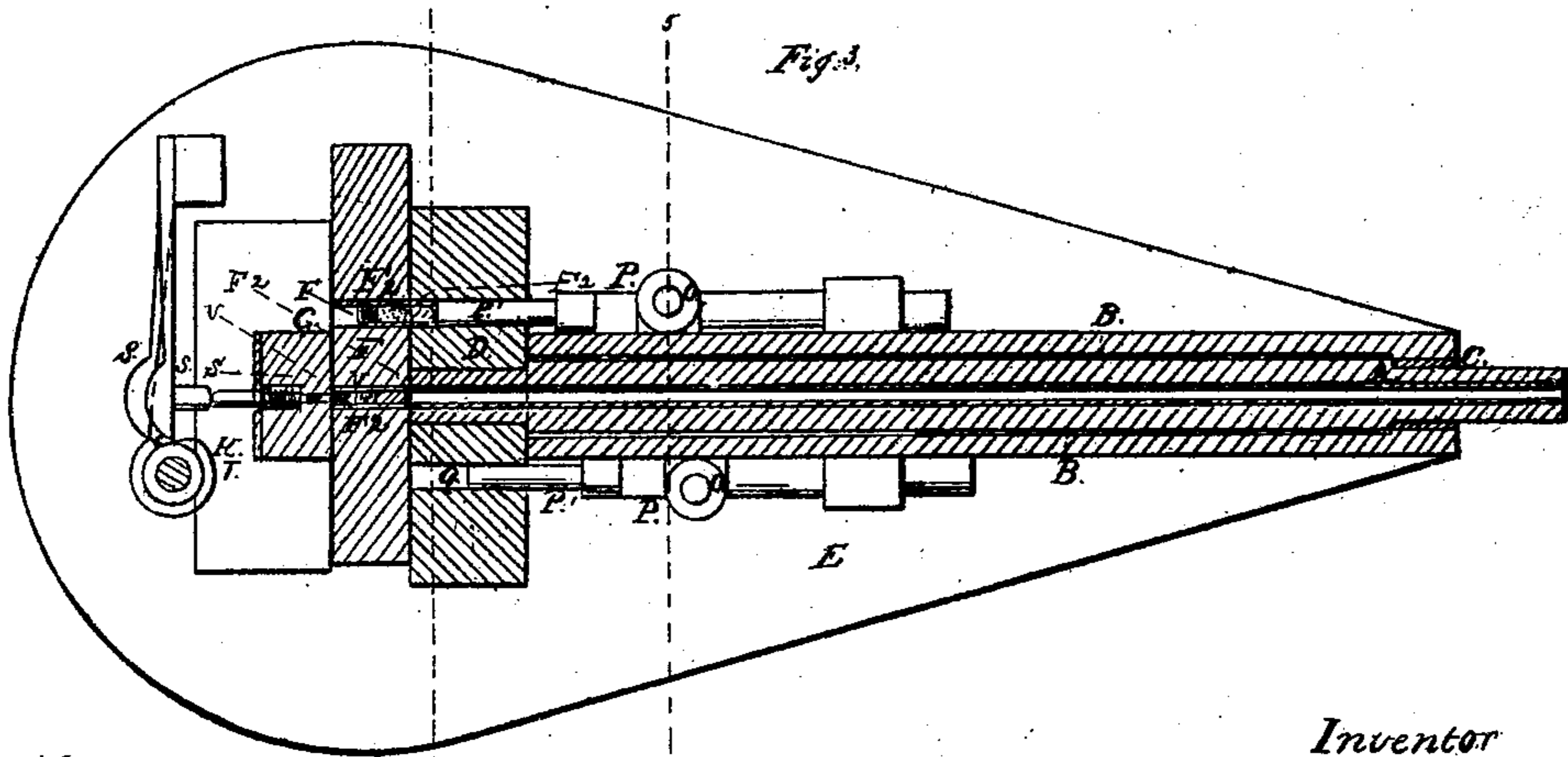
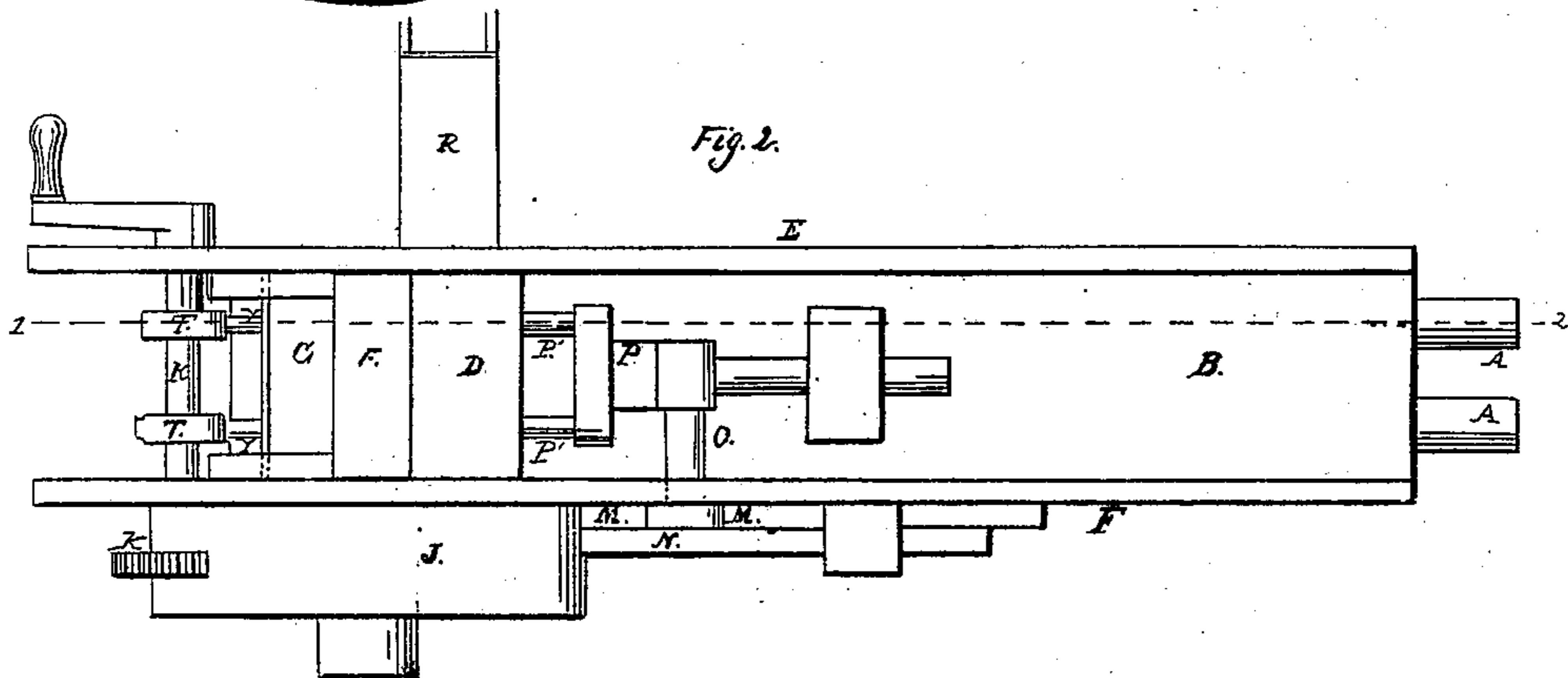
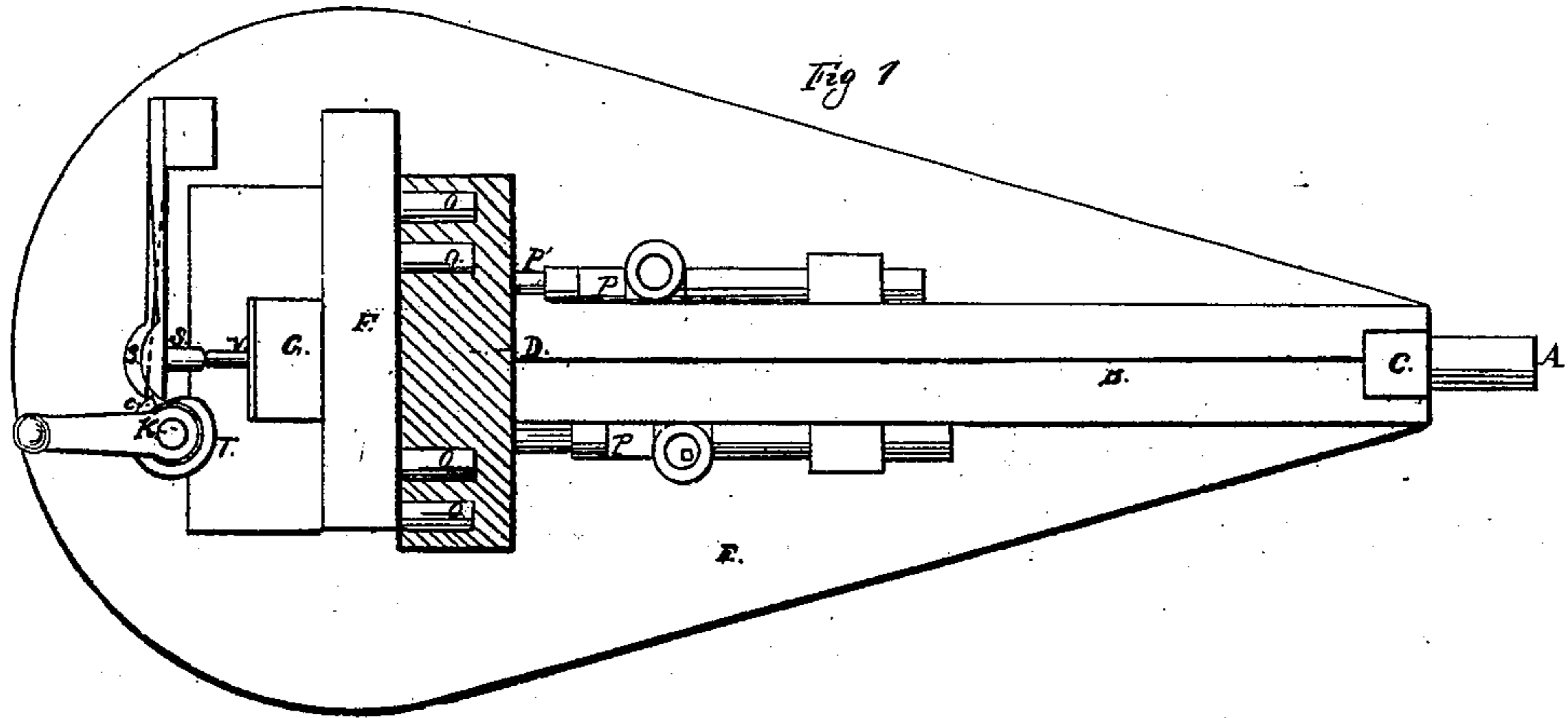


W. McCORD.
Machine Gun.

No. { 929,
31,933. }

Patented Apr. 2, 1861.



Witnesses
E. Baker
Ed. Morgan

Inventor
Wm. McCord

W. McCORD.

Machine Gun.

No. { 929, }
 { 31,933. }

Patented Apr. 2 1861.

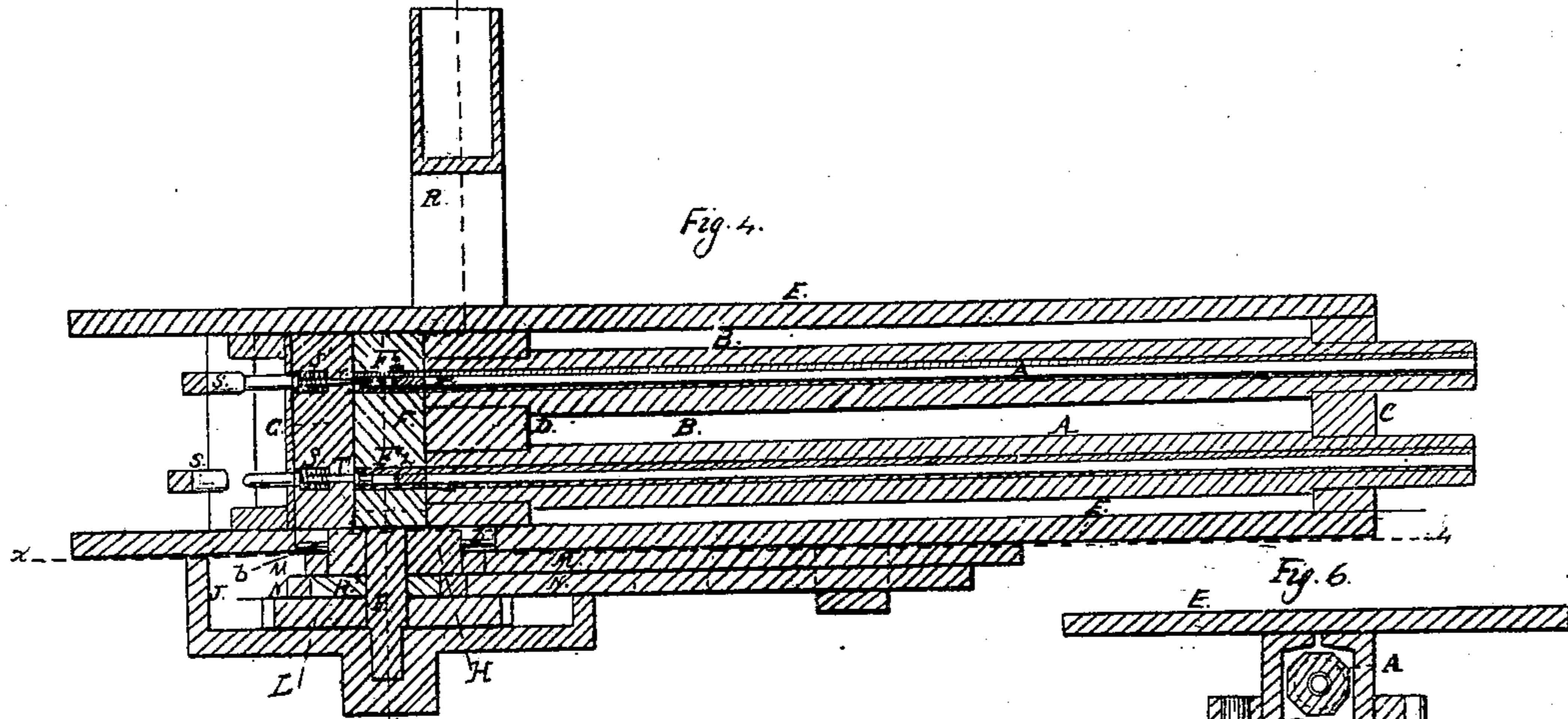


Fig. 4.

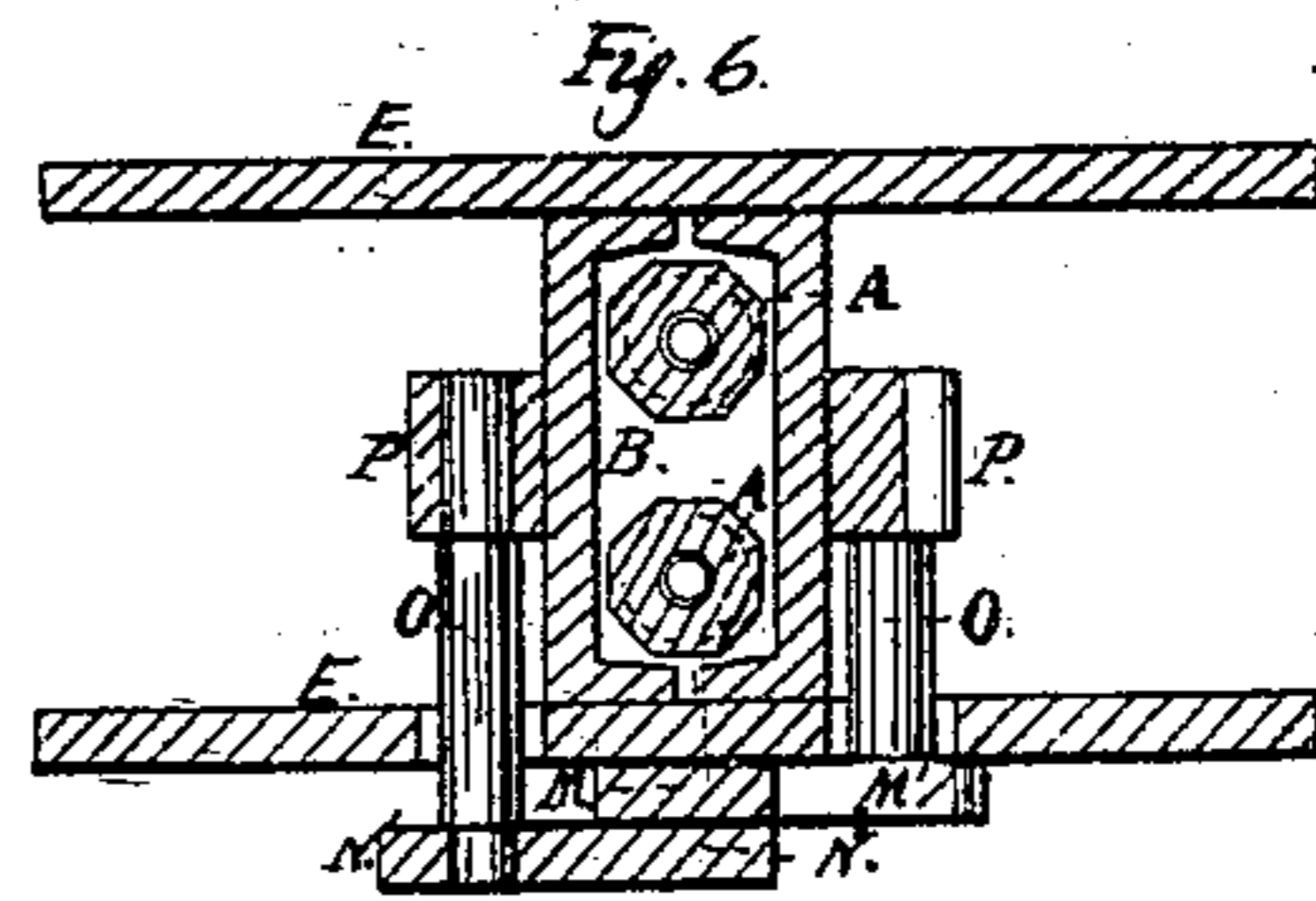


Fig. 6.

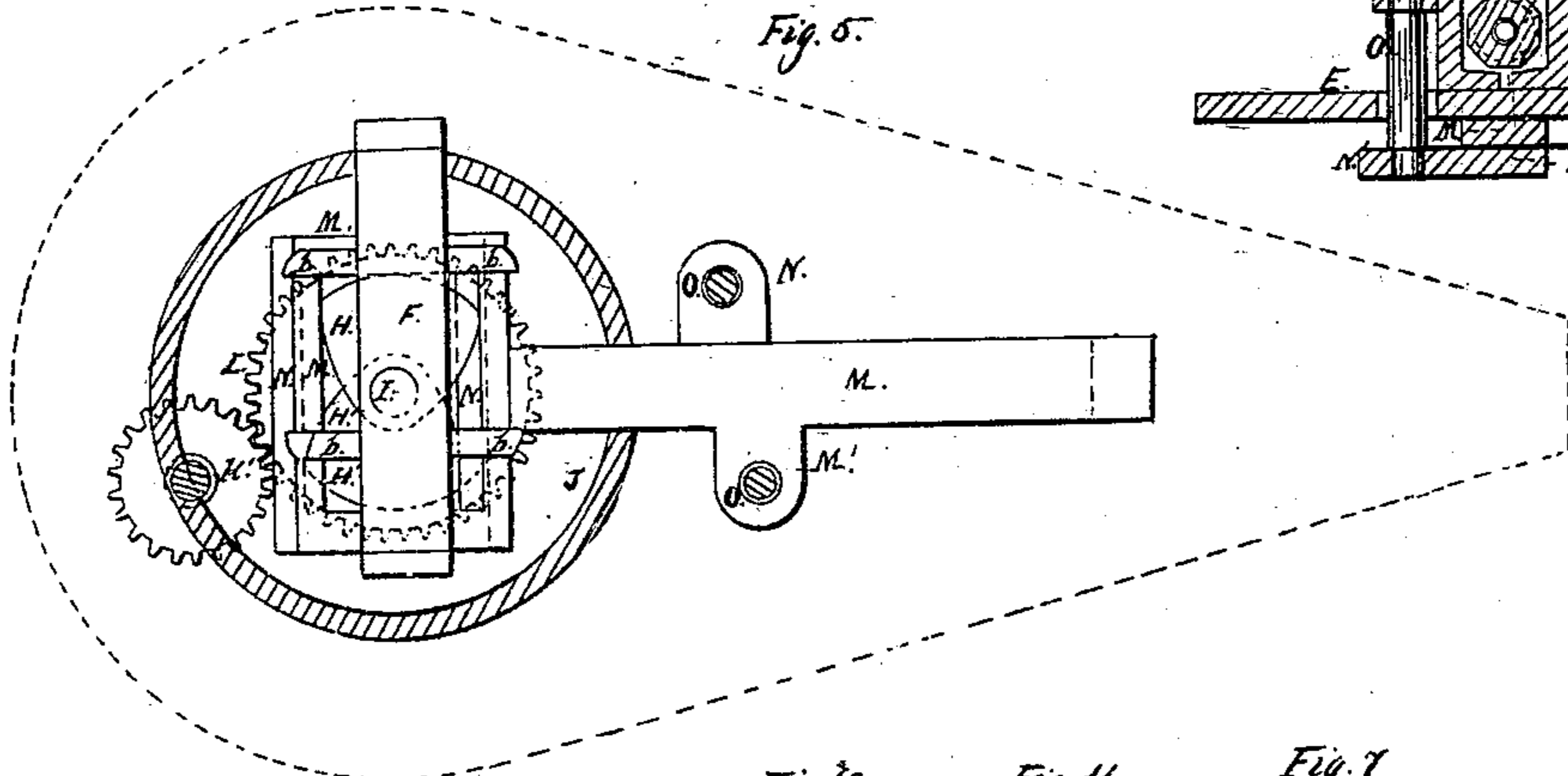


Fig. 5.

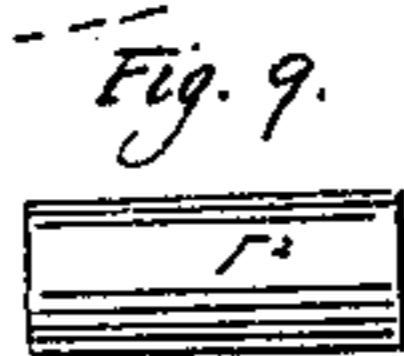


Fig. 9.



Fig. 10.

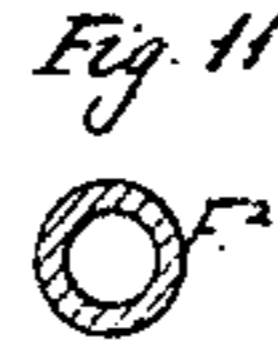


Fig. 11.

Fig. 7.

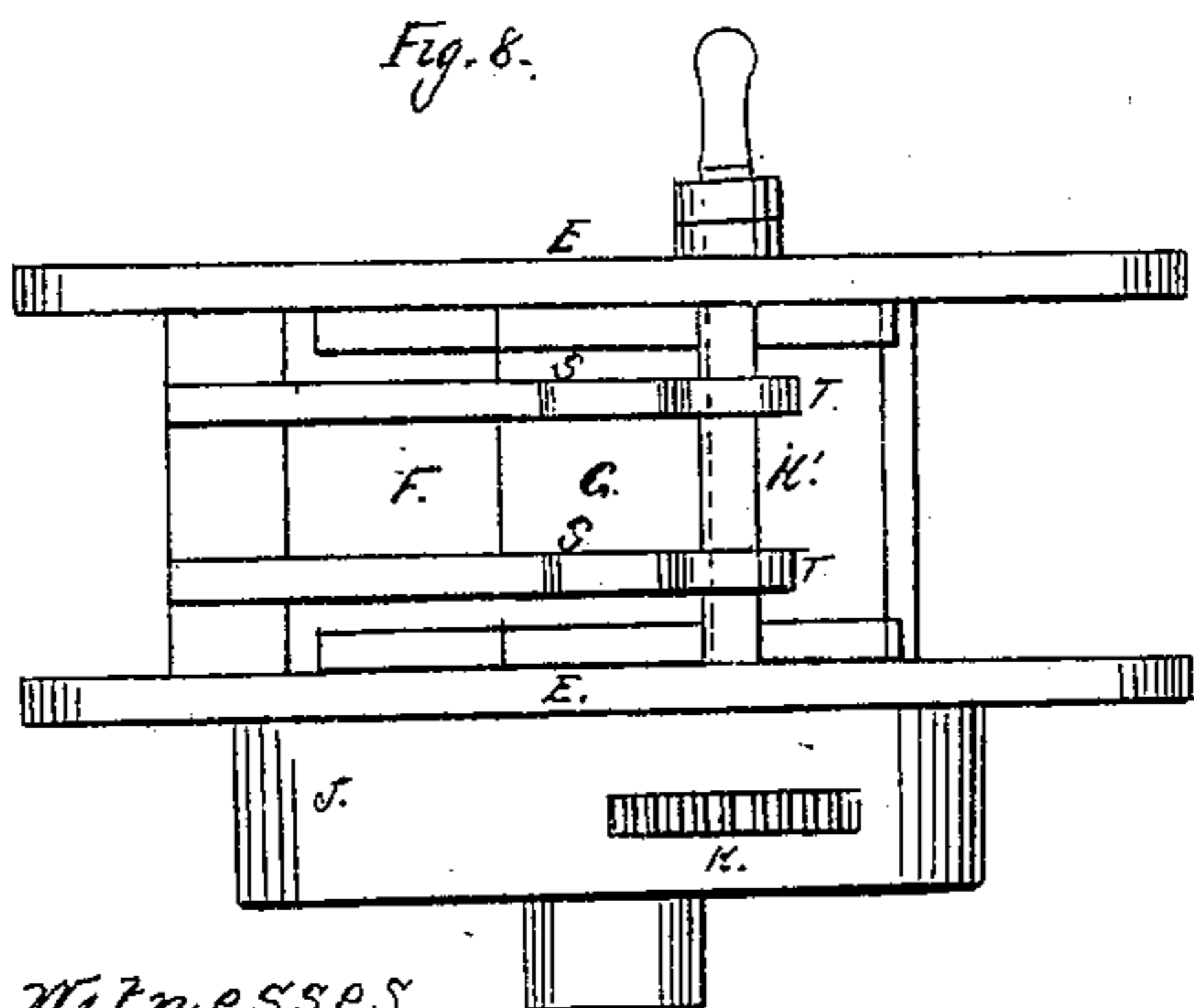
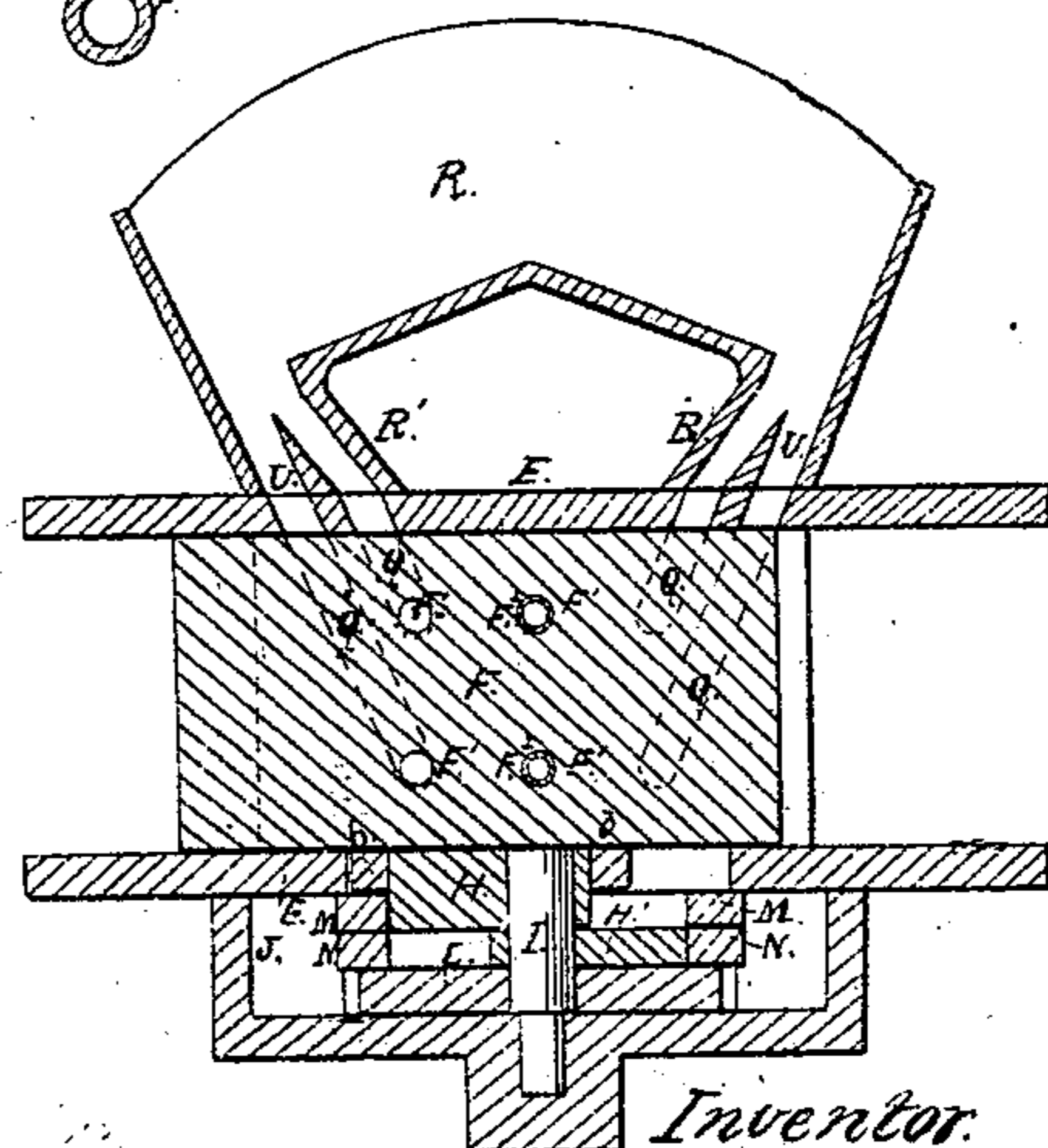


Fig. 8.

Witnesses
E. Maher
C. Adams

Inventor
Wm. McCord

UNITED STATES PATENT OFFICE.

WILLIAM McCORD, OF SING SING, NEW YORK, ASSIGNOR TO HIMSELF AND CHAS. F. COX, OF SAME PLACE, AND ROBERT WOODWARD, OF NEW EGYPT, NEW JERSEY.

IMPROVEMENT IN FIRE-ARMS.

Specification forming part of Letters Patent No. 31,933, dated April 2, 1861.

To all whom it may concern:

Be it known that I, WILLIAM McCORD, of Sing Sing, in the county of Westchester and State of New York, have invented a new and useful Improvement in the Construction of Guns, and Loading and Firing the Same; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a top view of a battery of two guns constructed after the improved method, with the upper plate removed. Fig. 2 is a side elevation of the same. Fig. 3 is a horizontal section of the same at the line 1 2 of Fig. 2. Fig. 4 is a vertical longitudinal section through the center of the same. Fig. 5 is another horizontal section of the same at the line 3 4 of Fig. 4. Fig. 6 is a vertical transverse section of the same at the line 5 6 of Fig. 3. Fig. 7 is another transverse section of the same at the line 7 8 of Fig. 4. Fig. 8 is a rear elevation of the same. Fig. 9 is a side elevation of one of the detachable cartridge-chambers full size and charged with ball-cartridge. Fig. 10 is a longitudinal section of the same. Fig. 11 is a cross-section of the same.

Similar letters in the several figures refer to corresponding parts.

The nature of this invention consists in arranging between the rear open ends of two (more or less) gun-barrels, firmly secured in a suitable frame or stock, and a breech-post or standard immediately in the rear, a perforated reciprocating breech block or plate, and providing in connection therewith detachable cartridge-chambers, a series of peculiar formed cams, sliding plates with rammers attached, percussion-hammers, and other parts, the whole being arranged and made to operate, by the simple act of turning a crank-shaft, with such concert of action as to enable one set of the openings in the reciprocating block or plate to be charged with the said detachable cartridge-chambers having ball-cartridge within them, and the cartridges in the similar cartridge-chambers in the other set to be discharged through the barrels at every reciprocal throw of the said block or plate, and vice versa, and thereby cause a rapid and uninter-

rupted firing of balls from both barrels proportionate with the speed with which the crank-shaft is turned.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The gun-barrels A are secured in place, one above the other, within a water-tight casing, B, by having their muzzle and breech ends reduced in size and respectively inserted in corresponding sized openings in an upright post, C, and upright block, D, which, together with the casing, are firmly bound together between two parallel plates, E, fastened to the said casing, post, and block by screws, and forming with them the frame or stock of the gun-barrels. Immediately in the rear of the stationary transverse block D is arranged another upright transverse block or plate, F, perforated at its central portion with four openings, F', of greater diameter than the bore of the gun-barrels. The centers of the upper two of these openings are on the same horizontal plane with the center of the bore of the upper barrel, and the centers of the remaining two on a line with the center of the bore of the lower one, so that when the upper and lower openings, F', are respectively brought opposite the bores of the upper and lower barrels they will form enlarged continuations of the same. This transverse block or plate D is confined in place with its ground surface pressed against the breech ends of the barrels with the necessary force to form a tight joint by means of an upright post, G, between which and the block D this transverse block or plate F has a reciprocating movement the exact distance that the centers of the openings F' are situated apart transversely. This movement is produced by a peculiar formed cam, H, secured on the upper end of an upright shaft, I, whose lower end is inserted and turns in a step formed at the lower part of a circular casing, J, secured to the under and rear part of the lower stock-plate, E. This shaft is turned by a pinion or cog-wheel, K, meshing in gear with a larger cog-wheel, L, secured on the lower part of the shaft I, which pinion or cog-wheel K is fastened on the lower part of an upright shaft, K', also resting and turning in a step in the circu-

lar casing J and extending up through openings or boxes in the plates E, and having a crank on its upper end by which it is turned. This cam H is curved on its sides, and is made somewhat similar to a heart in shape, with the shaft passing through it near the apex, except that its outer or furthest part from the shaft is made in the form of a segment of a circle scribed from the center of the shaft I in such a manner as to enable its sides to operate on the sides of two parallel bars, b, between which it is situated, secured to the lower surface of the transverse perforated breech plate or block F, and thus give the necessary reciprocating throw to the same and its outer and inner circling surfaces to hold the said plate or block F stationary at the end of each throw the necessary length of time to fire and charge the respective sets of openings in the same, as will be more fully described hereafter. To the upright shaft I, and immediately below this cam H, is secured another cam, H', precisely similar to it in every respect, except that it is only one-half its thickness. It is fastened on said shaft with its broad portion in a directly opposite direction to the broad portion of the upper cam, H.

The lower portion of the upper cam, H, is situated between the edges of and within a rectangular space formed at the end of a plate, M, sliding in suitable guiding-boxes immediately below the lower plate, E, and having a right-angled wing-piece, M', extending a short distance from its side, midway between its ends, and resting on another plate, N, precisely similar, except that its right-angled wing-piece N' extends from it on the opposite side to that on which the other wing-piece, M', is situated. The lower cam, H, is arranged and revolves between the edges of and within the rectangular space at the enlarged end of the lower plate, N, in such a manner as to cause its movements to be in reverse order to those of the upper plate, M.

To the wing-pieces M' N' are secured the lower ends of shafts or studs O, which rise on either side of the casing B, and are attached at their upper ends to rammer-frames P, which slide back and forth with the reciprocating plates M N in boxes at the sides of the said casing. Each of these rammer-frames has two parallel ramrods, P', attached, arranged one above the other and the same distance apart, and on the same horizontal planes as the upper and lower openings, F', in the transverse reciprocating breech-plate F, and consequently the bores of the gun-barrels A. The ends of these ramrods P' pass through openings in the transverse block D into the lower ends of cartridge-chamber channels or slots Q, formed in the rear surface of the block D and inclining toward each other. The two central ones extend from the top of the block D to points on a line with the upper openings, F', in the transverse reciprocating plate or block F, and the other two, whose upper outlets are outside the

first-mentioned two, extend to points on a line with the lower openings, F'. The upper ends of these slots or channels Q communicate through corresponding inclined openings in the upper plate, E, with a peculiar-formed hopper, R, fastened on top of the said upper plate, E, through which the charged cartridge-chambers F² are supplied to the channels or slots Q. This hopper from the front portion of its inside to the back portion of its inside is the same size as the distance the cartridge-chamber slots or channels Q extend into the rear surface of the block D, and a very slight degree greater than the length of the cartridge-chambers F², and the portions of it next the sides of the stock are inclined and form a continuation of the side of the outer cartridge-chamber slots or channels, Q. The bottom of the hopper is some distance above the upper plate, E, and inclines both ways from the center toward the sides of the said plate E at angles of about fifteen degrees, until within a short distance of the side portions, a little greater than two thicknesses of the cartridge-chambers F². From these points of the bottom the inner inclined portions, R', extend downward and inward at more acute angles with the upper plate, E, than the outer inclined portions of the hopper, and form obtuse angles and continuations with the sides of the inner cartridge-chamber channels or slots, Q, so as to enable knife-edged division-pieces V, between the said outer and inner inclined portions, R', of the hopper R, to properly guide the cartridge-chambers F² into the said slots or channels Q and prevent them from choking up the entrances.

The spring-hammers S, which explode the percussion-caps on the nipples at the rear ends of the cartridge-chambers F², are operated at the proper intervals of time to correspond with the movements of the transverse reciprocating breech plate or block F by means of cams T, secured on the upright shaft K'. These cams are made circling nearly their entire extent, the omitted portion being a single ratchet-notch, c, cut out of each of them, whose less abrupt portion extends tangentially a short distance from the inner part of the more abrupt portion before it curves eccentrically into the line of the circular portion. The object in thus forming the cams T is to prevent that vibration of the spring-hammers S that must otherwise ensue, the peculiar tangential and curved surfaces immediately next the abrupt or radial portions from which the ends of the springs S are tripped coming in contact with the same as they revolve, and serving to arrest their first movement forward after the blow has been given to explode the cartridge, and thus stop such vibration. The hammers S strike on the ends or heads of percussion pins or rods V, whose inner or forward reduced ends extend loosely through openings in the upright breech-post G to nearly flush with the rear surface of the transverse reciprocating breech-plate F, being

held in this relation thereto, except when struck by the hammers S, by means of spiral springs *s*, surrounding them and inclosed in corresponding openings in the said post G, and so confined between shoulders on them and the inner parts of the spaces in which they are inclosed as to produce this result. The shoulders on these percussion-pins V are pressed by the spiral springs *s* against a plate secured by screws, dovetails, or other convenient means to the rear surface of the breech-post G, and in this manner the said shoulders are made to act as a preventive to the escape of any portion of the charge from the cartridge-chambers past the same.

The detachable cartridge chambers F² employed are represented in detail in Figs. 9, 10, and 11, and consist of steel cylinders open at their front and closed at near their rear ends, where they are provided with percussion-cap nipples, which are within and surrounded and protected by their rear ends. They are turned and smoothly finished on their outer surfaces, so as to exactly fit in the openings F' in the reciprocating plate F, and smoothly bored and reamed out to precisely the same size as the bore of the gun-barrels A. Their extreme length is exactly the same as the length of the openings F' in the reciprocating block or plate F, so that when inserted therein and moved with the said block or plate F opposite the gun-barrels, with their bores on line with the corresponding bores of the same, their rear ends will be flush with and rest against the front surface of the upright breech-post G and their front ends flush with the breech ends of the gun-barrels, and thus securely confined, and in fact made to form a continuation of said gun-barrels.

The casing B, in which the gun-barrels A are inclosed, is filled with cold water, to keep said barrels in a cool state during the firing through the same, although their tendency to heat will in a great measure be prevented by the employment of the detachable cartridge-chambers F², which serve to take up the greatest portion of the heat consequent upon the explosion of the cartridges within them. In case it is found necessary to more effectually accomplish this object—when, for example, a long-continued firing takes place—an opening or outlet may be made at the lower portion of the front end of the casing to allow the gradual discharge of the water as it becomes heated from contact with the barrels and a fresh supply of cold water admitted at the upper part of the breech end of the said casing, so as to cause a constant stream of cool water to flow around and past the barrels.

The operation is as follows: The detachable cartridge-chambers F², charged with ball-cartridge, being placed in regular parallel position in the inclined cartridge-chamber slots or channels Q in the transverse block D and hopper R, and motion given to the crank-shaft K', a reciprocating movement will be given the trans-

verse breech plate or block F by means of the side curved surfaces of the upper portion of the upper cam, H, on the shaft I, operating on the bars *b*, attached to the same, causing the the openings F' in said plate or block F to be alternately brought opposite to and on a line with the bores of the barrels A, and the lower ends of the cartridge-chamber slots or channels Q at every reciprocal throw of the said plate or block, and to be held in that position until the outer segmental edge of the said cam H has passed said bars *b*. During the stoppage of this transverse block or plate F the abrupt edges of the notches of the cams T pass the ends of the springs of the hammers S, and, disengaging the same, allow said hammers to strike the ends or heads of the percussion-pins V and explode the percussion-caps on the nipples of and cartridges in the detachable chambers F² in the openings or chambers F' immediately in front, and discharge their balls through the barrels with which they are in line. At the same time that this is being done the set of rammers P' on one side of the casing B is being withdrawn from the lower ends of the cartridge-chamber slots or channels Q, opposite which a blank portion of the surface of the transverse block or plate F is presented in withdrawing from the bottom of their slots or channels Q, and the other set of rammers on the opposite side of the casing is forcing the charged detachable cartridge-chambers F², at the lower ends of their slots or channels Q, into the openings or chambers F' in said block or plate F, which are situated on line with the same. In this manner the detachable chambers F² containing ball-cartridges are driven into the sets of openings or chambers F' in the transverse reciprocating plate or block F by the sets of rammers P', respectively designed for them, the said block or plate moved to bring them opposite the gun-barrels, their cartridges discharged therefrom, the rammers withdrawn to admit the descent of freshly-discharged cartridge-chambers F² to the bottoms or lower ends of the cartridge slots or channels, and a constant and quick firing of balls from the barrels kept up by the simple act of turning the crank-shaft K', the cams H H' operating with the necessary concert to move the reciprocating breech block or plate F while the rammers are kept at rest, and vice versa.

This invention is principally designed for the ordinary-sized musket and rifle barrels, but it is also adapted to guns of a larger caliber. It may be either placed in a suitable carriage on a fortification or on a ship-deck, and in either event it will be provided with the necessary swivel-joint and elevating screw to properly direct its firing against an enemy.

After the detachable cartridge-chambers F² have been discharged of their contents and moved with the reciprocating breech-plate on line with the rammers P' they are discharged from the rear of the openings or chambers F' by the act of the rammers forcing the charged

cartridge-chambers F^2 from the slots Q into the said openings or chambers F' .

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the cams H H' on the upright shaft I , parallel bars b on the lower part of the reciprocating block or plate F , sliding plates M N , having spaces formed in their enlarged ends and rammers P' attached, and inclined cartridge-chamber slots or channels Q , formed in the transverse block D , the said cams H H' giving the necessary reciprocating movements to the said block or plate F and sliding plates and rammers at the proper intervals of time in relation to each other, substantially in the manner and for the purpose herein fully set forth.

2. Forming the lower part of the hopper R ,

as represented and described, with a knife-edged partition between the entrances to the cartridge slots or channels Q , for the purpose of preventing the detachable cartridge-chambers F^2 choking up the entrance to said slots or channels as they descend into the same, as herein set forth.

3. The peculiar tangential and eccentric form of the portions of the cams T immediately next the more abrupt portions from which the ends of the spring-hammers S are tipped, in combination with said spring-hammers, operating in the manner and for the purpose described.

WM. McCORD.

Witnesses:

E. MAHER,

ED. W. MAYENS.

