

(No Model.)

2 Sheets—Sheet 1.

V. & B. CLAIR.

FIREARM WITH BREECH OPERATED BY GASES OF EXPLOSION.

No. 483,539.

Patented Oct. 4, 1892.

FIG. 1.

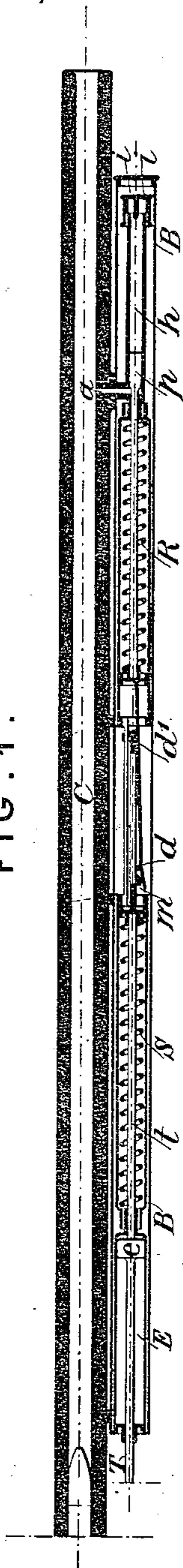


FIG. 2.

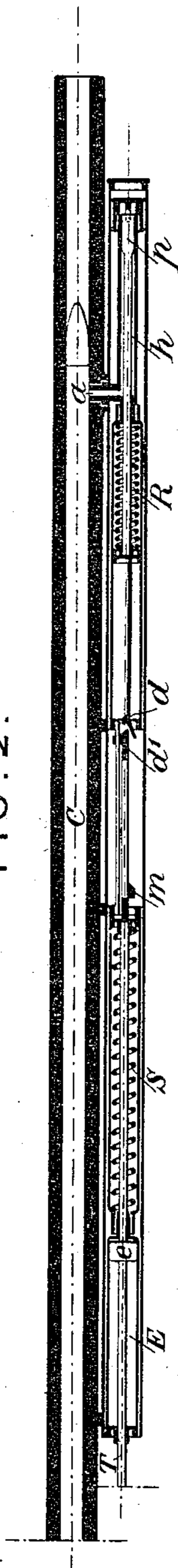
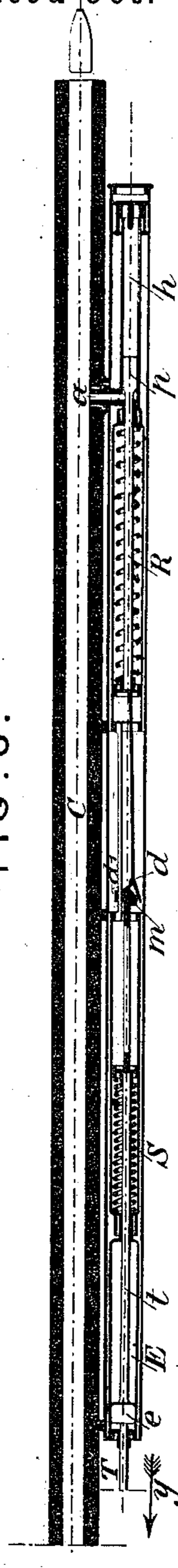


FIG. 3.



Witnesses:

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2 Sheets—Sheet 2.

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*Inventors:*

Victor Clair & Benoit Clair  
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# UNITED STATES PATENT OFFICE.

VICTOR CLAIR AND BENOIT CLAIR, OF ST. ETIENNE, FRANCE.

FIREARM WITH BREECH OPERATED BY GASES OF EXPLOSION.

SPECIFICATION forming part of Letters Patent No. 483,539, dated October 4, 1892.

Application filed March 20, 1889. Serial No. 303,995. (No model.)

*To all whom it may concern:*

Be it known that we, VICTOR CLAIR and BENOIT CLAIR, citizens of the French Republic, both residing at St. Etienne, in the Department of Loire, France, have invented certain new and useful Improvements in Repeating Firearms, of which the following is a specification.

Our invention relates to improvements in repeating firearms; and it consists in a mechanical device suitable for attachment to and with the system of a magazine-gun, making the gun automatic in loading at each discharge, except to pull the trigger, thus enabling the shooter to hold the gun permanently at the shoulder and the eye in the sights, while the reloading of the gun is automatically performed until the magazine is entirely exhausted. We accomplish this object of reloading the gun at each discharge by utilizing the pressure of the explosive gases generated by combustion in the barrel of the gun.

In the accompanying drawings, in which similar letters denote similar parts, Figures 1 and 2 are longitudinal sections of the barrel of a gun provided with our improvements, the former showing the position of the mechanical device for attachment to and with the breech-loading mechanism previous to the discharge of the gun, while the latter shows the position of the said device after the gun has been fired off and the ball just passed a small hole forming a passage for the explosive gas from the interior of the barrel of the gun to a cylindrical tube at the side and parallel with the barrel, into which is fitted a movable rod or piston, which is adapted to actuate the breech-loading mechanism of the gun. Fig. 3 is also a sectional view showing the position of the parts of the said attachment in the moment when the ball has just left the muzzle of the barrel. Figs. 4 to 6 are sectional views of the barrel, showing the essential parts of the said attachment on an enlarged scale and in the positions represented by Figs. 1 to 3, respectively. Fig. 7 is a longitudinal section of the breech mechanism of a magazine-gun of known construction, in connection with our improved attachment; and Fig. 8, a longitudinal section of the butt-end of the stock containing the magazine for storing the cartridges.

At the under side of and parallel with the barrel C is mounted within the "fore-end" of the stock the tube B, inclosing the attachment for transmitting the pressure of the explosive gas generated in the barrel at each discharge upon the breech mechanism. The said reloading attachment consists of the cylinder *h*, open at its front end, into which fits a movable piston *p*, corresponding in size to the bore of the cylinder. The latter is of sufficient thickness to withstand the pressure of the explosive gas entering through the passage *a* from the barrel C and of sufficient length to correspond to the motion of the piston required for actuating the breech-bolt and conveying the cartridge from the magazine into the barrel. The piston *p* is connected to a rod *d*<sup>1</sup>, extending through a suitable hole in the cover at the rear end of the cylinder, where the rod is received within a coiled drive-spring R, bearing at the fore-end of the gun upon the cover of the cylinder *h* and at the breech upon a flange or head of the piston-rod, which in the position of rest bears upon a shoulder within its guideway, so that in any position of the piston *p* the passage or vent *a* shall be free and open to admit the entrance and escape of the gases of combustion from and to the barrel of the gun.

To the piston-rod *d*<sup>1</sup> is rearwardly connected a spring-bar *d*<sup>3</sup>, being provided at its extremity with a sidewise-bent finger *d*<sup>2</sup>, so as to form a projection or nose *d*, which serves to engage with a head *d*<sup>1</sup> of a rod *t*, bearing by means of a collar upon a coiled reciprocating spring S, placed within a cylinder inclosed by the said tube B and resting with its breech upon the bottom of the said cylinder. The rod *t*, which forms a prolongation of the rod *t*<sup>1</sup>, extends through the hind bottom of the said cylinder into another cylinder E, in which is fitted a piston or flange *e* of the rod *f*, serving as a guide-block for the latter, as well as for the hereto-connected rod T. This rod T is provided at its free rear end with a cross-head or piston *a*<sup>\*</sup>, which is guided within the tube B and adapted to lock with a spring-hook *r* and through it to perform the function of loading, as will be described hereinafter.

The first time the gun must be loaded in the usual way by hand, whereafter the several parts of the mechanism will occupy the posi-

tion shown in Figs. 1 and 4. At the instant the trigger is pulled our improved attachment, inclosed in the tube B, will remain in the position of rest until the ball has passed the hole *a* in the barrel, when a portion of the gases of combustion passes into and through the hole *a* and into the space in the cylinder *h* at the rear of piston *p*. The piston *p*, the rod *d*<sup>4</sup>, and the drive-spring R are thrown forward until the nose *d* of the spring-rod *d*<sup>3</sup> may lock against the head *d'* of the rod *t'*, Figs. 2 and 5. The tension of the spring R then reacts against the flange or head of the rod *d*<sup>4</sup>, the latter against the spring-rod *d*<sup>3</sup>, this by means of the nose *d* in the direction of the arrow *y* against the rods *t'* *t*, the recoil-spring S, and the rod T, with cross-head *a*<sup>x</sup>, whereby the latter engages through a projection *a*<sup>o</sup> with the spring-hook *r* of a guide-block or follower *b*, being connected through the rod *c* to and with the breech-bolt. This is the first motion of loading by which the breech is opened and in case of reloading the spent cartridge-shell thrown out, Fig. 7. It will be observed that when the spring-rod *d*<sup>3</sup> follows the reaction of the drive-spring R to the end the finger *d*<sup>2</sup> will meet a wedge-shaped nose or deflector *m*, Figs. 3 and 6, and thereby slide off the head *d'* of the rod *t'*, thus liberating the mechanism from the backward force of the drive-spring R. After the backward force of the spring R is removed the return motion of the loading mechanism is inaugurated. The reaction of the spring S through the connecting-rod *c*, the follower *b*, cross-head *a*<sup>x</sup>, and rod T forces the breech-bolt to a closed and locked position, also drives a cartridge fed from the magazine into the barrel, and places the gun in readiness to be fired. During this action and while the parts of our improved attachment return into their position of rest at the end of the motion the cross-head *a*<sup>x</sup> is liberated from the follower *b* by means of a finger in the path of spring-hook *r*, thus disengaging the latter from the projection *a*<sup>o</sup> of the cross-head, when the parts of the attachment will occupy the position shown in Figs. 1 and 4. It will be understood from the foregoing that for the next discharge and reloading of the firearm but the one motion—viz., to pull the trigger—is required, and so on until the contents of the magazine are entirely exhausted.

The operation of the peculiar breech mechanism illustrated in Fig. 7, in conjunction with the magazine, Fig. 8, and our improved attachment, is caused by means of the two rods *c* and *e*. (Represented in Fig. 7 in stout and dotted lines.) The rod *c* serves to connect the breech-bolt *d*<sup>x</sup> to the follower *b*, thus transmitting the motion of the latter to the breech-bolt. The rod is attached to the breech-bolt by means of a pivot *e'* of a finger-knob, which may serve to operate the breech-bolt by hand in case the repeating mechanism is put out of action. The other rod *e*, which is connected at *e'* to one link of the feeding-

band *f* and at the other end by means of a bolt *i*<sup>x</sup> to the tug *o* of the rod *c*, serves to advance the cartridges from the magazine, Fig. 8, to the cartridge-carrier S<sup>x</sup> and to actuate the latter through the medium of a projection *i'* of the rod *c* and a spring-operated lever S' in a well-known manner.

To prevent the cartridges from traveling backward on the return motion of the feeding-band *f*, flat springs *n* are arranged in the conduct of the cartridges, yielding on the passage of the latter to the barrel, but engaging behind the rear face of the cartridges, thus holding the same in position, when the feeding-band *f* is rearwardly moved to grasp a fresh cartridge from the magazine and place the foremost one in the conduct upon the meanwhile-descended carrier S<sup>x</sup>.

When the gun is to be used without the magazine, the rod *e* only needs to be disconnected from the rod *c* by withdrawal of the bolt *i*<sup>x</sup>, which for this purpose is provided with a finger-knob accessible from the side of the stock in any convenient manner, so that the feed-band *f* may not be operated by our attachment. The breech mechanism may nevertheless be actuated by the aid of the gases of combustion in the barrel through the rod *c*, in which case the cartridges must be dropped into the open chamber by hand.

Having now fully described our invention, what we claim, and desire to protect by Letters Patent, is—

In a magazine-firearm, as an improvement in attachments for loading the gun automatically after firing by the explosive gas conducted from the bore of the barrel through a vent into a cylinder arranged under the latter, the combination of the piston *p* in said cylinder and the spring R, pressing rearward on the piston, the yielding drive-rod *d*<sup>3</sup>, provided with a nose *d* and a finger *d*<sup>2</sup>, the former adapted to engage with the drive-rod *t'*, a spring S, pressing forward on the rod, the latter adapted to meet with a projection in the path of the drive-rod *d*<sup>3</sup>, so as to release the latter from the rod *t'* at the end of the backward motion, the cross-head *a*<sup>x</sup> at the breech end of a rod T, forming the rearward extension of the drive-rod *t*, and the follower *b* engaging with the cross-head *a*<sup>x</sup> and connected through the rod *c* with the breech-bolt and through the rod *e* with the feed-band *f*, conveying the cartridges from the magazine into the breech-cylinder of the gun, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 26th day of February, 1889.

VICTOR CLAIR.  
BENOIT CLAIR.

Witnesses:

EDMOND DELORME,  
OSCAR MALMROS.