

(No Model.)

8 Sheets—Sheet 1.

J. S. JARMANN.
MAGAZINE GUN.

No. 308,772.

Patented Dec. 2, 1884.

Fig. 1.

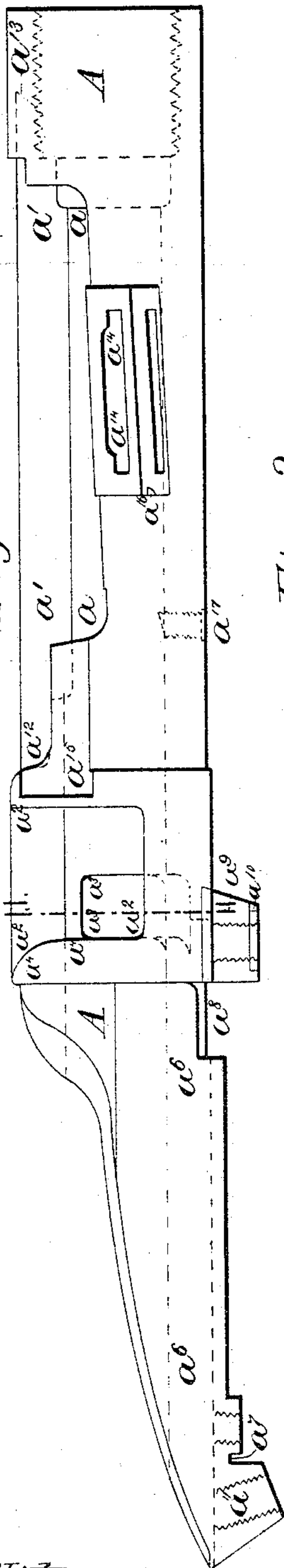


Fig. 2.

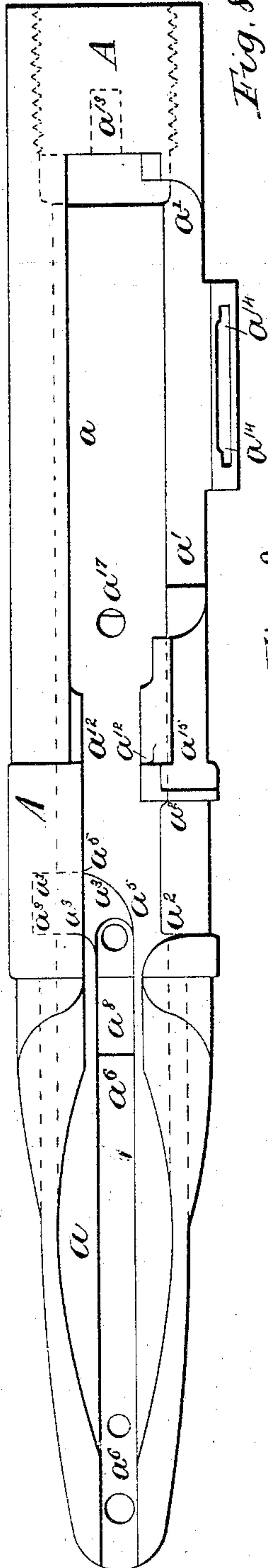


Fig. 3.

Fig. 4.

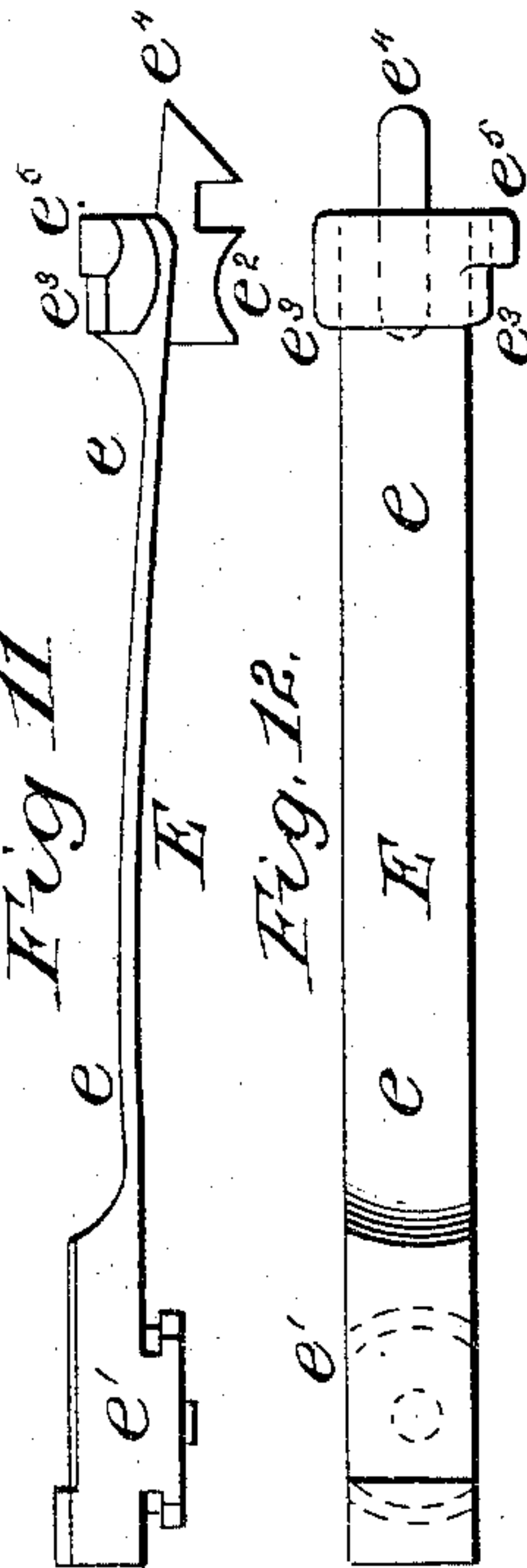


Fig. 5.

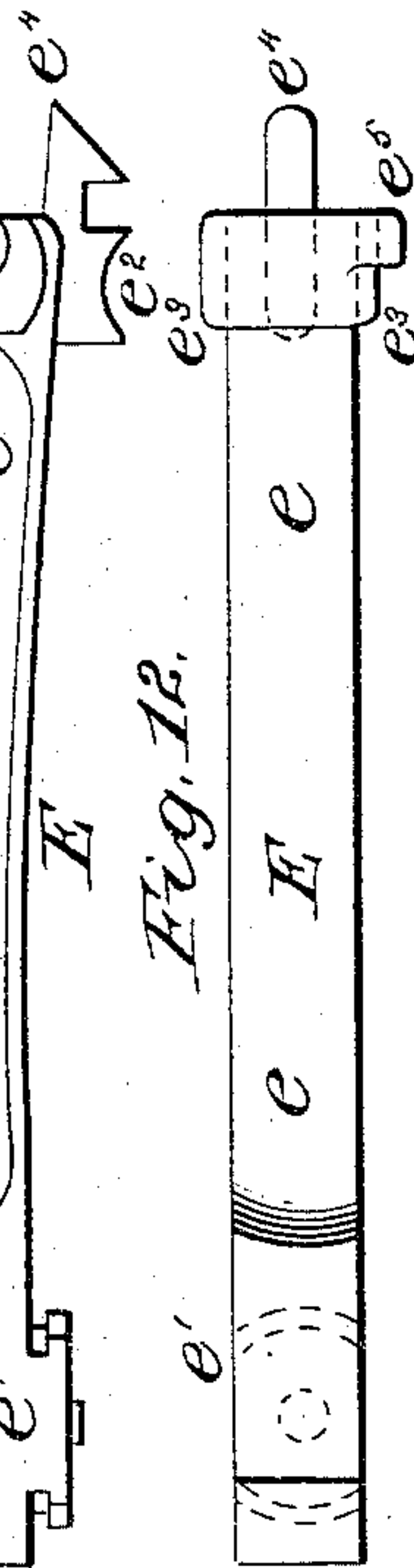


Fig. 6.

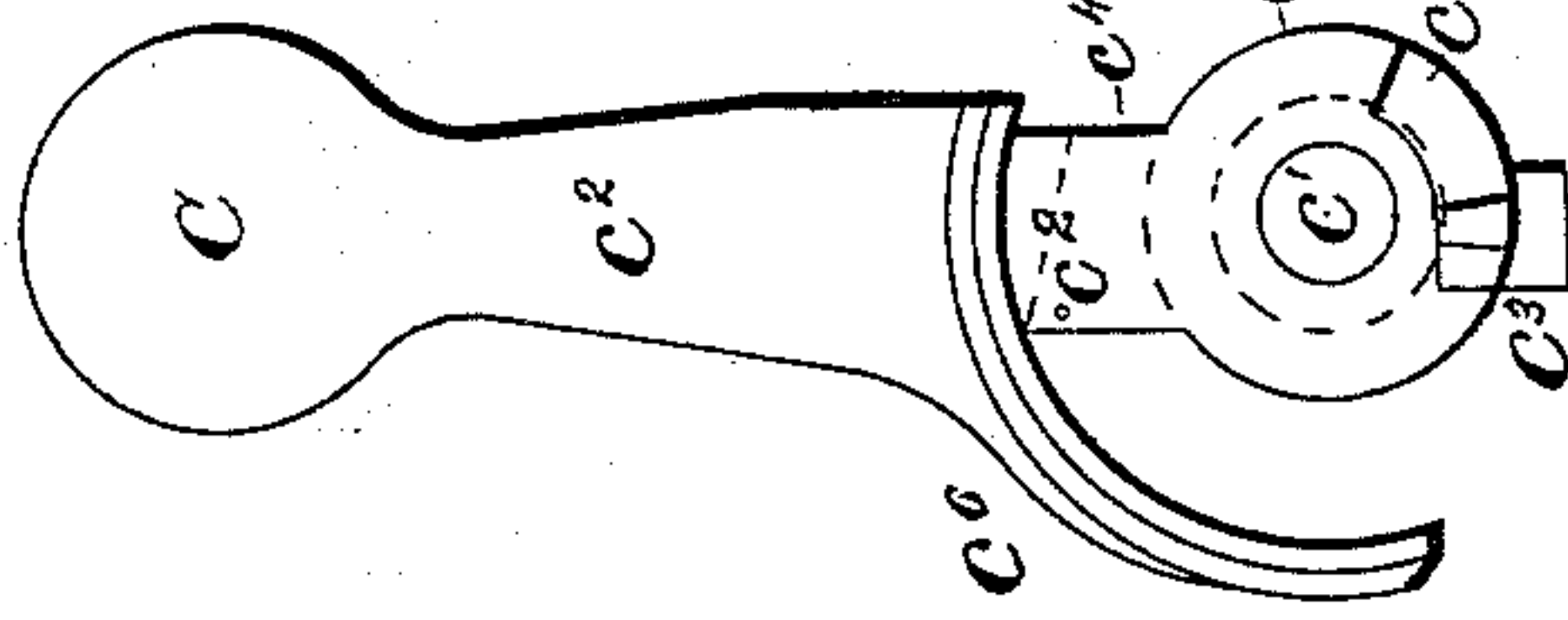
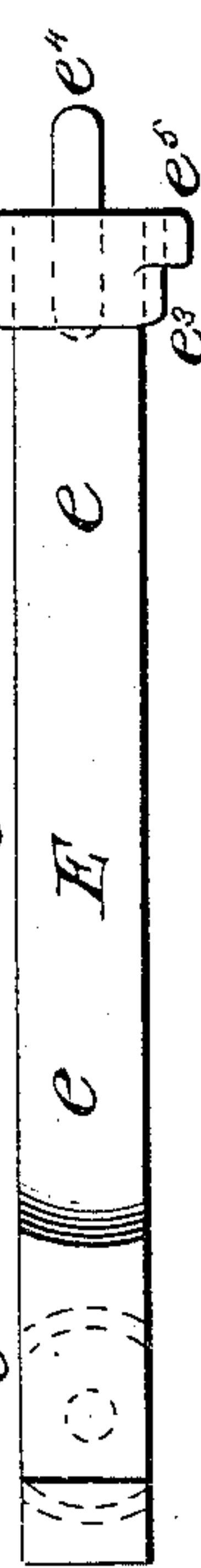
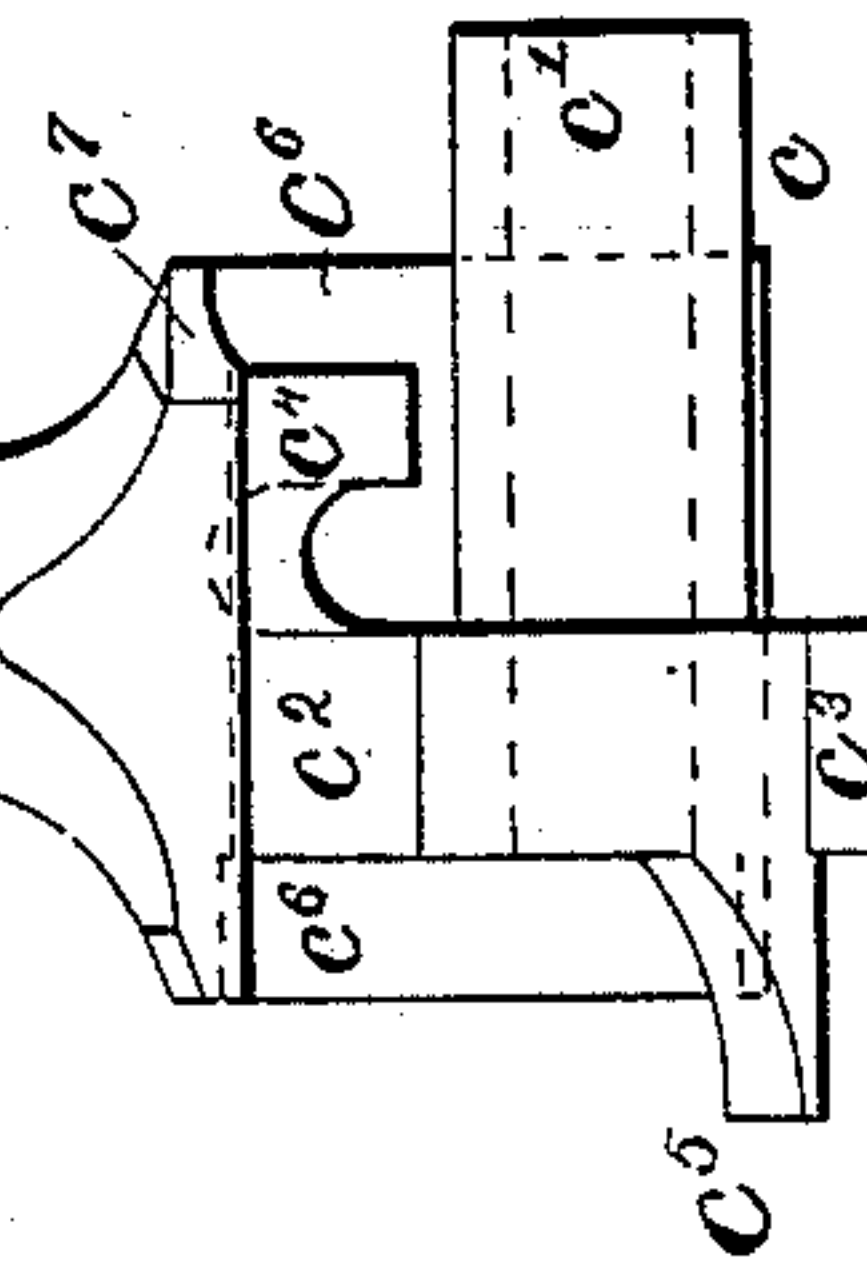


Fig. 7.



Witnesses:

Alex Scott
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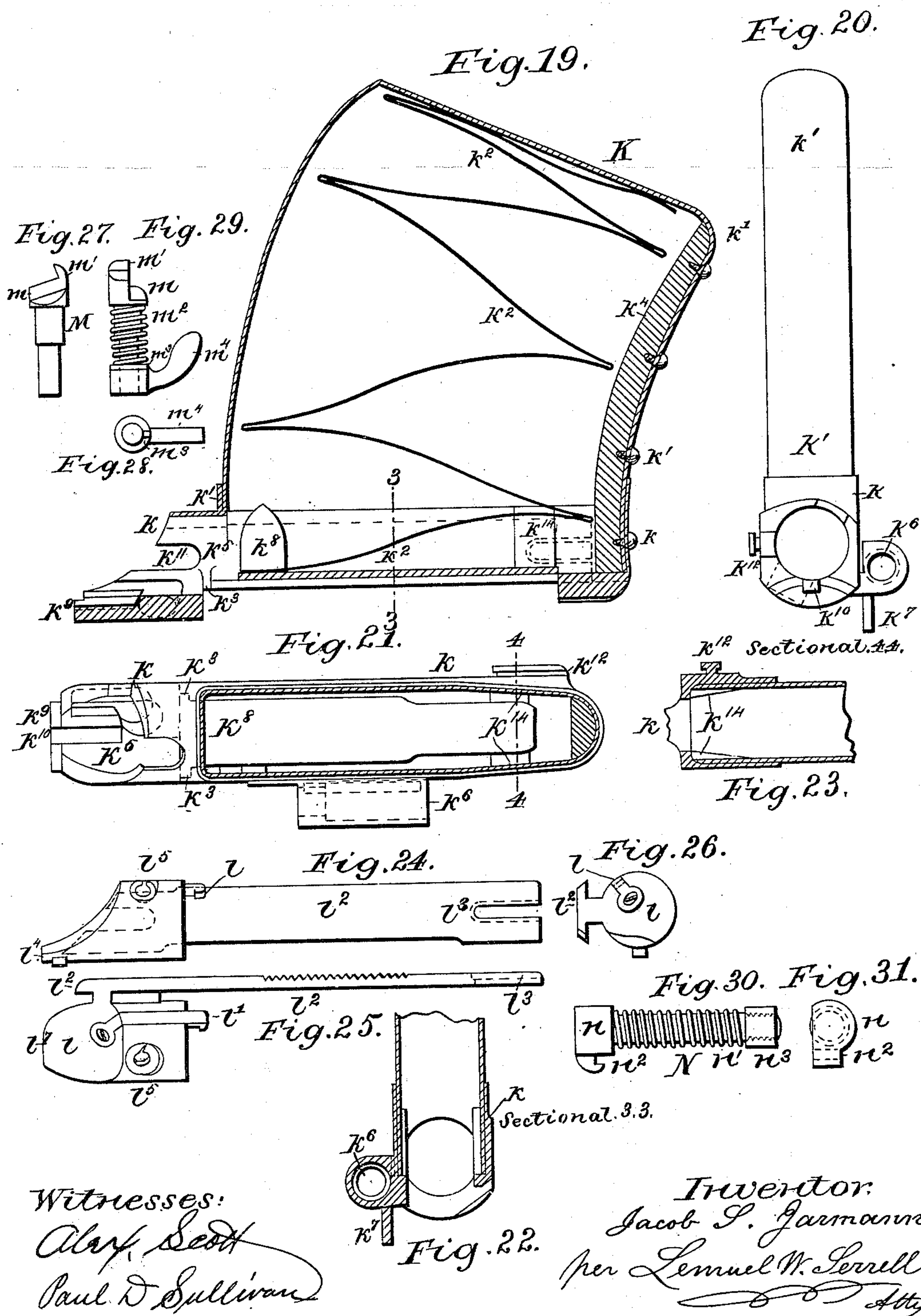
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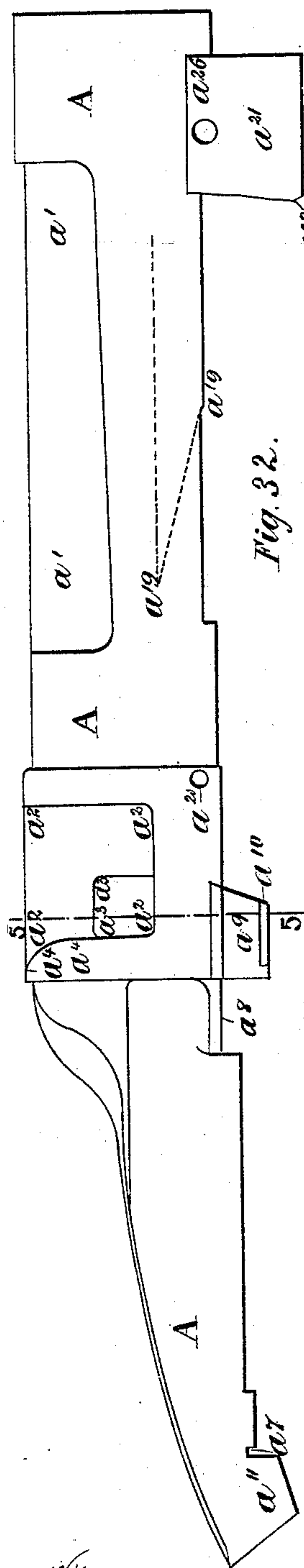


Fig. 32.

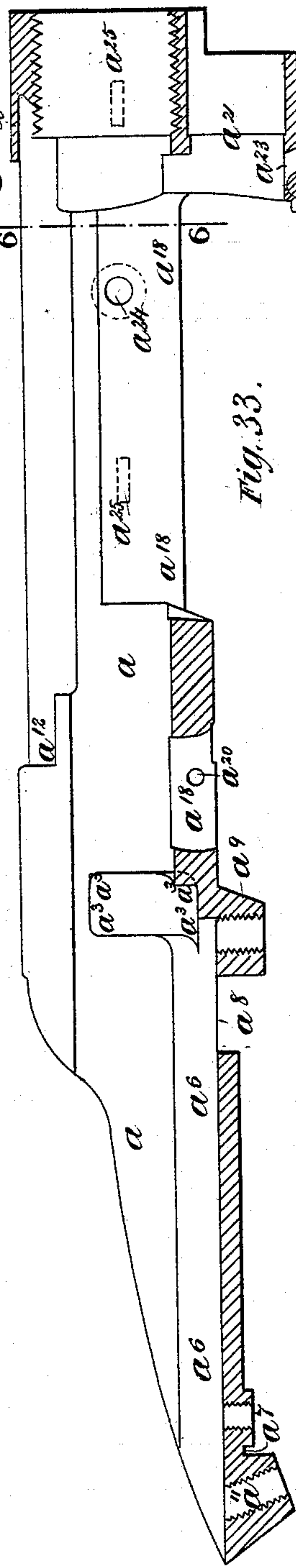


Fig. 33.

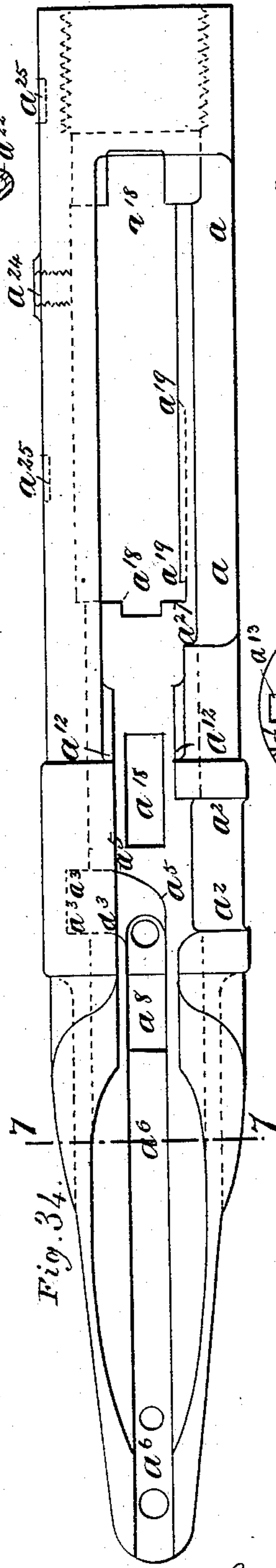


Fig. 34.

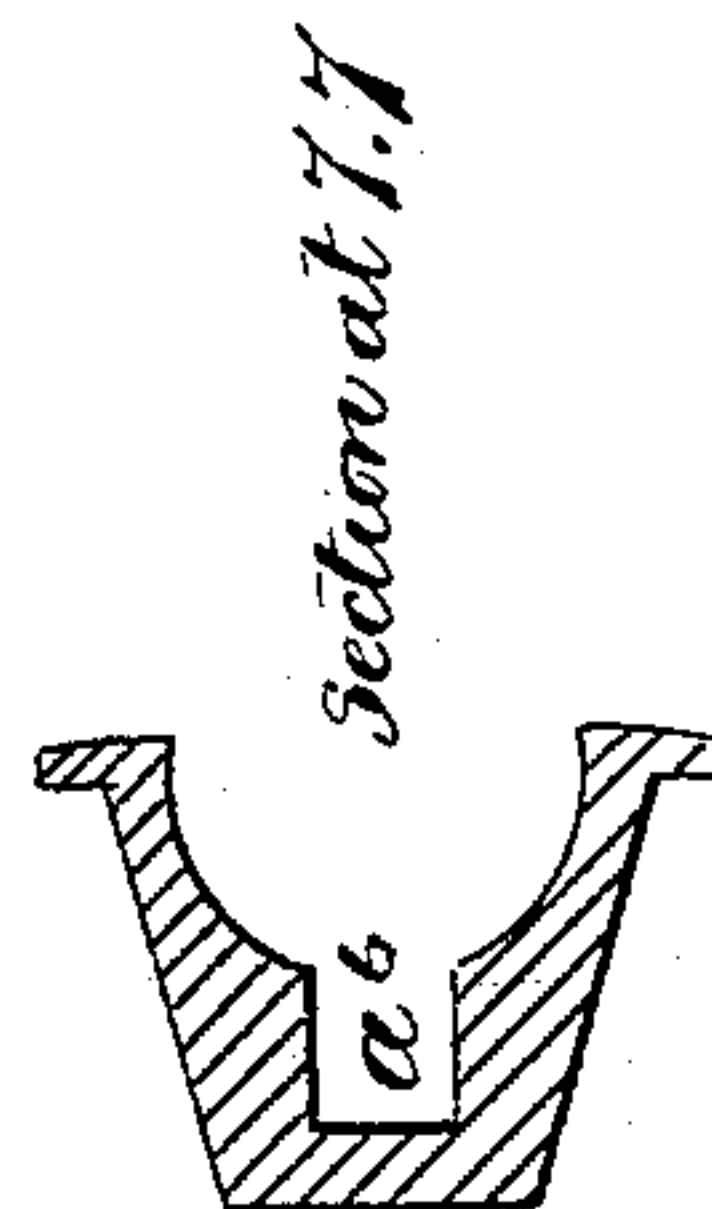


Fig. 35.

Section at 5.3

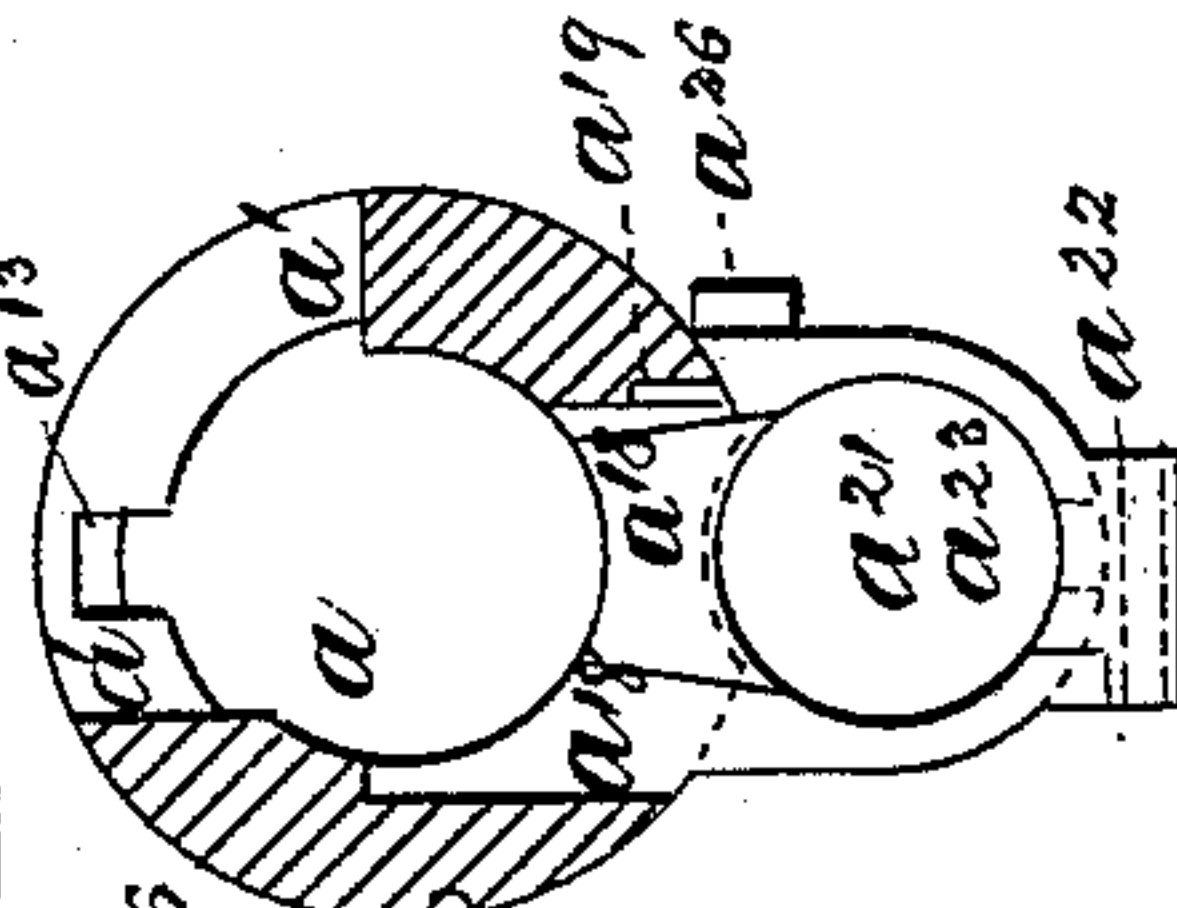


Fig. 36.

Section at 6.6



Fig. 37.

Section at 7.7

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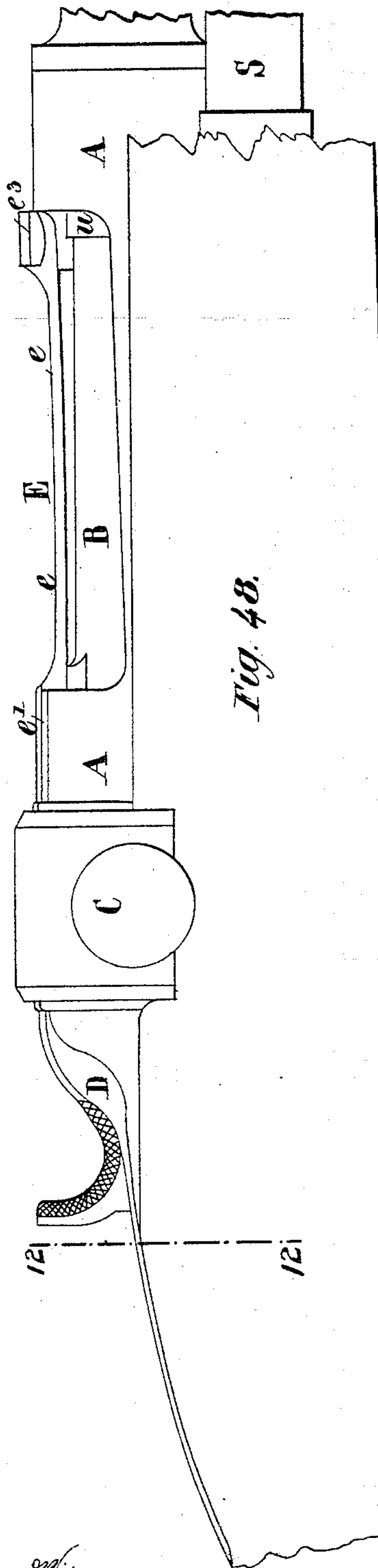
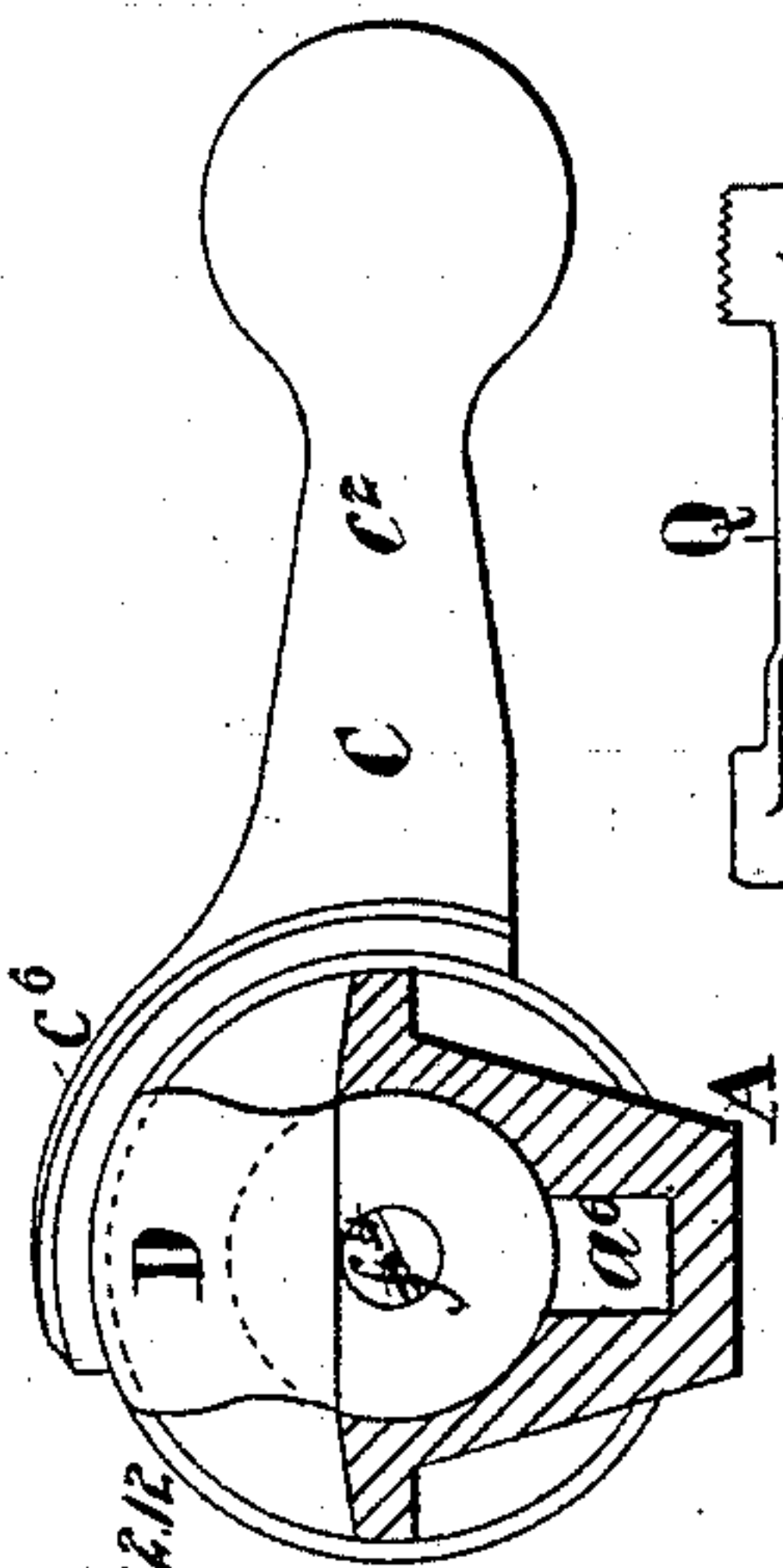


Fig. 48.



Sectional 12-12

Fig. 49.

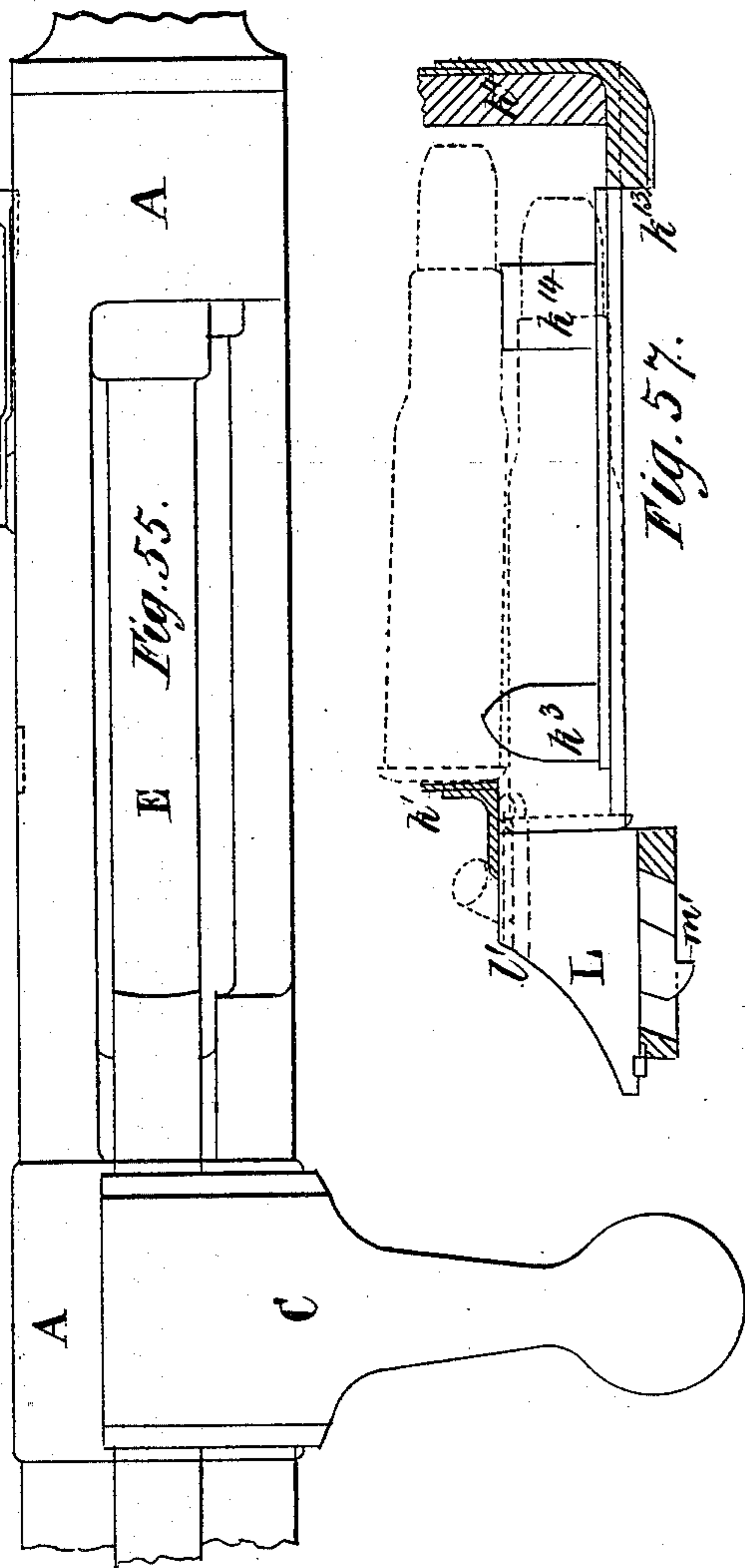


Fig. 55.

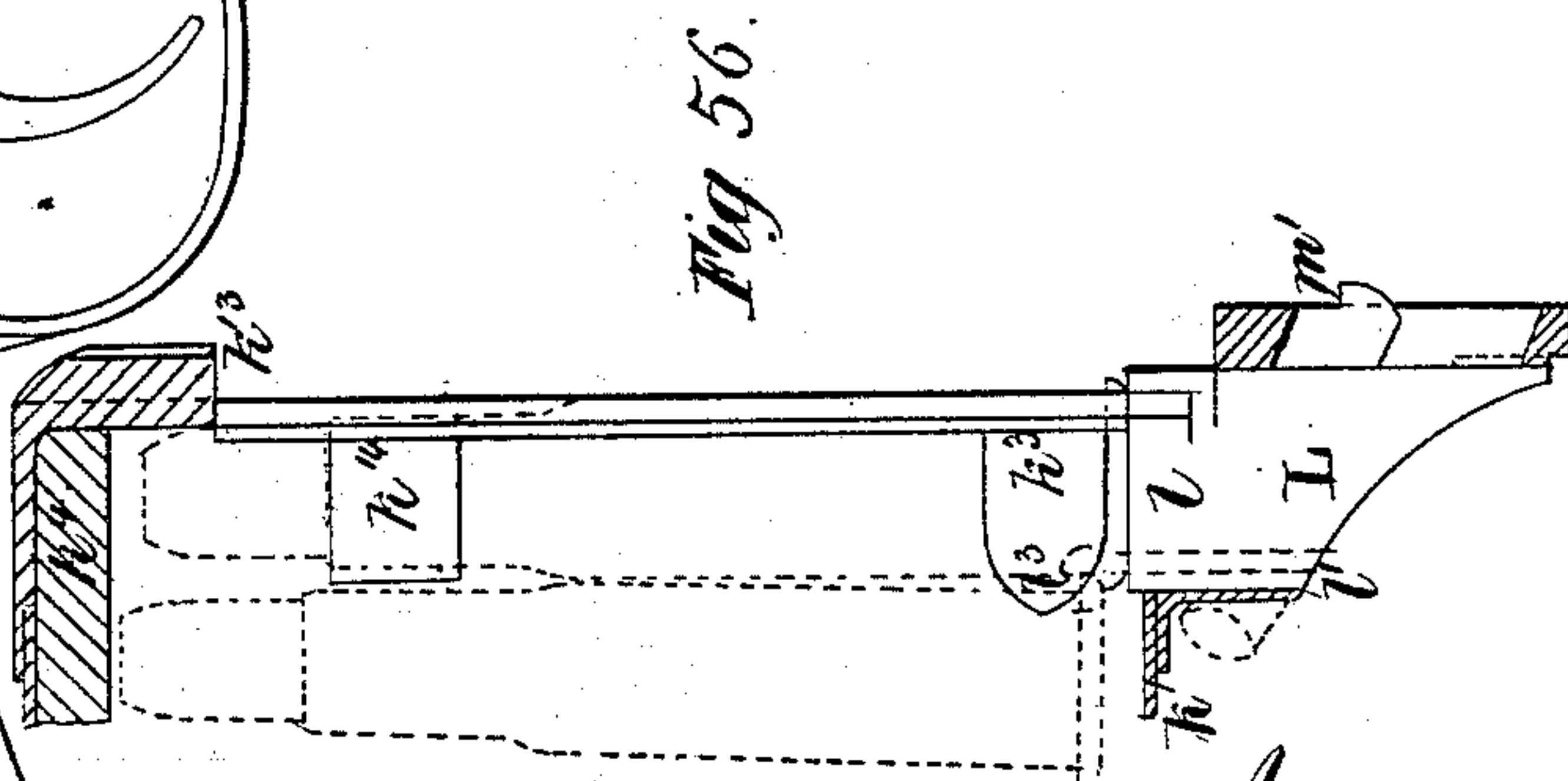


Fig. 56.

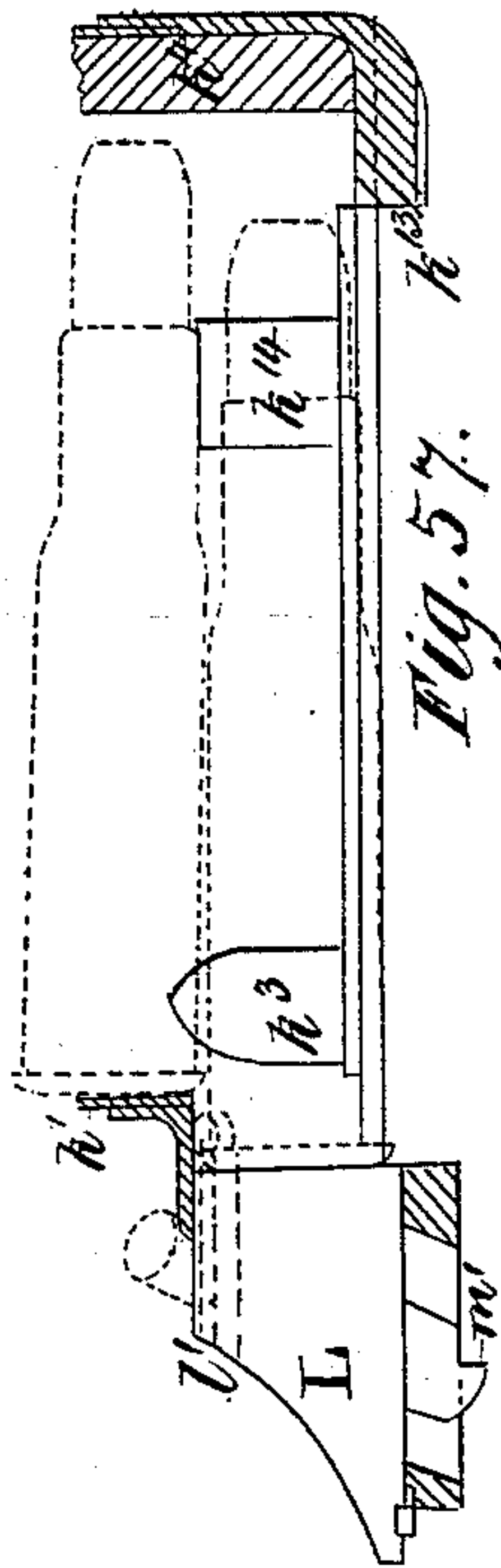


Fig. 57.

Witnesses

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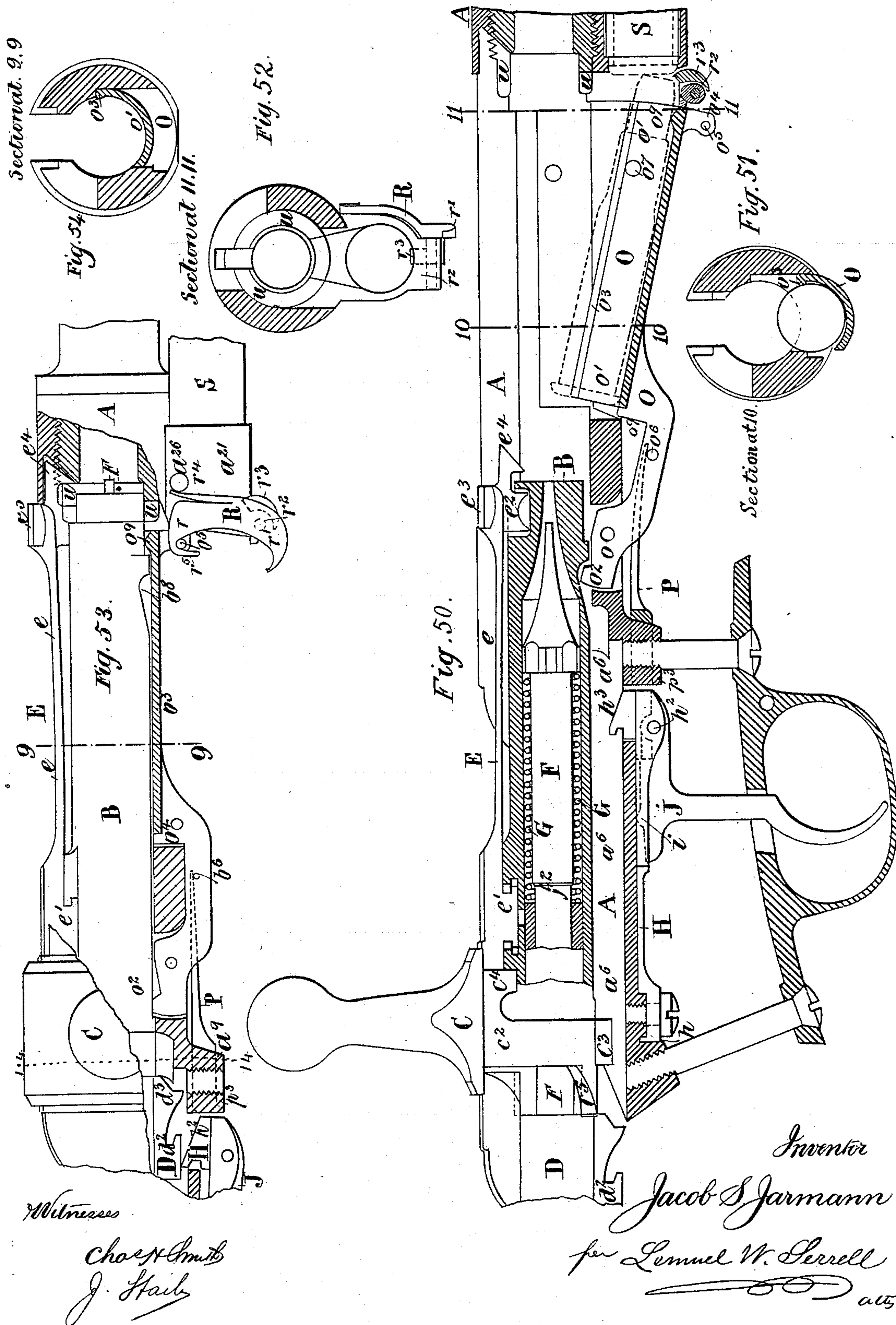
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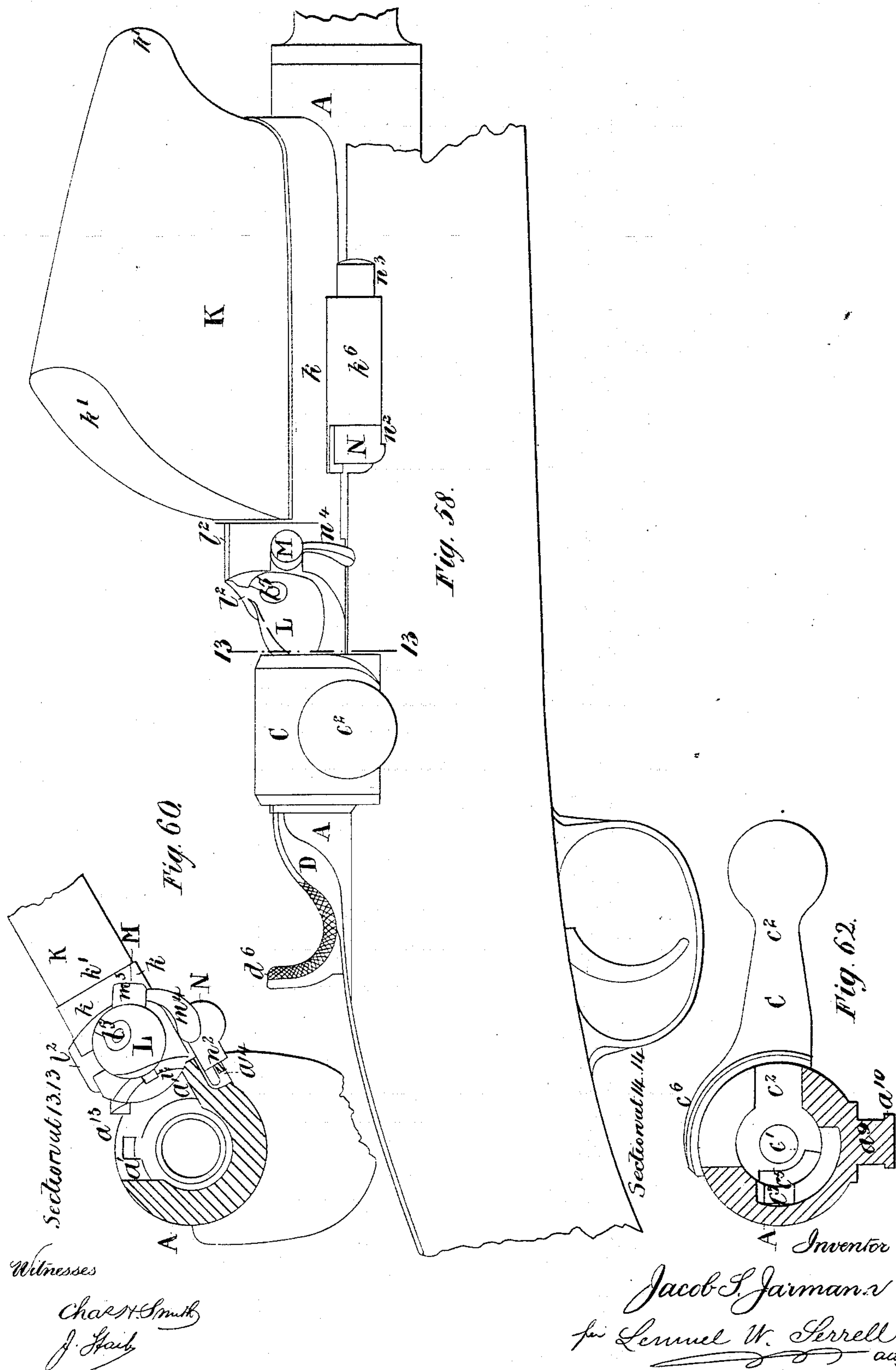
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Patented Dec. 2, 1884.



Witnesses

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(No Model.)

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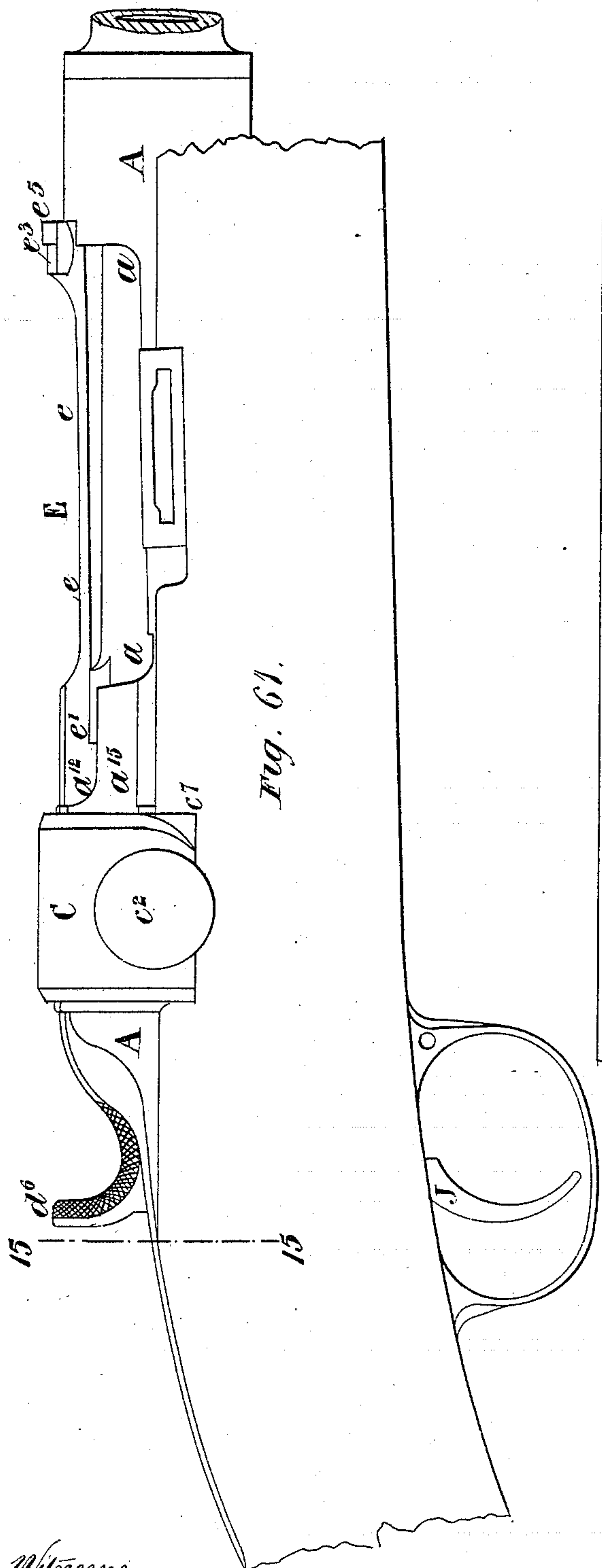


Fig. 61.

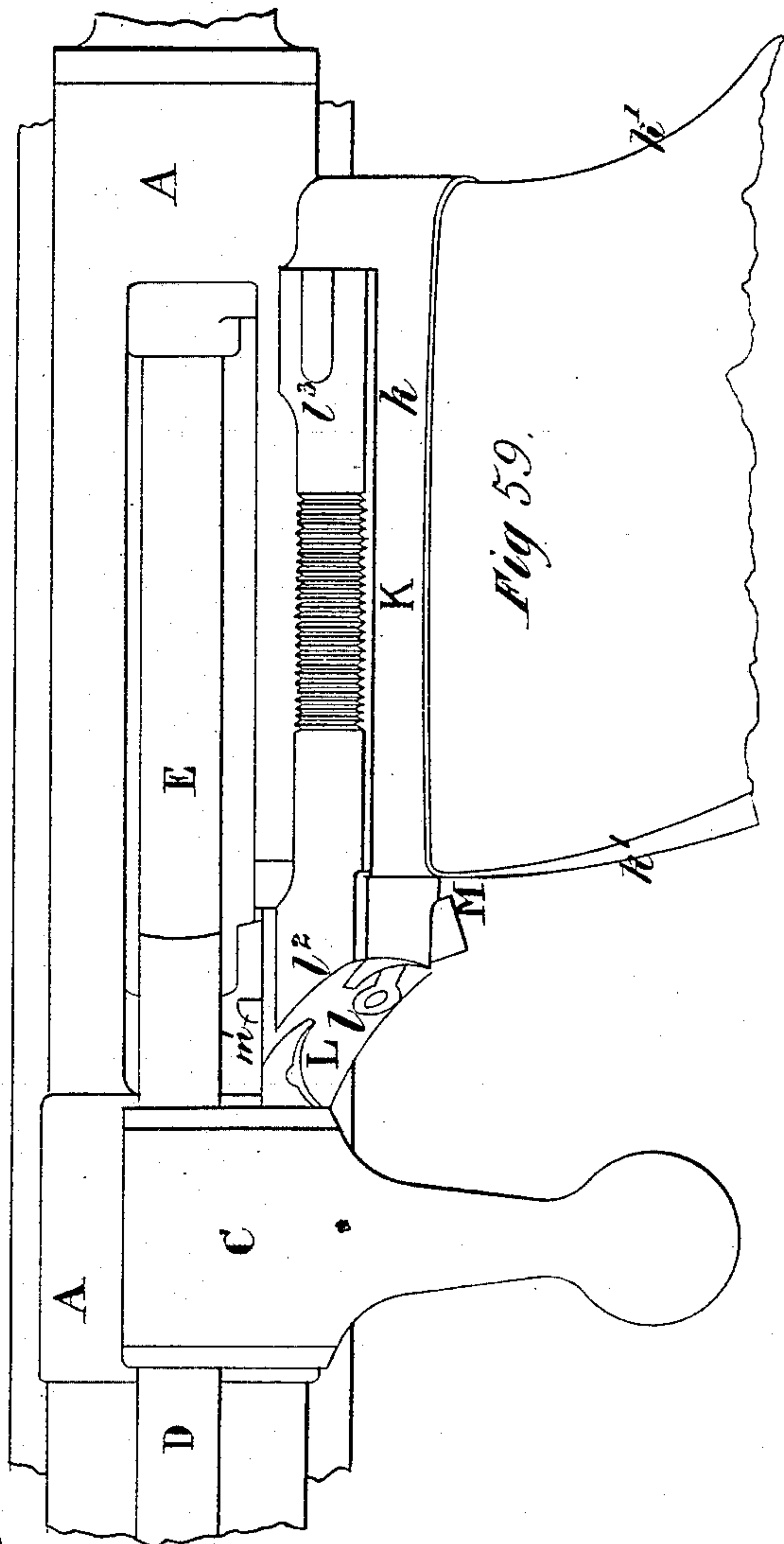


Fig. 59.

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UNITED STATES PATENT OFFICE.

JACOB SMITH JARMANN, OF CHRISTIANIA, NORWAY.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 308,772, dated December 2, 1884.

Application filed March 5, 1883. (No model.) Patented in Sweden September 13, 1882; in Norway November 21, 1882; in England December 11, 1882, No. 5,912; in France January 10, 1883, No. 153,041; in Belgium January 15, 1883, No. 60,161; and in Germany March 1, 1883, No. 26,768.

To all whom it may concern:

Be it known that I, JACOB SMITH JARMANN, a subject of the King of Norway, residing at Christiania, Norway, have invented new and useful Improvements in Breech-Loading Fire-Arms and in Repeating-Magazines Therefor, of which the following is a specification.

Fire-arms constructed according to this invention have a breech part which consists of the breech-case and of the following six parts, which are movable therein—viz., the breech-bolt, the closing and thrust block, the hammer, the extractor, the striker, and the main-spring. This mechanism is applied to a gun which is provided with a cartridge-magazine in the upper part of the gun and a cartridge-magazine under the barrel, the whole arrangement being such that the gun may be supplied first from one magazine and then from the other magazine; or the gun may be made with the upper magazine alone or with the lower magazine alone. The breech mechanism remains substantially the same in all the aforesaid cases.

Figure 1 is a side view of the breech-case A, containing the breech mechanism. Fig. 2 is a plan of same; Fig. 3, a cross-section on line 1 1. Fig. 4 is a longitudinal section through the breech-bolt B; Fig. 5, a plan of same, and Fig. 6 an end view. Fig. 7 is a side view, and Fig. 8 an end view, of the closing and thrust block. Fig. 9 is a side view, and Fig. 10 an end view, of the hammer D. Fig. 11 is a side view, and Fig. 12 a plan, of the extractor E. Fig. 13 is a side view, and Fig. 14 an end view, of the striker F. Other or accessory parts of the breech mechanism are the trigger-spring and the trigger. Fig. 15 is a longitudinal section, and Fig. 16 a plan, of the trigger-spring; and Fig. 17 is a side view, and Fig. 18 an end view, of the trigger. Fig. 19 is a vertical section through the upper detachable magazine, K. Fig. 20 is an end view; Fig. 21, a plan section; Fig. 22, a vertical section on line 3 3; Fig. 23, a vertical section. Fig. 24 is a side view, Fig. 25 a plan, and Fig. 26 an end view, of a carrier, L, which works within the lower part of the magazine K. Fig. 27 is a side view, Fig. 28 an end view, and Fig. 29 a plan, of a cartridge-guard, M, for admitting a car-

tridge from the magazine K into the breech. Fig. 30 is a side view, and Fig. 31 an end view, of a stop-hook, N, for securing the upper magazine, K, in place. Fig. 32 is a side view of the breech-case A when adapted for a tubular magazine under the barrel; Fig. 33, a longitudinal section; Fig. 34, a plan; and Figs. 35, 36, and 37, cross-sections, respectively, on lines 5 5, 6 6, and 7 7. Fig. 38 is a longitudinal section, Fig. 39 a plan, and Fig. 40 a cross-section on line 8 8, of the cartridge-feeder O, which receives the cartridge from the tubular magazine under the barrel. Fig. 41 is a plan, and Fig. 42 a side view, of the cartridge-feeder spring P for the lower magazine. Fig. 43 is a plan, and Fig. 44 a side view, of the stopper Q for the repeating mechanism of the lower magazine. Fig. 45 is a side view, Fig. 46 an end view, and Fig. 47 a part plan, of cartridge-guard R. Figs. 48 to 51 also refer to the gun when arranged with the tubular magazine underneath, Fig. 48 being a side view of the gun with the breech closed; Fig. 49, a vertical cross-section on line 12 12; Fig. 50, a longitudinal section of gun with the breech open; Fig. 51, a vertical cross-section on line 10 10; Fig. 52, a similar section on line 11 11; Fig. 53, a part sectional side view of the gun with the breech closed; Fig. 54, a vertical cross-section on line 9 9; Fig. 55, a plan. Figs. 56 to 66 refer to the gun when arranged for the upper detachable magazine, K, Fig. 56 being a longitudinal section showing one position of the cartridge in the lower part of the loose magazine, and Fig. 57 being a similar section showing another position of the cartridge; Fig. 58, a side view of the gun with the magazine K attached and the breech closed, and Fig. 59 a plan of same; Fig. 60, a vertical section on line 13 13; Fig. 61, a side view of the gun with the magazine K detached therefrom, and Fig. 62 is a cross-section on line 14 14.

The breech-case A, Figs. 1 and 2, which is screwed to the barrel, consists of a cylindrical tube, as usual in the bolt system, inside of which the movable breech mechanism works during the manipulation of the gun. The breech-case, as described below, and also the details of the breech mechanism and its arrangements, differ essentially from older types

of this system. Thus the thrust or recoil is taken up by a slot, a^2 , which receives the lever of the closing-block C, Figs. 7 and 8, and by a groove, a^3 , which receives the thrust-knob of the closing-block, so that the thrust or recoil is taken up diametrically on both sides of the breech-case, which, as regards solidity and accuracy in firing, has considerable advantages. For the downward movement of the lever of the closing-block, a curved inclined plane, $a^4 a^4$, in the aforesaid slot a^2 causes the cartridge to be pressed into the cartridge-chamber, and in the reverse movement of the lever a curved inclined plane, $a^5 a^5$, in the aforesaid groove a^3 causes an effective extraction of the cartridge-case. Thereby the thrust-knob C^3 of the closing-block C, Figs. 7 and 8, is forced over this curve. A slot, a^6 , receives the knob d^2 of the hammer D, Figs. 9 and 10, that has the full and half cock notches d^3 and d^4 and the third knob, c^3 , of the closing-block C, and it serves, also, for guiding the movable breech mechanism in its forward and backward motion during the manipulation of the gun. A notch, a^7 , at the rear serves as a support for the projection h , Figs. 15 and 16, for the trigger-spring. A mortise, a^8 , receives the cocking-knob h^3 of the trigger-spring. A lower lug, a^9 , Figs. 1, 32, and 33, serves for fastening the breech mechanism to the stock, and by its lateral projections a^{10} on the said lug the spring of the cartridge-feeder for the magazine under the barrel is secured, as will be described later on with reference to the magazine under the barrel. There is also a knob, a^{11} , at the rear for fastening the mechanism to the stock. The upper stop-notches, $a^{12} a^{12}$, stop the movable breech mechanism from moving backward farther than till the extractor-head abuts against these notches. A recess, a^{13} , in the socket for the barrel receives the extractor-hook e^4 , Figs. 11 and 12, when the mechanism is closed.

The special arrangements of the breech-case where the magazine K is to be made detachable are as follows: On the right side of the breech-case there is a recess, a^{14} , into which is inserted the stud of the loose magazine. Near the top and more to the rear there is a recess, a^{15} , for mounting the magazine. A screw-hole, a^{17} , is provided on the bottom of the breech-case for an ejecting-pin, which is only necessary when the loose magazine is intended to be used.

The movable breech mechanism consists of the following parts: The breech-bolt B, Figs. 14, 15, 50, and 62, is a cylinder with a front end, b , having a hole for the striker F. In the interior of this cylinder the mainspring and the striker are generally placed, the latter being in this case guided in a lateral groove, b^2 . The bolt has a lug, b^3 , at the rear, by which the closing-block draws the bolt back. On top a circular cut, b^4 , opens laterally and secures the end e' of extractor E, Fig. 11. A recess, b^5 , receives the knob e^2 on the front end of the extractor. The bolt B has a flat

face, b^1 , to permit it to pass over the ejecting-knob a^{17} , in the bottom of the breech-case.

The closing and thrust block C, Figs. 7 and 8, is formed with a pivot, c , that fits in the hollow cylinder b' of the bolt, and there is a hole, c' , for the striker F, Figs. 13 and 14. On this pivot the closing-block C turns sufficiently for opening or closing the mechanism. The closing-block is provided with the lever-knob c^2 , by which the mechanism is worked during the manipulation of the gun, and when the mechanism is closed this lever takes up the thrust in the aforesaid slot a^2 of the breech-case simultaneously with a lower thrust-knob, c^3 , that takes up the thrust in the aforesaid groove a^3 in the breech-case. Further, the closing-block is provided with a projection, c^4 , that engages with the rear lug or stud, b^3 , of the bolt B, Fig. 14. When the lever is turned up, therefore, in drawing the mechanism backward, the bolt is carried along by a spirally-formed incline plane, c^5 , at the back. The gun, as usual in the bolt system, is cocked when the closing-block is thrown up. A curved covering-plate, c^6 , on the closing-block protects the mechanism against dirt and imparts by its forward edge and rounded corner c^7 a forward impulse to the sliding carrier in the magazine. This curved plate also locks this magazine when the mechanism is closed and keeps it firm during firing.

The hammer D, Figs. 9 and 10, has a spirally-formed inclined plane, d , corresponding with the inclined plane c^5 of the closing-block, as shown by dotted lines. Through the middle of the hammer is a hole, d' , partly screw-threaded, for connecting the striker F to said hammer. The hammer is provided underneath with a knob, d^2 , with a nose, d^3 , for full-cock and a notch, d^4 , for half-cock. This knob is guided in the slot a^6 in the rear end of the breech-case A, Figs. 1, 2, and 33. There is also a front projection, d^5 , which also serves for guiding the hammer in the breech-case. By the comb d^6 the gun may be full or also half cocked. The point of the spirally-formed inclined plane c^5 in the closing-block C, Fig. 7, rests in a recess, d^7 , formed in front end of cock, and this prevents the hammer from turning when the mechanism is opened.

The extractor E, Figs. 11 and 12, consists of a very powerful spring, e , provided with a round button-formed knob, e' , by which it is fastened to the thrust-bolt B at b^4 , and when in this position the extractor is turned till a knob, e^2 , at the front enters the recess b^5 at front end of the bolt B, when the extractor is secured and in its right position. To take out the extractor only requires the lifting of the knob e^2 out of the cut b^5 in the bolt and the turning of the extractor a quarter-circle to either side. The fore part of the extractor E is provided with a head, e^3 , each projecting side of which, when the breech mechanism is open, abuts against the stop-notches $a^{12} a^{12}$ in the breech-case, and thus arrests the backward movement of the mechanism. e^4 is the ex-

tracting-claw. The extractor-head e^3 is also, at the right side, provided with a lug, e^5 , Fig. 12, that gives motion to the repeating mechanism of the loose magazine K, Fig. 19. By lifting up the extracting-claw e^4 (using, for instance, the right forefinger for that purpose) sufficient to allow the two side projections of the extractor-head e^3 to slide over the strengthened part of the breech-case, (at the aforesaid thrust-slot a^2 ,) the movable breech mechanism may be removed from the breech. By pushing the mechanism forward it may be again refitted, the extractor-spring thereby being lifted up and sliding freely up the inclined plane on the rear of the breech-case until the extractor-head e^3 has passed the above-named strengthened part of the breech-case, whereupon the extractor-head e^3 again drops down into the stop-notches $a^{12} a^{12}$, and the mechanism is then in the position shown in Fig. 50. This extractor has thus the following functions to perform, viz.:

First. To extract the cartridge-case from the chamber as usual—viz., by the hook e^4 .

Second. To eject the empty case. This is done only through the tension of the extractor-spring, which presses the rim or flange of the cartridge-case so hard against the bottom of the breech-case that the friction thereby produced is sufficient to throw the empty case gently clear of the gun.

Third. To stop the travel of the movable mechanism.

Fourth. To assist in removing the movable breech mechanism from the case.

Fifth. To secure the movable breech mechanism.

Sixth. To guide the back and forward movements of the bolt.

Seventh. When using the loose magazine K it serves also for giving partial impulse to the repeating mechanism of this magazine.

The striker F has at the front end a head, f , that fits in the inner cylinder, b' , of the bolt B. In instances where a cartridge bursts, the head has to let the gas escape, and for this purpose the head is formed with grooves or hollows, f' , by which the violent repulse of the piston is partially prevented. Near the middle the striker has a shoulder, f^2 , which in such cases is forced into contact with the pivot c of the closing-block, Fig. 8, and thereby prevents any flow of gas toward the eye of the operator and keeps the mainspring from being over-forced. To prevent the striker from unscrewing itself the head f^2 is provided with a feather, f^3 , that moves in the corresponding groove, b^2 , in the bolt. The back end of the striker has screw-threads f^4 , which are for screwing it into the hammer. The mainspring C is, as usual in this system, a helical steel spring.

The trigger mechanism consists of—

First. The trigger-spring H, Figs. 15 and 16, which is placed beneath the breech-case, at the rear of the same, between the notches a^7 and a^8 provided therein, and has a hook, h , that

catches in the back notch, a^7 , in the breech-case A, whereby the spring H, fastened by a screw, is protected against the shock caused by the forward movement of the breech mechanism. The spring has a slot, h' , for the trigger J, which is hinged thereto by a pin, h^2 . On the upper side, at the foremost end, this spring has the cocking stop-lug h^3 , that enters the opening a^8 in the breech-case, where it first meets with the full-cocking notch d^3 of the hammer D.

Second. The trigger J, Figs. 17 and 18, has a rounded projection on the top i , which abuts against the breech-case, and by which most of the pulling is done. When this first touch is felt the rest of the pulling requires a continual and but very slight pressure on the trigger.

The following is a description of the next part of my invention, which refers to the repeating detachable magazine K, Figs. 19 and 56 to 60. This is mounted on the top of the gun, standing out at an angle and communicating directly with the breech. Though preferably detachable, it may, if desired, be permanently fixed.

The magazine K consists of a lower case, k , for the mechanism. To this case k is soldered the cartridge-holder k' , inside of which is a zigzag spring, k^2 , that presses the cartridges down in the loading-opening in the breech-case, the cartridge which is retained in the magazine, Fig. 56, by the cartridge-flange, dropping into the notches $k^3 k^3$, one on each side. The magazine has an inner leather lining, k^4 , in front, to prevent the points of the bullets from being damaged by the recoil during the firing with the magazine loaded. The lower case, k , has a cylindrically-bored rear part, k^5 , in which slides carrier L, Figs. 24 and 25. The case has on one outer and lower side an eye, k^6 , Fig. 20, in which is inserted a stop-hook, N, Figs. 30 and 31; also a lower stud, k^7 , Fig. 20, that enters the eye a^{14} in a corresponding recess on the right side of the breech-case, and by which the magazine is mounted. There are two projections, k^8 , one on each side, inside the magazine-case. These support the flange of the cartridge when the carrier is pressing the extractor over the cartridge-flange A. The tongue k^9 at the rear extends a little under the curved plate c^6 of the closing-block C, and by this the magazine is kept quite firm when the mechanism is closed and ready for firing. It is here also formed with a slot, k^{10} , for the stop-pin l^1 of the carrier, Fig. 24, and with a slot, k^{11} , for guiding the carrier L at the left side. In front it is provided with a projection, k^{12} , Fig. 23, that enters a slot, l^2 , in the front end of the carrier guiding-arm l^2 , Fig. 24. At the bottom, in front, there is a flange, k^{13} , for the point of the bullet to rest on, and two inner inclined planes, k^{14} , one on each side, for guiding the cartridge, as shown at Figs. 23, 56, and 57. A magazine of such a size that it can hold seven cartridges appears to be the one most suitable. Having one cartridge

in the barrel, eight shots will then be available. The carrier L, that moves inside the cylindrical part k^5 in the magazine, is formed like a cylindrical plug, l , provided with the extractor l' , by means of which the cartridge is carried along so far that its flange may pass out through the opening k^3 , and the bullet-point gets clear of the aforesaid bottom flange-seat, k^{13} . The cartridge is then free, and is pressed down in the loading-opening of the breech-case by the zigzag spring k^2 , Fig. 19, the flat arm l^2 serving as a guide for the carrier, for which reason it has the aforesaid slot l^3 for the lug k^{12} . There is a hole, l^5 , bored aslant through the cylindrical body of the carrier, and in this turns a cartridge-guard, M, Figs. 27, 28, and 29, by the aid of which the mechanism of the magazine may be put into motion or stopped at pleasure, so that the gun in that case could work as a single-loader or with a bottom magazine. The carrier L receives its motion in one direction through the said guard M, when this is placed in such a position that the extraction-stud e^5 , Fig. 12, by the backward movements of the mechanism, can get hold of the catch-knob m' on the magazine-guard, and in the other direction the carrier receives its motion from the rounded-off corner c^7 of the closing-block which incloses the mechanism, presses against the end l' of the carrier, and moves it forward.

The cartridge-guard M, Fig. 27, of the magazine K consists of a small central pin, m , provided with an outer helical spring, m^2 , and turning in the aforesaid oblique hole l^5 in the carrier by means of a catch-knob, m' . The pin, when turned half round one way, comes right opposite the lateral front lug, e^5 , Fig. 12, of the extractor, and in opening the mechanism this lug will draw the carrier back, and thus let the cartridge in the magazine held by the carrier's extractor l' , Figs. 25, 56, and 57, drop down in the loading-opening of the breech-case. In the reverse movement of the pin the catch-knob m' will come so low that the extractor's lug e^5 , Fig. 12, will pass over it, and no motion will then be communicated to the magazine, and firing with the gun as a single-loader may go on without interfering with the magazine at all. The helical spring m^2 , together with a small stud, m^3 , on an arm, m^4 , for turning the pin, serves as a stopper for the two positions in which the magazine is put into motion or stopped.

The stop-hook N, Fig. 13, fixed in the eye k^6 on the magazine K, consists of a hook part, n n^2 , on a pin provided with a helical spring, n' , which draws the hook part n^2 into a notch, a^{16} , Fig. 1, in the breech-case by which the loose magazine is secured.

Fig. 56 shows the position of the cartridge in the lower part of the magazine K at the moment when the extractor l' , fixed to the corner pressed forward by the covering-plate c , has seized the cartridge-flange.

Fig. 57 shows the position of the carrier L, with cartridge drawn back by the extractor-

stud e^5 , the cartridge here being free to pass down into the loading-opening of the breech-case.

Figs. 58 and 59 show the gun with the magazine mounted and the mechanism closed ready for firing.

When the gun is also to be provided with or adapted for the magazine under the barrel, I make such magazine in the usual tube form, as I shall now explain with reference to Figs. 32 to 55. This tube S is made to take eight cartridges, and is at one end secured in a socket, a^{21} , or the breech-case A, (shown separately in Fig. 32,) and at the other end to a stud on the barrel. This tube-magazine also contains the usual helical spring and runner, that press the cartridges one after the other into the breech.

The breech-case A, Figs. 32 and 50, as adapted for the magazine S, is arranged as follows: A slot, a^{18} , is formed in the bottom, and in this slot works the cartridge-feeder O, Figs. 38, 39, and 40, which is guided by a rib, o^3 , fitting in the inclined recess a^{19} in one side of the slot a^{18} , and is hinged to the breech-case at o . A screw-hole, a^{24} , on the side of the breech-case receives the stopper Q, Figs. 44, 45, for the magazine S, and there is a front recess and a rear recess, a^{25} , for fixing the end of that stopper in its two positions. a^{26} is a stop that limits the movements of the stopper. The cartridge-feeder O receives the cartridge from the magazine S and receives its impulse through a spring, P, Figs. 41 and 42, and the inclined plane leading to the hollow b^8 in the under side of the bolt B, Fig. 4, in the following manner: When the bolt B is drawn so far back that the lifting back end, o^2 , of the cartridge-feeder enters the said recess, the spring P acts on the stud o^6 on the cartridge-feeder and brings the front part of the same low enough to receive the cartridge from the magazine. It is brought back to its former position by means of the inclined plane at the recess b^8 , as this plane in the forward movement of the mechanism presses the back end o^2 of the feeder down and consequently the cartridge is lifted up, as shown at Fig. 53. The cartridge that the scoop has received from the magazine-tube, being forced up, is stopped against the back part of the opening a^{18} a^{18} in the breech-case. By having the aforesaid recess b^8 , Fig. 4, in the under side of the bolt so placed, and by having a longitudinal rib, o^3 , of the cartridge-feeder resting in the outer longitudinal groove, b^9 , in the side of the bolt, the cartridge-feeder, which in this case forms the bottom of the breech-case, is prevented from falling down before the empty case is ejected by the extractor E. The rib o^3 , as long as it is in contact with the outer groove, b^9 , in the bolt, also relieves the lifting end of the feeder o^2 from the reacting pressure caused by the extractor when in the act of ejecting the empty cartridge-case. When the cartridge-feeder is down, Fig. 50, the rib o^3 and the inclined recess a^{19} a^{19} , Fig. 34, in the bottom of

the breech-case form a passage in which the cartridge-flange is guided, and whereby the cartridge is prevented from getting out of the feeder before it reaches the extremity of the opening in the breech-case at the rear of the feeder, where the cartridge-flange at one side gets clear of the rib o^3 , and at the same time it is released at the other side by a notch, a^{27} , in the side of the breech-opening, and is then at liberty to be lifted up in the breech-case by the cartridge-feeder O. The lug o^4 on the front end of the latter stops the cartridge in the magazine-tube, the same being liberated by the guard R the moment the mechanism is closed, and it lies now ready to enter the cartridge-feeder when the mechanism is again opened. The pin o^5 through the lug o^4 of the feeder serves for giving impulse to the cartridge-guard R while closing and opening the mechanism, as the pin then alternately comes in contact with the arms of the cartridge-guard above and below its fulcrum. There is a rib, o^9 , across the fore end of the scoop-formed part of the cartridge-feeder, that lifts the cartridge, and thereby facilitates its entrance into the cartridge-chamber. A projection, o^{10} , prevents the cartridge-flange from falling down behind the upper end of the cartridge-feeder when this is down. The cartridge-feeder spring P is formed with a front stop in the rear. It has also a notch, p^2 , by which it is fastened to the screwed lug a^9 under the breech-case A. The back arms of the spring have hooks p^3 , by which it is held fast when acting on the transverse pin o^6 of the arm of the feeder. Thus this spring presses the cartridge-feeder down when free of the stopper Q of the repeating mechanism. Through the pin o^5 in the back end, o^4 , of the feeder this spring also depresses an arm or hook, r' , of the cartridge-guard R.

The stopper Q, Figs. 43 and 44, of the repeating mechanism consists of a handle having at one end a screw, q , that fits into a hole, a^{24} , Figs. 33 and 34, on the left side of the breech-case. The end of the screw q has a short stud, q' , that has one-half of its diameter filed off to a D-section, that permits it, when placed in one position, to pass through the slot o^8 in the scoop of the cartridge-feeder, and when placed in the opposite position enters that part of the hole o^7 in the scoop of the cartridge-feeder not filed out, and thus keeps the feeder up and fixed, and the gun may then be worked just as if it had no magazine S.

To keep the stopper steady in its two positions, the handle or arm q^2 is formed as a spring, provided at the extremity with a small projection, q^3 , that enters into a recess, a^{25} , in the outer side of the breech-case.

The cartridge-guard R, Fig. 46, consists of a balance-lever, the two arms or ends r and r' of which form an angle, and it turns on its center-pin r^2 , that works in the hole a^{22} in the magazine-tube socket a^{21} , Figs. 32, 33. The guard has a tooth, r^3 , that enters into a slot-opening, a^{23} , in the tube-socket, and hinders the cartridge that comes from the magazine

from getting farther than to this claw, which is pressed into the eye in the tube-socket a^{21} by the impulse that the feeder-spring gives to the feeder and its stud o^5 at its lower front end. As this latter abuts against the lower arm, r' , of the guard and forces this down, and thereby also the tooth into the tube-socket a^{21} , this of course prevents the next cartridge from following the one that has passed into the feeder. The pressure of the helical magazine-spring upon the cartridge, which is stopped against the claw of the guard, keeps the claw in the socket, as this pressure takes effect above the center about which the guard turns. The other impulse that the guard receives is also communicated to it through the pin o^5 at the rear end of the feeder, as this pin, when the cartridge-feeder is lifted, pushes the upper arm, r , of the guard forward, and thus draws the guard's claw r^3 out of the tube-socket a^{21} , and the cartridge resting against the claw is made free and abuts against the lug on the fore end, o^4 , of the feeder. An end projection, u , Figs. 50, 52, and 53, on the barrel extends into the loading-opening of the breech-case, whereby the bullet-points, at the rapid forward movements of the mechanism, are prevented from being thrown up so high by the cartridge-feeder as to abut against the edges of either the barrel or breech-case in the loading-opening, and thus hinder the cartridges from getting into their places.

The mechanism proper of the gun is so constructed that it may also be used either for a repeating-gun with upper magazine, or for a repeating-gun with lower magazine, without removing or changing any of the parts of which the mechanism consists.

I claim as my invention—

1. The breech-case A, having a lateral slot, a^2 , a lateral recess, a^3 , and curved inclined faces a^5 , in combination with the closing-block C, having corresponding parts, c^2 and c^3 , for the purposes of taking up the end-thrust and for causing an effective extraction of the cartridge-case, substantially as described.

2. The upper magazine, K, the lower magazine, S, and cartridge-feeder O, in combination with the breech-case A, having the recesses a^{14} , a^{15} , and a^{16} , for affixing the upper magazine, K, the lateral projections a^{10} , for attaching the spring P, the slot a^{18} and the pin o , for connecting the cartridge-feeder O, the incline a^{19} , for guiding the cartridge into said feeder, and the socket a^{21} and the hole a^{24} , for connecting the lower magazine, S, substantially as set forth.

3. The closing-block C and the breech-case A, having recesses a^{14} and a^{15} , for affixing the upper magazine, K, in combination with the upper magazine, K, and with its cartridge-carrier L, and with the curved plate c^6 upon the closing-block C, for holding the magazine K during firing, and an incline, c^7 , for operating on the cartridge-carrier L of the magazine K for closing it, substantially as described.

4. The closing-block C, its claw c^4 , and the

extractor E, in combination with the breech-bolt B, having a lug, b^3 , which is operated by the claw c^4 of the closing-block C, and having the groove b^4 and recess b^5 , for fixing the extractor E, substantially as described.

5 5. The mainspring G and the hollow bolt B, having a lateral groove, b^2 , for guiding the striker, in combination with the striker F, having a shoulder, f^2 , for preventing injury
10 to the mainspring G and other internal parts from gas-pressure, a guiding-feather, f^3 , with a spring, G, and with means for impelling the striker, substantially as described.

6. The breech-case A, having an inclined
15 recess, a^{10} , in combination with the hollow bolt B, having a rear lug, b^3 , and an outer groove, b^9 , and the block C, having a hollow pivot, c , and a claw, c^4 , which engage with the bolt B, and the cartridge-feeder O and its nose
20 o^2 , operated thereby, and a rib, o^3 , which is guided in the said groove b^9 , and takes the wear and friction from the nose o^2 , and prevents, in conjunction with the recess a^{10} , the cartridge from leaving the feeder O before it
25 has reached the extremity of the opening in the breech-case at the rear of the feeder O, substantially as described.

7. In combination with the bolt B and breech-case A, the extractor E, having a knob,
30 e' , for fastening one end to the slot b^4 on the bolt B, and serving to assist in removing the bolt and other moving parts from the breech-case, a knob, e , which enters a recess, b^5 , on the bolt B, for holding the extractor in posi-
35 tion, and a head, e^3 , the sides of which abut against the stops a^{12} in the breech-case A in the backward movement of the bolt and the other moving parts of the mechanism, and hold them in the breech-case and guide the bolt,
40 substantially as described.

8. The case A, cartridge-magazine S, stopper Q, its pin q' , and the guard R, in combination with the cartridge-feeder O, forming the
45 bottom of the breech-case A, and connected thereto by pin o , and a slot, o^8 , which operates in conjunction with the half-round pin q' on the

stopper Q, for stopping the supply of cartridges from the magazine S, and having a pin, o^5 , which operates a cartridge-guard, R, for
50 intermittently admitting cartridges from the magazine S, substantially as described.

9. The magazine S, feeder O, and pin o^5 , in combination with the cartridge-guard R, consisting of a double-armed lever operated on
55 one arm, r , or the other, r' , by the pin o^5 of the cartridge-feeder O, and having a cam, r^3 , which opens and shuts for the cartridges as they are pushed out of the magazine S, substantially as described.

10. In combination with the closing-block
60 C and an upper magazine, K, the cartridge-carrier L, which works in the rear end of the bottom part, k , of the magazine, an extractor, l' , and a stop or guard, M, for shutting off the
65 supply from the magazine, and for being operated by the extractor, the carrier L having also a rear projection, l' , which is operated on by the incline c^7 on the closing-block C, substantially as described.

11. The combination, with the gun-barrel
70 A, extractor E, and hook e^4 , and the cartridge-feeder O, operating as described, of the projection u on the gun-barrel, formed with an upper notch for the hook e^4 of the extractor
75 and with lower notch for the point of the cartridge to pass through, for the purpose of preventing the cartridge from being thrown out of the breech, substantially as described.

12. The combination, with the closing-block
80 C and an upper magazine, of the bottom part or case, k , having a cylindrical part, k^5 , for receiving a cartridge-carrier, an eye, k^6 , a stop-hook, M, a stud, k' , for connecting to the breech-case, a tongue, k^9 , which is held firmly during
85 firing by the rim c^6 of the closing-block C, and guiding parts k^8 , k^{13} , and k^{14} for the cartridge, substantially as described.

JACOB SMITH JARMANN.

Witnesses:

F. BARBET,
JOHN DEAN.