(No Model.)

J. M. BROWNING.

MEANS FOR AUTOMATICALLY REMOVING UNCONSUMED PRODUCTS FROM GUN BARRELS.

No. 543,567. Patented July 30, 1895.

FIG. I.

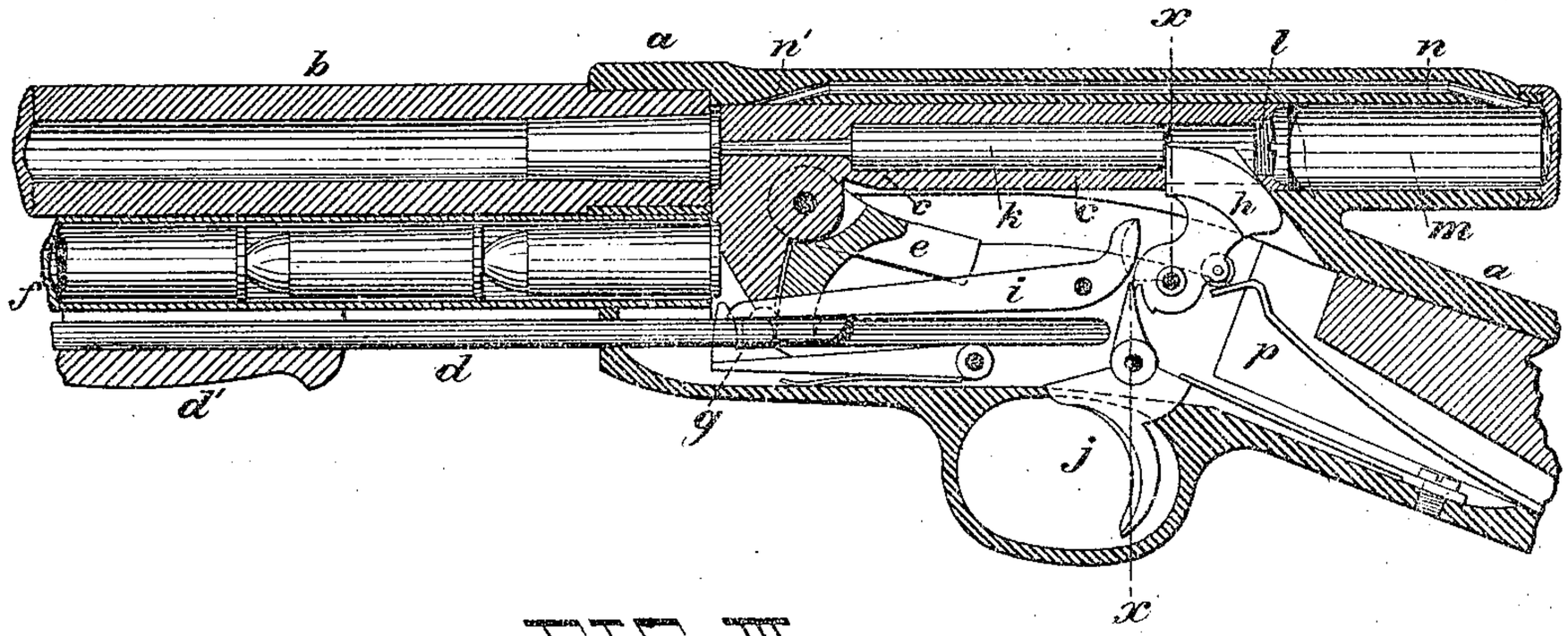


FIG. II.

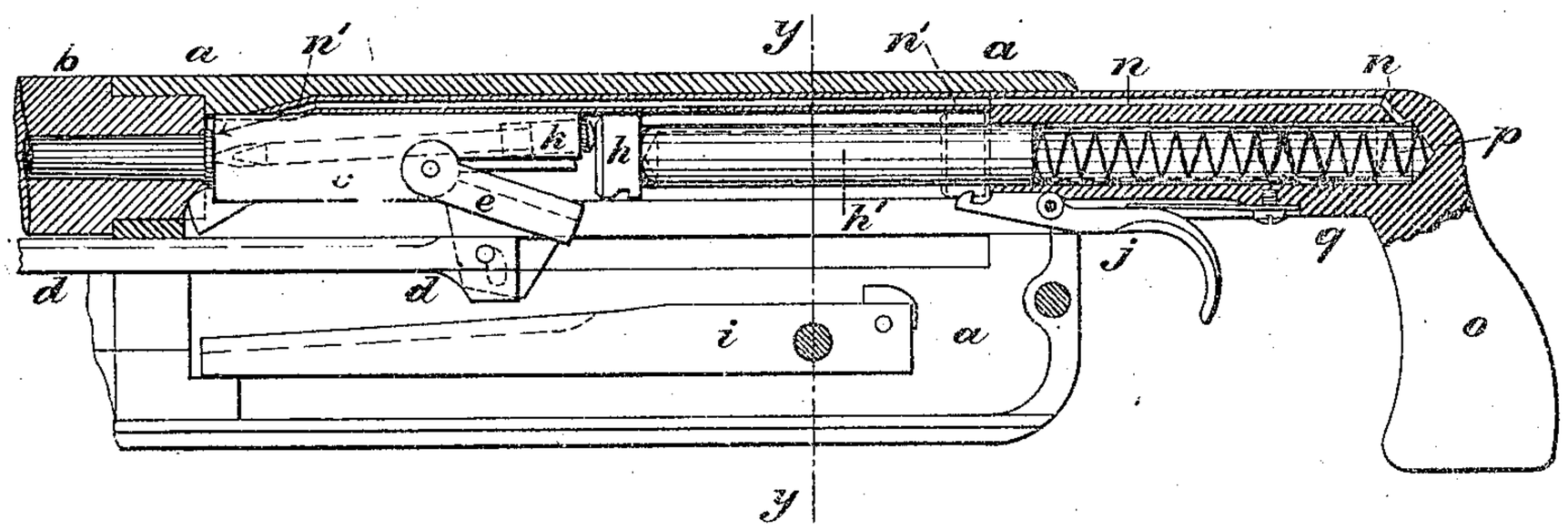


FIG. III.

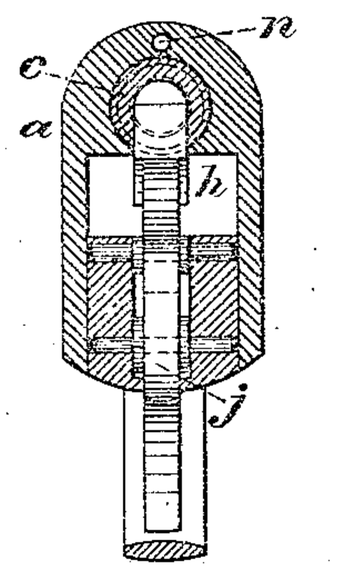
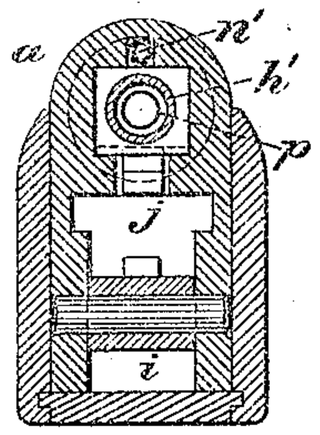


FIG. IV.



Witnesses.

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UNITED STATES PATENT OFFICE.

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MEANS FOR AUTOMATICALLY REMOVING UNCONSUMED PRODUCTS FROM GUN-BARRELS.

SPECIFICATION forming part of Letters Patent No. 543,567, dated July 30, 1895.

Application filed April 16, 1895. Serial No. 545,920. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, a citizen of the United States, residing at Ogden, in the county of Weber and Territory of Utah, have invented a new and useful Improvement in Breech-Loading Firearms, of which the following is a specification.

In consequence of the rapidity with which modern firearms may be fired it has become difficult to keep clean the chamber of the barrel, for though the metallic case of the cartridge protects the chamber at the moment of firing any débris of the powder remaining in the case after firing is liable to be deposited in the chamber during the extraction of the cartridge-case. The use of the modern nitro-powders has especially developed this trouble, for as these are more difficult to ignite than the older gunpowder some unburned grains often remain in the cartridge-case and during the extraction fall into the chamber, where their presence causes more trouble, as these grains are hard and tough and cannot be readily crushed. Thus they prevent the entering cartridge from properly filling the chamber.

The object of my invention is to provide a simple but effective device by which, after each shot is fired and before a new cartridge is entered into the chamber, any such deposit in the latter will be removed. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure I is a longitudinal vertical section of the breech of a magazine-gun, showing my improvement applied thereto. Fig. II is a vertical cross-section of the same on line *x x* of Fig. I, looking rearward. Fig. III is a longitudinal vertical section of the breech of a machine-gun with my improvement applied thereto. Fig. IV is a vertical cross-section of the same on line *y y* of Fig. III, looking rearward.

Similar letters refer to similar parts throughout the several views.

My improvement consists in providing in the receiver or in some part connected therewith an air-chamber in which one of the reciprocating members of the breech mechanism fits and moves during the opening and closing of the breech, thus forming an air-pump. From the air-chamber I provide a narrow passage, through which it communicates with the receiver somewhat above and in rear of the chamber of the barrel, and the end of this passage I incline inward, so as to direct the air forced through it downward and forward into the chamber.

In the gun shown in Figs. I and II, the barrel *b* is secured to and opens at its rear into the receiver *a*, in which the breech-bolt *c* is reciprocated by the rod *d* and handle *d'*, the locking-brace *e* connecting the rod with the breech-bolt, the magazine-tube *f*, cartridge-stop *g*, carrier *i*, hammer *h*, and trigger *j* being all of the usual construction.

The breech-bolt *c* contains the firing-pin *k*, and projects rearwardly beyond the latter. A downward opening in the bolt enables the hammer to strike the firing-pin when the breech is closed. In rear of this opening the end of the breech-bolt is cup-shaped, the screw-plug *l* closing the seat of the firing-pin.

In rear of the breech-bolt and in line with it the receiver forms the air-chamber *m*, in which the rear of the bolt closely fits, and which is closed by a suitable cap. From this air-chamber the passage *n* in the top of the receiver leads forward toward the chamber of the barrel.

When in operation the breech-bolt is moved to the rear to open the breech after firing a shot. It compresses the air in the chamber *m*, and as soon as the bolt has moved rearward enough to clear the front end of the passage *n* a strong stream of air is forced through the latter. As the breech-bolt draws the cartridge-case rearward and the latter is somewhat taper, the air is forced into the space between the case and the chamber of the barrel as soon as the flange of the case has passed the opening *n'* of the air-passage, and after the front end of the cartridge-case has passed this opening the stream of air freely enters the chamber and blows any powder left in it out of the front of the barrel. During the return or closing movement of the breech-bolt the passage *n* freely admits air to the chamber *m*.

In the machine-gun shown in Figs. III and IV, the arrangement varies only from the above in that it is not the breech-bolt which acts as the piston of the air-pump, but the striker or hammer *h* performs this service. In this case the breech-bolt *c* is connected by the locking-brace *e* with the actuating-slide *d*,

from which it receives the reciprocating movement. The rear of the receiver is closed by the tubular extension *q*, to which the grasp *o* and the trigger *j* are attached, and in which the stem *h'* of the hammer *h* fits. The hammer *h*, moving in line with and in rear of the breech-bolt, is forced back by the opening movement of the latter, and when released it is forced forward by the spring *p*. The trigger *j* serves to retain the hammer in the rear or cocked position, as shown in dotted lines in Fig. III. The stem *h'* is made hollow, and closely fitting the tube *q* it acts as a piston therein. A narrow passage *n* in the tube *q* leads from it to the receiver, where it communicates with a small tube *n'* seated in a longitudinal groove in the top of the receiver-chamber. The front end of the tube *n'* inclines downward toward the chamber of the barrel. The operation is essentially the same as that described above. The opening movement of the breech-bolt also moves rearward the hammer and compresses the air in the tube *q* and forces it through the tube *n'* into the chamber as soon as the extraction of the cartridge-case opens the same. Forward of the opening *n'* the top of the breech-bolt has a shallow groove which freely admits air to the tube when the hammer moves forward.

It will be understood that any suitable part of the breech mechanism may be made to perform the part of the piston, and that the location of the air-chamber is not of importance as long as during the opening movement air is compressed therein, and a suitable connection is provided to force this air into the barrel-chamber and clear the latter. I therefore do not wish to be understood as limiting my invention to the precise details of construction shown and described, but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a breech loading fire-arm the air pump, consisting of an air chamber in the receiver or attached to the receiver and a piston attached to one of the reciprocating parts of the breech mechanism and fitting in said air chamber, and a passage leading from said air chamber and opening into the receiver in rear of and in the direction of the cartridge chamber.

2. In a breech loading fire-arm the combination of the receiver provided with an air chamber in rear of the breech bolt, a piston attached to the breech bolt and fitting in said air chamber, means to reciprocate said breech bolt, and a passage leading from said air chamber into the receiver in rear of and in the direction of the cartridge chamber of the barrel, substantially as and for the purpose specified.

3. In a breech loading fire-arm in combination with the receiver and the cartridge chamber opening into said receiver, a breech bolt for opening and closing said cartridge chamber, means for reciprocating said breech bolt, a hammer in rear of said breech bolt, said hammer provided with a piston, an air chamber attached to the receiver and a passage leading from said air chamber into the receiver in rear of and in the direction of the cartridge chamber, whereby during the opening movement air is compressed in said air chamber and forced into the cartridge chamber, for the purpose specified.

This specification signed and witnessed this 8th day of April, 1895.

JOHN M. BROWNING.

In presence of—
C. J. EHBETS,
JAS. S. BRYANT.