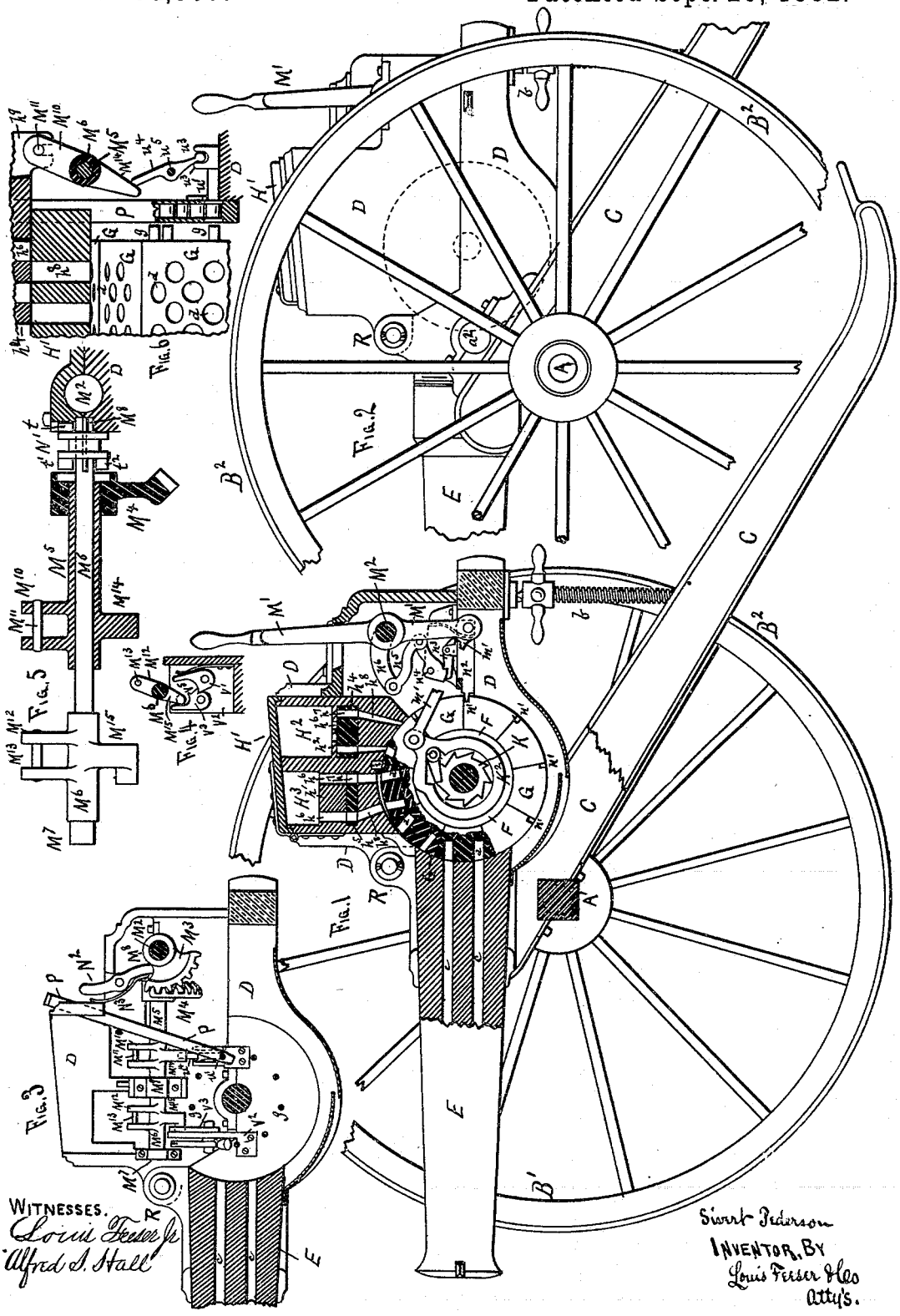
(No Model.) 2 Sheets—Sheet 1.

S. PEDERSON.

MACHINE GUN.

No. 264,897. Patented Sept. 26, 1882.



WITNESSES.
Louis Fesser Jr
Alfred A. Hall

Sivert Pederson
INVENTOR. BY
Louis Fesser & Co
Atty's.

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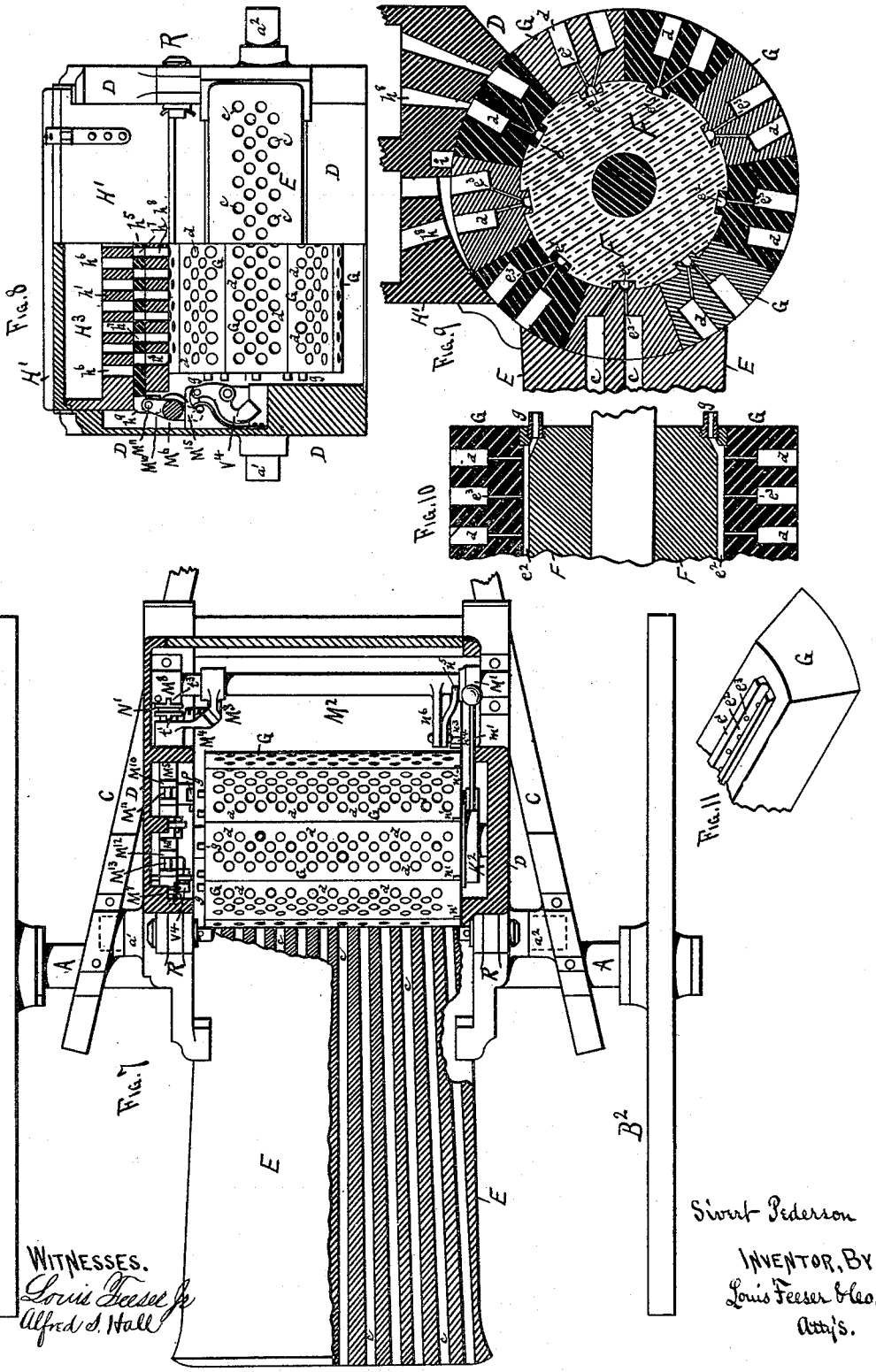

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UNITED STATES PATENT OFFICE.

SIVERT PEDERSON, OF MENOMONEE, WISCONSIN.

MACHINE-GUN.

SPECIFICATION forming part of Letters Patent No. 264,897, dated September 26, 1882.

Application filed January 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, SIVERT PEDERSON, a subject of the King of Sweden and Norway, and a resident of Menomonee, in the county of Dunn and State of Wisconsin, have invented certain new and useful Improvements in Cylinder-Guns, of which the following is a specification.

This invention relates to that class of ordnance or fire-arms in which the loading and firing are both accomplished by mechanical means; and it consists in a cylinder provided with ammunition-chambers in its periphery, and adapted to be revolved, and with means for loading and capping said ammunition-chambers while the cylinder is being revolved, and firing the charges through a series of barrels corresponding to any desired number of the said ammunition-chambers, as hereinafter set forth. I attain these objects by the use of the mechanism illustrated by the accompanying drawings, in which—

Figure 1 is a sectional side elevation. Fig. 2 is an outside view of the rear portion. Fig. 3 is a sectional view of the casing and a portion of the barrels with the cylinder removed, illustrating the construction of the capping and firing mechanism. Fig. 4 is a detached view of the hammer-operating mechanism; Fig. 5, an enlarged detached view of the cam-shaft and its attachments for operating the capping and firing mechanism; Fig. 6, an enlarged sectional detail view of a portion of the cylinder and capping mechanism. Fig. 7 is a sectional plan view. Fig. 8 is a semi-sectional front view of the cylinder, barrels, casing, and ammunition-magazine. Fig. 9 is an enlarged cross-section of the cylinder and a portion of the magazine and barrels, and Fig. 10 is a longitudinal section of the same. Fig. 11 is an enlarged perspective view of a portion of one end of one of the sections of the cylinder detached.

A is the axle, B′ B² the wheels, and C the carriage formed in the ordinary manner of a cannon-carriage.

Mounted by trunnions a' a^2 upon the carriage C, and adapted to be elevated or depressed in the ordinary manner by a screw, *b*, to secure the proper range, is a frame or casing, D, having secured thereto a metal block, E, provided with a series of barrels, *c*, either bored in or cast in, as shown.

F is a metal cylinder, mounted upon the frame D by suitable bearings across the rear of the barrel-block E, and provided with segmental sections G, attached to its periphery, forming a complete ring about the cylinder, and adapted to fit the latter and against each other very closely, and with their outer surfaces turned true and in a perfect circle about the center of the cylinder. The rear of the barrel-block E is formed hollow to fit the sections G closely, as shown. Each of the sections G is provided with a number of chambers, *d*, corresponding in number and position to the barrels *c*, so that when one of the sections is opposite the barrel-block the chambers *d* of said section will be directly in line with and opposite to said barrels. Upon the lower part of each of the sections G is a rib, e', (see Fig. 11,) having a groove, e^2, running its entire length, and with small holes or vents e^3 running from the grooves into each of the chambers *d*. The ribs e' are adapted to fit into corresponding cavities in the surface of the cylinder F, and opposite each of said cavities and leading into the channels e^2 are "nipples" *g*, upon which percussion-caps are to be placed, as hereinafter shown. By this means, if the chambers *d* in one section be charged with powder and ball, and a percussion-cap fired on the nipple *g* corresponding thereto, the fire will run through the groove e^2 and up through the vents e^3 and ignite the powder in all the chambers of each section with one cap.

Above the cylinder is a magazine or ammunition-box, H′, divided into two compartments, H² H³, each compartment being provided with a bottom, h' h^2, between which and the bottom proper of the magazine slides h^4 h^5 are arranged to be pulled out and pushed in through the ends of the casing H′. Each of the bottoms h' h^2 and the slides h^4 h^5 are provided with perforations h^6 h^7, corresponding in number to the chambers *d* of one of the sections G, while similar perforations or conduits, h^8, connect the perforations h^7 of the slides h^4 h^5 with the chambers *d* of the sections G. The conduits h^8 are arranged so that when the sections G come beneath them each chamber *d* of two sections

will have a conduit above it at the same time that the forward section is opposite the barrels *c*, as shown in Fig. 9. The perforations h^6, through the bottoms h' h^2, are not directly above their corresponding conduits, h^8, but to one side, as shown in Fig. 8, so that when the slides are moved outward to bring the perforations h^7 beneath the perforations h^6 the solid portions of the slides will come above the conduits h^8, and then when moved back again the perforations h^7 will come above the conduits h^8 and bring the solid portions of the slides beneath the perforations h^6. The powder will be placed in the compartment H^2 and the balls in the compartment H^3. The slide h^4, it will be observed, is much thicker than the slide h^5, to provide a space within its perforations h^7 sufficiently large to hold a charge of powder for the chambers *d*, while the slide h^5 need only be thick enough to hold one bullet in each of its perforations. The perforations for the powder, it will also be seen, are much smaller than the perforations for the bullets, as less space laterally is required for the former than for the latter. A strip of rubber or leather, *i*, will be arranged in the lower face of the magazine H′ between the compartments H^2 H^3, to act as a "wiper" to the sections and prevent loose powder being carried over to the barrels. The lower face of the magazine H′ is formed some distance away from the sections G at the center and gradually approaches them again as the barrel-block E is neared, thereby forming a wedge-shaped curved cavity, so that the bullets, which are made of lead and larger than the chambers *d*, will be compressed into the said chambers, and thereby form their own wadding.

Upon the end of the cylinder F, opposite to the nipples *g*, is a ratchet-wheel, K, (see Fig. 1,) with the same number of teeth that there are sections G, (in the drawings 9,) and surrounded by a ring, K^2, having a dog adapted to engage with the teeth of the ratchet.

m' is a link or rod connecting the collar K^2 with the lower end of a hand-lever, M′, mounted upon a shaft, M^2, journaled across the rear of the cylinder F on the frame D. By this arrangement, if the hand-lever M′ be pushed forward at the top, the collar K^2 will be revolved backward around the ratchet K′, and then when pulled back again the dog, acting upon the ratchet-teeth, will revolve the cylinder.

In the edges of the sections G small cavities n' are formed, in which the point of a spring-pawl, n^2, fits. (See Fig. 1.) This spring-pawl is provided upon its upper side with a spring-catch or stop, n^3, upon which the "toe" of a dog, n^4, catches. This dog is connected by a rod, n^5, to an arm, n^6, on the shaft M^2, so that when the shaft is revolved backward the dog n^4 will be raised up, and by means of the toe of the dog catching upon the catch n^3 of the spring-pawl n^2 will draw the spring-pawl backward and remove its point outward from the cavity n', in which it fits. By this means, when the pawl n^2 is engaged with one of the cavities n', the cylinder F and its attached sections G will be held stationary; but when the latter is to be revolved the same backward movement of the hand-lever M′ that operates the ratchet K′ will also release the spring-pawl n^2 and permit the cylinder to be revolved. The lifting of the dog n^4 will in time release its hold on the catch n^3, when the spring-pawl n^2 will be thrown forward again by its spring, ready to engage with the next cavity, n', and then when the lever M′ is pushed forward again the dog n^4 will again engage with the catch n^3. Upon the opposite end of the shaft M^2 is a segment of a bevel-gear, M^3, adapted to mesh into a similar segment, M^4, upon a shaft journaled at right angles to the shaft M^2 in the side of the casing D. This cross-shaft is formed of two parts, one part, M^5, being a hollow sleeve, (see Fig. 5,) and having the segment M^4 rigidly attached thereto, as shown, and the other part of the shaft M^6 passing through the sleeve M^5. One end of the part M^6 is journaled at M^7 in the casing D and the other end journaled at M^8 in the box of the shaft M^2, while a cap, M^9, supports it at the center, the hollow sleeve M^5 running upon the part M^6 loosely.

Upon the end of the shaft M^6, between the segments M^4 and bearing M^8, is a clutch-collar, N′, having teeth t' t^2 upon the side next the segment M^4, adapted to fit into corresponding cavities in said segment when the clutch-collar is moved along the shaft toward the segment, and a tooth, t^3, upon the opposite side adapted to fit into a corresponding cavity in the box of the shaft M^2 when the clutch-collar is moved over against it, the distance between the segment M^4 and bearing M^8 being sufficient to allow of the proper movement of the clutch-collar N′ to hold the teeth t' t^2 t^3 entirely disconnected from either the segment or bearing, or connected to either one of them. A shipper-lever, N^2, (see Fig. 3,) with a spring, N^3, is arranged in the ordinary manner to throw the clutch-collar N′ back and forth along the shaft M^6 to alternately engage and disengage the teeth t' t^2 t^3 with the segment M^4 and bearing M^8. By this means, if the clutch-collar N′ be thrown back by the shipper until the teeth t' t^2 are disconnected from the segment and the tooth t^3 connected to the rigid bearing M^8, the segment and sleeve M^5 may be oscillated independently of the shaft M^6, and the latter held stationary by the clutch-collar N′, being "fixed" to the bearing M^8, and then, if the teeth t' t^2 be thrown in contact with the segment M^4 and the tooth t^3 detached from the bearing M^8, the sleeve M^5 and shaft M^6 will be connected together through the feather and groove of the clutch-collar N′ and shaft M^6, so that the oscillation of the segments will also oscillate the shaft M^6, as and for the purpose hereinafter explained.

Upon the sleeve M^6 are two arms, M^{10}, connected together by a cross-rod, M^{11}, the latter adapted to fit into a slotted hanger, h^9, pro-

jecting from the end of the slide h^4, while similar arms, M^{12} M^{13}, are arranged to act upon a slotted hanger projecting from the slide h^5. By this means it will be seen that the moving of the lever M′ back and forth to revolve the cylinder, as before described, will also, through the segments M^3 M^4 and sleeve and shaft M^5 M^6 and arms M^{10} M^{11} M^{12} M^{13} and hangers h^9, move the slides h^4 h^5 back and forth to feed the powder and balls to the chambers d.

Below the sleeve M^5 is a short plunger, u', (see Fig. 6,) provided with prongs u^2 u^3, in which the lower end of a lever, u^4, pivoted at u^5 in any suitable frame upon the casing D, fits, and adapted to be acted upon by an arm, M^{14}, projecting downward from the sleeve M^5, to throw the plunger u' inward toward the end of the cylinder F, while a spring serves to throw it back again when the arm M^{14} releases it. By this means the plunger u' will be moved inward and outward by the oscillation of the sleeve M^5.

P is a hollow tube, with its interior the same size as the lengthwise dimensions of the percussion-caps that are to be used upon the nipples g, so that when a number of these caps are placed side by side in this tube they completely fill its cross-section. At the bottom of this tube P, through both sides, opposite the ends of the caps, holes are formed slightly larger than the cap, through which the plunger u' is adapted to pass. The tube P will be set through the casing D, as shown in Fig. 3, with its lower end opposite the plunger u', while the position of the latter will be such that the nipple g of the section G, beneath the powder-compartment H^2, will be directly opposite the plunger and the holes through the tube. By this means the lower cap in the tube P, being opposite the holes in its lower end, will be forced out by the plunger u' when the shaft M^6 and sleeve M^5 are oscillated, as before described, and set over the nipple g opposite to it. Then when the plunger u' is drawn back again the weight of the caps above will force the next cap down into place, ready to be forced out upon the next nipple g when the cylinder is revolved. A number of the tubes P, ready charged with caps, will be provided, so that no delay may occur in supplying caps to the gun.

Beneath the arms M^{12}, upon the shaft M^6, is another arm, M^{15}, projecting downward therefrom, and having a pin at right angles from its lower part adapted to act upon a lever, V′, upon a plate, V^2, secured to the casing D, to disconnect its lower point or toe from a lever, V^3, upon the hammer-pivot when the shaft M^6 is oscillated.

The hammer V^4 is formed in any well-known shape, and has an arm, V^3, before described, attached to its pivot, so that the backward movement of the arm M^{15} may "reset" the hammer by throwing the teeth V^5 into gear with the toes of the lever V′. This arrangement is more clearly shown in Fig. 4.

When first operating the gun the shipper N^2 is pushed forward to throw the sleeve M^5 and shafts M^6 out of gear with each other, so that the slide h^5 will not be operated to feed balls to the chambers d in advance of the powder. By this arrangement the simple pulling of the lever M′ backward revolves the cylinder F and sections G the distance of one of the said sections, draws the slides h^4 h^5 to fill their perforations with powder and balls, and draws the plunger u' back ready to force a cap upon the nipple g, and at the same time "sets" or "cocks" the hammer V^4. Then at the forward or return stroke of the lever M′, and while the cylinder F and sections G are held stationary by the pawls n^2, the plunger u' is pushed inward and a cap forced upon the nipple g, which may be opposite to it, the slides h^4 and h^5 pushed back again to permit the powder and balls in them to fall into the chambers d in the sections G beneath them, and the section that is opposite the barrels c fired by the trigger or hammer V^4 striking the cap opposite to it. The whole operation of loading, capping, and firing is thus accomplished by the simple movement back and forth of the lever M′.

The casing D will be provided with hinges R, so that it may be turned back upon the barrels E when access is required to the barrels, &c.

The barrels c may be made separately and secured in the proper position in the frame, if desired, and the barrels will also be arranged with their "nozzles" farther apart than their "breeches," to cause the balls to sweep over a wider field when fired than if the barrels were parallel.

What I claim as new is—

1. The cylinder F, adapted to be revolved, and having a series of cavities provided with nipples g, in combination with sections G, provided with grooved ribs e', fitting into the cavities in cylinder F, and having chambers d communicating with the grooves in the ribs, the several parts being arranged and adapted to operate as set forth.

2. The revolving cylinder F, provided with chambered and grooved sections G, in combination with magazine H′, having perforated bottoms h' h^2 h^3 and intermediate perforated slides, h^4 and h^5, the slide h^4 being adapted to receive a ball, and slide h^5 a charge of powder, the several parts being arranged and adapted to operate as set forth.

3. The revolving cylinder F, provided with chambered and grooved sections G, in combination with magazine H′, having perforated bottoms and slides for the passage of balls and powder to the cylinder, the face of the magazine next to the cylinder being cut away so as to form a wedge-shaped cavity, as and for the purpose set forth.

4. The combination of cylinder F, provided with ratchet K′ and chambered and grooved sections G, having cavities n', the collar K^2, having a dog to engage with the ratchet, a

spring-pawl, n^2, and a lever, M′, connected to and operating pawl n^2, the several parts being arranged to operate as set forth.

5. The combination of cylinder F, provided with chambered and grooved sections G, the magazine H′, provided with perforated bottoms and slides h^4 h^5, shaft M^2, provided with segmental gear M^3, shaft M^6, provided with segmental gear M^4, clutch N′, and arms M^{10} M^{11}, and shipper N^2, the several parts being arranged to operate as set forth.

6. The combination of cylinder F, provided with chambered and grooved sections G and nipples g, hammer V^4, formed with arm V^3, lever V′, provided with a toe adapted to engage with lever V^3, and arm M^{15}, connected to shaft M^6 and adapted to act upon lever V′, the several parts being arranged to operate as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SIVERT PEDERSON.

Witnesses:

SEWELL A. PETERSON,

HALVOR STEENDAHL.