

No. 675,009.

Patented May 28, 1901.

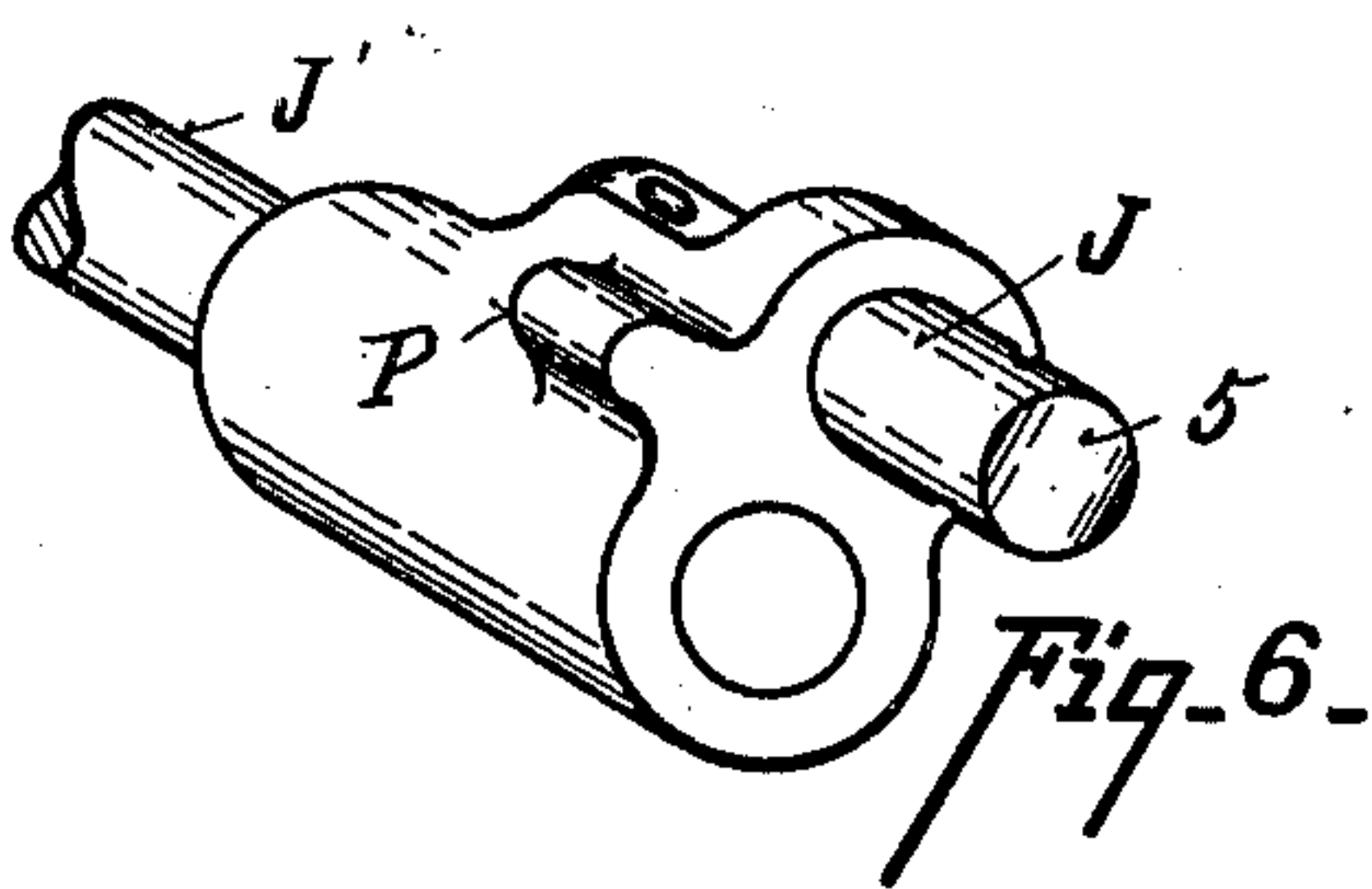
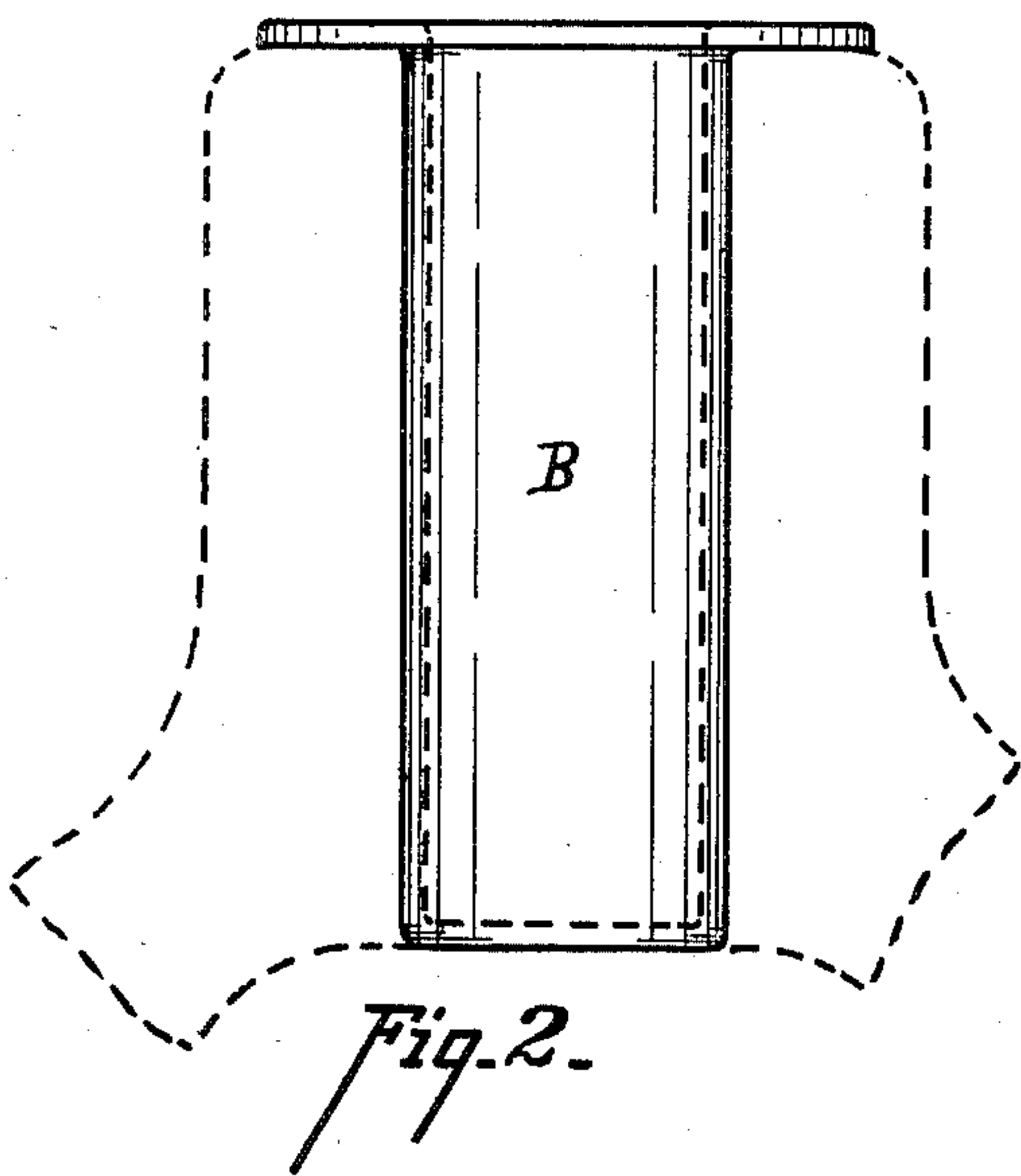
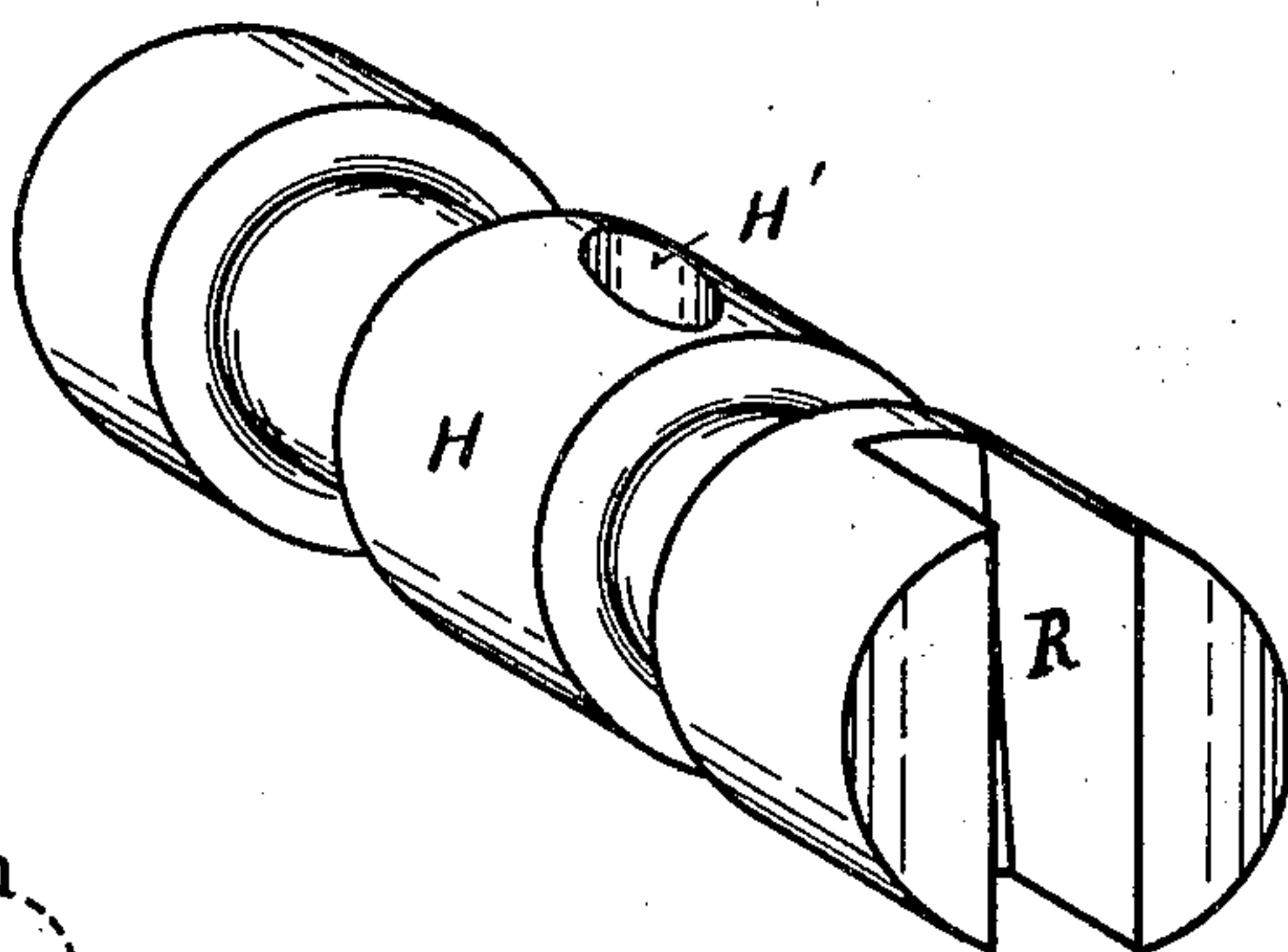
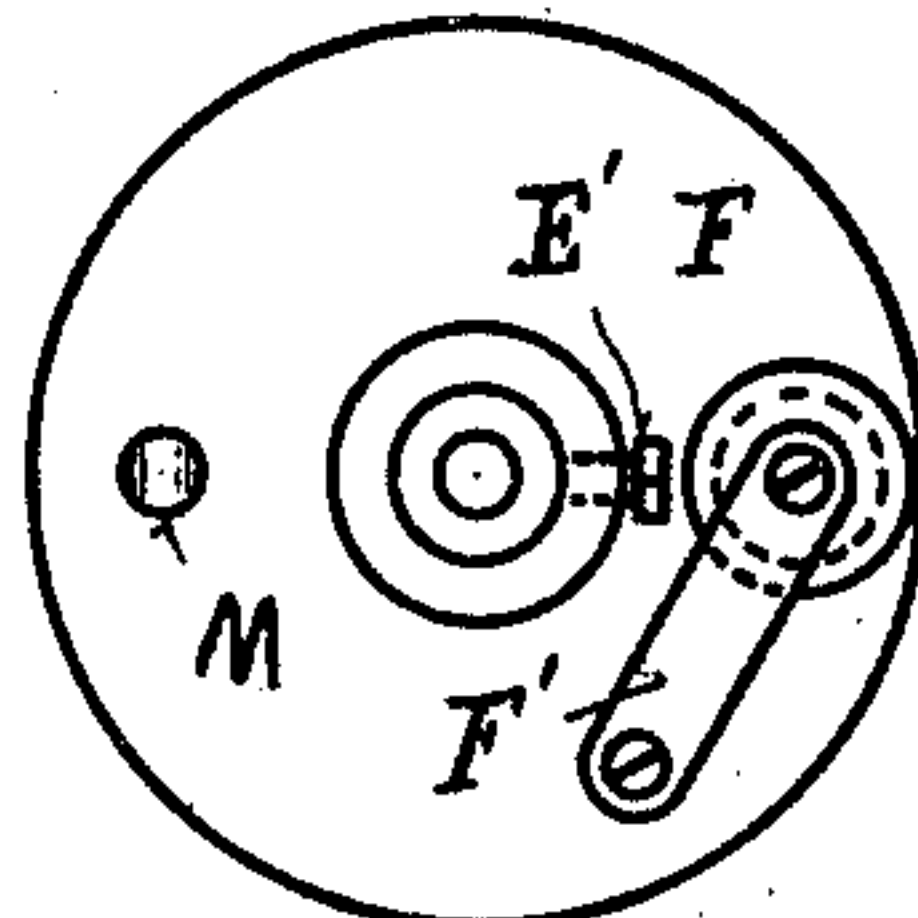
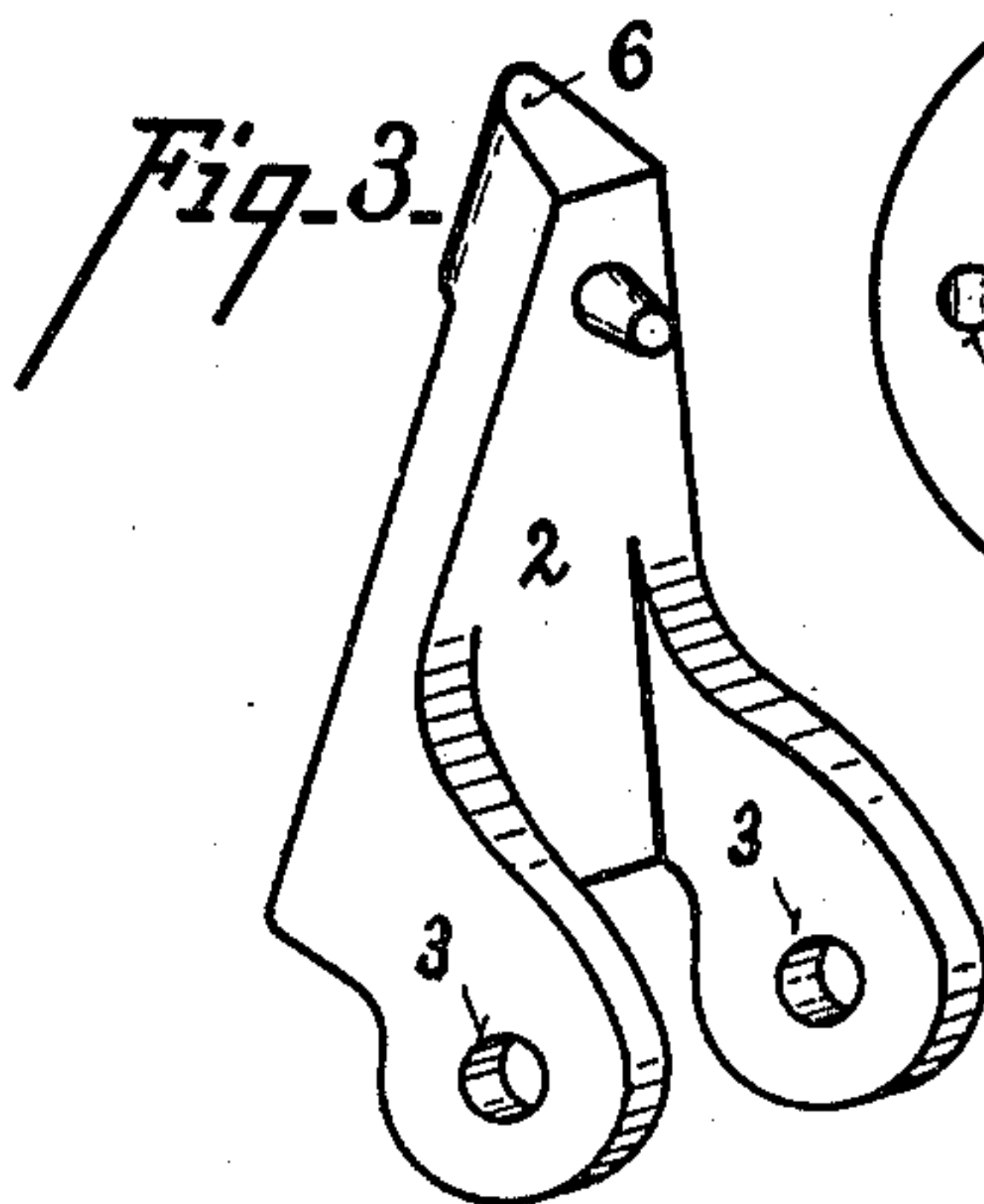
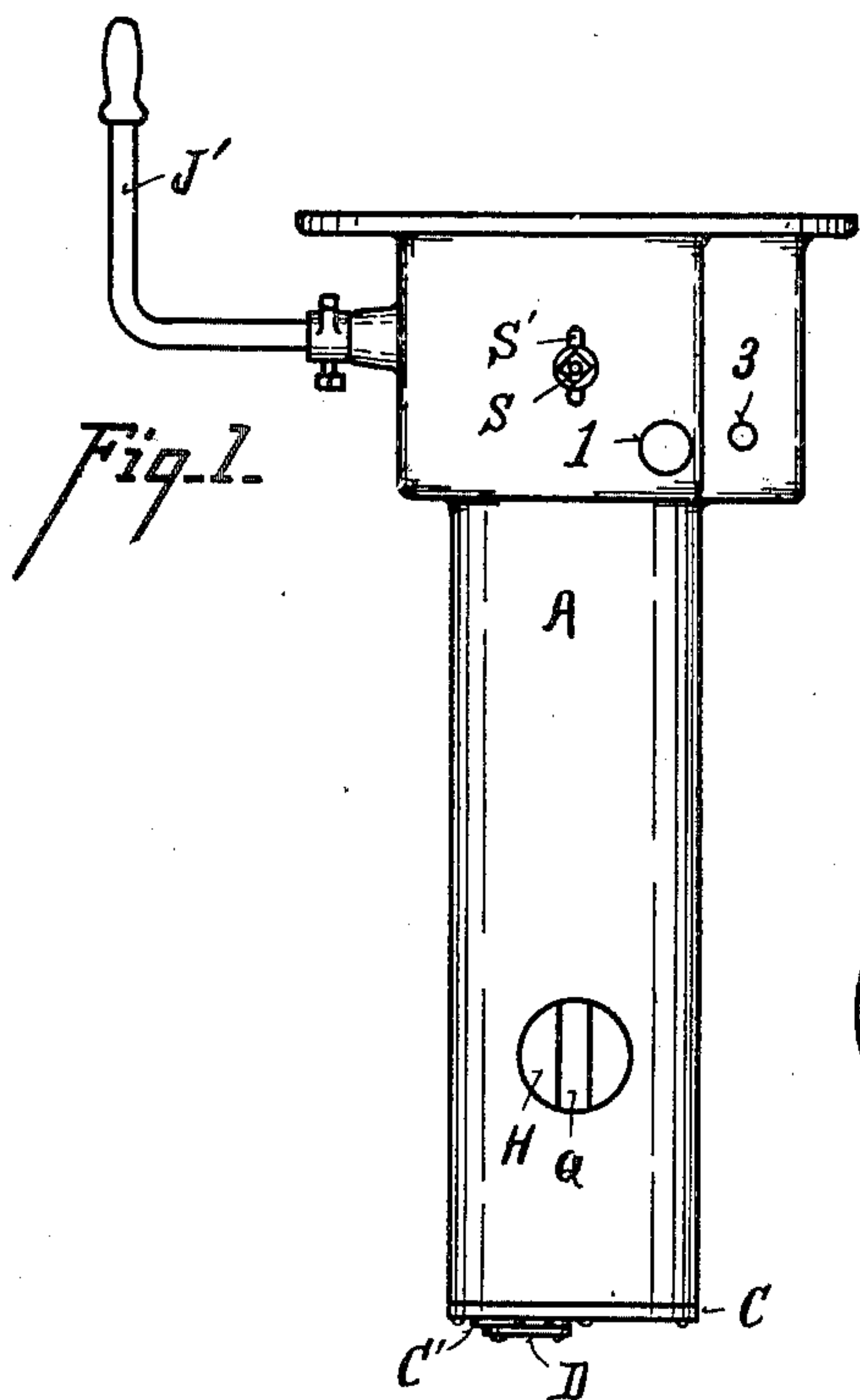
F. KOENIGKRAMER.

HYDRAULIC CHAIR.

(Application filed Feb. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Witnesses

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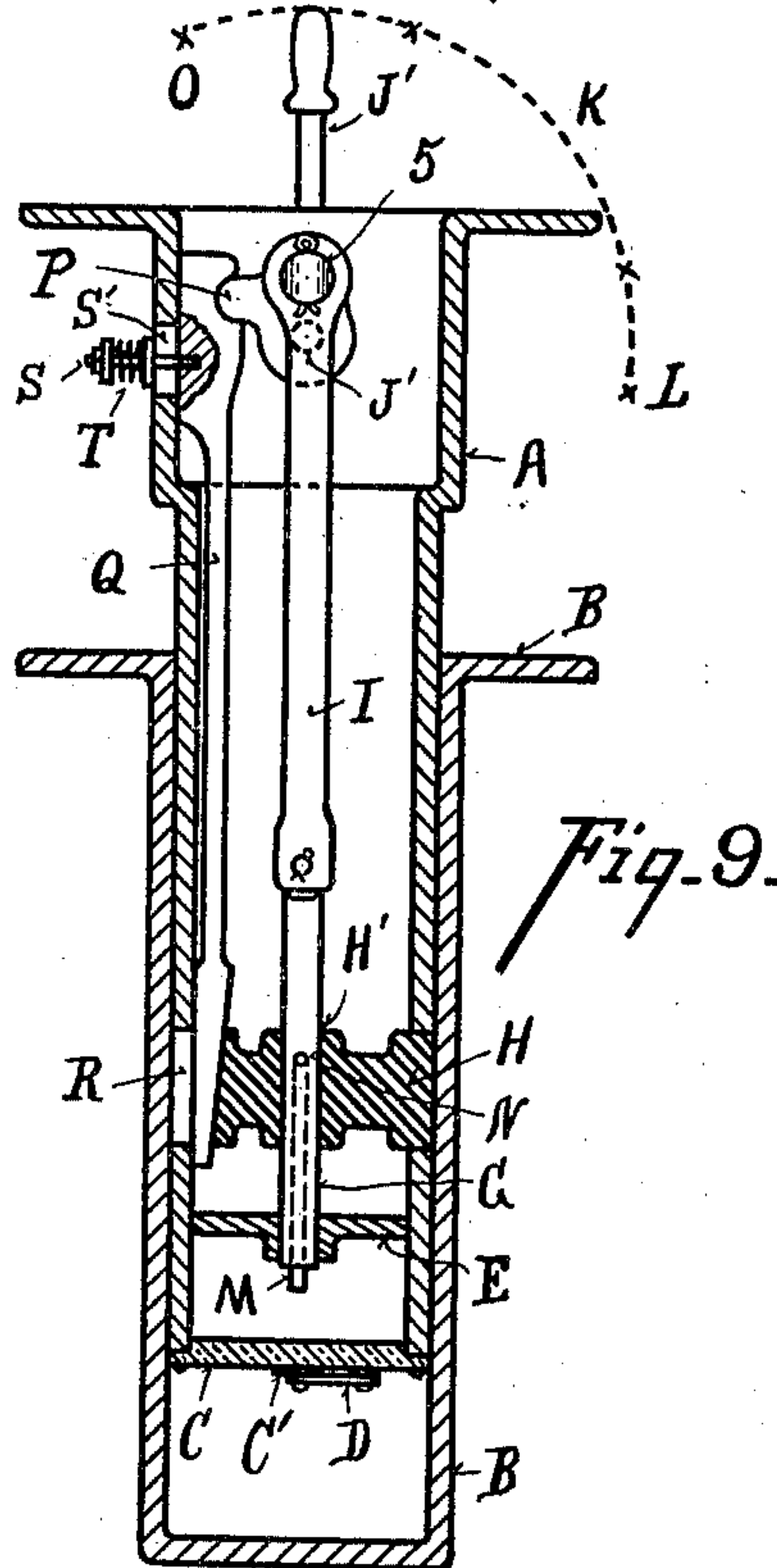
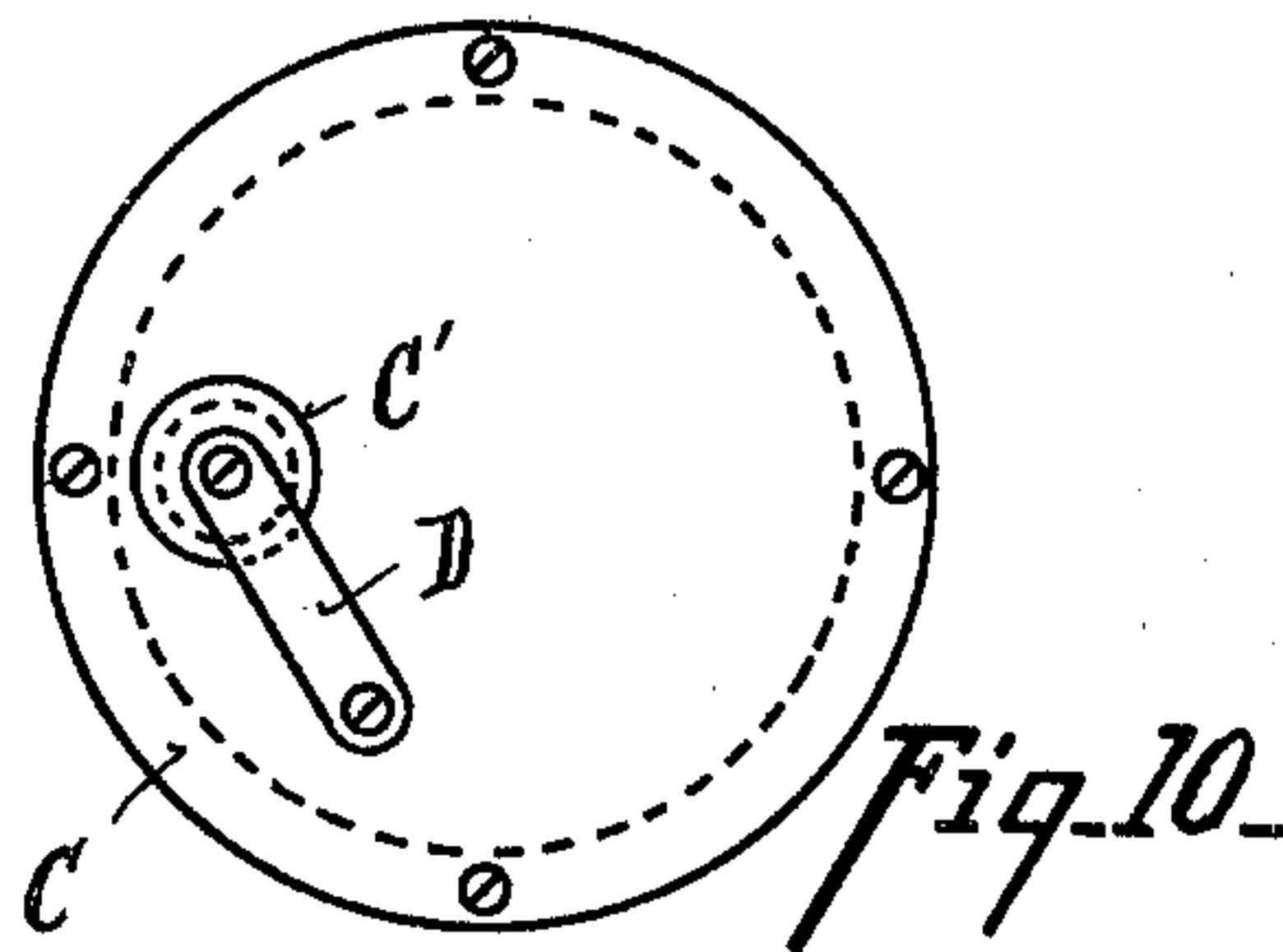
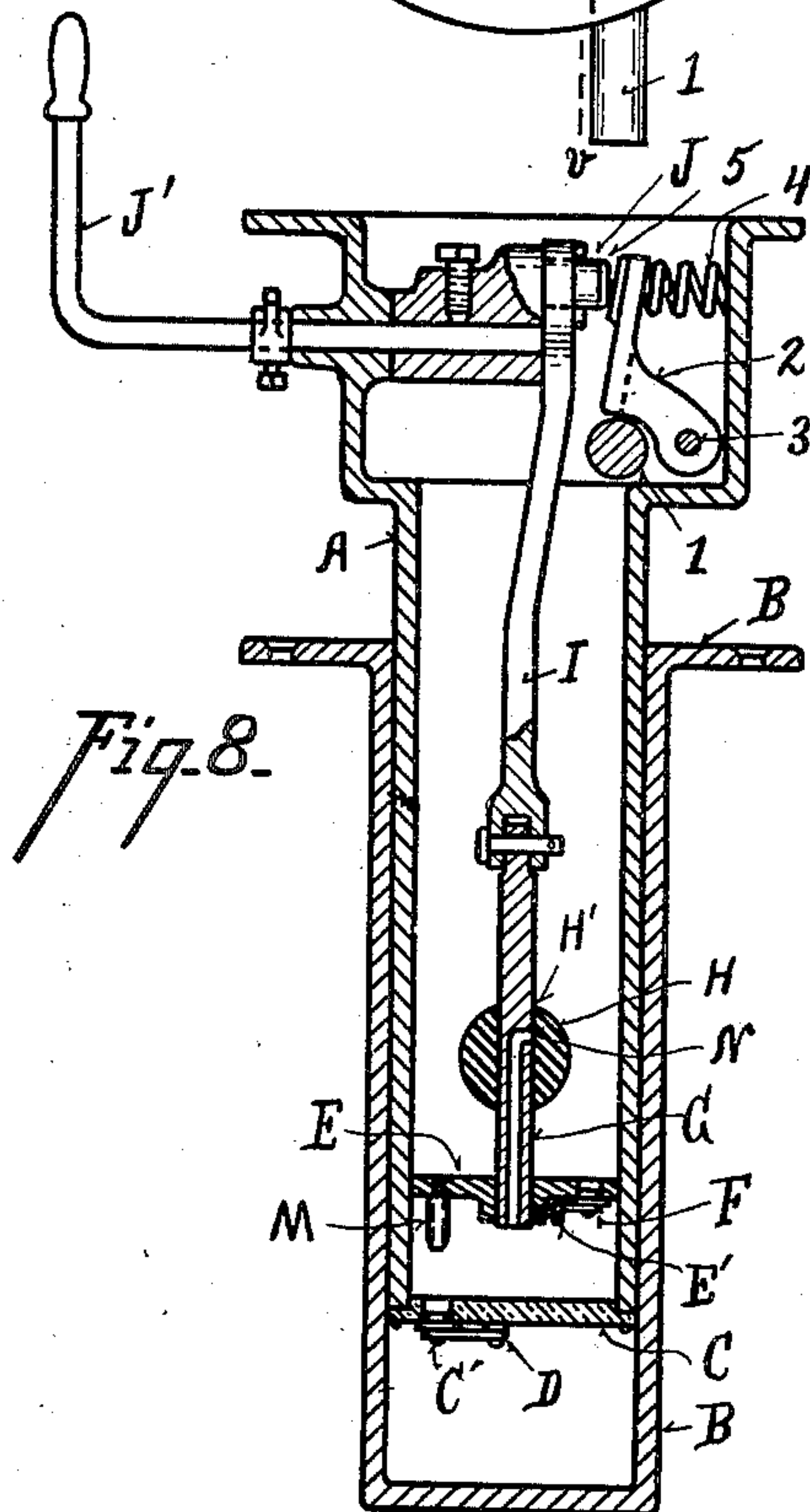
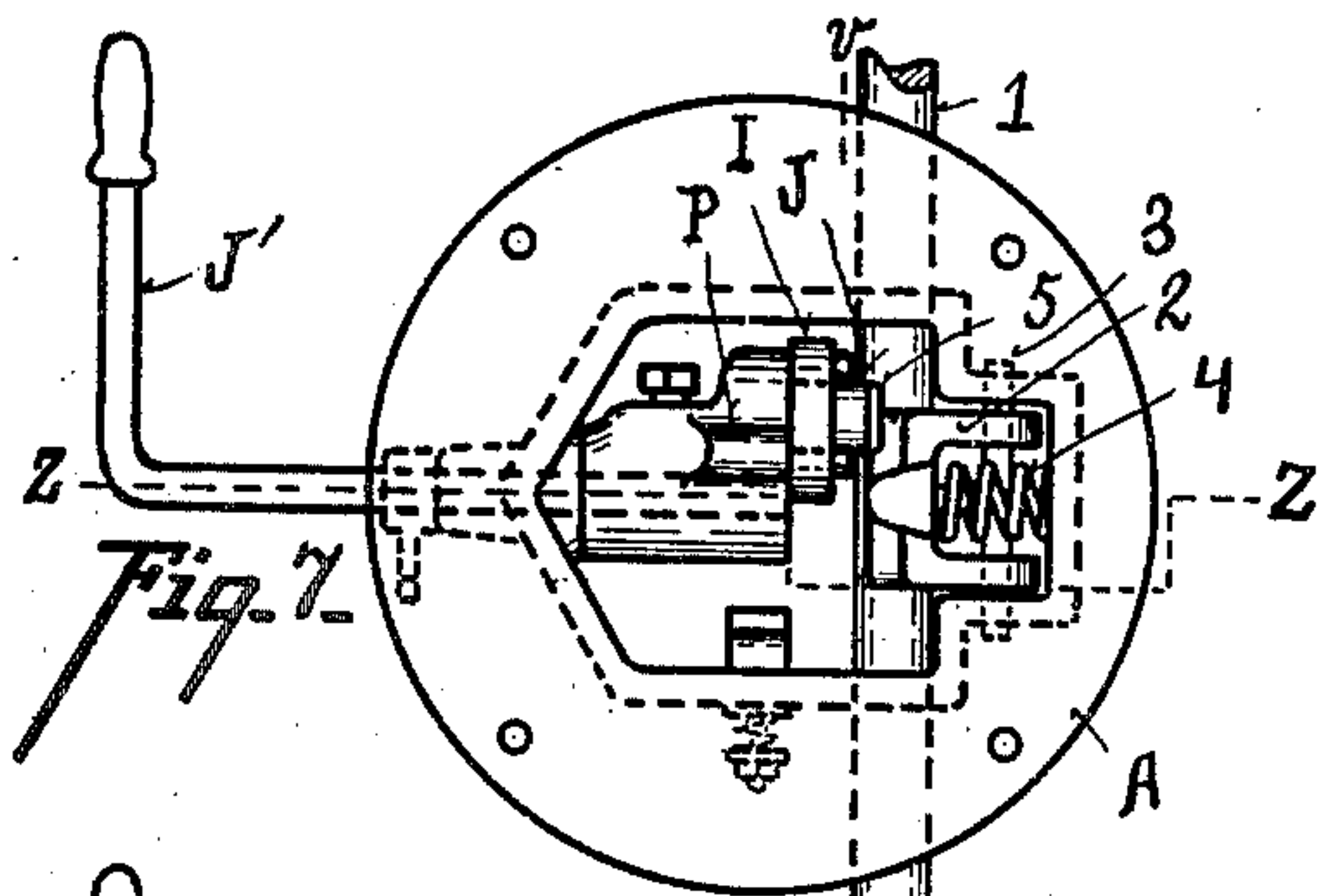
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

FRANK KOENIGKRAMER, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF
TO FREDERICK KOENIGKRAMER, OF SAME PLACE.

HYDRAULIC CHAIR.

SPECIFICATION forming part of Letters Patent No. 675,009, dated May 28, 1901.

Application filed February 25, 1901. Serial No. 48,771. (No model.)

To all whom it may concern:

Be it known that I, FRANK KOENIGKRAMER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Hydraulic Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in hydraulic chairs. One of its objects is to provide an improved hydraulic raising and lowering mechanism to be employed on barber, dental, and surgical chairs and for similar purposes.

Another object is to provide a more simple, reliable, and inexpensive mechanism for the above purpose than has been heretofore in use.

It also consists in certain details of form, combination, and arrangement, all of which will be more fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a side elevation of the hydraulic plunger. Fig. 2 is a side elevation of the hydraulic cylinder. Fig. 3 is a perspective view of the clamp for locking the chair-tilting bar. Fig. 4 is a bottom plan view of the pump-piston. Fig. 5 is a perspective view of the bar for locking the plunger to its adjusted position in the cylinder. Fig. 6 is a perspective view of the crank-pin and cam at the inner end of the operating-lever. Fig. 7 is a top plan view of the plunger and its operative parts. Fig. 8 is a section through the plunger and cylinder on line *zz* of Fig. 7. Fig. 9 is a section through the same on line *vv* of Fig. 7. Fig. 10 is a bottom plan view of the plunger. Fig. 11 is a perspective view of the locking bar or wedge.

A represents the hydraulic plunger, which is secured to the under side of the chair-seat and carries the operative parts.

B represents the hydraulic cylinder, which is mounted in the pedestal of the chair, as indicated in dotted lines in Fig. 2 and within which the plunger seats. The plunger consists of a hollow shell provided at its lower

end with a head C, which is provided with a valve C', adapted to pass a liquid—say oil—from the interior of the plunger down into the cylinder beneath the plunger and to normally prevent a return passage of the liquid.

D represents a spring to retain the valve in position. Within the plunger is located a pump-piston E, which is provided with a valve F, similar to the valve C' and held in place by a spring F'.

E' represents a set-screw securing the piston to the piston-rod G.

H represents a locking-bar which spans the plunger and seats in openings cut through the side walls of the plunger. The piston-rod G passes through an opening H' in the bar H and is connected by means of a pitman or link I with a crank-pin J on the inner end of the operating-lever J', so that the oscillation of the operating-lever through the arc K of its travel will reciprocate the pump-piston in the plunger and pump the liquid from the upper portion of the plunger above the piston down through the valves of the piston and plunger into the cylinder beneath the plunger, and thereby elevate the chair-seat. Turning the handle of the operating-lever to the point L depresses the piston and piston-rod, so that the stud M will contact with and open the valve C', and at the same time the upper end of the passage N in the piston-rod will be depressed below the lower edge of the opening H' in the locking-bar H, which will permit the liquid in the cylinder to escape through the valve C' and passage N into the plunger above the pump-piston, and thereby lower the chair-seat. The upper end of the passage N reciprocates within the passage H' during the act of pumping and is sealed thereby. After the chair has been raised or lowered to the desired position the handle of the operating-lever is thrown to the point O, Fig. 9, when the cam P on the inner end of the operating-lever will engage the upper end of the bar Q, forcing its lower wedge-shaped end into the slot R in the bar H and wedging the opposite end of the bar H against the inner wall of the cylinder, at the same time wedging the plunger against the opposite wall of the cylinder, which effectually locks the plunger in the ad-

justed position. The return movement of the operating-lever lifts the bar Q, releasing the plunger.

S represents a stud secured to the bar Q and seating in a slot S' in the wall of the plunger, and T a spring for holding the upper end of the bar Q in place and for preventing it from wedging the parts except when pressed down by the cam P.

1 represents a bar passing through openings in the walls of the plunger and attached at one end to the mechanism ordinarily employed to tilt the chair-back and foot-rest.

2 represents a clamping-bar located in the upper end of the plunger and pivoted at 3.

4 represents a spring acting on the upper end of the bar 2 to normally hold the bar 2 in position to clamp and lock the bar 1.

The end of the crank-pin J is provided with a cam-shaped face 5, which when the operating-lever is in a vertical position, as shown in Figs. 8 and 9, engages the cam 6 on the locking-bar 2 and lifts the bar to release the bar 1 and permit the chair to be tilted.

I claim—

1. In a hydraulic chair, a cylinder; a hollow plunger provided with a valve at its lower end; a pump; a locking-bar spanning the plunger and seated in the side walls of the plunger; a bar located within the plunger with its lower end engaging and adapted to wedge the locking-bar and plunger against the inner walls of the cylinder to lock the plunger in place; an operating-lever provided with a cam adapted to operate the wedge to lock and release the plunger.

2. In a hydraulic chair, a cylinder; a hollow plunger provided with a valve at its lower end; a locking-bar spanning the plunger and seated in openings in the side walls thereof; a pump-piston provided with a valve and a stud projecting from its lower face; a piston-rod sliding through an opening in the locking-bar; a passage leading from the lower end of the piston-rod to a point within the opening in the locking-bar; a bar located within the plunger adapted to engage between the locking-bar and the inner wall of the plunger to wedge the parts and lock the plunger in place; an

operating-lever provided with a crank-pin for reciprocating the pump, and a cam adapted to throw the bar to lock the plunger.

3. In a hydraulic chair in combination with a cylinder a plunger; a pump; and means for locking the plunger to the adjusted position in the cylinder; a tilting-bar; a spring-actuated clamping-bar; and an operating-lever provided with a cam-faced crank-pin adapted to engage the clamping-bar at one position of its stroke to release the tilting-bar, substantially as specified.

4. In a hydraulic chair in combination with a cylinder; a hollow plunger; a pump-piston and piston-rod; a locking-bar spanning the plunger with one end projecting through the side wall thereof; a bar located within the plunger and actuated by the operating-lever at one point of its stroke to engage between the locking-bar and the inner wall of the plunger to wedge the parts against the inner walls of the cylinder to lock the plunger to its adjusted position, substantially as specified.

5. In a hydraulic chair, a cylinder; a hollow plunger provided with a valve at its lower end; a pump-piston located within the plunger and provided with a valve and a stud adapted to trip the valve in the plunger; a piston-rod provided with a passage leading from beneath the piston to a point above the same, and means for normally closing the upper end of said passage; a locking-bar spanning the plunger with one end projecting through the side wall of the plunger, said locking-bar serving as a support for the upper end of the piston-rod; a bar adapted to engage the locking-bar and plunger to wedge and lock the plunger to its adjusted position; a tilting-bar; a spring-actuated clamping-bar adapted to normally clamp the tilting-bar; and a common operating-lever adapted to operate the several mechanisms at different portions of its travel, substantially as specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK KOENIGKRAMER.

Witnesses:

F. W. REINERS,

C. W. MILES.