be momentarily held in position after the fall of the hammer. Efforts at deliberate aiming in this exercise must be discouraged.

When the soldier has become proficient in the details of this exercise, it should be repeated at will; the instructor cautions, **at Will, quick fire exercise.**

To Fire to the Right and Left Front, the instructor places the squad so that the simulated bull's-eyes are in turn, to the right, front and the left front. With the

squad in one of these positions, the instructor commands, **Raise Pistol,** and cautions, **Position and Aiming Drills, Right** (or Left) **Front.** The instructor then commands, 1. **Squad,** 2. **Fire.** At the command, **Fire,** the shoulders are turned about 45 degrees to the right (or left) and the pistol snapped as in *Quick Fire Exercise.* In firing to the left front the pistol will be in front and to the left of the left shoulder. The exercise is to be executed *At Will* when the squad has been sufficiently well instructed in detail.

CHAPTER VI

RANGE PRACTICE

Range practice will be held as described below. The different classes of fire being:

136. SLOW FIRE. Target A is used so that the kind and magnitude of the errors committed by the firer become at once evident to him. Abundant time is permitted in the firing to enable proper explanation of the causes and remedies for such errors to be pointed out. It is designed as the elementary phase of instruction in the proper manipulation of the weapon and in determining and correcting the personal errors of the firer.

137. QUICK FIRE. Use Target E, five yards apart, one for each man firing. Position the same as that prescribed for *Raise Pistol* with interval. Being at *Raise Pistol,* pistols locked, at the command, **Commence firing,** unlock, fire and return to *Raise pistol* after each shot, following the principles of *Quick Fire Exercise.*

In *Quick Fire* the target is operated as a bobbing target. Three to five seconds after notice is received in the pit that all is ready at the firing point, the target is alternately exposed to and turned from view of the fir-

ing point, exposures being of three to four seconds duration, depending on the range, with an interval of three to five seconds between exposures. If bobbing targets are impracticable, time is regulated at the "Firing Point."

138. AUTOMATIC FIRE. Use Target E. Being at *Raise Pistol,* pistols locked; at the command, **Commence Firing,** unlock and empty the magazine in seven seconds, keeping the arm extended. Position is the same as for *Slow Fire.*

139. TRENCH FIRE. Target, two lines of E targets. The first line is composed of E targets, five yards apart, one figure for each man firing. The second line is composed of two figures, one yard apart, for each man firing, placed in a trench immediately in rear of the figures of the first line. This gives for each firer a group of three figures, one placed on top at the near edge of the trench and the other two in the trench immediately in the rear. In case a trench is not available, a rifle pit can be used. A gutter, sunken road, embankment or hedge can be used for this purpose, so long as trench fire is simulated.

The firing line advances at a walk from 100 yards, takes up *Double Time* at 50 yards from trench, fires one shot at the *Double Time* when within 10 yards of the first target, continues to the trench and fires the remaining six shots, automatic fire, at the two targets in the trench in the rear of the first line target.

140. Score. Seven shots will constitute a score. Except in slow fire when each shot will be marked as soon as fired, targets will be marked after each man has completed a score.

141. THE DISMOUNTED COURSE will be:

1 Slow fire, 10 yards, minimum of 1 maximum of 3 scores
2 Slow fire, 25 yards, minimum of 1 maximum of 3 scores
3 Quick fire, 10 yards, minimum of 1 maximum of 3 scores
4 Quick fire, 25 yards, minimum of 1 maximum of 3 scores
5 Automatic fire, 10 yards, minimum of 1 maximum of 3 scores
6 Automatic fire, 25 yards, minimum of 1 maximum of 3 scores
7 Trench fire, 1 run of 7 shots, about eight men at a time

PART III
USE OF THE RIFLE

PART III

USE OF THE RIFLE

142. GENERAL MILITARY VOCABULARY.

Battle Sight: The position of the rear sight in which the leaf is laid down.

Beaten Zone: The space on the ground upon which the bullets of the Cone of Dispersion strike.

Bore: The cylindrical cavity in the small-arms barrel.

Butt: The embankment or other means used to stop bullets in rear of a range target. The plural "butts" is used to designate collectively the parapet, pit and back stop of a group of targets.

Caliber: The interior diameter of a small-arms barrel, measured between the lands.

Cant: To revolve the barrel of the piece on its axis to the right or left while aiming.

Combined Sights: The use of more than one sight setting for different parts of a firing unit to increase the Beaten Zone.

Cone of Dispersion (Cone of Fire), (Fig. 24a): A term applied to the figure formed in space by the trajectories, considered together, of a series of shots fired by a body of soldiers at a common objective and with the same rear sight setting.

Danger Space: The sum of the distances at the be-

ginning and end of the path of the bullet in which an object of given height will be struck. Sighting prone at 500 yards, the entire distance is danger space, as the highest point of the trajectory is 28 inches. At long ranges the danger space at the farther end of the range alone is considered. (Fig. 4.)

Disappearing Target: A target which is temporarily exposed to view.

Disk, Marking: A staff, with a disk at each end,

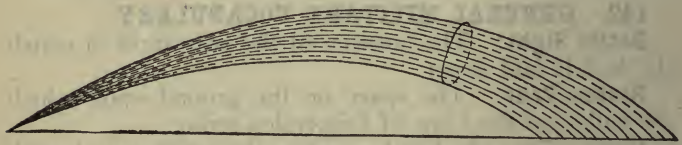


FIG. 24a.—Cone of Dispersion or Cone of Fire.

used by the marker in the pit in signaling the results of hits on the target.

Drift: The lateral deviation of the bullet caused by the resistance of the air and the rotation of the bullet on its longer axis.

Echelon, Order in: In the order in echelon the targets or firing stands are placed one behind another to the right or left and unmasking one another.

Emplacement: The space on the target range allotted for the position of the target.

Grooves: The spiral channels within the bore of the rifle barrel.

Lands: Spaces in the bore of the rifle barrel between the grooves.

Mirage: A word used to designate the heat waves

observed on the target range on warm days. The waves indicate the direction in which the air is moving.

O'Clock: A term employed to indicate by means of the division on the dial of the clock the location of hits on the target or the direction from which the wind may be blowing, as a 7 o'clock, 4 or 5 o'clock wind. In speaking of the position of a hit, the dial is supposed to occupy the front of the target facing the firer with 12 at the top of the target. In speaking of wind, the dial is supposed to lie on the ground, with the 12 toward the target and the center at the firing point. (Fig. 18.)

Pit: The space between the parapet and the butt or bullet stop occupied by the markers.

Prone: Lying flat on the belly. The only position with the body extended on the ground authorized in long distance firing. (Fig. 12.)

Ranges: CLOSE RANGE..... 0— 600 yards
EFFECTIVE RANGE ..... 600—1200 "
LONG RANGE .....1200—2000 "
DISTANT RANGE .....2000 yds. and over

Ricochet Shots: Bullets which rebound after striking the ground.

Score: A string of consecutive shots (usually 5 or 10) fired in individual practice.

Sighting Shots: The trial shots which precede scores in the Qualification Test Firing to enable the soldier to determine the proper sight setting or point of aim and start the score with a warm rifle.

Targets (Range): BULL'S-EYE TARGET: A series of concentric circles mounted on a rectangle.

BULL'S-EYE: The black circular division in the cen-

ter of the bull's-eye target. Shots in this space have a value of 5 for targets A, B, and C. (Figs. 14, 15, 16, 17.)

CENTER: The annular division of the bull's-eye targets A, B, and C embraced between the bull's-eye and the circumference of the next larger circular division of the target. Shots in this space have a value of 4.

INNER: The annular division of the bull's-eye targets A and B, outside the Center. Shots in this space have a value of 3.

OUTER: The space on the bull's-eye targets A and B, outside the Inner. Shots in this space have a value of 2.

SILHOUETTE TARGET: A black or drab silhouette representing a soldier standing, kneeling or prone. Designated as D, E, F, G, H, I, and K.

D: Black silhouette of Prone Soldier in middle of 6′ x 6′ Target.

E: Drab silhouette of Kneeling Soldier.

F: Drab silhouette of Prone Soldier. (Fig. 19a.)

G, H, I and K are varied arrangements of E and F.

Telescopic Sight: A telescope or other magnifying device attached to the barrel of the rifle, for getting, while aiming, a better definition of a distant objective, provision being made for adjustments in elevation and for windage.

Trajectory: The path described by a bullet in the air moving under the combined influences of the force of propulsion, the force of gravity, and the resistance of the air. (Fig. 4.)

Twist: The spiral formed by the grooves in the barrel of a rifled piece. In both Rifles, Models 1903 and 1917, this twist is uniform, one turn in 10 inches.

Windage: The influence of the wind in deflecting the

bullet from the point at which it is aimed; also applied to the amount of change made on the wind gage.

Wind Gage: A graduated attachment on the rear of the rifle (Model 1903) by which allowance may be made for the effect, in aiming, of the wind upon the bullet, and for drift.

143. TERRAINE VOCABULARY.

Cover: A feature of the ground affording concealment or protection from enemy.

Eminences: CLIFF: High steep rock.
CREST: Top of slope.
HILL: A medium sized eminence.
KNOLL: A low hill standing alone.
PASS: A gap in a ridge or line of hills.
RIDGE: An elevation with slopes on both sides.
SADDLE: A shallow dip in a ridge.
SPUR: A ridge running out from a slope.

Land: ARABLE LAND: Land under cultivation.
CLEARING: Open land in a wood.
FENCING: Structure enclosing land.
GORGE: A rugged deep ravine.
HOLLOW: A depression in the ground.
MARSHLAND: Low-lying wet land at times covered with water.
PASTURE: Grass land.
PLATEAU: An elevated level of land.
PLOUGHED LAND:
QUARRY: A stone pit.
RAVINE: A deep narrow valley.
SLOPE: An incline.
Hollow (concave) slope
Bulging (convex) slope

Gentle slope
Steep slope
Opposite slope, inclining downward toward the observer.
Forward slope, inclining downward from observer.
Right slope, inclining downward to the right.
Left slope, inclining downward to the left.
Reverse slope, inclining downward to the rear.

VALLEY: A space between hills.

Profile: An outline or contour.

Railroads: BRIDGE: A roadway structure spanning a ravine, road, water course, etc.

CUT (or Cutting): An excavation for a railway or road.

EMBANKMENT: Earth banked up for a railway or road.

GRADE CROSSING: On the same level as roadway.

SIGNAL BOX: A small building on railroad for signaling.

VIADUCT: A series of arches carrying a roadway.

Roads: BRIDGE: (See Railroads.)

CAUSEWAY: A raised roadway.

CROSS-ROADS: A point where one road crosses another.

CUT: (See Railroads.)

EMBANKMENT: (See Railroads.)

JUNCTION OF ROADS: FORK—where roads meet without crossing.

PATH:

SUNKEN ROAD: An excavated roadway.

VIADUCT: (See Railroads.)

Skyline: The line where earth or sea appear to meet the sky.

Verdure: COPSE (or Coppice): a small wood.

HEDGE: A line of bushes.

SCRUB: Small stunted trees or bushes.

SHRUB: Small bushy tree.

THICKET: A small wood.

UNDERGROWTH: Bushes, creepers, etc., in a wood.

Water: BROOK: A small stream.

CULVERT: A covered drain, under a road.

DRY WATER COURSE:

RIVER: A large body of running water.

STREAM: A small body of running water.

144. FIRING VOCABULARY. Definitions.

Combined Sights: A term used when sights are set at two or more elevations in collective fire. They are used when the range is uncertain and, when two settings are used, usually one is from 50 to 100 yards under and the other 50 to 100 yards over the estimated range. When three settings are used, one is put *at* the estimated range.

Combined sights are not used where the range is known nor usually by less than two platoons. They are used against advancing enemy, to cover his movement, changing the farthest sighting as enemy advances.

Fire At Will: That class of fire in which, within the restriction of the command for firing, the individuals deliver their fire independently of the commander and of each other.

Fire Control: Or Conduct of Fire, is the exercise by the commander over his unit or units, of that power which enables him to regulate the fire in obedience to

his will. It pertains especially to the technicalities immediately involved in delivery of fire.

Fire Direction: Or Employment of Fire, is a general term embracing the various steps, including tactical disposition, which enable the commander of one or more units to bring an effective fire to bear upon the desired target at the proper time. It pertains especially to preparation of fire.

Fire Discipline is that condition of the personnel of a fire unit, resulting from training and practice, which enables the commander to obtain an orderly and efficient delivery of fire.

Gallery Practice: Short range firing as a part of the progressive course between the position instruction and the outdoor range practice. There is no advantage in gallery practice at more than one distance. Fifty feet is the greatest distance at which the firer can plainly see the hit on the target. The targets can be proportioned so as to simulate the firing at any distance.

Rapid Fire: That class of fire employed in instruction and qualification practice in which a time limit is set for completing a score or scores.

Slow Fire: That class of fire employed in instruction and record practice in which no time limit is imposed for completing a score.

145. CLASSES OF FIRE BY RATE.

Rapid Fire: 10 to 20 shots per minute.

Slow Fire: 1 to 6 shots per minute.

146. CLASSES OF FIRE BY DIRECTION. (Fig. 25.)

Converging Fire: Fire aimed at one target from different points.

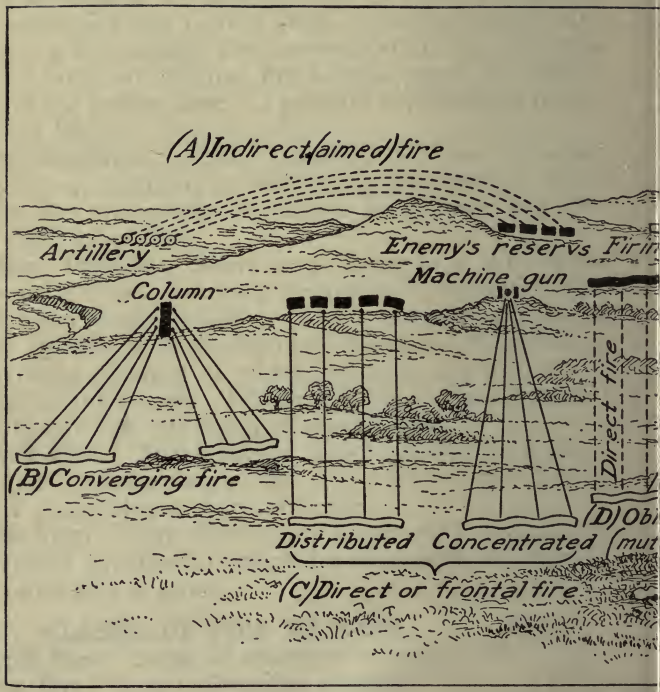
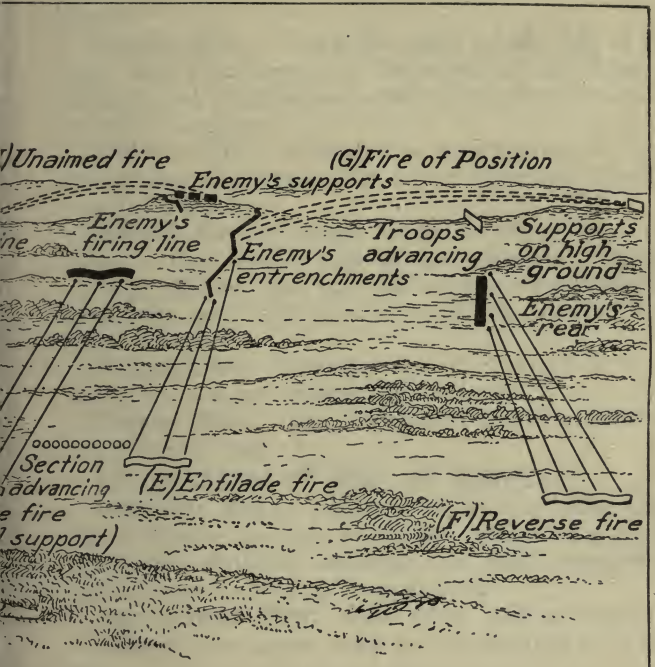


FIG. 25.—Classes



Fire by Direction.

Enfilade Fire: Fire which sweeps a line of troops or defenses from a flank.

Frontal Fire: Fire which is delivered directly to the front.

Grazing Fire: When the angle of the fall of the bullets (see Trajectory) is the same as the slope of the ground and the missiles sweep along its surface, the fire is called Grazing.

Indirect Fire: Indirect fire is fire directed by means of auxiliary aiming-marks at an objective which is invisible to the firer.

Masked Fire: Troops (guns or rifles) in a position whence they could employ fire effectively against an enemy, but for the fear of causing casualties to their comrades, are said to have their fire masked by these latter troops.

Oblique Fire: Fire directed on a target in a slanting direction, i. e. not directly to the front.

Reverse Fire: Fire so directed that the bullets strike the target in rear.

147. CLASSES OF FIRE BY RESULT.

Collective Fire: The fire of several rifles combined for a definite purpose under the orders of a fire-leader. Such fire skillfully directed and well controlled may produce good effect up to 1400 yards.

Concentrated Fire: Fire of a unit concentrated on a point of the target, such as the position of a machine gun.

(1) Used for observation.

(2) Used for local effect on a particular part of the enemy's line.

Fire of Position: Infantry is said to execute Fire of

Position when it is posted so as to assist in an attack by firing over the heads or off the flank of the attacking troops and is not itself to engage in the advance, or when, in defense, it is similiarly posted to augment the fire of the main firing line.

Individual Fire: Fire opened without orders from a fire-leader. On account of the difficulty of observation, 600 yards may be taken as the limit of effective fire of this nature against small targets.

Mutual Supporting Fire is the supporting fire of units advancing alternately by rushes.

The supporting unit must avoid endangering the unit being supported and not delay its own advance, as advancing is usually the best means of support.

Pursuing Fire: At a receding enemy.

Searching Fire is the term applied to collective fire when the depth of its dispersion over a beaten zone is increased by the use of combined sights.

Sweeping Fire is fire distributed laterally.

Surprise Fire: Unexpected and demoralizing.

Surprise fire, consisting of **Bursts of Fire** instead of continuous fire, is often used to demoralize the enemy.

CHAPTER I

LOADING AND FIRING COMMANDS

148. TO LOAD. 1. **With dummy** (blank or ball) **cartridges**; 2. **Load.**

Note. Loadings are executed in line and skirmish line only.

Pieces having been ordered loaded are kept loaded without command, until the command **Unload** or **Inspection Arms.**

If the men are not already in the *Position of Load,* that position is taken at the announcement of the sight setting; if the announcement is omitted, the position is taken at the first command for firing.

149. TO UNLOAD. Unload.

Note. At the command **Unload,** the sight leaf is laid down and in Model 1903 the drift slide is brought back to normal.

150. TO SET THE SIGHT. Range, Eleven Hundred (850, etc.)

or

Battle Sight.

Note. If no sight setting is announced, the Battle Sight will be used.

151. FIRING COMMANDS.

(1) **To Fire by Volley:** 1. **Ready;** 2. **Aim;** 3. **Company** (Platoon or section); 4. **Fire.**

Note. The command **Load** should precede volley firing. After first volley soldiers reload without command.

To Continue the Firing: 1. **Aim**; 2. **Company**; 3. **Fire.**

(2) **To Fire at Will: Fire at Will.**

Note. That class of fire normally employed in attack or defense. It is often advisable to give the number of rounds to be fired before giving the command.

To increase (*and decrease*) *the Rate of Fire:* **Faster (Slower).**

(3) **To Fire by Clip: Clip Fire.**

Note. Executed in the same manner as *Fire at Will* except that each man, after having exhausted the cartridges then in the rifle, suspends firing.

Clip fire has limited application. It is principally used

(a) In the early stage of the combat, to steady the men by habituating them to brief pauses in firing.

(b) To produce a short burst of fire.

(4) **To Suspend Firing: Suspend Firing,** or a long blast of the whistle.

Note. Firing stops; pieces are held, loaded and locked, in a position of readiness for instant resumption of firing, rear sights unchanged. The men continue to observe the target or aiming place, or the place at which the target disappeared or at which it is expected to reappear.

(5) **To Cease Firing: Cease Firing.**

Note. Firing stops; pieces not already there are brought to the *Position of Load;* those not loaded, are loaded; sights are laid down, pieces are locked and brought to the *Order.*

Cease Firing is used for long pauses, to prepare for changes of position, or to steady the men.

Commands for suspending or ceasing fire may be given at any time after the *preparatory command for firing*, whether the firing has actually commenced or not. A long blast of the whistle (as for *Suspend Firing*) may be used as a preliminary to *Cease Firing*.

(6) **Complete Firing Command.** The following is an example of one form of a complete firing command, including Target Designation.

Range, 1100; Reference Point, that clump of trees on hill-crest; Target, at 4 o'clock, 2 sights, a gun pit; Fire at Will.

152. FIRING COMMANDS BY ARM SIGNALS.

Range: To announce range, extend the arm toward the leaders or men for whom the signal is intended, fist closed; by keeping the fist closed, Battle Sight is indicated; by opening and closing the fist, expose thumb and fingers to a number equal to the hundreds of yards; to add 50 yards describe a short horizontal line with forefinger.

To change Elevation, indicate the amount of increase or decrease by fingers as above; point upward to indicate increase and downward to indicate decrease.

What range are you using? or **What is the range?** Extend the arms toward the person addressed, one hand open, palm to the front, resting on the other hand, fist closed.

Are you ready? or **I am ready:** Raise the hand, fingers extended and joined, palm toward the person addressed.

Commence Firing: Move the arm extended in full length, hand palm down, several times through a hori-

zontal arc in front of the body. This command by hand or bugle is equivalent to *Fire at Will.*

Fire Faster: Execute rapidly the signal *Commence Firing.*

Fire Slower: Execute slowly the signal *Commence Firing.*

To swing the cone of fire to the right or left: Extend the arm in full length to the front, palm to the right (left); swing the arm to the right (left) and point in the direction of the new target.

Fix Bayonet: Simulate the movement of the right hand in *Fix Bayonet.*

Suspend Firing: Raise and hold the forearm steadily in a horizontal position in front of the forehead, palm of the hand to the front.

Cease Firing: Raise the forearm as in *Suspend Firing* and swing it up and down several times in front of the face.

Platoon: Extend the arm horizontally toward the platoon leader; describe small circles with the hand.

Squad: Extend the arm horizontally toward the platoon leader; swing the hand up and down from the wrist.

Rush (Same as *Double Time*): Carry the hand to the shoulder; rapidly thrust the hand upward the full extent of the arm several times.

The signals *Platoon* and *Squad* are intended primarily for communication between the captain and his platoon leaders. The signal *Platoon* or *Squad* indicates that the Platoon Commander is to cause the signal which follows to be executed by platoons or squad.

CHAPTER II

ESTIMATING DISTANCE

153. BY THE EYE. (1) Measure the intervening ground with the eye in terms of some familiar unit, such as 100 yards.

(2) The soldier can decide that the object cannot be more than a certain distance away, nor less than a certain distance; his estimates must be kept within the closest possible limits and the mean distance of the two taken as the range.

In the Field, two men in each platoon, who have been found especially accurate, make maximum and minimum estimates. Individual estimates are supposed not to occupy over 30 seconds. Platoon leaders transmit the average of these estimates to the 1st Sergeant, who transmits the grand average to the Captain.

In attack where the firing position is changed, the commander of the first unit to establish a new position is responsible for establishing the new range when there are no range cards (which is done by counting the paces covered by the rush, or making new estimates of the distance to the enemy) and transmitting this information to the other units as they arrive on the new line.

(3) Judge by apparent size of object; i. e. the comparative height of a man.

(4) Judge by visibility conditions.

Note. Underestimate rather than overestimate.

When a target is indistinct, distance is apt to be overestimated.

When a target is distinct, distance is apt to be underestimated.

Objects seem farther:

(a) When objects are of the same color or when color harmonizes with background;

(b) On broken ground;

(c) When seen across a valley or undulating ground;

(d) In avenues, long streets or ravines;

(e) When in shadow;

(f) When viewed in mist or failing light;

(g) When heat is rising from the ground;

(h) When seen near any other object which makes it appear smaller than it is by the effect of comparison;

(i) When only partially seen, as in the case of troops firing from cover;

(j) Troops kneeling or lying in the open seem farther away than when standing;

(k) When looking from low ground up towards higher ground.

Objects seem nearer:

(a) When both object and background are of different or contrasting colors;

(b) When the sun is behind the observer;

(c) In bright light or clear atmosphere;

(d) When the intervening ground is level or covered with snow;

(e) When seen across water or a deep chasm;

(f) When looking downwards;

(g) When the object is large, or when seen near any other object which makes it appear larger than it is by effect of comparison.

Note. As bright light makes objects seem nearer than

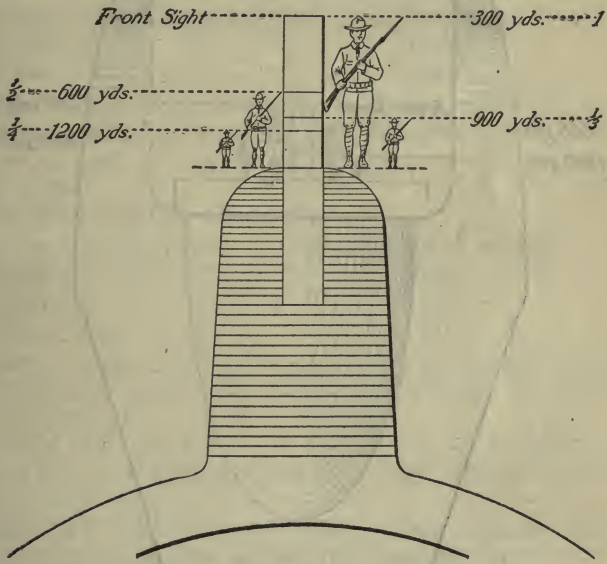


FIG. 26.—Front Sight Method for Estimating Ranges. Rifle, Model 1903.

they really are, and dull light, farther, a convenient general rule is

"Lights up," "Sights up."

"Lights down," "Sights down."

154. BY FRONT SIGHT METHOD.

In the *Position of Aim,* observe how many times the height of the front sight a standing soldier appears to

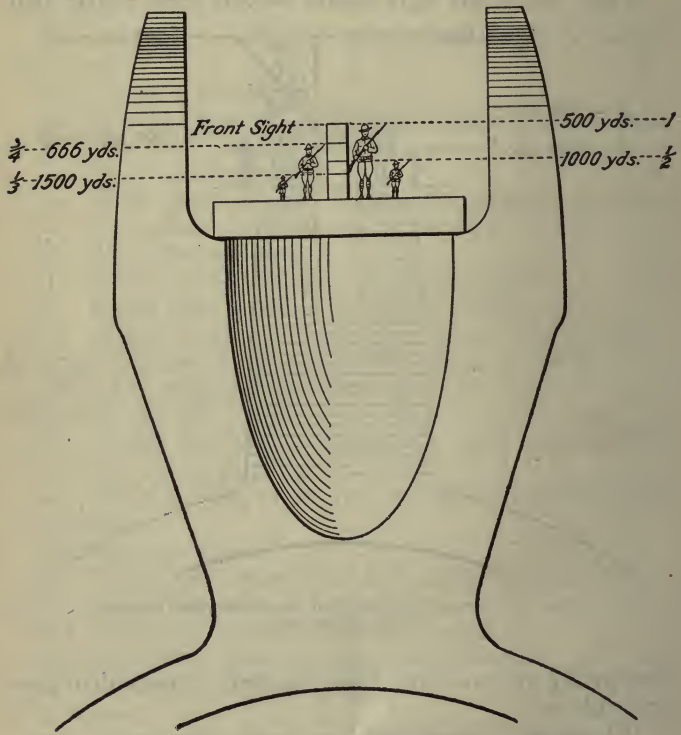


FIG. 26a.—Front Sight Method for Estimating Ranges. Rifle, Model 1917.

be, at the distance which it is desired to estimate.

For Model 1903: (Fig. 26.)

When he appears *1/4 times the height* of front sight, he is distant about *1200 yards;*

When ⅓ the height, distant about 900 yards;
When ½ " " " " 600 "
When just " " " " 300 "

Note. This is calculated for the *Rifle Model 1903* with a distance from eye to front sight of about 34½", height of front sight of 7/32", and height *over all* of man, 5 ft. 9 inches.

For Model 1917: (Fig. 26a.)

When ⅓ the height, distant about 1500 yards.
When ½ " " " " 1000 "
When ¾ " " " " 666 "
When just " " " " 500 "

Note. Distance from the eye to the front sight 36½", the height of front sight .14", and the height of a man, 5′ 9″ over all.

For a different height of front sight, or distance between the front sight and the eye, make new proportions from above data.

155. BY RESULTS OF FIRE. Two volleys, using combined sights, should be sufficient to establish the range.

Where 1/3 of the shots in a Cone of Fire strike in front of the target, the range is approximately correct. (Fig. 24a.)

Nearest shots will be most easily mistaken for nucleus.

All shots will appear to observer to strike nearer than they are.

156. BY RANGE CARDS.

(1) **For Attack** (Fig. 27).

(2) **For Defense** (Fig. 28).

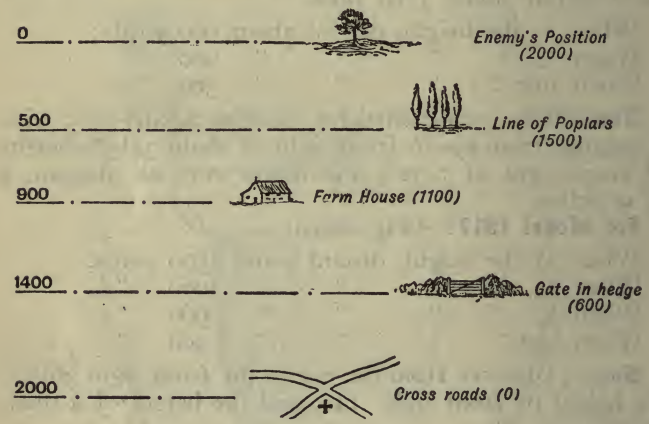


FIG. 27.—Range-Card for Attack.

Note.—The distances on the left are those from the enemy's position. Those on the right in parentheses are only for the range-taker's information, and should not be shown on the card, to avoid confusion.

157. BY MARKING RANGES. Roman numerals for hundreds of yards are used.

Marks should be visible only to the defense and one foot in height for each 100 yards of range, and are placed:

(1) ON GROUND (such as on banks).

(2) ON TREES.

(3) ON BUILDINGS.

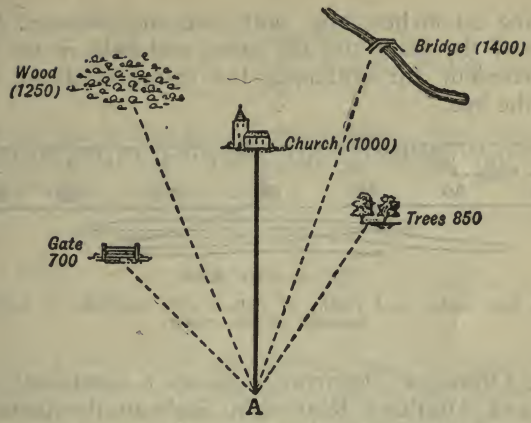


FIG. 28.—Range-Card for Defense.

Note.—The point from which ranges are taken (A) should always be described clearly on the card to facilitate setting it.

158. BY THE MIL SYSTEM. The true Mil is an angular measurement (3′ 26.2″) whose natural tangent is 1/1000 of the radius; but, for the sake of convenience, the Mil is commonly taken as 1/6400 of a circle.

The Mil Scale. (Fig. 29.) A mil scale may be made by marking inches on a pencil, stick or piece of cardboard, and dividing the inches into tenths. An inch on a mil scale, when held 20 inches from the eye, equals 50 mils and covers 1/20 of the range, or,

50 yards at 1000 yards.
25 yards at 500 yards.
20 yards at 400 yards, etc.

A string 20 inches long, with one end fastened to the center of the scale and the other end held in the teeth, is convenient for obtaining the distance of 20 inches from the eye.

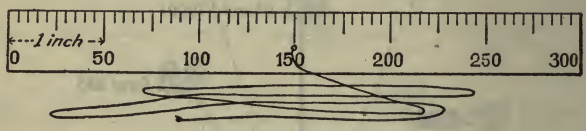


FIG. 29.—Mil Scale.

Divided into inches and tenths of inches with a string 20 inches long fastened at the center.

The Ordnance Department issues a combination Mil Rule and Auxiliary Rear-sight Scale in the form of a Musketry Rule, with which an angle may be measured in mils or in terms of the scale on the rifle sight. The rule is of aluminum, 4¾ inches x 1¼ inches, marked for 300 mils and has the formulas given in this section on the back.

To Find the Range by the Mil System.

FORMULA:

$$\mathbf{R}\ (\text{Range in yds.}) = \mathbf{W}\frac{(\text{Width or height in yds.}) \times 1000}{\mathbf{M}\ (\text{number of Mils})}$$

EXAMPLE: A house is estimated to be 30 ft., or 10 yds., long, (judging from the size of the door and windows,) and extends 25 mils on the Mil Scale (when held 20 inches from the eye); then,

$$R = \frac{10 \text{ yards} \times 1000}{25 \text{ Mils}} = 400 \text{ yards (or "Range" of the house)}$$

To Find the Width by the Mil System: The Mil System can also be used for estimating width, the range being known, by the formula

$$W = \frac{R \times M}{1000} = \text{width or height in yards.}$$

Assume a stone wall at a known range of 1200 yards which covers 80 mils on the scale. How long is the wall and how many men are behind it, if at one yard intervals?

$$W = \frac{1200 \text{ yards} \times 80 \text{ Mils}}{1000} = 96 \text{ yards or 96 men.}$$

To Find the Number of Mils to cover a given front, the width being known, use the formula

$$M = \frac{W \times 1000}{R}$$

Assume a line of skirmishers containing 200 men at 1 yard intervals, a portion of the line only being visible at a Range of 800 yards. How wide a front in Mils do they occupy?

$$M = \frac{200 \text{ yards} \times 1000}{800} = 250 \text{ Mils.}$$

Common Unit of Measure. (Fig. 29a.) One inch on the Mil scale, held 20″ from the eye, or 1 sight leaf at 13¾″ from the eye, or 1 Finger Breadth at the proper predetermined distance from the eye, each covers 50

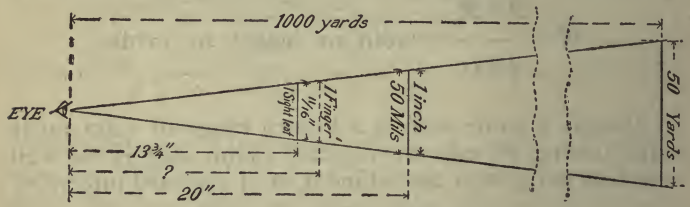


Fig. 29a.—Units of Measure.

mils on the landscape, which width is equal to 1/20 of the range at all ranges, for example, at 1000 yards it equals 50 yards. For convenience and accuracy (as the soldier always has his rifle) the rear sight is usually used except in cases of emergency. Measures in Mils should always be translated into "Sights" before being given to the soldier.

CHAPTER III

DESIGNATION AND RECOGNITION OF TARGETS

Among the systems used for designating targets are the following:

159. FEATURE-OF-GROUND SYSTEM. By the **Feature System,** in designating a target (which is often a minor feature of the landscape), the description should

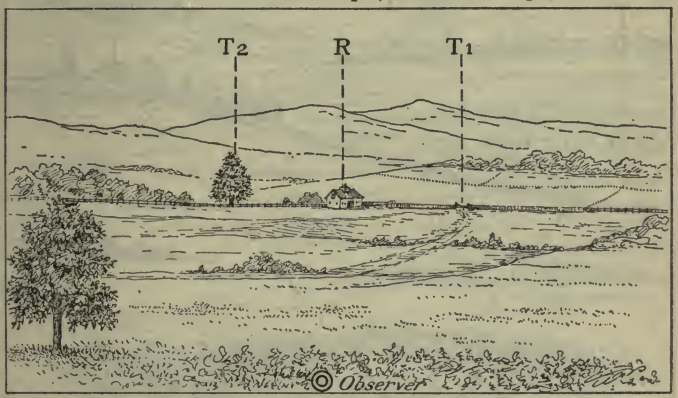


FIG. 30.—Feature of Ground System.

Example A. Range, 950; Reference Point, Red Barn; Target, Gate in Wall (T1), at Right of Barn.

Example B. Range, 925; Reference Point, Red Barn; Target, Tree (T2) at Left of Barn.

begin with the principal point, named the "Reference Point," from which the target is located. (Fig. 30). All these descriptions precede the firing commands.

160. HORIZONTAL CLOCK-FACE SYSTEM (or H. C. F.). (Fig. 31.) Imagine a clock face lying horizontal with its center at the firing point, and 12 o'clock directly to the front.

161. VERTICAL CLOCK-FACE SYSTEM (or V. C. F.). (Fig. 32.) Imagine a clock face hanging vertically with its face at right angles to the line of vision, and its

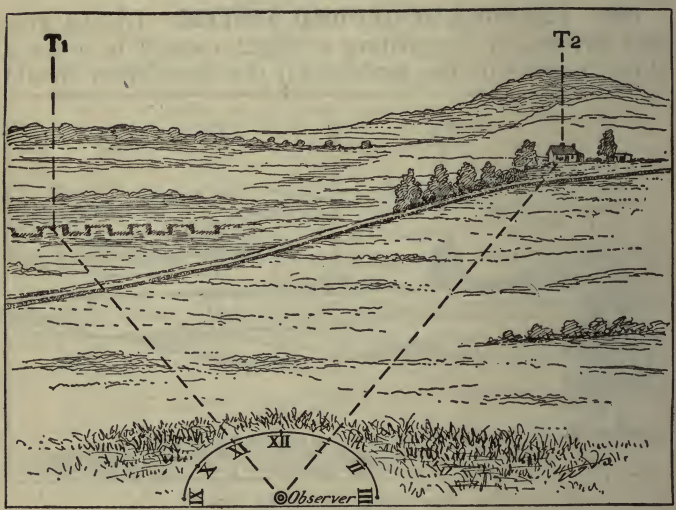


FIG. 31.—Horizontal Clock Face System.

Example A. Range, 800; Target, at 11 o'clock, a Trench (T1).
Example B. Range, 1050; Target, at 1 o'clock, a House (T2).

center at the reference point. An objective directly above the reference point would be at 12 o'clock, etc.

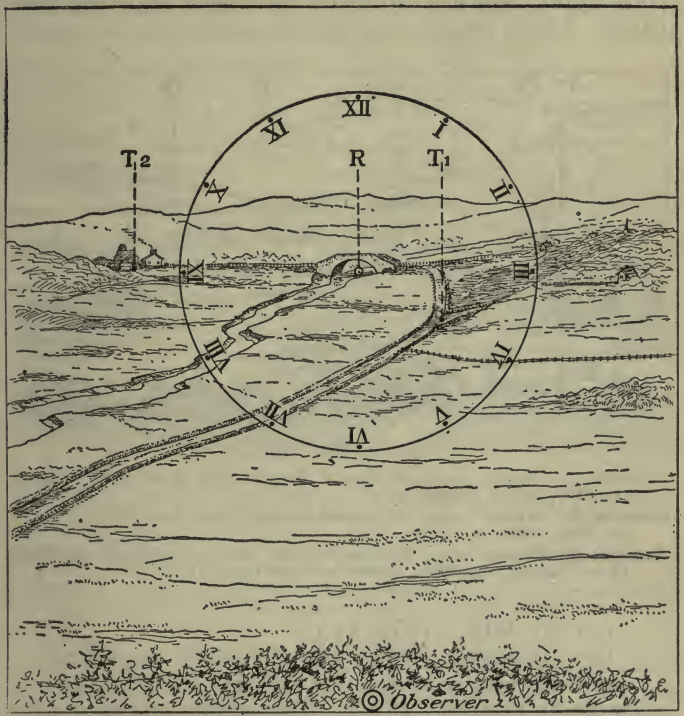


FIG. 32.—Vertical Clock Face System.

Example A. Range, 1100; Reference Point, Bridge; Target, at 4 o'clock, Wall at Fork of Roads (T1).

Example B. Range, 1400; Reference Point, Bridge; Target, at 9 o'clock, Battery at Left of House (T2).

162. MIL (SIGHT OR FINGER) SYSTEM. Distances in the landscape in any direction from the Reference Point, also the width of the target may be designated

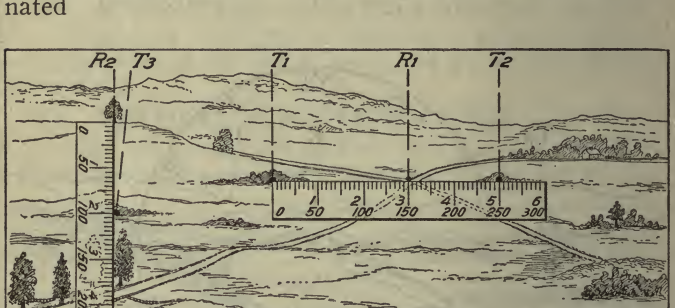


FIG. 33.—Mil System.

Example A. Range, 1200; Reference Point, Cross Road (R1); Target, 150 Mils, left, a Thicket (T1).

Example B. Range, 1050; Reference Point, Cross Road (R1); Target, 100 Mils, right, a Battery (T2).

Example C. Range, 975; Reference Point, Bottom of Tree on Ridge (R2); Target, 100 Mils, below, a Shell Hole (T3).

(a) By Mils. (Fig. 33.)
(b) By Sights. (Fig. 33a)
(c) By Finger Widths. (Fig. 33a.)

By Sight System. (S.S.) The soldier marks a point on the stock of his rifle 13¾″ from the rear sight (assuming the rear sight leaf is 11/16″ wide, which is the case on both the Model 1903 and Model 1917). With

his eye above this point, the width of the rear sight (called a "Sight") then covers 50 mils of the landscape. (Fig. 33a.) This is the most practical and convenient system for the enlisted man and should always be used except in an emergency.

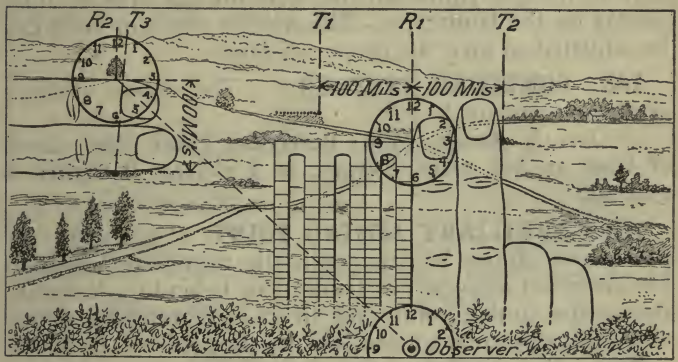


FIG. 33a.

Example A. Range, 1300; Reference Point, at 12 o'clock, Cross Roads (R1); Target, 10 o'clock, 2 Sights, is the left of an enemy's line, 1 Sight long (T1).

Example B. Range, 1050; Reference Point, at 12 o'clock, Cross Roads (R1); Target, at 3 o'clock, 2 Fingers, a Battery (T2).

Example C. Range, 1000; Reference Point at 10.30 o'clock, bottom of tree on ridge (R2); Target, at 6 o'clock, 2 Fingers, a Shell Hole (T3).

By Finger Width System. As a substitute for Mils or Sight widths, the Finger may be used, held in front of the eye at such a distance that the width of one Finger covers the same amount of landscape as the width of 50 Mils or one Sight. (See **Common Unit of Measure,** Section 158.) To make this method effective, the

soldier should find a means of always placing the finger at the same distance from the eye, which must be predetermined by experiment. (Fig. 33a.)

Note. Similarly, anything, such as a whistle, held in like manner at a predetermined distance from the eye, may be used as equivalent for determining Mils or *sight widths* on the landscape. The whistle chain or cord can be adjusted to give the proper distance.

163. COMBINED SYSTEMS. The above systems are often combined.

EXAMPLE: **Range, 1100; Reference Point, that clump of trees on hill crest; Target, at 4 o'clock, 2 Sights, a gun pit.**

164. AUXILIARY AIMING POINT. (Fig. 34.) "If the target cannot be seen with the naked eye, platoon leaders select an object in front of or behind it, designate this as the aiming point, and direct a sight setting which will carry the cone of fire into the target." (I. D. R.)

Note. To determine the elevation to use with the Auxiliary Aim Point in order to reach the real target, when the range of the real target is known:

With the Model 1903, hold an inverted rear sight, 22⅛" from the eye * and with the Model 1917, 32½" from the eye (which is the sight base length, or the distance between the front and rear sights), and at a distance from the ground at which the rifle will be held when firing; then with the drift slide, set at the known range of the target and the sight notch or peep hole held on a line between the eye and the target, note the

* The distance, 22⅛", from the rear sight is a point about 1⅝" back of the heel of the butt on the Model 1903.

elevation reading, at which a line from the eye to the auxiliary aiming point passes the rear sight leaf. This reading is the proper elevation at which the sights should

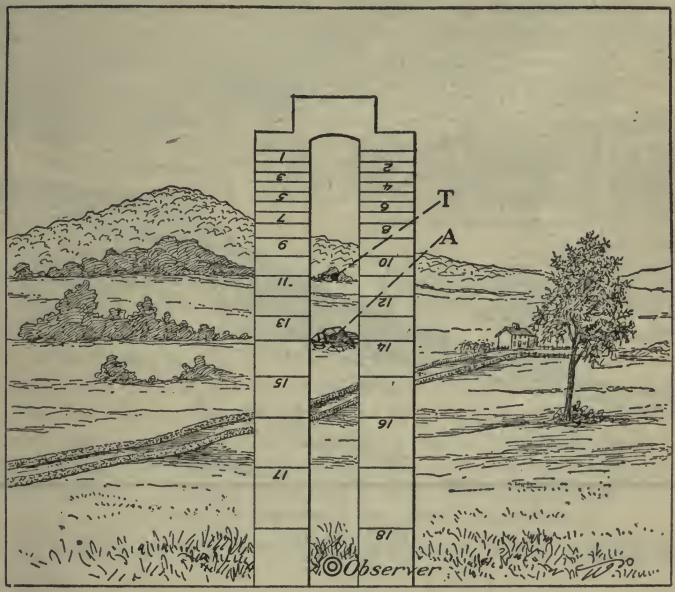


Fig. 34.—Auxiliary Aiming Point System.

Example. (Note the inverted rear sight.)

T is target (not easily seen without field glasses) at known distance of 1100 yards.

A is a large rock to be used as the Auxiliary Aiming Point.

The Auxiliary Aiming Point is announced as the target with range of 1400 yards.

This will bring the Cone of Dispersion to the actual unseen Target.

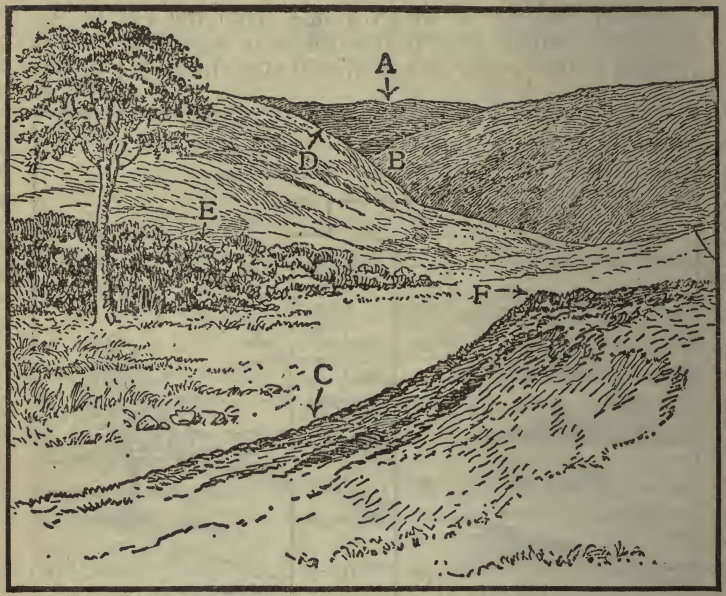


FIG. 35.—Study and Description of Ground.

A. Skyline.
B. Hollow.
C. Gentle slope.
D. Steep slope.
E. Dense cover.
F. Crest of hill.

be set to carry the cone of fire into the target when aiming at the auxiliary aiming point.

The Musketry Rule (Sec. 158) is convenient for this purpose.

165. INSTRUCTION PRACTICE.

Note. A progressively shortened time allowance

should be given for *practice* under the following instruction as facility increases.

(1) **Study and Description of Ground.** (See Fig. 35.)

(a) Foreground, Middle Distance and Back-Ground;

(b) Principal features accurately and briefly described as per military vocabulary just preceding;

(c) Minor features near some principal feature.

(2) **Marking Down Enemy.**

(a) Close range by individual soldiers.

(b) Long range by Fire Unit Commanders.

(3) **Discernment and Description of Targets.**

(a) State the *clear* and *unmistakable* feature of the landscape that is nearest the target;

(b) Then nearer features with direction from first feature. Allow plenty of time after mentioning each feature before stating the next.

Note. In firing commands, the target description is preceded by the designation of the range in yards, upon hearing which the soldiers are expected to adjust their sights. It is of the utmost importance that ample time be given for this purpose, before starting to designate the target. Failure to do this is likely to result in—

(a) *The soldier not following the description.*

(b) *Forgetting part of description while adjusting sights.*

(c) *Losing target and failing to find it again.*

CHAPTER IV

FIRE DIRECTION AND CONTROL

166. THE IMPORTANT ELEMENTS ARE:

(a) *Good indication* of Targets (clear, concise, deliberate).

(b) *Immediate* and *accurate recognition* of Targets.

(c) *Prompt* and *efficient placing* of fire.

Note. The soldiers must be instructed that unless they clearly recognize the target described, they must remain at *Ready.* This avoids waste of fire and shows the fire unit commander if he has not been understood.

Remember that however skillful individual men may be as marksmen, the greatest effect is produced by their fire only when it is efficiently directed and controlled.

167. DUTIES OF FIRE COMMANDER OR PLATOON LEADER. Fire is **directed** by a **Fire Commander** (usually commissioned officer) who

1. *Executes orders* and in lieu of orders handles his unit effectively, and with proper consideration for its safety.

2. *Allots Sectors.*

3. Repeats, or determines and directs, *sight settings.* (See note below.)

4. *Designates target.* When necessary, selects an Auxiliary Aiming Point with special sight setting for same.

EXAMPLE of target designation with complete firing command, using combined Vertical Clock Face and Sight Systems:

Range, 1100; Reference Point, that clump of trees on hillside; Target, at 4 o'clock, 2 Sights, a gun pit; Fire at will.

5. Arranges for *ammunition distribution* from rear and collection from dead and wounded.

6. Gives *class of fire* and controls *rate of fire* with regard to the importance and distinctness of target and the covering of rushes of adjacent units.

7. If his unit is on a flank, he sends out, or arranges for keeping in touch with, *combat patrols.*

8. *Signals readiness* to open fire (see Firing Commands by Arm Signals, "I am ready").

9. *Resignals* superior's orders to commence firing.

10. *Observes enemy* and results of fire.

11. *Details* special *observers* to watch enemy when not firing.

12. Sees that *fire is not interfered with* while:—

(a) Ammunition is given out.
(b) Changing sightings.
(c) Getting ready to advance.
(d) Fixing bayonets.

13. Provides that *adjoining fire* shall not threaten an advancing unit.

14. *Notes* the meaning of flag and semaphore *signals.*

15. When his unit leads in a rush, *chooses point of halt* with reference to a new firing position.

16. *Starts rush* and upon halting *opens fire* promptly.

17. *Reorganizes squads,* appointing leaders, etc., when necessary

18. When coming up with reinforcements, is *ready to take command* of the unit he joins, if necessary.

19. *Leads in advancing* and charging, and when in "Thin lines," leads the odd numbered line.

Note. Combined sights are used—

(1.) In estimating distance by results of fire.

(2.) To overcome error in estimating distance.

(3.) Against advancing enemy, to keep him covered as he advances, changing farthest sighting at the necessary intervals. At over 1000 yards the probable error in estimating range is such that a single sighting will probably prove ineffective.

Combined sights will not usually be employed by less than two platoons.

168. DUTIES OF A PLATOON GUIDE.

1. He *acts as assistant* to the Fire Commander (Platoon Leader) and *takes* his place or *the place* of disabled sergeants when necessary.

2. *When he leaves his position* for any cause, he notifies the senior corporal. He *watches* the firing line and adjoining units.

3. He *preserves fire discipline* and *prevents men* from *leaving* the ranks for any reason.

4. He *assists in the advance* and leads the even numbered lines in "Advancing by thin lines."

5. He must *understand* all *signals* and the semaphore code.

169. DUTIES OF FIRE UNIT COMMANDER OR CORPORAL.

Fire is controlled by a **Fire Unit Commander** who

1. *Receives* his *orders* from the Platoon Leader and sees that all orders are promptly *passed* and *carried out.*

2. *Indicates the target* and the portion to be fired on, by his squad, and sees that the squad fires not only on the designated target, but on all portions of it equally.

3. *Announces sight setting* and supervises same.

4. *Announces class and rate of fire,* sees that the same is maintained, especially during changing of sights, preparation for rushes, distribution of ammunition, etc., and increases same when other units which have the same target are rushing.

5. When his squad is ready to commence firing, *signals, "I am ready"* (by raising the hand, fingers extended and joined, palm toward the person addressed. See "Firing Commands by Arm Signals.")

6. *Observes constantly* (a) The *effect of fire* and (b) *the movements* of the *enemy,* and *looks to the rear only when* signaled by the whistle of the platoon leader.

7. *Reports* to platoon commanders when *ammunition is running short,* prevents waste of same, issues and redistributes ammunition. Sees that his men obtain ammunition from wounded and dead, and sees that the men keep 30 rounds in the right pocket section of the belt as a reserve, to be expended only when ordered by an officer.

8. *In rushing,* sees that all his men rush *simultaneously,* as soon as possible after the command, "Cease Firing," *drop to the ground in line,* and in such a location as to make the best use of cover, without blanketing the fire of or endangering other units, and *open fire immediately.* (In rushing, the Corporal is the center skirmisher, and in halting he lies down immediately in rear of his squad. The Corporal does not fire with his squad except to steady them or unless ordered to do so.)

9. *Preserves fire discipline,* steadies his men and prevents any from leaving the line for any reason.

10. When reënforcing, *takes* over the *duties* of disabled squad leaders of adjacent squads, or assists them if they are not disabled.

11. *When leaving his position* for any reason, notifies the private designated to take his place and informs the entire squad of such action.

12. *Must know all signals,* and the semaphore code.

13. Changes his position behind the line by rolling over with the rifle held closely against his body.

Note. Extended order results in fewer casualties and less fire effect.

Specially guard flanks.

Enfilade and Oblique fire are effective against shielded artillery.

170. DUTIES OF THE PRIVATE. The soldier should learn to

1. *Obey orders* exactly and promptly.
2. *Recognize targets* quickly.
3. *Describe targets* clearly by various methods.
4. Promptly *set sights,* upon order.
5. *Aim carefully, fire deliberately and reload rapidly.*
6. *Continually observe* his sector or target, especially when fire is suspended.
7. Make good use of natural, artificial and accidental *cover* as trees, ditches, or shell holes and the best firing positions as standing, kneeling, sitting, or lying down.
8. Obey no whistle signals except signal to suspend firing.
9. *Put himself under command* of nearest squad leader

when reënforcing as an individual. Also obtain target and range from neighbor.

10. *Cultivate coolness* and *confidence* on the firing line, and *aggressiveness* and *determination* in charging.

11. *In rushing, jump up, run directly to the front at full speed, but maintaining the line without bunching, drop, and crawl up to the new line.*

12. Remain with own command, but if separated join adjacent one.

13. Keep silence except when transmitting information, or charging.

14. *Use* the 30 rounds of *reserve ammunition* kept in the right pocket section of the belt *only under direct orders.*

15. Never attend the wounded in action.

16. Charge steadily and *re-form promptly.*

17. *Always keep face to the enemy. When unable to advance dig in, and wait for darkness.*

18. Not to fire until he *understands* what the *target* is, at what part he is to fire, and with what sight setting.

19. *Economize ammunition.*

20. *Coolly endure enemy fire.*

21. Fire quickly though steadily without undue effort, and at the ordered rate.

22. Calmly and intelligently use the rifle, when the commander can no longer exercise control.

Note. Working in Pairs. When not otherwise directed, men can work to advantage in pairs, indicating target and estimating the range for each other and observing the results of each other's fire. Suggested rate of fire, 3 shots per minute, each. This, however, depends on so many conditions that it can only be worked

out by the soldier, as accuracy must not be lost through speed.

171. FIRE DISCIPLINE. Important General Points.

1. In collective fire no man will fire until he clearly recognizes the target described by his commander, or in individual firing without selecting a definite target.

2. As a rule fire should be delivered deliberately, and each man must always satisfy himself that every time he squeezes the trigger he will hit the target aimed at.

3. If "Fire at will" is ordered, every man will fire at his own best rate for combining rapidity with accuracy.

4. Each man will take care to pass orders carefully and accurately.

5. Each man will make the best use of ground and cover, *primarily to increase fire effect,* and secondarily for concealment and protection. He must remember that the most important requirement, when firing from behind cover, is the ability of a man to use his rifle to the best advantage, and that *his eyes must be kept on the enemy between shots to avoid losing sight of targets.*

6. *Each man must watch the front and remain alert and attentive while awaiting orders. He must open fire smartly when ordered to do so on such fleeting targets as troops in movement, and continue firing, unless otherwise ordered, while they present a favorable target.*

7. He must, when employing individual fire on the defensive, especially at shorter ranges, *mark down troops by noting their position on the ground or behind cover, and open fire the moment they expose themselves or rise up to advance.*

8. *When not under direct control of a fire commander men should try to work in pairs, indicating targets, esti-*

mating ranges for each other and observing the results of each other's fire.

9. If incapacitated from advancing and firing, a man should always place ammunition in a conspicuous place, ready to be picked up by others, and all men should always be on the lookout to renew their ammunition supply in this way.

CHAPTER V

NIGHT FIRING

In Offense it is never used. It is not only useless but absolutely criminal. The bayonet is the weapon that decides the issue.

In Defense, when a night attack is apprehended, preparation should be made to sweep with fire the ground immediately in front, over which the assailant must advance. Wait until the enemy is within 30 yards, then every rifle should be fired once followed immediately by a bayonet charge.

The methods employed in order of their importance are:

172. (a) INSTINCTIVE ALIGNMENT OF RIFLES. Train the soldier in pointing his rifle at a mark near the ground within 100 yards with the eyes closed. The right eye is then opened and error noted. Thus a soldier learns his error and how to correct it.

A white rag wrapped about the muzzle of the rifle will often assist in aiming.

173. (b) FIXED RIFLE RESTS prepared in advance.

174. (c) BY PREPARED ILLUMINATING AIMING MARKS giving a horizontal line of sight.

175. (d) BY FIRING AT THE FLASHES of the enemy's rifles.

CHAPTER VI

TACTICAL USE OF RIFLE FIRE

176. THE IMMEDIATE OBJECT of Rifle Fire is to weaken the enemy against assault, and to keep down the enemy's fire. Except in Enfilading fire, assault is almost always necessary in taking a position.

177. SUPERIORITY OF FIRE is established by superiority of

(a) **Fire direction and control.**
(b) **Fire discipline.**
(c) **Use of Rifle** (Rapidity and accuracy).
(d) **Ammunition supply.**

178. OPENING FIRE. Decision as to when to open fire is governed by the following considerations:

In Attack

(a) PRINCIPLE OF SURPRISE.
(b) EFFECT OF FIRE AT VARIOUS RANGES.

In attacking economize fire for close range final struggle.

In Defense open fire sooner than in attack unless,

(a) TO GET DECISIVE RESULT.
(b) TO SURPRISE ENEMY.

CHAPTER VII

THE USE OF COVER

179. GENERAL REMARKS. The recruit should be given careful instruction in the individual use of cover. It should be impressed upon him that, in taking advantage of natural cover, he must be able to fire easily and effectively upon the enemy; if advancing on an enemy, he must do so steadily and as rapidly as possible; he must conceal himself as much as possible while firing and while advancing. *While setting his sight, he should be under cover or lying prone.*

180. FIRING FROM COVER. To teach him to fire easily and effectively, at the same time concealing himself from the view of the enemy, he is practised in simulated firing in the prone, sitting, and kneeling positions, from behind trees, heaps of earth or rocks, from depressions, gullies, ditches, doorways, or windows. He is taught to *fire around the right side of his concealment* whenever possible, or, when this is not possible, to rise enough to fire over the top of his concealment.

181. SELECTING COVER. When the details are understood, he is required to select cover with reference to an assumed enemy and to place himself behind it in proper position for firing.

182. CHANGING COVER. The evil in remaining too

long in one place, however good the concealment, should be explained. He should be taught to advance from cover to cover, *selecting cover in advance before leaving his concealment.*

It should be impressed upon him that a man running rapidly toward an enemy furnishes a poor target. *He should be trained in springing from a prone position behind concealment, running at top speed to cover and throwing himself behind it.* He should also be practised in advancing from cover to cover by crawling, or by lying on the left side, rifle grasped in the left hand, and pushing himself forward with the right leg, or by rolling over with the rifle held close against the body.

He should be taught that when fired on while acting independently, he should drop to the ground, seek cover, and then endeavor to locate his enemy.

The instruction of the recruit in the use of cover is continued in the combat exercises of the company, but he must then be taught that the proper advance of the platoon or company and the effectiveness of its fire are of greater importance than the question of cover for individuals. He should also be taught that he may not move about or shift his position in the firing line except the better to see the target.

183. GOOD COVER. Good cover, which, however, will very rarely be found, will combine the following advantages:

(a) Affords a clear view up to the enemy's position.

(b) Permits the free use of the rifle.

(c) Provides protection for him from the enemy's fire.

(d) Gives concealment to the firer.

Example, A LOW SOLID STONE WALL WITH A CONVENIENT OPENING.

184. POOR COVER.

(a) Gives a restricted view of the enemy's position.

(b) Restricts the free use of the rifle.

(c) Offers a well-defined target for the enemy's fire and provides no protection from its effect.

Example, A HEDGE OR EDGE OF A WOOD.

APPENDIX

U. S. Magazine Rifle, 1898
U. S. Revolver, Cal. .45, Model 1909
New Model Clip-loading Revolver.
U. S. Revolver, Cal. .38
Range Precautions

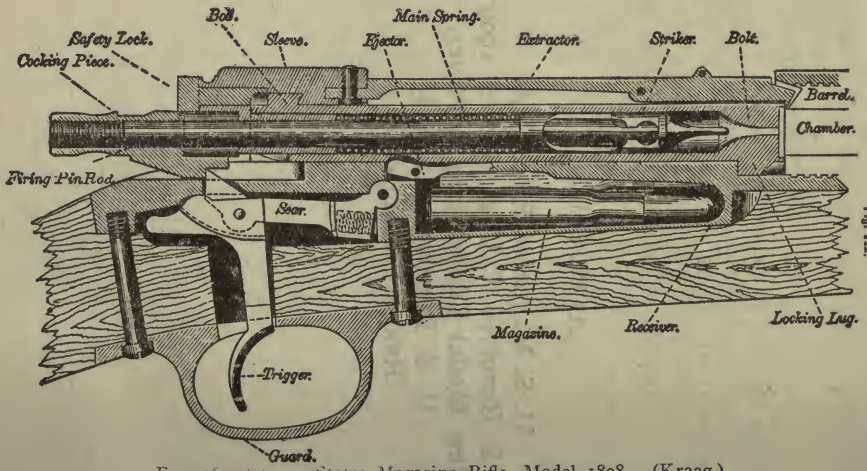


FIG. 36.—United States Magazine Rifle, Model 1898. (Kraag.)
Longitudinal Section.

APPENDIX

U. S. MAGAZINE RIFLE, MODEL 1898

(Sometimes called the Kraag.)

185. NOMENCLATURE. This rifle is composed of 87 parts, the most important of which are shown in Figs. 36 and 37.

186. THE ASSEMBLED PARTS AND THEIR OPERATIONS. Most of the operating parts may be included under the Bolt Mechanism and the Magazine Mechanism.

The **Bolt Mechanism** consists of the bolt, sleeve, extractor, extractor rivet, safety lock, firing pin, striker, and main spring.

The **Bolt** moves backward and forward and rotates in the well hole of the receiver; it carries a cartridge, either from the magazine or one placed by hand in front of it, into the chamber and supports its head when fired. The locking lug will sustain any powder pressure liable to occur, but if worn by usage or upset by excessive pressures the rear end of the guide rib will bear on the locking shoulder of the receiver, permitting the continued use of the arm with safety.

The **Sleeve** unites the parts of the bolt mechanism; its rotation with the bolt is prevented by its arm occupying the opening between the walls of the receiver.

The hook of the **Extractor** engages the rim of the cartridge case and retains the head of the latter in the countersink of the bolt until the case is ejected. The extractor spring, engaging its lip on the receiver, prevents the hook from releasing the rim of the cartridge case, when the latter is being started from the chamber. The extractor pin holds the bolt open for convenience in loading when using single-loader fire.

The **Safety Lock**, when turned to the left, is inoperative; when turned to the right, the point of its spindle enters the notch in the bolt collar and locks the bolt. If turned to the right when the piece is cocked, its cam forces the firing pin slightly to the rear, out of contact with the sear, so that, if the trigger be pulled, the sear, when the trigger is released, can rise to catch the firing pin, thereby preventing accidental discharge. If turned to the right, when the piece is not cocked, it locks the firing pin as well as the bolt.

The gun having been discharged, to remove the empty cartridge case, reload and fire, the bolt mechanism operates as follows:

To Open the Bolt, raise the handle until it comes into contact with the sleeve, then pull it directly to the rear until the locking lug strikes the locking shoulder of the receiver.

Raising the handle rotates the bolt. This separates the locking lug from the shoulder of its recess in the receiver, with which it is brought into close contact by the powder pressure. This separation is made easy by the slight inclination to the axis of the receiver of the vertical planes containing the rear surface of the locking lug and the shoulder of its recess.

The rotation also causes the cocking cam of the bolt to force the firing pin to the rear, withdrawing the point of the striker into the bolt. The rotation of the firing pin is prevented by the lug on the cocking piece, projecting through the slot in the sleeve into its groove in the receiver. As the sleeve remains longitudinally stationary with reference to the bolt, this rearward motion of the firing pin, and consequently of the striker, will begin the compression of the main spring, since the rear end of the latter bears against the front end of the barrel of the sleeve, and the front end against the rear end of the striker.

When the bolt handle strikes the sleeve, rotation ceases, during which the firing pin has been forced to the rear by the cocking cam on the bolt until the sear notch of the cocking piece has passed the point of the sear, the cocking piece nose entered the notch in the rear end of the bolt and the main spring partly compressed; the locking lug will then be out of its recess, and the guide rib under the extractor.

When the bolt handle is raised into contact with the cam on the cocking shoulder of the receiver, a direct motion to the rear will be combined with the rotation, so that the cartridge case will be started from the chamber by the action of this cam.

The bolt is then drawn directly to the rear, the extractor and guide rib move along the left wall and through the opening between the two walls of the receiver. The parts are retained in position by the cocking-piece nose remaining in the notch in the rear end of the bolt, and the main spring is partly compressed.

To **Close the Bolt,** push the handle forward until it

strikes the cocking shoulder, then turn it down until it comes into contact with its seat in the receiver. As the handle is turned down, the rear end of the guide rib traveling along the cam of the locking shoulder of the receiver, will move the bolt forward until the locking lug comes into contact with the cam of its recess in the receiver, which moves the bolt slightly forward into its closed position. As all movement of the firing pin is prevented by the point of the sear engaging the sear notch of the cocking piece, the forward movement of the bolt, produced by these cams, completes the compression of the main spring, seats the cartridge in the chamber, and forces the extractor hook over the rim of the cartridge case.

In closing the bolt, a cartridge from the magazine, if using magazine fire, or one placed by hand in the well of the receiver in front of the bolt, will be carried forward into the chamber. The Gun is then ready to be fired.

The position then occupied by the parts is shown in Fig. 36.

When the bolt is rotated so the guide rib is under the extractor, the front end of the guide rib engages a lug on the underside of the extractor and holds the latter against the left wall of the receiver so the hook, as the bolt is closed, will enter its notch in the receiver and barrel.

To Pull the Trigger, the finger-piece must be drawn to the rear until contact with the receiver is transferred from its bearings to the heel, which gives a creep to the trigger, and then until the point of the sear is withdrawn from in front of the cocking piece.

The heel of the ejector rises into its groove in the bolt, but just before the bolt is drawn fully to the rear, the end of the groove suddenly forces the heel down, causing the point to rise in front of the bolt and strike the cartridge case. As the bolt is closed, the heel rises again into its groove, the curved portion of which permits the bolt to rotate without operating the ejector. The upper surface of the front end of the ejector is shaped so as to throw the cartridge case out of the receiver, upward and to the right.

It is to be noted that, in this system of bolt mechanism, the compression of the main spring, the seating of the cartridge in and the starting of the empty case from the chamber, are entirely done by the action of cams.

The Piece may be Cocked either by raising the bolt handle until it strikes the sleeve and then immediately turning it down, or by pulling the cocking piece directly to the rear.

In Firing, unless the bolt handle is turned fully down against its seat in the receiver, the cam on the cocking piece will strike that in the rear end of the bolt and the energy of the main spring will be expended in closing the bolt instead of on the primer; this prevents the possibility of a cartridge being fired until the bolt is fully closed.

The opening and the closing of the bolt should each be done by one continuous motion.

The Magazine Mechanism includes the gate, carrier, follower, magazine spring, hinge bar and cut-off.

Fig. 37 represents a cross section of the Model 1896 gun, through the point of the ejector; the bolt is closed, the magazine contains five cartridges and is "off."

To Charge the Magazine, open the gate, insert the cartridges from a clip, or from the hand, then close the gate.

As the gate is opened, its lug, acting on the cam of the carrier, retracts the latter within the recess of the gate, leaving an unobstructed opening for the insertion of the cartridges. As the gate is closed, the magazine spring, the front end of which bears on the lug of the arbor of the carrier, swings the carrier into the magazine, against the last cartridge inserted. The point of the carrier forces the cartridges, in succession, against and up the curved surface of the side plate, into the magazine channel. When there is only one cartridge in the magazine, the point of the carrier forces it up on the top of the follower, which holds it high enough in the channel to be caught by the bolt. The point of the carrier then rests against the inner surface of the side plate.

When the thumb-piece of the cut-off in the Model 1896 is turned up (Fig. 37), the magazine is "off." The point of the spindle then bears on the rim of the upper cartridge and holds it down in the magazine channel below the action of the bolt. The magazine mechanism then remains inoperative, and the arm can be used as a single loader, the cartridges in the magazine being held in reserve.

When the thumb-piece of the cut-off, in the Model 1896, is turned down, the magazine is "on." The point of the spindle then occupies its hole in the upper wall of the magazine channel, and permits the top cartridge to rise high enough to be caught by the bolt in its forward movement. As the bolt is closed, this cartridge is pushed forward, through the magazine channel and well of the

receiver, into the chamber, the point of the bullet being directed by the ramps on the side plate and receiver. During this passage the cartridge is held up in the magazine chamber by the pressure of those below. The last

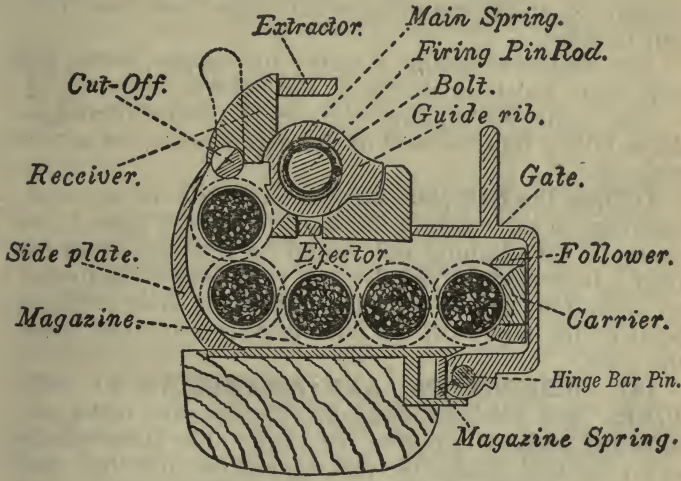


FIG. 37.—United States Magazine Rifle, Model 1896. Cross Section through Magazine.

one in the magazine is held up first, by the top of the follower, and after passing the latter, by the rib of the side plate and left edge of the roof of the magazine.

In the Model 1898, when the thumb-piece of the cut-off is turned down, the magazine is "off" and when turned up is "on"; or the reverse of what it is in the Model 1896. As the arm is habitually used with the magazine

"off," the thumb-piece of the cut-off is better protected when turned down.

The magazine can be charged with the bolt closed or open, with the cut-off turned for magazine or single-loader fire, and if one or more cartridges have been fired, can be filled.

The magazine spring actuates the carrier, holds the gate open, assists in closing it, and holds it closed.

The guide lip prevents the heads of the cartridges from falling into the well of the gate when charging the magazine.

To Open the Butt-plate Cap, insert the rim of an empty cartridge in the notch in the cap and draw it open. The joints of the cleaning rod should be removed from the oiler. In replacing the oiler and rods, insert the former so its bottom will be next the butt plate, and, with one joint of the rod, push the oiler into its seat, then insert the rods.

187. DISMOUNTING AND ASSEMBLING BY SOLDIER. The bolt and magazine mechanism can be dismounted without removing the stock. The latter should never be done except for making repairs, and then only by some selected and instructed man.

To Dismount Bolt Mechanism.

1. Draw the bolt fully to the rear, then place the piece across hollow of left arm.

2. Lift the front end of hook of extractor off bolt with left thumb, and at the same time turn bolt handle to left with right hand. The bolt can then be drawn from the receiver.

3. Take bolt handle in left hand, back of hand down, bolt upside down. Grasp cocking piece with right hand.

4. Slightly draw back cocking piece and turn it toward the operator until the firing pin can be removed from the bolt.

5. Take firing pin in left hand and bear down on point of striker with right thumb until it leaves the firing pin, remove main spring from firing pin, and the latter from sleeve.

To Assemble Bolt Mechanism.

1. Observe that the safety lock is turned to the left. Reverse the order of the steps of fifth operation in dismounting.

2. Grasp the bolt handle in left hand as in third operation in dismounting, and the firing pin in right hand, extractor uppermost. Insert firing pin in bolt.

3. Grasp handle of bolt with fingers of both hands, bolt directed downwards, and with both thumbs on the rear of safety lock, push strongly forward and turn to right with thumbs until the arm of the sleeve engages the collar of the bolt.

4. Grasp bolt and cocking piece as in third operation for dismounting. Draw back and turn cocking piece from the operator until its nose enters the notch on the rear end of the bolt.

5. Take bolt in right hand and introduce it into the receiver, keeping the extractor lifted with the right thumb. Turn bolt to right hand, at the same time press strongly with first finger against right side of extractor.

To Dismount Magazine Mechanism.

1. The gate being closed, engage the flanged head of a cartridge case under the lug on the front end of the hinge bar head and turn the latter toward the gate, out of its seat; then bear heavily on the gate with the palm

of the right hand, to overcome the pressure of the magazine spring, and, with the left, press forward against the lug, drawing the hinge bar pin from the receiver.

2. Remove the gate, magazine spring, carrier and follower.

To Assemble Magazine Mechanism.

1. Hold the piece with the right side uppermost. Insert arbor of carrier into its hole in receiver and place end of left thumb across magazine to prevent carrier swinging into the latter.

2. Place magazine spring in its channel, convex side up, rounded end to the rear, particularly observing that the lip at its front end rests in the notch on heel of carrier.

3. Place gate in its seat, lug entering between carrier and magazine spring. Remove left thumb and at the same time press gate against magazine spring with right hand.

4. Insert hinge bar pin in front hinge hole in receiver with left hand, and press gate down strongly until pin can be pushed through gate into rear hinge hole.

5. After the hinge bar pin is fully home, turn the head into its seat by opening the gate.

188. PRECAUTIONS. If it is desired to carry the piece cocked, with a cartridge in the chamber, the bolt mechanism should be secured by turning the safety lock to the right.

To obtain positive ejection, and to insure the bolt catching the top cartridge in the magazine, when using magazine fire, the bolt must be drawn fully to the rear in opening it.

If a cartridge is pushed from the magazine partly into

the chamber, and then the bolt fully drawn to the rear, that cartridge will remain in the well and chamber, and a second will rise from the magazine in front of the bolt. If the bolt is again pushed forward, the second cartridge will strike the first and produce a jam. To avoid this, always close the bolt on a cartridge in front of it to insure the action of the extractor and ejector on that cartridge, when the bolt is opened.

If a **Jam** occurs, draw the bolt fully to the rear, with the right hand, remove the first cartridge and close the bolt; if the first cartridge has been pushed into the chamber, draw the bolt to the rear, with the thumb of the right hand push the second cartridge back into the magazine and cut it off; then close the bolt on the first cartridge.

Unless the bolt handle is fully turned down into contact with its seat in the receiver, when the trigger is pulled the nose of the cocking piece will strike against the cocking cam of the bolt, and the energy of the main spring will be expended in closing the bolt instead of igniting the primer, causing a misfire. Care should be taken not to raise the bolt handle with the forefinger if the trigger is pulled with the middle one.

It is essential for the proper working and preservation of all cams that they be kept lubricated.

U. S. REVOLVER, CALIBER .45

189. NOMENCLATURE. Colt's double action revolver, Caliber .45, Model 1909. Parts. Fig. 38 shows a longitudinal section with parts of the mechanism exposed to view, with designations as follows: (1) butt swivel.

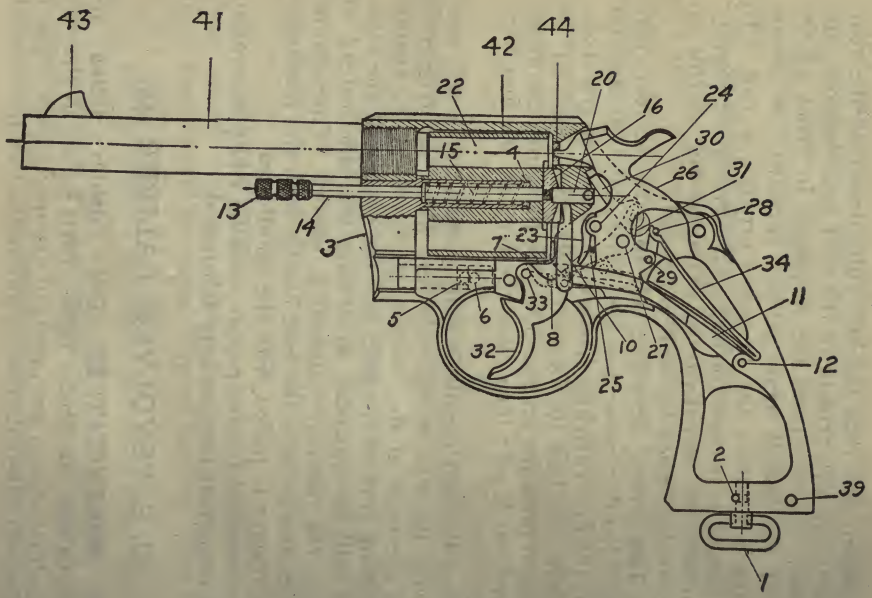


FIG. 38.—Colt's Double Action Revolver. Cal. .45.

(2) butt-swivel pin, (3) crane, (4) crane bushing, (5) crane lock, (6) crane-lock screw, (7) cylinder bolt, (8) cylinder-bolt spring, (9) cylinder-bolt screw, (10) hand, (11) rebound lever, (12) rebounding-lever pin, (13) ejector-rod head, (14) ejector rod, (15) ejector spring, (16) ejector and ratchet, (17) side plate, (18) side-plate screws, (19) latch, (20) latch pin, (21) latch spring, (22) cylinder, (23) hammer strut, (24) hammer-strut pin, (25) hammer-strut spring, (26) hammer, firing-pin, and firing-pin rivet, (27) hammer pin, (28) hammer stirrup, (29) hammer-stirrup pin, (30) safety, (31) safety lever, (32) trigger, (33) trigger pin, (34) mainspring, (35) stock, right, (36) escutcheon, threaded, (37) escutcheon, plain, (38) stock, left, (39) stock pin, (40) stock screw, (41) barrel, (42) frame, (43) front sight, (44) recoil plate.

190. CARE. The revolver should be kept clean, free from rust, and properly oiled. The oil should not be used in excess. Waste oil left in the mechanism will cause the parts to gum and work stiffly. (See also Part I, Chapter V, Care of the Rifle and Pistol.)

191. IMPORTANT POINTS. The lock mechanism must not be tampered with. The side plate should not be removed except under the supervision of a non-commissioned officer.

Never attempt to remove the side plate by prying it out of place. It should be jarred out of place by smart blows struck with a piece of wood on the left side of the frame where it is covered by the stock.

The side plate must be replaced from the rear so as to put the latch pin stud in the proper position, care being taken that the latch is drawn back, the latch pin for-

ward and its pin upright, so that it may enter the hole in latch without forcing. See that the latch spring is in its proper position in rear of latch.

The crane and cylinder must not be dismounted unless suitable tools are available, and not then unless absolutely necessary.

Never attempt to open the cylinder when the hammer is cocked.

Never attempt to cock the hammer until the cylinder is fully closed and locked in the frame.

192. OPERATION. To eject the shells and load, push the latch to the rear and spring the cylinder to the left out of the frame; pressure against the front end of the ejector rod head will empty the chambers and the cylinder is ready to be reloaded; moving the cylinder into the frame, taking care that it is revolved so that the cylinder bolt will enter one of the rectangular cuts in its surface.

193. TO DISMOUNT AND ASSEMBLE REVOLVER. To dismount the revolver, remove the parts in the following order: Crane-lock screw (6) and crane-lock (5); crane (3) with cylinder (22); stock screw (40); (35 and 38); side-plate screws (13); side plate (17); mainspring (34); rebound-lever pin (12); rebound lever (11); hand (10) and trigger (32); hammer (26); cylinder-bolt screw (9); cylinder bolt (7); cylinder bolt spring (8); latch pin (20); safety lever (31); and safety (30).

The crane and cylinder should not be further dismounted or the recoil plate removed except at ordnance depots. The crane and cylinder are dismounted as follows: (a) unscrew ejector (16) from ejector rod (14),

right-handed thread; (b) remove cylinder (22) from crane arbor; (c) unscrew ejector-rod head (13) from ejector rod (14); (d) unscrew crane bushing (4), right-handed thread; (e) remove ejectod-rod (14) and spring (15).

To assemble, reverse the above order.

In removing or replacing a hand in a revolver, lift rebound lever by inserting screw-driver between it and the frame, so as to free it from lug on hand, and it is important that it be so adjusted that the upward movement of the hand will not begin to revolve the cylinder before the trigger withdraws the cylinder bolt. To insure this it may be necessary to file the hand slightly at the end which first engages the ratchet, and, as this may bring the two points of the hand which engage the teeth of the ratchet too near together, the lower projection must be adjusted so as to bring the cylinder in proper position for firing. This can be done only by expert workmen at a factory.

194. HOW TO COCK THE REVOLVER. The revolver should be cocked by putting the thumb on the hammer at as nearly a right angle to the hammer as possible, and by the action of the thumb muscles alone bringing the hammer back to the position of aim or raise pistol. Where the soldier's hand is small this cannot be done, and in this case it assists the operation to give the revolver a slight tilt to the right and upward (to the left). Particular care should be taken that the forefinger is clear of the trigger or the cylinder will not revolve. Jerking the revolver forward while holding the thumb on the hammer will not be permitted.

195. SELF-COCKING ACTION. The force required

to squeeze the trigger when the self-cocking device is used is considerably greater than with the single action. To accustom a soldier to the use of the self-cocking mechanism and also to strengthen and develop the muscles of the hand, a few minutes' practice daily in holding the unloaded revolver on a mark and snapping it, using the self-cocking mechanism is recommended. The use of the self-cocking device in firing is not recommended except in emergency. By practice in cocking the revolver the soldier can become sufficiently expert to fire very rapidly, using single action, while his accuracy will be greater than when using the double action.

196. DOUBLE ACTION. In using *double action* the trigger should not be pulled through with one motion, but merely sufficiently to cock the revolver, which should then be accurately aimed and the final squeeze imparted through the trigger to release the sear. A certain amount of practice is necessary to secure the necessary control of the trigger, but with practice it is quite practicable to cock the revolver and lower the hammer, using double action, and thus revolve the cylinder without firing the revolver at all.

197. MANUAL OF THE REVOLVER. The instruction under this head is first given on foot.

When a lanyard is used, one end is attached to the butt of the revolver, the other forms a sliding loop, which is passed over the head and drawn snug against the right arm-pit. The lanyard should then be of just such length that the arm can be extended without constraint.

Raise Pistol. The revolver being in the holster, to raise pistol: 1. **Raise,** 2. **Pistol,** grasp the stock, back of the hand to the body.

At the command, **Pistol,** draw the revolver from the holster, reverse it, muzzle up, the hand holding the stock with the thumb and the three first fingers; the little finger may be placed under the butt; forefinger outside the guard; guard to the front; barrel nearly vertical; hand as high as the neck and six inches to the right and front of the right shoulder. This is the position of *Raise Pistol.*

When dismounted, carry the right foot about twenty inches to the right and place the left hand in the position of the bridle hand.

Lower Pistol. Being mounted and at the position of *Raise Pistol,* 1. **Lower,** 2. **Pistol.**

At the command, **Pistol,** lower the revolver without changing the grasp, and rest the hand and revolver on the right thigh, back of hand up, muzzle in front of right knee.

When dismounted, lower the revolver without changing the grasp of the hand, arm by the side and nearly extended, back of the hand to the right; barrel inclined to the front and downward.

Return Pistol. Being at raise or lower pistol: 1. **Return,** 2. **Pistol.**

At the command, **Pistol,** insert the revolver in the holster, back of hand to body, button the flap and drop the hand by the side.

If dismounted, bring the right foot by the side of the left and drop the left hand by the side.

If the holster is so constructed that the butt is to the rear, *Raise* and *Return Pistol* are executed as above, except that the back of the hand is to the right and the revolver is not reversed.

To Inspect Pistol. 1. **Inspection,** 2. **Pistol.**

At the command, **Pistol,** execute *Raise Pistol,* except that the revolver is held about six inches in front of the center of the body, barrel up, pointing to the left front and upward at an angle of about 45 degrees, wrist straight, and as high as the breast.

The instructor passes along the ranks, and examines the revolvers. To inspect the revolver minutely, he takes it in his hands, and then returns it to the trooper, who grasps it at the stock and resumes *Inspection Pistol;* each trooper returns pistol as the inspector passes to the next. If the revolvers are not inspected, they are returned by the command, 1. **Return,** 2. **Pistol.**

When dismounted the left hand and right foot remain in place.

To Load includes to **Unload**:—being at *Raise* or *Lower Pistol,* place the revolver at the cylinder in the left hand, latch up, barrel inclined to the left front and downward at an angle of about 30 degrees; draw back the latch with the right thumb, push the cylinder out with the second finger of the left hand, and if necessary, eject the empty shells by pressing the ejector with the left thumb, right hand steadying the revolver at the stock; take a cartridge from the belt or box, insert it in the chamber, press it home with the right thumb and so on for each chamber to be loaded; close the cylinder with the left thumb, and *Raise Pistol.*

198. FIRINGS. For single action, being at *Raise* or *Lower Pistol:* 1. **To the front (or right oblique,** etc.), or 1. **At (such an object),** 2. **Squad,** 3. **Ready.**

At the command, **Ready,** cock the revolver with the

right thumb and direct the eyes to the front or toward the objective.

1. **Squad,** 2. **Fire.**

At the command, **Fire,** thrust and point the revolver toward the objective, arm nearly or quite extended, keeping the eyes on the object, and fire; resume the *Raise* or *Lower Pistol* according to the position before firing.

To continue the firing in the same direction, or at the same objective: 1. **Squad,** 2. **Ready,** 3. **Squad,** 4. **Fire.**

For double action. Being at *Raise* or *Lower Pistol,* 1. **To the front (right oblique,** etc.), 2. **Squad,** 3. **Fire,** or 1. **At (such an object),** 2. **Squad,** 3. **Fire.** Executed as in *Single Action,* except that at the command, **Fire,** the revolver is cocked by pressing steadily on the trigger.

An almost imperceptible pause may be allowed between the thrusting and firing in which to correctly point the revolver. Deliberate aiming, however, should not be encouraged. After firing without cartridges pause an instant and see if the revolver is correctly pointed, to get the personal error.

The instructor must take into account individual peculiarities in order to secure the best results in firing; in such cases departure from the text is permissible.

In a similar manner, the men will be instructed to fire to the left, right, right oblique, right rear, and rear. When firing to the left the revolver hand will be about opposite the left shoulder; when firing to the rear or right rear, the shoulders are turned about 45 degrees to the left.

Instruction may be given with the revolver in the left hand.

The recruits are first taught the motions of loading and firing without using cartridges. Loading and pointing practice shall be given mounted, at all gaits.

No cartridges will be used, except when indicated in the first command, thus: 1. **(So many) dummy (blank or ball) cartridges,** 2. **Load.**

To Fire at Will. 1. **Fire at will,** 2. **To the front,** etc., or 2. **At (such an object),** 3. **Commence Firing,** 4. **Cease Firing.**

The trooper fires as rapidly as is consistent with careful pointing at each shot. The *Raise* or *Lower Pistol* is resumed after each shot.

At the command, **Cease Firing,** the firing will stop, and the men resume the *Raise* or *Lower Pistol.*

The practice will be conducted on the principles explained in the Small Arms Firing Regulations.

199. MUSCLE EXERCISES. See Part II, Chapter IV (Muscle Exercises).

200. POSITION INSTRUCTION. (See Part II, Chapter V.)

201. NEW MODEL CLIP-LOADING DOUBLE-ACTION REVOLVER CHAMBERED FOR AUTOMATIC PISTOL AMMUNITION

Note. The preceding data and manual apply also to this revolver, except the method of loading. This arm

FIG. 39.—Loading Clip for Automatic Revolver Ammunition.

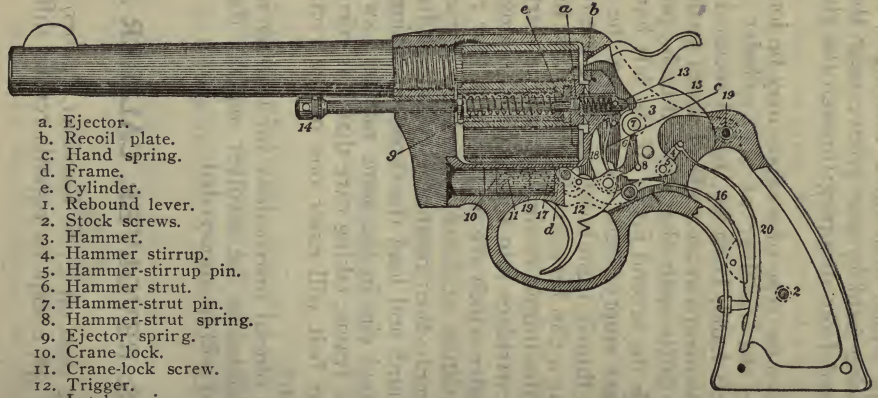
is loaded by clips which hold three cartridges, each of the cartridges being held by the groove near the head and thus prevented from dropping through the chamber. (Fig. 39.)

Loading. This new type of weapon may be loaded as follows: Place the revolver at the cylinder in the fingers of the left hand, latch up, barrel inclined to the left front and downward at an angle of about 30 degrees; draw back the latch with the right thumb, push the cylinder out with the second finger of the left hand, and if necessary, eject empty shells by pressing the ejector rod with the left thumb, right hand steadying the revolver at the stock; take a clip between the thumb and finger of the right hand, the thumb resting against the cartridges, and insert the cartridges into the three adjoining chambers of the cylinder which are on the right (the revolver being in the *Position of Load*), steadying the cylinder with the left thumb; then rotate the cylinder a half turn with the left thumb and load the three remaining chambers with a second clip in the same manner; swing the cylinder into the frame, taking care that it is revolved so that the cylinder bolt will enter one of the rectangular cuts in its surface.

Note. When official instructions for loading with the clip have been added to the revolver manual, the above tentative method will be superseded.

202. U. S. REVOLVER, CALIBER .38

The preceding data on U. S. Revolver, caliber .45, apply to U. S. R. .38, except as regards certain differences



a. Ejector.
b. Recoil plate.
c. Hand spring.
d. Frame.
e. Cylinder.
1. Rebound lever.
2. Stock screws.
3. Hammer.
4. Hammer stirrup.
5. Hammer-stirrup pin.
6. Hammer strut.
7. Hammer-strut pin.
8. Hammer-strut spring.
9. Ejector spring.
10. Crane lock.
11. Crane-lock screw.
12. Trigger.
13. Latch spring.
14. Ejector-rod head.
15. Latch spring.
16. Rebound-lever spring.
17. Cylinder bolt.
18. Hand.
19. Side-plate screws.
20. Mainspring.

FIG. 40.—United States Revolver, Caliber .38.

in the internal mechanism which only concern the armorer. (Fig. 40.)

203. RANGE PRECAUTIONS

Perfect discipline must be maintained on all ranges.

Post a copy of the following precautions in a prominent position in a gallery range back of the firing line:

No person should be allowed on the firing line except the officer, the instructors, and the men actually firing. Others must be kept well back of the firing line.

When any one passes over the firing line to examine the targets, or otherwise, *all weapons should be unloaded,* and in gallery practice should be *laid down.*

Never load unless the range is open for firing. This is usually indicated by taking down the red range flags. This does not refer to the red flags displayed to warn outsiders that the range is in use.

Never load or have cartridges in the magazine except on the firing line.

When first picking up a rifle or pistol see that it is not loaded.

With the rifle, pull back the bolt smartly, see that there is no cartridge in the breach (if necessary, insert the little finger), also see that the magazine is empty.

With the pistol take out the magazine, draw back the slide and see that there is no cartridge in the breach or in the magazine. Insert the magazine.

Keep rifle bolt open when not firing.

Keep the slide open when not firing (and the pistol not in the holster). Never "snap" except on the firing

line and then only in the direction of the butts when they are open for use.

When loaded, the rifle should have the safety lock turned to *Safe.*

When loaded, the pistol should be carried with the safety lock pushed up at *Safe.*

When loaded the revolver, if caliber .38, being loaded with only five cartridges, should be carried with the hammer *down on an empty chamber.*

Under no circumstances should the firing pin be let down by hand on a cartridge. But lowering the hammer of the automatic pistol by hand does not bring the firing pin in contact with the cartridge, and so, in an emergency, the pistol may be carried with the hammer down and a cartridge in the breach.

In case of a misfire with the rifle, it is unsafe to raise the bolt handle immediately, as it may be a case of hangfire. In such cases wait a few seconds, when the bolt may be opened in perfect safety.

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