

No. 617,907.

Patented Jan. 17, 1899.

C. POHLIT.

HORIZONTAL BREECH BLOCK FOR ORDNANCE.

(Application filed Dec. 31, 1897.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.

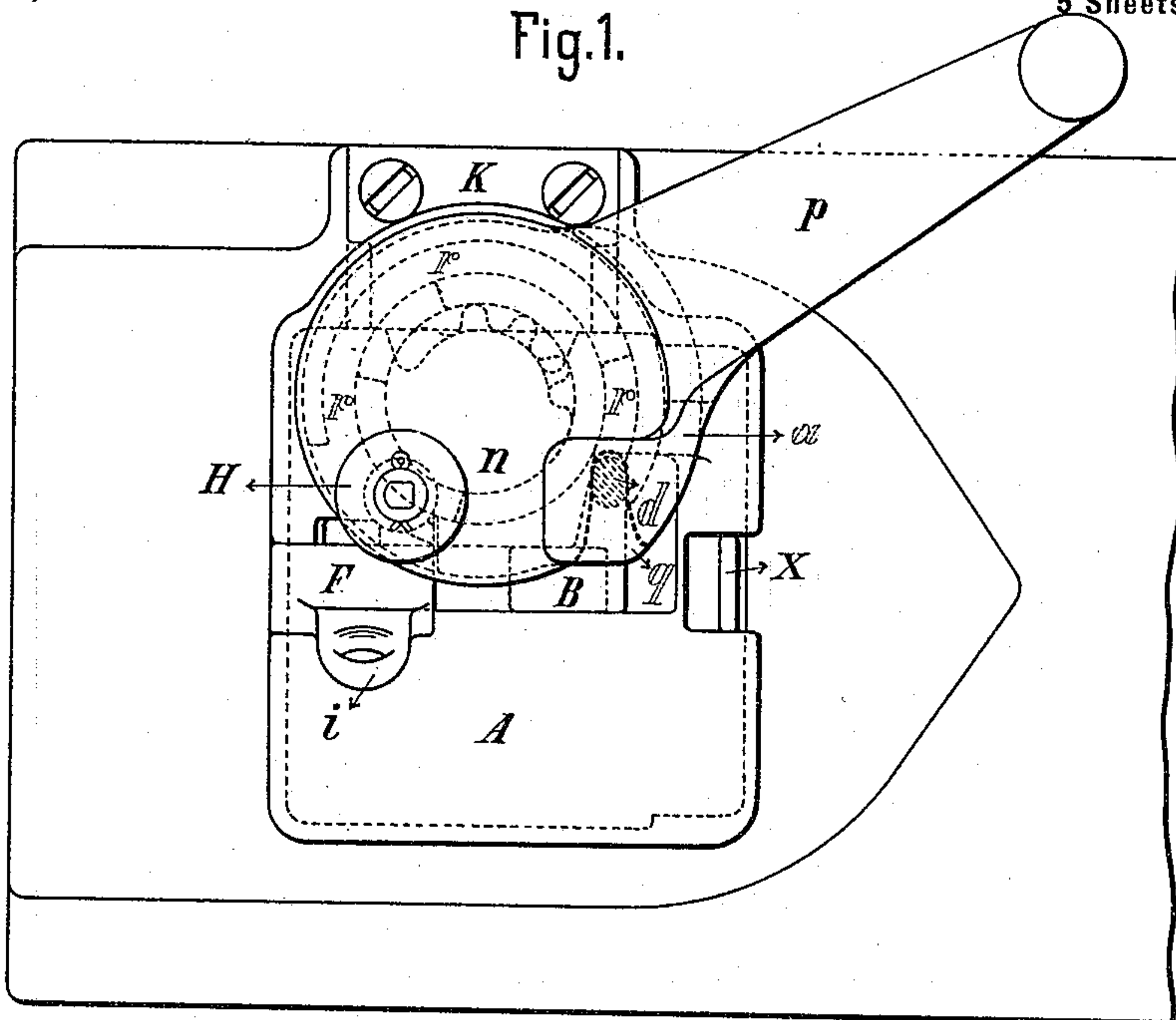
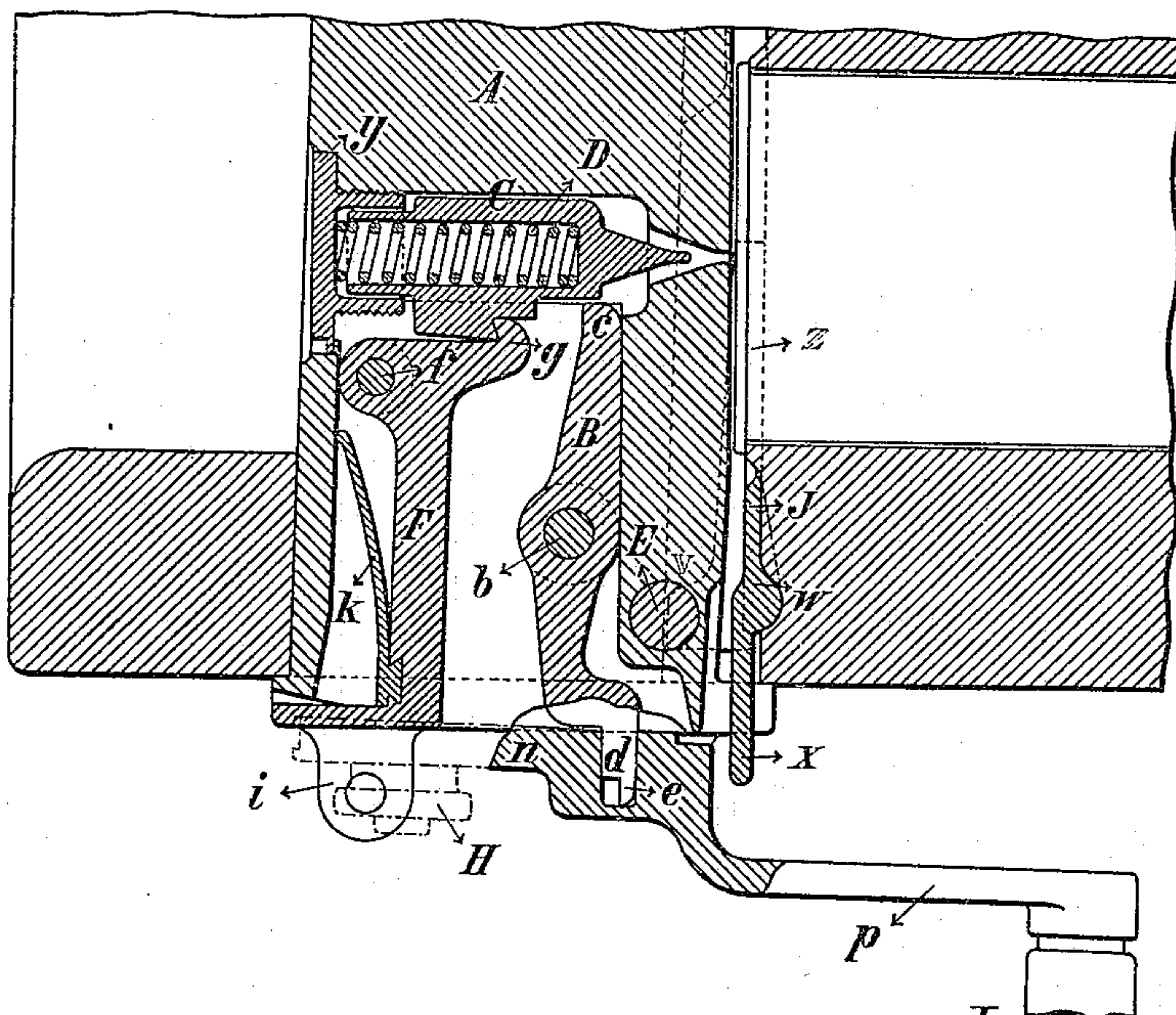


Fig. 2.



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Fig.3.

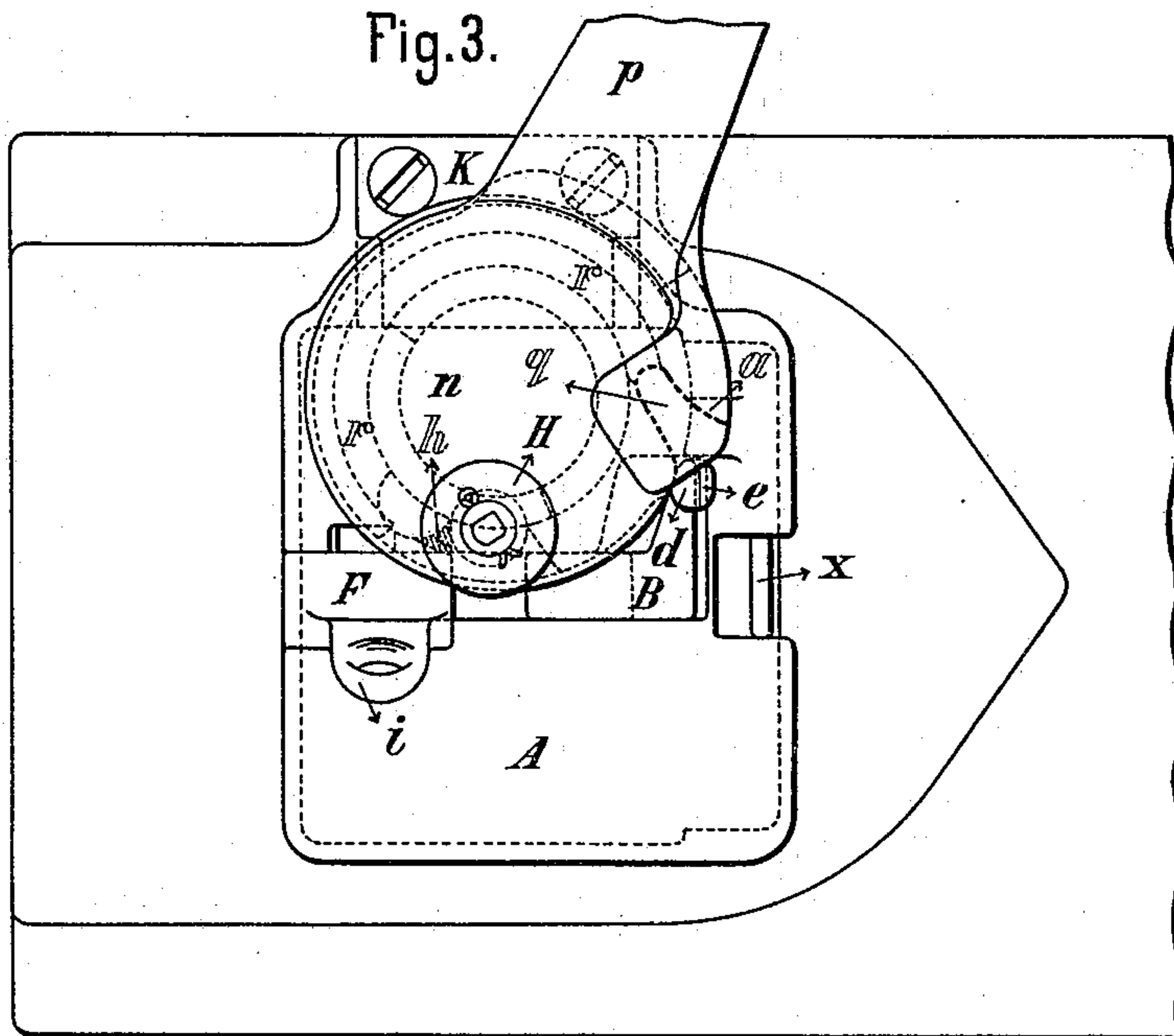
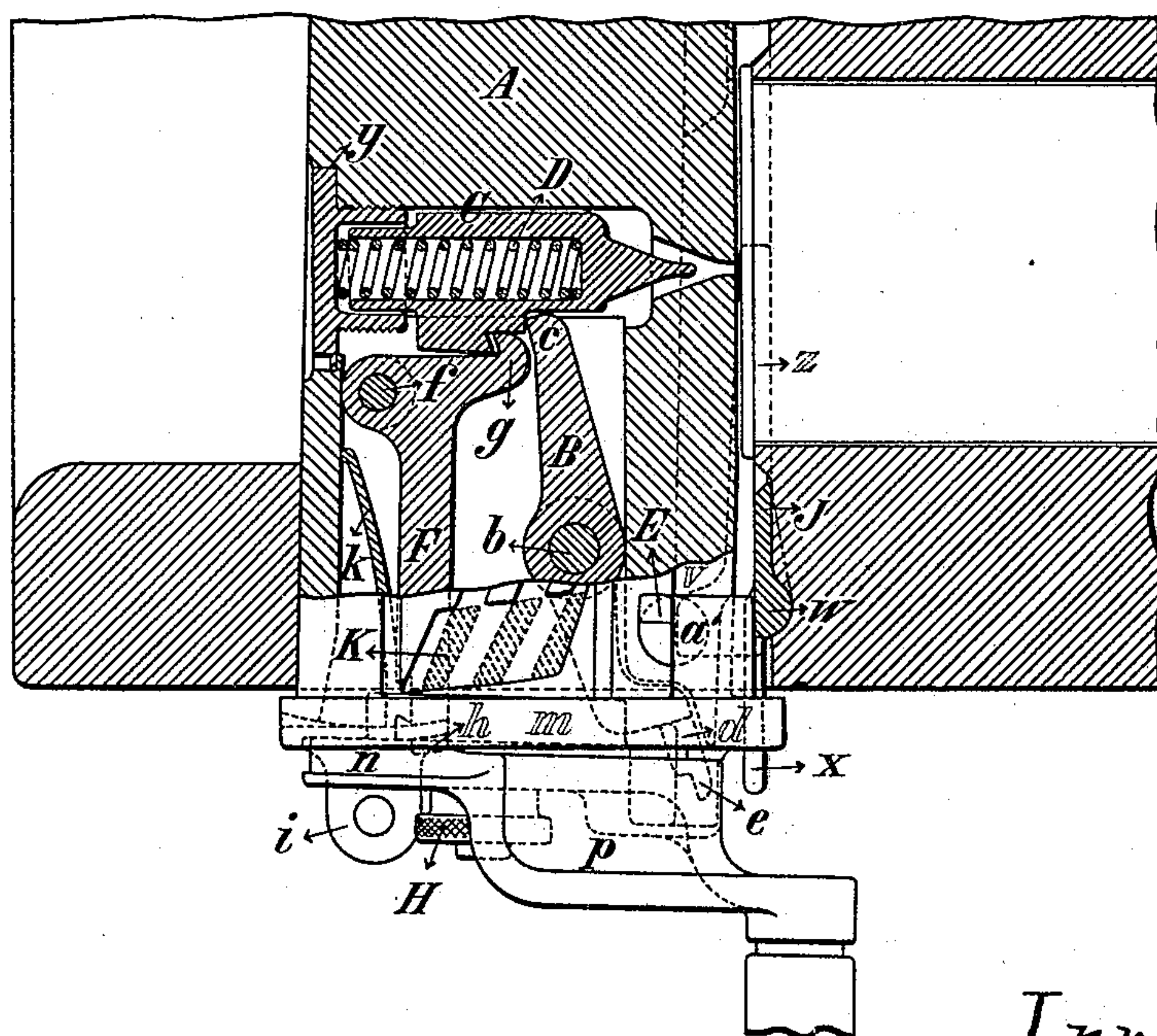


Fig.4.



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Fig. 5.

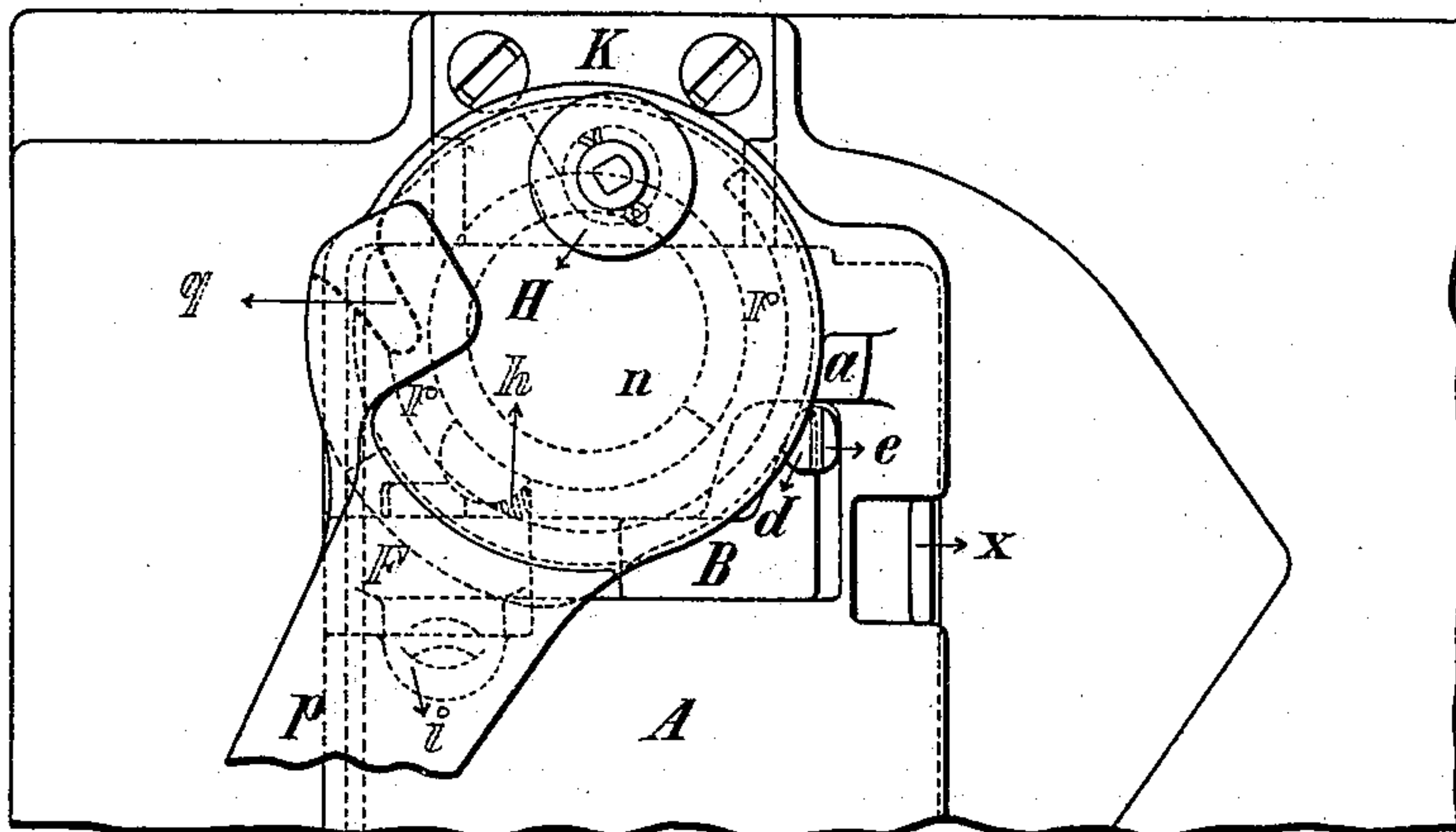
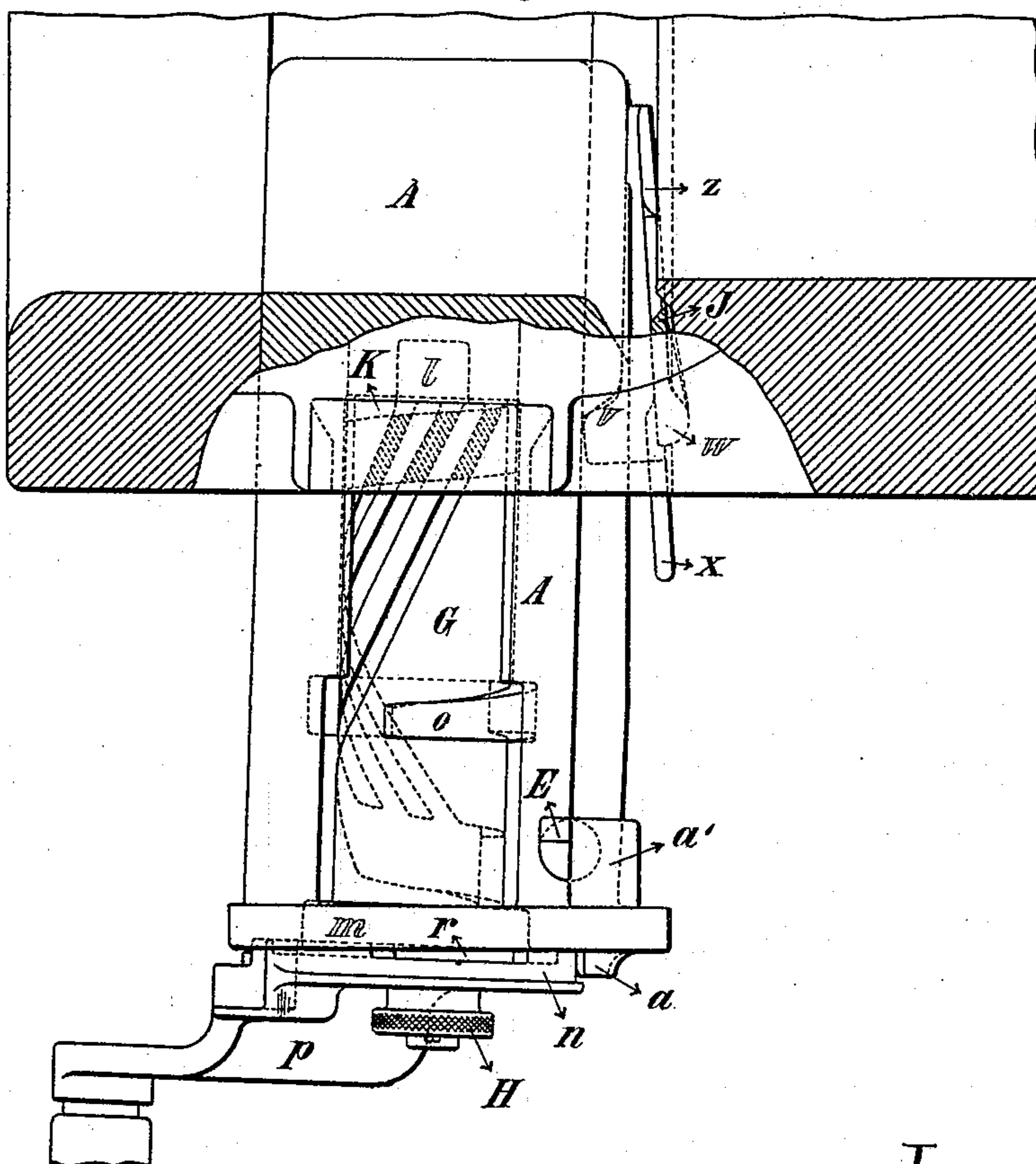


Fig. 6.



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Fig. 7.

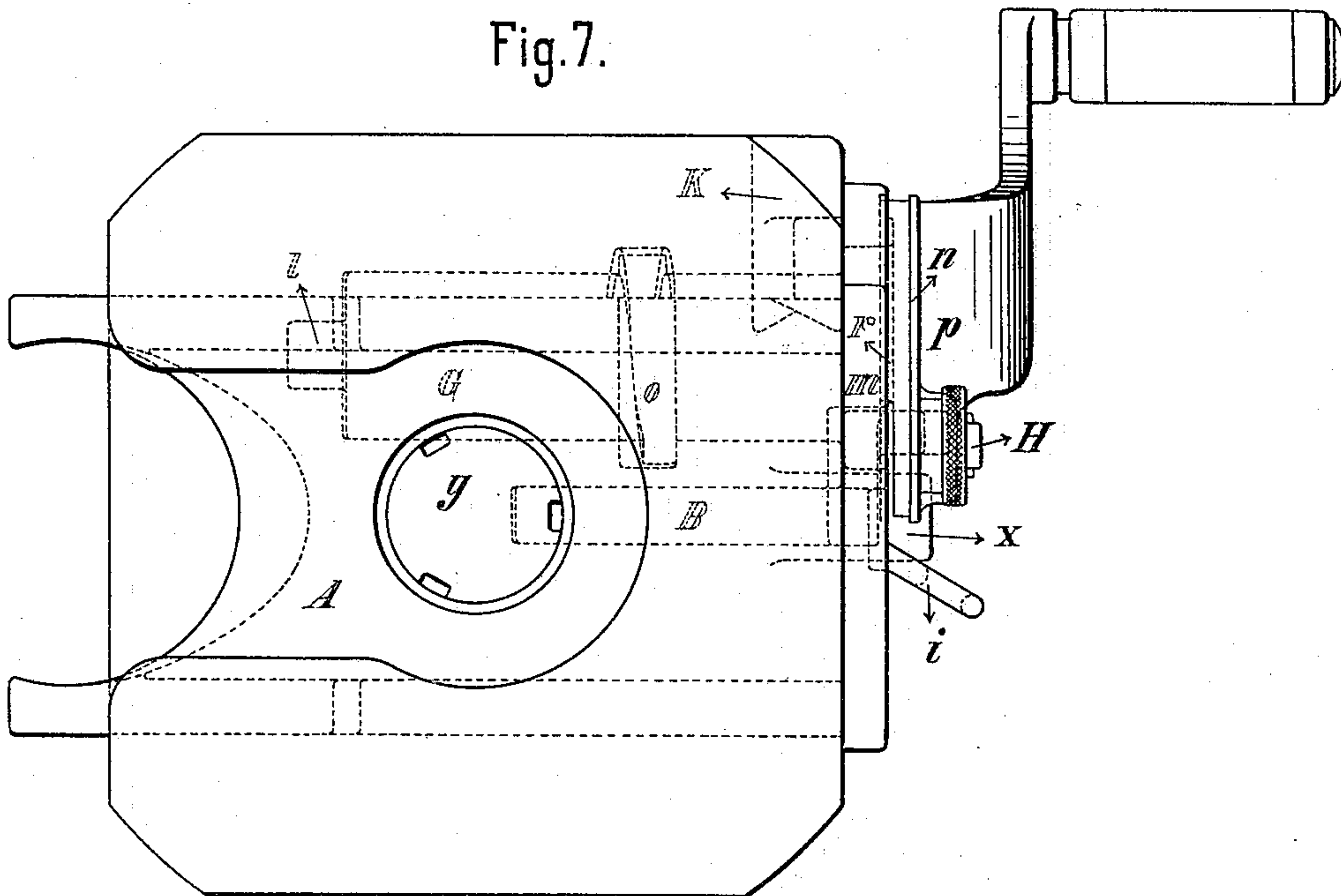


Fig. 8.

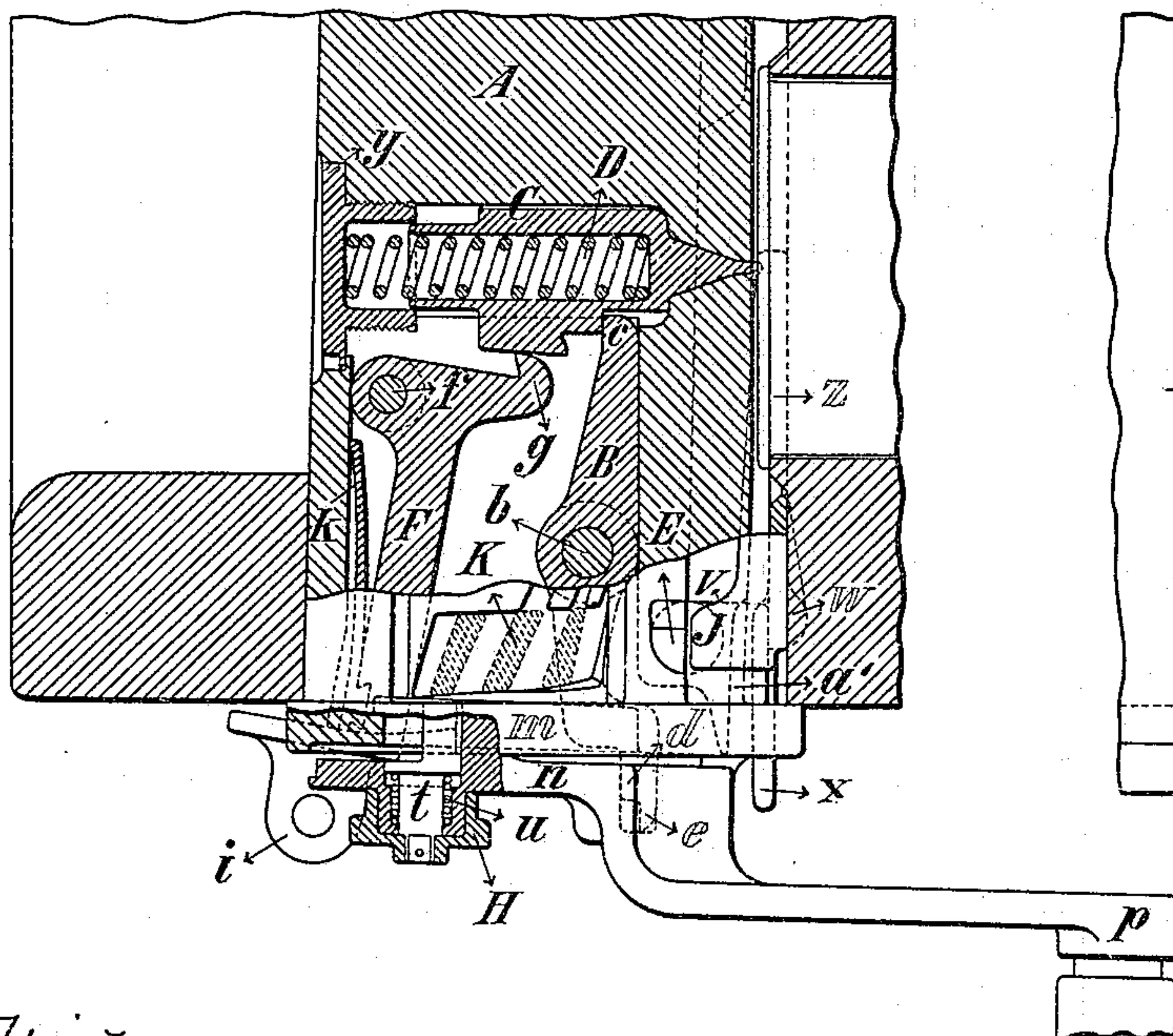
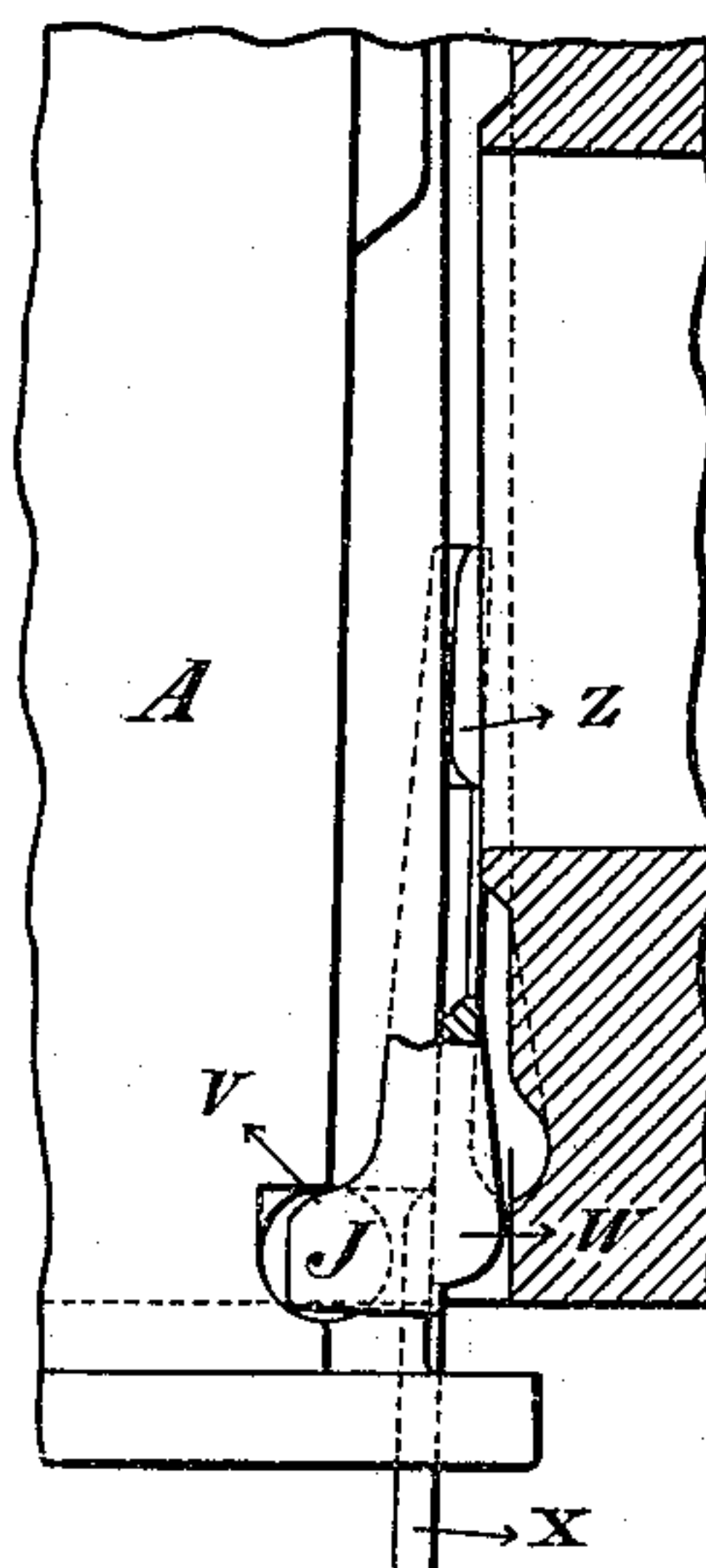


Fig. 9.



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HORIZONTAL BREACH BLOCK FOR ORDNANCE.

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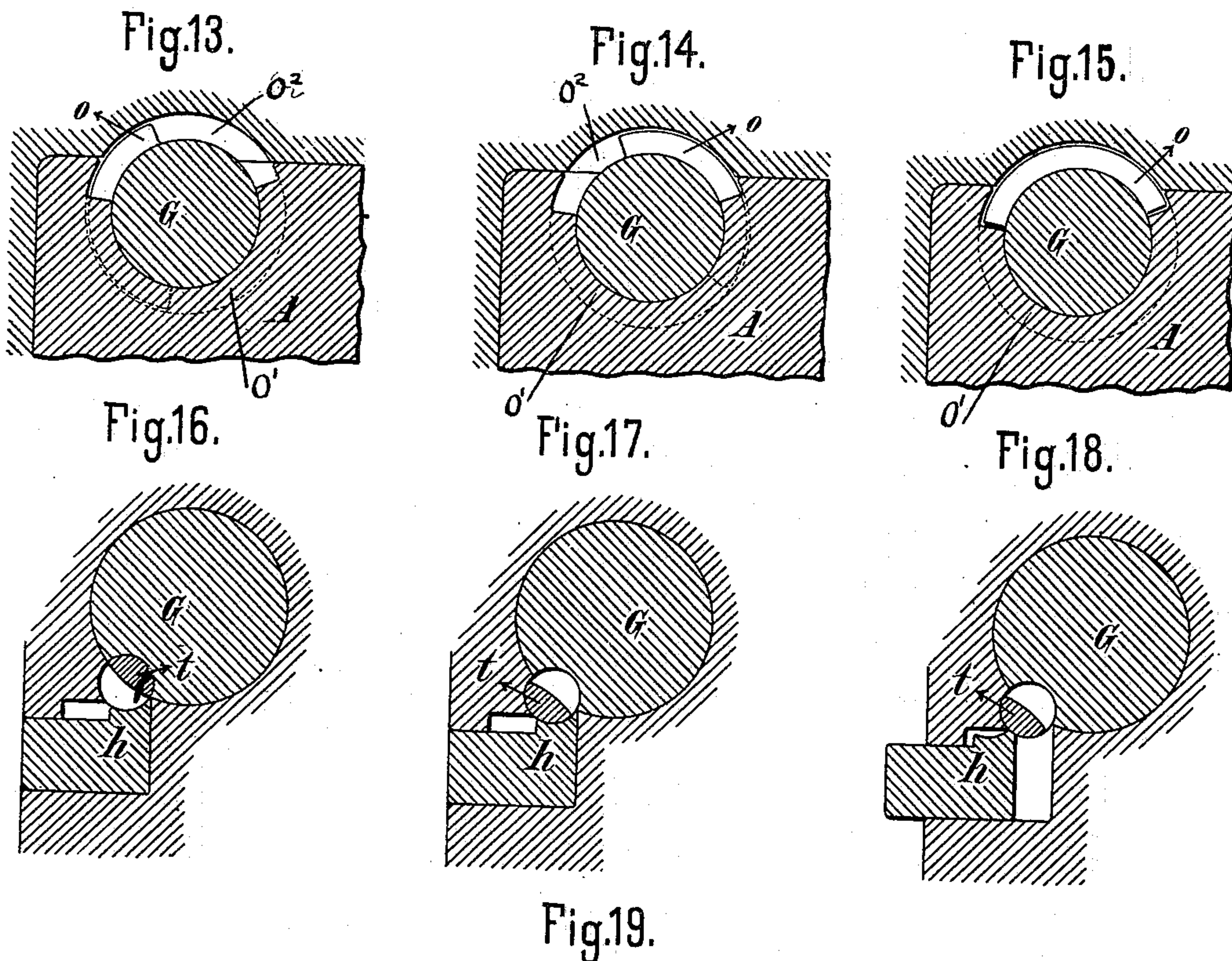
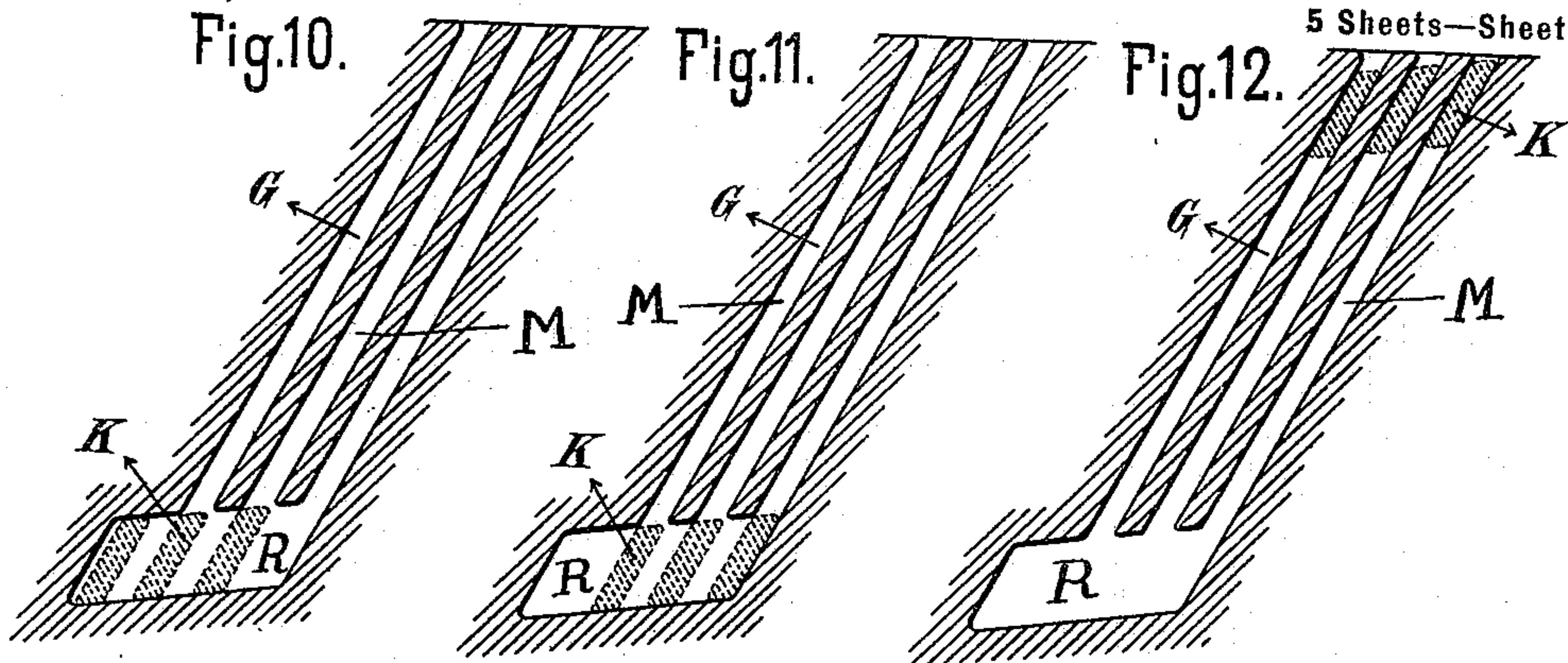
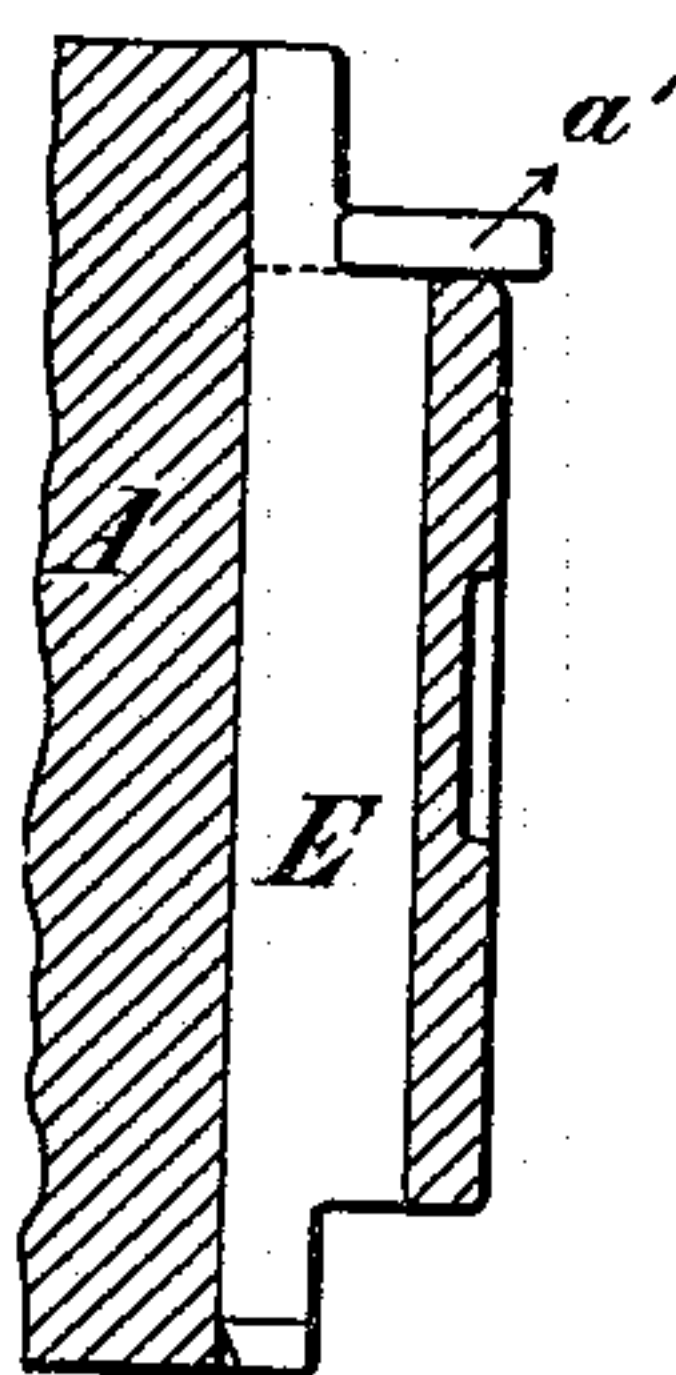


Fig. 19.



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UNITED STATES PATENT OFFICE.

CARL POHLIT, OF ESSEN-ON-THE-RUHR, GERMANY, ASSIGNOR TO FRIED.
KRUPP, OF SAME PLACE.

HORIZONTAL BREECH-BLOCK FOR ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 617,907, dated January 17, 1899.

Application filed December 31, 1897. Serial No. 665,059. (No model.)

To all whom it may concern:

Be it known that I, CARL POHLIT, a citizen of the German Empire, residing at Essen-on-the-Ruhr, Germany, have invented new and
5 useful Improvements in Horizontal Breech-Blocks for Ordnance with Percussion Firing System, of which the following is a specification.

My invention has reference to improvements in fermetures of breech-loading guns with horizontal transverse breech-blocks; and it consists, essentially, in the arrangement within the breech-block of a threaded guide-arbor adapted to engage the corresponding
15 short threads in the wedge chamber or slot, the guide-arbor having a sectional screw-flange within a cylindrical groove in the wedge-chamber for preventing axial motion of the arbor within the wedge and locking the
20 wedge to the gun when the breech is closed, together with safety devices to prevent premature firing, &c.

The nature of my invention will best be understood when described in connection with
25 the accompanying drawings, in which—

Figure 1 represents a side view of the fermeture, (breech closed and hammer cocked.) Fig. 2 is a horizontal section of Fig. 1 through the axis of the gun. Fig. 3 is a side view, the
30 guide-arbor being turned to the left an angle of thirty-four degrees, (hammer cocked and breech-wedge started out a short distance.) Fig. 4 is a horizontal section of Fig. 3 through the axis of the gun. Fig. 5 is a side view of the
35 fermeture, the wedge and arbor being pulled out sufficiently to completely open the breech. Fig. 6 is a plan view of Fig. 5, partly in section. Fig. 7 is an end view, (breech closed and hammer cocked.) Fig. 8 is a horizontal
40 section through the axis of the gun, some parts being in elevation, (breech closed, gun fired.) Fig. 9 illustrates the removal of the ejector. Figs. 10, 11, and 12 illustrate different relative
45 positions of the threads of the guide-arbor and of the fixed threads in the wedge-chamber. Figs. 13, 14, and 15 illustrate the different relative positions of the screw-flange on the arbor. Figs. 16, 17, and 18 illustrate different
50 positions of the safety-bolt. Fig. 19 shows the position of the ejector-key within the wedge.

Similar letters of reference designate corre-

sponding parts throughout the several views of the drawings.

Referring to the drawings, the letter A designates the breech-wedge formed with a cylindrical cavity open at the top, and G the guide-arbor provided with an actuating-lever *p* and inserted into the cylindrical cavity of the breech-block A, Figs. 6 and 7 and 13 to 15. The
55 guide-arbor has an end gudgeon *l* and an outer flange *m*, fitting into corresponding cavities of the wedge A.

o is a right-hand square screw-cam on the guide-arbor G, extending over less than half its circumference, cut off for its greater part
65 on the side facing the lever *p* and on a plane at right angles to the axis of the guide-arbor G, so that but a small part has the full cross-section of the screw-thread, as shown in Figs. 6 and 7. When the guide-arbor is turned,
70 the screw-cam *o* normally moves within a cylindrical groove *o'*, Figs. 6, 7, 13, and 14, of the breech-wedge, the width of the groove in a direction parallel to the axis of the guide-arbor being equal to the total extent of the
75 screw-cam in the same direction. The groove *o'* in the breech-block forms only part of a circle complemented to a circle by the length of the screw-cam *o*, Fig. 15. It is readily understood that an axial displacement of the
80 guide-arbor G on the breech-wedge A is impossible as long as the screw-cam *o* is wholly or partially within the groove *o'* of the breech-wedge, Figs. 13 and 14. When, however, the screw-cam *o* is in the position shown in Fig. 15,
85 the guide-arbor may be removed in the direction of its axis. During the ordinary operation, however, the screw-cam *o* will never take the position shown in Fig. 15. It will only be
90 brought into this position when, as will be described hereinafter, the ejector is removed and when the wedge is drawn out beyond the loading position.

The screw-cam *o* not only serves to prevent axial displacement of the guide-arbor within
95 the wedge, but its object is likewise to lock the wedge to the gun, and also, by the flat screw-surfaces provided thereon, to cause the initial motion of the wedge in opening and the last motion in closing it home. For this purpose the upper wall of the wedge-chamber is
100 provided with a screw-shaped groove *o''*, Figs.

7 and 13, within which the screw-shaped part of the cam *o* rests when the breech is locked. The remaining part of the screw-cam *o* being within the groove *o'* of the wedge *A*, it follows
 5 that the screw-cam *o* causes the locking of the breech-wedge to the gun. If then the guide-arbor, through the operating-lever *p*, is turned to the left, the screw-cam *o* leaves the groove *o'* in the upper wall of the wedge-
 10 chamber at the same time through the co-operation of the screw-surfaces of cam *o* and the groove *o'* of the wedge-chamber slightly pushing the wedge out. On the other hand, when the wedge is moved far enough into the
 15 wedge-chamber that the screw-cam *o* enters its groove *o'* in the chamber a further turn of the guide-arbor to the right will cause a short closing motion of the wedge, driving it home. The threads on the screw-cam being
 20 very flat, it follows that in this closing motion the wedge is driven home slowly, but with great force, which is of great importance for the packing of the fermeture. In the same manner the thread of the screw-cam *o* admits
 25 of applying considerable force for starting the wedge out.

While the first part of the opening and closing motion is very slow, the rest of the motion of the breech-wedge is very rapid, and like-
 30 wise effected through turning the operating-lever *p*, and consequently the guide-bar *G*. For this purpose the guide-arbor, as shown in Fig. 6, is provided with very steep guiding screw threads or grooves *M*, engaged by a
 35 segmental nut *K*, Figs. 1, 4, 6, 7, and 8, attached to the gun at the upper part of the wedge-chamber, as in the old Krupp fermeture for large calibers. The coöperation of the steep guiding-threads and the segmental
 40 nut *K* will be readily understood from Figs. 4, 6, 8, 10, 11, and 12. This arrangement differs from Krupp's former similar arrangement in so far that when the breech is closed the sectional nut *K* does not engage the guide-
 45 threads *M*, but is within a recess *R* at the outer ends of the guide-threads. When now the operating-handle is turned, this recess slides beneath the nut *K* passively until the screw-cam *o* has left its hold on the groove in
 50 the roof of the wedge-chamber and pushes the wedge a short distance out. At this instant the steep guide-threads of the arbor *G* are opposite the threads of the sectional nut *K*, so that a further turning of the guide-arbor
 55 will cause their engagement and the opening of the breech, the guide-arbor being held within the breech-wedge. The closing of the breech is effected in a similar manner. As in opening the breech the ends of the steep
 60 guide-threads *M* reach the nut *K*, the breech-wedge strikes a nose *v* of the ejector *z*, Fig. 6, limiting the outward motion of the breech-wedge (position for loading) and causing the ejection of the empty cartridge. At this in-
 65 stant the screw-cam *o* of the guide-arbor takes the position shown in Fig. 14. If now it is desired to pull the breech-block farther out

for the purpose of removing the guide-arbor, the ejector must first be removed. For this purpose the key *E*, Figs. 6, 8, and 19, is
 70 withdrawn from the breech-wedge, the latter returned far enough into the wedge-chamber to bring the nose *v* of the ejector opposite the space cleared by the removal of the key *E*, then the ejector by its handle *x* is pressed
 75 against the front face of the wedge, and finally the breech-wedge is moved out, together with the ejector, by turning the guide-arbor. In doing this the steep threads of the guide-arbor finally become disengaged from the threads
 80 of the nut *K*, the screw-cam *o* takes the position Fig. 15, and the guide-arbor *G* is free to be pulled out.

The outer flange or disk *n* of the guide-arbor *G* has an eccentric groove *q*, Figs. 1 and 3, 85 for cocking the hammer, and a concentric groove *r*, Figs. 1 and 3, for preventing premature firing. Besides this the flange *n* is perforated for the reception of the safety device, to be referred to hereinafter. The firing-
 90 lock, Fig. 2, consists of a hammer *C*, with spring *D*, and screw-cap *y*, the two-armed cocking-lever *B*, and the trigger *F*, the latter being a bell-crank lever pivoted on a bolt *f*.

While the breech is closed after firing the
 95 various parts of the firing-lock are in the positions shown in Fig. 8, the cocking-lever *B* by its pin *d e* engaging the groove *q* in the flange *n* of the guide-arbor *G*. As this groove is eccentric, turning of the guide-arbor for
 100 opening the breech causes a forward movement of the pin *d e*, turning the cocking-lever *B* on its pivot, the inner end *c* of the lever *B* carrying the hammer *C* back until it is caught by the catch *g* of the trigger *F*, acted upon by
 105 the spring *k*. While the actuating-handle *p* is being turned to the left for fully opening the breech and then to the right for closing and for locking the same the nose *d e* of the cocking-lever *B* bears against the rim of the
 110 flange *n* of the guide-arbor. Toward the last part of the closing motion of the guide-arbor the cocking-groove *q* again engages the nose *d e* and returns the cocking-lever to its original position, Fig. 2. 115

For firing, the lanyard is hooked into the eye *i* of the trigger *F*, Fig. 2, and pulled back, causing the trigger to turn on the bolt *f*, so as to release the catch *g* from the hammer, which is then thrown forward by the spring
 120 *k* against the percussion-screw, Fig. 8.

While the guide-arbor is turned for opening or closing the breech firing of the gun is impossible, because when the guide-arbor *G* is turned far enough for the trigger *F*, with
 125 its catch *g*, to start inward a nose *h* on the trigger, Figs. 3 and 4, comes up to and on further motion enters the above-mentioned concentric groove *r* on the flange of the guide-arbor, Fig. 3, and is held therein until the
 130 breech is closed again. As long as the nose *h* remains in the groove *r* the trigger is held fast and cannot be moved again until when in closing the breech the nose *h* leaves the

groove *r*. As already mentioned, a safety device is likewise located within the guide-arbor and prevents opening the locked breech and firing of the gun. This safety device, Fig. 8, consists of a safety bolt *t*, which, together with a spring *u*, is inserted into a bore of the guide-arbor flange *n* and connected to a safety-knob H by a pin. The cylindrical inner end of the bolt *t*, from which part is cut off, reaches into the flange *m* and into the breech-wedge. By turning the knob H the bolt *t* may be brought into two different positions at an angle of one hundred and eighty degrees.

When the fermeture is not secured, the position of the bolt *t* is such that, as shown in Fig. 16, it leaves the guide-arbor G free to be turned and the trigger F, of which only the nose *h* is shown in Fig. 16, is free to be pulled. When for securing the fermeture the knob H is turned one hundred and eighty degrees, the end of the bolt *t* leaves the guide-arbor and bears against a corresponding cut in the nose *h* of the trigger, so that the latter is secured against motion, Fig. 17. At the same time, however, the bolt *t* passes into a semicylindrical recess in the breech-block, so that turning of the guide-arbor and opening of the breech are both impossible, since the bolt is held within the guide-arbor and extends into the breech-block. If the fermeture is secured after firing by turning the safety-knob H, then the safety-bolt *t* engages only the recess in the breech-wedge, Fig. 18, so as to prevent turning of the guide-arbor and opening of the breech; but it cannot enter the nose *h*, because the trigger having been pulled back in firing the nose *h* takes the position shown in Fig. 18. The safety-bolt *t* is held in the two extreme positions by spring *u* forcing two noses on knob H into corresponding stops on guide-arbor flange *n*.

The operation is as follows: The breech being closed and the gun fired, the several parts are in the positions shown in Figs. 7 and 8. By turning the guide-arbor through the actuating-arm *p* to the left the screw-cam *o* during the first part of the motion leaves the groove provided for it in the top wall of the wedge-chamber, thereby unlocking the fermeture. Through the coöperation of the screw-surfaces of the cam *o* and of the groove in the breech-chamber the breech-block is at the same time pushed out a short distance and the hammer cocked by the angular movement of *p* and *u*, the groove *q* actuating the cocking-lever. By continued turning of the guide-arbor the nut K, which so far had not come into action, is engaged by the steep threads of the guide-arbor G, whereby the breech is completely opened. During this part of the operation firing is impossible, because the nose *h* of the trigger F is within the safety-groove *r* of the flange *n*. The outward motion is limited by the breech-wedge striking against the ejector *z*, at the same time causing the empty cartridge to be thrown out.

The breech-wedge is now in the position for loading. After the insertion of a new cartridge the actuating-arm *p* is turned to the right for the purpose of closing the breech, the above-described actions being repeated in reversed order, with the exception that the hammer remains cocked. When the breech is completely closed, it is either secured in the above-described manner by turning the safety-knob H, or it is fired.

What I claim as new is—

1. In a horizontal wedge-fermeture of breech-loading guns, the combination with the body of the gun and its wedge-chamber, of a breech-wedge A provided with a cylindrical cavity open at the top, and with a transverse groove *o'*; a guide-arbor G inserted into the cylindrical cavity of the wedge and pivoted therein; said guide-arbor being provided with an actuating-handle *p* and with a screw-cam *o*, normally more or less within the groove *o'* of the wedge, so as to prevent axial motion of the arbor G in relation to the breech-wedge A, and adapted to engage a groove *o''* within the roof of the wedge-chamber, to start the outward motion of the breech-wedge at the beginning of the opening movement, and to drive the wedge home toward the end of the closing motion; steep screw-threads M on the guide-arbor G terminating at their outer ends in a transverse recess R; and a sectional nut K adapted to engage the threads to cause the opening and closing of the breech by turning the handle *p*, substantially as and for the purpose specified.

2. In a breech-fermeture of the character specified, the combination with the body of the gun, the breech-wedge A and the guide-arbor G, of an eccentric groove *q* on the end plate or flange *n* of the guide-arbor; the cocking-arm B with its pin *d e* engaged by the groove *q*, so as to cock the hammer during the first part of the opening motion of the actuating-handle *p*, then held in position on the flange *n* of the guide-arm until the breech is nearly closed, when the notch *q* will reengage the pin *d e*, thereby turning the cocking-arm, to release the hammer therefrom, substantially as and for the purpose specified.

3. In a breech-fermeture of the character specified, the combination with the body of the gun, the breech-wedge A and the guide-arbor G, of an outer plate *n* on the guide-arbor and a trigger having a nose *h*, said plate being provided with a concentric groove *r* which, while opening or closing the breech, is engaged by the nose *h* of the trigger, to prevent premature firing, substantially as and for the purpose specified.

4. In a breech-fermeture of the character specified, the combination with the body of the gun, the breech-wedge A and the guide-arbor G, of a spring safety-bolt *t* on the guide-arbor; a section of the cylindrical end pin cut away and the remaining part engaging corresponding recesses of the breech-wedge and of the trigger, to allow or prevent turning

of the guide-arbor or pulling of the trigger, substantially as and for the purpose specified.

5 In a breech-fermeture of the character specified, the combination with the body of the gun, the breech-wedge A and the guide-arbor G, of the screw-cam *o* extending around a portion of the circumference of the guide-arbor, groove *o'* in the breech-wedge forming only a part of a circle, complemented to a circle by the length of the screw-cam *o*, said
10 screw-cam *o* normally engaging the groove *o'*, so as to lock the guide-arbor against axial

motion on the wedge A, and also adapted to clear the groove *o'* so that the guide-arbor by axial motion may be removed from the wedge, 15 substantially as and for the purpose specified.

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

CARL POHLIT.

Witnesses:

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