

911,818.

M. HERMSDORF.  
BARREL RECOIL GUN.  
APPLICATION FILED JAN. 9, 1907.

Patented Feb. 9, 1909.

5 SHEETS—SHEET 1.

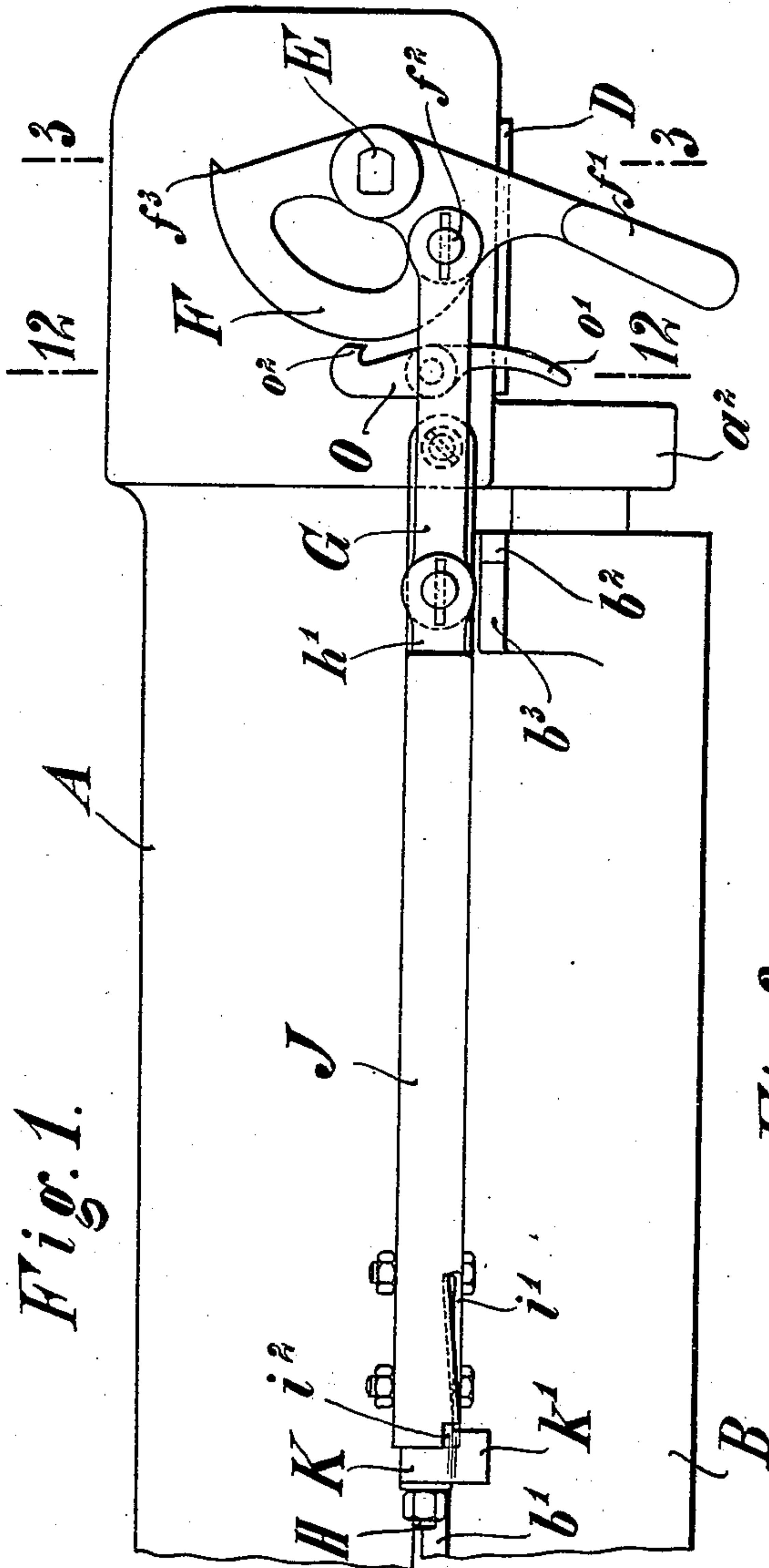


Fig. 1.

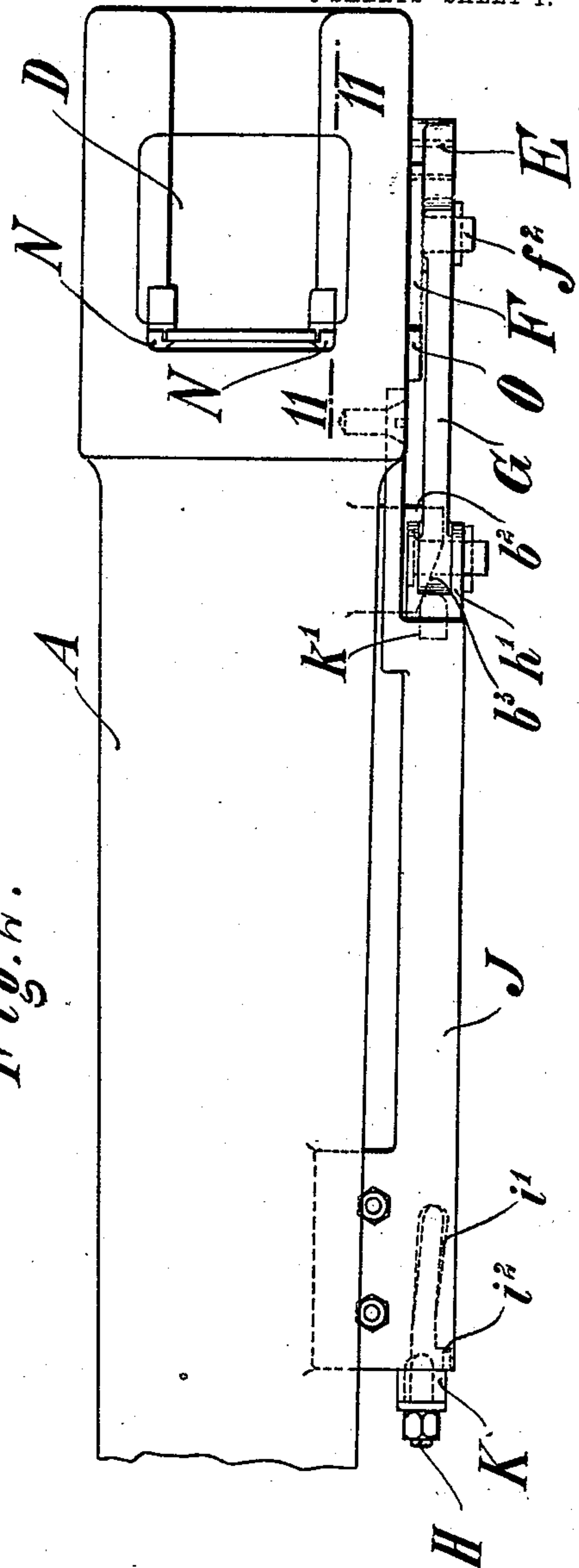


Fig. 2.

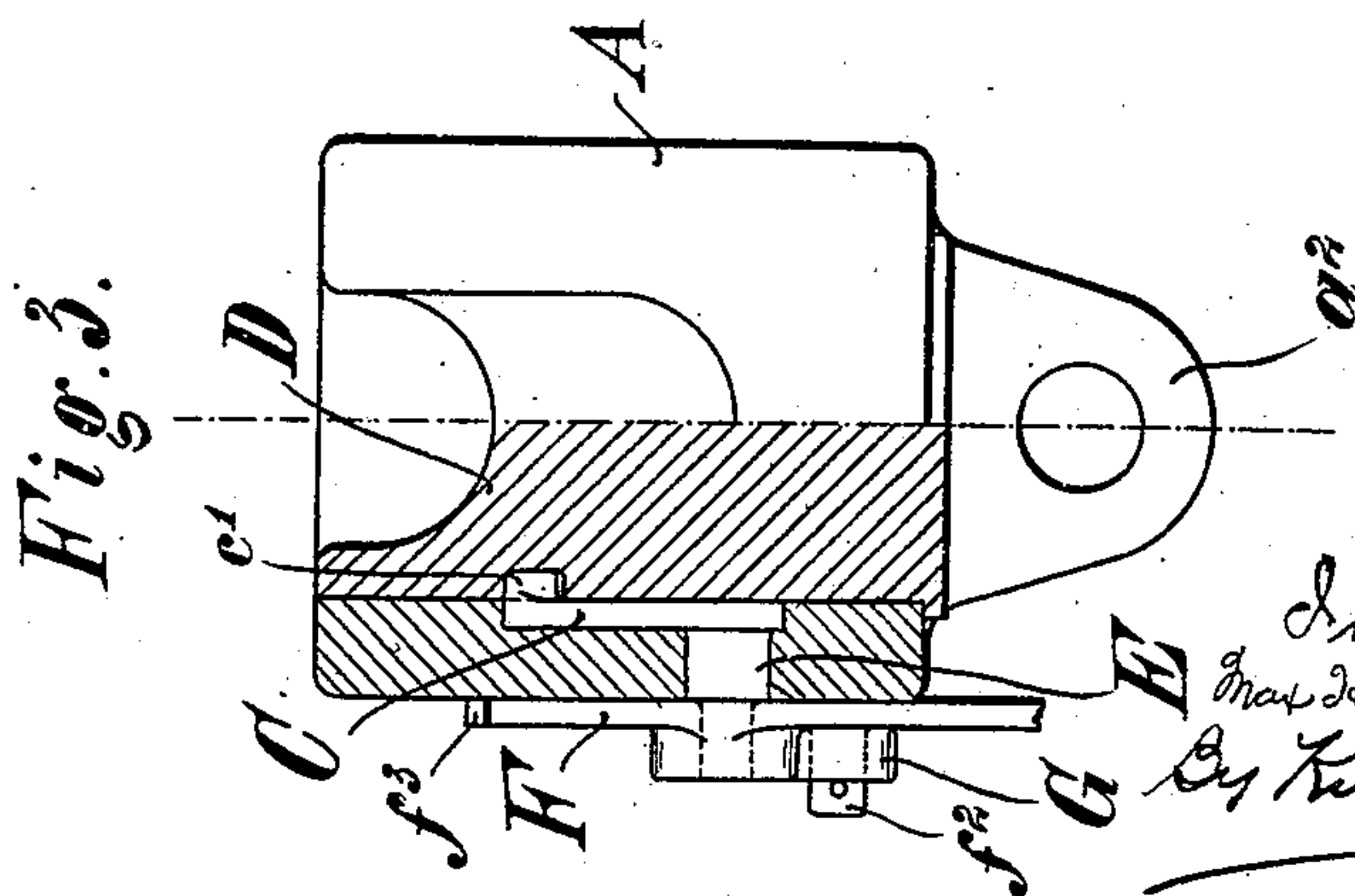


Fig. 3.

Witnesses  
J. M. Wyndrop  
At Knight.

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911,818.

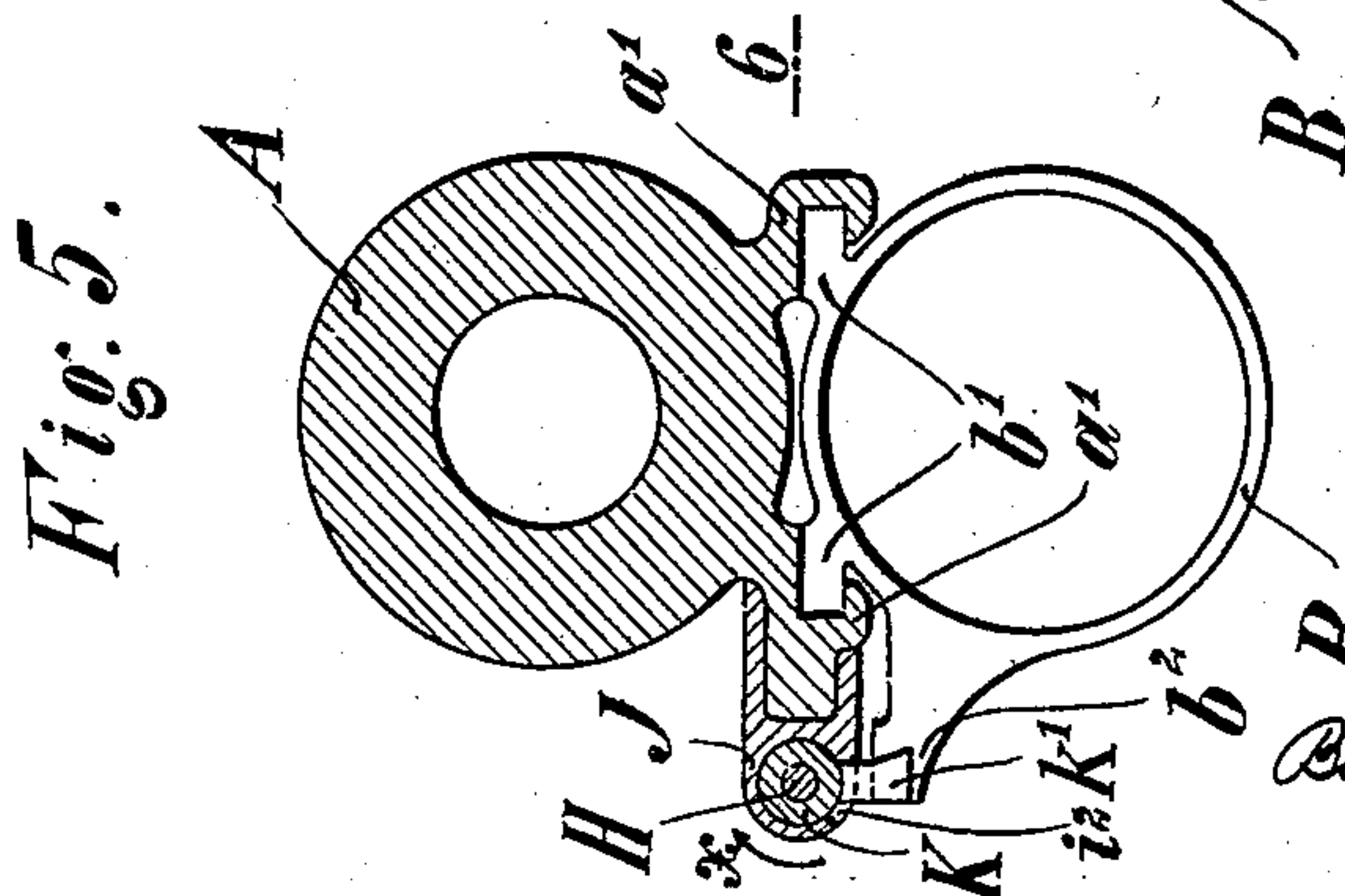
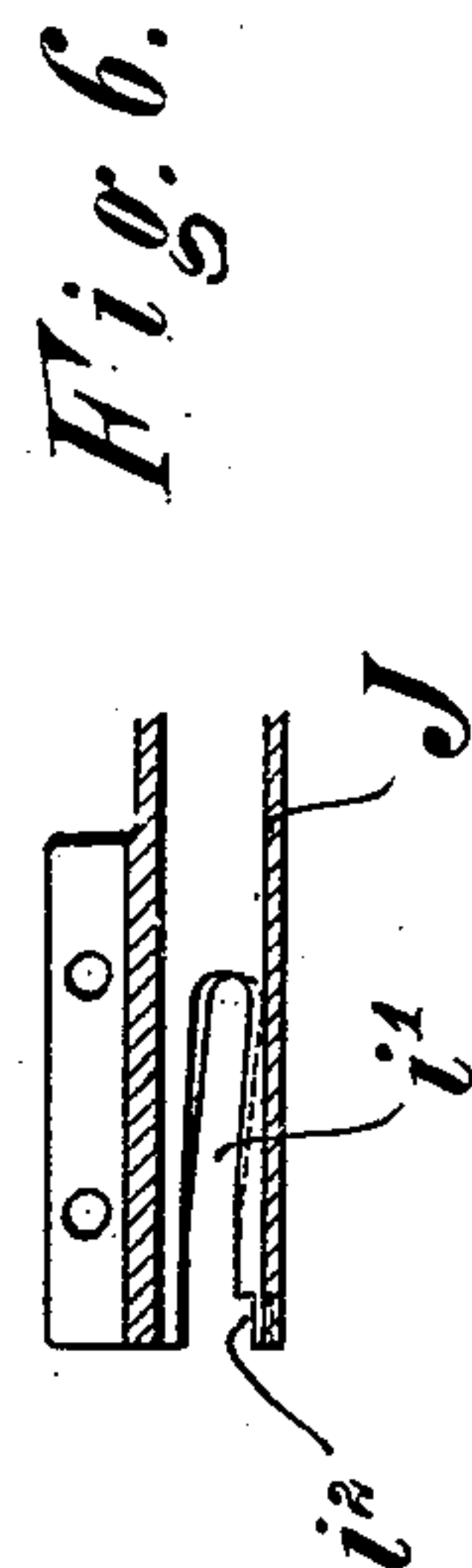
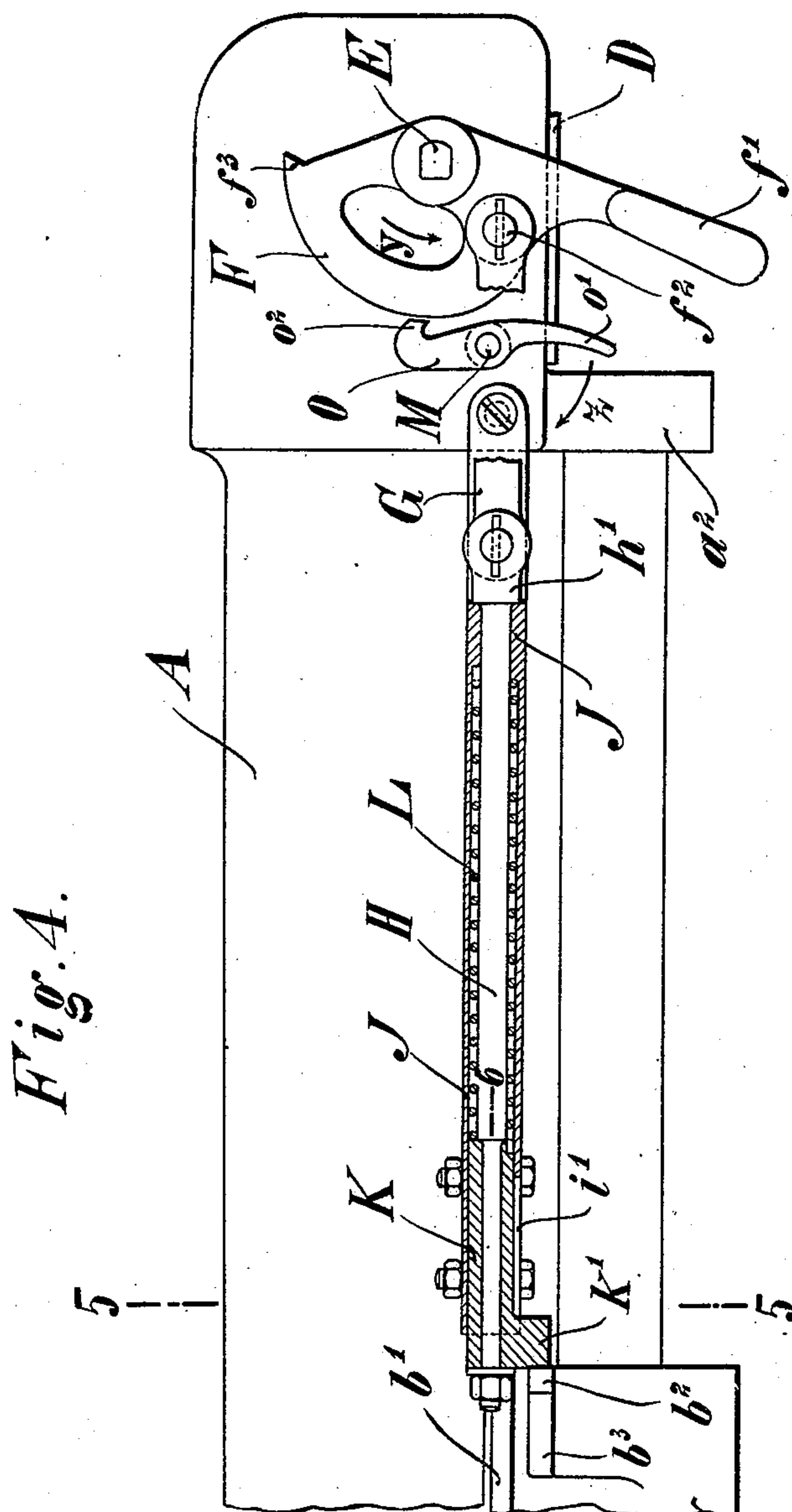
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6 SHEETS—SHEET 2.



Witnesses  
J. M. Wyulkoop  
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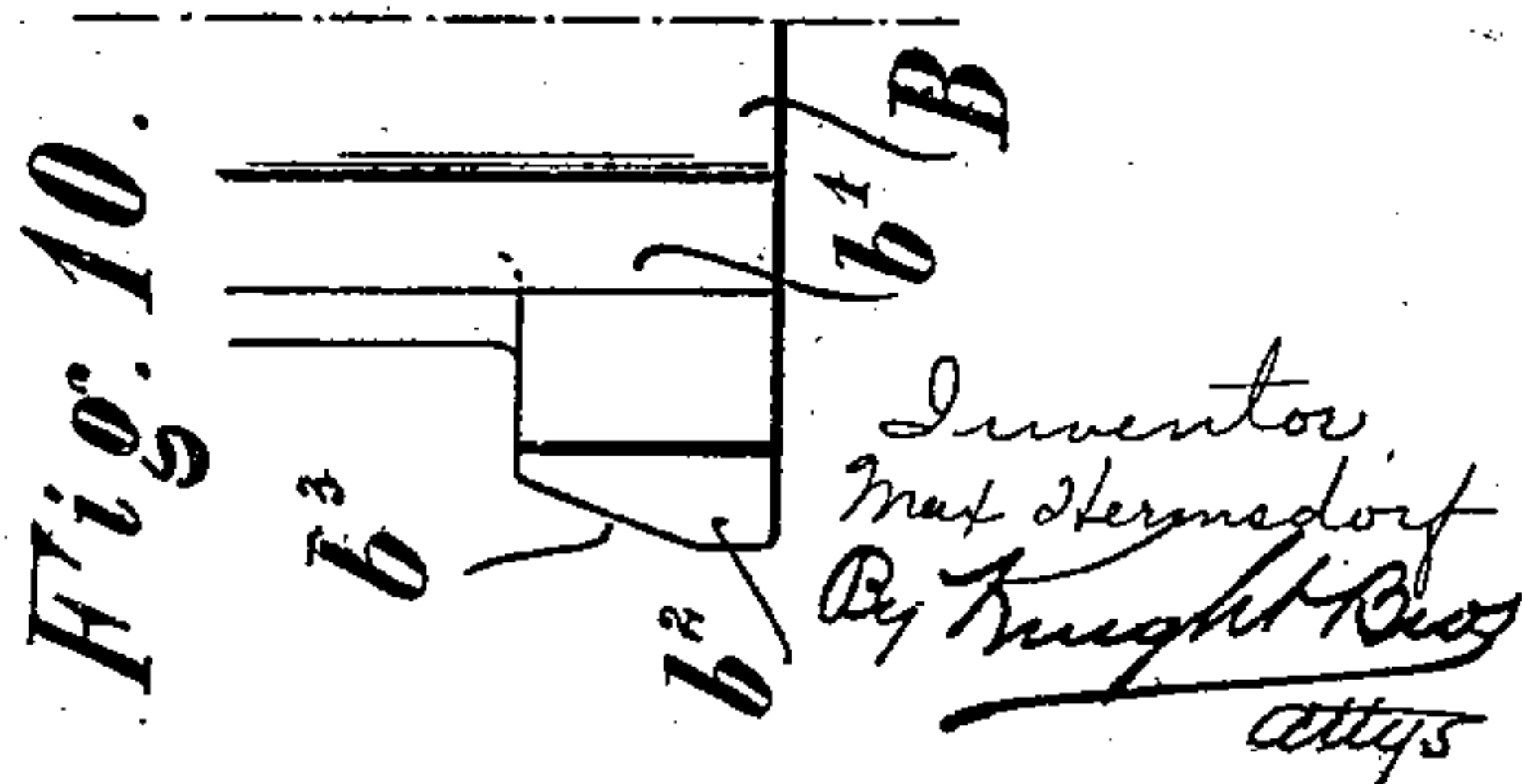
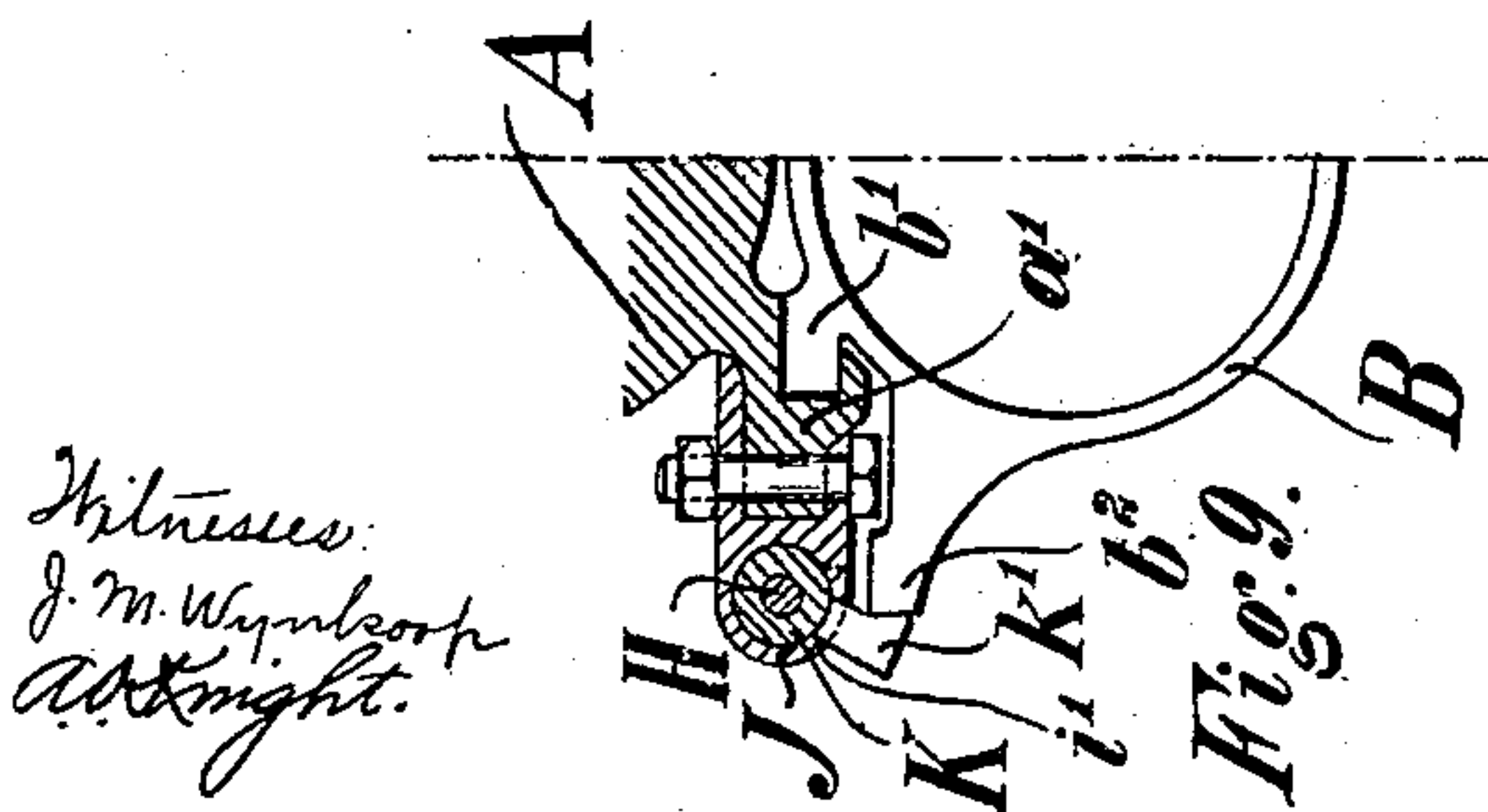
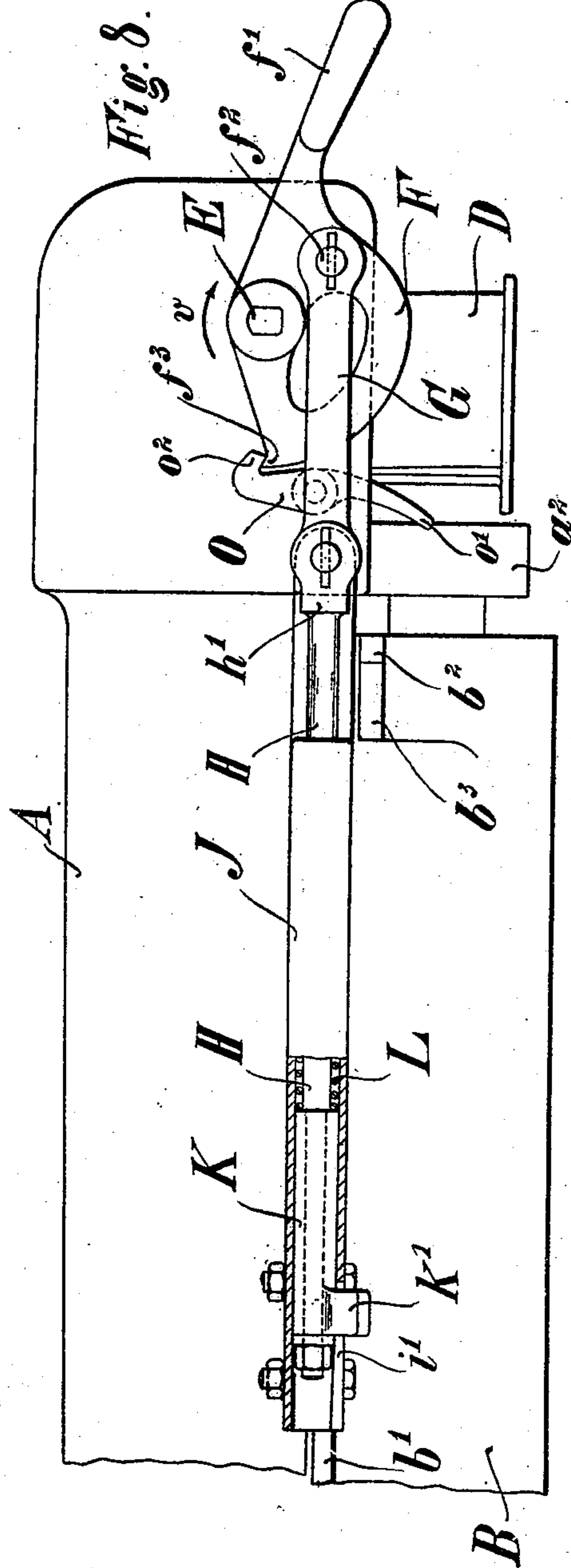
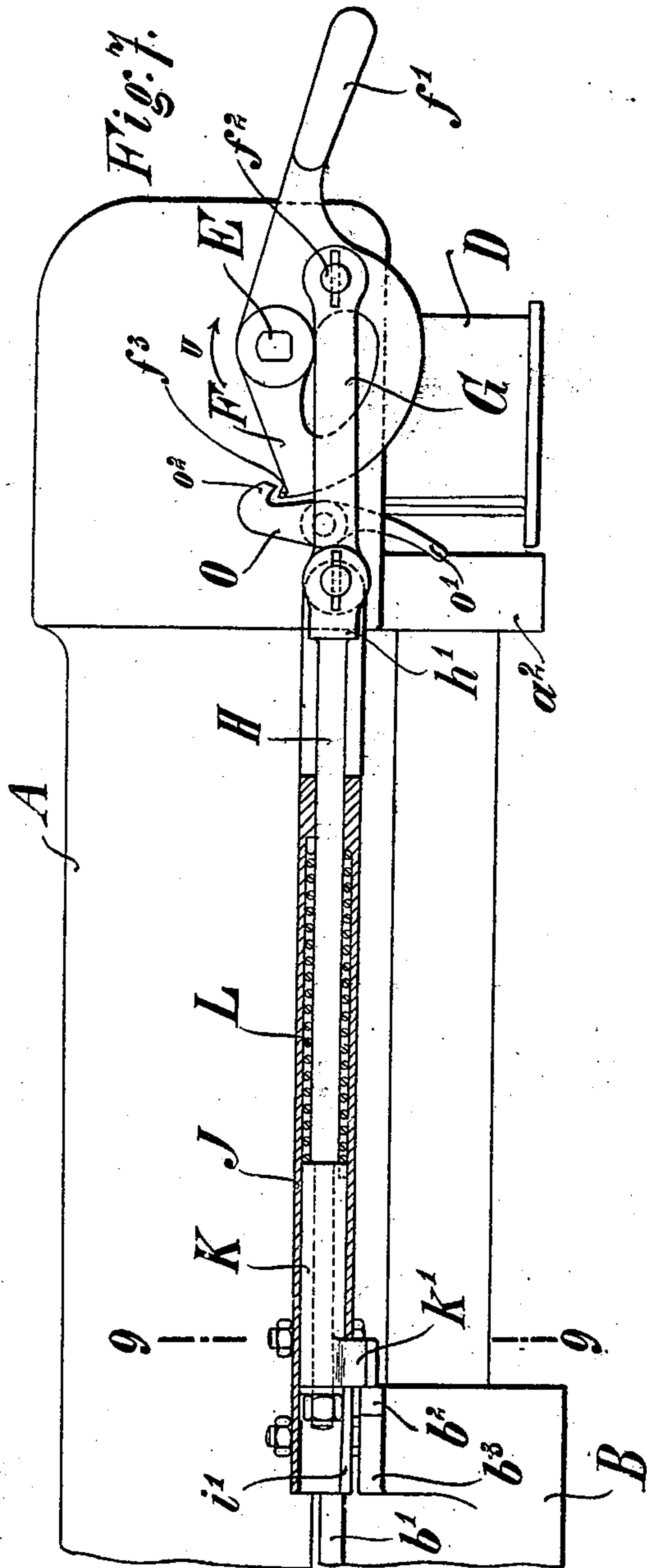
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5 SHEETS—SHEET 3



Witnesses:  
J. M. Wynnebrook  
A. D. Knight.

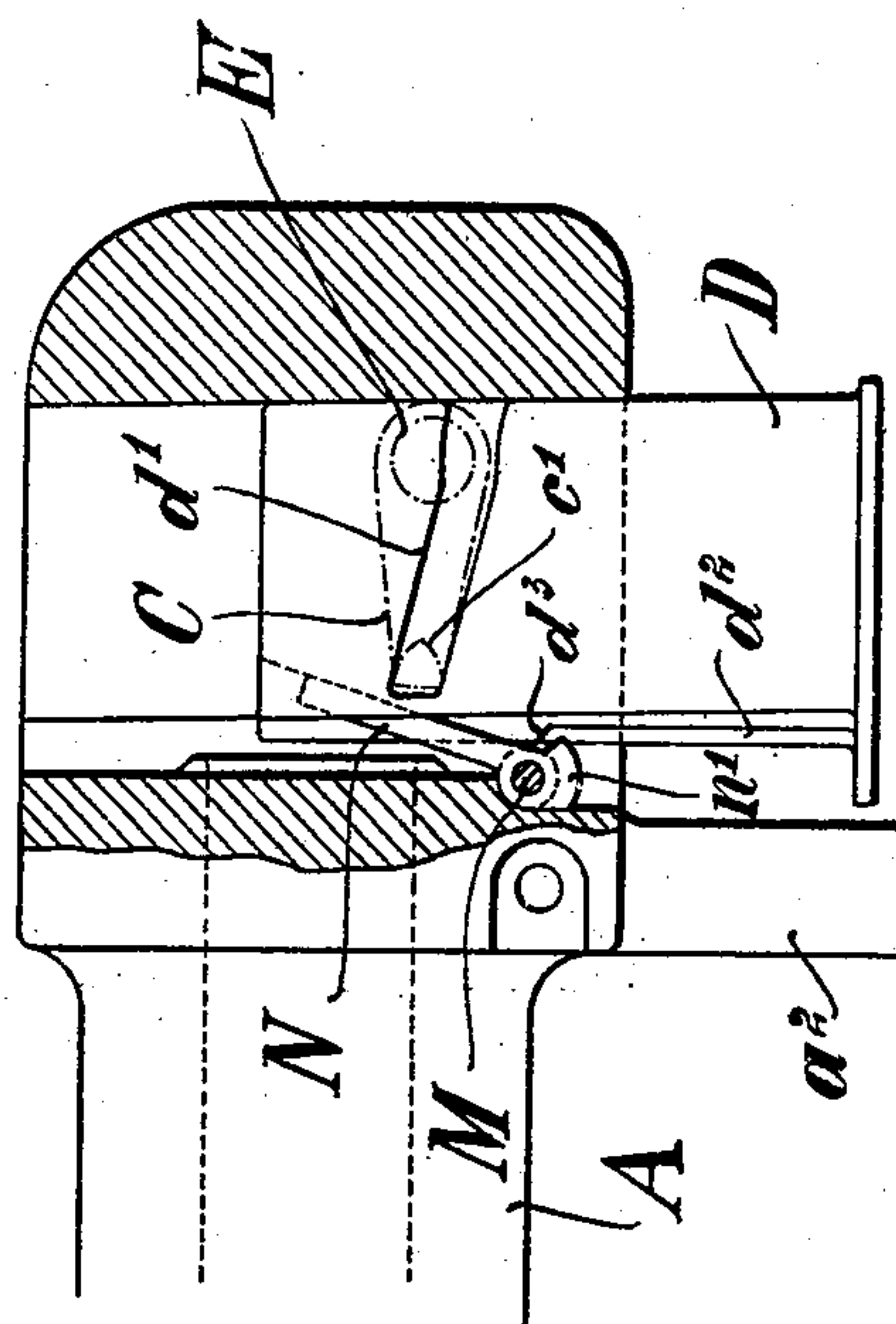
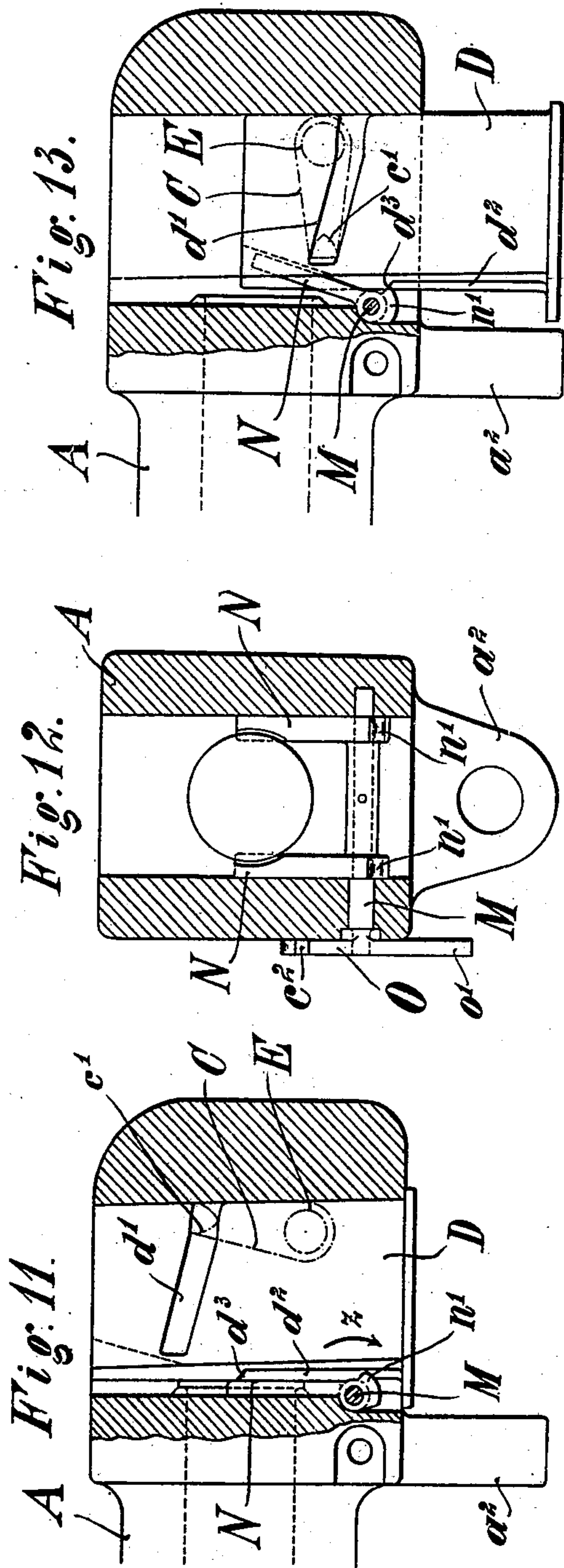
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911,818.

Patented Feb. 9, 1909.

5 SHEETS—SHEET 4.



Witnesses  
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911,818.

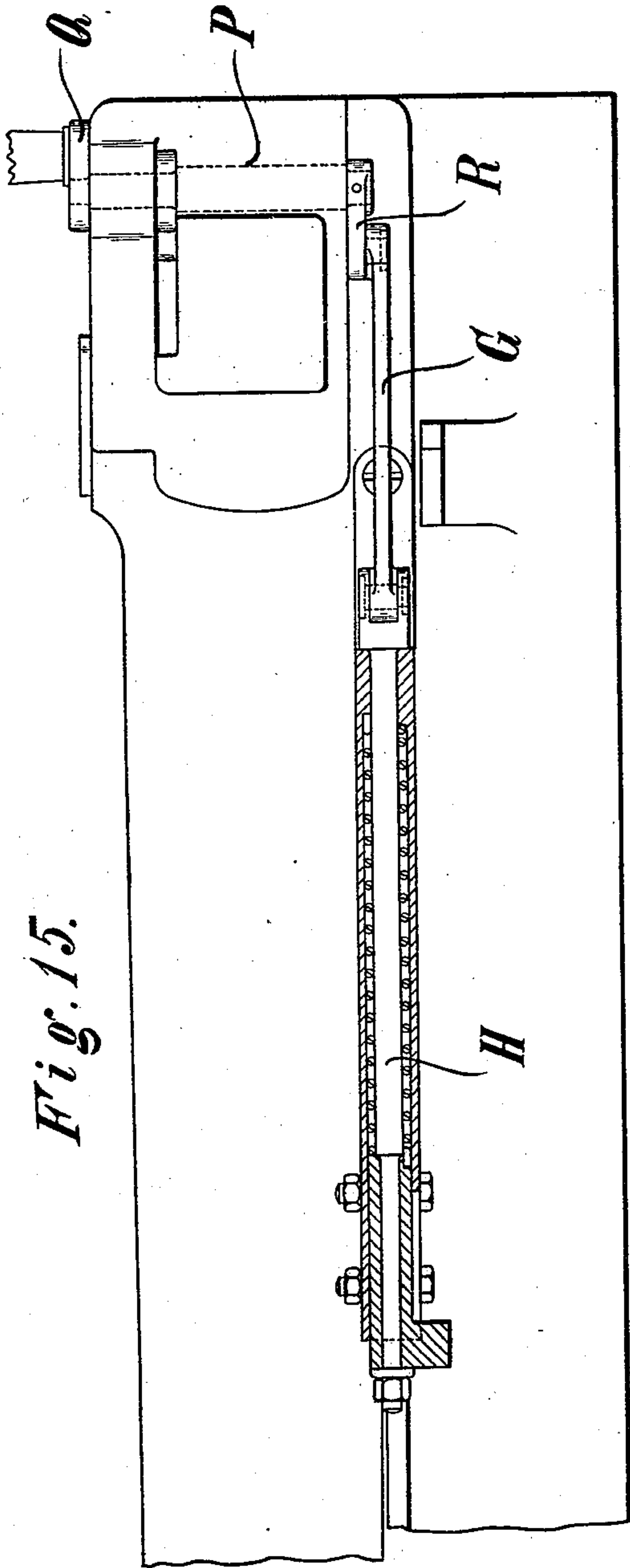


Fig. 15.

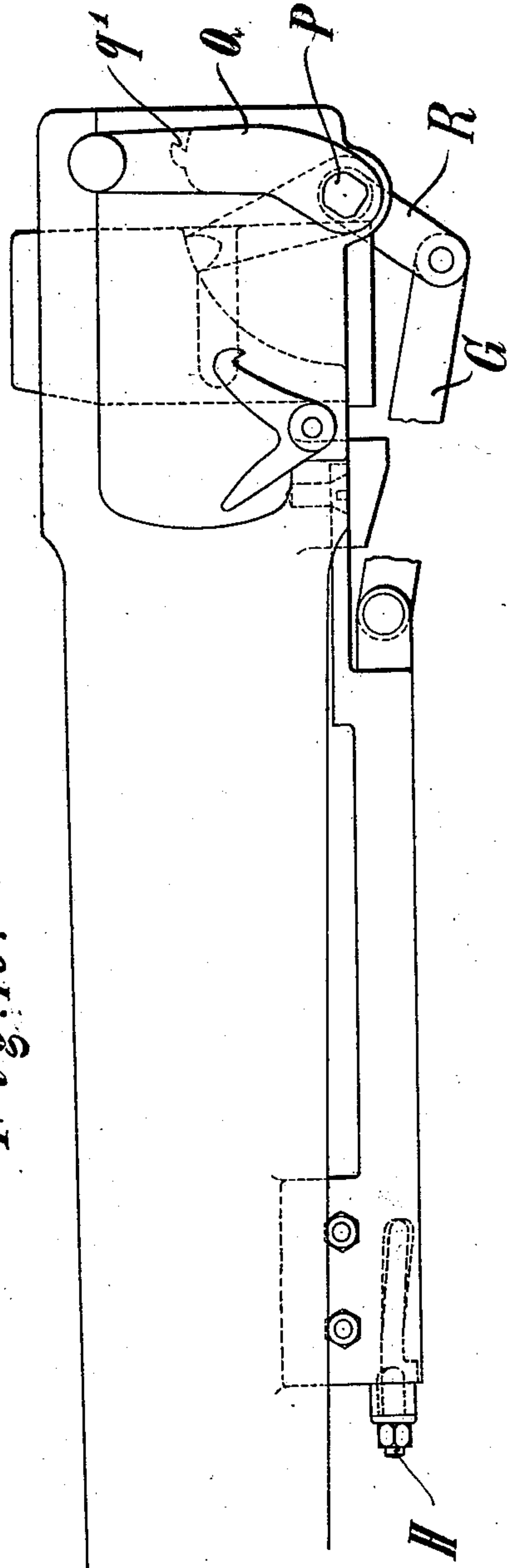


Fig. 16.

Witnesses  
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# UNITED STATES PATENT OFFICE.

MAX HERMSDORF, OF ESSEN-ON-THE-RUHR, GERMANY, ASSIGNOR TO FRIED. KRUPP AKTIEN-GESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

## BARREL RECOIL-GUN.

No. 911,818.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed January 9, 1907. Serial No. 351,522.

*To all whom it may concern:*

Be it known that I, MAX HERMSDORF, a subject of the Emperor of Germany, and a resident of Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Barrel Recoil-Guns, of which the following is a specification.

The present invention relates to barrel recoil guns and the object of the invention is to provide a device for automatically opening the breech, which in particular is adapted for those guns in which the cradle does not project beyond the rear face of the breech.

The invention is furthermore particularly valuable for guns having "long" barrel-recoil.

Other objects and advantages will appear in the following description and will be more particularly pointed out in the appended claims.

The accompanying drawings show two embodiments of the invention, by way of example.

Figures 1 to 14 show one embodiment; Fig. 1 is a side view of those parts of a gun concerned with the present invention, the gun barrel being in firing position and the breech being closed; Fig. 2 is a plan view of the same; Fig. 3 is a rear elevation of the gun barrel partly in section on the line 3—3, Fig. 1; Fig. 4 is a view corresponding to that shown in Fig. 1 but partly in section, the individual parts being shown in those positions which they assume when the gun barrel has executed a certain portion of its return movement; Fig. 5 is a section on the line 5—5, Fig. 4, looking from the right; Fig. 6 shows a detail in section on the line 6—6, Fig. 4; Fig. 7 is a view corresponding to that shown in Fig. 4 and showing the individual parts in those positions which they assume during the return movement of the gun barrel and directly after the opening of the breech; Fig. 8 is also a view corresponding to Fig. 4 and showing the individual parts in those positions which they assume when the gun barrel is in firing position and the breech is open; Fig. 9 is a section on the line 9—9, Fig. 7, seen from the right; Fig. 10 shows a detail in plan view; Fig. 11 is a section on the line 11—11, Fig. 2, from below; Fig. 12 is a section on the line 12—12 Fig. 1, looking from the right; Fig. 13 is a view corresponding to that shown in Fig. 11 but with the parts in a position corresponding to that

shown in Fig. 7; Fig. 14 is a view also corresponding to that shown in Fig. 11 and showing the parts in a position corresponding to that shown in Fig. 8; Fig. 15 is a side view, partly in section, of the second embodiment of the invention; and Fig. 16 is a plan view of the same.

Reference will first be had to the embodiment shown in Figs. 1—14. The gun barrel A is slidably mounted upon the slide track  $b'$  of the cradle B by means of claws  $a'$  (Figs. 5 and 9) and through the medium of its horn  $a^2$ , the barrel is connected with the recoil brake and the recuperator, which may be of any suitable construction. The rear end of the breech projects beyond the cradle when the barrel is in firing position (see in particular Fig. 1). A "vertical" wedge breech block serves as closure. The opening and closing of the breech is effected by means of an operating lever C (see in particular Fig. 3) mounted in the breech of the gun-barrel and having its stud  $c'$  engaging in a groove  $d'$  of the breech block D. A substantially sector-shaped crank member F, carrying a handle  $f'$ , is arranged on that end of the operating lever shaft E which projects out from the breech. The pin  $f^2$  of the crank-piece F is connected with a rod H through the medium of a link G, the rod being guided in the gun barrel in such a manner that it can move parallel to the direction of recoil of the gun barrel. A tubular housing J, which is rigidly secured to the gun barrel, serves to guide the rod H. On the free, reduced end of the rod H a sleeve K is rotatably but non-slidably arranged. The sleeve K guides the free end of the rod H in the housing J and carries a downwardly extending striker  $k'$ . For the striker  $k'$  a guide-groove  $i'$  is provided in the housing J, the groove extending helically in such a manner that the sleeve K is turned in the direction of the arrow  $x$  (Fig. 5), that is to say, the striker  $k'$  swings outwardly, when the sleeve K is moved towards the breech of the gun barrel from the position shown in Figs. 1, 2 and 4. The end of the groove  $i'$  that is towards the muzzle of the gun-barrel is enlarged at  $i^2$  (Figs. 1, 2, 5 and 6.)

A helical spring L (see in particular Figs. 4 and 7) surrounds the rod H and has one end engaging the sleeve K, while its other end engages a projection on the housing J, the spring being arranged between these parts in such a manner that it acts as a compression



and expansion spring and as a torsion spring. On the one hand, the spring tends to hold the rod H in a position in which its head  $h'$  lies against the housing J (Figs. 1, 2 and 4) and on the other hand the spring tends to turn the sleeve K in the opposite direction of the arrow  $x$  (Fig. 5.) On that end of the cradle B which is towards the breech of the gun barrel, is arranged a rigid striker  $b^2$  (see also Fig. 10) which is provided with an inclined face  $b^3$ , this striker being designed to cooperate with the striker  $k'$ .

Rigidly secured to a shaft M (see in particular Figs. 11-14), mounted in the breech, parallel with the shaft E of the operating lever, is an ejector N which is provided with noses  $n'$  which project into recesses  $d^2$  in the breech block D and are designed to cooperate with an abutting face  $d^3$  of these recesses in such a manner that the ejector is swung outward toward the end of the downward movement of the breech block. On the end of the ejector shaft M which projects beyond the breech of the gun barrel, is rigidly secured a two-armed lever O, one of whose arms  $o'$  is in the form of a trigger while the other arm is provided with a nose  $o^2$ . The latter is capable of entering into engagement with a nose  $f^3$  on the aforesaid crank piece F.

Immediately before the firing of the shot, the parts are in the positions shown in Figs. 1 to 3, 11 and 12. The gun barrel A is then in its foremost position relatively to the cradle B. The breech is closed. The ejector N lies against the forward wall of the breech opening and grips behind the base rim of the cartridge shell. The rod H lies with its head  $h'$  against the housing J. The spring L is under initial compression. The sleeve K projects from the housing J to such an extent that the striker  $k'$  is still in engagement with the enlarged portion  $i^2$  of the groove  $i'$ .

After firing, the gun barrel recoils upon the cradle B. The striker  $k'$  then hits the inclined face  $b^3$  of the striker  $b^2$  when the striker  $k'$  reaches the position shown by dotted lines in Fig. 2. The striker  $k'$  then slides along the inclined face  $b^3$  and is turned against the action of the spring L so as to swing into the enlargement  $i^2$  of the groove  $i'$ . During the further course of the recoil, the striker  $b^2$  releases the striker  $k'$  so that the latter may return to its original position under the influence of the spring L. In the return movement of the gun barrel, the striker  $k'$  again hits the striker  $b^2$  (Figs. 4 and 5). As long as the striker  $k'$  lies against the rear face (the face towards the breech) of the striker  $b^2$ , the sleeve K and consequently also the rod H will move longitudinally relatively to the gun barrel while imparting compression to the spring L. Consequently the crank piece F is turned in the direction of the arrow  $y$  (Fig. 4) through the medium of

the link G. The crank piece F through the medium of the shaft E turns the operating lever C so that the breech block D is moved downwardly (Fig. 7). Towards the end of this movement, the nose  $f^3$  of the crank piece F reaches such a position relatively to the nose  $o^2$  of the lever O that the lever O may swing outward in the direction of the arrow  $z$  (Fig. 4). Immediately after this position is reached, sudden rotation in the direction of the arrow  $z$  is imparted to the ejector N, the shaft M and the lever O by the breech block, through the medium of its engaging faces  $d^3$  and the noses  $n'$  of the ejector N. This causes the ejector to throw out the cartridge shell and the nose  $o^2$  enters the path of the nose  $f^3$  as shown in Fig. 7.

During the aforesaid longitudinal movement of the sleeve K and of the rod H, the striker  $k'$  moves along the groove  $i'$  in the housing J. This causes the sleeve K to turn on the rod H in the direction of the arrow  $x$  (Fig. 5), and the striker  $k'$  slides on the rear face of the striker  $b^2$  until it passes out of engagement with said face. This takes place when the individual parts have reached the position shown in Figs. 7, 9 and 13. From this time on the rod H takes part in the return movement of the gun barrel. At the same time, the rod H will be moved longitudinally relatively to the gun barrel by the expanding spring L, and the crank piece F and shaft E will be turned in the direction of the arrow  $u$  (Fig. 7) until the nose  $f^3$  hits the nose  $o^2$  (Fig. 8). The pair of noses  $o^2 f^3$  then constitutes means to prevent the spring L further expanding. The operating lever C takes part in the turning of the shaft E so that the breech block D is elevated to a slight extent and the shoulders  $d^3$  pass out of engagement with the noses  $n'$  of the ejector N (Fig. 14). The extent of this movement of the breech block must be sufficiently great to permit the noses  $n'$  of the ejector N to swing without hindrance upon the introduction of a cartridge. At the end of the return movement, the several parts assume the positions seen in Figs. 8 and 14. If now loading takes place, the ejector N will be returned to its original position by the rim of the cartridge. With the ejector turns the lever O whose nose  $o^2$  passes out of engagement with the nose  $f^3$  so as to release the crank piece F which is caused to rotate, under the influence of the expanding spring L, in the direction of the arrow  $v$  (Fig. 8), and the operating lever now effects the closing of the breech. At the same time, the striker  $k'$  reaches the position from which it can swing into the enlargement  $i^2$  of the groove  $i'$ . All the parts have now attained the positions shown in Figs. 1 to 3, 11 and 12. If the breech is to be closed without loading, it is simply necessary to



withdraw the nose  $o^2$  of the lever O from the nose  $f^3$  of the crank piece F by turning the lever O through the medium of its arm  $o'$ .

The gun shown in Figs. 15 and 16 differs  
5 mainly from the other embodiments merely  
in having a "horizontal" wedge breech-  
block as closure. The shaft P (operating  
lever shaft) which effects the opening and  
10 closing of the breech is journaled vertically  
in the breech and its upper end carries a  
hand lever Q which is provided with a nose  
 $q'$  corresponding to the nose  $f^3$  of the first  
embodiment. An arm R, which connects  
15 the shaft P with the striker rod G H, is rigidly  
secured on the other end of the shaft P  
which projects over the lower face of the  
breech block.

Having now described the invention, what  
is claimed and desired to secure by Letters  
20 Patent is:

1. The combination with the recoiling bar-  
rel; and the part on which the barrel recoils;  
of a movable breech block; mechanism for  
opening the breech comprising a rod carried  
25 by the barrel and extending longitudinally  
of the bore thereof and a striker rotatable  
about the longitudinal axis of the rod; and  
means on the part on which the barrel re-  
coils, arranged to engage the striker and to  
30 cause said mechanism to open the breech,

said means being out of engagement with the  
mechanism when the gun is in firing position.

2. The combination with the recoiling bar-  
rel; and the part on which the barrel recoils;  
of a movable breech block; a fixed striker on 35  
the part on which the barrel recoils; and  
mechanism for opening the breech embody-  
ing a striker turnable about an axis parallel  
to the bore of the gun, and a guide for the  
striker causing the striker to pass out of en- 40  
gagement with the fixed striker after the  
breech is opened.

3. The combination with the recoiling bar-  
rel; and the part on which the barrel recoils;  
of a movable breech block; a fixed striker on 45  
the part on which the barrel recoils; and  
mechanism for opening the breech compris-  
ing a rod connected with the breech block, a  
striker rotatable about the longitudinal axis  
of the rod, and a spring tending to hold the 50  
striker in one position and acting on the rod  
to close the breech.

The foregoing specification signed at Dus-  
seldorf, Germany, this eighth day of Novem-  
ber, 1906.

MAX HERMSDORF.

In presence of—

ALFRED SOHLMAYER,  
M. ENGELS.