

J. NICHOLS.
MAGAZINE FIREARM.

No. 36,358.

Patented Sept. 2, 1862.

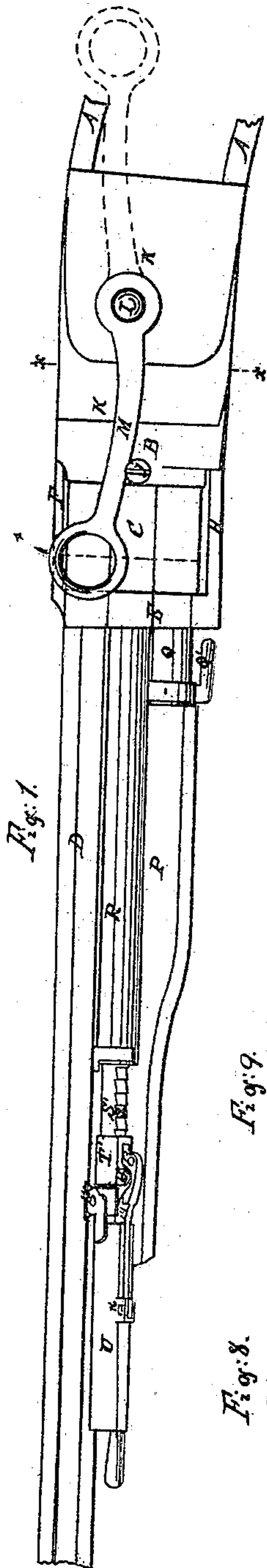


Fig. 1.

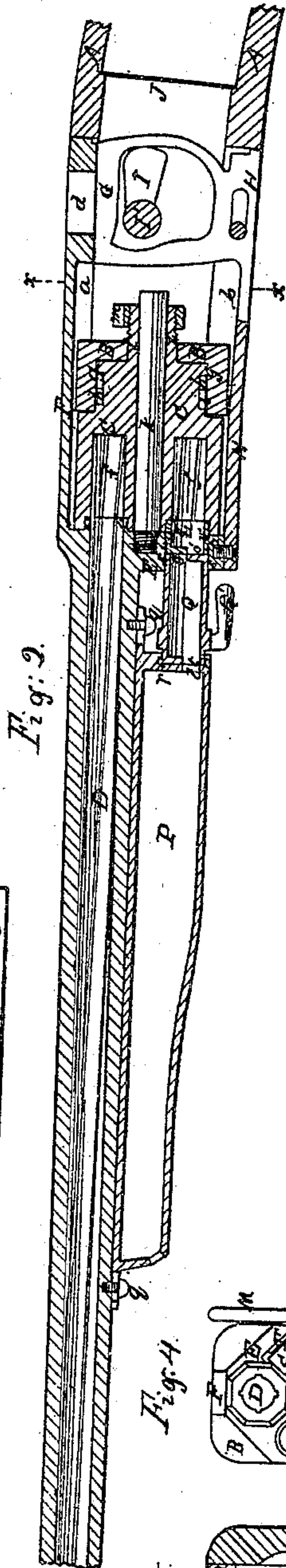


Fig. 2.

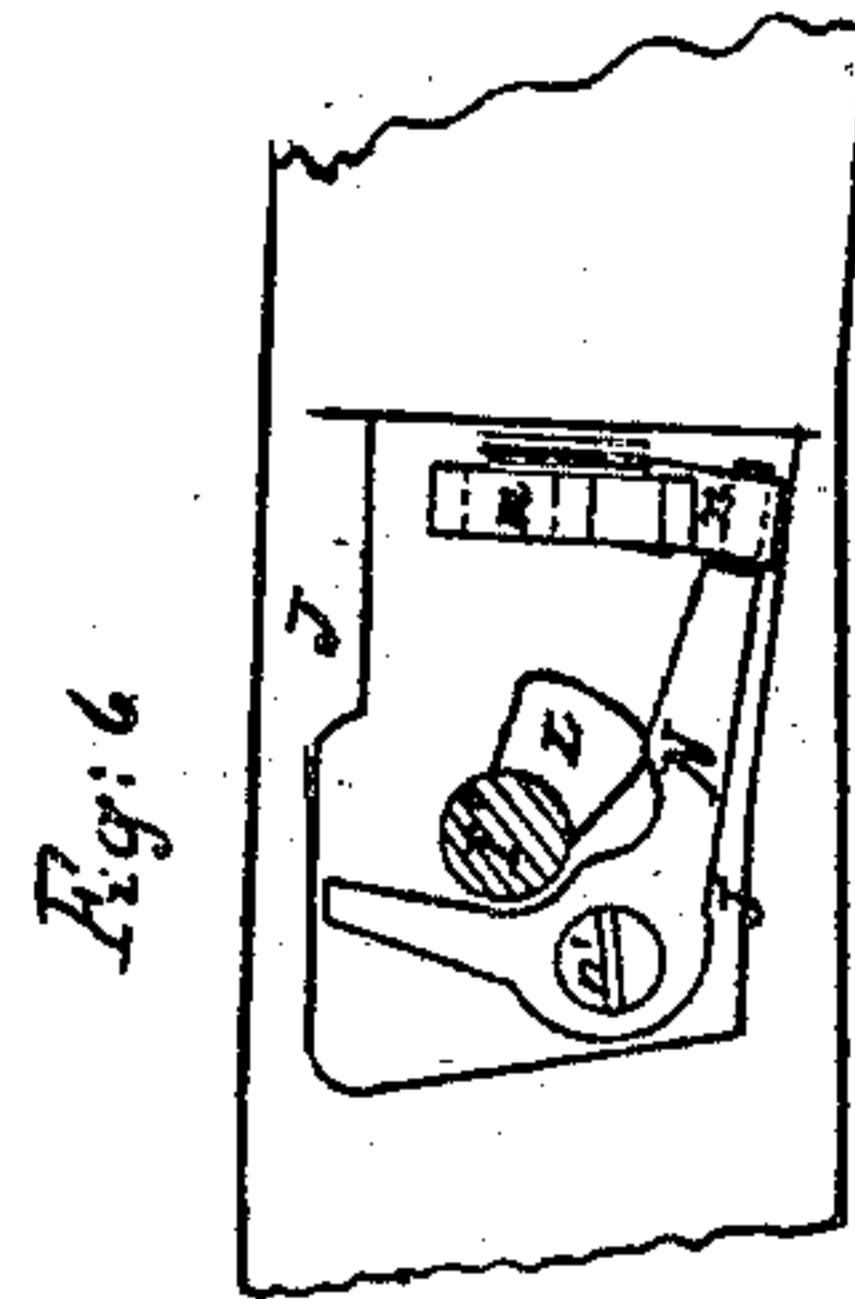


Fig. 6.

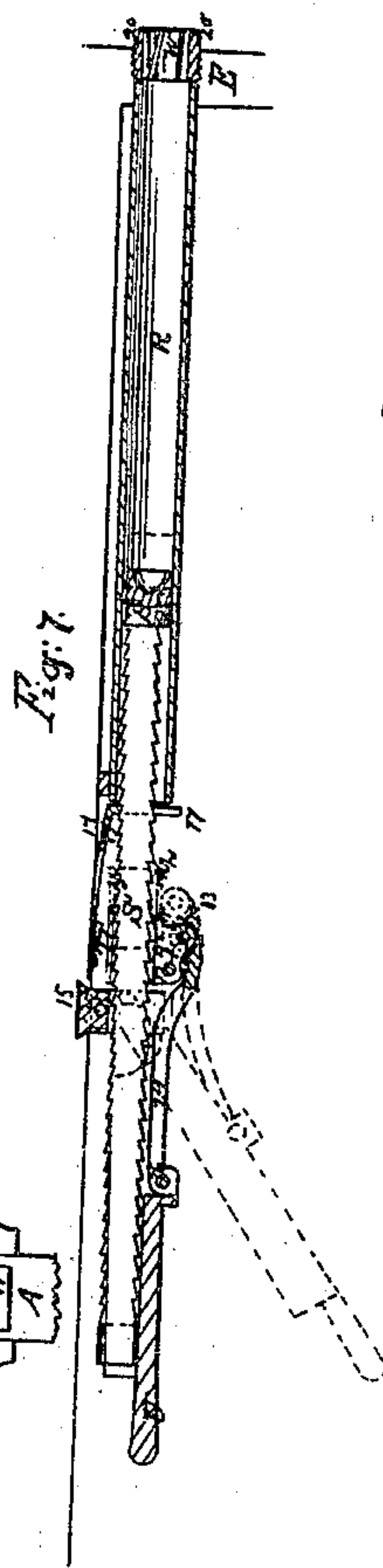


Fig. 7.

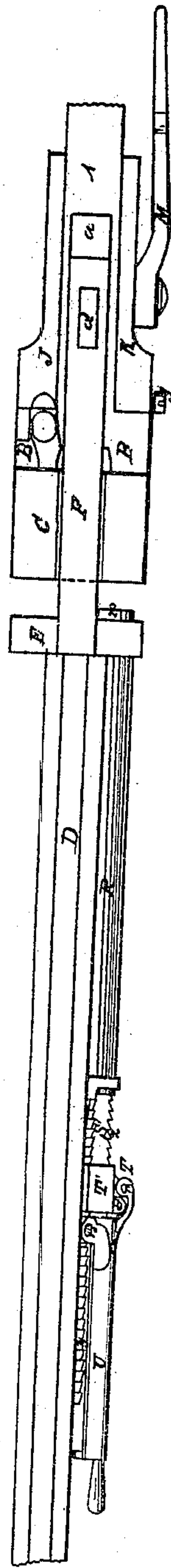


Fig. 3.

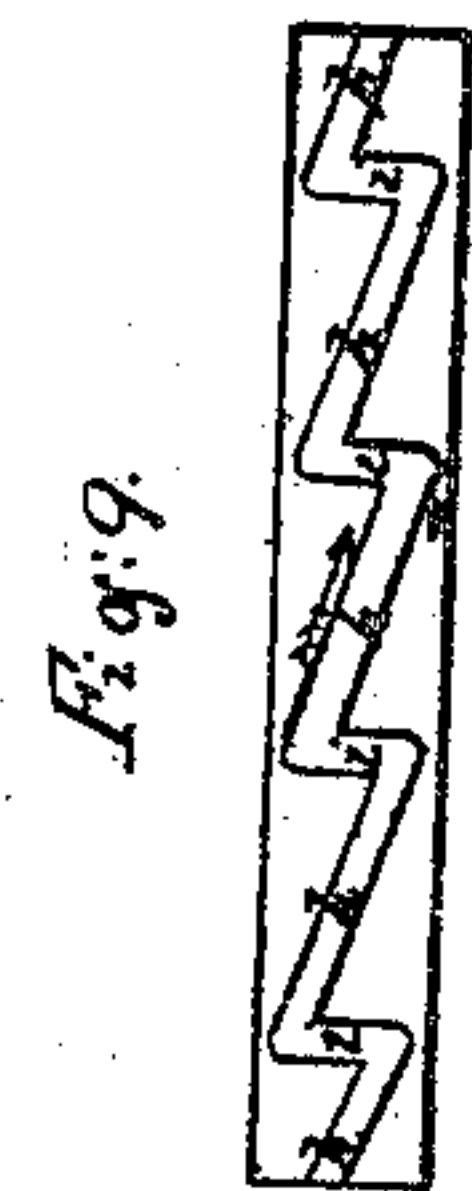


Fig. 9.



Fig. 8.

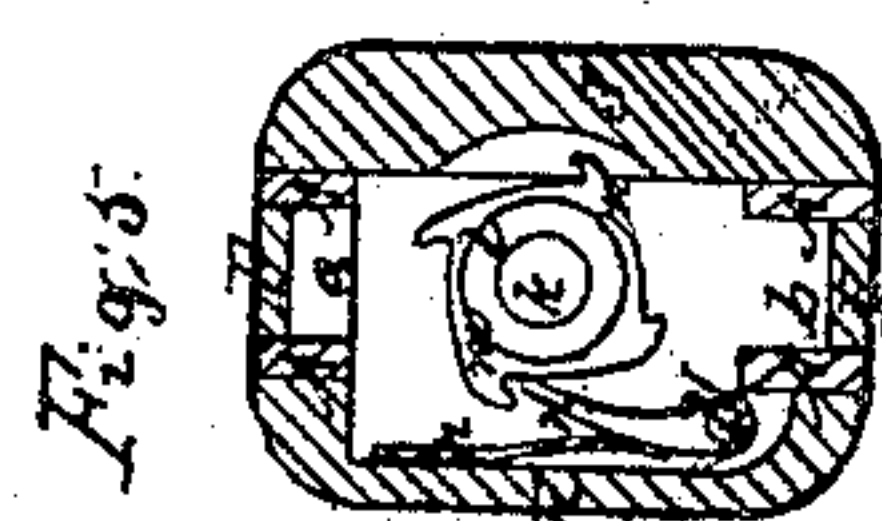


Fig. 5.

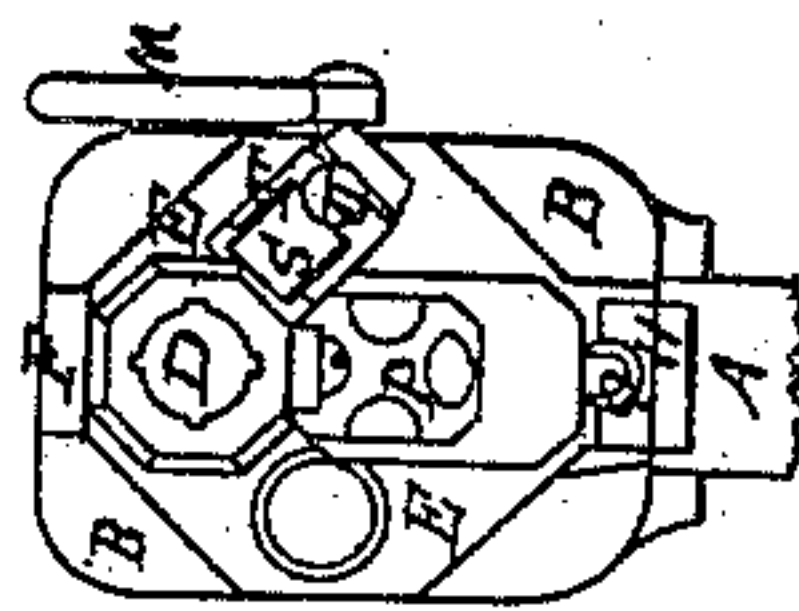


Fig. 4.

Witness

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UNITED STATES PATENT OFFICE.

JAMES NICHOLS, OF LIMESTONE, NEW YORK.

IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 36,358, dated September 2, 1862.

To all whom it may concern:

Be it known that I, JAMES NICHOLS, of Limestone, in the county of Cattaraugus and State of New York, have invented a new and useful Improvement in Repeating Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a gun with my improvements, the stock being omitted as not necessary to illustrate my invention. Fig. 2 is a central longitudinal vertical section of the same. Fig. 3 is a top view of the same. Fig. 4 is a front view of the same. Fig. 5 is a transverse section of the same in the line *xx* of Figs. 1 and 2. Fig. 6 is a view, seen in the opposite direction to Figs. 1 and 2, of the mechanism by which the rotation of the chambered cylinder is effected. Fig. 7 is a central longitudinal section of the bullet-magazine and feeder. Fig. 8 is an end view of the measure by which the charges of powder are measured and transferred from the magazine to the barrel. Fig. 9 represents the rear portion of the cylinder projected on a plane to illustrate the form of the groove *h h i i* which extends all round it.

Similar letters of reference indicate corresponding parts in the several figures.

This invention mainly consists in certain means applied to a fire-arm, in combination with a rotating many-chambered cylinder, for the purpose of permitting and effecting the loading of the chambers with loose powder and bullets or shot from magazines attached to the barrel or fore-stock of the arm in front of the cylinder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A B is a frame, which is attached rigidly to and forms a portion of the stock of the gun, and whose front part, B, constitutes the recoil-shield to the rotating cylinder C.

D is the barrel, having firmly secured to it a plate, E, of a form to cover the front of the cylinder, and this plate E has firmly attached to or made in the same piece with it a strap, F, which extends back over the top of the cylinder through a groove in the top of the

recoil-shield B, and is fitted to slide in a slot, *a*, in the upper part of the frame A B, behind the recoil-shield.

G is a cam-yoke, arranged within the frame A B in the rear of the recoil-shield, and having formed in the same piece with or rigidly attached to it a strap, H, which is fitted to slide in a slot, *b*, in the lower part of the said frame and through a groove in the bottom of the recoil-shield. The said strap-piece is secured at its front end by a screw, *c*, to the bottom of the plate E, and at the top of the yoke there is formed a tenon, *d*, which is fitted tightly into a mortise in the strap F, and by these means the plate E, strap F, yoke G, and strap H are made to form a rigid frame, which is rigidly attached to the barrel, and which surrounds both the cylinder and the recoil-shield, and which is capable of a longitudinal movement independently of the stock, recoil-shield, and cylinder, for the purpose of opening and closing a valve-like joint which is formed between the barrel and the chambers of the rotating cylinder by forming a projecting cone or lip, *e*, Fig. 2, around the rear of the barrel and countersinking the muzzles of the chambers *f f* for the reception of such cone or lip, the said movement being effected by means of a cam, I, working in and acting upon the yoke G. This cam is fast upon a shaft, I', which is arranged transversely to the length of the gun, and which works in a bearing in the lock-plate J and another bearing in a plate, K, secured to the opposite side of the frame A B. The same shaft has also secured to it a cam, L, by which the rotary movement of the cylinder is produced, and it is furnished outside of the plate K with a lever, M, by which to give it the necessary movement to produce the operation of the two cams, which will be presently more fully described.

The cylinder C may have any number of chambers *f f*, but is represented as having four, that number being sufficient, and in many respects preferable to a greater number. It is fitted to rotate freely on the base-pin *k*, (which is screwed permanently into the plate E from the rear thereof, and which extends back through the recoil-shield,) and it has formed upon its rear a journal, *l*, which passes through the recoil-shield, and which has fastened to it behind the recoil-shield a ratchet-

wheel, *m*, having a number of teeth corresponding with the number of chambers in the cylinder, such ratchet-wheel having applied to work in it a pawl, *n*, which is attached to an elbow-lever, *N*, working on a fixed pivot, *n'*, secured inside of the plate *J*. Upon this lever *N* the cam *L* operates to produce the necessary action of the pawl upon the ratchet-wheel, acting on the upper arm of the said lever to raise the pawl and turn the ratchet-wheel and cylinder, and upon the lower arm, to which the pawl is attached, to draw back the pawl. The pawl is kept to its work by means of a spring, *p*, attached to the plate *K*.

The cams *L* and *I* require about half a revolution of the shaft *I'* to effect their operations. The operation of moving forward the frame *E F G H* and the barrel relatively to the stock, recoil-shield, and cylinder, to prepare for the revolution of the cylinder, and the operation of revolving the cylinder to the extent required after every fire, are effected by moving the lever *M* in the direction of the arrow shown near it in Fig. 1, which represents it in its most forward position, where it has been stopped by the stop-pin *j*, that is screwed into the side of the recoil-shield. The operation of drawing back the pawl and drawing back the frame *E F G H* and barrel is performed by the movement of the said lever in the opposite direction. The cams must be so arranged relatively to each other that *I* must complete the forward movement of the barrel before *L* commences to effect the revolving movement of the cylinder.

A portion of the cylinder in front of the journal *l* is made somewhat smaller than the front and chambered portion, and this smaller portion, which is of cylindrical form, is received within a cavity of corresponding form provided for it in the front of the recoil-shield, as shown at *g g* in Fig. 2, and in the periphery of this smaller portion of the cylinder there is a groove, *h h i i*, which is fully represented in the projection, Fig. 9, portions *h h* of the said groove being all similarly oblique to the axis of the cylinder, and the shorter intermediate portions *i i* being parallel with the said axis, the portions *h h* being all of equal length and corresponding in number with the number of chambers in the cylinder, and the portions *i i* being all of equal length, but the obliquity of the portions *h h* being such as to make the portions *i i* very short. The said groove receives the end of the fixed stop-pin *j*, which is made to project into the cavity of the recoil-shield, and thus by its action in the said groove constitutes a stop to the cylinder, that it may not revolve farther than is desired. The oblique portions *h h* of the groove running on the pin *j* permit the revolution of the cylinder, and the straight portions *i i* cause the stoppage of the revolution after the successive operations of the pawl *n* until the cylinder has moved forward far enough relatively to the recoil-shield to permit the said pin to pass out of them and into the oblique portions *h h*.

After the revolution of the cylinder to the extent required the cylinder remains back against the recoil-shield, while the barrel is drawn back to it by moving forward the lever to the position shown in Fig. 1; but when the barrel is moved forward again preparatory to the next revolving movement by the drawing back of the lever *M* in the direction of the arrow shown near it in Fig. 1, the cylinder, owing to the friction of the valve-joint *e* and of similar joints between it and the connections of the powder and bullet or shot magazines, which will be presently described, is caused to move forward with the barrel until the back of the groove comes in contact with the pin *j*, after which the cylinder, having moved back far enough to disengage itself from the said pin and permit its revolution, remains attached to the recoil-shield, while the barrel continues its forward movement to break the joint *e e* and the similar joints formed between the cylinder and the passages that are provided in the plate *E* for the loading of the chambers *f f* from the magazines.

The powder-magazine consists of a tube, *P*, secured to the bottom of the barrel by screws *q q*. This tube extends back to within a short distance from the plate *E*, and the space between its rear end and the said plate is occupied by the powder measure or charger *Q*, which consists of a hollow cylinder of sufficient capacity to contain a proper charge of powder. This charger is arranged with its axis parallel with those of the cylinder and of the bores of the chambers, and its ends are received one in a seat, *r*, provided for it in the rear end of the tube *P*, and the other in a seat, *s*, formed around the front of an opening, *u*, provided in the plate *E*, in which seats it is capable of being turned easily by a handle, *Q*, attached to it for the purpose. The position of the said charger is such that one of the chambers *f* of the cylinder is always directly opposite to and in line with it, while another is in line with and opposite to the bore of the barrel. In that end of the said charger next the magazine there is provided an aperture, *t*, of the form of a portion of a circle concentric with the axis of the charger, and in the other end there is a similar aperture, *o*, the said apertures being arranged on opposite sides of the said axis. In the seats *r* and *s* there are precisely similar apertures but the apertures in the seats are directly opposite each other—that is to say, are on the same side of the axis of the charger. By this arrangement of the apertures those *t t'* next the magazine are opposite each other and open, while those *o o'* next the cylinder are out of range with each other and closed, as shown in Fig. 2, and vice versa. The charger may be always in the position shown in Fig. 2, except during the operation of loading, which is effected by holding the gun with the muzzle upward to fill the charger from the magazine, and then, by turning the charger to the position to close the apertures *t t'* communicating with the maga-

zine and open those *o o'* communicating with the cylinder, the charge is transferred from the charger through the passage *u* into the opposite chamber of the cylinder. The back part of the passage *u* has screwed into it a lining-ring or thimble, *v*, which projects through the back of the plate in conical or other suitable form to fit seats which are formed by countersinking the muzzles of the chambers, and thereby to form between the loading-passage *u* and the chambers a tight joint of similar character to that formed between the barrel and the chambers.

The bullet-magazine consists of a straight tube, *R*, of cylindrical form, just large enough for the bullets to move easily forward, one behind another. The bullets may have patches applied before insertion into the rear end of the magazine. The said tube *R* is attached to the barrel parallel therewith, and its front end enters a hole in the plate *E*. The position of the said tube *R* is such that, when one chamber of the cylinder is opposite to and in line with the barrel and another opposite to and in line with the charger *Q* of the powder-magazine, an intermediate chamber will be opposite to the said tube *R*. The hole in the plate *E* into which the said tube *R* enters has screwed into it from the rear a short tube or thimble, *w*, Fig. 7; the bore of which is of the same size as that of the barrel, and not large enough for the bullets to pass through without the application of considerable force, and when the gun has a rifled barrel the chambers are rifled to match the barrel and the tube or thimble *w* rifled to match the chambers. The said tube or thimble is also made to project through the back of the plate *E*, as shown at 20, in Fig. 7, to fit into the countersunk muzzles of the chambers, to form a joint between the chambers and the bullet-magazine like those formed between them and the barrel and powder-magazine. The bullets are fed forward in the magazine *R* by means of a plunger or piston, *S*, from which a rod, *S'*, passes out through the front end of the tube, said rod having ratchet-teeth *y z* on two sides, the teeth *y* on the side next the barrel being to receive a spring stop-pawl, 17, for the prevention of the running back of the piston, and the teeth *z* being for the reception of a dog, *T*, which is employed to move the piston forward to feed the bullets. The said dog *T* is attached by a pivot, 12, to a socket, *T'*, which is fitted to slide on the outside of the rod *S'*, and it works through a slot in the said socket. It is also connected by a pin, 13, link 14, and pin 16 with a lever, *U*, that is attached by its fulcrum-pin 15 to the barrel. By drawing the said lever down, as shown in red outline in Fig. 7, the dog *T* is caused to engage in the ratchet *z* and to push the plunger back in the magazine *R*, and thereby to push back all the bullets therein, and so to deposit the one farthest from the plunger into the chamber *f*, which is opposite to the said magazine, and by pressing hard enough upon the said lever the bullet is

rammed upon the charge of powder with the required degree of force. When the lever is raised again to the position shown in black outline in Fig. 7, the dog *T* disengages itself from the ratchet *z* and the slide *T'* moves forward on the rod *S'*, which is prevented from coming back by the pawl 17. When it is desired to refill the magazine *R* the pawl 17 is pressed back from the ratchet *y* while the lever *U* is in the position represented in black outline, and the plunger can then be drawn forward entirely out of the magazine *R* by taking hold of the rod *S'* with the fingers. After the magazine has been refilled by inserting the bullets at the front end, the plunger is inserted again, and the feeding mechanism, consisting of the plunger *S*, rod *S'*, slide *T'*, dog *T*, link 14, and lever *U*, is then all ready for operation.

If the gun is intended for a shot-gun, the shot can be placed in cartridges, which may be inserted in the magazine *R* and fed therefrom after the powder to the chambers *f f* of the cylinder in the same manner as the bullets, as above described.

The lock used upon this fire-arm may be of ordinary construction.

Having now described the construction and the individual operations of the several parts of the fire-arm, I will proceed to describe, as briefly as I can, the operations of loading and firing.

In loading, the arm should be held in an upright or nearly upright position, with the muzzle upward. While the lever *M* is in the forward position shown in Fig. 1 in black outline, the chamber *f* opposite the powder-magazine *P* has the charge of powder placed in it by first turning the charger to the position shown in Fig. 2, and then turning it to the position to close it to the magazine and open it to the chamber. When this has been done the lever *M* is drawn back to the position shown in red outline to revolve the cylinder and bring the chamber which has been charged with powder opposite to the bullet-magazine and bring another chamber opposite to the powder-magazine, after which the lever is moved forward again to the position shown in Fig. 1 to bring the barrel and magazines back close to the cylinder. The chamber which has been charged with powder now has the bullet inserted in it by the movement of the lever *U* to operate the piston *S*, as before described, and the chamber now opposite the powder-magazine is made to receive its charge of powder by turning the charger, as before described. The lever *M* is then moved backward again, and the cylinder thus turned to bring the chamber, which has received both a charge of powder and a bullet opposite to and into line with the barrel, and to bring the chamber which has only received the charge of powder opposite to the bullet-magazine, and a third chamber opposite to the powder-magazine, after which the lever is returned to its forward position and the chambers opposite the maga-

zines are respectively charged with powder and bullet, as before described. The arm is now in condition for firing, and after each fire it is only necessary to move the lever M once backward and forward to bring the next chamber which has been loaded with powder and ball to the position in line with the barrel in readiness for a repetition of the fire; but if the fire is not desired to be repeated immediately, I prefer, after revolving the cylinder, always to charge the chambers newly brought opposite the magazines with powder and ball, respectively, so as to save time in case a rapid repetition of fire may be subsequently desirable, and to have always one chamber loaded besides that one which is opposite to the barrel.

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

1. The powder-charger Q, applied in combination with the rotating cylinder C and a magazine, P, substantially as herein specified.

2. The bullet-feeding mechanism, consisting of the plunger S, double ratchet-rod S', slide T, dog T', link 14, and lever U, the whole combined and applied to the fire-arm, in combination with the magazine R, to operate substantially as herein specified.

3. The frame A B, attached rigidly to the stock, and the frame E F G H, attached to the barrel, fitted together and combined by means of a yoke, G, and cam I, applied and operated, substantially as herein described, to produce a longitudinal movement of the barrel or stock the one relatively to the other.

4. Combining the cylinder with the recoil-shield by means of the zigzag groove *h h i i* in the cylinder and the pin *j* in the recoil-shield, such groove and pin serving both to stop the cylinder in its revolution and to detach the cylinder from the barrel in the longitudinal movement of the latter, substantially as herein specified.

5. The elbow-lever N, carrying the revolving dog *n*, and the cam L, applied in combination with each other and with the cam L, by which the longitudinal movement of the barrel is produced, substantially as and for the purpose herein specified.

JAMES NICHOLS.

Witnesses:

RICHARDSON GAWLEY,
JAMES LAIRD.