

C. WEUSTE.  
ELECTRIC CONTACT APPARATUS.

No. 459,323.

Patented Sept. 8, 1891.

Fig. 1.

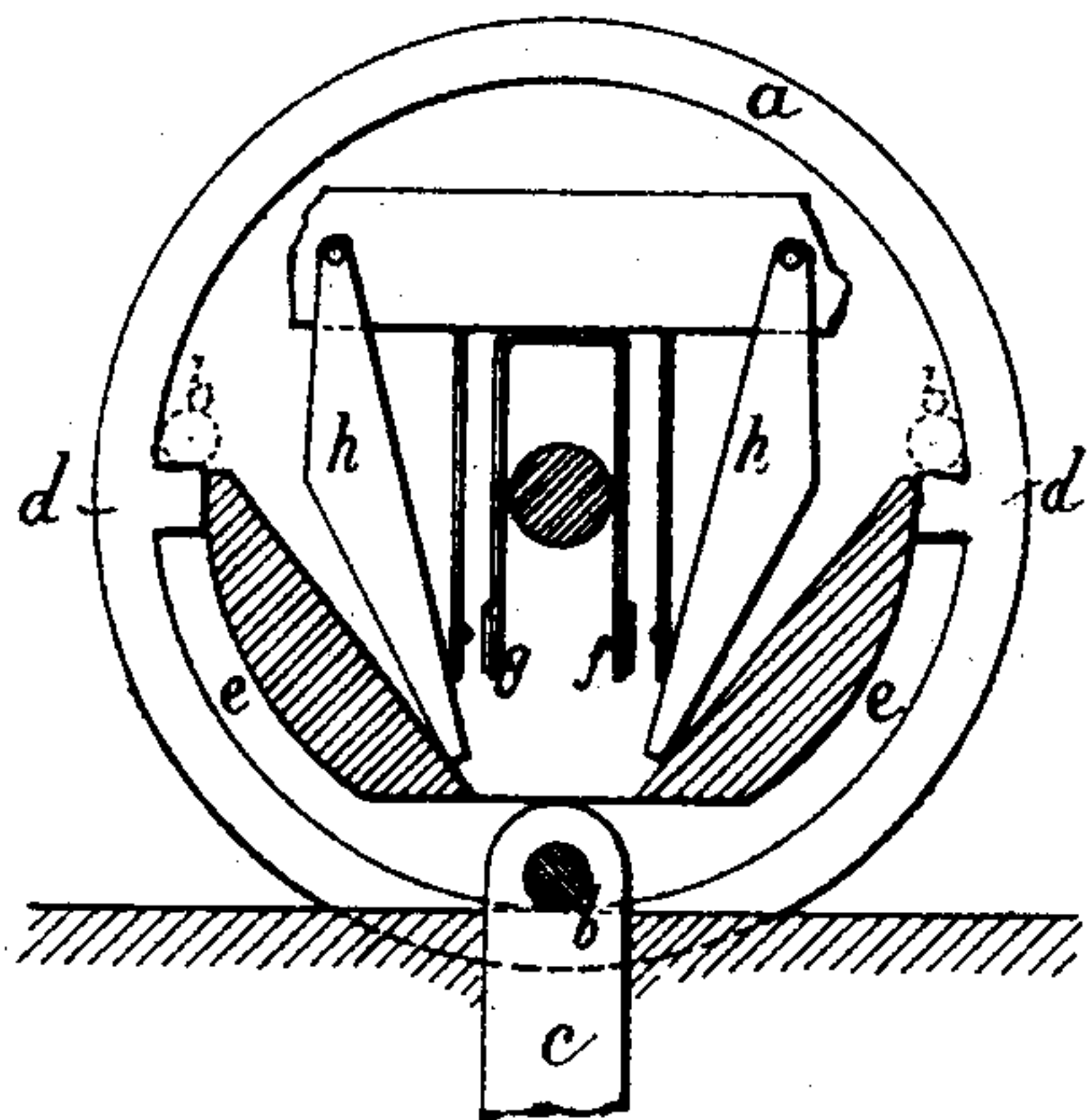


Fig. 2.

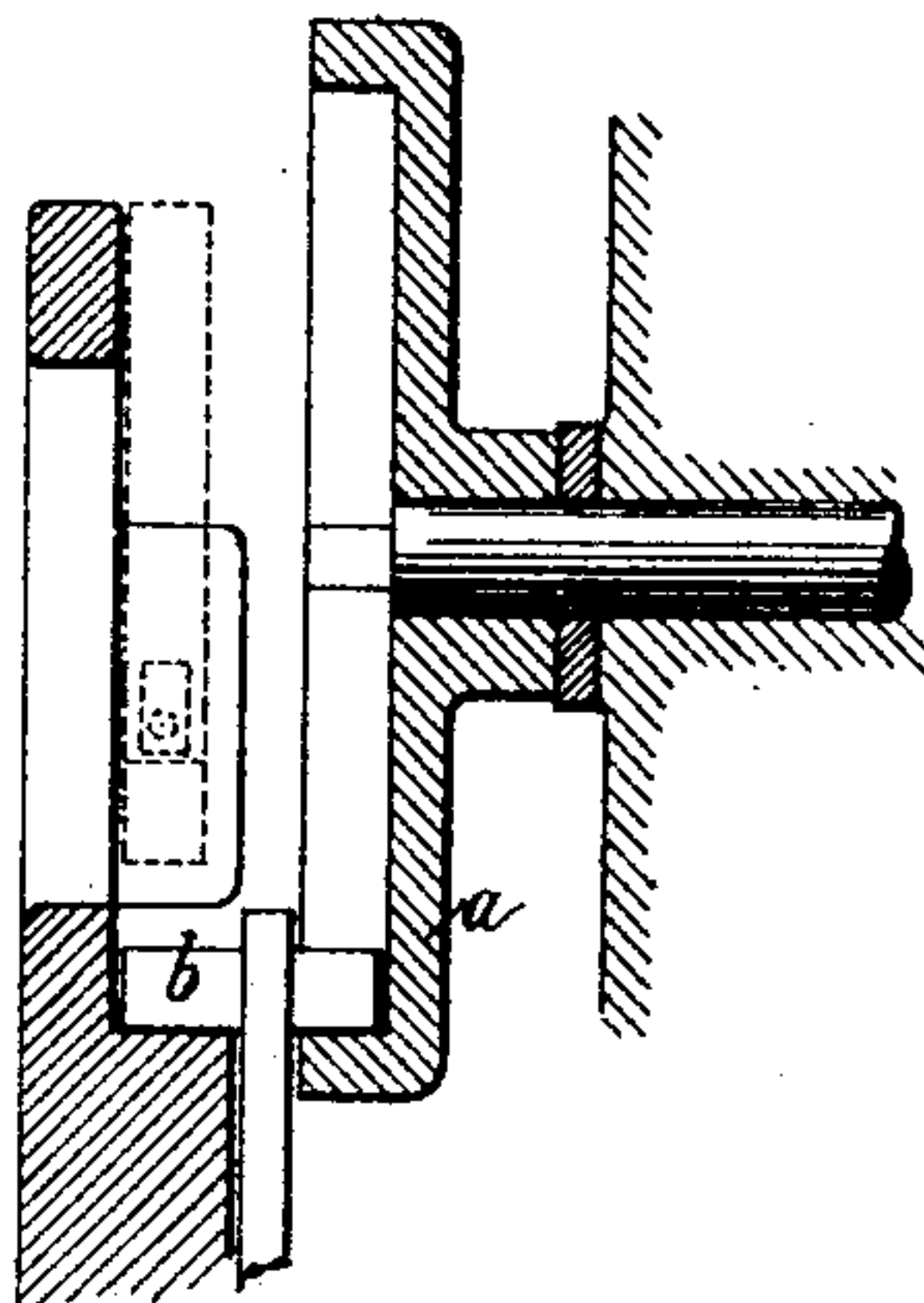


Fig. 3.

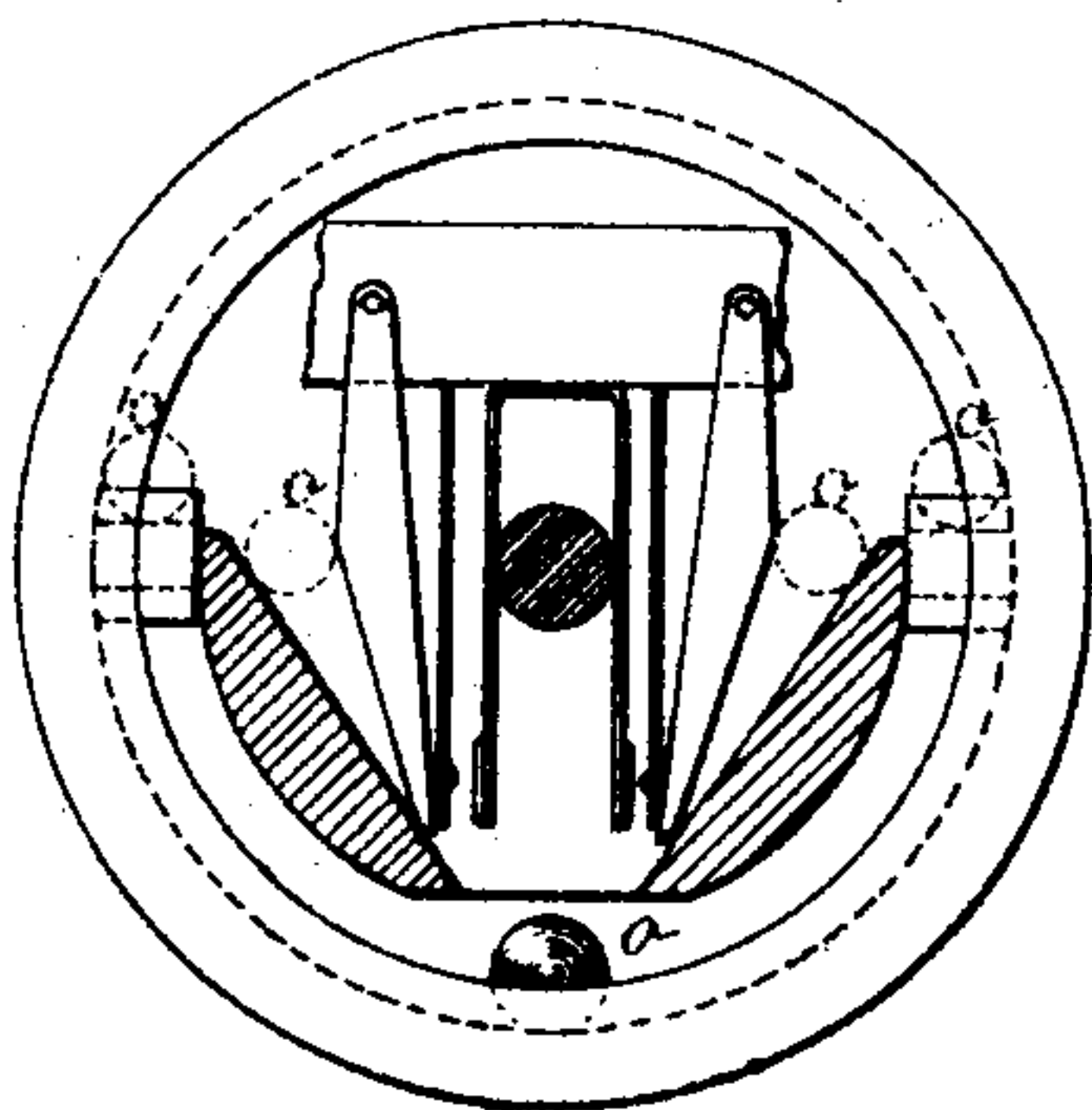


Fig. 4.

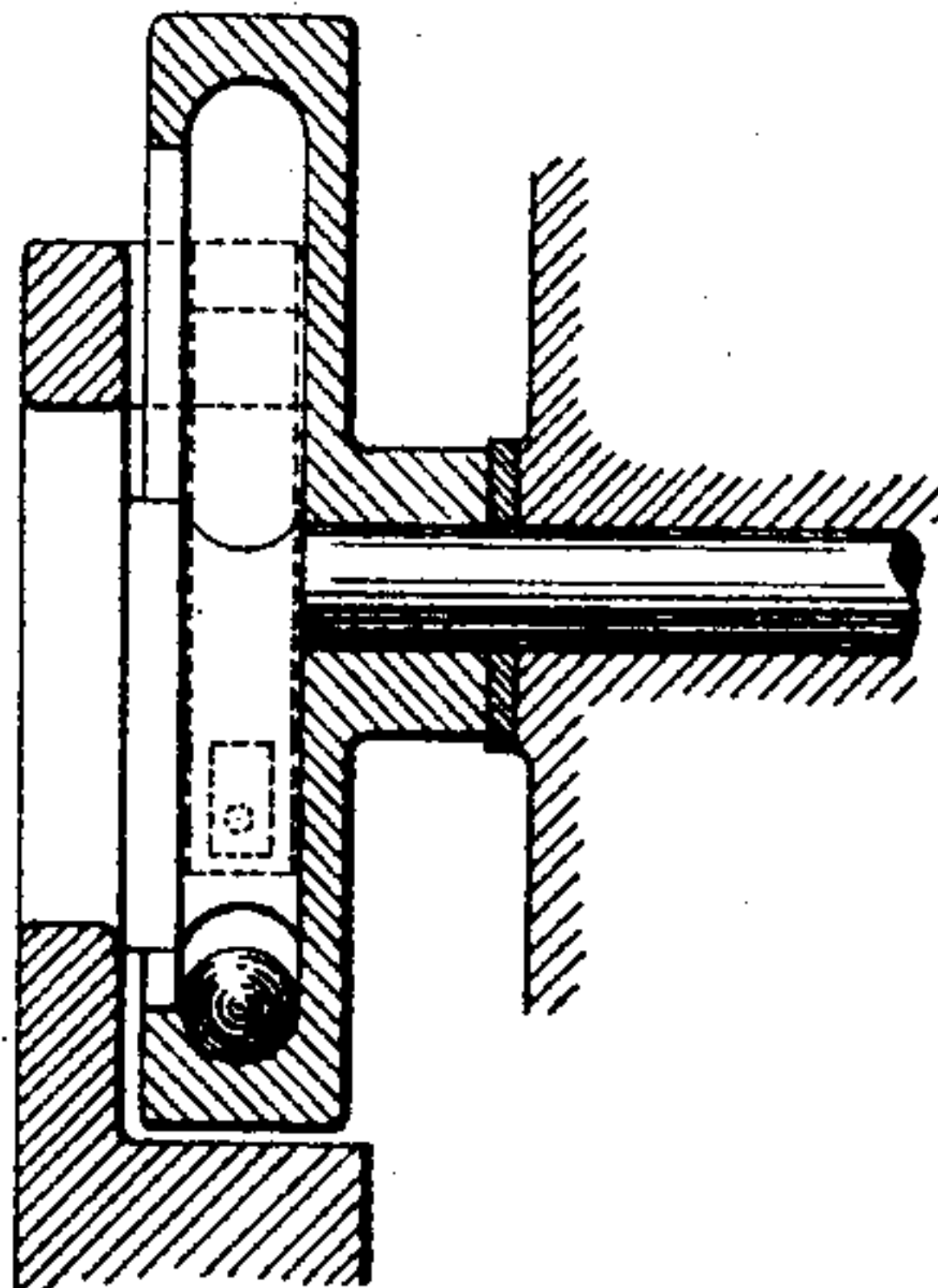


Fig. 5.

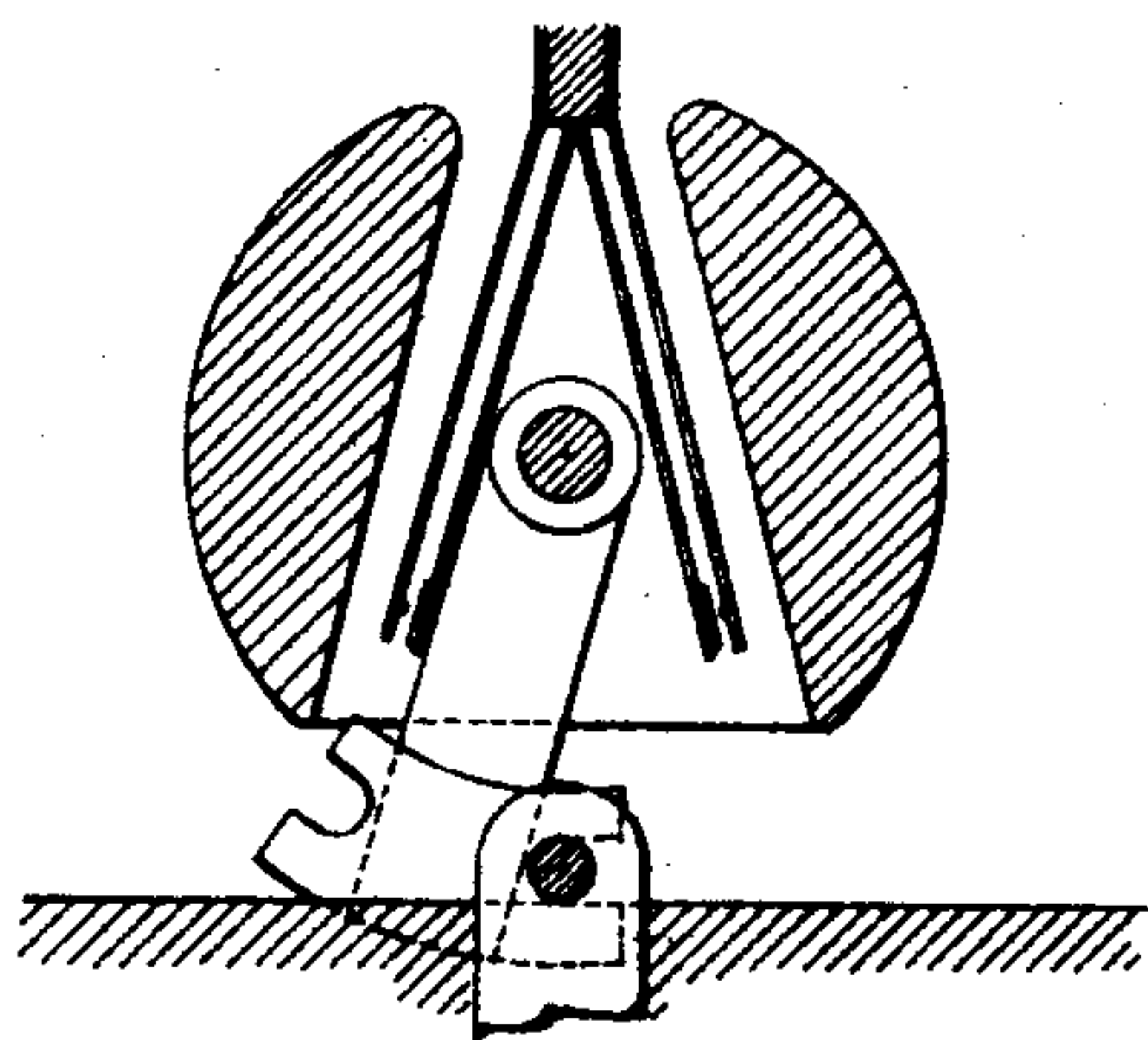
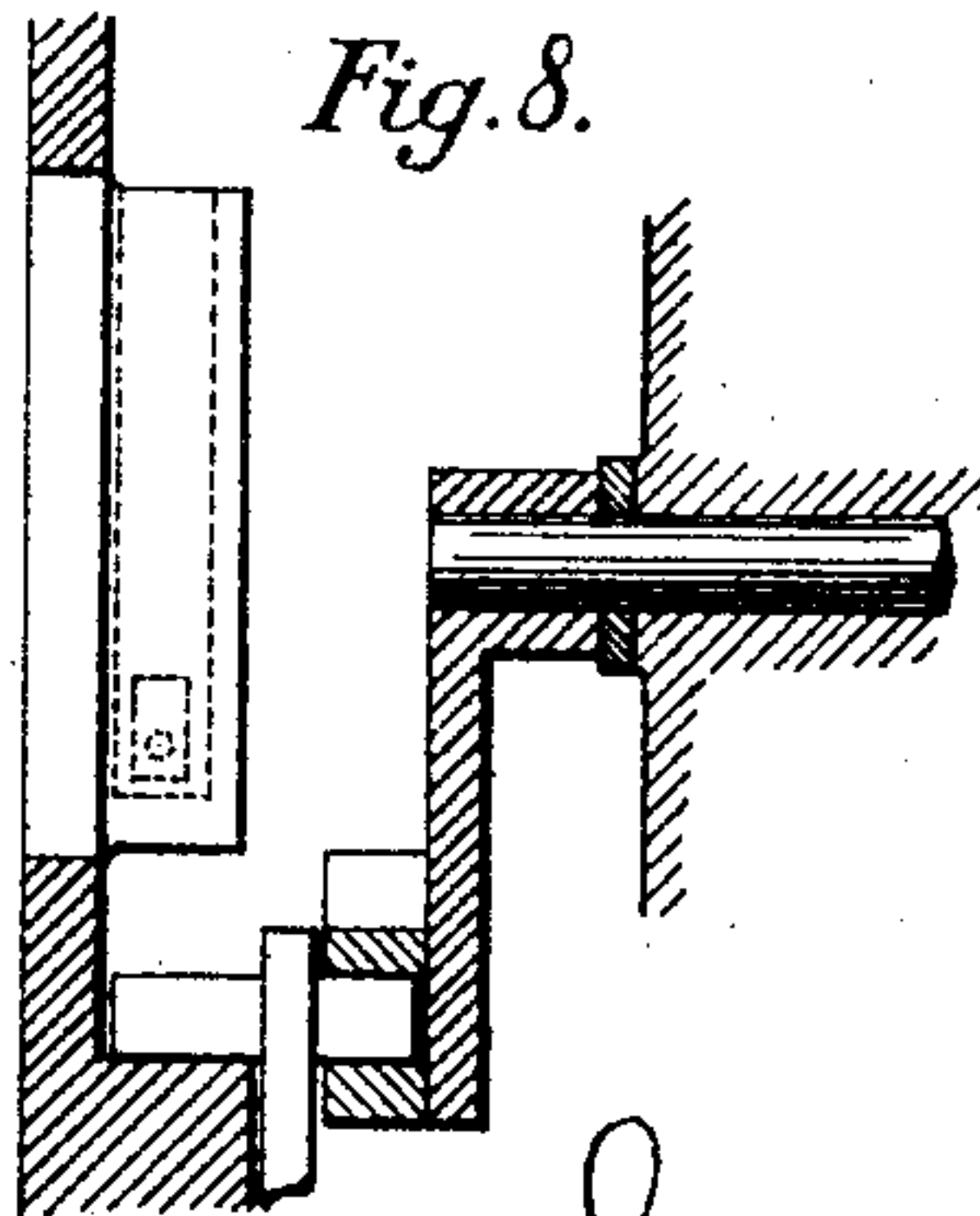


Fig. 6.



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Fig. 5.

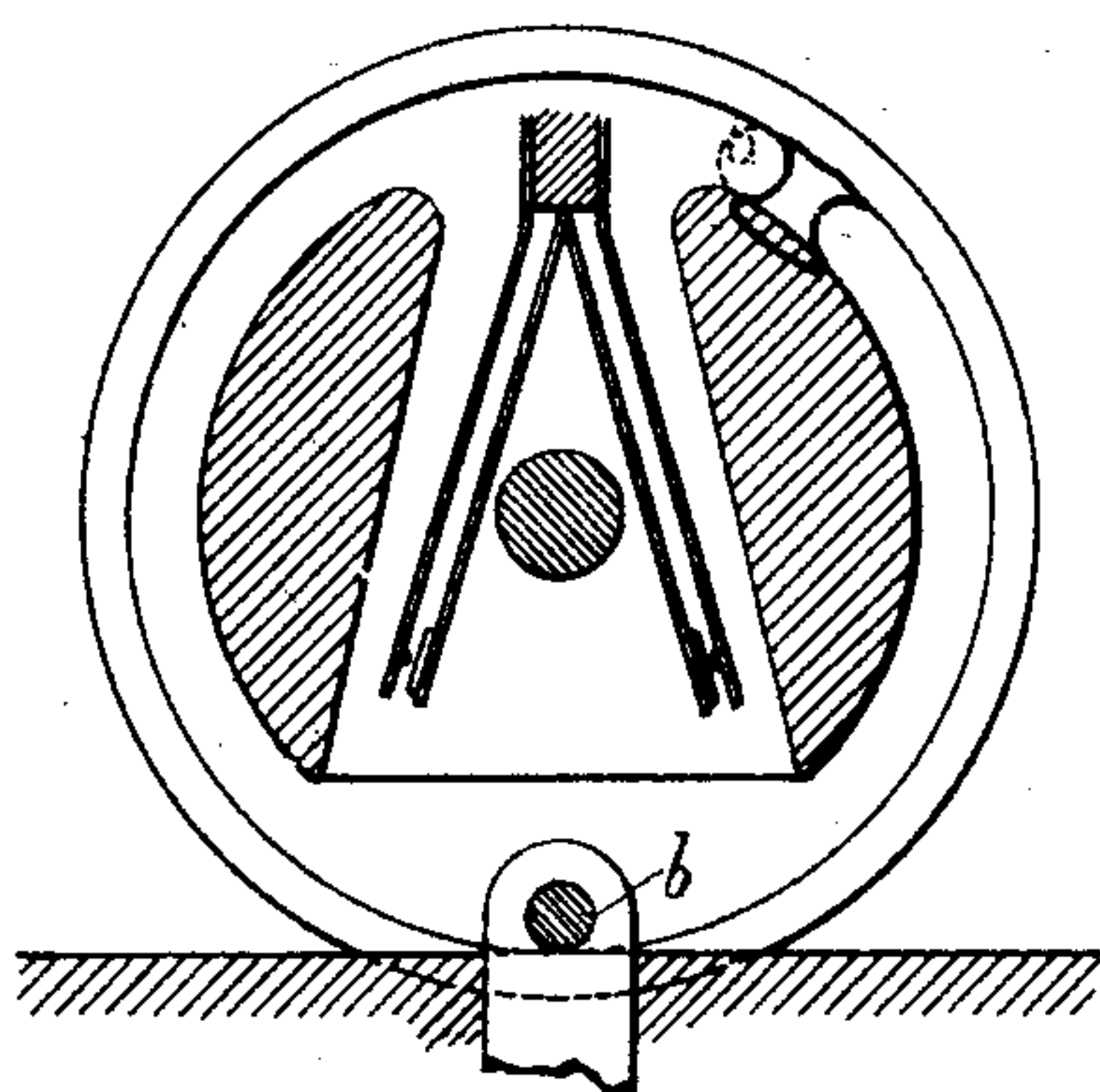


Fig. 6.

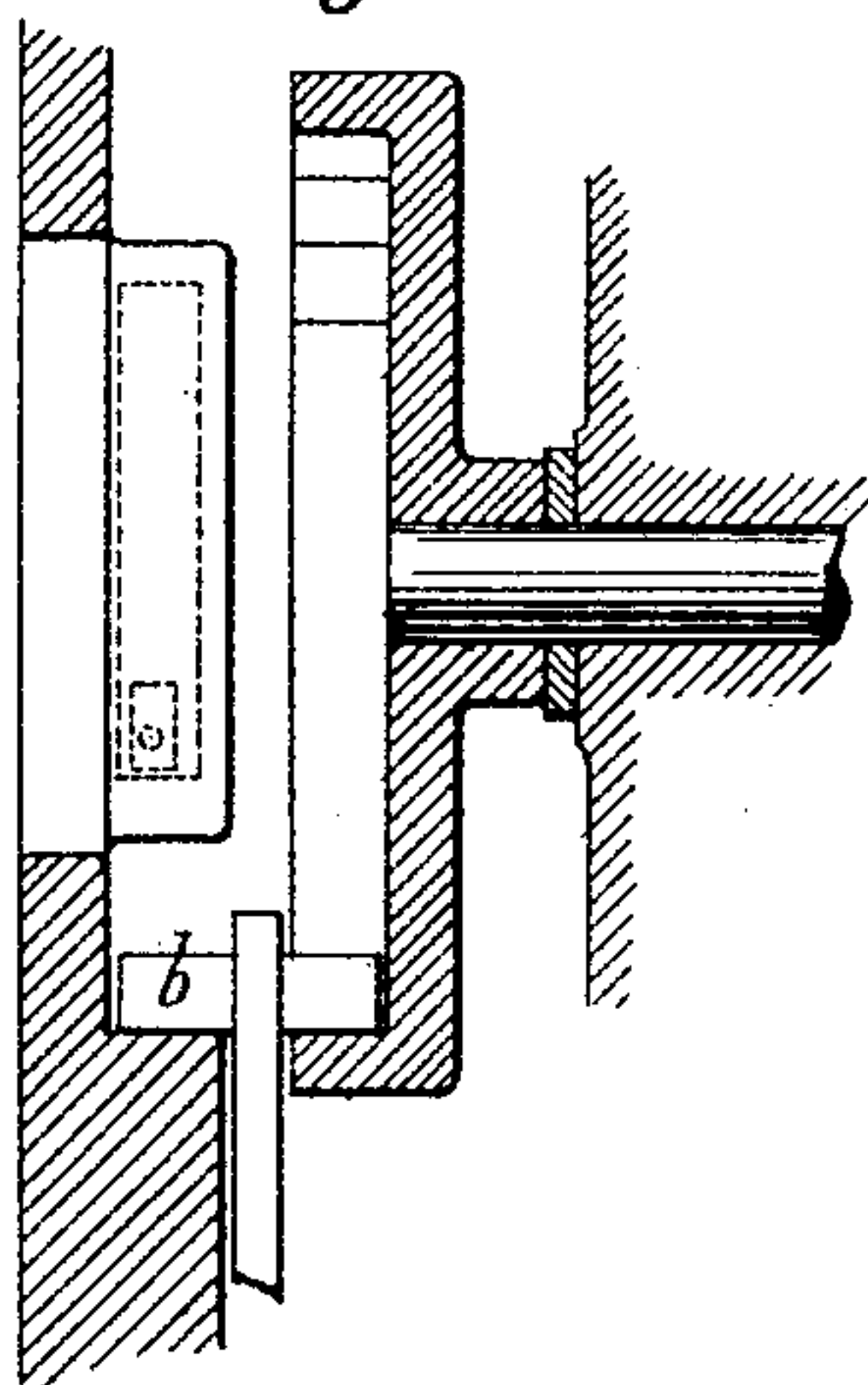
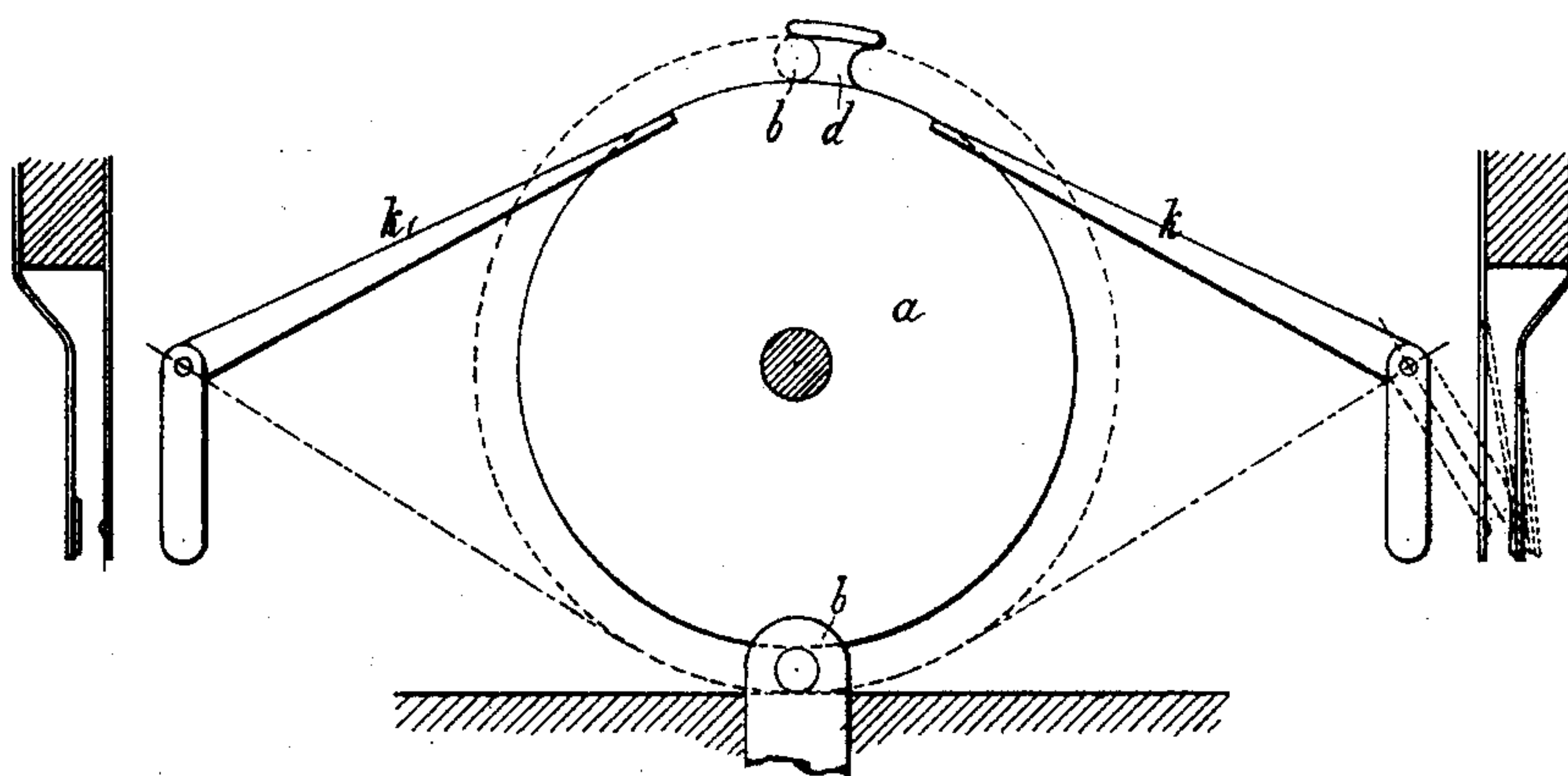


Fig. 9.



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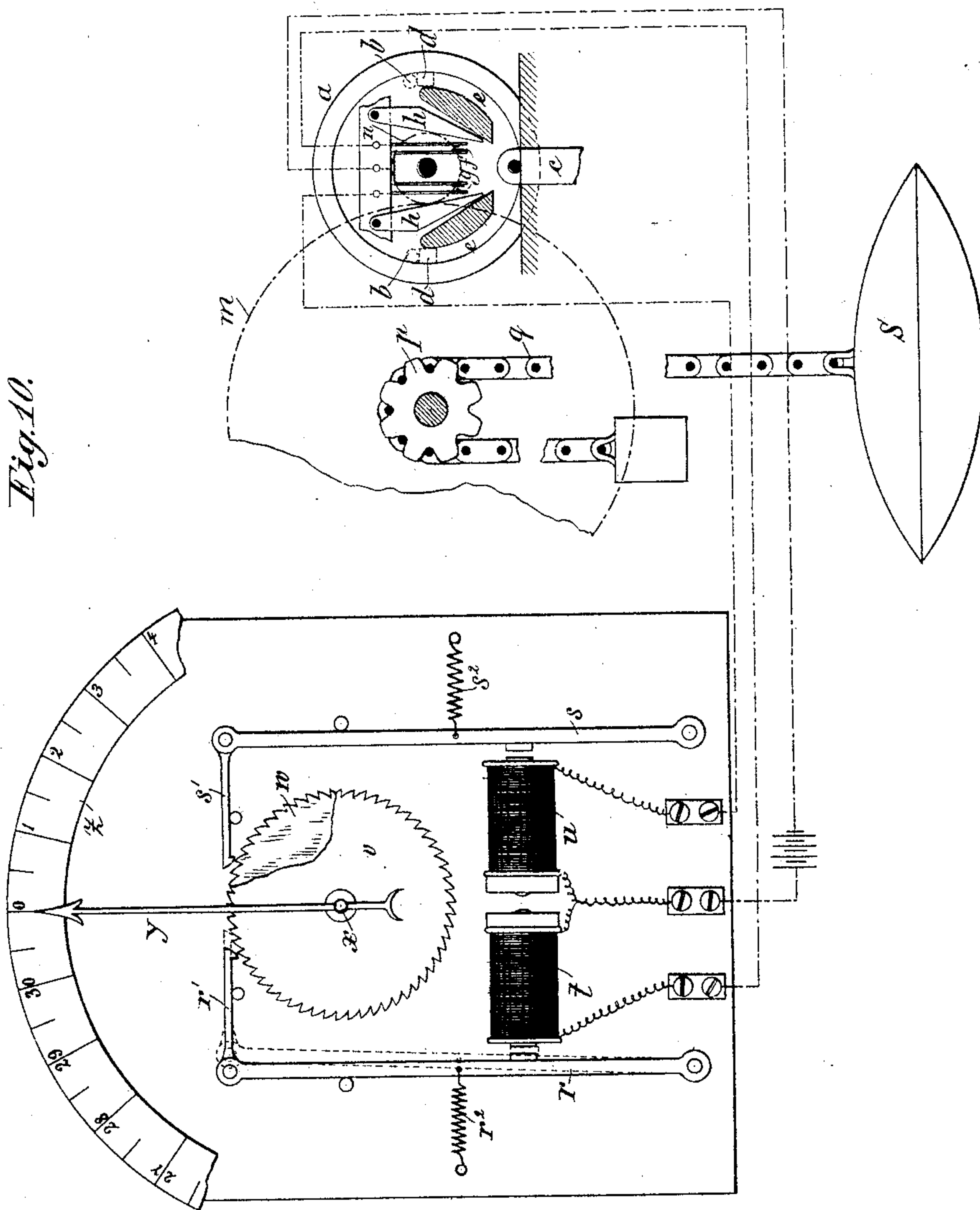
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Fig. 10.



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# UNITED STATES PATENT OFFICE.

CHRISTIAN WEUSTE, OF DUISBURG, GERMANY.

## ELECTRIC CONTACT APPARATUS.

SPECIFICATION forming part of Letters Patent No. 459,323, dated September 8, 1891.

Application filed June 12, 1890. Serial No. 355,202. (No model.) Patented in Germany May 13, 1889, No. 50,058; in France June 1, 1889, No. 198,667, and in Switzerland October 18, 1889, No. 1,511.

*To all whom it may concern:*

Be it known that I, CHRISTIAN WEUSTE, a subject of the Emperor of Germany, and a resident of Duisburg, Germany, have invented certain new and useful Improvements in Electric Contact Apparatus, (for which I have obtained patents in France, No. 198,667, dated June 1, 1889; in Germany, No. 50,058, dated May 13, 1889, and in Switzerland, No. 1,511, dated October 18, 1889,) of which the following is a specification.

This invention relates to electric contact apparatus, and has for its main object to enable the level of water in reservoirs, the movement of hauling drums, lifts, and other machines or devices to be indicated by a dial at a great distance through the medium of the electric current. The improved contact apparatus serving for this purpose is distinguished from the apparatus heretofore employed for similar purposes by its great simplicity and perfectly safe action. It comprises a disk having in or upon it one or more teeth, which disk is in the first place caused to turn by the float of a water-reservoir or by the machine or other device to be controlled. By this means a pin, acted upon by a weight or spring or a comparatively heavy ball, is carried away. As soon as the aforesaid tooth has been turned far enough it releases the ball or the pin, whereupon the latter, by reason of its weight or the action of the spring, will move upon a suitable guide back to its original position, making contact at the same time.

My electric contact apparatus can be carried out in various forms or modifications, some of which are illustrated, by way of example, in the accompanying drawings.

Figures 1 and 2, 3 and 4, 5 and 6, 7 and 8 are longitudinal and transverse sections, respectively, of four different forms. Fig. 9 is a longitudinal section of a contact apparatus, the construction of which differs somewhat from that of the apparatus shown in the aforesaid figures; and Fig. 10 is a detail elevation exhibiting one manner of utilizing my invention.

In the arrangement of the said contact apparatus represented in Figs. 1 and 2 a hollow disk *a* supports a pin *b*, that is continu-

ally pulled downward by a rod or lever *c*, to which a weight is attached. The lowest point of this lever may be adapted to move in a straight guide, (not indicated,) in order to prevent the weight giving rise to oscillatory movements of the same. The said pin *b* is prolonged beyond the rod or lever *c*, so that as the latter slides downward from one of the teeth *d d* arranged in the disk *a* it will be properly guided. This is obtained by providing a stationary frame with two cheeks *ee*, between which and the said hollow disk *a* a sufficient space is left for the upward and downward movement of the rod or lever.

Between the above-mentioned cheeks constituting a guide are arranged two springs or contact-pieces *f* and *g* on the same frame as the cheeks, and two arms or levers *h h* are pivoted to the said frame on either side of these contact-pieces. If the aforesaid disk *a* is turned through more than ninety degrees, either one or the other of its two teeth *d d*, according to the direction of the turning movement, will carry away the pin *b*, thereby raising the arm or lever *c*. When the disk is turned far enough, the pin *b* will drop from the said tooth *d* upon one of the cheeks *e* and move downward thereon. In the latter movement the pin presses the above-mentioned pivoted arm or lever, which is in its way, against the contact-pieces, thereby closing the circuit, which latter may serve for moving the hand upon a dial forward or backward. In order to render the contact more lasting, an air-buffer, a glycerine-pump, or other appropriate stop mechanism may be provided on the said arm or lever *c*.

In lieu of an arm or lever *c* acted upon by a weight and of the pin *b* arranged thereon, a sufficiently heavy ball *o*, Figs. 3 and 4, may be used, which performs the same part as the pin *b* in the example hereinbefore described with reference to Figs. 1 and 2.

A simplified arrangement of the electric contact mechanism can be obtained by substituting for the aforesaid two teeth *d d* (shown in Figs. 1 to 4) a single tooth, as illustrated in Figs. 5 and 6. This tooth has two concave surfaces, which serve for the reception of the said pin *b*. The latter is conducted by means of the tooth and one of the cheeks to the



corresponding contact-piece. As soon as it reaches this contact-piece it will move downward along the same, whereby contact is made. In this case the cheeks only serve as guides.

5 Another form of apparatus, which is represented in Figs. 7 and 8, differs from the last-described arrangement only in that the tooth is provided on a crank, instead of on a disk, the mode of action remaining the same.

10 In the arrangements above described the spring or contact pieces are within the disk. Without departing from the nature of my said invention the contact apparatus may be further modified by placing the springs or  
15 contact-pieces outside the disk *a*, as shown in Fig. 9. Upon the periphery of the latter, which may be made of any suitable shape, is provided a tooth *d*, which has the same shape as that used in the arrangements de-  
20 scribed with reference to Figs. 5 to 8, and which in the turning movement of the disk carries the pin with it. As soon as the tooth *d* has passed to its highest position the pin will slide from the disk and strike upon the  
25 arm of a bell-crank lever *k*, the other arm of which will then strike against the spring contact-piece and cause the same to make contact.

An example of the employment of the above-  
30 described electric contact apparatus is illustrated in Fig. 10. This arrangement serves for indicating the water-level. For this purpose the contact apparatus, arranged as shown in Figs. 1 and 2, is connected with the float *S*  
35 by the chain device *q* or other suitable means in such a manner that the disk *a* is turned by the wheel-work *p m n* in one or the other direction, according as the float *S* rises or  
40 sinks with the water-level. By this means the pin *b* as often as the rotating disk or body *a* completes half a revolution closes in each descending movement upon one of the guides  
45 *e* one or the other of the contacts *f* and *g*. From this results the excitement of one of two electro-magnets *t u*, so that it attracts the  
50 corresponding armature *r* or *s*. These armatures are provided with the hooks *r' s'* and connected with springs *r<sup>2</sup> s<sup>2</sup>*, by which, after the circuit has been closed only a short time,  
55 they are pulled from the electro-magnet. The springs *r<sup>2</sup> s<sup>2</sup>* act upon two toothed wheels *v w*, arranged above the shaft *x*, so that the latter, together with the hand *y* secured thereon,  
60 will turn in one or the other direction. The hand *y* is adapted to move above the scale *z* and indicates upon the same by jerks the rising or sinking of the water-level. With the  
65 lever *c* may be connected another hand, which, by indicating the intermediate positions of the disk *a*, renders a more accurate reading possible.

It must be specially observed that I do not limit myself by any means to the employment of the improved contact apparatus only  
65 for indicating water-levels, but give this application of the same merely by way of ex-

ample. Of course this contact apparatus can be used for numerous other purposes.

What I claim is—

1. In an electric contact apparatus, the  
70 combination of a rotating disk or body, contacts, stationary cheek-pieces relatively arranged to the contacts for providing a guide-channel or passage-way between the contacts  
75 and the cheek-pieces, and a movable device lifted by the disk or body as it turns axially and deposited at a point above the axis of the  
80 disk or body into the guide-channel or passage-way to act upon and press the contacts into electrical connection, substantially as de-

2. In an electric contact apparatus, the  
85 combination of a rotating disk or body, two pairs of contacts arranged, respectively, at opposite sides of a vertical plane through the axis of the disk or body, stationary cheek-  
90 pieces relatively arranged to the two pairs of contacts for providing guide-channels or passage-ways between the contacts and the cheek-pieces, and a movable device lifted in the arc  
95 of a circle by the disk or body as it turns axially and deposited at a point above the axis of the disk or body into one of the guide-channels or passage-ways to act upon and press a pair of the contacts into electrical  
100 connection, substantially as described.

3. In an electric contact apparatus, the  
105 combination of a rotating disk provided with an internal tooth, a pair of contacts located between the tooth and the axis of the disk, stationary cheek-pieces relatively arranged  
110 to the contacts for providing a guide-channel or passage-way between the contacts and the cheek-pieces, and a movable device lifted in the arc of a circle by the tooth of the disk or  
115 body as it turns axially and deposited at a point above the disk or body in the channel or guideway to act upon and press the contacts into electrical connection, substantially  
120 as described.

4. In an electric contact apparatus, the  
125 combination of a rotating disk having internal teeth, two pairs of contacts arranged, respectively, at opposite sides of a vertical plane through the axis of the disk or body, stationary  
130 cheek-pieces relatively arranged to the contacts for providing guide-channels or passage-ways between the contacts and the cheek-pieces, and a movable device lifted in the arc of a circle by the teeth of the disk as it turns  
135 axially and deposited at a point above the axis of the disk into one of the guide-channels or passage-ways to act upon and press a pair of the contacts into electrical connection, substantially as described.

5. In an electric contact apparatus, the  
140 combination of a rotating disk provided with an internal tooth, stationary cheek-pieces relatively arranged to the contacts for providing a guide-channel or passage-way be-  
145 tween the contacts and the cheek-pieces, and a rod or lever provided with an attached pin

engaging the disk and lifted in the arc of a  
circle by the tooth of the disk as it turns  
axially for depositing said pin into the guide-  
channel or passage-way to act upon and press  
5 the contacts into electrical connection, sub-  
stantially as described.

In testimony whereof I have hereunto signed

my name in the presence of two subscribing  
witnesses.

CHRISTIAN WEUSTE.

Witnesses:

FRITZ MAELLENHOFF,  
HERMANN KUHUS.