

(No Model.)

6 Sheets—Sheet 1.

K. KRINKA.
MAGAZINE GUN.

No. 475,061.

Patented May 17, 1892.

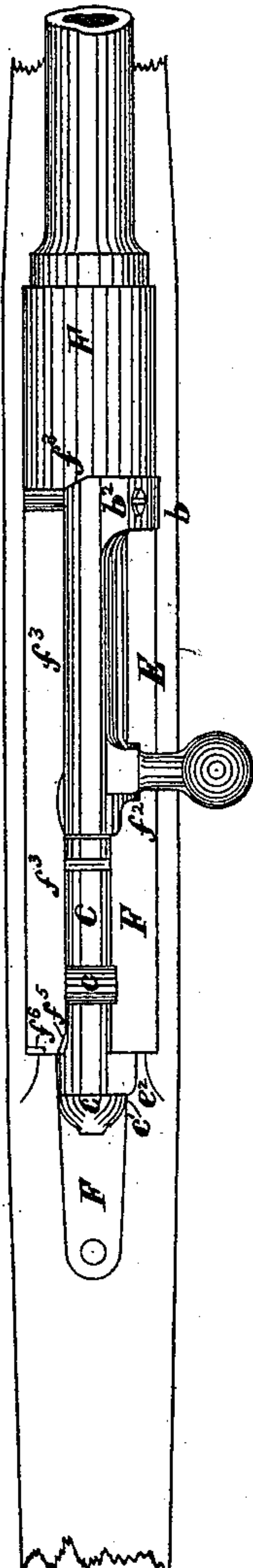
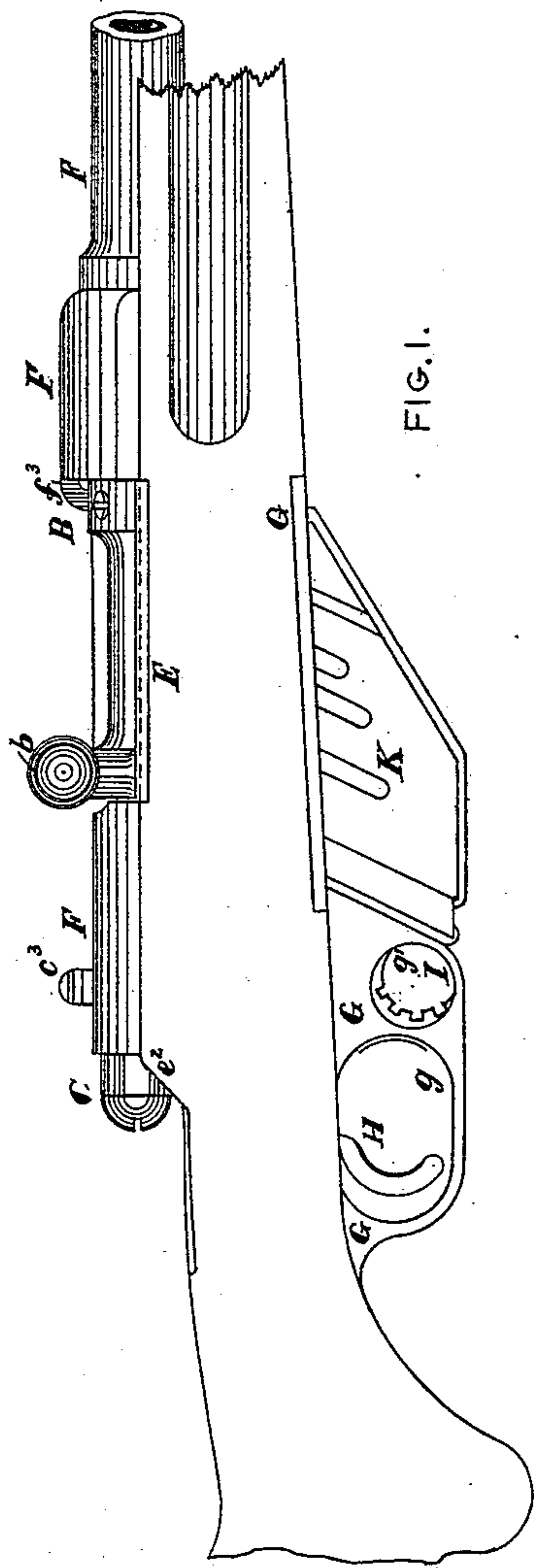


FIG. 2.

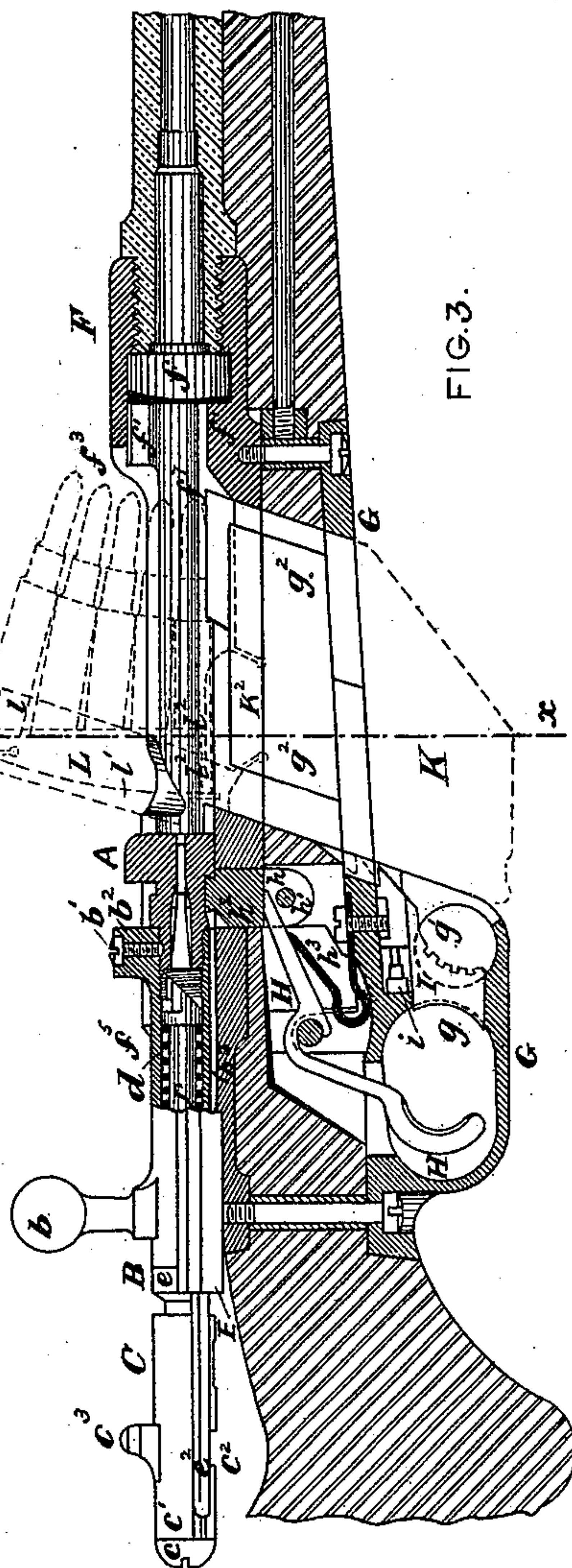


FIG. 3.

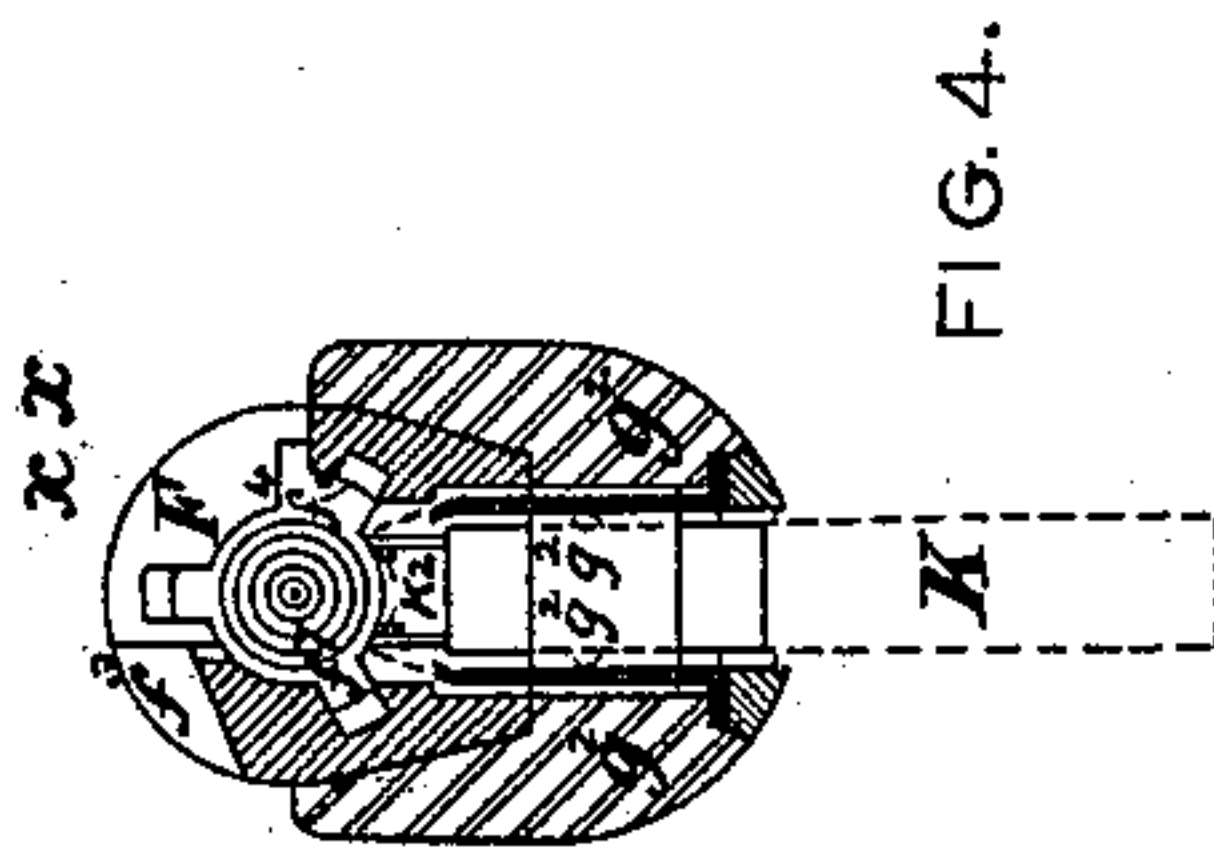


FIG. 4.

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H. Salmer

By

Inventor:
Karl Krinka
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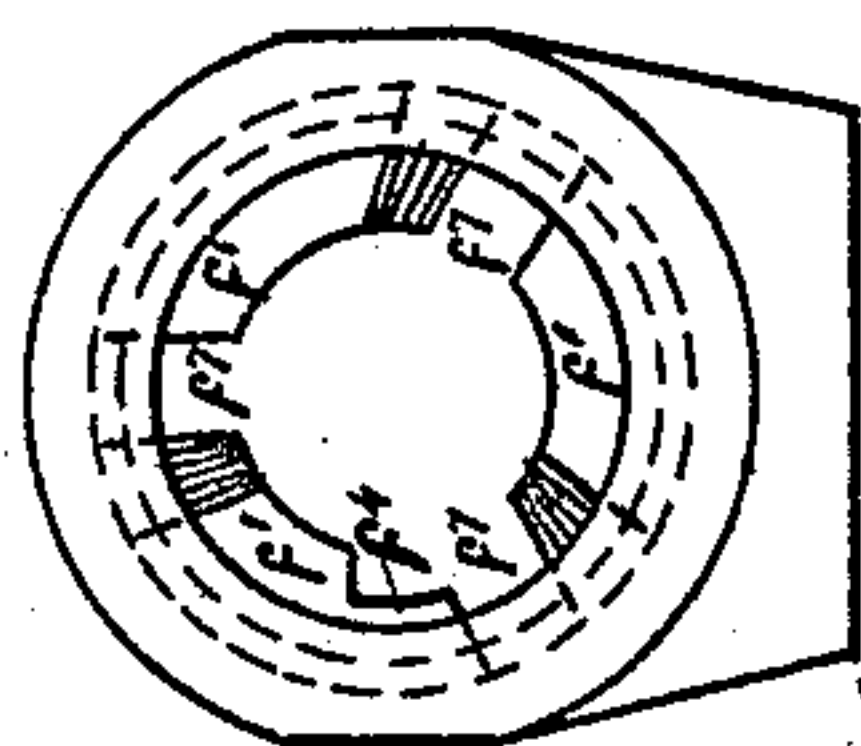
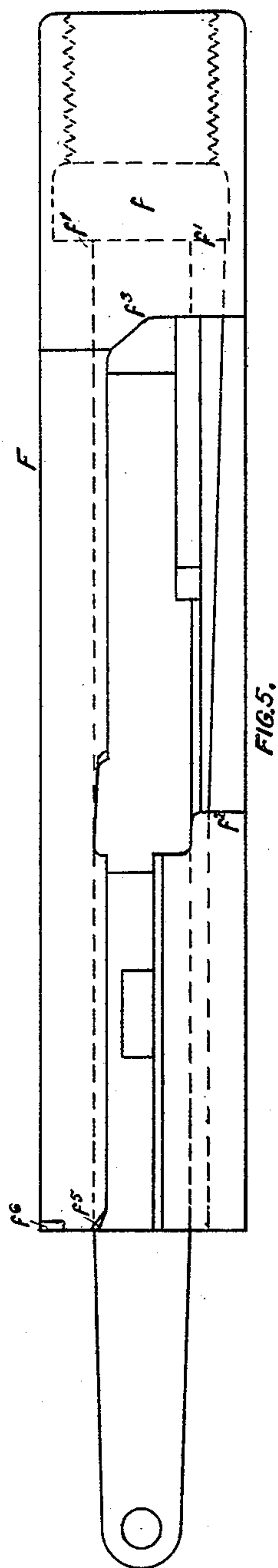


FIG. 9

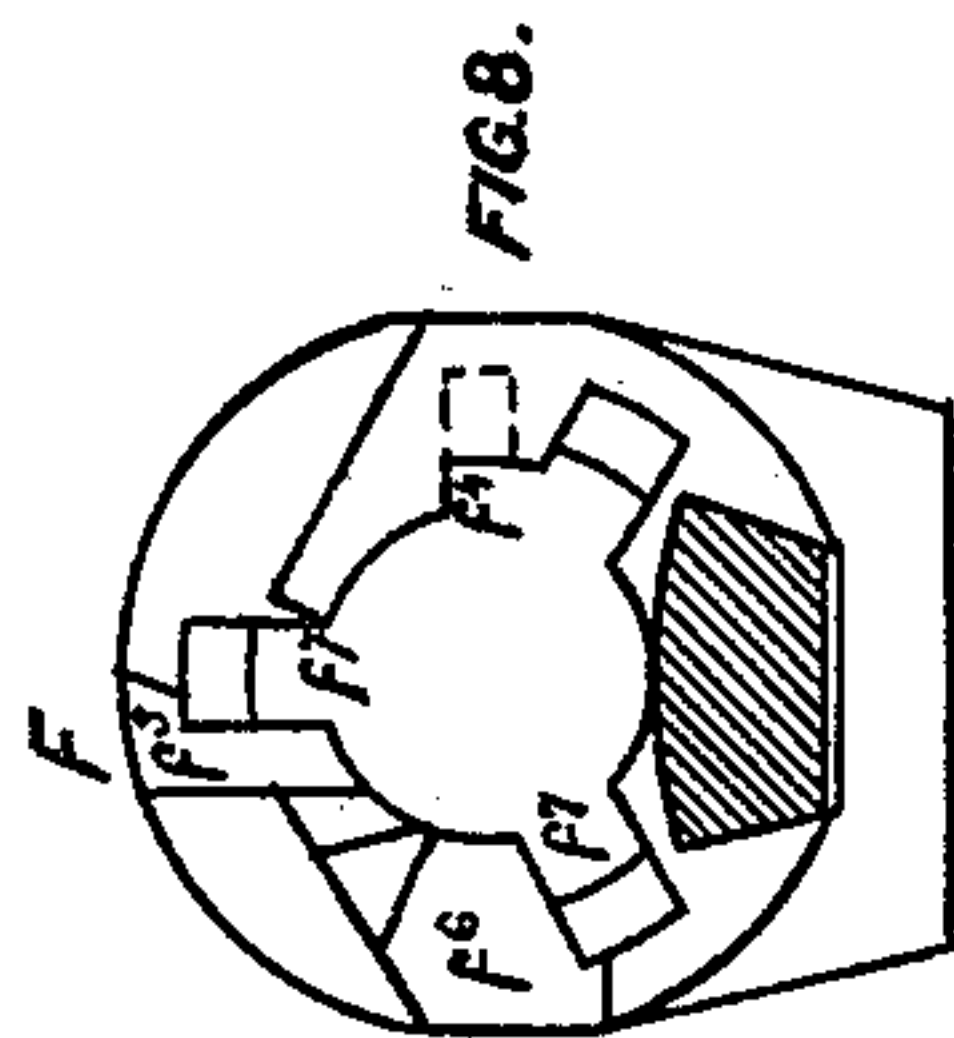


FIG. 8.

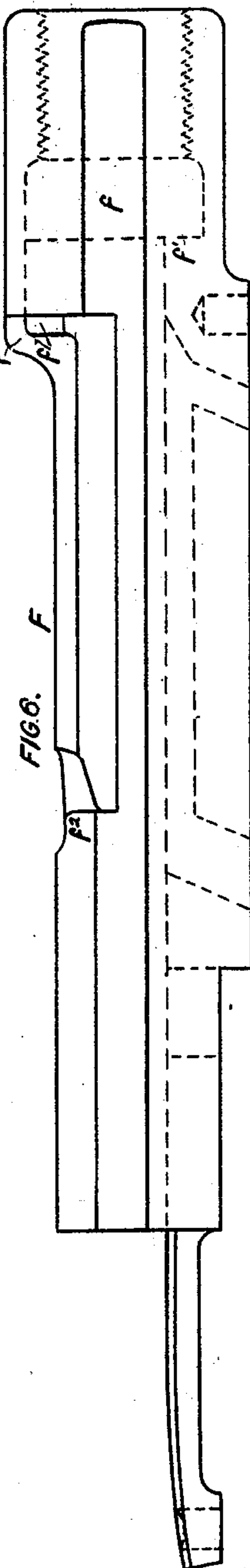


FIG. 6.

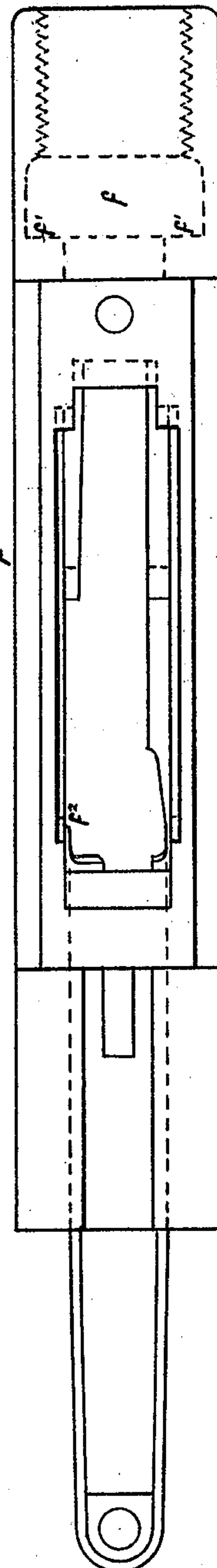
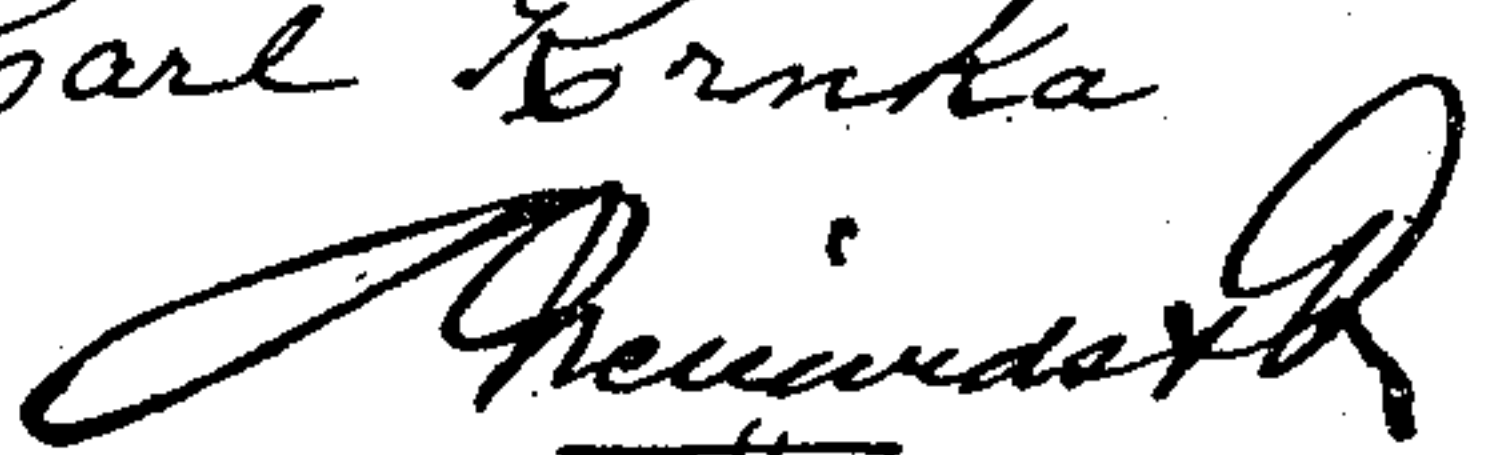


FIG. 7.

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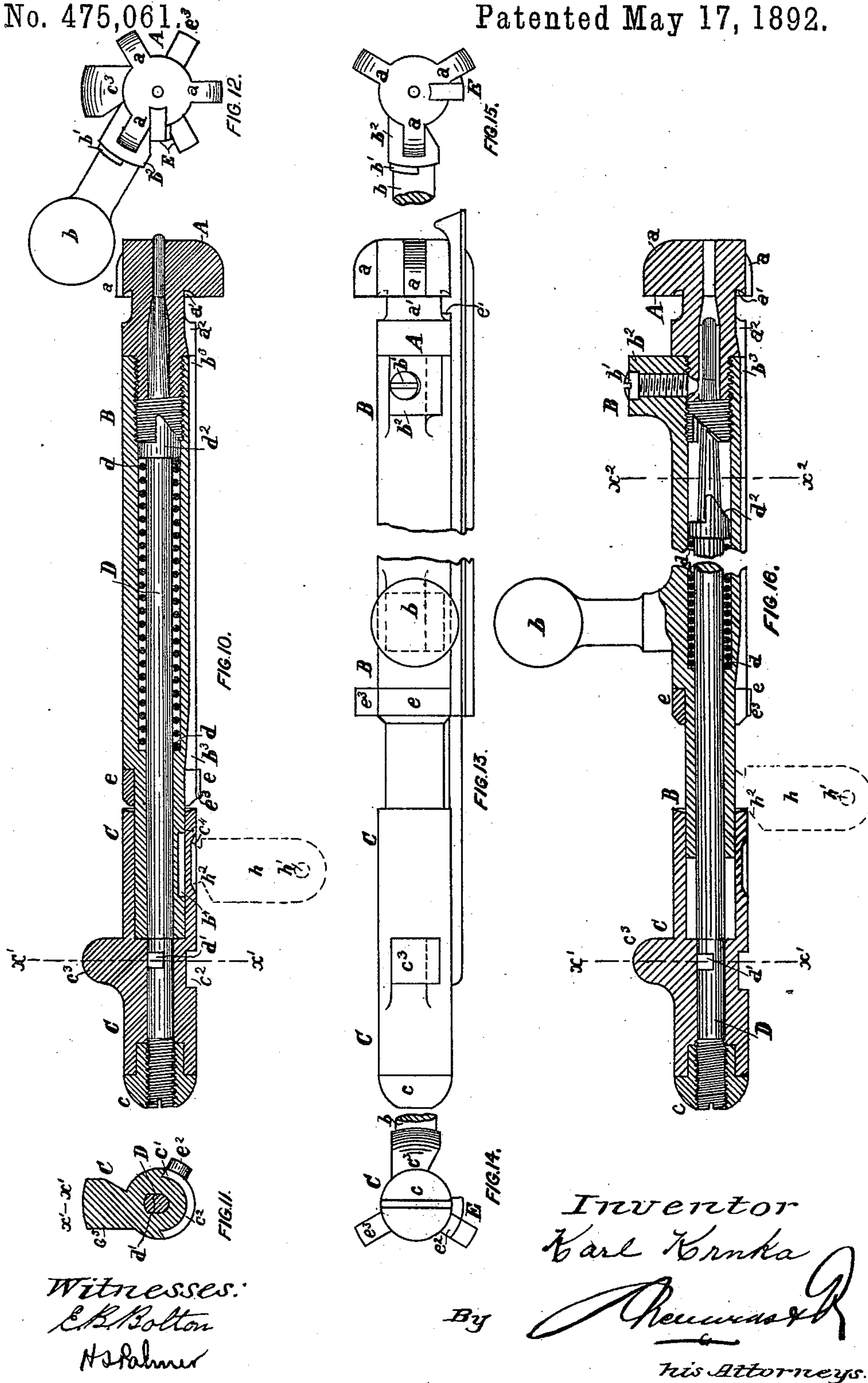
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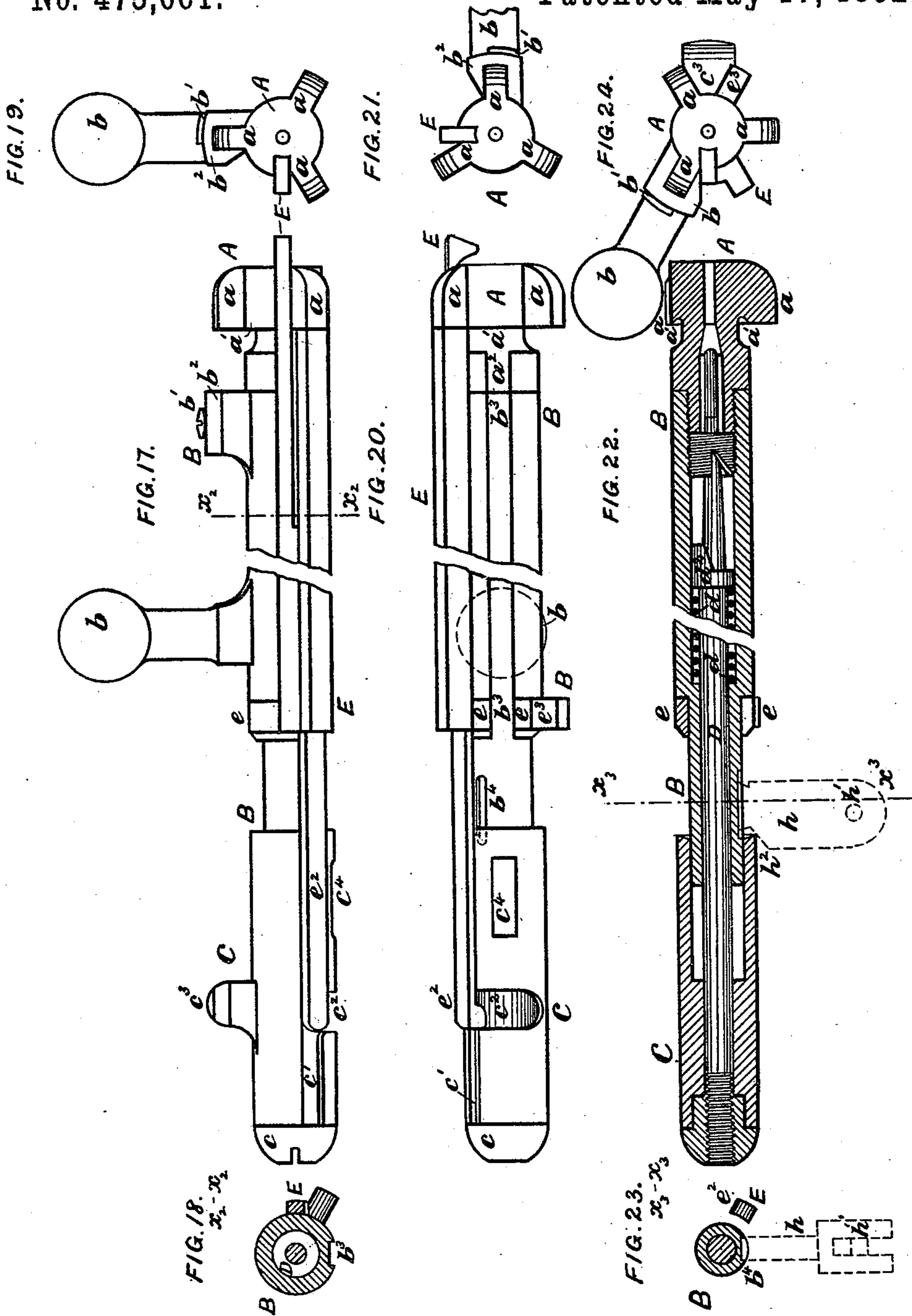
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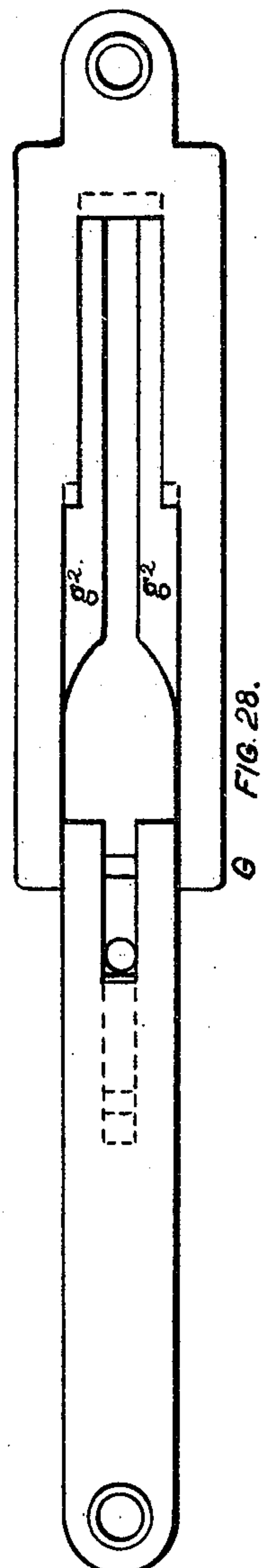
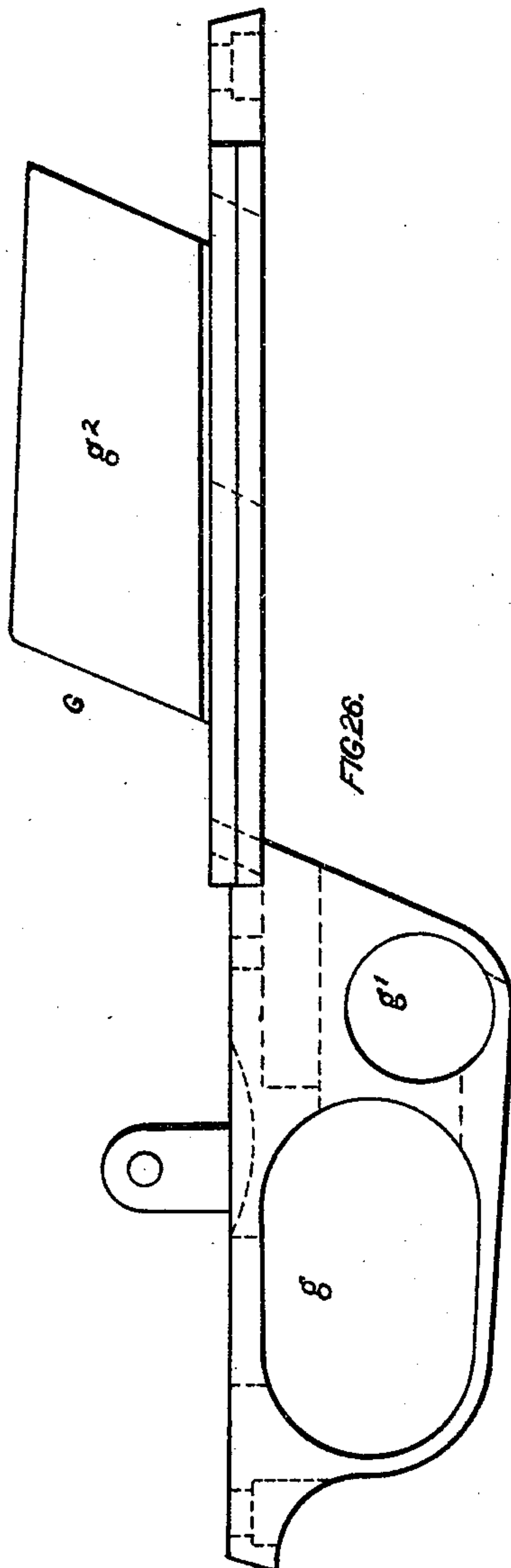
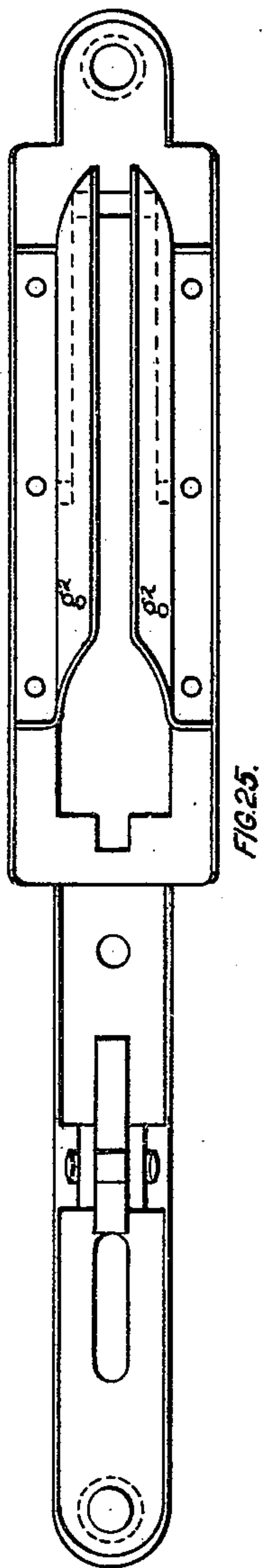
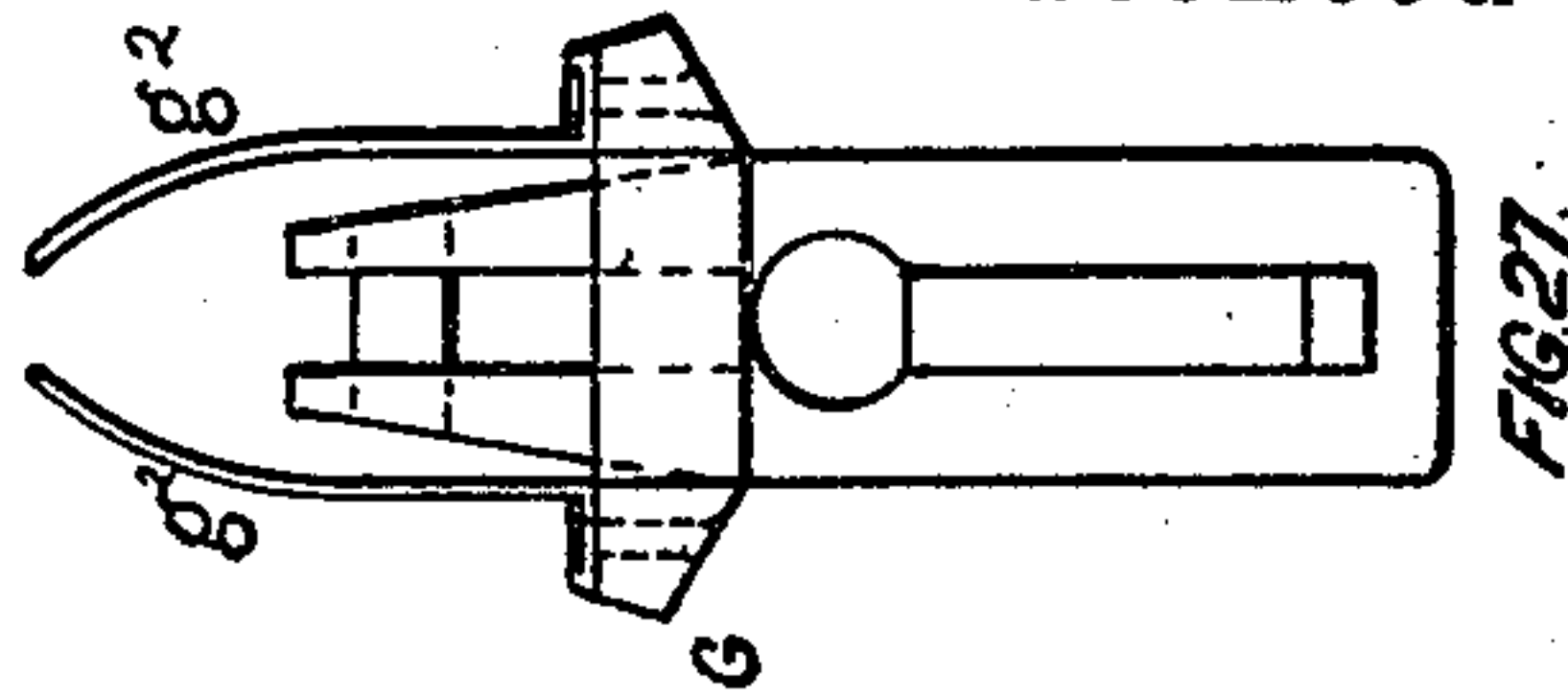
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No. 475,061.

Patented May 17, 1892.



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H. Salmer

Inventor:
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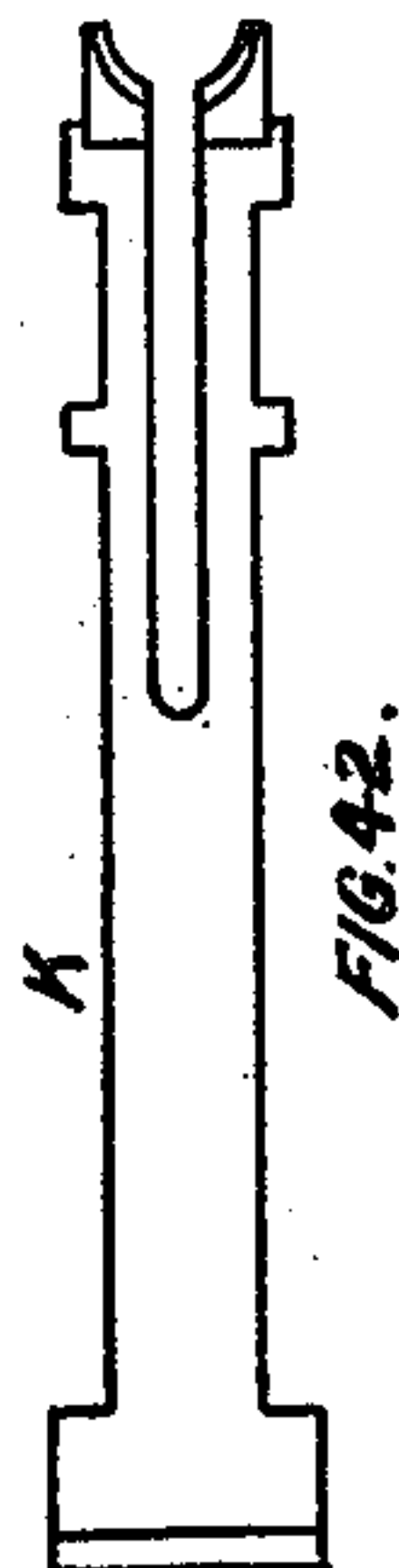
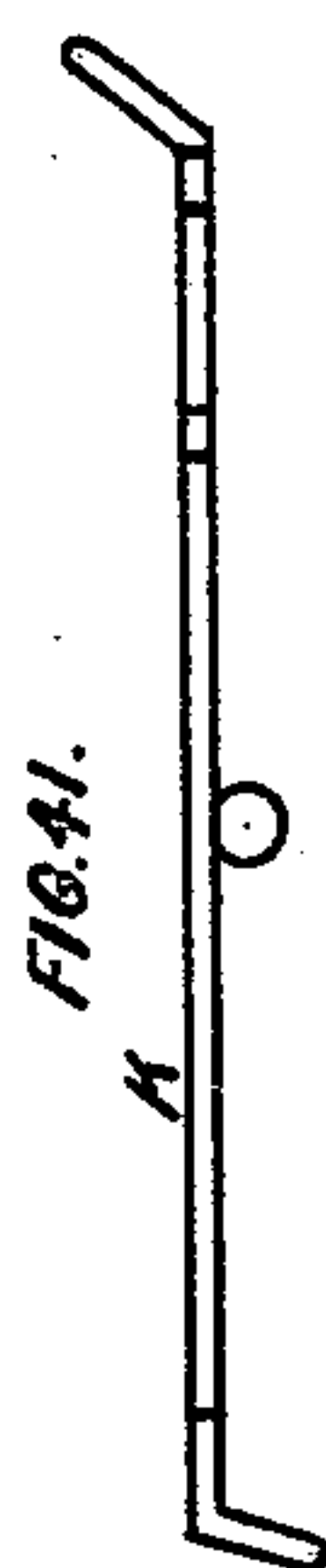
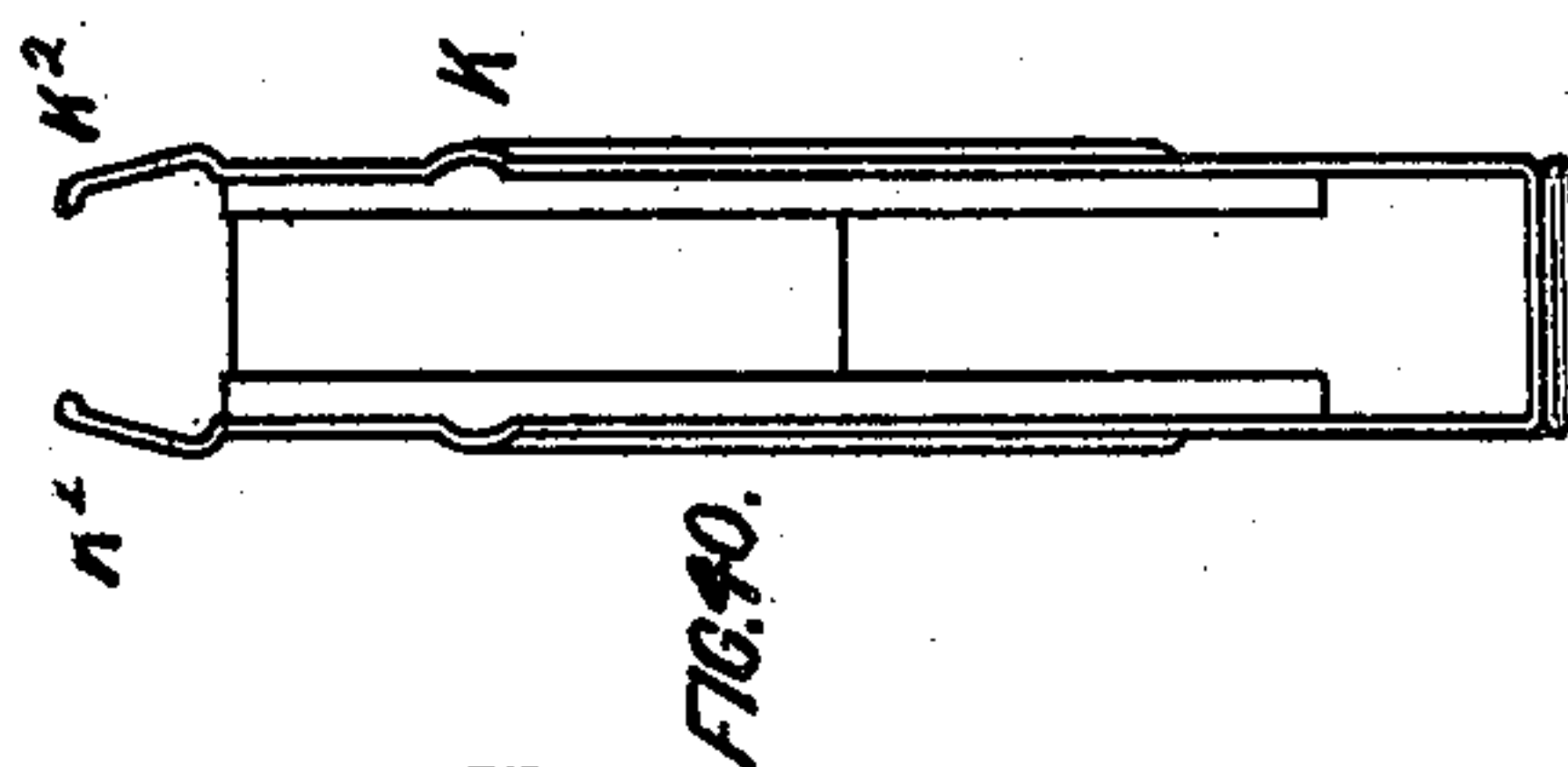
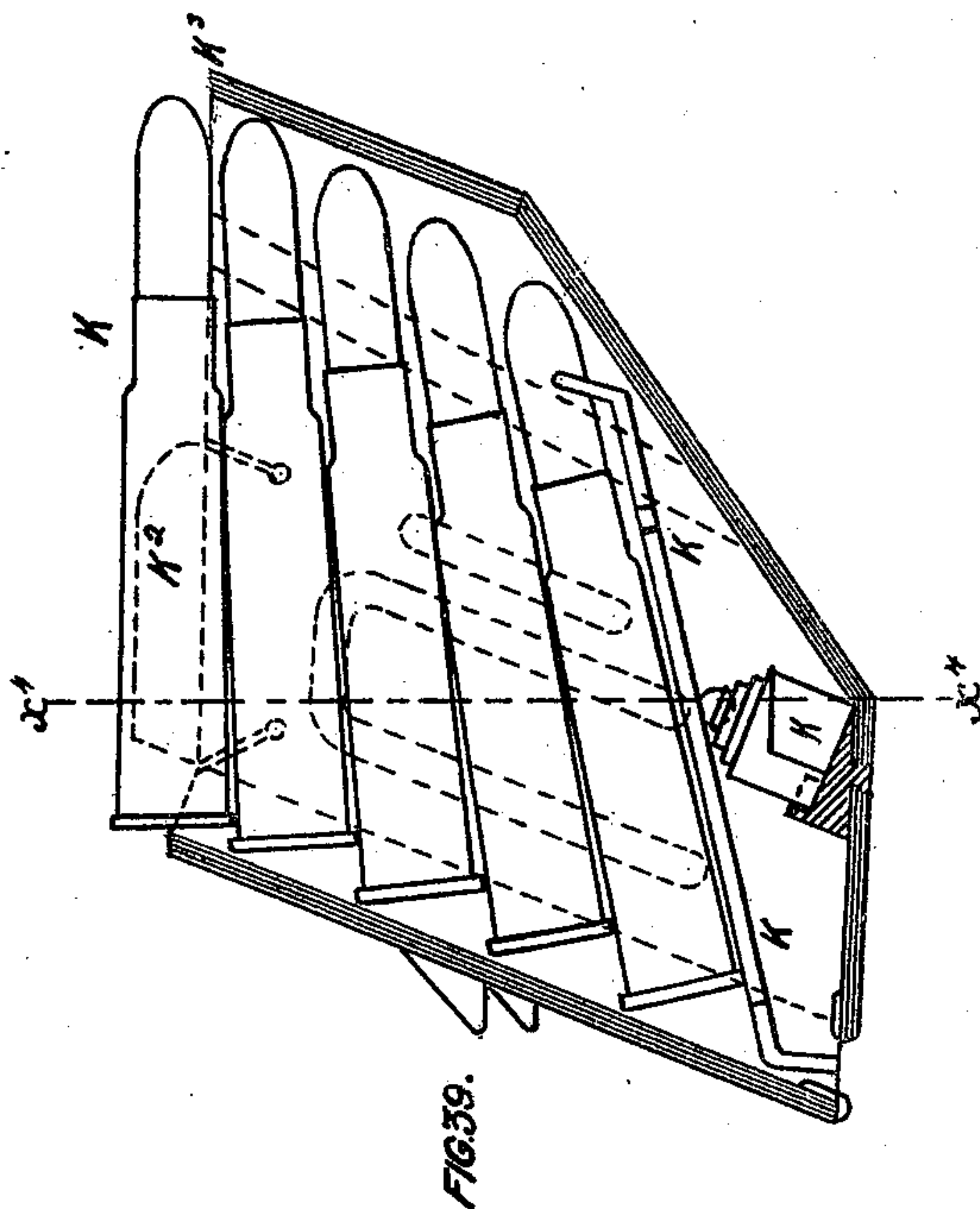
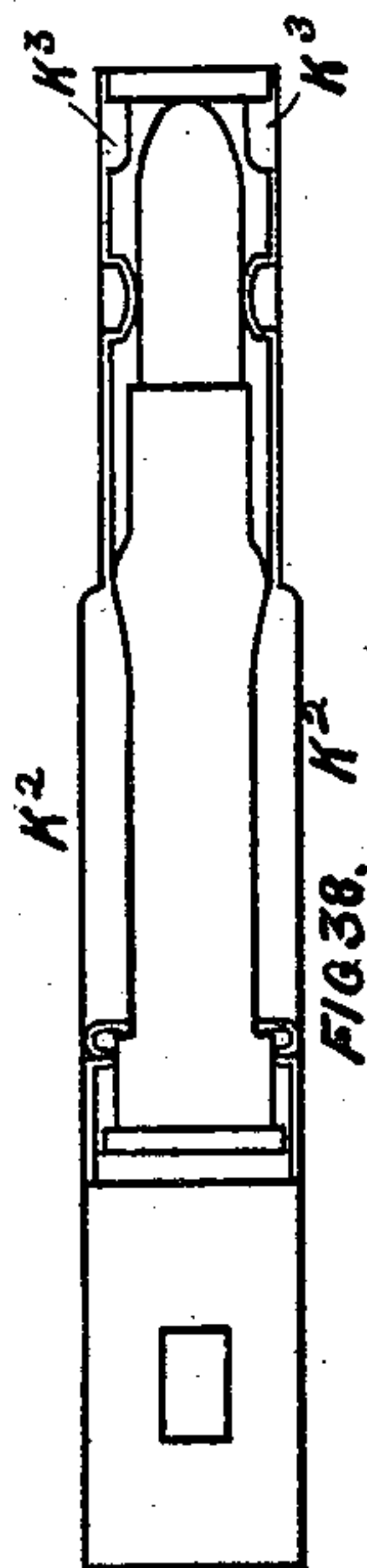
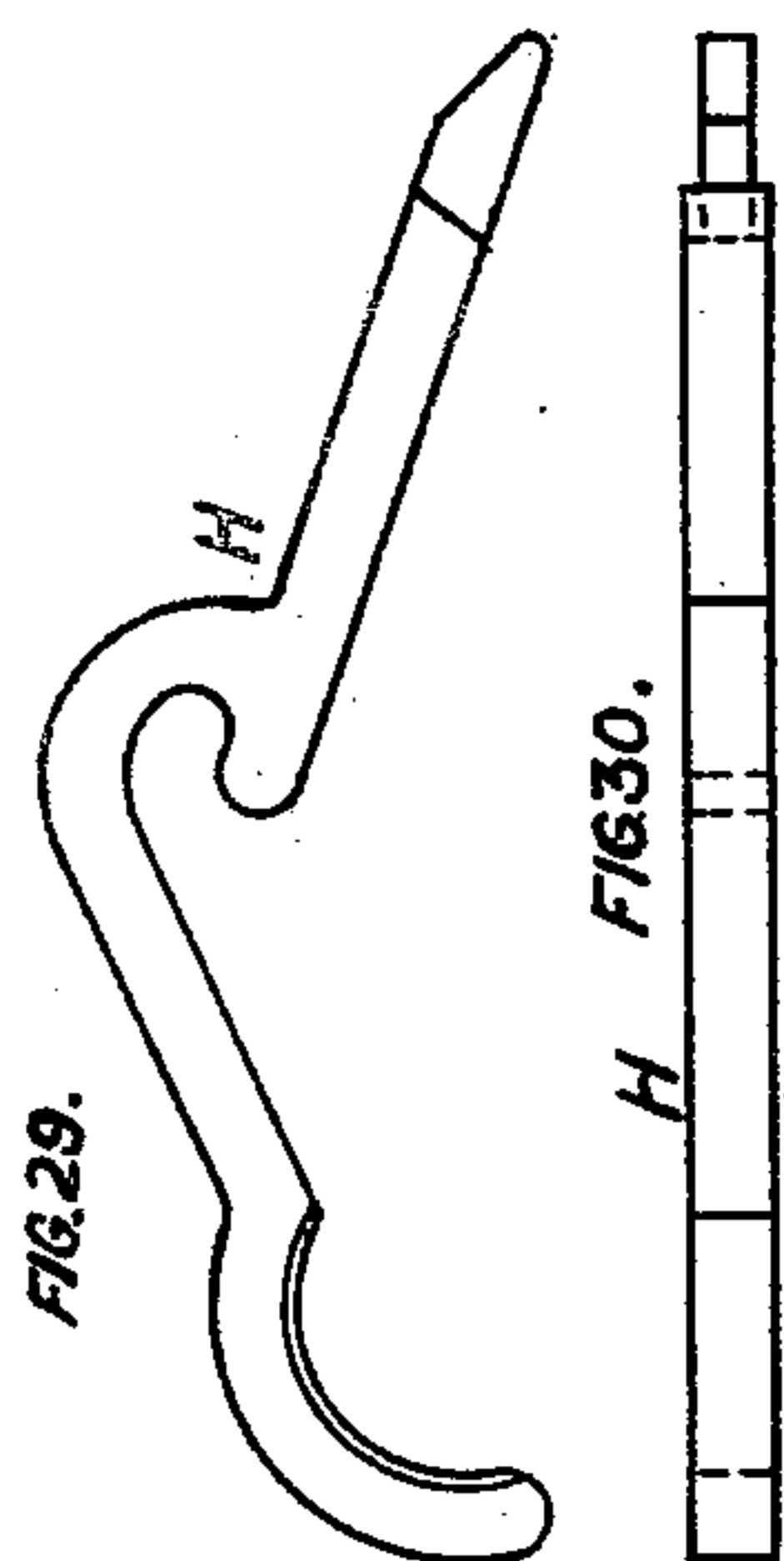
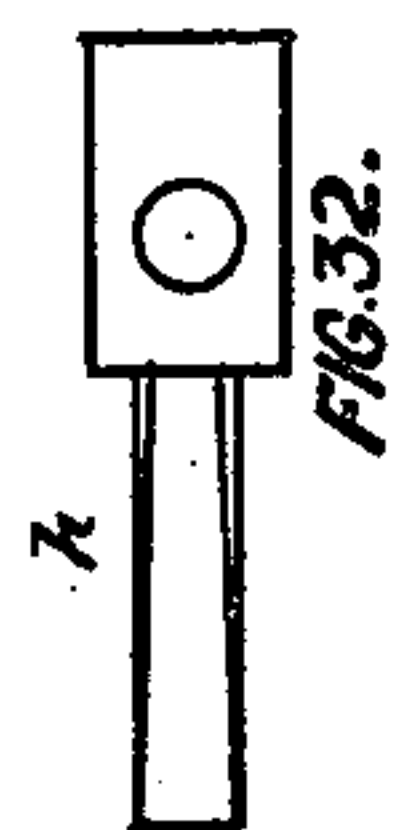
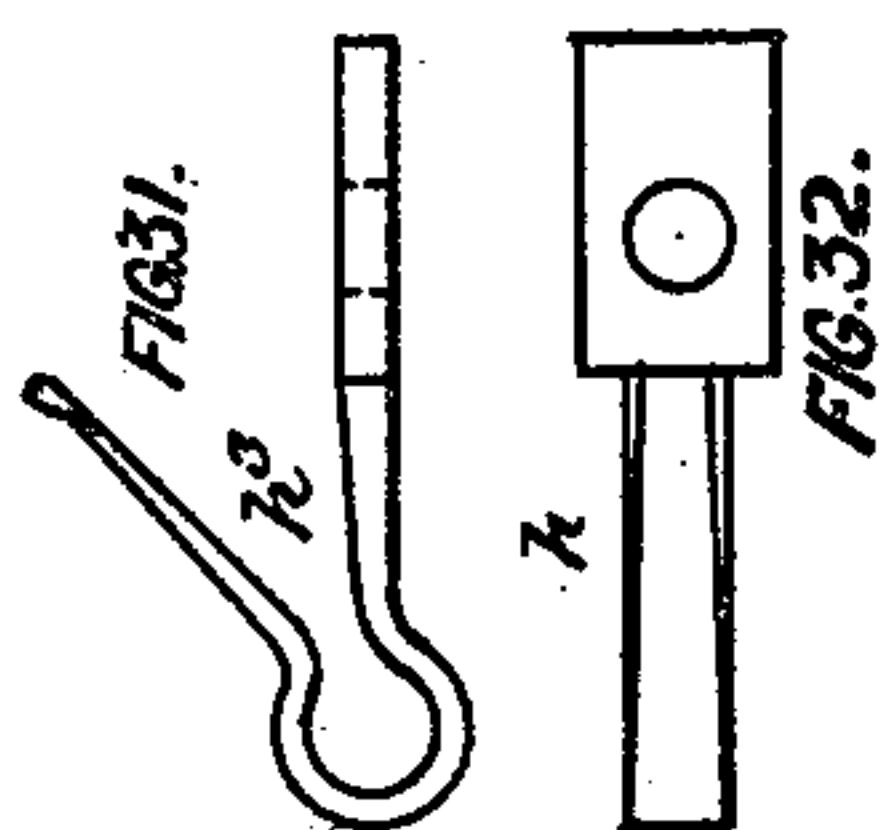
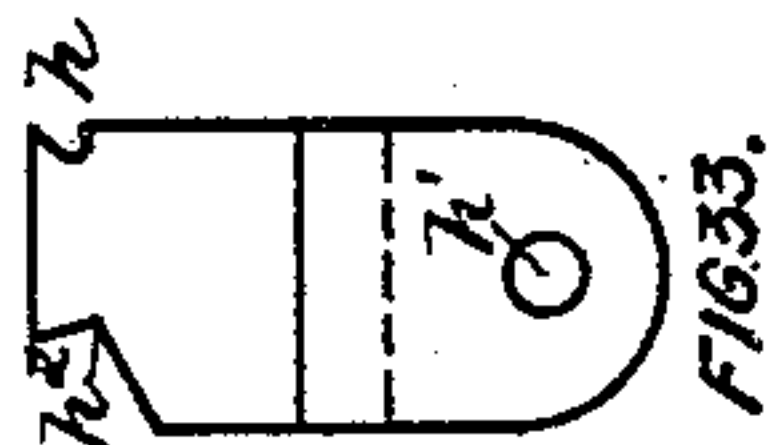
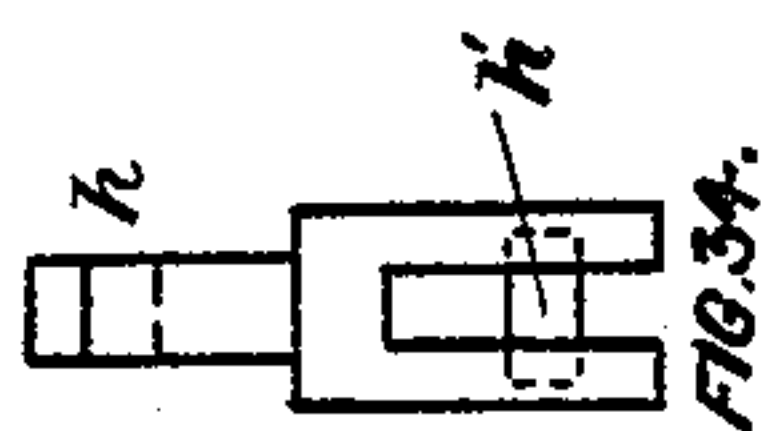
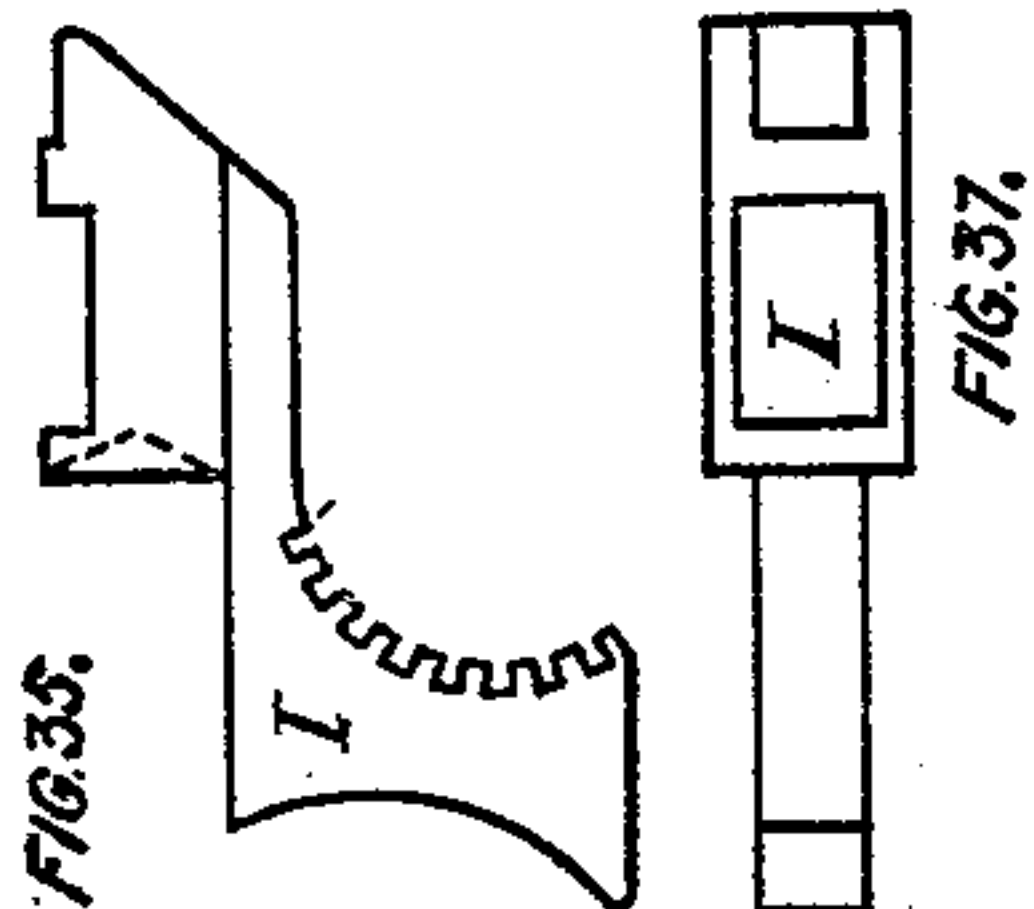
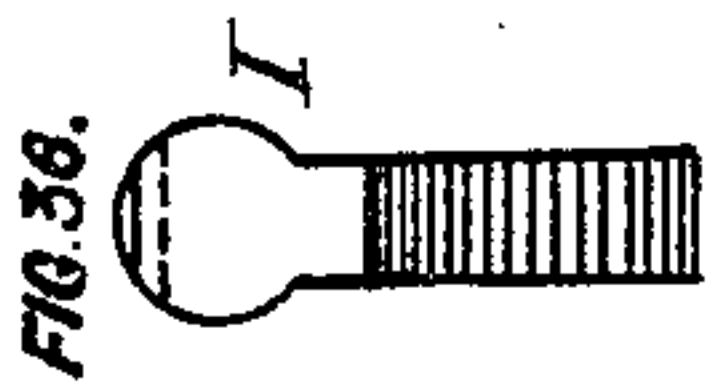
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No. 475,061.

Patented May 17, 1892.



Witnesses:
E. R. Bolton
H. Palmer

By

Inventor
Karl Krinka
[Signature]
His Attorneys.

UNITED STATES PATENT OFFICE.

KARL KRNKA, OF LONDON, ENGLAND, ASSIGNOR TO THE KRNKA REPEATING RIFLE COMPANY, LIMITED, OF SAME PLACE.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 475,061, dated May 17, 1892.

Application filed March 31, 1890. Serial No. 346,126. (No model.)

To all whom it may concern:

Be it known that I, KARL KRNKA, residing at London, England, have invented certain new and useful Improvements in Repeating Firearms, of which the following is a specification.

This invention is designed, first, to reduce as much as possible the weight of the breech-bolt while retaining sufficient strength to insure absolute security. To effect this, the breech-bolt, which may be elsewhere of slight dimensions, has at its front end a strengthened head, on which are situated three radial breech-bolt ribs at angles of one hundred and twenty degrees to one another, which take the force of the recoil from the explosion. To these three breech-bolt ribs correspond guiding-grooves in the receiver, which run into a circular groove behind the barrel end, so that by pushing the breech-bolt forward and turning it through sixty degrees the breech is closed. In consequence of the arrangement of the three breech-bolt ribs on the periphery of the breech-bolt head, the force of recoil, acting on the latter when the rifle is fired, will always lie between the three supporting-points.

A further peculiarity of the breech-bolt consists in the cartridge-extractor being situated on a ring loosely surrounding the breech-bolt. This extractor is guided in a groove of the receiver and is freely elastic when the breech-bolt is pushed forward, while its front end, when the breech-bolt is drawn back, is engaged under the neck of the breech-bolt, and thus stiffened. This is effected by means of a projection on the cartridge-extractor entering into a correspondingly-wider circular groove, the front half of which is dovetailed or undercut, so that the said projection of the extractor engages under the dovetail when the breech-bolt is pulled backward. Further, as regards the breech-bolt, the locking of the same when the firing-pin is cocked is effected by the sear entering a groove of the breech-bolt cylinder.

The improvements in the magazine consist in the catch securing the magazine in a raised or lowered position, in a longitudinal slot of the trigger-guard, and in a cartridge-carrier,

the front end of which is slotted to allow of removal for cleaning.

In order that my invention may be the better understood, I now proceed to describe the same in relation to the drawings hereunto annexed, reference being had to the letters marked thereon.

Like letters refer to like parts in the various figures.

Figure 1 is a side elevation of the rifle with the breech closed but uncocked. Fig. 2 is a plan of the same. Fig. 3 is a longitudinal section of the rifle with the breech-bolt pulled back. Fig. 4 is a transverse section according to the line xx . Fig. 5 is a plan of the receiver. Fig. 6 is a side elevation of the same. Fig. 7 shows the receiver, seen from below. Fig. 8 is a rear end view of the receiver. Fig. 9 is a front view of the same. Fig. 10 is a longitudinal section of the breech-bolt closed and uncocked. Fig. 11 is a transverse section according to the line $x'x'$. Fig. 12 is a front view of the breech-bolt in the same position as Fig. 10. Fig. 13 is a plan of the breech-bolt cocked and before total closure. Figs. 14 and 15 are rear end and front end views according to Fig. 13. Figs. 16 and 17 are a longitudinal section and side elevation, respectively, of the breech-bolt according to Fig. 13. Fig. 18 is a transverse section according to the line x^2x^2 , and Fig. 19 is a front end view, both corresponding to Fig. 17. Fig. 20 shows the breech-bolt, as seen from below, in the same position as Fig. 13. Fig. 21 is a front end view according to Fig. 20. Fig. 22 is a longitudinal section of the breech-bolt cocked, closed, and with the firing-pin secured. Fig. 23 is a transverse section according to the line x^3x^3 . Fig. 24 is a front end view corresponding to Fig. 23. Fig. 25 is a plan of the trigger-guard. Fig. 26 is a side view of the same. Fig. 27 is a front end view of Fig. 26. Fig. 28 shows the trigger-guard, as seen from below. Figs. 29 and 30 are views of the trigger-bar. Figs. 31 and 32 are views of the trigger-springs. Figs. 33 and 34 are views of the sear. Figs. 35, 36, and 37 are views of the magazine-catch. Fig. 38 is a plan of the magazine filled. Fig. 39 is a longitudinal section of the same. Fig. 40 is a transverse section of the empty magazine ac-

according to the line $x^4 x^4$. Figs. 41 and 42 are views of the cartridge-follower.

The breech-bolt head A is so formed that on its end are situated three breech-ribs a of equal size, extending exactly radially from the body of the breech-bolt head and at equal distances. During firing the flattened shoulders of these three breech-ribs rest against the collar-like steps f' in the receiver F, Fig. 9, in which is formed the cylindrical chamber f , which is of such a diameter that the breech-ribs can rotate in the same around the axis of the bolt. The collar or shoulder f' thus formed is recessed at three places, serving to receive the breech-bolt and coinciding with three grooves f^7 , corresponding to the three before-mentioned breech-ribs a . These three grooves f^7 run through the whole length of the receiver and into the cylindrical chamber f . These grooves are best shown in Figs. 8 and 9 and are designed to allow the forward and backward movement of the breech-bolt and the three breech-ribs a , respectively. As soon as the three breech-ribs a , Fig. 19, have been pushed into the chamber f they are turned sixty degrees around the axis of the breech-bolt by means of the handle b , whereby the perfect symmetrical closure of the breech is effected, because the resting-points of this locking mechanism are arranged on the periphery of the breech-bolt at equal distances, and because the three bearing points or surfaces distribute well the pressure and at the same time permit a small rotation of the breech-bolt to complete the locking. The breech-bolt head A is hollowed longitudinally for the reception of the firing-pin and is screw-threaded to enable the breech-bolt head to be screwed to the center piece B. The rigid connection of these two parts (see Fig. 16) is effected by means of the screw b' in such a manner that both parts make their rotary movements simultaneously. The breech center piece B is also hollowed longitudinally to receive the firing-spring d and the longitudinal part of the firing-pin D. From the upper surface of the center piece B protrudes the handle b , by means of which the breech is closed or opened. To close the breech, the handle b is pushed forward and then rotated toward the right. In order to open the breech, the handle is turned toward the left and then pulled back. It is intended that this symmetrical breech-bolt head may be used for a straight-pull breech-bolt, in which case the rotation of the breech-ribs is effected automatically at the end of the forward movement of the handle without it being necessary to first turn the handle. It may be used in this manner, for instance, in a straight-pull breech-bolt system. From the breech center piece B projects farther a projection b^2 , which serves, first, as a boss for the screw b' , and, secondly, in combination with a socket-handle b , to limit the rotation of the breech-bolt to the proper angle, and when the breech is opened the projection b^2 comes

against the left wall of the receiver, and thus prevents further rotation in the opposite direction; thirdly, the projection b^2 is also intended to loosen the jammed cartridge-case after firing and when the breech is opened, so that the empty case cannot offer any resistance to the backward movement of the breech-bolt. During the rotation of the breech-bolt to the left (see Fig. 2) this projection b^2 comes against the oblique face f^3 and slides along the same, so that without direct manipulation by the hand in this direction the breech-bolt is pushed back five millimeters before the rifleman commences the direct pulling back of the breech-bolt.

In order to prevent the hooked head of the cartridge-extractor E, Fig. 14, which is attached by means of its ring e to the rear of the breech center piece B, from sliding off the cartridge-rim in consequence of the longitudinal elasticity of the extractor, the following arrangement has been designed: The breech-bolt-head cylinder A is surrounded directly behind the breech-bolt by the groove a' , which is undercut, so that its upper edge hangs over. (See Fig. 16.) The cartridge-extractor (see Fig. 13) is provided with a projection e' , corresponding to the groove a' . (See Fig. 13.) This projection is a little smaller than the groove, so that the cartridge-extractor E can move a little forward or backward, as required. When the cartridge is pushed into the barrel, the cartridge-extractor is thrown back a little distance at the closure of the breech in consequence of its striking the cartridge-rim, and as in this case its elasticity is not confined the hook of the cartridge-extractor is allowed to slide over the cartridge-rim at the closing of the breech. A cartridge from the magazine is pushed forward by the cartridge-extractor as soon as the former leaves the magazine and also as soon as a cartridge is thrown into the loading-recess of the receiver for single-firing. When the breech is opened, the breech-bolt recedes by itself at first, whereby the projection e' is brought under the overhanging side wall of the groove a' , thus taking away the elasticity of the cartridge-extractor. The more resistance the cartridge-case offers the less becomes the elasticity of the cartridge-extractor and the stronger the grip of the latter on the rim.

By the continued and complete withdrawal of the breech-bolt the case is extracted from the receiver in the following manner: The space between the hook of the cartridge-extractor and the left wall of the receiver is much smaller than the rear diameter of the cartridge-case, and therefore pushes elastically upon the base of the cartridge. As the cartridge-extractor at the withdrawal of the breech-bolt protrudes forward, the cartridge cannot be thrown out when its bottom is perpendicular to the longitudinal axis of the shoe, but its front end endeavors to find room toward the right, and as soon as the breech-bolt has been sufficiently withdrawn to satisfy

this tendency of the case the latter is thrown out completely from the receiver. The cartridge-extractor of course does not join in the rotary movement of the breech-bolt, as it is prevented from doing so by a corresponding groove in the receiver, which only allows its longitudinal forward and backward movement. The cartridge-extractor therefore serves as a guide for the breech-bolt.

10 The firing-spring d and the rear end of the firing-pin D are introduced into the breech-bolt center piece before the breech-bolt head a is screwed onto the latter. The rear end of the firing-pin protrudes a considerable distance backward out of the breech-bolt center piece B. Onto this protruding end is pushed the breech-bolt rear piece C after the cartridge-extractor E has been pushed over the center piece B by means of the ring e . By means of the screw-nut c the firing-pin D is connected to the rear piece C, so that these two pieces make all movements together. To further secure this connection, the rear spindle of the firing-pin D (see Figs. 10, 11, and 16) has a small projection d' reaching into a groove of the breech-bolt rear piece, thus insuring the joint action of these two parts. The breech-bolt rear piece C and the firing-pin D do not join in the rotary movement of the breech-bolt center piece B and the breech-head A. To absolutely prevent such rotation at the opening and closing of the breech-bolt, the rear arm e^2 of the cartridge-extractor (see Fig. 17) reaches into the guiding-groove c' in the breech-bolt rear piece C, and as the cartridge-extractor can only move forward and backward any rotary movement of the breech rear piece is prevented by the extractor. At the moment of the complete cocking, with the breech-bolt closed, the projection c^3 has just issued a little distance out of the slot in the shoe, so that it may be turned round for locking. Before cocking the end of the arm e^2 is at the rear end of the groove c' .

45 As before described, the middle part of the cartridge-extractor E is formed as a ring e to surround the breech center piece B without interfering with the rotary movement of the latter. The protruding parts of the cartridge-extractor are placed partly in the right-hand breech-rib groove f^7 of the shoe and partly into a separate groove f^4 . (See Fig. 8.) Besides the cartridge-extractor rod E the cartridge-extractor ring e is supplied with a guiding-stud e^3 , (see Fig. 13,) which is, however, only of secondary importance and serves chiefly as a stopper to the left-hand breech-rib groove in the shoe, which otherwise would remain uncovered. Of course this stud also assists to prevent a forward rotation of the cartridge-extractor. The rear end of the firing-spring d (see Fig. 10) bears against the rear end of the breech-bolt center piece B, and thus always pushes the firing-pin completely forward, being prevented from further expansion by the firing-pin collar d^2 .

On the lower periphery of the breech-bolt head (see Fig. 20) runs from the circular groove a' the sear-groove a^2 and in continuation of it the groove b^3 of the breech-bolt center piece which passes through the cartridge-extractor ring e and finishes at the edge of the rear cylinder C of the breech-bolt center piece B. These three grooves thus connected form a longitudinal groove through the two forward breech-bolt parts and the ring e . This common groove serves for the reception of the sear h , which also limits the backward movement of the whole breech-bolt. (See Fig. 3.) When, then, the breech-bolt is pushed forward, the rear piece C is kept back by the sear, the upper back edge of the sear being slightly undercut and engaging with the cupped edge of c , thus compressing the firing-spring. This is effected (see Fig. 16) because the firing-pin D is kept back, while the breech-bolt center piece B, during the continued forward and rotary movement, takes the rear part of the firing-spring forward, the front part of the latter being kept in position by the firing-pin collar d^2 . When, then, the trigger-bar H, Fig. 3, is pressed for the firing of the rifle at first when the forefinger is bent, the trigger-bar H is moved alone, while the spring h^3 is somewhat pressed; but when the bending of the finger is continued the fore part of the trigger-bar H presses down the sear h by engaging with the sear-pin h' . The breech-bolt rear piece C is thus freed from the sear h and is thrown forward to the extent shown in Fig. 10 by means of the rapid expansion of the firing-spring d . To cock the breech-bolt in this manner, it must be rotated to the right and locked after having been pushed forward, or the recoil of the firing-spring will draw the bolt back again. When this rotation of the handle b has been effected even in part, the compression of the spring by cocking or drawing back the rear portion C may be effected. If the handle b should not be completely turned, the final locking of the breech-bolt is effected as follows by means of the firing-pin before the latter fires the cartridge. The firing-pin collar d^2 has a projection forming a segment of a screw-thread, (see Fig. 16,) and in the breech-bolt head A there is a screw-like recess corresponding to the before-mentioned projection. When the breech is not completely closed, the said recess of the breech-bolt head A is not exactly opposite to the segmental screw projection d^2 , as in Fig. 16. When the firing-pin is in this position and is thrown forward by the spring, it places the breech-bolt head A in a right position by means of the reaction of the said segmental screw projection and recess. During the opening of the breech when the bolt is rotated toward the left the firing-pin D is pushed back by this device and the firing-spring d is thereby somewhat compressed. (See Fig. 3.) The complete compression of the firing-spring d is effected when the

breech-bolt is pushed forward and locked as described, the rear cylinder *c* being held back by the sear.

To prevent accidental firing of the loaded, 5 cocked, and closed rifle, (particularly during any movement,) the breech-bolt rear piece *C* can be rotated to the left behind the receiver, thus arresting the firing-pin in all cases. For this purpose the breech-bolt rear piece *C* is 10 provided with a projection *c*³, by means of which the former can be turned to the left (see Fig. 17) when the breech-bolt is cocked. The groove *c*¹ runs into the transverse groove *c*² (see Figs. 17 and 20) to admit of the piece 15 *C* turning on the fixed extractor. On the rear end of the receiver (see Fig. 5) is, further, the oblique face *f*⁵, over which the projection *c* can slide to enter the recess *f*⁶. In this case firing is prevented and at the same 20 time the breech-bolt is completely locked, which is effected in the following manner:

On the rear cylinder of the breech-bolt center piece *B* is the separate longitudinal groove *b*⁴, which, when the breech has been com- 25 pletely closed, is situated directly opposite the sear *h*. (See Fig. 10.) When, however, the breech-bolt is cocked and the firing-pin arrested, as in Fig. 22, the sear *h* engages into this groove *b*⁴, and thus prevents the rotation 30 of the breech-bolt and the opening of the breech as long as the firing-pin is cocked. When the projection *c*³ is turned into its normal position, as in Fig. 12, the breech-bolt rear piece *C*, Fig. 22, presses at the same time 35 the sear *h* down out of this groove *b*⁴—that is to say, by the pressure which the breech rear piece *C* can now effect against the oblique face *h*² of the sear *h*. When the breech is completely closed, the firing-pin uncocked, 40 and the firearm is not in use, Fig. 10, the sear engages into the groove *c*⁴ of the breech-bolt rear piece *C* in order to reduce the compression of the trigger-spring *h*³. (See Fig. 10.) The handle *b* and its socket are turned 45 to engage with the shoulder *f*² of the receiver in the same manner as the three breech-ribs, before described, engage in their locking. (See Figs. 1 and 2.) The breech-bolt is thus locked twice. This second locking is, however, 50 not real, because there is a very small space between the socket of the handle and the shoulder *f*² of the receiver. When the rifle has been used for a considerable time, this intermediate space will become less, as the breech- 55 bolt head *A* is bound to be upset in time in consequence of the high pressure of the gas. If this small intermediate space has become so much reduced that the rotation toward the left of the handle produces friction on the 60 shoulder *f*² of the receiver, it will be apparent to the rifleman that the breech-bolt head *A* must be exchanged for a new one. Nevertheless the handle is also available for safety-locking—that is to say, in case the 65 breech-bolt head should be subjected to so heavy a strain that the breech-ribs *a* might

break off by the gas-pressure. It is hardly necessary to take into consideration the possibility of this taking place, but if it were to happen the handle will stop the recoil of the 70 breech-bolt.

The lower front corner of the magazine is reduced, as in Fig. 1, to enable the bearer to shoulder the rifle conveniently. In order to have the lower surface of the magazine on 75 one level with the lower surface of the trigger-guard *G*, the latter has been extended accordingly. The elliptical recess *g* is designed for the trigger-bar and the circular recess *g*¹ for the magazine-catch *I* to allow of the lat- 80 ter being pressed back for lowering the magazine to enable the rifle to be used for single-loading. The duplicate trigger-guard *G*, therefore, protects the magazine-catch from being pressed back accidentally. The uni- 85 formity of these two lower surfaces of the trigger-guard and magazine further allows of the rifle being also shouldered at this place. To entirely disengage the magazine, the catch *I* should be pressed back into the guard by 90 means of a thin packing piece or object beyond the position in which the catch comes flush with the guard when the bare finger only is used, as this latter position of catch merely allows the magazine to fall to its lower position 95 without complete disengagement.

The rifle may also be used for single-loading by the two springs *g*² being bent toward each other, and thus serving as a rest for the cartridges fed singly into the recess of the re- 100 ceiver.

The front half of the cartridge-follower *k*, Fig. 42, is slit to allow of being removed from the magazine for cleaning when ordinarily the follower is kept back by the two lugs *k*³, Fig. 105 38, as its two elastic arms can be pressed together for this purpose.

When the magazine has been emptied by repeated firing, the rear end of the cartridge-follower *k*, Fig. 39, rises so high that the breech- 110 bolt cannot be pushed forward. This serves as a signal to the rifleman that he must refill the magazine, or for single-firing he has to press the magazine-catch *I* to allow of the magazine being lowered. The catch *I* is al- 115 ways pressed forward by the spring *i*. To insure the base of the magazine-spring *k*¹ being perpendicular to the longitudinal axis of the latter, a supporting-wedge slightly hollowed at one side is introduced on the bottom of the 120 magazine.

For repeat-firing the filled magazine may be introduced from below, or if the empty or partially-empty magazine is already attached to the rifle single cartridges may be fed from 125 above. The magazine can also be filled by packets by means of any suitable cartridge-cramp.

Having fully described my invention, what I claim, and desire to secure by Letters Pat- 130 ent, is—

1. In a repeating rifle with a cylindrical

breech-bolt A, sear h , provided with undercut top edges and provided at the back edge with a second oblique face h^2 of opposite direction, in combination with the recessed cupped edge 5 of the firing-pin cylinder c and the groove b^4 of the breech-bolt, so that in the securing of the lock by the withdrawal and rotation of the firing-pin and the action of the trigger-spring the sear enters the groove b^4 of the 10 handle B to lock the breech-bolt, while by the pressure of the readvanced firing-pin on the oblique face h^2 the sear is again automatically pressed down from the groove b^4 .

2. In a repeating rifle with a cylindrical

breech-bolt A, cartridge-magazine, and a car- 15 tridge-carrying plate K, located therein, the front end of which is split to produce two elastic arms, which can be pressed together when it is desired to remove the cartridge-car- 20 rier.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KARL KRNKA.

Witnesses:

RICHARD A. HOFFMANN,
JOHN C. FELL.