

No. 668,083.

Patented Feb. 12, 1901.

J. BOGEL.

WORKING PAWL FOR AMMUNITION HOISTS.

(Application filed Feb. 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.

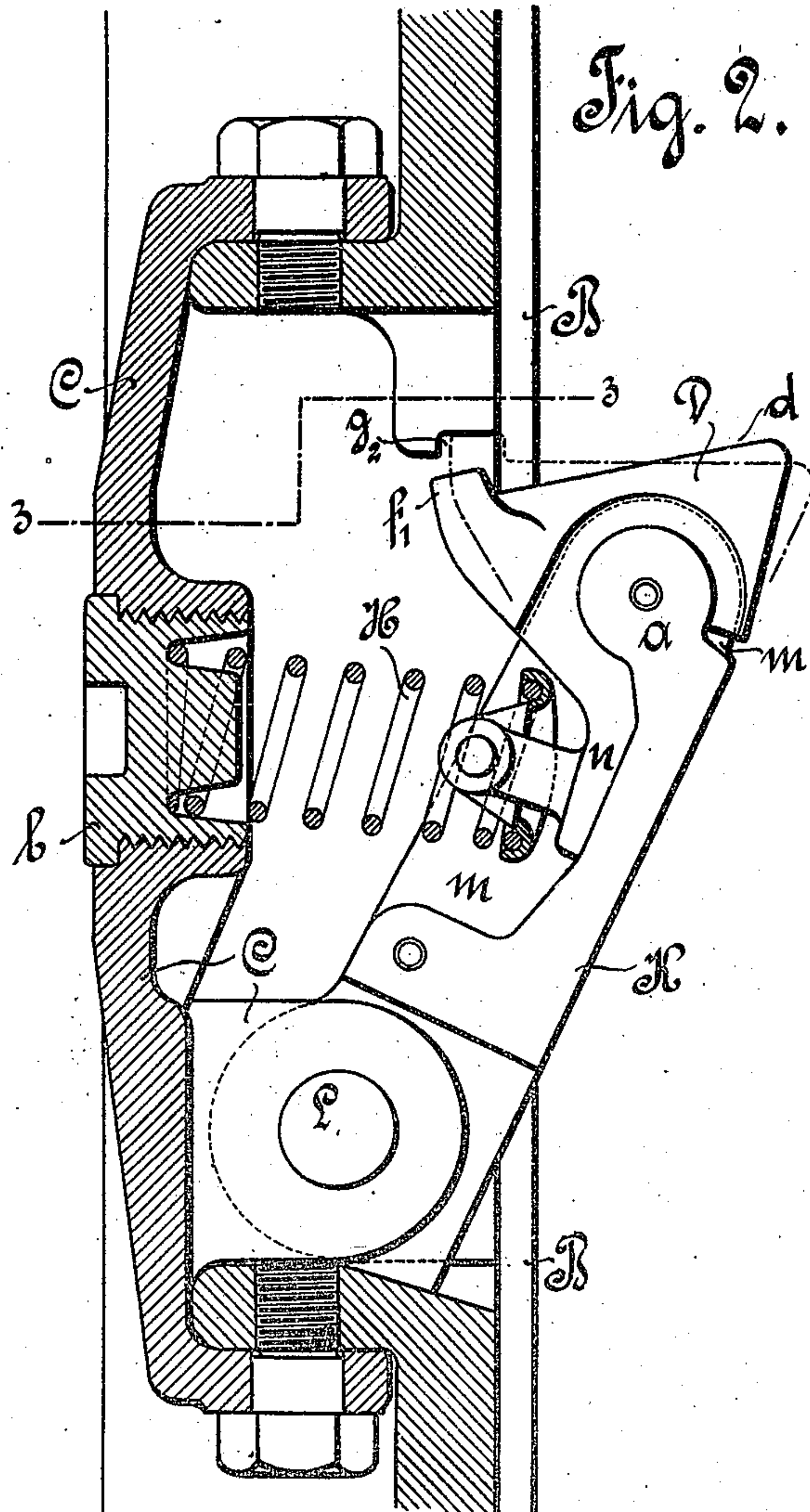
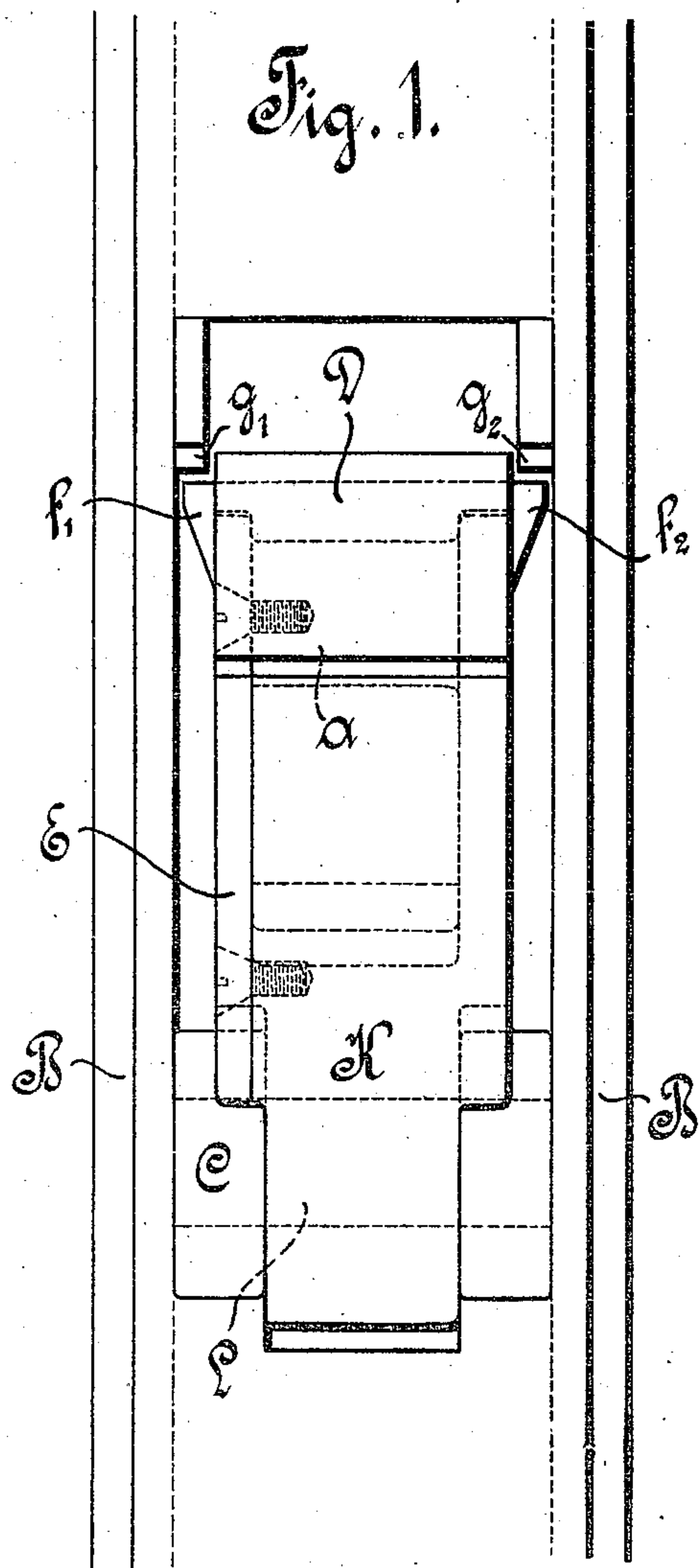
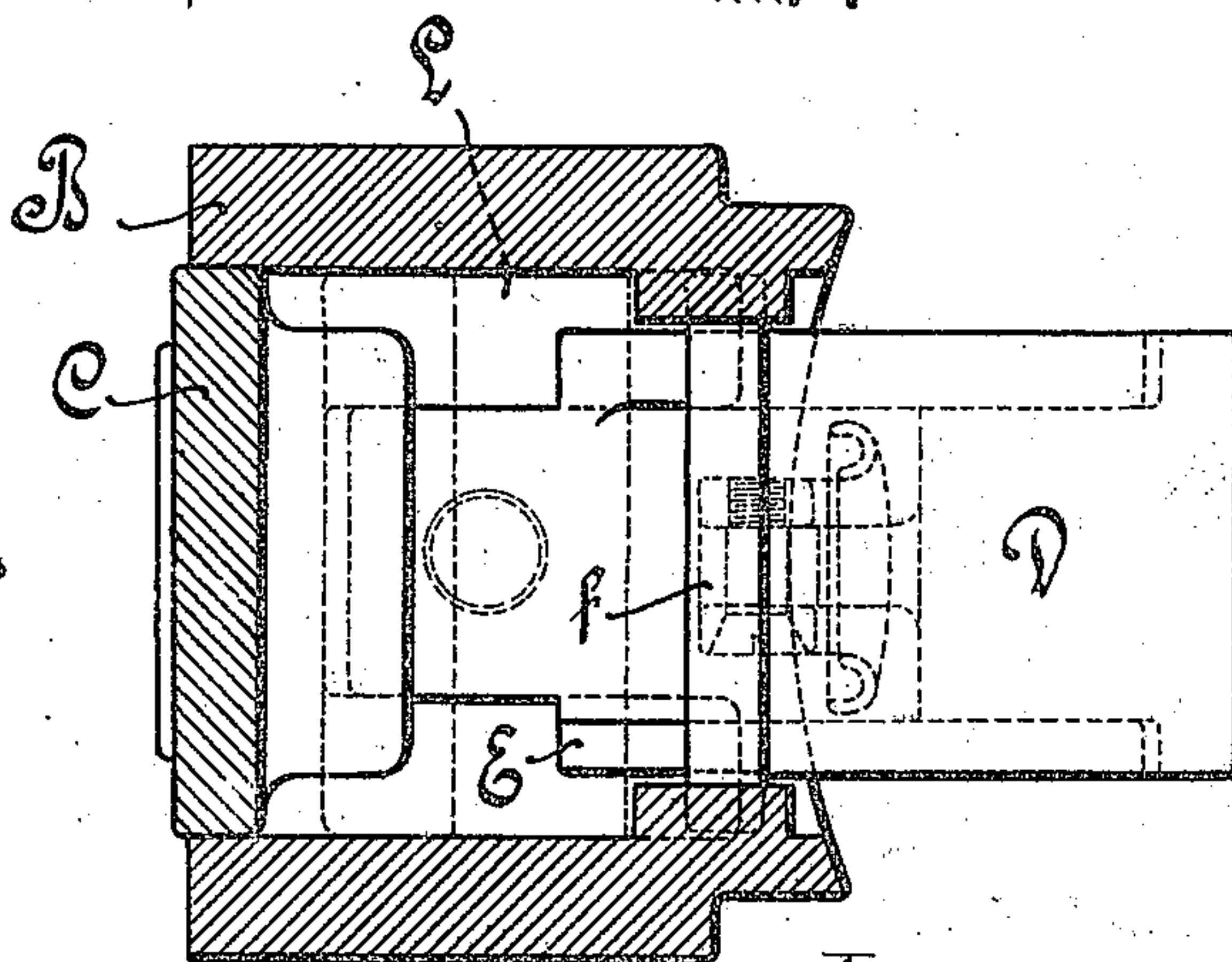


Fig. 3.



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2 Sheets—Sheet 2.

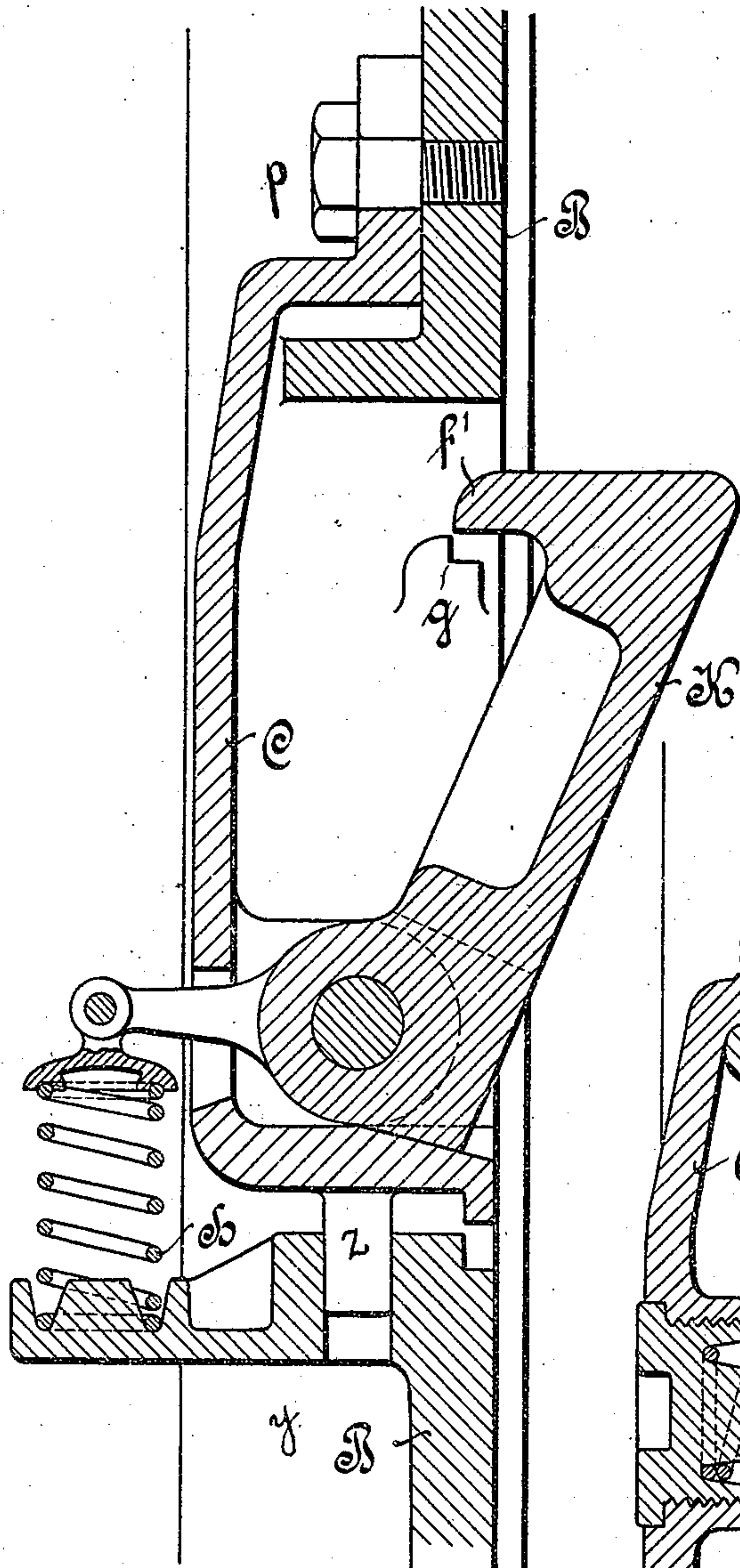


Fig. 5.

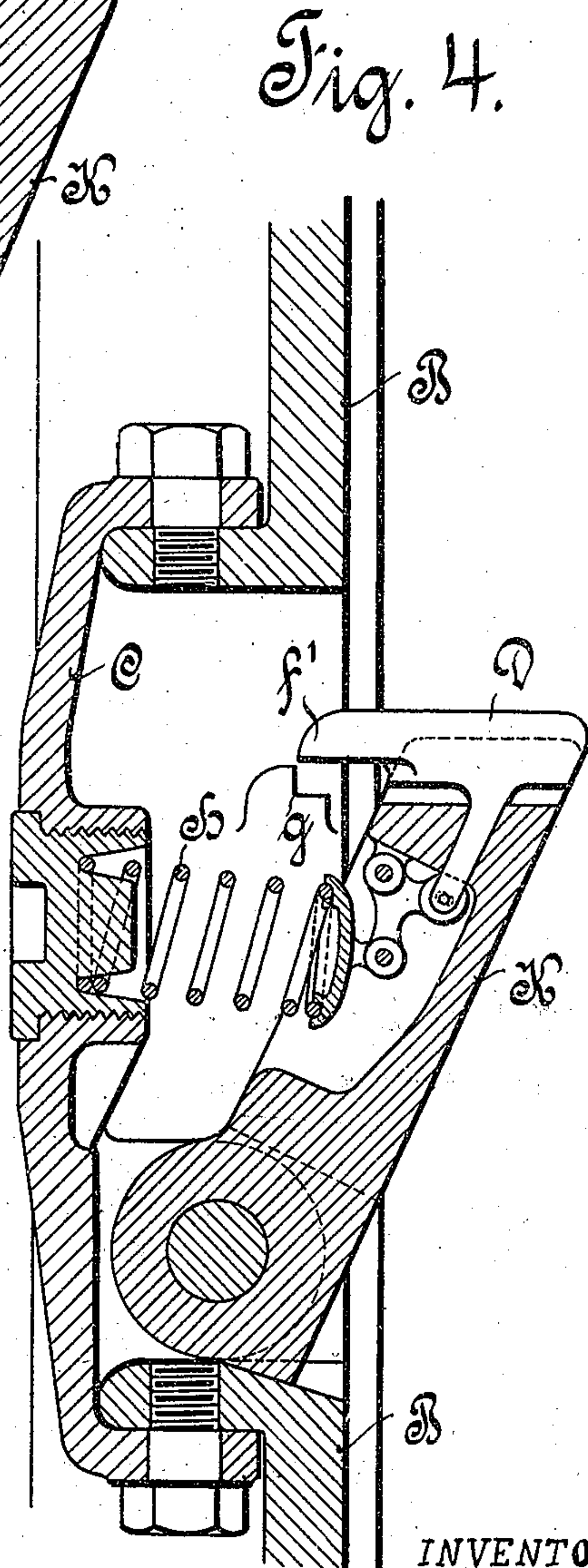


Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEF BOGEL, OF ESSEN, GERMANY, ASSIGNOR TO FRIED. KRUPP, OF SAME PLACE.

## WORKING PAWL FOR AMMUNITION-HOISTS.

SPECIFICATION forming part of Letters Patent No. 668,083, dated February 12, 1901.

Application filed February 28, 1900. Serial No. 6,796. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEF BOGEL, engineer, a citizen of the German Empire, residing at 14 Gottfriedstrasse, Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Working Pawls or Latches for Conveyers or Hoists, &c., of which the following is a specification.

My invention refers to improvements in working pawls or latches for conveyers or hoists, &c.—such, for instance, as the ammunition-hoists shown and described in United States Letters Patent No. 624,826, dated May 9, 1899, and No. 636,534, dated November 7, 1899. In such apparatus as hitherto used the pawls or latches are held in the working position by their own weight or by springs, so that it may happen that through some external cause they may recede from the working position, wherefrom not only irregularities in the operation may result, but serious accidents may be caused, for instance, in hoisting apparatus.

The object of my present invention is to prevent accidents and to insure more perfect security of the operation by retaining the pawl in its working position through the working pressure against it.

My invention will be best understood by reference to the annexed drawings, in which—

Figure 1 shows a pawl and casing in front elevation; Fig. 2, a side view of Fig. 1, partly in section, the side plate E, Fig. 1, removed; Fig. 3, a section on the line 3-3, Fig. 2. Figs. 4 and 5 are sectional side views illustrating modifications.

Similar letters refer to corresponding parts in the several views.

In Figs. 1 to 3 of the drawings the pawl is shown formed of two parts—namely, a body K and a headpiece D—which are held together by a side plate E. B is the push-rod, formed with a casing with a separate bottom C screwed to it. Within this casing the part K of the pawl is pivoted to lugs projecting from the bottom C by a bolt L, so as to be free to turn thereon to a limited degree. The pawl-body K has a cylindrical part *a*, which fits a corresponding cylindrical cavity of the headpiece D, and the two parts are held together by the cheek-plate E, screwed against

one side of the body K, the other side having a similar cheek-piece *m*, made in one piece therewith. The headpiece has an extension *n*, against which bears a spring H, abutting against a bush *b*, screwed into the bottom C, and is also provided with an extension *f*, having two lugs *f'* and *f''* engaging corresponding recesses *g'* and *g''* in the casing.

When no pressure is exerted against the upper face *d* of the headpiece D, the same under the action of the spring H takes the position shown in full lines in Fig. 2, the lugs *f'* *f''* being disengaged from the recesses *g'* *g''* and the whole pawl being under the action of the spring H, so that the pawl when not in action is free during the motion of the lifting-rod or push-rod to oscillate into and out of the casing, as in apparatus hitherto used. When, however, there is a working pressure against the upper face *d* of the headpiece D, the same is pressed into the position shown in dotted lines in Fig. 2, the lugs *f'* *f''* engaging the notches *g'* *g''*, whereby the latch is locked against turning on its pivot. As soon as the working pressure is removed the spring H, which was compressed by the turning of the headpiece, returns the latter to its original position, so that the latch is liberated.

It is readily seen that the above-described arrangement permits the use of a much weaker pawl-spring than in the apparatus hitherto used, thereby materially reducing the wear and tear of the moving parts and increasing the efficiency.

Without departing from the spirit of my invention the pawl, instead of being formed of two parts, of which the one part turns upon the other, may be formed of two parts, of which the one slides upon the other, as illustrated in Fig. 4. In this figure the headpiece D is arranged to slide toward and from the body K of the pawl and is provided with a lug or projection *f'*, adapted to engage with a recess *g*, formed in the lifting or push bar B, for the purpose of locking the pawl when the load is on it and releasing it when the load is removed. The headpiece D, as before, is acted upon by a spring H, connected thereto in this example by a bell-crank lever. It is furthermore to be understood that it is not



absolutely necessary to make the pawl in two parts, one of which is movable with respect to the other, since it may be made in one piece and its pivot mounted to have a limited sliding motion against a spring. This construction I have illustrated in Fig. 5, where the pawl K is hinged to a sliding casing C, which is connected with the push-rod B by a pin  $x$ , which enters a socket  $y$  in the push-rod, and by a bolt  $p$ , passing through a forked or bifurcated part of the casing and entering the push-rod. The pawl is subjected to the action of a spring H to throw it outwardly and upwardly, but moves downwardly against the action of said spring when engaging the load, so as to bring the projecting lug  $f'$  into engagement with the recess  $g$  of the push-bar. When the load is removed, the spring H moves the pawl upwardly.

It will be readily seen from the foregoing description that in each of the forms shown the pawl is so mounted or constructed as to yield under the load and that the movement produced by such yielding causes the engagement of the interlocking devices and locks the pawl firmly in its working position, thus rendering the lift or hoist absolutely safe. Whether this necessary locking movement is effected by permitting the pawl as a whole to yield or by permitting a part of the pawl to yield is immaterial, the essential feature of my invention being an oscillating pawl adapted to yield under pressure for effecting the locking of the pawl.

What I claim as new is—

1. In an apparatus of the character specified, a push-bar provided with a recessed casing, a spring-pressed pawl pivoted within the casing and projecting beyond the same, interlocking devices formed on the push-bar and

on the pawl and said pawl being mounted to yield under the load against the pressure of the spring for effecting engagement of the interlocking devices and so securing the pawl in its working position, and said spring disengaging the pawl when the load is removed, substantially as described.

2. In an apparatus of the character specified, a casing formed on the push-bar and provided with recesses, a pawl consisting of a rear part pivoted to the casing and a front part with the impact-face pivoted to the rear part so as to allow a limited oscillation thereon, a lug or lugs on said front part, a spring abutting against the bottom of the casing and against the front part, the lugs on the front part engaging the recesses in the casing, when the impact-face acts against a resistance, whereby the pawl is locked, while the spring unlocks the pawl when there is no pressure against the face, substantially as and for the purpose specified.

3. In an apparatus of the character specified, a push-bar, a spring-pressed pawl in connection with the push-bar, interlocking devices formed on the push-bar and on the pawl and said pawl being mounted to yield under the load against the pressure of the spring for effecting engagement of the interlocking devices and so securing the pawl in its working position, and said spring disengaging the pawl when the load is removed, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEF BOGEL.

Witnesses:

WILLIAM ESSENWEIN,  
PETER LIEBER.