

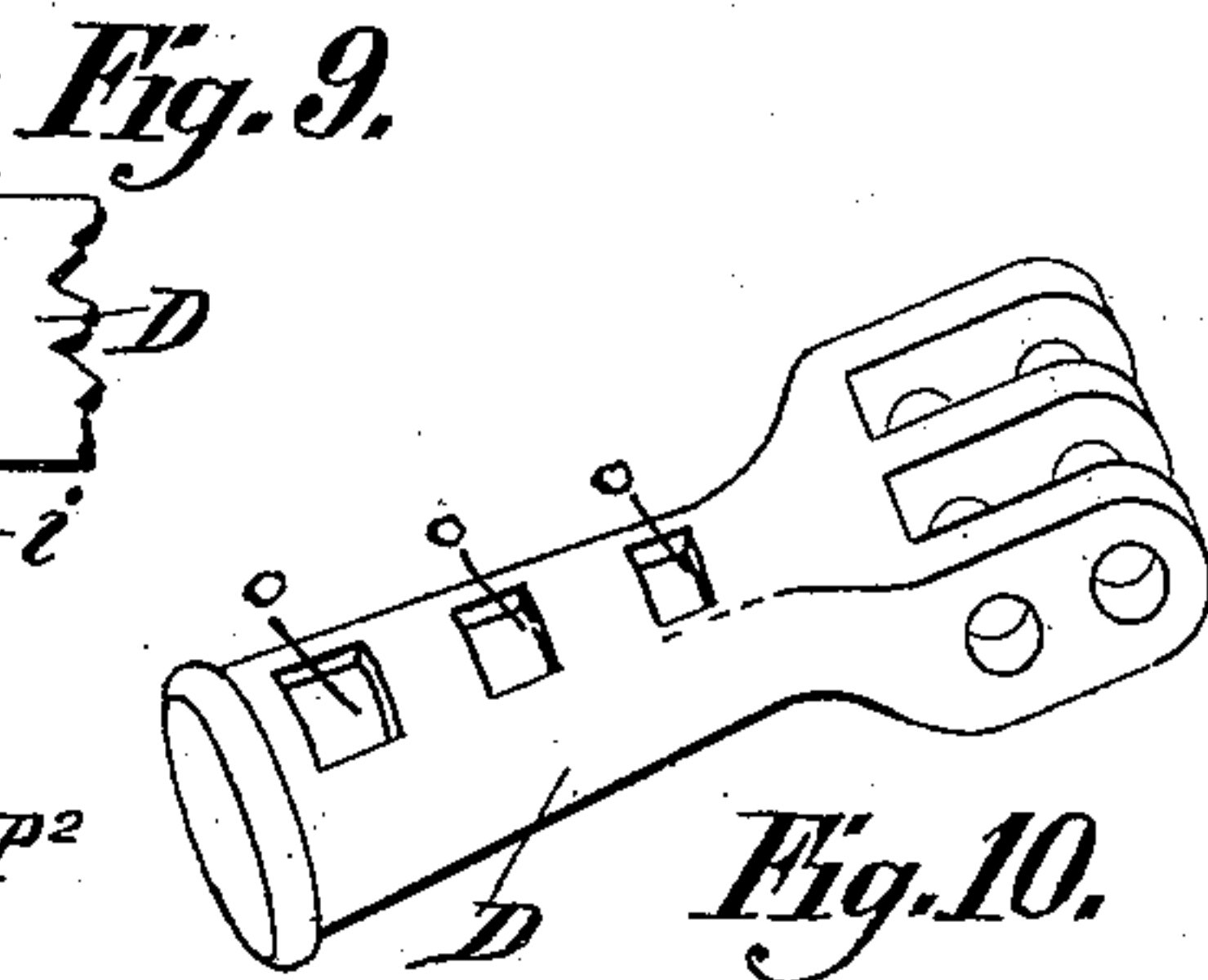
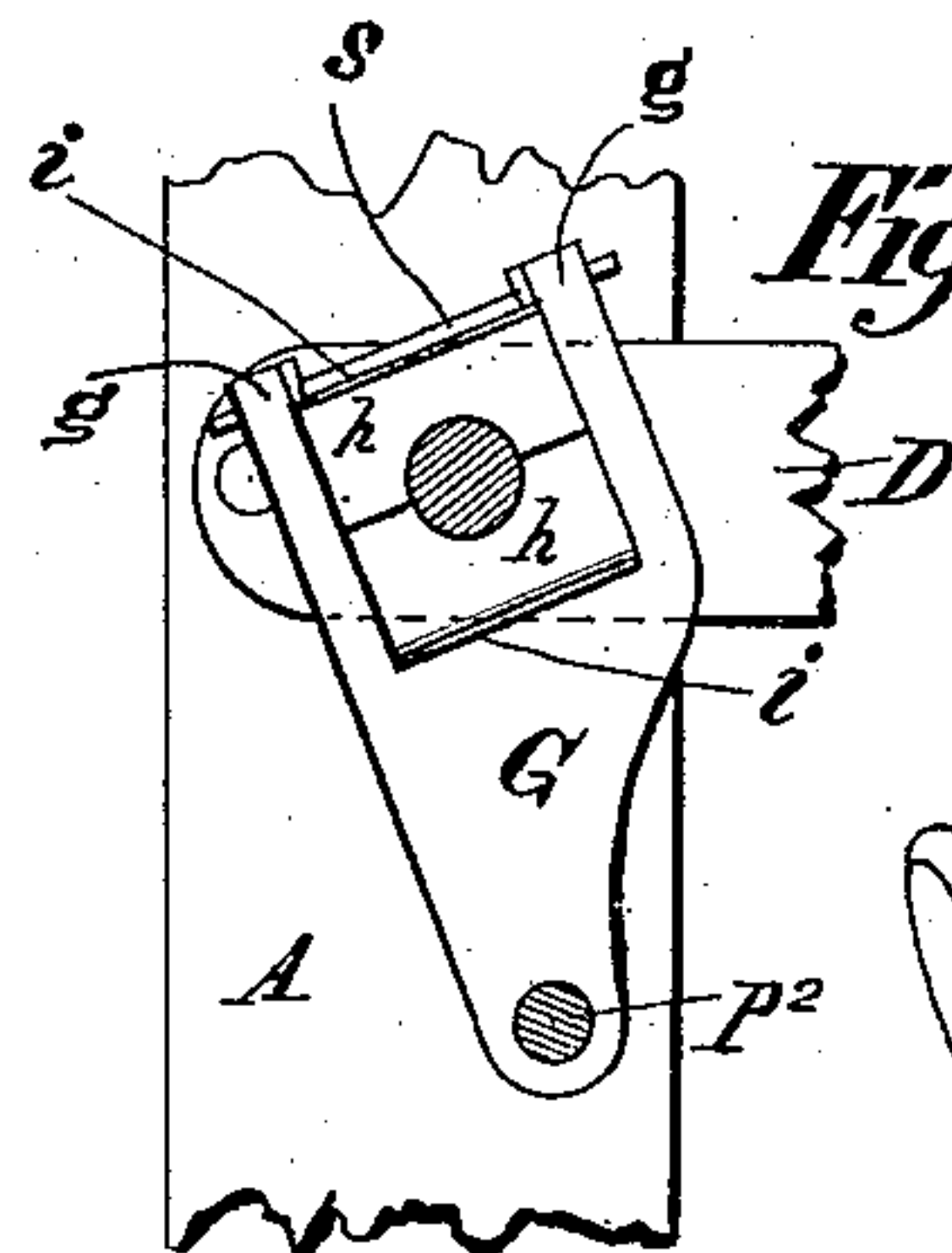
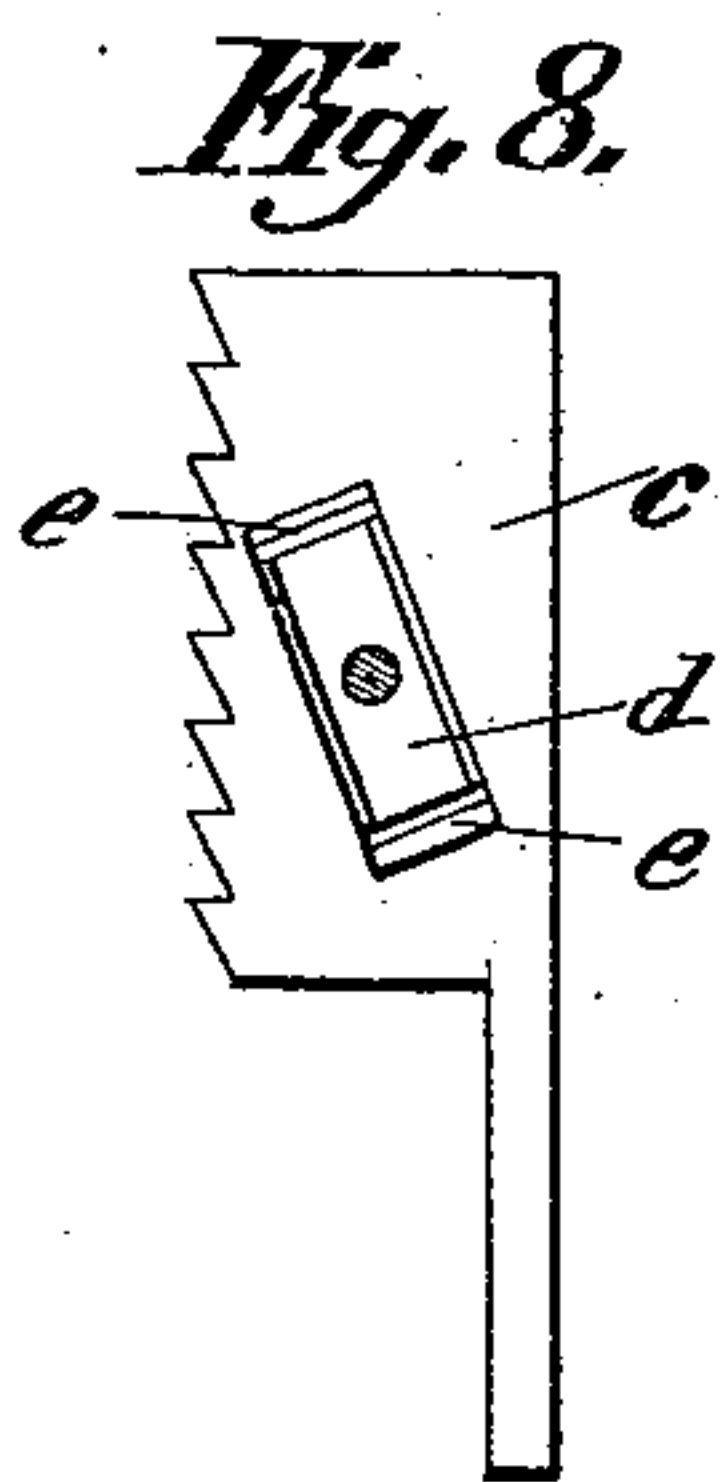
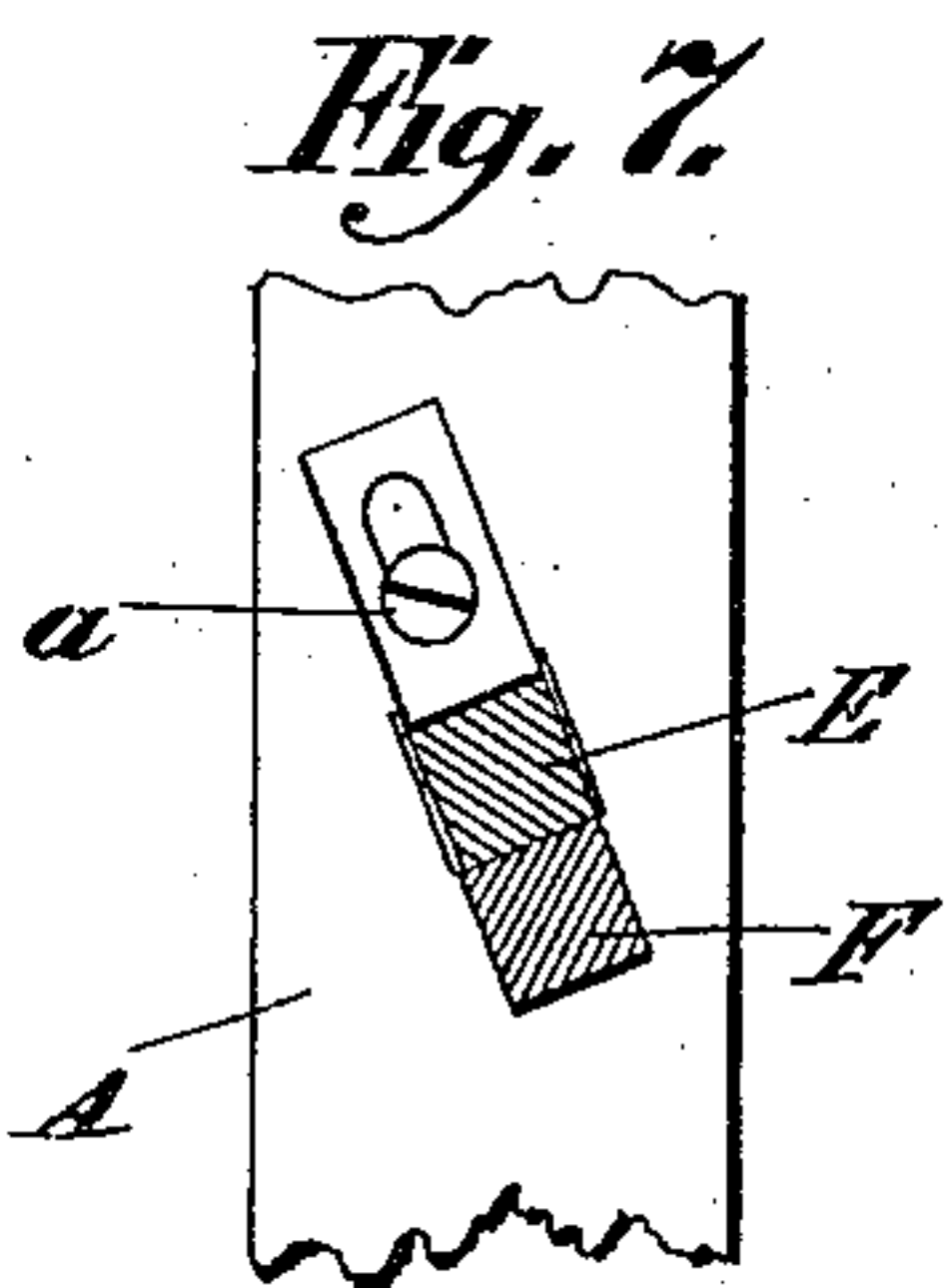
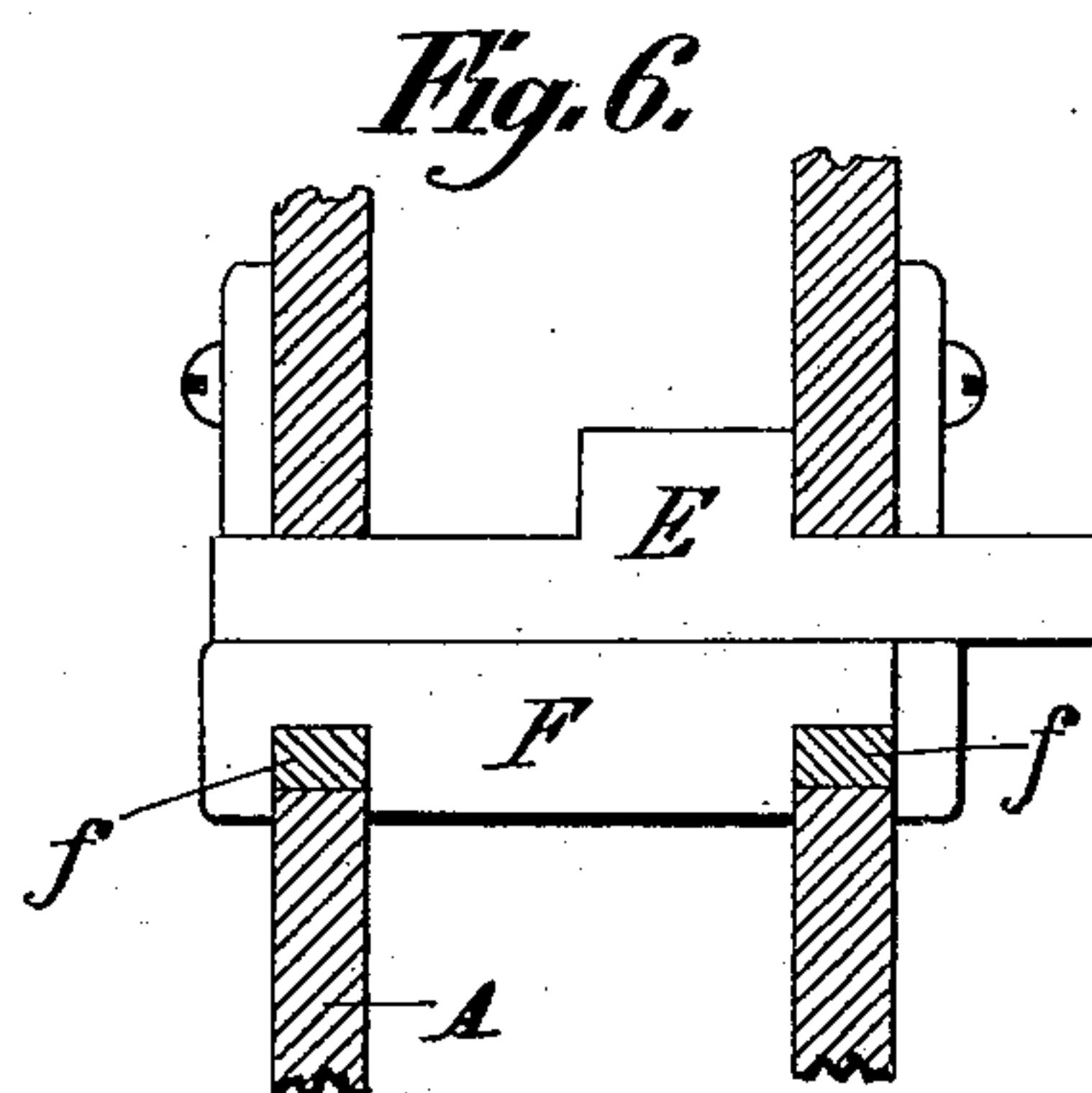
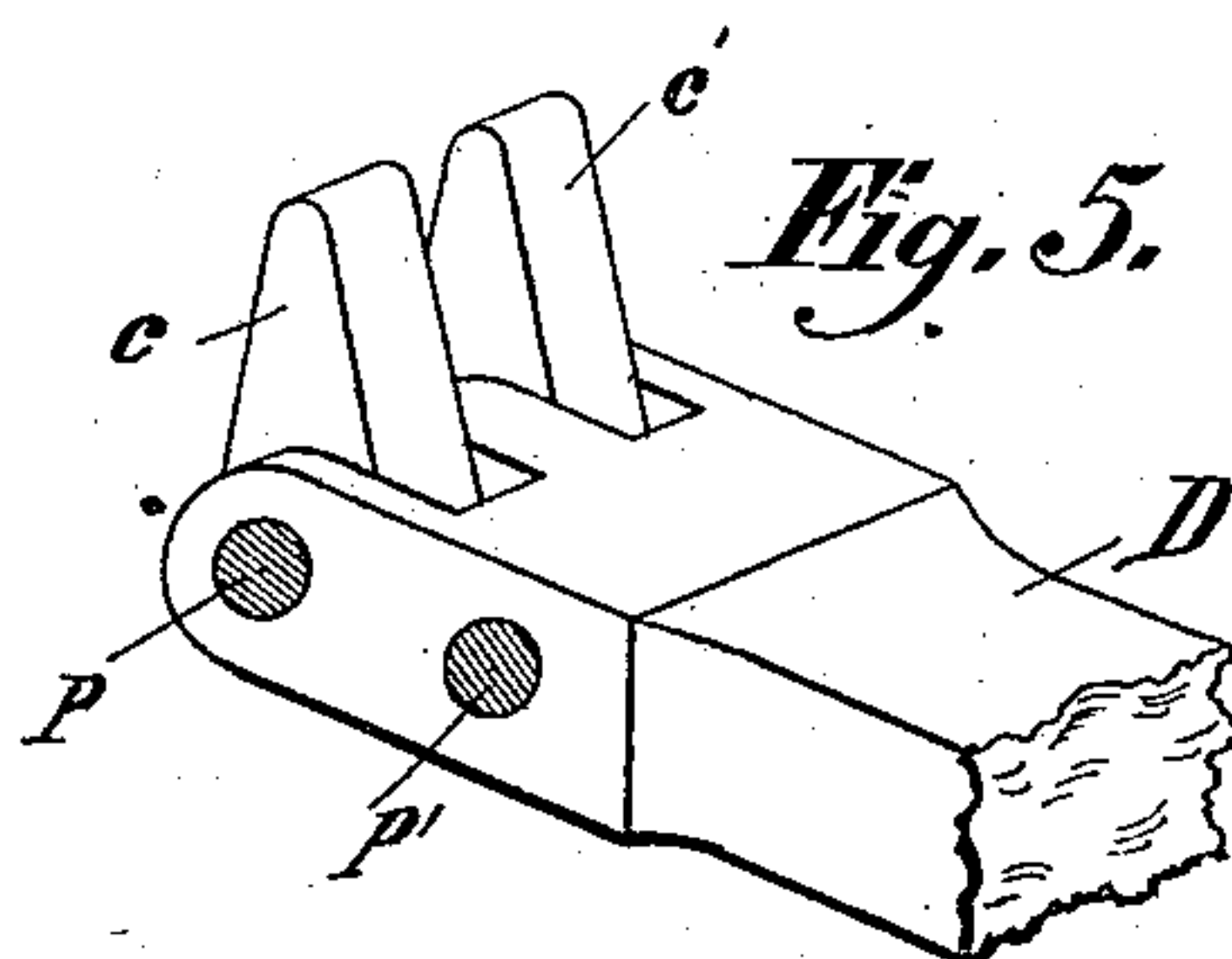
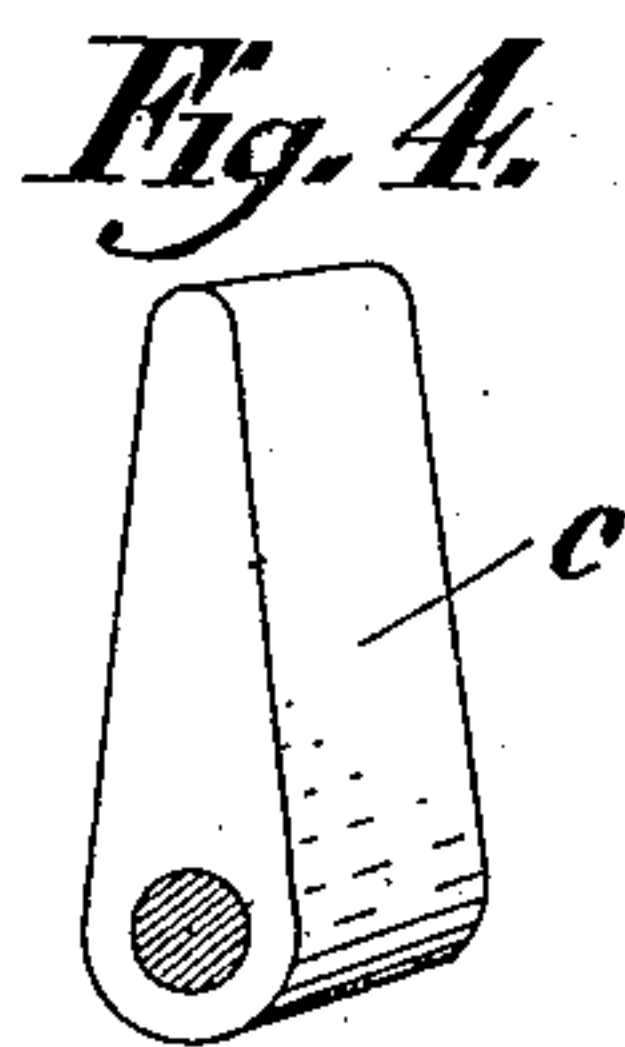
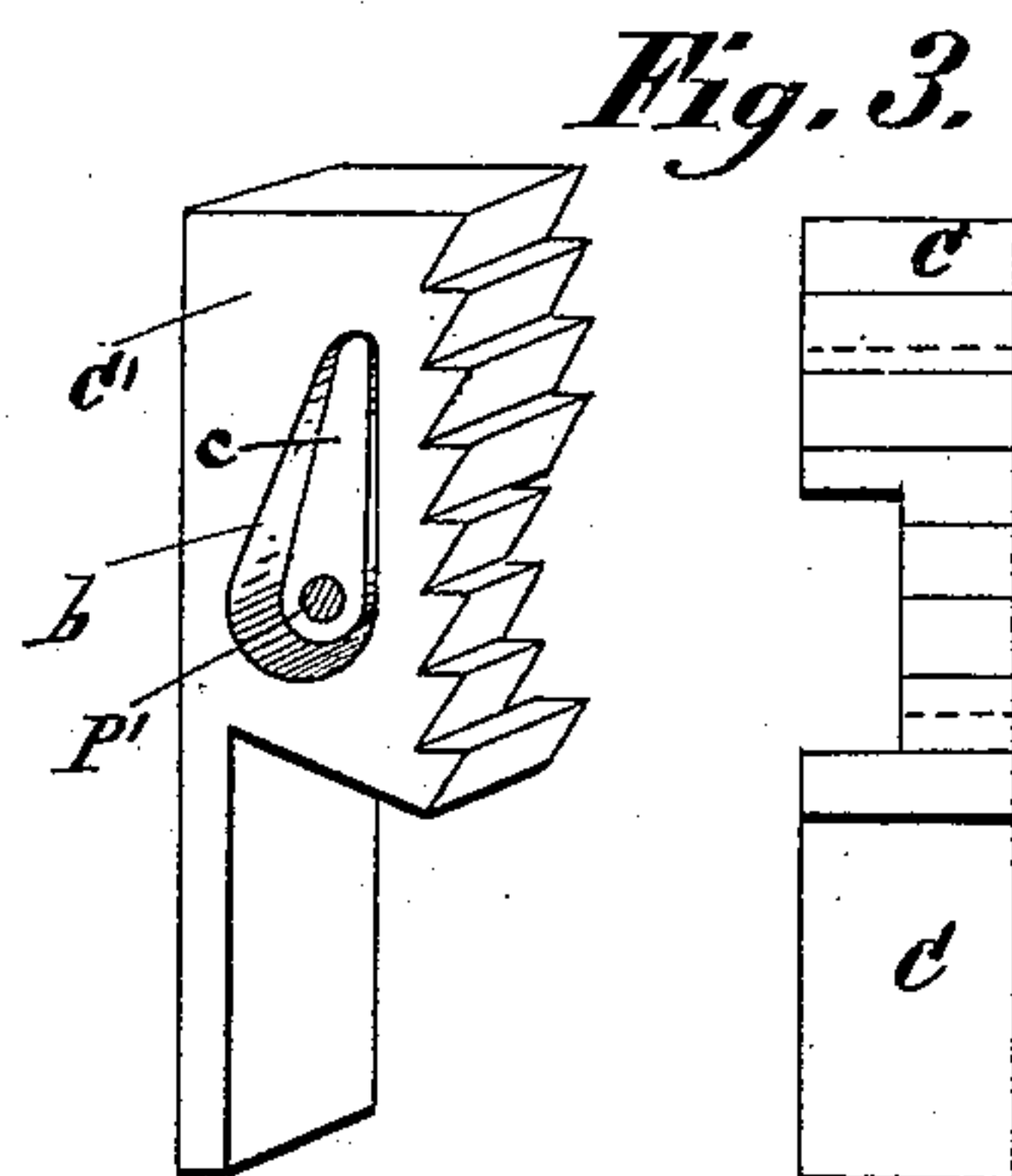
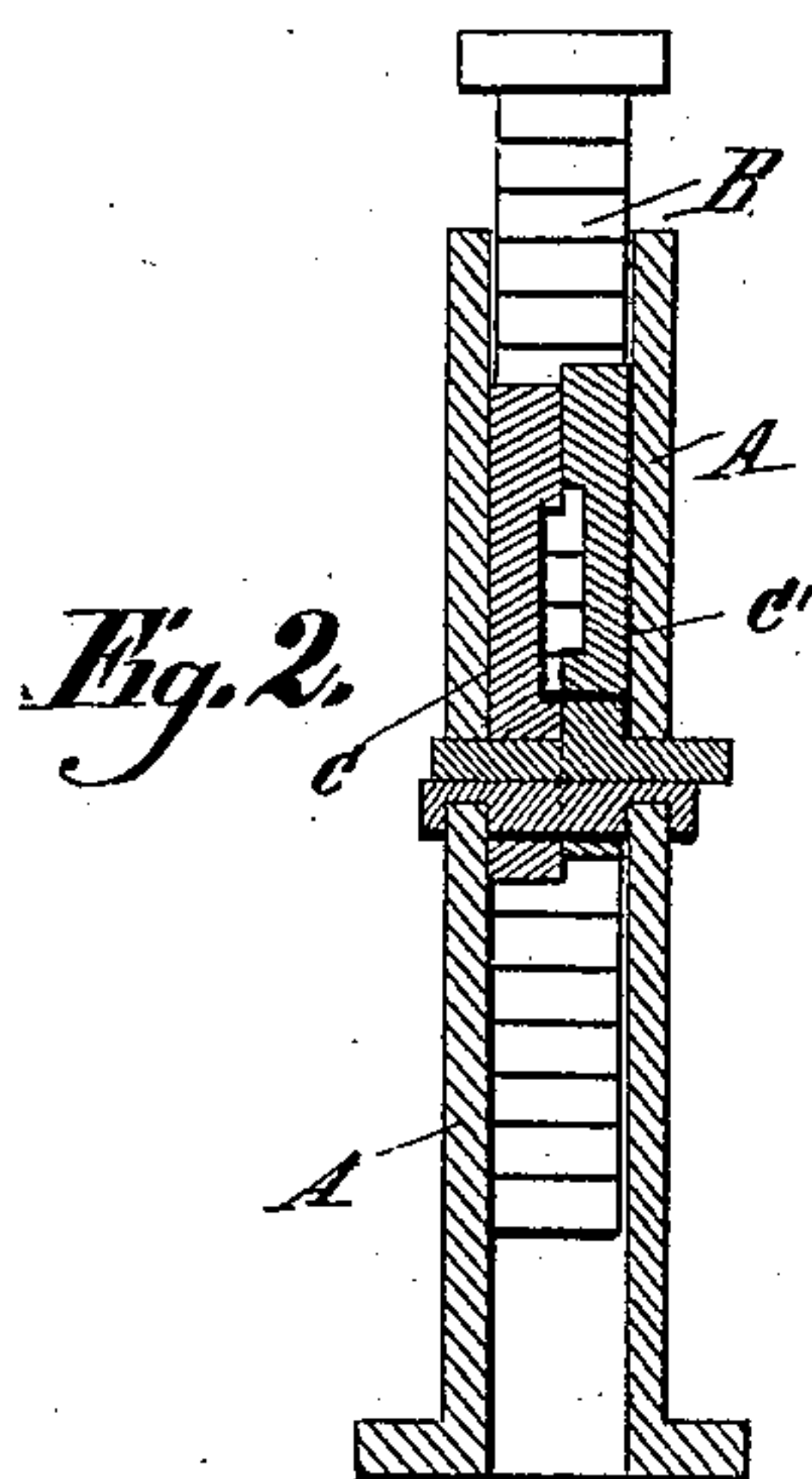
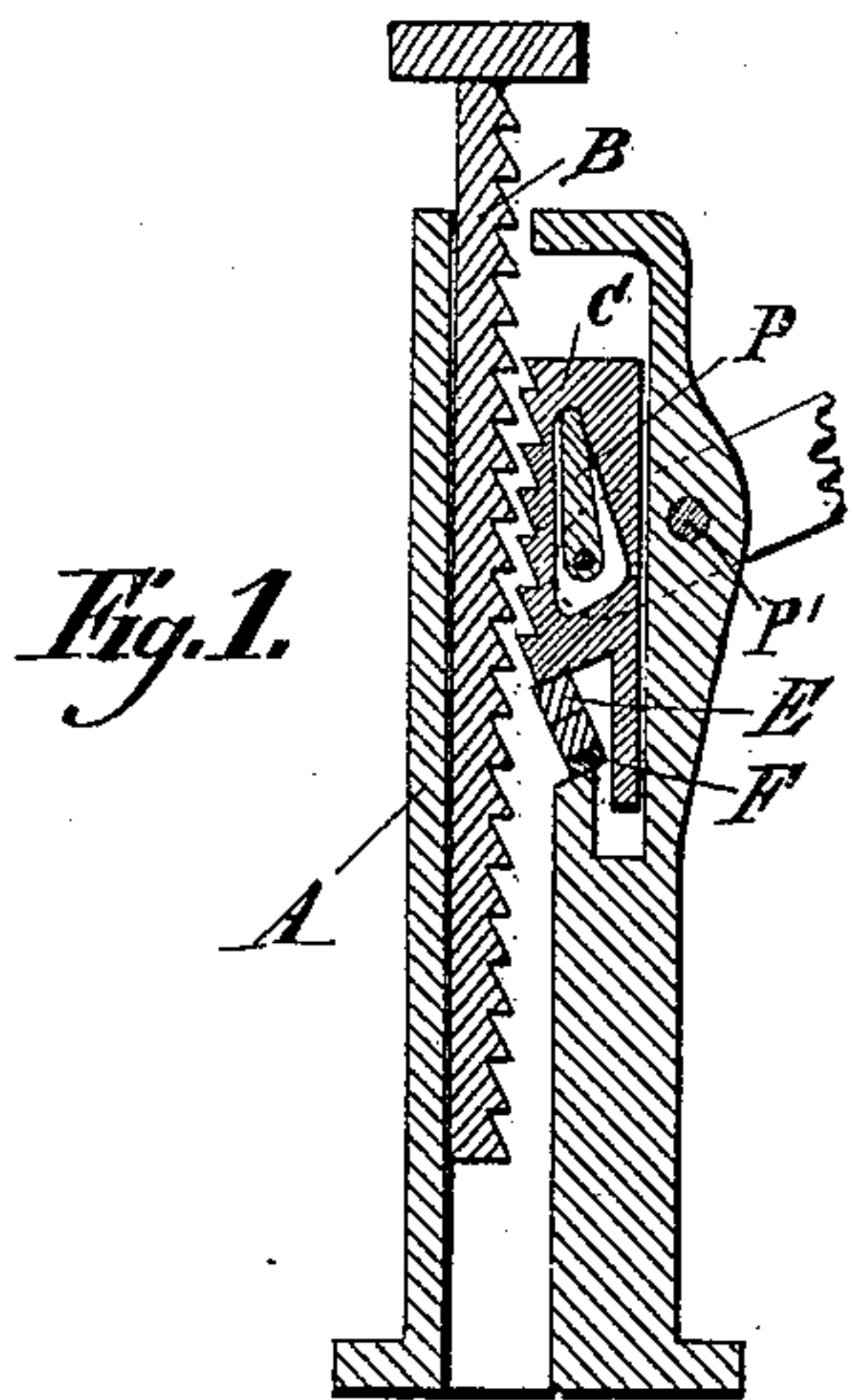
(Model.)

S. E. MOSHER.

LIFTING JACK.

No. 356,486.

Patented Jan. 25, 1887.



Attest.
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UNITED STATES PATENT OFFICE.

SAMUEL E. MOSHER, OF CHILLICOTHE, OHIO.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 356,486, dated January 25, 1887.

Application filed June 21, 1884. Serial No. 135,583. (Model.)

To all whom it may concern:

Be it known that I, SAMUEL E. MOSHER, a citizen of the United States, residing at Chillicothe, Ohio, have invented new and useful Improvements in Lifting-Jacks, of which the following is a specification.

My invention relates to ratchet lifting-jacks, its object being to improve their construction and efficiency in the several particulars herein-
after pointed out.

In the jacks of this kind used for heavy work, as in railway service, the ratchet-bars being formed by casting, a relatively considerable lift is necessitated in consequence of the size of the teeth required, whereas, the jack being short and operated near the ground and allowing only a limited scope for lever action, a loss of lever power is the result.

One object of my invention, therefore, is to obtain a shorter and more powerful lift, whereby one man is enabled to exert a greater power in lifting without increasing the arc of the lever movement or impairing the strength of the teeth by diminishing their size.

The invention consists in the construction and relative arrangement of the lifting-pawls with reference to the ratchet-bar and frame.

Other features of my invention relate to improvements in construction, as hereinafter described, and which are separately applicable also to the ordinary kinds of lifting-jacks.

Mechanism embodying my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of a preferred form of my improved jack, taken in the operating plane of the lever; Fig. 2, a vertical cross-section of the same, omitting the lever. Fig. 3 exhibits one of the pawls in perspective and front elevations; Fig. 4, a detached perspective view of one of the dogs removed from its pivot-connection with the lever; Fig. 5, a partial perspective view of the lever with dogs attached; Fig. 6, a partial cross-section of the jack-frame, showing the movable pawl-seat and its adjustable bearing; Fig. 7, a detail view of the movable pawl-seat, showing the adjustable holding-cleat; Fig. 8, a side view of a modified form of pawl; Fig. 9, a partial side elevation of the jack, showing one of the pivoted standards for support-

ing the lever, with provision for adjustment therein to bring the same into accurate relation with the pawls, and Fig. 10 a perspective view of the operating-lever detached.

Referring to the drawings, A designates the frame of the jack; B, the ratchet-bar; C C', the pawls, and D the operating-lever, the frame, ratchet-bar, and lever being, in general construction and arrangement, the same as in ordinary lifting-jacks of this character.

The pawls C C' operate side by side between the sides of the frame, each occupying half the width of the ratchet-bar, and have their teeth arranged relatively to each other in echelon, the tooth-angles of one being midway between those of the other. The pawls are of the general construction shown in Fig. 3, having each a central perforation, *b*, preferably of triangular form, as shown, and corresponding side recesses to receive the central prong of the operating-lever. The connection between the lever and pawl is made by means of a lifting-dog, *c*, Figs. 4 and 5, pivoted to the lever, and engaging the pawls by contact at the upper end of its recess *b*—a connection permitting a pivotal movement enabling the pawl, while retaining parallelism with the rack-bar, to move back and forth from the same in releasing and engaging its teeth, and to allow for the curved path described by the lever-connection in lifting.

The lever D terminates in three prongs, as shown in Fig. 10, the dogs *c c'* being pivoted between the prongs, as shown in Fig. 5. Where pawls of this construction are employed, the lever may be pivoted directly to the sides of the jack-frame. In connection with the two pawls thus constructed I employ a laterally-movable seat, E, which may be shifted in the frame, and takes the bearing of the pawls alternately upon its raised center. Thus, when the right-hand pawl C' has raised the rack-bar by a movement of the lever, the seat E is shifted to the right by pressure or a slight blow on the projecting end, and then takes the position, as shown in Figs. 2 and 6, beneath the pawl C', and holds it in its elevated position, thus maintaining the rack-bar. The outer end of the lever is then raised, the opening *b* being of sufficient size to permit the dog *c* to drop far enough to allow the pawl C to engage

the rack-bar for another lift, which being accomplished, the seat E is shifted to the left under the pawl C, which in like manner becomes a holding-pawl, while the other is again used for lifting.

The seat E, which is preferably formed of steel or gun-metal, rides upon a bearing-seat, F, inserted in the frame and resting upon liners *f*, which, by increase or diminution, adjust the position of the seat E to the pawls, and afford a means of taking up any lost motion due to wear. These parts are inclined to the vertical, as shown in Fig. 7, to coincide with the line of thrust between the rack-bar and pawls, and the upper limit of the frame-opening, through which the seat operates, is formed by a slotted adjustable cleat, *a*, held by a set-screw upon the outside of the frame.

The pawl hereinbefore described, having a projection for the pivotal engagement and play of a dog by which it is supported from the lever, may be employed singly in a jack of the ordinary construction, permitting the lever to be pivoted directly to the frame, thus dispensing with the pivotal link or standard usually required to support the lever therefrom.

A slightly-modified construction of the pawl (shown in Fig. 8) may also be employed either singly or in duplicate, in which the perforation is rectangular, inclined to coincide with the line of thrust, and provided with a block, *d*, carrying pivots for engagement with the lever, and secured adjustably in the opening by liners *e e*, above and below. The adjustment in this case is for the purpose of aligning the pawl-teeth to those of the rack-bar within the limit of movement of the lever. With a pawl so connected with the lever, the latter is necessarily mounted upon a pivotal connection in order to permit a pawl to move away from and clear the rack-bar in descending to re-engage.

In Fig. 9 is shown a lever-supporting standard, G, provided with means for adjusting the lever in relation to its support and to its proper arc of movement in relation to the frame. The construction is as follows: The upper end of the standard is extended in two parallel jaws, *g g*, between which, as holding-guides, are arranged bearing-blocks *h h*, surrounding the pivot *p* of the lever. The bearing-blocks are adjusted in position by liners *i i*, inserted above and below them, and secured by a pin, *s*. The same essential features of construction may be applied to a lever pivoted directly to the frame, parallel ribs, forming guideways, being cast upon the frame and being provided with adjustable bearing-blocks *h h*.

The lever D (shown in perspective detached

in Fig. 10) has the ordinary socket-handle for the insertion of a bar for its manipulation. This hollow socket is cast with suitable openings, *o*, at the under side to prevent accumulation of snow, dirt, or water when standing.

I claim as my invention and desire to secure by Letters Patent—

1. In a ratchet lifting-jack, and in combination with the rack-bar thereof, a many-toothed lifting-pawl perforated and having in said perforation a dog or lifting-block pivoted to the operating-lever and adapted by such constructions and lever-connection to clear and engage the ratchet-bar in operation, as set forth.

2. In a ratchet lifting-jack, in combination with the rack-bar, a pair of lifting-pawls arranged side by side and engaging said rack-bar, each pawl having a recess, and a dog pivoted to the lever operating in said recess, substantially as set forth.

3. In a ratchet lifting-jack, in combination with the rack-bar, a pair of lifting-pawls arranged side by side and engaging said rack-bar and the shifting seat placed in proximity to said pawl, so as to engage and hold one or the other alternately.

4. In a ratchet lifting-jack, a lifting rack-bar, in combination with two pawls operating side by side to lift the bar by alternate movements of the lever and a movable pawl-seat adapted to be shifted laterally beneath the pawls alternately and maintain them as holding-pawls, substantially as set forth.

5. In a ratchet lifting-jack, the combination of the rack-bar, the pawl, and a movable pawl-seat relatively arranged, substantially as described, so that the pawl-seat may be adjusted to the pawl and the latter to the rack-bar, substantially as set forth.

6. The combination, in a ratchet lifting-jack, with the ratchet-bar, pawls, and lever, of the movable pawl-seat E, bearing-block F, and adjustable cleat *a*, as set forth.

7. In a ratchet lifting-jack, the combination of the lifting rack-bar, the pawls C C', dogs *c c*, and three-pronged lever D, substantially as and for the purpose set forth.

8. In a ratchet lifting-jack, in combination with the rack-bar, pawls, and lever, the pivoted supporting-standard G, constructed as shown, and provided with the adjustable bearing-blocks *h* and liners *i*, substantially as set forth.

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

SAMUEL E. MOSHER.

Witnesses:

L. M. HOSEA,
C. SHAPPELL.