

J. D. GREENE.
FIREARM.

No. 88,161.

Patented Mar. 23, 1869.

Fig. 1.

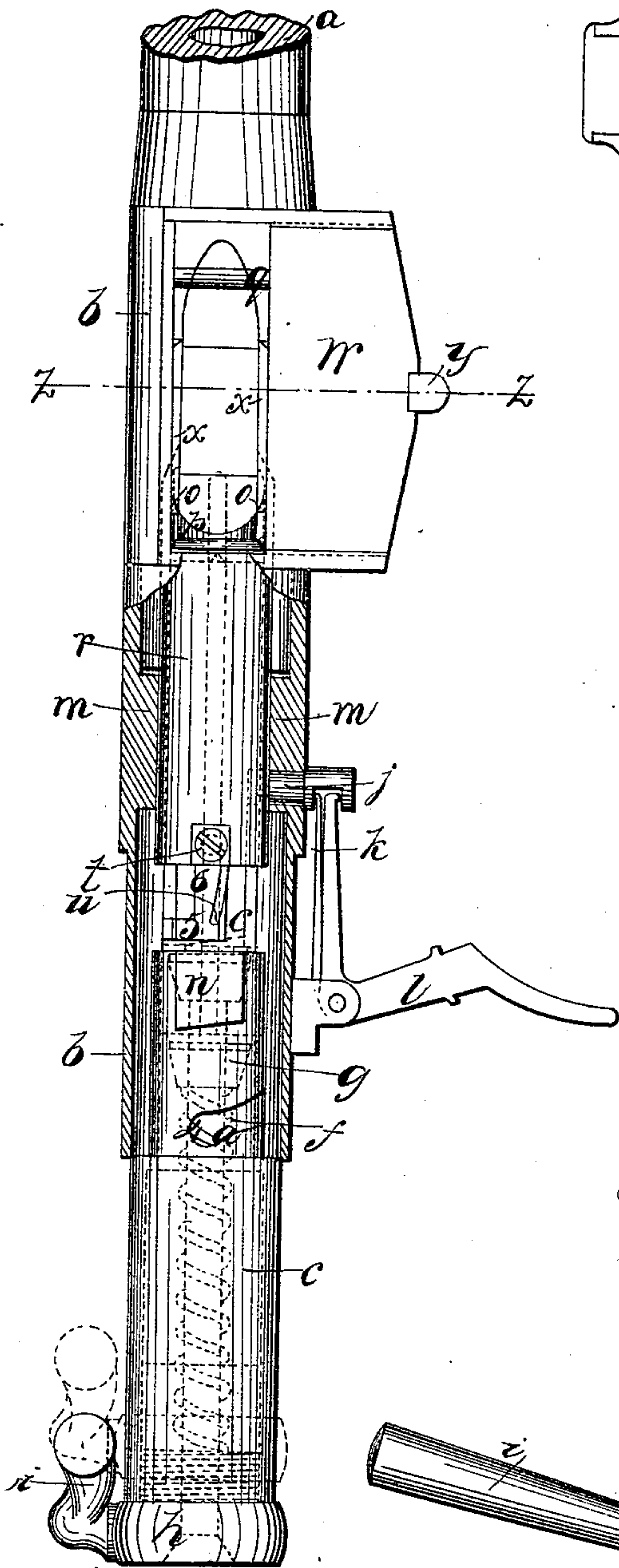


Fig. 3.

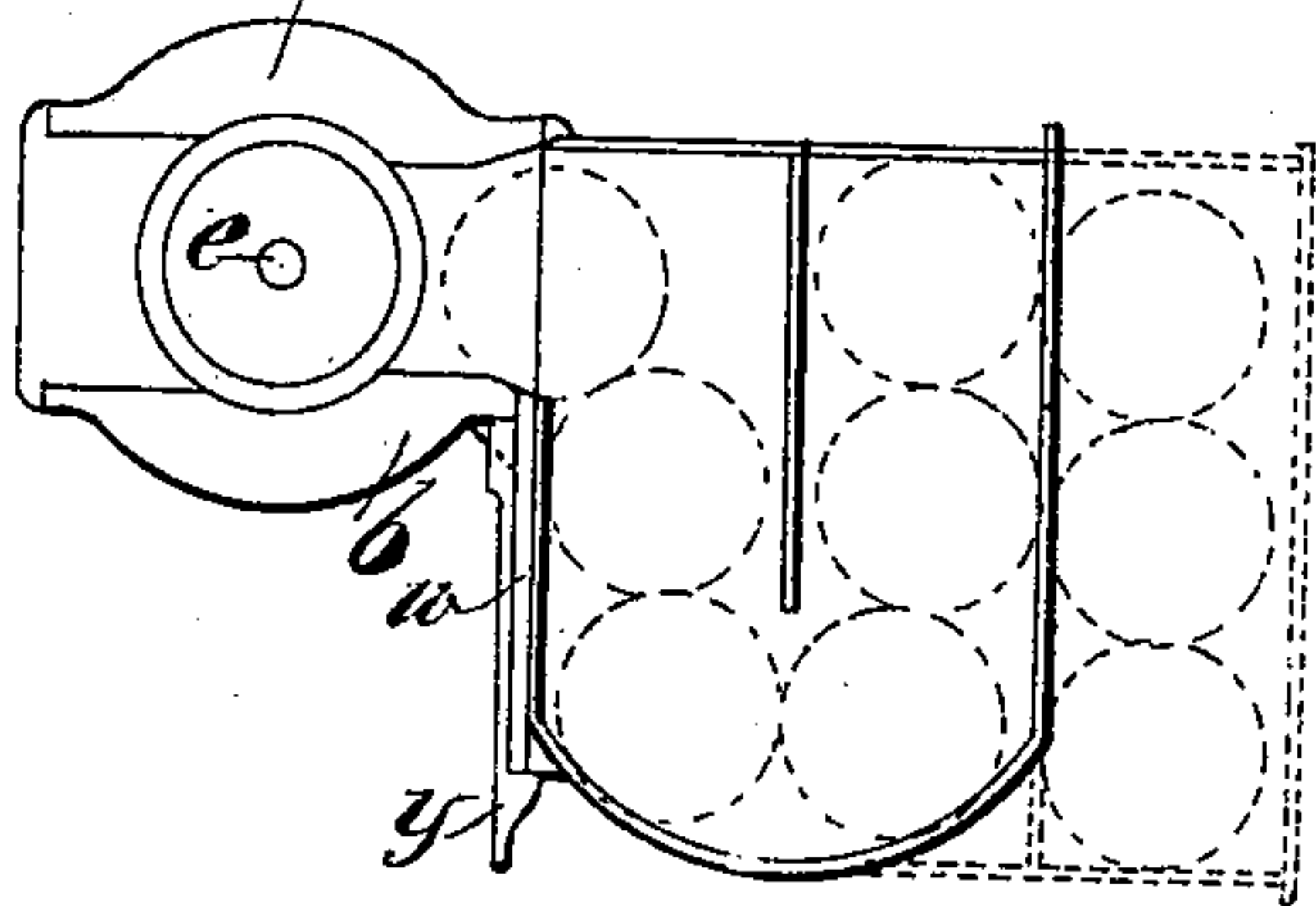
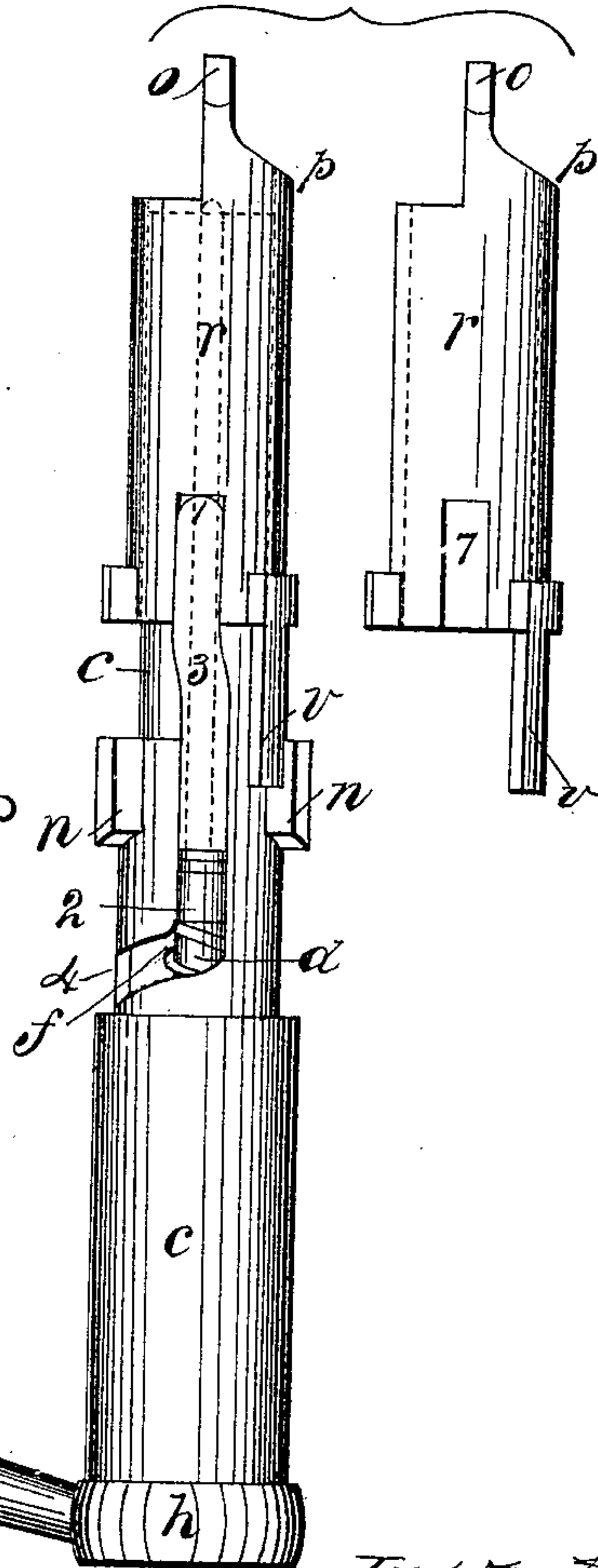


Fig. 2.



Mitneßer:
Francis Gould
& Warren Brown.

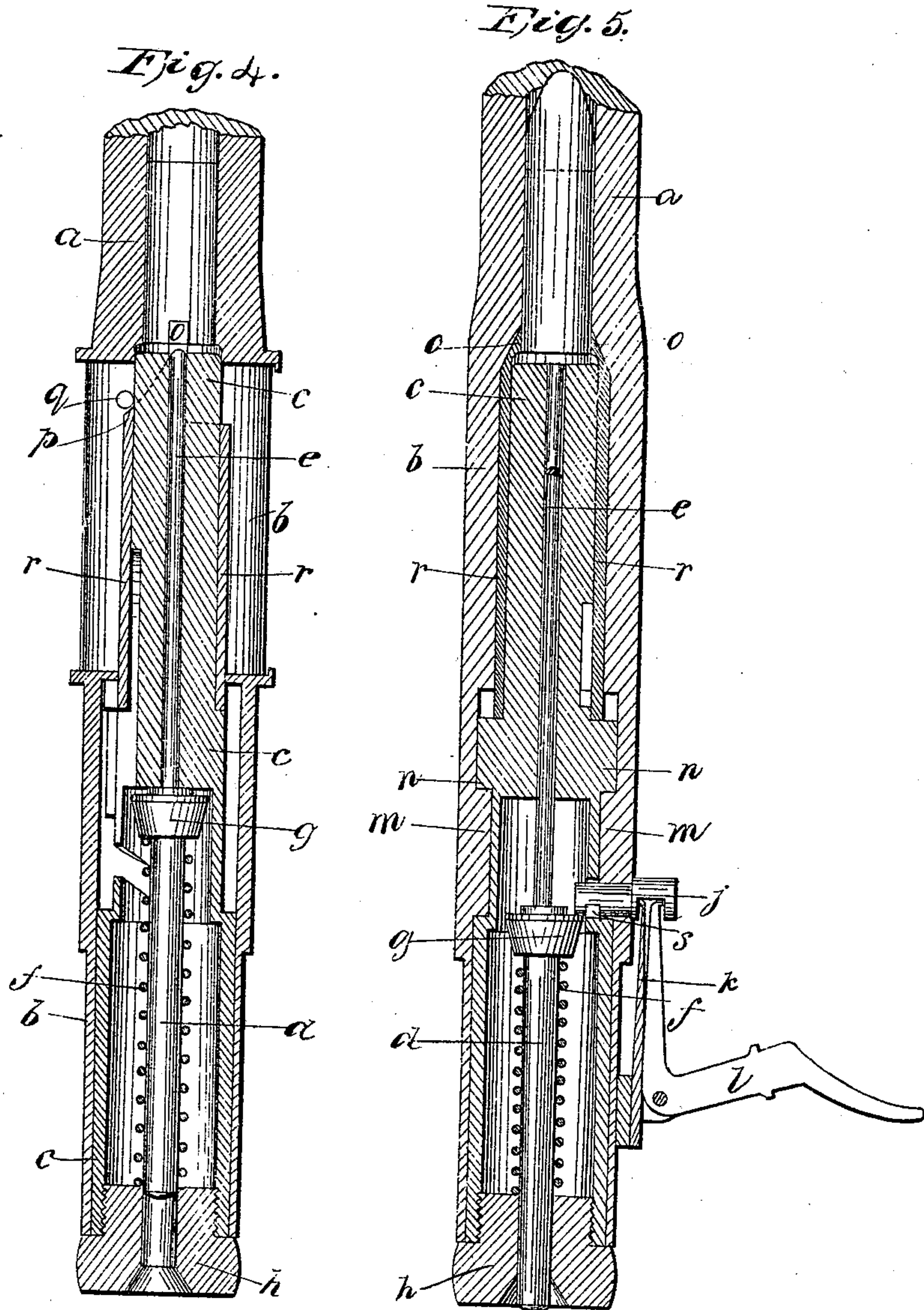
Inventor:

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Witnesses:
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C. Warren Brown.

Inventor:
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United States Patent Office.

J. DURELL GREENE, OF CAMBRIDGE, MASSACHUSETTS.

Letters Patent No. 88,161, dated March 23, 1869.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, J. DURELL GREENE, of Cambridge, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practise it.

This invention relates to peculiarities of construction, which adapt the arm to the use of metallic cartridges, in loading and exploding them, and in extracting and discharging the empty shells, and which protect the breech and lock-mechanism from the presence and action of dust and moisture.

Of the drawings illustrating an embodiment of my invention,

Figure 1 is a sectional elevation, viewed from the right-hand side of the arm, the stock and most of the barrel being omitted, and the parts being exhibited in the position which they have when the breech-bolt is fully withdrawn, and in readiness to push forward the cartridge, shown in red lines, or this view may be considered as a plan, when the piece is held flatwise, as in loading.

Figure 2 is a plan of the breech-bolt, and the parts therewith immediately connected, shown as removed from the breech-piece, and turned ninety degrees from the position which the bolt has in fig. 1.

Figure 3 is a cross-section on the line *z z*, (see fig. 1,) exhibiting a cartridge-pannier, attached to the arm, for the purpose of containing cartridges to be successively and intermittently supplied to the arm, under and by the charges given the piece in loading, till the contents of the pannier are exhausted.

Figure 4 is a horizontal section through the axis of the barrel, with the piece in the position in which it is held in firing, and showing the parts in the position which they have after a cartridge is exploded, the empty shell being shown in red lines, as remaining in the barrel.

Figure 5 is a vertical longitudinal central section, showing the parts in the position which they have when the breech-bolt is locked upon an unexploded cartridge, and with the hammer fully cocked, ready to be released by pull upon the trigger. In this figure, a ball-cartridge is shown in the chamber.

The barrel *a* is fixed in the breech-piece *b*, through which, from right to left, as the piece is held in position for firing, a mortise is made, extending back from the end of the cartridge-chamber to a distance sufficient to receive the longest ball-cartridge to be used, the width of the mortise being a little greater than the greatest diameter of the cartridge.

The breech-piece *b* is bored from the rear of the mortise through to its end, so as to receive, and to allow to slide and turn in the bore and mortise, the combined

breech-bolt *c* and sleeve *r*, which has at its salient end the cartridge-extracting hooks *o o*, and the apron *p*; on which the rear of the cartridge rests on being placed in the mortise, through the breech-piece, with its bullet resting on the support *q*.

The breech-bolt is made of different diameters, and is bored as shown in the drawings, and receives and guides the firing-pin *e*, and its extension or hammer *d*, the rear end of the breech-bolt being closed by the nut *h*, which is provided with a lever-handle, *i*, by which the breech-bolt and extractor-sleeve are reciprocated in the breech-piece, and by which the breech-bolt *c* is turned alternately back and forth, about ninety degrees, in locking and unlocking the cartridge-chamber, and in starting back the shells of exploded cartridges.

Between the collar *g*, on the hammer and firing-pin, and the nut *h*, is the main-spring *f*, coiled about the hammer so that when, in moving forward the breech-bolt, the collar is checked by the sere, or trigger-pin, *j*, the spring *f* is compressed, and will throw forward the firing-pin, as soon as a pull upon the trigger *l* liberates the collar *g*, which is made conical, as shown, to permit its withdrawal past the sere *j*, which is kept in position by the sere, or trigger-spring *k*.

When the breech-bolt is brought close to the barrel, and it is forced home against the barrel-end, and locked in position, by turning the bolt about ninety degrees, the outwardly-projecting lugs *n n*, on the bolt, engage, with their inclined rear ends, with the inclined forward ends of inwardly-projecting lugs *m m*, on the bore of breech-piece, in a manner well known in some existing arms. In pushing forward and in withdrawing the breech-bolt, the lugs *n n* slide between the lugs *m m*.

The length of the hammer is such that in all positions of the parts the hammer will close the axial bore of the nut *h*, in which the hammer is guided and slides.

In the breech-bolt there is cut a slot, which is seen most clearly in fig. 2. This is the slot which, in the movements of the breech-bolt, traverses over the sere, which, by its operation in the slot, causes certain movements, effecting the starting of the cartridge-shells that may be strongly set in the barrel, consequent upon their expansion, produced by the explosion.

The longitudinal part of the slot extends from 1 to 2, with a slight offset therein at 3, which operates, in passing the sere, to produce a slight turning of the breech-bolt, relative to the sleeve *r*, which is not allowed to turn.

Another part of the same slot extends from 2 to 4, around the breech-bolt, about ninety degrees, this part of the slot being slightly inclined, so as, when traversing over the sere, to produce a slight, but powerful retraction of the shell-extractors, in starting the shell from the location where it has been bedded and expanded by the explosion, the sleeve *r* being at this time locked to

the breech-bolt by presence of screw *t*, in the part 5 of the right-angular groove, best seen in fig. 1, and marked 5 6.

When the cartridge is locked by the bolt, the position of the screw *t* is at the end of the part 5, of the slot most remote from the part 6, and when the breech-bolt is turned ninety degrees, the incline of the slot, acting on the sere in moving from 4 to 2, starts back the cartridge, which is firmly held between the end of the bolt and the hooks *o*, the movement of the cartridge thus obtained being but slight.

In this rotary movement, the screw *t* catches at the end of spring-latch *u*, by which, when the breech-bolt is drawn directly back, the sleeve is made to move with the bolt, retaining a gripe upon the cartridge-shell till the slot traverses over the sere, from 2 to 3, where the offset formation causes enough turn of the bolt to draw the end of spring-latch *u* away from screw *t*, leaving the latter free to move in the part 6 of the groove 5 6.

This allows the breech-bolt to move longitudinally, relatively to the sleeve, (the shell having been withdrawn clear from the barrel and from the support *q*), which relative movement releases the shell, which then falls freely from the side of the mortise opposite to that by which it entered.

When the breech-bolt has moved, relatively to the sleeve, rearward, the distance permitted by the length of the part 6 of the groove 5 6, the bolt is in its extreme back position, and the apron *p* of the sleeve is fully uncovered to receive and support the next cartridge entering.

When the breech-bolt is again forced forward, to load a fresh cartridge, the spring-latch *u* yields as the offset at 3 passes the sere, and slightly turns the bolt with relation to the sleeve.

In the first part of its forward movement, the breech-bolt passes through the sleeve till the cartridge-shell flange is embraced between the face-end of the bolt and the hooks *o*; when the sleeve and bolt move forward together, till the point 2 of the sere-slot arrives at the sere, when, by turning the bolt, the screw *t* enters part 5 of the groove 5 6, the inclined faces of *m m* and *n n* engage and lock the cartridge in the barrel, and the sere-slot traverses the sere from 2 to 4.

It may here be observed that the sere is notched, as seen in fig. 5, at *s*, and that from 2 to 4 the sere-slot is narrowed, so as to enter the sere-notch, which prevents any accidental discharge of the firing-pin, at the time of turning the breech-bolt, till the barrel is fully closed.

The tang *v*, attached to the sleeve *r*, and the slot 7, in said sleeve, act to prevent the sleeve from turning from position in which its hooks *o o* can enter the slots, or grooves made in the barrel to receive them.

If it is desirable to enter a cartridge in the barrel, without having the hammer held back by the sere, the trigger should be pulled, so that the sere will not catch the collar *g* during the forward movement of the breech-bolt.

In loading, the gun is turned so as to bring the bed-plate *w* into a nearly horizontal position, so that the cartridge can fall by gravity upon its supports in the mortise through the breech-piece, and after the gun is brought to position for firing, and discharged, it is again turned to the position in which it was loaded, this allowing the withdrawn empty shell to drop out through the mortise from the side opposite to that at which it was introduced when loaded.

In the mortise are the projections *x x*, the purpose of which is to cause the entering cartridge to fall upon the apron *p*, so as to support its rear.

It will be seen that in all positions of the breech-bolt and the sleeve, no slots or openings are exposed, for entrance of dust or moisture, and that, by the close fit of the sleeve in the breech-piece, and of the breech-

bolt in the sleeve and the breech-piece, all of the mechanism connected with the lock, and with the opening and closing of the breech, is covered and protected.

Under circumstances where it would be desirable to deliver several shots in rapid succession, I make use of what I term a cartridge-pannier, which is a simple sheet-metal device designed to be filled with cartridges, which are kept apart by longitudinal partitions extending the entire length of the pannier, but falling short of its width, as shown in fig. 3, so that there is a continuous but tortuous passage formed in the pannier, which, in charging it, and in emptying it, the cartridges are obliged to follow, the height of the pannier being less than the length of loaded cartridges, which renders it impossible for them to turn between the partitions, end for end.

The number of partitions in the pannier, and its projection beyond the bed-piece *w*, when connected thereto, may be extended within reasonable limits.

A full, or partially full pannier may be attached to the bed-piece *w*, by flanges on the pannier and grooved guides in the bed-piece, and locked in position by the spring-latch *y*, the opening at the upper part of the inside surface of the pannier resting on the bed-piece corresponding with the mortise in the breech-piece.

When the breech-bolt closes the barrel, it will be evident, that no matter how the gun is held, no cartridge can pass from the pannier into the mortise; but when the breech-bolt is drawn back, it will be seen that if the bed-plate *w* is brought nearly horizontal, a cartridge will roll out of the pannier into the mortise, resting there on the apron *p* and support *q*, till it is forced into the barrel. When exploded, and disposed of, by falling out of the mortise, consequent on drawing back the breech-bolt, and turning the gun, another cartridge will roll out of the pannier into the mortise, and by repeated operations the pannier may be emptied.

1. I claim a breech-loading gun, with its breech-piece mortised through, when provided with a breech-bolt arranged to move longitudinally in the axial line of the bore, and a mechanism adapted to operate on the cartridges, substantially as described.

2. Also, the breech-bolt, in combination with the sleeve, breech-piece, and hammer, when arranged and constructed as described, so as to prevent, in all positions of the parts, access of dirt and moisture to the mechanism.

3. Also, in combination with the breech-bolt and the breech-piece, the slotted sleeve *r*, bearing the hooks *o o* and tang *v*, and fitting on the breech-bolt and in the breech-piece, substantially as described.

4. Also, the breech-bolt, as made, with the right-angular groove 5 6, and sere-embracing slot, operating on the cartridge-shell extractor, to start and draw back the shell by rotation of the breech-bolt, substantially as described.

5. Also, the breech-bolt, as made, with the offset 3 in the sere-slot, and the spring-catch *u* in the groove 5 6, and combined with the sleeve, to permit the separate and conjoined movements of both the bolt and the sleeve at the rear of the mortise, substantially as described.

6. Also, as a safety-device, the sere-piece *j*, with the cross-groove *s*, arranged to operate in the sere-groove, to prevent withdrawal of the sere till the breech-bolt is fully turned, in the act of locking the cartridge in its chamber, substantially as described.

7. Also, the attachable cartridge-pannier, constructed and arranged to operate substantially as set forth.

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Witnesses:

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