F. T. RUSSELL.
SHELL EJECTOR FOR GUNS.
APPLICATION FILED FEB. 18, 1911.

991,375. **Patented May 2, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.

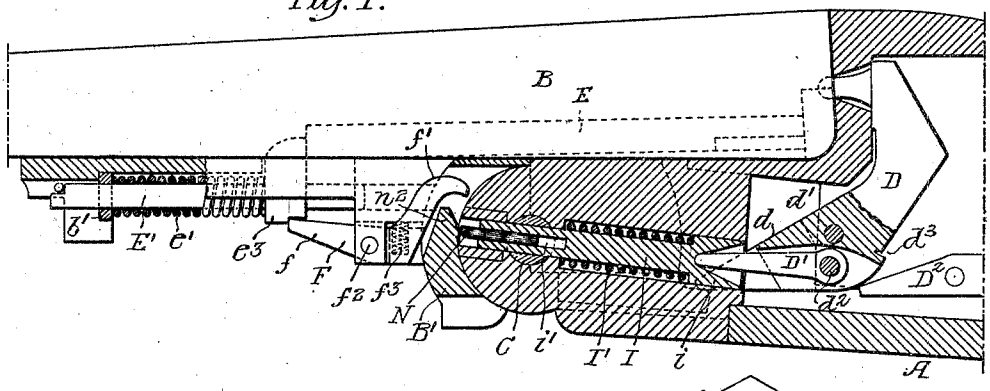


Fig. 2.

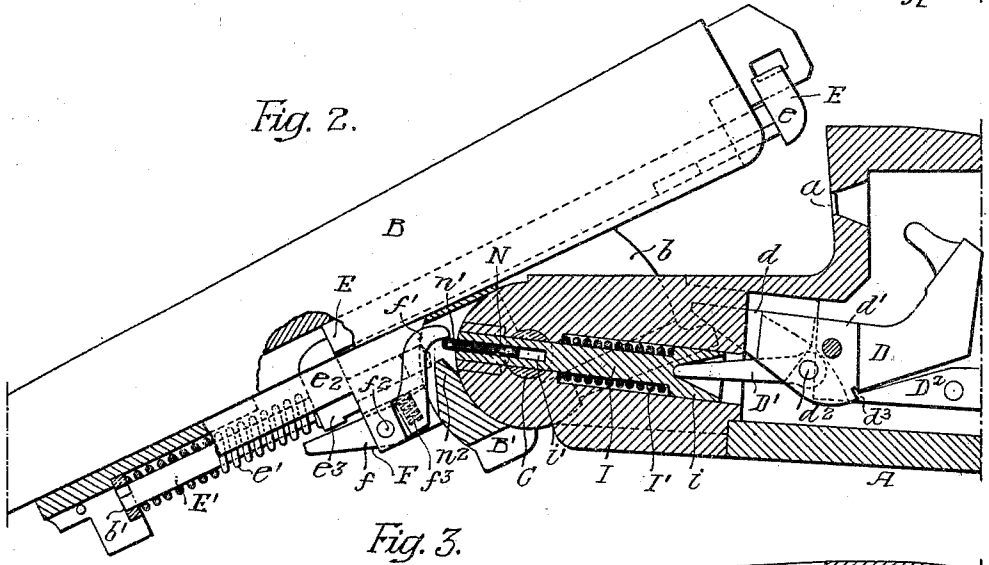
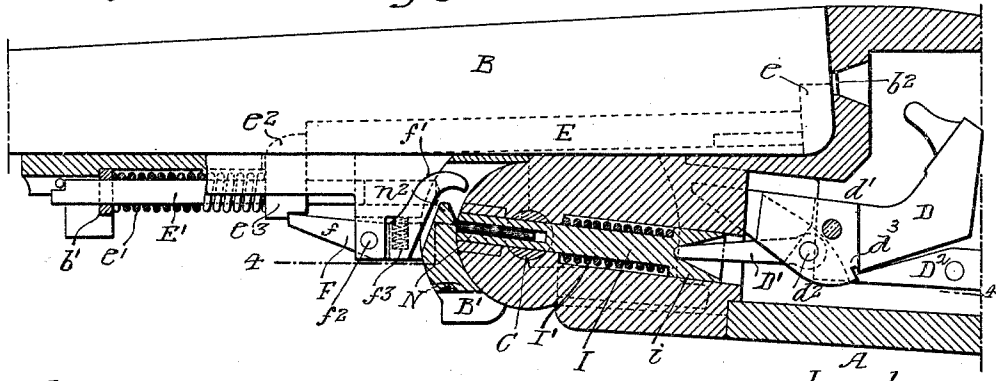


Fig. 3.



Witnesses.—
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Wallis A. Burrowes

Inventor.—
Frederick T. Russell.
by his Attorneys.—
Howson & Howson

42. FIREARMS,
Breech-loading,
Upward Tilting Breech,
Ejectors, Hammer.

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2 SHEETS—SHEET 2.

Fig. 4.

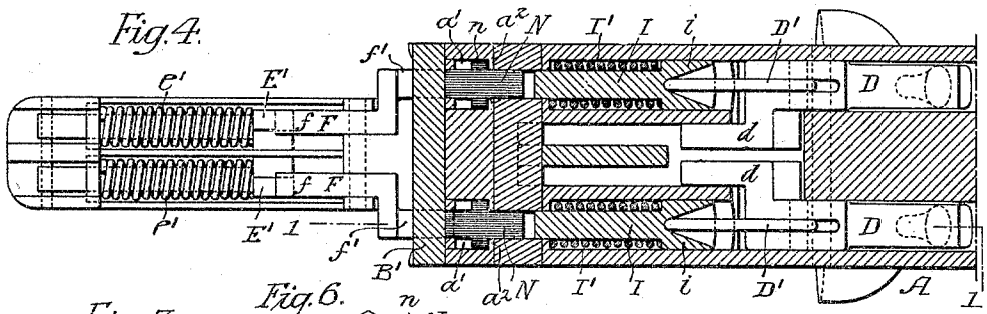

Fig. 6.

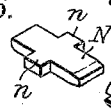

Fig. 5.

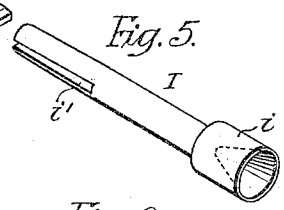

Fig. 7.

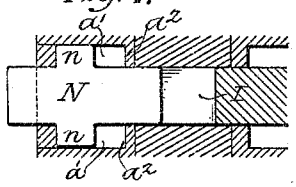

Fig. 8.

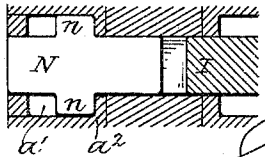

Fig. 9.

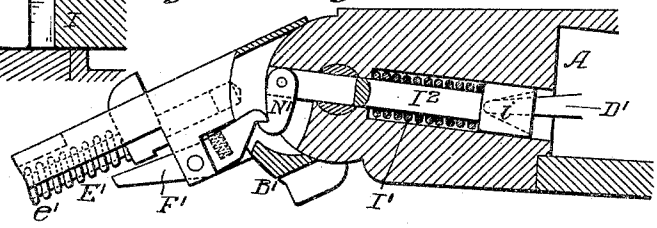

Fig. 11.

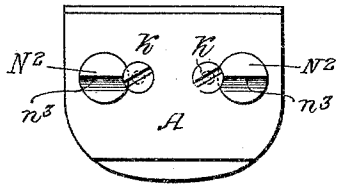

Fig. 10.

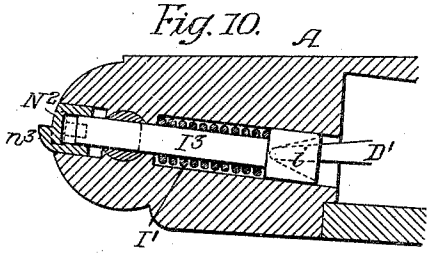

Fig. 12.

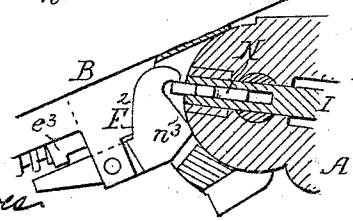

Fig. 13.

Witnesses.—
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Wells A. Burrowes.

Inventor.—
Frederick T. Russell.
by his Attorneys.—
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Breech-loading,
Upward Tilting Breech,
Ejectors, Hammer.

UNITED STATES PATENT OFFICE.

FREDERICK T. RUSSELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO A. H. FOX GUN COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SHELL-EJECTOR FOR GUNS.

991,375. Specification of Letters Patent. Patented May 2, 1911.

Application filed February 18, 1911. Serial No. 609,307.

To all whom it may concern:

Be it known that I, FREDERICK T. RUSSELL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Shell-Ejectors for Guns, of which the following is a specification.

This invention relates to certain improvements in shell ejecting mechanism for breech loading break down guns, particularly of the double barreled type.

The object of the invention is to so construct the mechanism that the ejector will eject both empty shells when both barrels have been fired or in the event of only one barrel being fired, then only one empty shell of that particular barrel will be ejected.

The invention also relates to certain detailed improvements in the ejecting mechanism which will be described hereafter, reference being had to the accompanying drawings, in which;—

Figure 1, is a longitudinal sectional view of a double barrel breech loading gun on the line 1—1 Fig. 4, showing the barrel in outside view; Fig. 2, is a view similar to Fig. 1, illustrating the gun in the broken position; Fig. 3, is a view similar to Fig. 1, showing the gun after the barrel has been returned to its normal position and the hammer cocked; Fig. 4, is a sectional plan view on the line 4—4, Fig. 3; Fig. 5, is a detached perspective view of the plunger; Fig. 6, is a detached perspective view of the trip; Figs. 7 and 8, are diagram views illustrating the movement of the trip plate; Fig. 9, is a modification of the trip mechanism; Figs. 10 and 11, are views of another modification of the trip mechanism; Fig. 12, is a detached perspective view of the details of the trip mechanism shown in Fig. 10, and Fig. 13, is a view showing the retracting cam face on the sear.

A is a portion of the frame of the gun. B is the barrel hinged to the front part of the frame by a pivot pin C. Depending from the barrel B is the cocking lug b which engages one arm d of the firing hammer D when the barrel is moved to the position illustrated in Fig. 2, so as to recock the firing hammer. This firing hammer is pivoted at d^2 and is retained in the cocked position by the sear D^2 which engages a retaining notch d^3 in the usual manner.

E is the ejector having a head e and E′ is the ejector hammer held in its retracted position by a sear F against the pressure of a spring e', the spring being confined between the head e^2 of the ejector hammer and a lug b' on the foreend iron carried by the barrels. This head has a notch e^3 which is engaged by an arm f of a pivoted sear F when the ejector hammer is pushed forward as illustrated in Fig. 1. The forward end of the ejector E bears against the head e^2 of the ejector hammer and the ejector is so proportioned that its head e will contact with the breech face a and on closing the barrels will be forced forward, causing the ejector to move toward the ejector hammer and to force it forward against the pressure of its spring to the position illustrated in Fig. 1.

It will be understood that this particular gun is what is known as a double barreled breech loading gun and the mechanism above described is duplicated; one set of mechanism being for the purpose of discharging the fired shell from one barrel of the gun and the other from the other barrel of the gun. The mechanism which I will now proceed to describe is also duplicated.

I is a plunger having a head i at the end in which is a conical recess to receive the end of the toggle D′ pivoted at d^2 to the firing hammer D. Mounted between the head i and the shoulder on the forward end of the frame A is a spring I′ tending to force the plunger rearwardly. The forward movement of the plunger is given to it by the cocking of the firing hammer. In the forward end of the plunger I is a slot i', as clearly illustrated in Fig. 5, and mounted in this slot is the trip plate N, Fig. 6. This trip plate has laterally extending lugs n—n, which travel in slots a' in the frame A. The rearward movement of the plate is limited by the lugs coming in contact with the shoulders a^2 on the frame, as illustrated in Figs. 4 and 8, which show it in the inoperative position. The slot i' in the plunger I is so proportioned to the thickness of the trip plate that the trip plate must be forced into the slot and is held therein by spring tension or friction, and while this friction is sufficient to carry the trip plate forward when the plunger is moved forward, as illustrated in Fig. 7, which shows it in the operative position, it will not prevent the rear-

ward movement of the plunger due to the pressure of its spring when the trip plate is stopped on its rearward movement, by coming in contact with the shoulders a^2.

The sear F is pivoted at f^2 and has a hooked arm f' in the present instance which extends through the foreend iron B′ and close to the curved surface of the frame A. A spring f^3 tends to hold the sear in the position illustrated in Fig. 1, in contact with the shoulder e^3 on the head of the ejector hammer E′.

n^2 is a cam surface on the end of the foreend iron for forcing the trip plate N back into the inoperative position after it has been extended and as the barrel is returned to the position illustrated in Fig. 3. The end n' of the trip plate is projected to operative position on the forward movement of the plunger I into the path of the arm f' of the sear F as the barrel is turned on the pivot C to the position illustrated in Fig. 2, forcing the sear to release the ejector hammer, which will be moved by its spring and its head will contact with the end of the ejector causing it to eject a fired shell from one of the gun barrels. When the gun barrel is returned to the position illustrated in Fig. 3, the end n' of the trip is forced to the inoperative position into the slot of the plunger by contact with the cam surface n^2. This brings the lugs n of the trip plate against the shoulders a^2, preventing its further rearward movement. When the plunger I is released it is moved rearwardly by its spring when the firing hammer strikes the blow to discharge the cartridge, as in Fig. 1. This movement projects the trip plate beyond the end of the plunger I as the plate is held by the shoulders a^2, so that when the plunger is forced forward on the cocking of the hammer the trip is carried with it and the end n' of the trip extends into the path of the arm f' of the sear F in the operative position, causing the sear to release the ejector hammer, as before described. This mechanism is duplicated, and, as above mentioned, one set of mechanism is entirely independent of the other so that when one barrel is discharged then the shell of that barrel is the only one ejected, whereas, when both barrels are discharged, then both shells are ejected, or if neither is fired, then neither one is ejected. By this arrangement one barrel can be discharged and reloaded and the gun broken as many times as desired without affecting the cartridge or the shell in the other barrel.

In Fig. 9, I have shown a modification of my invention in which the plunger I^2 is slotted at the outer end and mounted in the slot is a pivoted trip plate N′ in the form of a pawl having a tooth, which is arranged to engage one arm of the sear F′. This pawl trip plate is held by friction in the slot of the plunger I^2 so that when the plunger is retracted by the action of its spring, the pawl will strike a portion of the frame A and will be forced to turn on its pivot and as the plunger is moved forward again the pawl trip plate will be frictionally held in the slot of the plunger and its tooth will project when in the operative position into the path of the arm of the sear F′ and will engage the sear when the gun is broken. On the return of the barrel to its closed position the projection on the cam surface of the foreend iron will push the pawl trip plate back out of its path to the inoperative position.

In Figs. 10 and 11, I have shown a still further modification of the invention in which the plunger I^3 is slotted at its outer end forming forks and instead of being contracted the forks are bent away from each other and are adapted to a cavity in the sliding trip piece N^2; the forks binding upon the walls of this cavity holding the trip piece in frictional contact with the plunger. The trip piece has a projection n^3 which engages the sear F′. The outward movement of the trip piece N^2 is limited by the head of a screw k, illustrated in Fig. 11; the trip piece being notched as illustrated in Fig. 12, to receive this head. The rear end of the trip piece strikes the shoulder at the base of the cavity in which it is mounted when the plunger is forced back by its spring and as the trip piece is free to slide in its cavity, it will be carried forward by the plunger when said plunger moves forward again due to the frictional contact of the same, accomplishing the same purpose as that of the trip plate illustrated in Fig. 1.

In Fig. 13, I have shown the cam face n^3 on the sear F^2, the cam face acts upon the trip N and forces it back into the inoperative position when the barrel is returned to its normal position.

In the claims, I have referred to the ejector, meaning thereby an ejector in its broad sense, including the ejector proper and the ejector hammer and it will be understood that different types of ejectors and different forms of sears for retaining the ejector in the retracted or normal position may be used without departing from the essential features of the invention. Furthermore, the trip may be frictionally confined to the plunger in many different ways and in the drawings I have shown the simplest forms only; the essential feature of the invention being the trip so connected to the plunger that it will be carried forward with the plunger to the operative position so that it may release the ejector when the gun is broken and allow it to be positively retracted when the gun is returned to its normal position. When the plunger is moved back by its spring the trip plate will be retained by

shoulders, allowing the plunger to have a further movement, thus re-setting the trip plate and allowing its end to project beyond the plunger so that when it is carried forward again by the plunger its projecting end will be in position to actuate the sear or other device to release the ejector.

While I have illustrated my invention in connection with a double barrel gun, it will be understood that the invention may be used on a single barrel gun without departing from my invention.

I claim:—

1. The combination in means for ejecting fired shells from guns, of an ejector, a sear for retaining the ejector in its normal position, a trip for said sear, means for frictionally engaging said trip to move it into operative position, and means for positively retracting the trip.

2. The combination in means for ejecting fired shells from guns, of an ejector, a sear for retaining the ejector in its normal position, a plunger actuated by the firing hammer, and a trip arranged to act upon the sear and to release the ejector, said trip being in frictional contact with the plunger whereby it will be carried into operative position with the plunger on its forward movement.

3. The combination of an ejector, a sear for retaining the ejector in its normal position, a plunger, a firing hammer, said firing hammer actuating the plunger to move it forward, a spring acting against the movement of the firing hammer, a trip held in frictional contact with the plunger whereby it will be moved forward with the plunger, and means for limiting the rearward movement of the trip as the plunger is retracted by its spring, said trip, when extended, being in position to actuate the sear to release the ejector.

4. The combination of an ejector, a sear for retaining the ejector in its normal position, a sliding plunger slotted at its forward end, a trip plate mounted in the slot, the friction of the sides of the slot being sufficient to allow the plate to be carried forward with the plunger, and means for stopping the rearward movement of the trip plate and allowing the plunger to continue its rearward movement whereby the trip plate is re-adjusted in the slot.

5. The combination of an ejector, means for retaining the ejector in its normal position, a reciprocating plunger, a stop, a trip held in frictional contact with the plunger whereby it will be moved with the plunger as the plunger is moved forward and will engage the means which holds the ejector, means for positively retracting the trip, and a stop to limit the movement of the trip plate while the plunger completes its return movement.

6. The combination of an ejector, a sear for retaining the ejector in its normal position, a firing hammer, a plunger actuated by the firing hammer, a spring for the said plunger, the plunger being slotted at the forward end, a trip plate mounted in the slot, a stop to limit the rearward movement of the trip plate, and a foreend iron having a cam surface acting upon the trip plate to positively return it after it has been moved forward to release the sear.

7. The combination in the frame of a gun, of a barrel pivoted thereto, a firing hammer mounted in the frame, a plunger also mounted in the frame and moved forward by the firing hammer, a spring for retracting the plunger, said plunger being slotted at its forward end, a trip plate held frictionally in the slot so that it will move with the plunger, a stop to limit the rearward movement of the trip plate when the plunger is retracted, an ejector, and a sear retaining the ejector in its normal position, the trip plate, when the gun is broken, being carried forward and into the path of the sear so as to release the sear and the ejector.

8. The combination in a gun, of a frame, a barrel pivoted thereto, a firing hammer mounted in the frame, a plunger also mounted in the frame and actuated in one direction by the firing hammer, a spring acting to retract the plunger, said plunger being slotted at its forward end, a trip plate mounted in the slot and having laterally extending lugs projecting beyond the plunger, stops in the path of said lugs to limit the return movement of the trip plate when the plunger is returned to its normal position, an ejector, and a sear for retaining the ejector in its normal position, said trip plate actuating the sear to release the ejector.

9. The combination in a gun, of a frame, a barrel pivoted thereto, an ejector mounted on the barrel, a sear also mounted on the foreend carried by the barrel and arranged to hold the ejector in its normal position, a firing hammer, means for cocking the firing hammer when the barrel is turned on its pivot, a plunger mounted in the frame and moved forward on the cocking movement of the firing hammer, a spring for retracting the plunger, said plunger being slotted at its outer end, a trip plate mounted in the slot and extending beyond the end of the plunger when in its forward position and into position to actuate the sear, with a stop to limit the return movement of the trip plate and to allow the full return movement of the plunger whereby the trip plate is re-set in the plunger.

10. In a breech loading break down gun of the shell ejecting type, a sear tripping device which is moved to operative position by the cocking of the firing hammer, for the purpose of tripping the sear as the bar-

rels are broken down, and is moved to inoperative position when the barrels are closed regardless of the position of the firing hammer.

11. In a breech loading break down gun of the shell ejecting type, the combination of an ejector hammer and sear, and means for tripping said sear consisting of a sliding plunger located in the gun frame, the forward movement of the plunger serving to set the trip in operative position in the path of the sear as the gun is broken down, and means for moving the trip into inoperative position as the barrels are closed, substantially as and for the purposes set forth.

12. In a breech loading break down gun of the shell ejecting type, a sear tripping device which is set in operative position when the firing hammer is being cocked, and returned to inoperative position as the barrels are closed, substantially for the purpose set forth.

13. In a breech loading break down gun of the shell ejecting type, a sear tripping device carried by the gun frame which is set in operative position when the firing hammer is being cocked, and returned to inoperative position as the barrels are closed, substantially for the purpose set forth.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FREDERICK T. RUSSELL.

Witnesses:

JOHN W. ARMSTRONG,

ANSLEY H. FOX.