

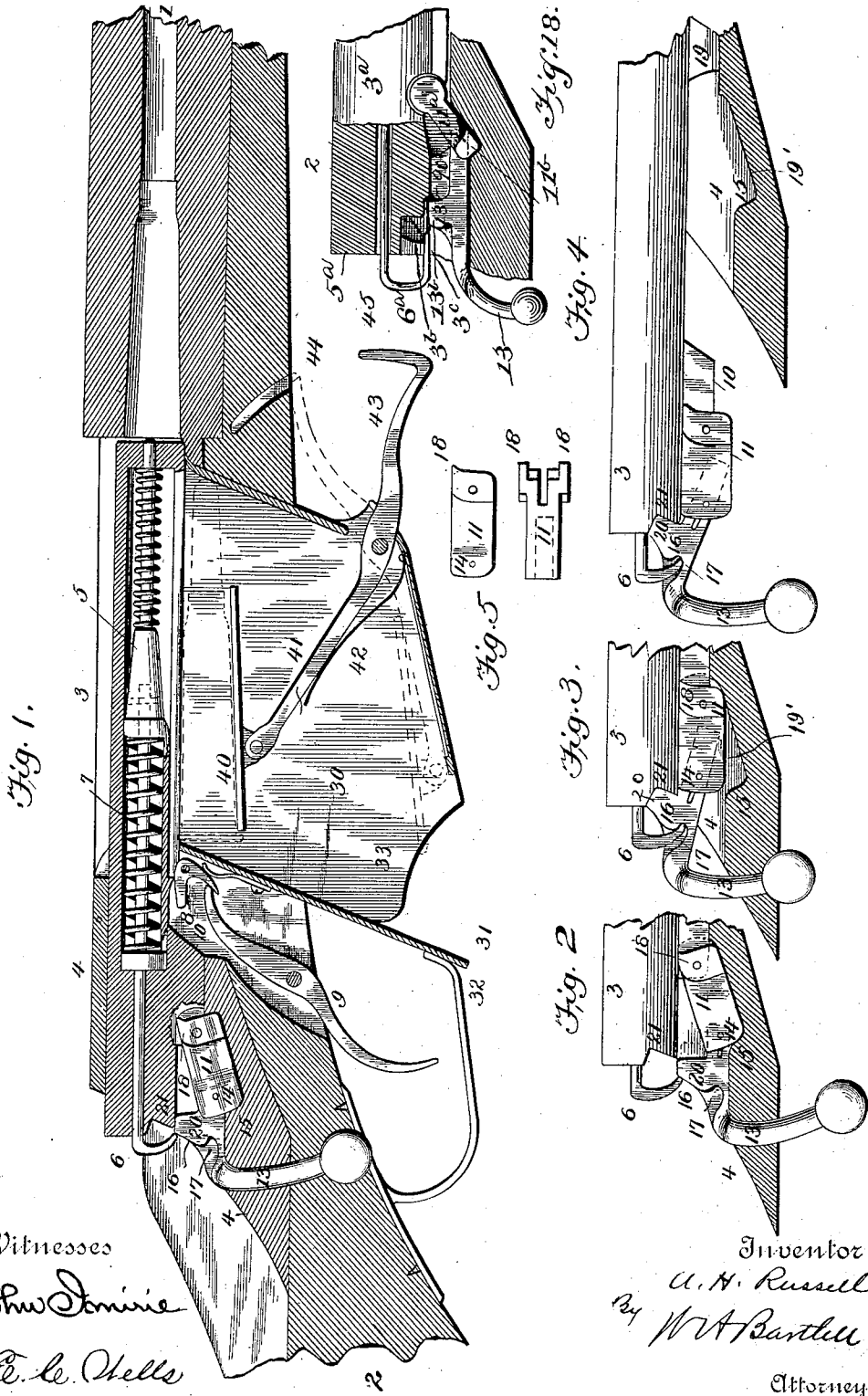
(No Model.)

3 Sheets—Sheet 1.

A. H. RUSSELL.
STRAIGHT PULL MAGAZINE GUN.

No. 501,367.

Patented July 11, 1893.



Witnesses
John Dominic
E. L. Wells

Inventor
A. H. Russell
W. A. Bartlett
Attorney

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STRAIGHT PULL MAGAZINE GUN.

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Fig. 7

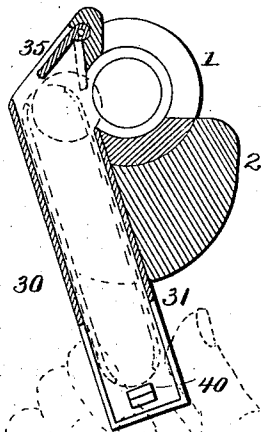


Fig. 9

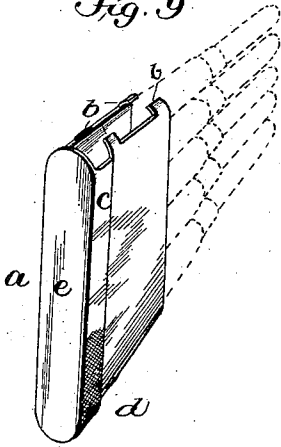


Fig. 11.

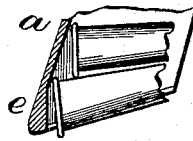


Fig. 10.

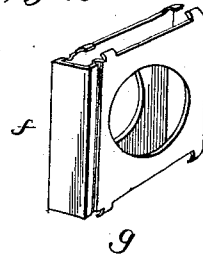


Fig. 8

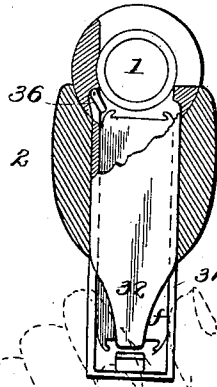
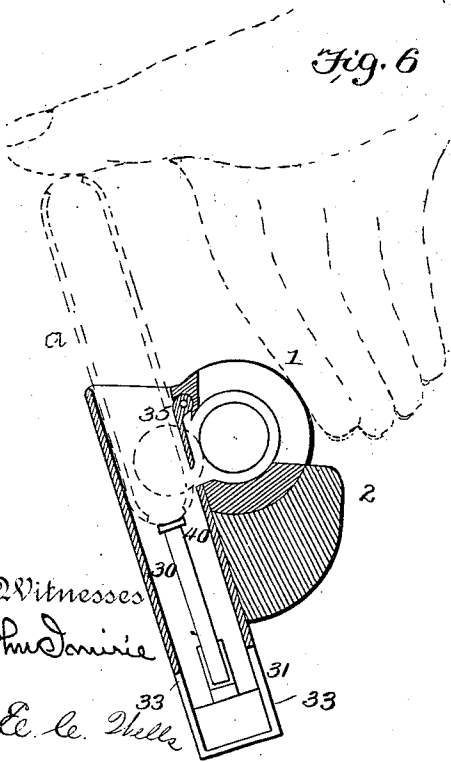


Fig. 6



Witnesses
John Donnie
E. C. Wells

Inventor
A. H. Russell
By W. A. Bartlett
Attorney

(No Model.)

3 Sheets—Sheet 3.

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Fig. 15.



Fig. 17.

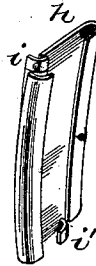
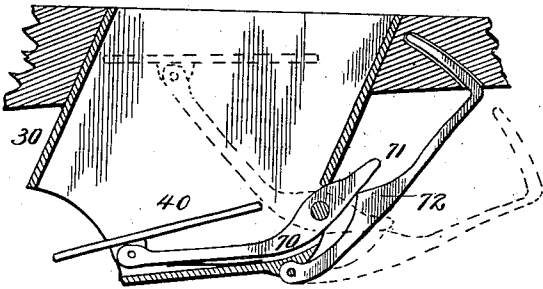


Fig. 16.

Fig. 14.

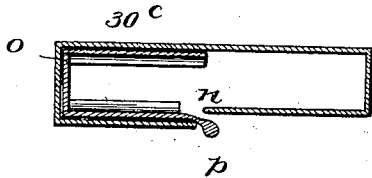


Fig. 13.

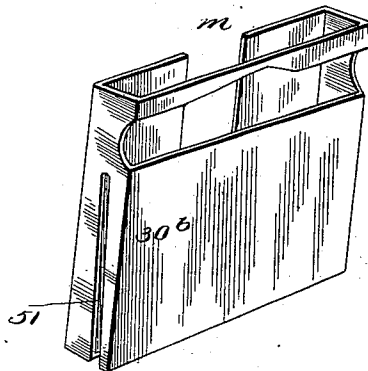
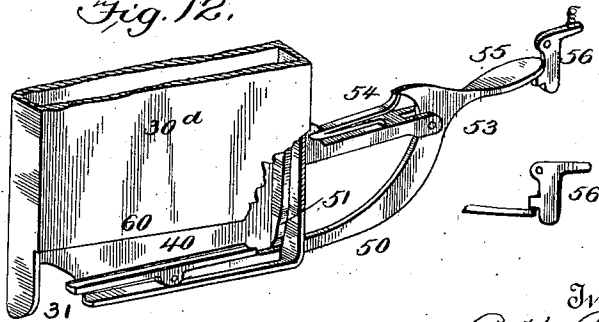


Fig. 12.



Witnesses

John Linnie
E. L. Phelps

Inventor

A. H. Russell.

By W. A. Bartlett

Attorney

UNITED STATES PATENT OFFICE.

ANDREW H. RUSSELL, OF THE UNITED STATES ARMY.

STRAIGHT-PULL MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 501,367, dated July 11, 1893.

Application filed June 1, 1892. Serial No. 435,143. (No model.)

To all whom it may concern:

Be it known that I, ANDREW H. RUSSELL, of the United States Army, stationed at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Magazine-Guns, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to magazine fire arms, and the method of feeding cartridges into the same.

The object of the invention is to improve the breech mechanism of guns and the means by which the operating handle is held; also to control the magazine follower by the hand of the operator while said hand grasps the gun. Also to improve the method of feeding cartridges to the magazine and the construction of the magazine; also to improve various details of the gun and its magazine and feeder.

Figure 1 is a longitudinal section and partial elevation of so much of a gun, of the kind known as bolt guns, as is necessary to the understanding of the general features of my invention showing the breech bolt closed. Fig. 2 is a broken section of the rear portion of bolt and locking mechanism, the handle just started toward the opening position. Fig. 3 is a similar view showing locking brace unlocked. Fig. 4 is a view showing bolt drawn back. Fig. 5 shows side and top elevations of locking brace. Fig. 6 is a cross section through the magazine and receiver, showing manner of applying filled cartridge package. Fig. 7 is a similar view showing manner of withdrawing packing case. Fig. 8 is a view like Fig. 7, but with differently located magazine. Figs. 9 and 10 are perspectives of two forms of cartridge packing case. Fig. 11 is a sectional detail of strengthened packing case. Fig. 12 is a perspective of part of a magazine broken away. Fig. 13 is a perspective of a magazine showing side slot. Fig. 14 is a plan of a magazine and packing case. Fig. 15 is a plan of magazine with recess for catch on packing case. Fig. 16 is a perspective of a modified package holder. Fig. 17 is a section of magazine with compound lever for follower. Fig. 18 is a broken detail of

modified connection between handle, brace, and bolt.

The numeral 1 indicates the barrel of a gun, and 2 the stock. A bolt 3, is located as usual in the shoe or receiver 4, and has a firing pin 5, which projects from the rear of the bolt, and has a rear projection or hook 6. The spring 7, sear 8, and trigger 9 may be of any usual or approved construction. The bolt has a projecting rib 10, which may be either at the side or bottom of the bolt, and is calculated to stand the strain of locking and shock of recoil. This rib may project a greater or less distance, and the shoe 4 will correspond to the bolt and its projections. The locking brace 11 is pivoted to the rib 10, and has a bearing surface which engages said rib 10 to prevent the backward movement of the bolt when the parts are in locked position. A handle piece 13 has a front projection, which projection enters an oblique recess or mortise in the locking brace 11. The handle piece is connected to the brace by a pin 14 in the brace entering a groove in the handle, or by other connection which permits a free longitudinal movement of the handle relatively to the recess in the brace.

The shoe or receiver has an abutment 15, against which the free end of the locking brace swings to lock the bolt in closed position, as in Figs. 1 and 2.

Referring now to Fig. 1, the bolt is shown in locked position, with the firing pin forward, as after firing. A backward pull on handle piece 13 brings the rear end of said handle back against the projection 6 of the firing pin; slightly withdrawing said pin, to the position of Fig. 2. A continuation of the backward movement causes the handle and locking brace to swing on the pivot of said brace, and the cam surface 16 of the handle piece, riding under the end of hook 6, moves back the firing pin by wedge or cam action. The point of hook 6 then falls into recess 17 in the end of the handle piece, and the forward pressure of the spring, acting on the firing pin, tends to hold the nose of the hook in said recess, so that the handle will not swing out with the brace while this pressure continues. As the locking brace 11 swings toward its position parallel with the bolt, the corner 18 of said

brace bears on an abutment 19 in the shoe, thus acting with a leverage to start the bolt backward at the beginning of its movement, to start the cartridge. Any suitable or common extractor to engage the cartridge shell may be used, and as guns and cartridges are usually constructed, the shell will be drawn out with little resistance after this first starting of the bolt. As the brace 11 swings against the bolt, a projection 20 on the handle finds a bearing against an abutment 21 at the rear of the bolt, as shown in Fig. 3. The parts having assumed the position described, the continuation of the backward movement of the handle carries the locking brace and bolt directly back, to the open position of the bolt. See Fig. 4. A reversal of the movement carries the handle forward, the projection 20 acting directly against the abutment 21 on the bolt, so that no strain is thrown on the pivot of the locking brace. When the bolt is closed the further forward movement of the handle swings the brace out to locked position, the end of the brace acting against the abutment 15 in the shoe to close the bolt with force. As the handle swings out from the bolt, the projection 20 passes the end of the bolt after the locking brace is engaged in the abutment of the shoe, and then moves forward between the bolt and the brace, thus firmly locking the brace, and at the same time removing the obstruction from the front of projection 6 of the firing pin, so that the pin may strike a blow on the cartridge.

The firing pin, which constitutes the hammer, is caught by the sear 8 as the bolt moves forward, and held back until the trigger is pulled, as illustrated in Fig. 1. This arrangement of firing pin and trigger is not new, and other known devices might be used. The firing pin is caught, however, by the trigger in time to retain its hold on the handle and allow the handle to be swung down and lock the bolt.

The handle is of such form as to furnish a convenient hand grasp and in proximity to the trigger. It may project either at the side or at the bottom of the gun, both constructions being common in that respect. The movement of the hand on the handle is so nearly in a straight line that the departure from such direction is almost imperceptible, and no time is lost in changing the direction of movement in locking or unlocking and sliding the bolt, as in those guns in which the handle is turned to unlock, and then drawn back.

The magazine may occupy any of the usual positions of the box or laterally feeding magazine in the gun, that is, it may open into the bottom or into either side of the receiver, and may feed perpendicularly or horizontally, so far as the principles of operation are concerned. In Figs. 1 and 8 forms of magazine are shown which open upwardly into the receiver, and in Figs. 6 and 7 magazines opening sidewise into the receiver. In each case

it is understood that the cartridges lie side by side, and are fed into the receiver in about the direction of their diameters, and not in the direction of their lengths.

The term "lateral" as here used with reference to a magazine, or to the receiver, applies only to the lateral instead of endwise movement of the cartridges. "Front" and "rear" correspond to the ends of magazine nearest to the muzzle and breech. The "top" of the magazine is the end nearest the entrance to the receiver, and the "bottom" is the end farthest from the entrance to the receiver, and the words up or down correspond. The "sides" of the magazine are the walls connecting the top, bottom and ends. These definitions apply to the magazine, whether straight or curved, vertical, horizontal or oblique, and whether the mouth is at the side or bottom of the receiver.

As applied to the receiver, the terms side, top, and bottom, have definite meaning due to the usual positions of the receiver in firing.

My purpose is to feed a packing case filled with cartridges into the magazine, and pass the case directly through the magazine, leaving the cartridges behind in the magazine.

It is common, as in the Mannlicher gun, to put a cartridge package in the magazine, and permit the empty case to be withdrawn from the magazine after the cartridges have been fired. But this is objectionable, since the cases in which cartridges are packed should be light, so as not to load the soldier with needless weight. Being made of thin metal usually, the cases are liable to indentation and in such case the cartridges become clogged by the packing case against the action of the magazine spring, and the gun is temporarily disabled.

There are other cartridge packages which are put wholly or partly into the magazine or applied to the mouth thereof, and the cartridges are forced from the case into the magazine, when the cases are withdrawn from the loading end of the magazine. To avoid this reversal of movement I have arranged to pass the packing cases right through the magazine, although in the magazine of the present invention the former course may still be pursued in filling the magazine.

Referring now to Figs. 1, 6, and 7 it will be seen that the magazine 30 has an opening 31 near the bottom and at the rear end of the magazine. The rear wall 32 of the magazine extends down far enough to guide all the cartridges in the magazine, but the side walls 33 are broken away as much as may be necessary to permit the fingers to grasp a package while in the magazine through said opening, the rear wall being narrowed to prevent its interfering with the fingers. The bottom of the magazine is broken away at the rear end and the rear wall may be continuous with the trigger guard.

Fig. 9 shows the general outline of a car-

tridge package, such as may be used; but as a great variety of cartridge packages are already known, and as the magazine may be easily adapted to receive any one of several packages without change in the magazine, it is not deemed necessary to limit the invention to its application to any particular package.

Fig. 6 shows graphically the manner of passing the package into the magazine. If the follower 40 be not already depressed, it will be forced down by the bottom of the cartridge in the open bottomed package *a*, until the follower lies against the bottom of the magazine proper. The spring gate 35 at the top of the magazine consists of a leaf which swings out of the way as the package passes into the magazine, and swings out over the top cartridge when the package is fully in the magazine. (If the gate be located at the side of the magazine farthest from the receiver, as in my Patent No. 230,823, of August 3, 1880, the operation of the gate on the top cartridge to stop the rise of the column will be the same.)

When the package is in the magazine, the same hand which inserted the package is quickly carried below the magazine, and the package is grasped and the casing withdrawn from the bottom of the magazine. The follower 40 stops the cartridges from going with the case, and the gate 35 retains them at the top of the magazine.

The cartridge packing case *a* is of sheet metal, having side and rear walls, open at top and bottom and front end, and having retaining catches *b b* which extend far enough over the cartridges to hold them in transportation—the flange of the cartridges being held in the enlargement *c* of the case. The enlargement extends far enough to prevent forward movement, even of the cartridges nearest to the exit, and not to obstruct their escape past the lips. The side walls of the case may be checked or roughened, as at *d*, to give a firmer hold-in withdrawing the case. The rear wall *e* may be strengthened as in Fig. 11, to prevent collapse of the packing case under the grasp of the fingers.

Fig. 10 shows a form of packing case *f* similar to one now in use in a German magazine gun, for headless cartridges, the inwardly extending corrugation *g* projecting into the groove which takes the place of the head used in most cartridges. Such a case can be used by my method, in a properly constructed magazine. The case can be fed into the magazine either end up. In this case the groove would extend clear to the edges, or near enough to prevent forward movement of the cartridge lying nearest to the exit.

Fig. 8 illustrates the position of the hand in withdrawing the cartridge case, which is passed in at the top of the magazine precisely as at present. The only change necessary to adapt the present form of magazine to my method of loading, is the slight cutting away of the magazine at 31, and the insertion of

the spring-cartridge stop 36, while the spring catch now used in rear, to hold the case in, would be abandoned.

In Fig. 16 the cartridge holder *h* is shown as merely a plate with its edges turned in to cover the flanges of the cartridges. The spring catches *l* and *l'* retain the cartridges by projecting over the flanges. When such a package is used, the magazine 30^a, Fig. 15, should have a recess *k* in its rear wall, so that the lower catch *i* may pass through freely and remain set, while the top catch *i'* will be pressed inward to let the cartridges pass when the case is pulled out at the bottom.

It will be readily understood that by slotting the side of the magazine, the case can be carried directly through the magazine by a continuous movement, without removing the hand entirely from the packing case. Fig. 13 shows in perspective a magazine 30^b of this character, the magazine having a slot *m* at the side. The finger or thumb of the loading hand can follow the package with a continuous movement, ejecting the package at the bottom of the magazine.

Fig. 14 gives a plan of a magazine 30^c, having a narrow slot *n* at the side. The packing case *o* has a projecting part *p* which extends through the slot *n* at the side of the magazine, and the loading hand need not quit this projection, but may press the case directly through the magazine.

These examples show how my method of inserting cartridges may be employed with many different forms of guns, some of which are well known in the art, with but slight changes in the gun.

When it is not desired to feed a full package of cartridges into the magazine, a single cartridge may be fed in, as is usual.

Whether a single cartridge or a package is fed into the magazine, it is more convenient to have the follower depressed, so that the cartridges or package need not be forced against the resistance of the spring of the follower.

Several mechanisms are known by which the follower may be forced back, and the cartridges dropped in without resistance therefrom, but generally the follower is forced back by the hand which loads the cartridges, before inserting them, and released afterward by the same hand. This causes some delay, and puts all the labor on one hand. By locating the mechanism which depresses the follower, within reach of the hand which holds the gun while loading, (usually the left hand) an advantage is gained in this respect. Fig. 1 shows the follower 40 supported on a lever 41, which lever is thrown up by a spring, as 42, in any usual manner. The lever 41 has an arm 43 which projects forward from the magazine, into proximity with the hand which holds the gun at about the center of gravity of the gun. The forestock of the gun may have a mortise 44, into which a turned up end 45 of the lever 43 will project when the fol-

lower is thrown down, and this mortise may serve as a guide to press the lever a little to one side, as will be hereinafter explained, and also as a cover to the end of the lever. It is found by test that a lever so located can be manipulated by the fingers of the left hand which holds the gun, without impairing the facility with which the gun is brought to convenient loading position, and without loss of time, as is the case when the right hand must depress the follower, and then reach to the box for cartridges, afterward releasing the follower.

In Fig. 12 the magazine 30^d is shown in perspective, partly broken away. The follower 40 is carried by lever 50, which is pivoted in front of the magazine, and projects through a slot 51 in the front wall of the magazine. The slot 51 is slightly inclined, so as to throw the lever slightly to one side as the follower is depressed to near the bottom of the magazine. The pivotal connection, as at 53, is loose enough to permit this slight side movement, and spring 54 tends to raise the follower. The follower is depressed by the fingers of the left or gun-holding hand acting on the arm 55 of lever 50, and when fully depressed the follower may be held down by a spring catch, as 56, engaging said lever and also under control of the same hand, and a reverse shoulder on the same catch may prevent too much accidental depression of the follower. The inclined slot 51 directs the follower to the side of the carrier for the purpose of enabling a cartridge to be fed in at the bottom of the magazine if desired. The side 60 of the magazine is cut away at the bottom, so that when the cartridge follower is fully depressed a cartridge may pass into the opening above the follower; but when the follower is released it moves sidewise toward the opening 60, as well as upward, and the cartridge is then held from escaping from the opening 60. Of course the same result would follow from the rising of the follower, but by combining a sidewise and upward movement of the cartridge less space is required in the magazine. The cartridges may be pushed or rolled in from a packing case if desired.

In Fig. 17 a modification of the lever which controls the follower is shown. The lever 70 supports the follower 40, and projects from the front of the magazine, has its arm 72 in position to be reached by the fingers of the operator, and a projection 73 acts on the lever 70 to depress the follower. The spring may be any usual spring.

From the foregoing it will be seen that my magazine may be loaded singly or from packing cases, through either top or bottom, or by means of a packing case passed directly through the magazine. Also that the magazine follower may be depressed by the other hand of the operator while one hand is reaching for cartridges.

As the vertical magazine becomes a transverse magazine when the gun is turned on its

side, it is evident that many if not all the features of construction will apply to guns of that class. I intend the generic claims herein to cover guns of that class.

Fig. 18 illustrates a modification of the bolt device in which the bolt 3^a has a curved recess in which the end of locking brace 11^a has a pivotal bearing. The outer end of the locking brace has a shoulder 11^b, which engages a cam surface 90 in the receiver, to give the first backward movement to the bolt as the brace unlocks. The handle piece 13^a has a telescopic movement relatively to the locking brace, as has been described. The projection 13^b on the handle piece can swing between the shoulder 3^b and the abutment 3^c on the bolt, as the bolt is unlocked, so that the handle piece has a direct bearing against the bolt in moving either forward or backward. The hook point 6^a of firing pin 5^a will be cammed back by projection 13^b in unlocking the bolt.

I claim—

1. In a breech loading gun, the combination of the barrel, the receiver, the bolt reciprocating in the receiver, the locking brace pivotally connected to said bolt in position to engage an abutment in the receiver, and the handle having extensible connection with the locking brace, and a shoulder engaging the bolt independently of said brace, all substantially as described.

2. The barrel, the receiver, and bolt reciprocating in the receiver, the locking brace pivoted to the bolt, and a handle connected to the locking brace and having a longitudinal movement relatively thereto, said handle having a projection in position to engage the firing pin and a projection having direct engagement with an abutment on the bolt independently of the locking brace, all in combination.

3. The gun having a receiver and bolt substantially as described, and a firing pin having a projection, the locking brace pivotally connected to the bolt, the handle connected to the locking brace to have a slight independent longitudinal movement, said handle having a projection which swings between the projection on the firing pin and the body of the bolt, to hold the firing pin retracted as the bolt is drawn back, the parts in combination substantially as described.

4. In a fire arm the bolt, the firing pin having a projection, the brace pivotally connected to the bolt, the handle connected to the brace and having a recess therein, in combination with the receiver, whereby when the handle is swung toward the bolt the projection on the pin engages said handle and holds the handle into proximity with the bolt, all substantially as described.

5. The receiver, bolt, and locking brace pivotally connected with the bolt, and the handle connected to the brace and provided with a projection which has a direct bearing against the bolt, to press said bolt forward in closing

the breech, (independently of the pivot) in combination with the necessary operative adjuncts, substantially as described.

6. The combination with the receiver, bolt, and brace pivotally connected to the bolt, of the handle connected to the brace and having longitudinal movement relatively thereto, said handle having a projection which bears against the bolt and serves to hold the brace in extended position when the handle is in forward position, the parts and necessary adjuncts combined substantially as described.

7. The receiver the reciprocating bolt and locking brace pivotally connected thereto, the handle extensibly connected to the brace and having a side projection with a cam surface and a recess at the rear thereof, and the firing pin having a hook at the rear end which engages and is engaged by the projection on the handle as stated, in combination with suitable adjunctive parts, substantially as described.

8. In a magazine gun, the magazine having a passage through which a cartridge package case may pass without obstruction, and a detent in the line of movement of cartridges in said case, in combination with an open ended cartridge package case constructed to pass directly through the magazine leaving the cartridges therein, substantially as described.

9. The gun having a magazine opening into the receiver, and a follower therein and having a slot extending the entire length of the magazine, in a direction transverse to the cartridges, so that the finger of the operator or a projection on the package may pass unobstructed through said slot.

10. The magazine opening laterally into the receiver, and the single leaf swing gate pivoted at the mouth of the magazine and at the side next the receiver, in combination substantially as described.

11. The magazine opening laterally into the receiver and having a slot at the side farthest from the receiver extending the entire length of the magazine transverse to the cartridges, in combination with the gate at the mouth of the magazine at the side opposite said slot.

12. The magazine gun having a magazine provided with a follower and with front and rear walls to guide the cartridges, and with the sides cut away to permit the grasp of the packing case through said cut away portions.

13. The magazine opening laterally into the receiver, and having a slot extending through one side for the entire width of the magazine and transverse to the cartridges.

14. The magazine opening laterally into the receiver, the sides partially cut away, and the rear wall narrowed to permit the grasp of the fingers on a case within the magazine.

15. The magazine having a spring follower, a front wall and a rear wall to guide the cartridges, and sides open in front of the lower part of the rear wall, to permit the grasp of the cartridge package, substantially as described.

16. The combination with the magazine opening laterally into the receiver open at both ends and having a recess substantially as described, of the packing case having spring catches which are allowed to expand into the recess of the magazine as the packing case is passed through the same, all substantially as described.

17. The gun having a laterally feeding magazine, open at both ends to pass the cartridge case, and having a side recess near the end of the magazine farthest from the receiver, into which opening a cartridge may be entered when the follower is depressed, substantially as described.

18. The magazine of substantially the length of the cartridges and opening laterally into the receiver and a side loading opening near the end farthest from the receiver, sufficient to receive a cartridge, in combination with a spring follower which may be depressed beyond the side loading opening, substantially as described.

19. The gun having a magazine of substantially the length of the cartridges and opening laterally into the receiver, the loading opening at the end of the magazine farthest from the receiver, the spring follower, and a guide acting to force the follower slightly to the side of the magazine away from said opening when the follower is depressed, the parts combined substantially as described.

20. The magazine of substantially the length of the cartridges and having a loading opening at one side and a slot at its front inclined toward the side of the magazine, the follower lever passing through said slot, and a spring follower connected to said lever, all combined substantially as described.

21. The magazine and spring follower, and the exposed follower lever extending outside the magazine into position to be operated by the hand of the operator while supporting the gun at about the center of gravity thereof, substantially as described.

22. In a magazine gun, the magazine of about the length of a cartridge and opening laterally into the receiver, the spring follower in said magazine, and the exposed follower lever extending beyond the magazine into position to be operated by the fingers of the hand which supports the gun in usual position, all combined.

23. In a magazine gun, the magazine opening laterally into the receiver, the spring follower, the follower lever extending outside the magazine and having its outer end turned toward the stock, and the stock recessed to receive the end of said lever, all combined substantially as described.

24. In a magazine gun the magazine feeding laterally into the receiver, the spring follower, the follower lever projecting beyond the magazine, and a detent in position to hold the spring follower in depressed position.

25. In a magazine gun, the magazine feeding laterally into the receiver, the spring fol-

lower therein, and the compound follower lever projecting beyond the magazine, all combined substantially as described.

26. The combination with the receiver and reciprocating bolt, of the locking brace, the handle connected to said brace, and a projection on the handle engaging directly with the bolt when the brace is unlocked, to move the bolt either forward or rearward, all substantially as described.

27. A magazine gun having a magazine opening into the receiver, and having an unobstructed passage way through one side wall of the gun and magazine in a direction transverse to the cartridges, through which passage a projection on the feed clip may pass.

28. The magazine opening at one side into the receiver, and having a loading mouth in proximity to the receiver, and a loading gate interposed between the mouth of the magazine and receiver, in combination substantially as described.

29. In a magazine gun, the magazine having a passage through which a cartridge package case may pass without obstruction, and a detent in the line of movement of cartridges in said case, in combination with a cartridge package case constructed to pass through the magazine, and having a yielding catch for the cartridges whereby the cartridges remain in the magazine when the package case is passed therethrough, substantially as described.

30. The gun having a magazine opening into the receiver and recessed in its sides, and a detent partially closing the lower end thereof, in combination with a clip which enters the magazine, and extends opposite the recesses in the sides of the magazine when the clip is fully entered into the magazine, substantially as described.

31. The magazine gun having its follower lever prolonged in front of its pivot, said lever provided with an operating finger piece in front of said pivot, substantially as described.

32. The gun having a magazine constructed to hold cartridges side by side therein and opening laterally into the receiver at one end,

and having an opening near the end farthest from the receiver, in combination with a follower lever pivoted in the frame, and having a finger piece connected thereto by which the follower may be retracted by the grasp of the hand without shifting said hand from its usual position in holding the gun, substantially as described.

33. The gun having a magazine and a follower therein, and a follower lever connected to said follower, and provided with means, substantially as described, for depressing the follower by the action of that hand which supports the gun, while supporting the gun in usual and natural position.

34. A magazine gun having a magazine opening into the receiver, said magazine having a slot in the side farthest from the receiver, which slot or passage is unobstructed from end to end of the magazine.

35. The magazine gun having a magazine opening into the receiver and having an unobstructed transverse opening through one side, in combination with a cartridge holding clip constructed to pass through said magazine, substantially as described.

36. The magazine gun having a magazine opening into the receiver and having an unobstructed passage or slot through one side, in combination with a feed case constructed to pass through the magazine, and having a side projection which moves in said slot, when the clip is so passed, substantially as described.

37. The magazine gun having a magazine opening into the receiver, said magazine having an opening at the bottom, and having its side walls cut away at the lower part so that a clip within the magazine may be grasped through said cut away portions and withdrawn from the bottom of the magazine, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW H. RUSSELL.

Witnesses:

M. L. B. RUSSELL,
C. C. KURTZ.