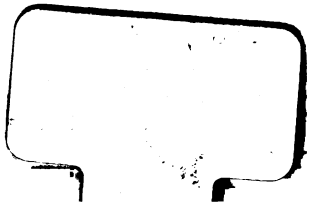
COMPANION
TO THE
NEW RIFLE MUSKET



COMPANION

TO THE

NEW RIFLE MUSKET.

A

COMPANION

TO THE

NEW RIFLE MUSKET:

COMPRISING,

PRACTICAL INFORMATION

ON THE

CLEANING AND MANAGEMENT OF ARMS,

AND ON THE

MAKING OF CARTRIDGES.

ILLUSTRATED BY TINTED PLATES.

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INTRODUCTION.

THE object of this little book is, to make the Soldier acquainted with an easy and effectual mode of cleaning his Musket, and of keeping it in a proper state, so that it may always be ready for immediate use. Some further information is given, which, if properly attended to, will enable the Soldier to become perfectly familiar with his weapon, and with its various parts; and, this being accomplished, he may always feel sure that, in his Musket, he possesses not only an intimate acquaintance, but a trusty friend in time of need.

The Soldier should always be prepared to see danger without surprise, and to meet it without doubt or hesitation—hence the necessity of keeping in perfectly good order the chief arm of his defence as well as of attack.

A Frenchman once wrote a book about the best way of blowing out a candle. "There is," said he, "a right way, and a wrong one, and it often happens that we fall into the wrong one, because we have not taken the trouble of making ourselves well acquainted with the object we have to deal with." How important is it then, that, with the introduction into the Service of the Improved Musket, a few easy

and defined rules for its treatment—the result of practical experience—should be placed before the Soldier whose duty it is, and whose pleasure it should be, always to have in the highest state of efficiency the weapon entrusted to him.

It is not alone necessary that the Soldier should be taught merely how to clean and to keep his Arms in order. He should further be made thoroughly to understand what particular work each separate part of his Musket has to perform, in connection with the whole, and of what importance it is that not the slightest irregularity should exist in even the minutest part of the weapon. Like the bundle of sticks we read of in the fable, the Musket must be kept well together;—each part must be thoroughly clean, properly placed, and the whole screwed home. The Musket will thus be made firm, the parts will act smoothly together, and the weapon will do its work well. But if from indifference, from bungling, or from neglect, the parts are wrongly put together, or one screw left loose, the result will be failure, mischief, and disgrace.

A Soldier who does not fully appreciate the trust reposed in him when a valuable Musket is placed in his hands, and who cannot be trusted to keep it clean and in proper order, will do no credit to his Regiment, and be of little use to the Service. The new Rifle Musket is made of the best and strongest materials known in the gun trade, and in the most scientific manner: it only requires proper treatment and handling to keep it in a high state of efficiency.

Too much care cannot be taken to ascertain its

condition, by frequent inspections, not only on parade, but also in the barrack rooms. It must be perfectly free from rust, and other damage. It cannot be too often impressed upon the mind of the Soldier, that if rust be allowed to accumulate in the barrel, the bullet will be prevented from taking the rotatory motion, which is actually essential to the accuracy of its flight. Hence it is proved that the accuracy of the flight, and, consequently, the due execution of the bullet, is not dependent solely on the rules laid down in the theory and practice of firing, but that the perfect condition of the Arm itself is necessary to secure due and efficient execution.

Defects in the structure of the Musket itself will sometimes occur; and these, the Soldier, if ignorant or inexperienced in its treatment, may be unable to detect or rectify. He may never hit the mark; he may get the name of a bad shot, and his bad firing be attributed to his incompetence; whereas, if there were no defects in his Musket he might prove to be as good a shot as his comrades. This should be thoroughly explained to the Soldier, in order that he may become the more zealous in his efforts to detect and rectify any accidental defects in his Musket.

Many important remarks on the inherent defects of Muskets will be found in the various valuable works and lectures on Rifle Firing.

Soldiers, more particularly the younger ones, should be taught, when cleaning their Arms, to take the greatest care not to rub or damage the

foresight; this many unthinkingly do, not knowing how greatly such damage may operate against them at the time of trial. The lock, too, must not only be quite clean, but also oil must be applied to the parts that rub. For want of a little oil, the trigger will sometimes pull hard, and cause the firer to alter the direction of the piece while in the act of firing. This affords further proof of the importance of keeping the lock in good easy working order.

Another important point cannot be too strongly enforced, or too strictly attended to. If, through accident, carelessness, or neglect, any dent in the barrel should be made, or the barrel itself become bent, it may burst in the Soldier's hands. If, therefore, the lock should become wood-bound, the nipple injured, or any part of the Rifle damaged, which it is not in the Soldier's power to remedy, he must immediately report such damage, that the armourer alone may repair it. On no account must the Soldier himself attempt such repairs.

Young Soldiers are sometimes not aware that the explosion of a cap upon the nipple, when there is no charge in the barrel, causes more rust than the firing of a charge. Instructors must, therefore, insist upon the necessity of thoroughly cleaning and oiling the Rifle after a practice of snapping caps.

In order to keep the muzzle and lock as free as possible from exposure to rain, the Musket must be carried at the "*Secure;*" the rain will then run off the muzzle, while the lock is safe under the arm.

When "*Ordering Arms,*" place the butt gently on the ground, thereby avoiding injury to the

mechanism of the lock, which will occur if the butt is struck violently against any hard substance.

Avoid all useless thumping and rattling of the Musket. In "*Piling Arms*," be attentive to the directions given, that they may not become unlocked and fall to the ground.

While *On Guard*, and when "*Guard turn out*" is called, be careful not to snatch the Musket from the Arm-rack too suddenly; the bayonet may become strained, or the stock or barrel injured by so doing.

Always place the Rifle into the Arm-rack very carefully, lest it should fall, and become broken against the floor or the iron bedstead.

Never place the muzzle of the barrel upon the ground, for the purpose of cleaning or wiping the Musket, unless the stopper is in the muzzle.

When examining Arms, take care, in placing the ramrod into the barrel, that the head does not work against the sides, nor must it be allowed to fall heavily on the bottom, whereby the head may be injured.

When a Soldier first begins to learn how to clean and manage his Arms, the Instructor should make him thoroughly acquainted with the names of the different parts of the Musket, as well as with its construction and utility. He should then teach him how to dismount the Musket and lock, making him repeat aloud the Instructions given for taking each part to pieces. After dismounting the Musket, instructions in cleaning should be given, and then in remounting.

The Soldier having learned the names of every part, and seen the manner in which the Musket is taken to pieces, the Instructor should then make him dismount the Arm himself, and for each thing that he is about to perform, repeat aloud the instructions for doing it; by this means he soon learns how to give instruction to others.

The Instructor should inform the Soldier that the present Rifle Musket is a most superior weapon to the old one, (or to the Minié Rifle). That its construction differs materially will be seen by reference to fig. 1, p. 21. The barrel of the Enfield Rifle is fastened to the stock by a breech nail, and is also encircled by three iron rings of great strength:—these are kept in their places by as many catch springs. The greatest facility in taking the barrel from the stock, by merely pressing the springs, is afforded by this method of fastening the barrel: instead of sixteen fittings to the Musket, seven only are required,—namely, one breech nail and springs, and three spring catches.

The ramrod is constructed with a swell near the head, which also acts as a spring to keep it in its place. The Instructor should shew the Soldier that the swell of the ramrod will greatly assist him, (when the bullet requires more force than usual through fouling in the barrel,) in starting the bullet a few inches down the barrel, by the facility it offers for grasping the rod at that particular point. The head of the ramrod is made in the form of a jagg, so that instead of having a separate jagg, carried in the pouch, it now forms part of the ramrod itself.

The present bayonet and fittings differ entirely from the old ones, both in lightness and construction. First, they contain less metal: secondly, the bayonet has three grooves, which add to its efficiency; the socket is small, and fastens to the muzzle by a "*locking ring*," instead of the spring in the stock. In order to enable the Soldier to appreciate the advantage of this seemingly trifling, but, in reality, important improvement,—the "locking ring,"—he should be informed that the cavity made in the stock of the old Muskets to receive the bayonet spring, was a source of great injury to the gun, inasmuch as dirt and wet would enter, and thereby cause rust to accumulate about the barrel and the stock, which could only be removed by dismounting the barrel.

By steady attention, and adherence to the rules laid down for the cleaning and management of Arms, the Soldier will acquire a thorough and intimate knowledge of the weapon with which he fights.

DESCRIPTION OF PLATES.

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PLATE I.

Fig. 1.—*Description of Musket.*

Length with Bayonet, 6 ft. ½ in.
Length without Bayonet, 4 ft. 6 in.
Weight with Bayonet, 9lb. 3 oz.
Weight of Barrel, 4 lb. 2 oz.
Length of Barrel, 3 ft. 3 in.
Bore, Cylindrical—
Diameter, ·557 in.

Grooves—
Three, having a regular spiral of one turn in 6 ft. 6 in.

Lock—Swivel.	lb.	lb.
Main Spring draws at half cock	15 to	16
Sear Spring draws . . .	7 to	8
Pull of the Lock . . .	13 to	14
Trigger draws . . .	7 to	8

Charge—
Powder, 2½ drams FG (fine grain).
Bullet, Diameter ·568 in.
Length ·960 in
Weight ·520 grains.

Fig. 2.—*The Bayonet.*

a The Blade.
b The Socket.
c The Locking Ring.

Fig. 3.—*The Barrel.*

a The Breech
b The Muzzle
c The Back Sight
d The Fore Sight
e The Breech Nail
f The Lump

Fig. 4.—*The Stock.*

a The Butt
b The Hand (or small)
c The Head
d The Swell
e The Shaft
f The Ring Bands
g The Catch Springs

THE ENFIELD RIFLE MUSKET. Pattern 1853.

Fig. 1.

Fig. 2.

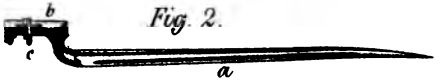


Fig. 3.

Fig. 4.

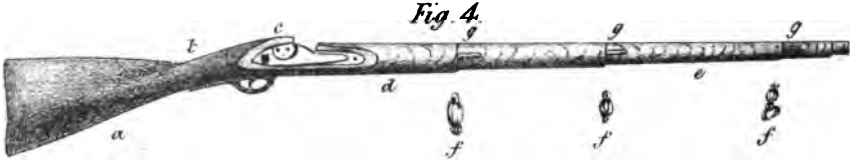


PLATE I.

PLATE II.

Fig. 5.—*The Hook Lock for Rifle Musket.*

Pattern 1851 (*Minié*).

A	**The Main Spring**	*a*	Main Spring Pin
B	**Tumbler**	*b*	Bridle Pin
C	**Bridle**	*c*	Sear Pin
D	**Sear**	*d*	Sear Spring Pin
E	**Sear Spring**		
F	**Cock**		
G	**Lock Plate**		

PLATE II.

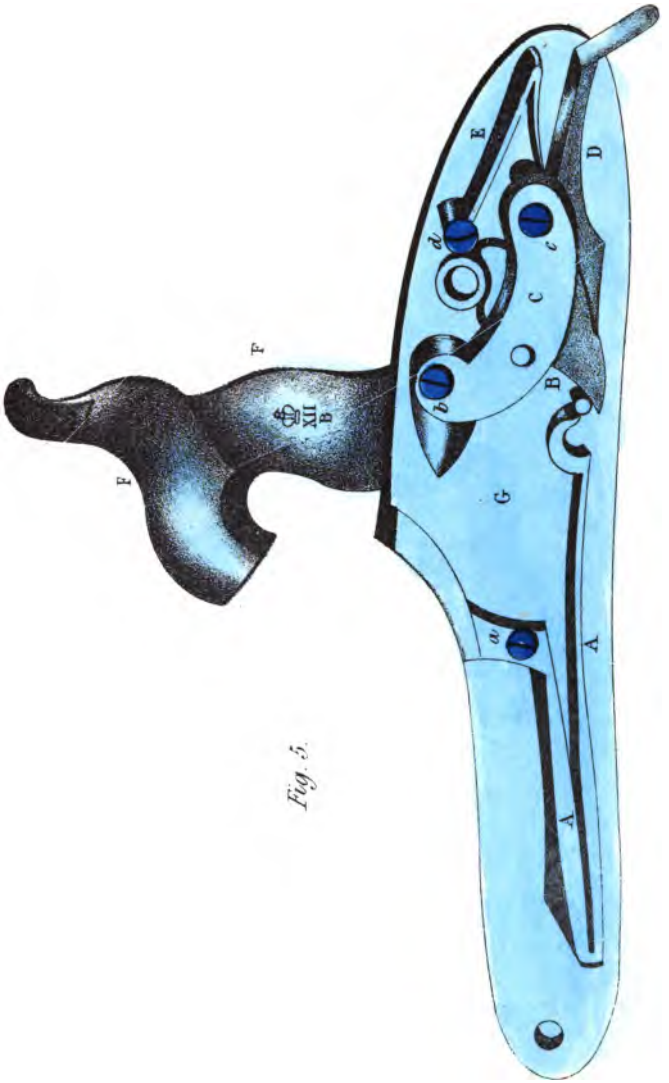


Fig. 5.

PLATE III.

Fig. 6.—*The Swivel Lock for Rifle Musket.*

Pattern 1853.

A	**Main Spring**	*a*	**Bridle Pin**
B	**Tumbler**	*b*	**Sear Pin**
C	**Bridle**	*c*	**Sear Spring Pin**
D	**Sear**		
E	**Sear Spring**		
F	**Cock**		
G	**Lock Plate**		
H	**Swivel**		

PLATE III.

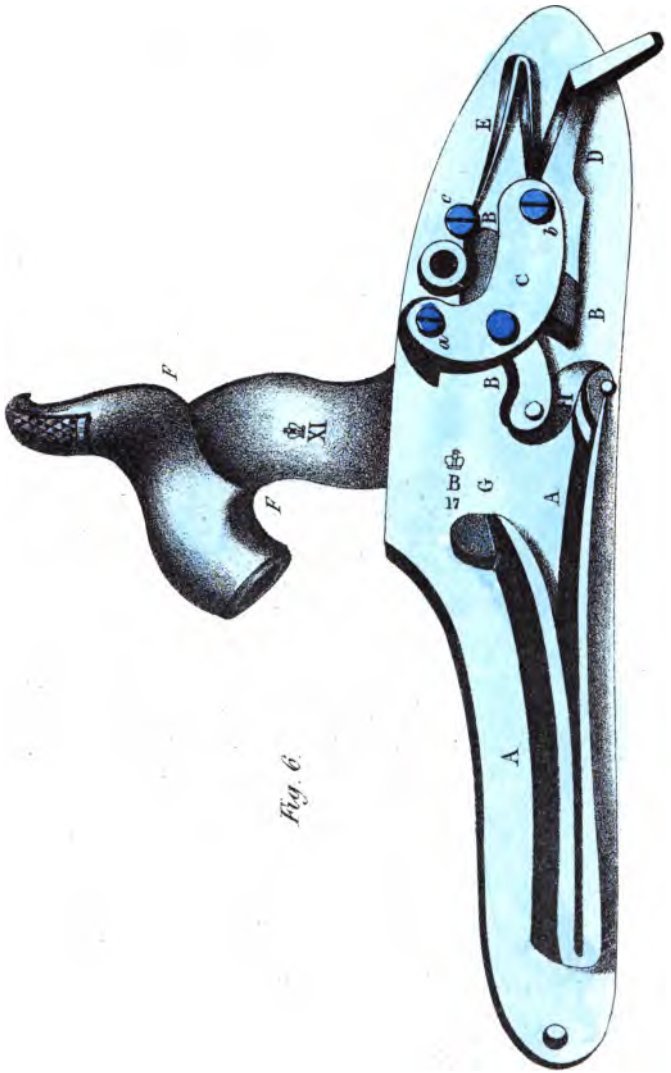


Fig. 6.

PLATE IV.

Fig. 7.—Lock Plate (outside).

A	Lock Plate	*d*	Comb of Cock
B	Cock	*e*	Nose ditto
C	Tumbler Pin	*f*	Mouth ditto
		g	Neck ditto
		h	Body ditto

PLATE IV.

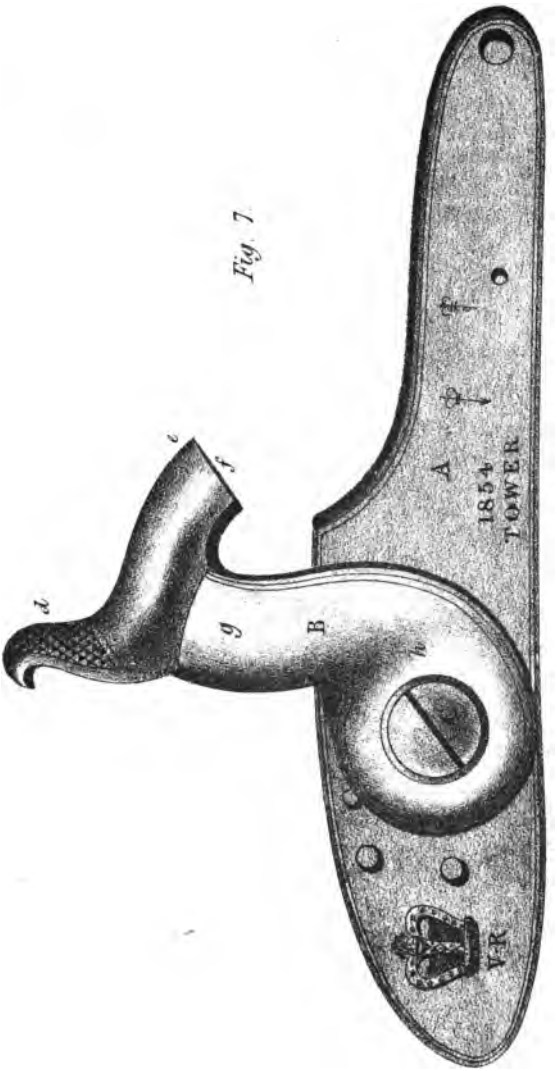


Fig. 7

PLATE V.

Fig. 8.— *The Lock Plate* (*inside*).

a Front Side Nail Hole
b Main Spring Stud Hole
c Bridle Stud Hole
d Bridle Pin Hole
e Rear Side Nail Hole and Stud of Lock Plate
f Sear Spring Pin Hole
g Sear Pin Hole
h Sear Spring Stud Hole
j Axle Hole
k Fore Stud

PLATE V.

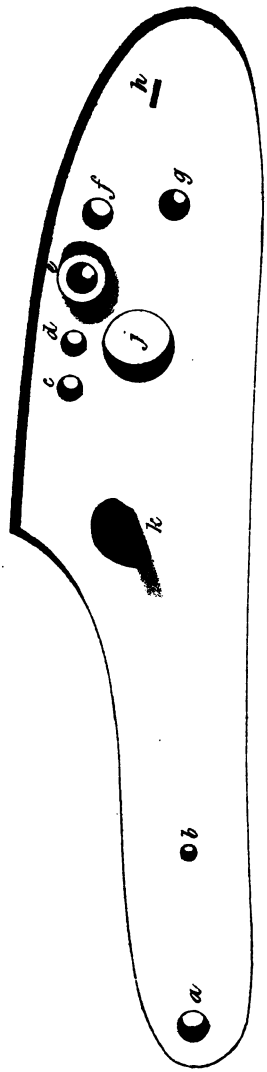


Fig. 8.

PLATE VI.

Fig. 9.—*The Main Spring* (*two ways*).

a The Stud
b Spring
c Return
d Catch
e Hook

Fig 10.—*The Swivel.*

a The Studs

Fig. 11.—*The Tumbler.*

a The Pivot
b The Axle
c The Squares
d The Bearer
e Full Bent
f Half Bent
g The Lever
h Swivel Stud Hole

PLATE VI.

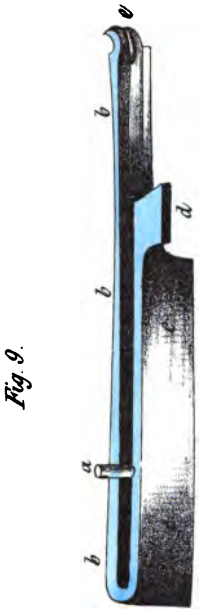


PLATE VII.

Fig. 12.—*The Bridle.*

a The Stud
b The Tumbler Pivot Hole
c Bridle Pin Hole
d Sear Pin Hole

Fig. 13.—*The Sear.*

a The Arm
b The Shank
c Eye
d Neck
e Nose

Fig. 14.—*The Sear Spring (two ways).*

a The Eye
b Stud
c Spring
d Return

PLATE VII.

Fig. 12.

Fig. 13.

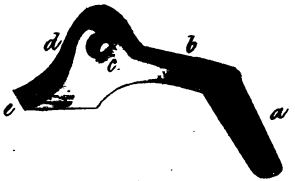


Fig. 14.

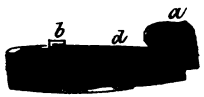


Fig. 14.

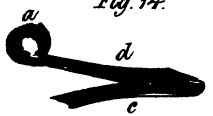


PLATE VIII.

Fig. 15.—*The Breech Pin.*

a The Face
b The Screw Threads
c The Neck
d The Tang
e The Breech Pin Hole

Fig. 16.—*The Nipple.*

a The Cone
b The Squares
c The Shoulder
d The Screw Threads
e The Touch Hole

Fig. 17.—*The Ramrod* (*in part*).

a The Head and Jagg
b The Swell

PLATE VIII.

Fig. 15.

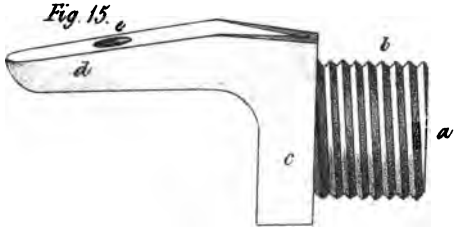


Fig. 17.

Fig. 16.

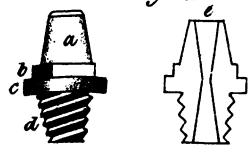


PLATE IX.

Fig. 18.—*The Back Sight.*

a The Bed
b The Flanges
c The Slide Bar
d The Leaf
e The Pin

Fig. 19.—*The Trigger.*

a The Blade
b The Finger
c The Box
d The Stud
e The Plate

PLATE IX.

Fig. 18.

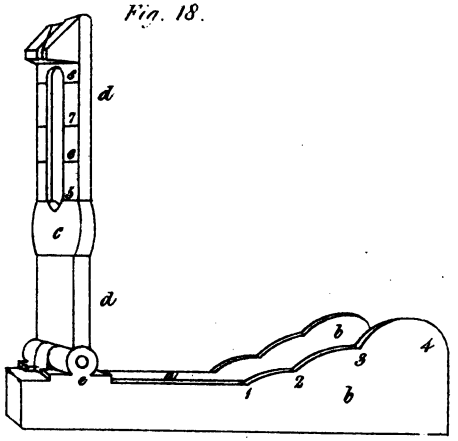


Fig. 19.

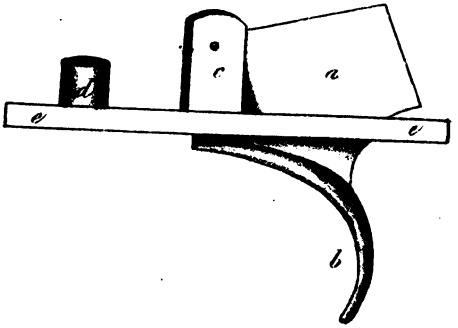


PLATE X.

Fig. 20.—*The improved Turnscrew and Cramp.*

A The Nipple Wrench
B The Cramp Hook
C The Worm or Ball Drawer
D The Turnscrew
E The Oiling Wire
F The Reservoir for Oil
G The Lever
H The Stud
I The Picker

Fig. 21.—*Cramp with Main Spring attached.*

(For Directions for Dismounting the Lock, see page 42).

PLATE X.

Fig: 20.

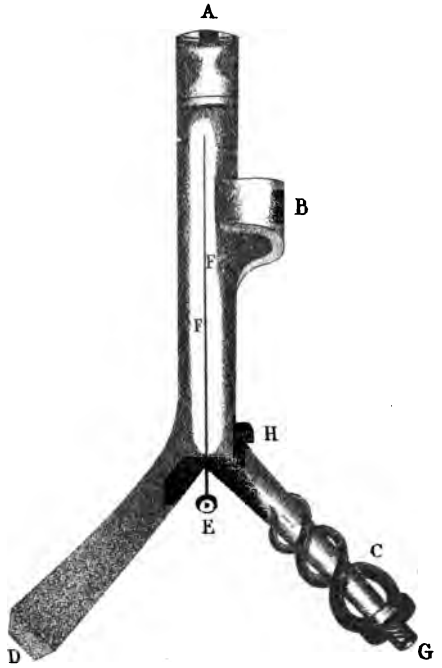


Fig: 21.

Directions for Dismounting the Rifle Musket.

Put the stopper into the muzzle of the barrel, take out the ramrod, pull the cock up to the half-bent, and take off the lock. To do this, hold the Musket horizontally in the left hand, with the lock downwards. Unscrew the side nails, and if the lock should stick, tap lightly on the head of the side nails so as to cause the lock to drop into the left hand. Place the butt on the ground, having the barrel upright, and towards you; press upon the spring catches with the first and second fingers of the left hand; and with the forefinger and thumb of the right hand, slip the rings over the springs, and take them off the barrel. Reverse the position of the Musket, having the muzzle (with the stopper in it) resting on the ground, and the barrel still towards you. Unscrew the breech nail and take it out. Take hold of the muzzle with the right hand, and lift it gently out of the stock.

N.B.—If the barrel will not leave the stock with ease, tap the stopper (that is in the muzzle) lightly on the ground, so as to start the *tang* of the *breech-pin* from the wood.

Directions for Dismounting the Lock.

It will seldom be found necessary to take the Lock to pieces if proper care and attention has been taken of the Arm.

1st. See that the cock is in at the full bent of the tumbler.

2nd. Take out the tumbler pin, turn the lock over in the left hand, having the inside of the lock towards you.

3rd. Take off the main spring. To do this, take the lock cramp (fig. 18) in the right hand, the lever (G, fig. 18) uppermost, and between the forefinger and thumb of the right hand. Place the hook of the cramp (B, fig. 18) on the upper side of the return of the main spring. Press the cramp well to the lock plate. See that the stud of the cramp (H) is close to the bend of the main spring (see fig. 19). Let the cock down so as to take it off the bearer; then lift the stud of the main spring gently out of the plate, the spring remaining attached to the cramp.

4th. Take off the sear spring. To do this, unscrew two or three threads of the pin. Put the end of the turnscrew under the bend of the spring, or otherwise. Tap on the outside of the plate, which will cause the stud of the spring to leave the plate. Unscrew the pin entirely, and take off the spring.

5th. Unscrew the sear pin, and take out the sear.

6th. Unscrew the bridle pin, and take off the bridle. If the stud of the bridle should stick, tap upon the lock plate with a piece of wood, and it will come out.

7th. Take off the Cock. To do this, tap upon the inside of the flat of the neck with a piece of wood, until it gradually leaves the squares of the tumbler.

8th. Take out the tumbler and swivel.

Whenever there are more than one stand of Arms being dismounted in the same place, the Soldier should place carefully the parts of his own Firelock in some receptacle, which will prevent them from being lost or intermixed with other Arms.

Directions for Cleaning the Lock.

TAKE every part singly, and wipe it perfectly clean with an oiled rag, and then with a dry one. If any of the interior part of the Lock should show specks of rust (and which will only arise through neglect), put a drop of oil on the spot, and then, with the point of a bit of wood, rub the rust clean out, and wipe the surface dry; then rub every part of the Lock and the main spring while it is in the cramp, with an oiled rag.

Directions for Remounting the Lock.

1st. PUT the swivel in the lever. Touch the axle of the tumbler with oil, and put it in its hole in the plate, keeping the bearer against the stud of the lock plate.

2nd. Touch the pivot of the tumbler with oil, and put on the bridle, at the same time taking great care that no dirt or grit gets between the bridle and plate: touch the screw threads of the bridle-pin with oil and screw it home.

3rd. Place the sear under the bridle. Touch the screw threads and shank of the sear-pin with oil; then pass it carefully through the bridle and the eye of the sear, and screw it home to the shoulder, but not so as to bind the sear.

4th. Put on the sear spring. Touch the threads of the sear spring pin with oil. Pass the pin through the eye of the sear spring, and turn it into the hole in the plate two or three threads, until the stud of the spring lightly touches the plate, then with the thumb of the left hand press the stud into its place, then screw the pin home.

5th. Put on the main spring, take the lock cramp with the main spring in it, and place the stud in the hole in the plate, at the same time placing the hook of the spring on the studs of the swivel and the catch of the spring under the fore stud of the lock plate.

6th. Put on the cock, turn the lock over in the hand and place the cock on the squares of the tumbler, touch the screw of the tumbler-pin with oil and screw it home.

7th. Draw the cock up to the full bent and take off the cramp; then clean the outside of the main spring and wipe it with an oiled rag.

8th. Touch first the nose of the sear where it touches the bents, and the point of the sear-spring where it touches the sear, with oil; also the studs of the swivel where the main spring and tumbler lever work. Feel that the parts work smoothly together by lifting

the cock and sear up and down two or three times, then let the cock down upon the bearer.

The length of the lock-pins are as follows, viz., the sear-pin is the longest and the end is round; the bridle-pin next and the end flat; the sear-pin is the shortest.

Turn all screws two or three threads into their places with the forefinger and thumb to ascertain that they enter fair before using the turnscrew to secure them home.

In oiling the parts of the lock bear in mind that a great quantity of oil is not required; it must be good sweet, or olive, oil (linseed oil must never be used to any part of the lock). Put only the smallest drop with the end of a shaving, or a feather, on such parts as may rub.

Whenever the cock feels to work stiff, or there should happen to be any grating with the tumbler in pulling up the cock, the lock should at once be taken off, cleaned, and oiled.

Directions for Cleaning the Stock.

Rub the Stock with a little linseed oil, after which wipe it well, and apply a little bees' wax, more especially round the lock plate and between the stock and barrel, so as to prevent wet entering either into the lock or between the stock and barrel.

Directions for Remounting the Rifle Musket.

PUT the barrrel into its place in the stock, having the breech properly settled; slip on the bands over the springs; touch the screw threads of the breech nail with oil, and screw it into its place (but not quite home). Pull the cock up to the half-bent, and put on the lock, screw home the side nails, and breech nail. Put in the ramrod, and ease the lock.

Directions for Cleaning Rifle Muskets.

MEMORANDUM.

Horse Guards, 6th January, 1855.

The annexed "Directions for Cleaning Rifle Muskets" having been approved by the General Commanding-in-Chief, are promulgated to the Army with a view to the same being generally adopted.

By Command,

(Signed) G. WETHERALL, A.G.

Directions for Cleaning Rifle Muskets.

1st. Place the Musket at full cock.

2nd. Pour about a quarter of a pint of clean water into the barrel; in doing this hold the Musket in the left hand, in a slanting direction, keeping the muzzle a little below the elbow of the arm with the barrel downwards to prevent any spilt water running between the Barrel and the stock.

3rd. Put a piece of rag or tow into the tag and surround it with the same, put it into the barrel *immediately the water is poured in*, and rub it well up and down, forcing the water out of the barrel through the nipple vent, which repeat once.

4th. Wipe the barrel well out with rag or tow until quite clean and dry, and then with an oiled or greased rag.

NOTE.—By this mode of cleaning, it is expected there will be little liability of the barrels becoming rusted, and seldom any necessity for removing the barrel from its stock, which is always objectionable, even with Muskets fitted with the break off.

Wipe out the oil or grease with a clean rag just before firing.

Order of Delivering Instruction.

1st Lesson.—Name the Limbs of the Lock.

2nd Lesson.—To Dismount the Lock.

3rd Lesson.—Name the Parts of the Limbs.

4th Lesson.—Instruct how to keep the Lock and Rifle Clean.

5th Lesson.—Remount the Lock.

6th Lesson.—Uses of the different Parts of the Lock.

For the 6th Lesson.—The stud of the main spring is for the purpose of securing the spring in its proper place in the plate. The nib or fore-stud of the plate is the part against which the eye (of the hook lock), or catch (of the swivel lock), of the main spring rests.

The sear spring stud secures the sear spring in its proper place.

The bridle is used to secure the tumbler and sear in their proper places. The sear is for the purpose of keeping the cock in its position of *full* or *half*-cock the nose of the sear being placed in the half-bent to keep the lock at half-cock, and in the full-bent to keep it at full-cock. The arm of the sear is that part against which the trigger bears, causing it, when acted upon by the trigger, to dislodge or release the nose of the sear from the full-bent of the tumbler. The stud of the lock plate, against which the tumbler bears, is to prevent the tumbler from revolving, when acted upon by the cock. The pins, pivots, &c., must always be perpendicular to the lock plate.

DIRECTIONS

FOR

MAKING CARTRIDGES

AND

GUNPOWDER.

Cartridges.

In each Company, from ten to a dozen men will be instructed in the Manufacture of Cartridges by the Non-Commissioned Officer Instructor of the Company. (Vide *Instruction of Musketry*, page 7.)

The following articles for the instruction of Soldiers in the Manufacture of Cartridges will be supplied to each barrack by the Ordnance Department. (Page 18. *Instruction of Musketry.*)

Five tin Measures containing two and half drams.

Five tin Funnels.

An iron Straight Edge for cutting the paper.

A large Knife.

Five Cylindrical Mandrels of hard wood (of the dimensions given in Plate XI,) to roll the Cartridge.

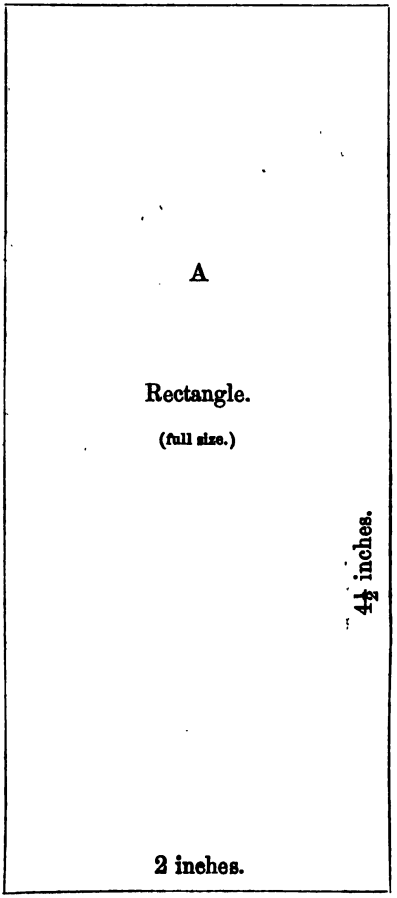
A Former, to make the hollow in the inner case, to receive the point of the bullet.

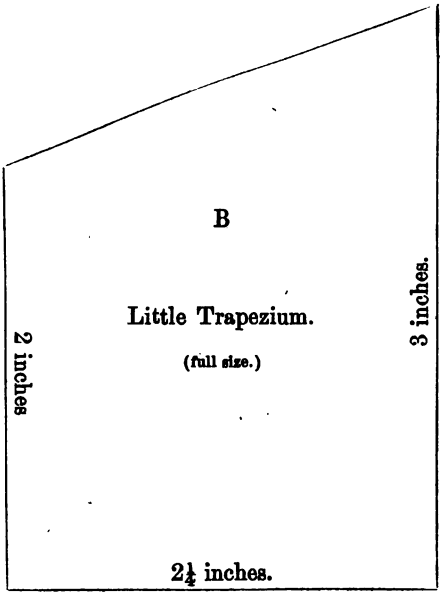
A set of Tin Patterns for shaping the paper.

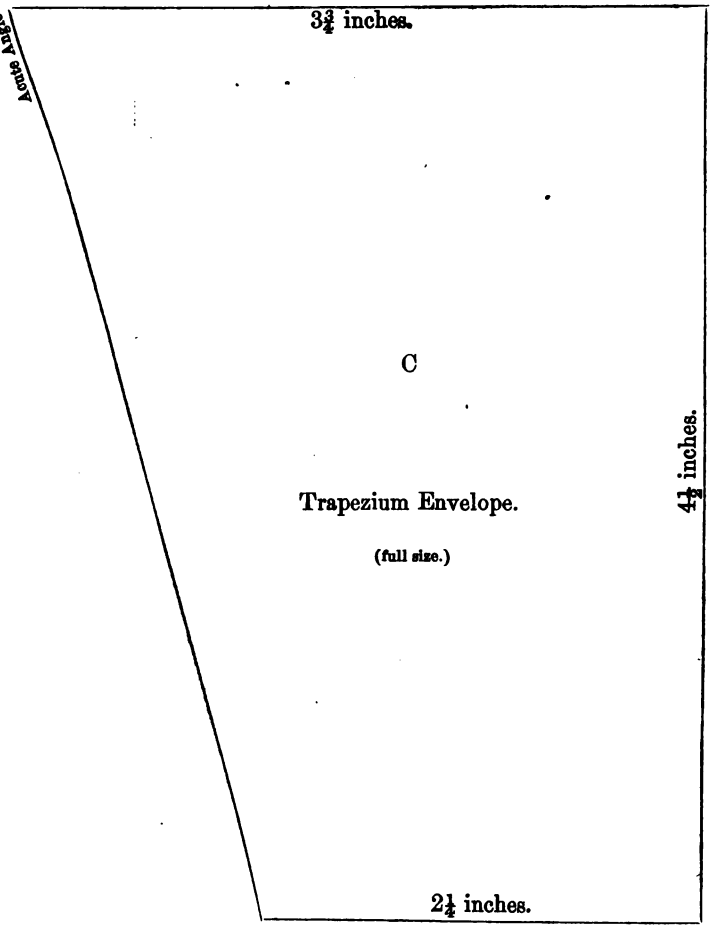
Cartridge paper, and fine white paper.

Bullets, and fine white sand to be used instead of powder.

To construct the Cartridge, cut the paper according to the patterns A B & C.




B
Little Trapezium.
(full size.)
2 inches
3 inches.
2¼ inches.


3¾ inches.
Acute Angle
C
4½ inches.
Trapezium Envelope.
(full size.)
2½ inches.

After cutting the paper according to the patterns A B and C, place the Mandrel on the rectangle, the base even with the side A C; roll the rectangle on the Mandrel as far as B (Fig. 1), insert the little trapezium between the roll of the rectangle, keeping the side A B $3\frac{1}{4}$ of an inch from the base of the Mandrel (Fig. 2); roll the whole tightly on the Mandrel (Fig. 3), place it vertically (Fig. 4), and fold the remainder of the trapezium paper into the hollow in the base of the Mandrel (A). Make use of the point of the former to close the folds (Fig. 5); examine the bottom of the inner case thus formed to see that there remains no hole for the escape of the powder when charged.

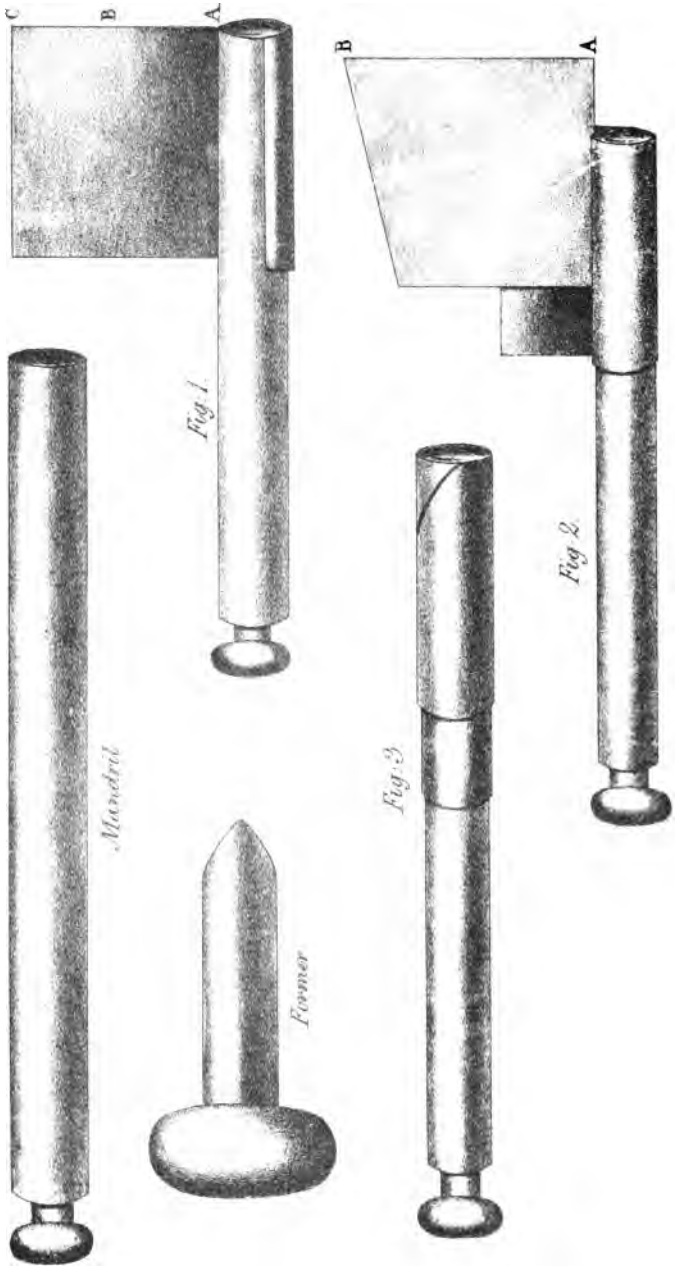
Introduce the point of the bullet into the aperture at the base of the Mandrel, take the trapezium envelope, place the Mandrel and bullet parallel to the side A B, the base of the bullet at $\frac{1}{2}$ an inch from the base A C of the envelope (Fig. 6); press the point of the bullet into the cavity, roll the envelope tightly on the bullet and on the Mandrel (Fig. 7), twist the remainder of the envelope into the hollow of the bullet (Fig. 8); place the base of the Cartridge on the table, withdraw the Mandrel, squeezing the case of the Cartridge with the left hand, and raising up the Mandrel with the right hand (Fig 9).

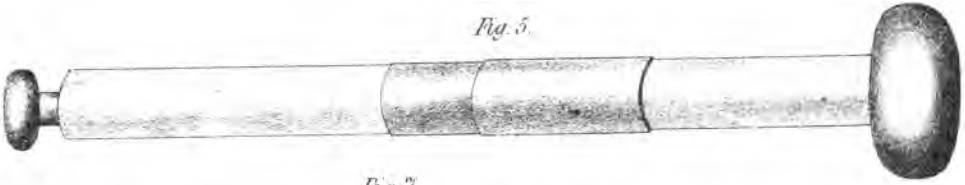
To charge the Cartridge, introduce the point of the copper funnel into the bottom of the case of the Cartridge; pour in $2\frac{1}{2}$ drams of fine grain powder from the powder flask; withdraw the funnel, taking care that none of the powder escapes between the case and the

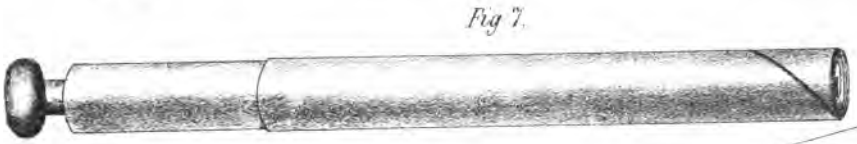
envelope, squeeze the top of the Cartridge (Fig. 10) and twist it round, forcing it a little into the case.

When completed, the base of the Cartridge (Fig 10, A) must be dipped up to the shoulder of the bullet B in a pot of grease, consisting of six parts tallow to one of bees' wax.

PLATE XI.







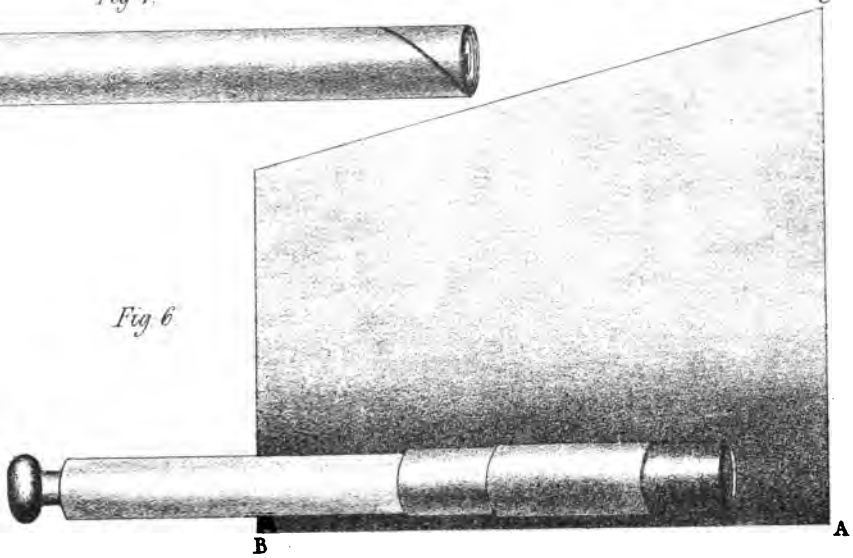


PLATE XII.

PLATE XIII.

Fig. 8.

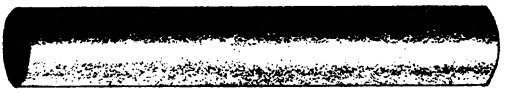


Fig. 9.

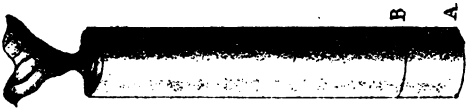


Fig. 10.

Gunpowder.

GUNPOWDER is composed of Saltpetre, seventy-five parts, Charcoal, fifteen parts, and Sulphur, ten parts. The saltpetre having been trebly refined is melted into cakes, which are brushed, to remove any adhering grit or dirt; the cakes are then broken into pieces with a mallet, ground into fine powder in a mill, and sifted through a fine bolting sieve of brass wire. The Charcoal is made of dogwood, alder, or willow, carefully burnt, and then reduced to powder. The sulphur is refined and ground to the same fineness as the other two ingredients, the three substances are then weighed out in the proper proportions, and mixed by placing them gradually in a wooden vessel in alternate and equal layers, after which the whole is thoroughly and perfectly mixed together. The mixture is then sifted, carefully ground to a paste, and pressed into a hard cake, which is next broken into pieces, granulated by agitation in parchment sieves, and after being glazed by friction, and the dust separated, it is dried with proper precaution in a stove heated to about a hundred degrees.

Ingredients of Percussion Powder.

EQUAL parts, in weight, of antimony and chlorate of potass, should be kept separate until required for use, and kept dry, as they quickly imbibe moisture.

Percussion caps may be used over again, if re-primed, by pressing them with a punch to fit, into an iron hole, or mould, and a small quantity of percussion powder at the bottom with a piece of paper pressed over it, or if caps cannot be had, three or four layers of paper, cut to size, pressed into the mould with a punch and primed with powder, similarly to the copper cap, will make a substitute.—From *Instructions on Naval Gunnery for H. M. Service.*

THE END.

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