

No. 763,295.

PATENTED JUNE 21, 1904.

M. W. LONG.
SWITCH STAND.

APPLICATION FILED APR. 14, 1904.

NO MODEL.

Fig. 2.

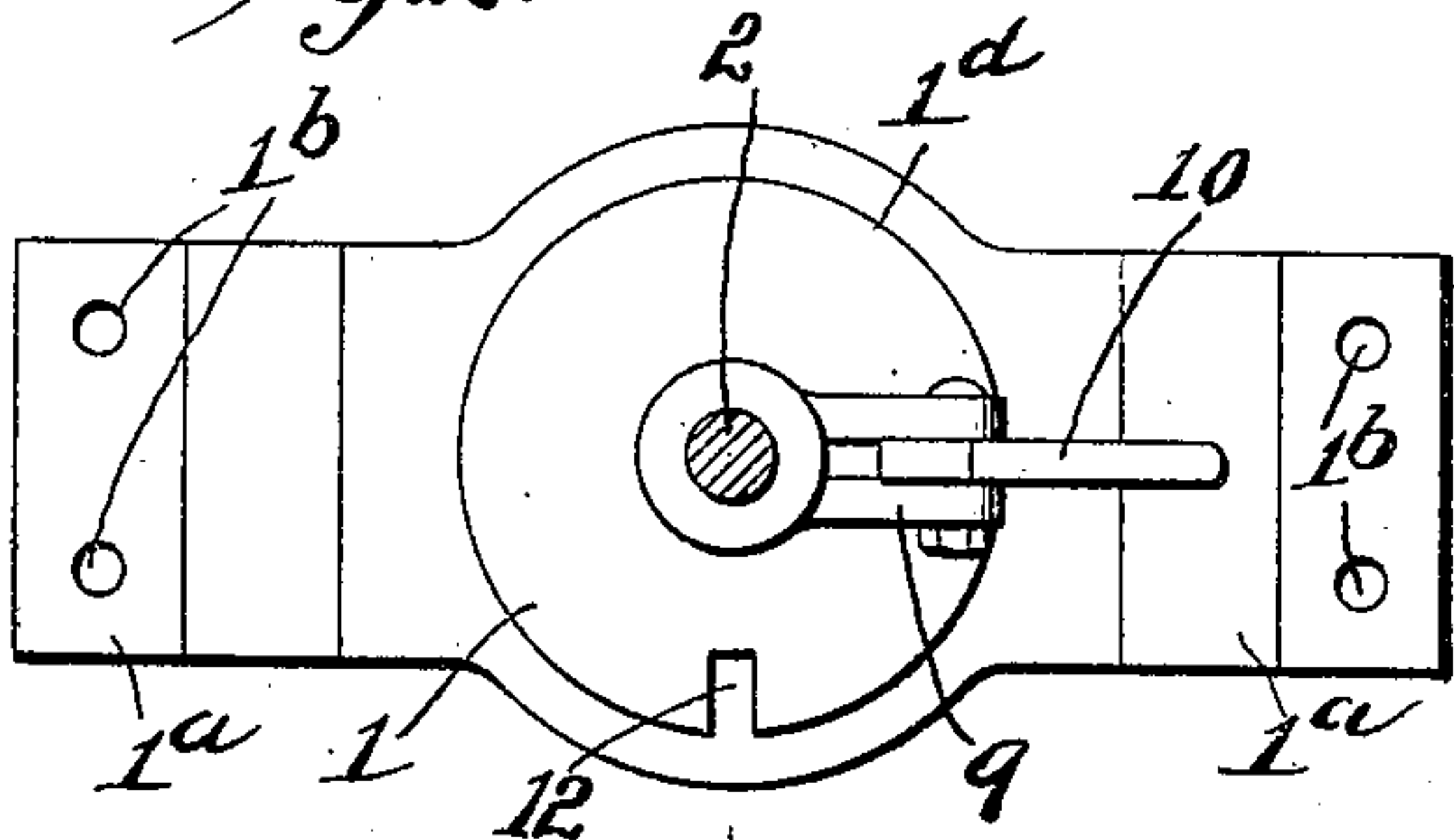


Fig. 3.

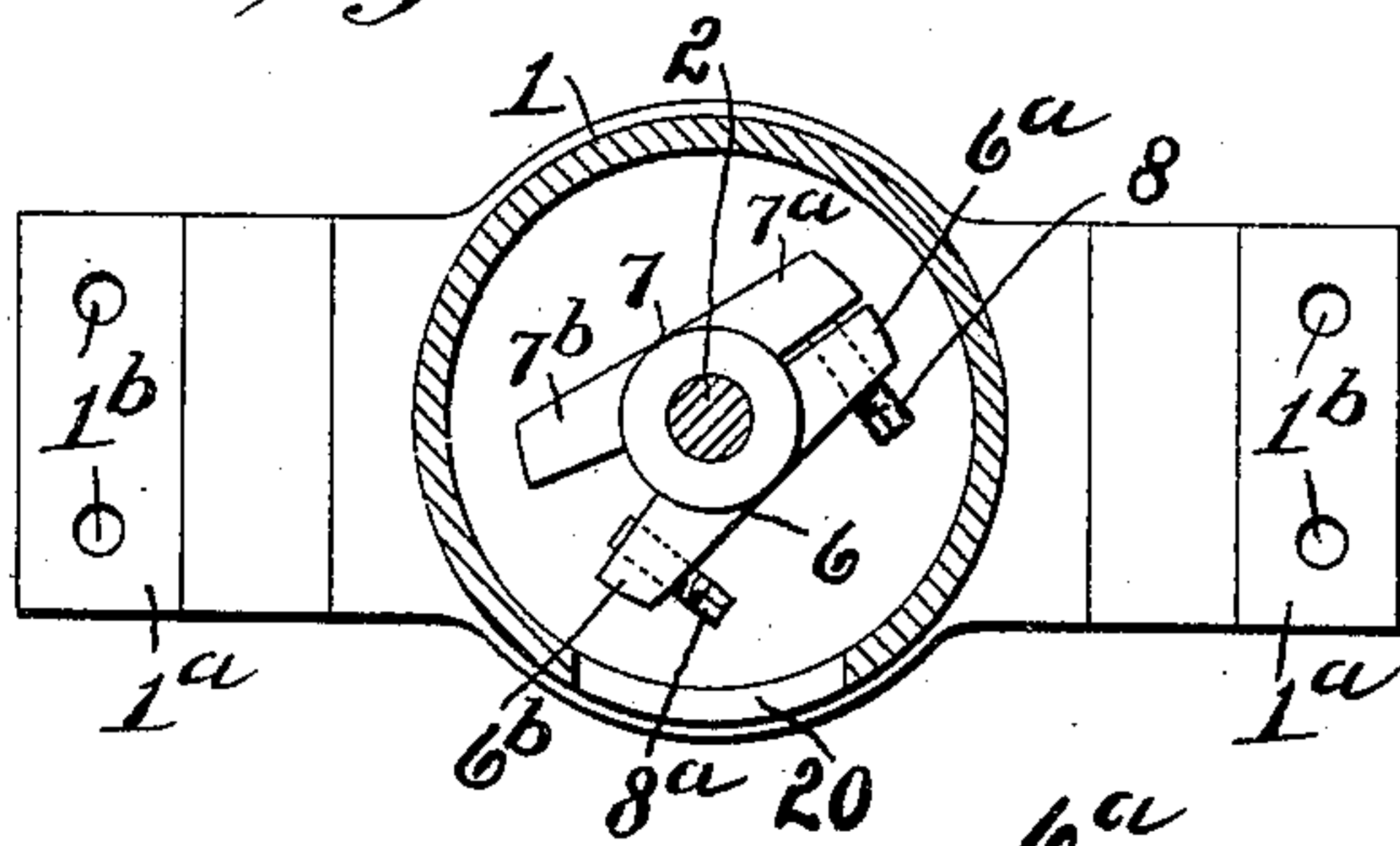


Fig. 1.

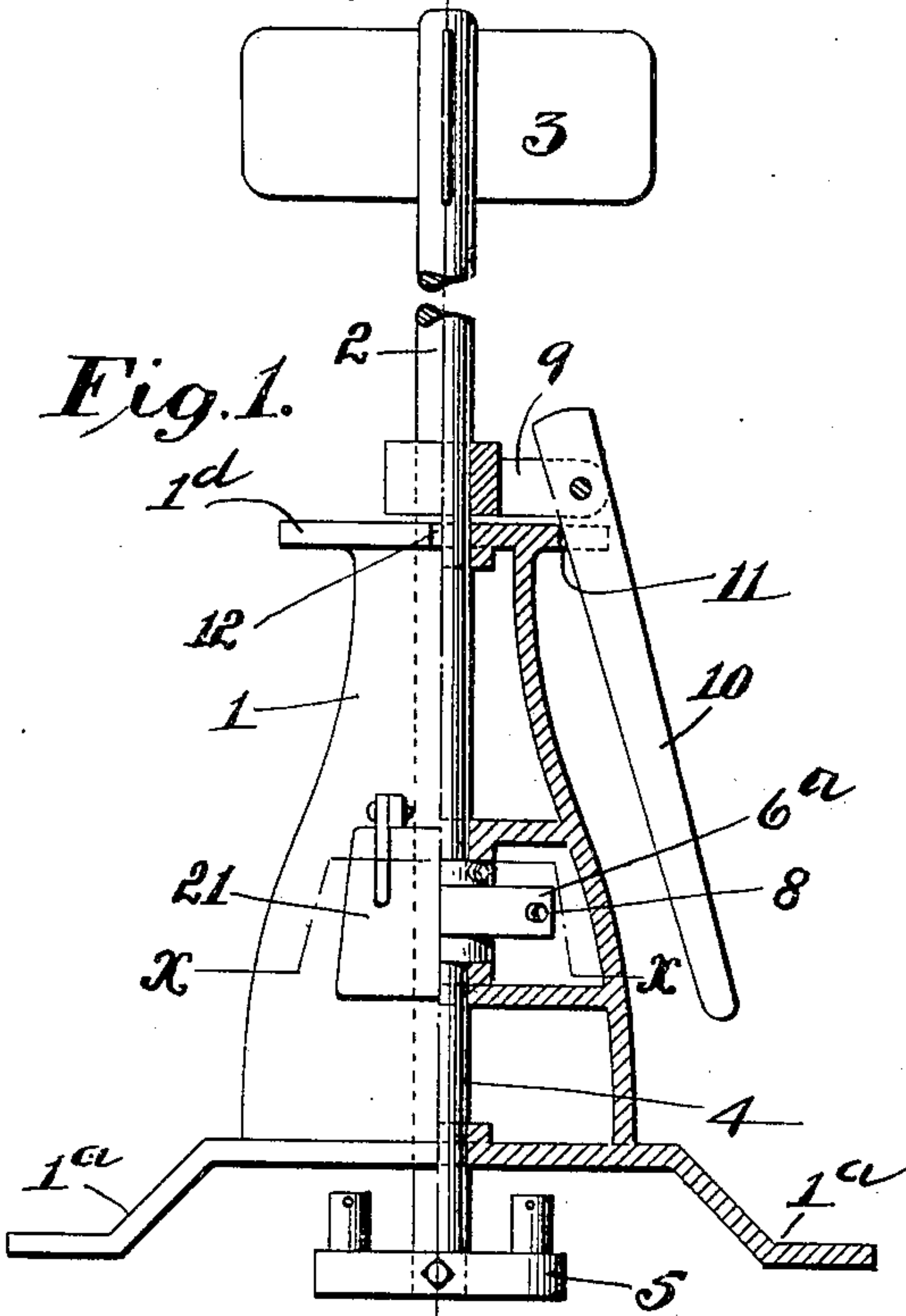


Fig. 4.

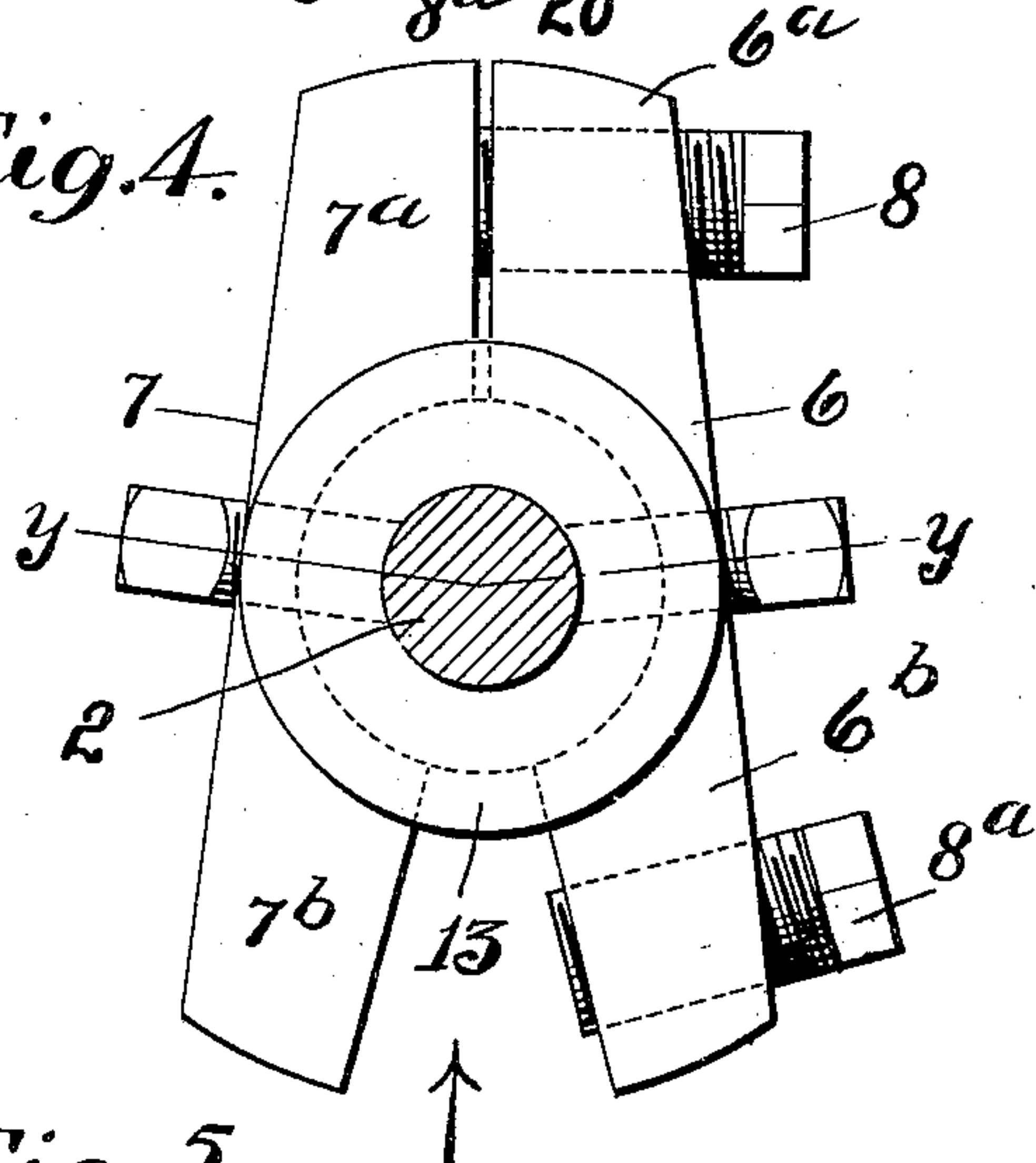


Fig. 5.

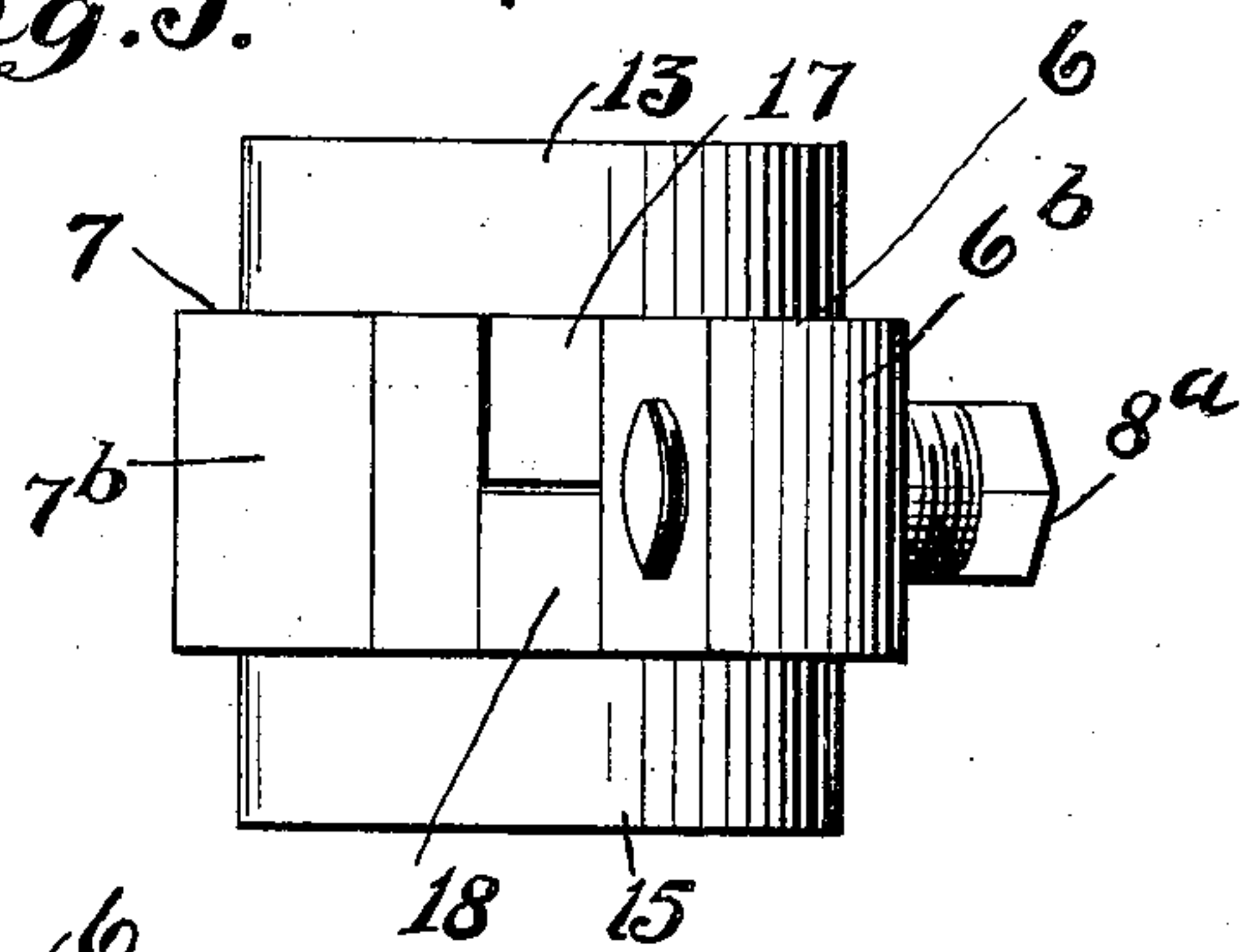
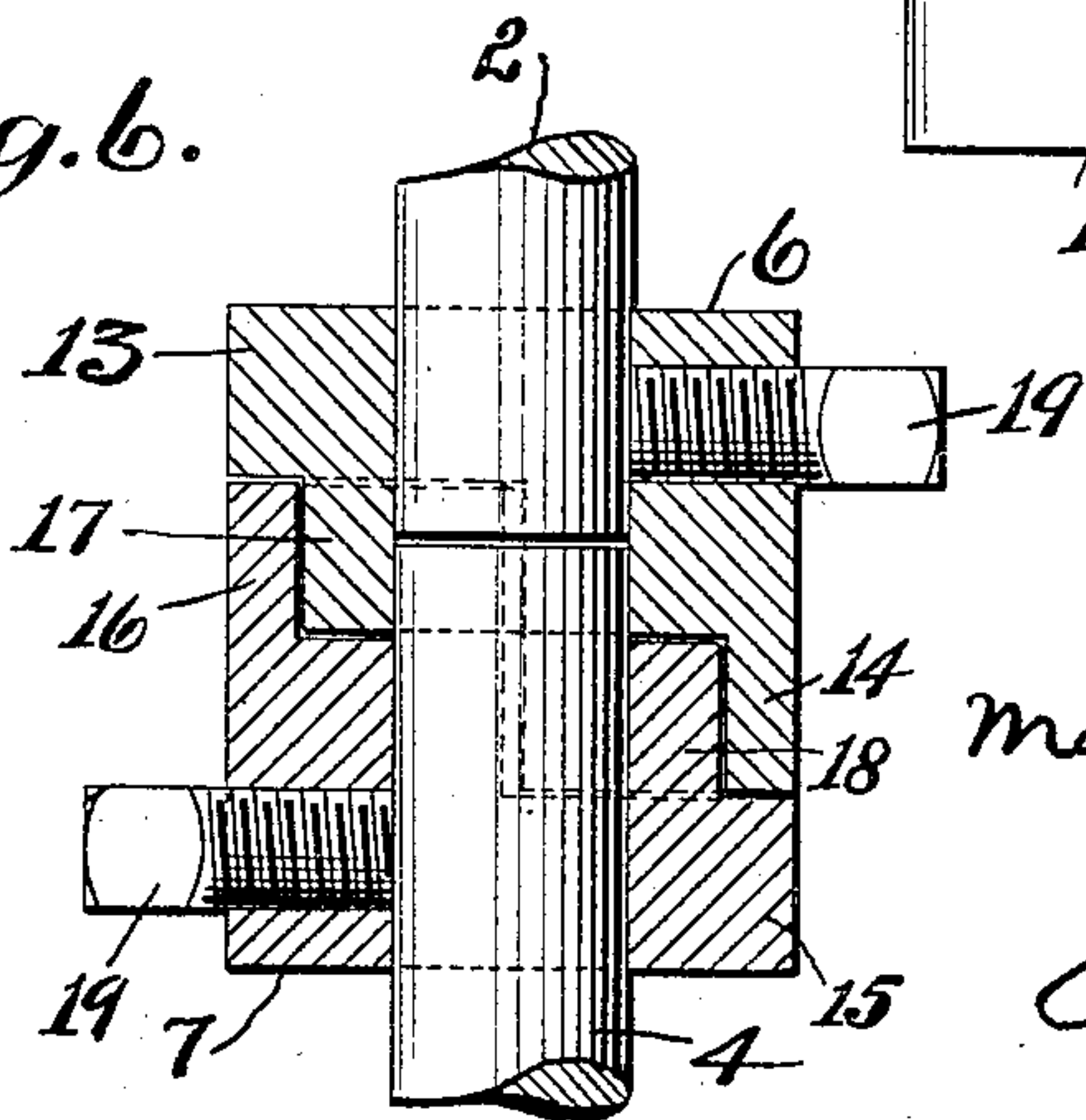


Fig. 6.



WITNESSES:

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SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 763,295, dated June 21, 1904.

Application filed April 14, 1904. Serial No. 203,110. (No model.)

To all whom it may concern:

Be it known that I, MALCOLM W. LONG, a citizen of the United States, residing at Harrisburg, Dauphin county, State of Pennsylvania, have invented certain new and useful Improvements in Switch-Stands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a side elevation half in vertical section. Fig. 2 is a plan view, the target-shaft being broken off. Fig. 3 is a section on line *x x*, Fig. 1. Fig. 4 is an enlarged plan view of the arms and correlated parts carried by the target and crank shafts, respectively. Fig. 5 is an elevation of Fig. 4 looking in the direction of the arrow in said figure. Fig. 6 is a section on line *y y*, Fig. 4.

The main object of this invention is to provide a railroad-switch stand of simple and convenient construction wherein the throw of the crank-shaft, and consequently of the switch connected therewith, may be readily varied without varying the throw of the target-shaft.

The leading feature of the invention consists in making the target-shaft and crank-shaft separate, but connected by a connection that insures a certain lost motion rotatably between said two shafts.

Another feature comprises, in combination with the foregoing, means for varying the extent of said lost motion so as to vary the movement or throw of the crank-shaft, and consequently of the switch connected thereto, all as hereinafter described.

Other features of the invention relate to certain details of construction hereinafter described and duly pointed out.

In the drawings, 1 is the frame of the stand, which supports the mechanism of the stand.

2 is the target-shaft, journaled in suitable bearings of the frame or casing 1, on the upper end of which shaft is mounted the usual target 3, Fig. 1.

4 is the crank-shaft, also journaled in said frame in vertical alinement with the target-shaft and having thereon a crank 5, in the present instance a double crank, to which the

switch connecting-rod is adapted to be pivotally attached.

I prefer to make the frame 1 in the form of a casing, as shown, closed against the ingress of dirt, snow, &c., with foot-flanges 1^a extending beyond and below the line of the bottom of the casing, which flanges have holes 1^b for the passage of the bolts for securing the stand to a railroad-tie, and the lower end of the crank-shaft projects through and below the casing, the crank being secured thereto outside the casing, as seen in Fig. 1.

To the lower end of the target-shaft is fixed an arm 6, one limb, 6^a, of which extends beyond one side of said shaft and the other limb, 6^b, beyond the opposite side of the latter, as more clearly seen in Figs. 3, 4, and 6. A similar arm 7, having limbs 7^a 7^b, is opposed to—that is, in line horizontally with—arm 6, said arm 7 being fixed to the upper end of the crank-shaft. The arrangement of these arms is such, as shown, (there being a space between the same,) as to permit a lost motion between the target-shaft and the crank-shaft when the former is rotated, the extent of which lost motion may be varied by means of adjusting-screws 8 8^a, secured to one of said arms, as hereinafter described.

Pivoted to and between the bifurcations of an arm 9, that is secured to the target-shaft above the top of the casing, is a hand-lever 10, and in the periphery of a flange 1^d of the top of said casing are two notches or slots 11 and 12 ninety degrees apart. When the target-shaft is in one position, the said lever is engaged with the slot 11, as seen in Figs. 1 and 2, thereby locking the shaft in that position, and when the said shaft has been rotated ninety degrees—that is, a quarter-revolution—it (the lever) is entered into the slot 12, thus locking the shaft in that position.

The arms 6 and 7 are preferably formed as shown—that is, the arm 6 with a hub 13, having a flange 14 on the lower side somewhat less than a semicircle, and the arm 7 with a similar hub 15, having a flange 16 on its upper end of the same form as the flange 14. The inner end of the hub 13 is reduced on one

side to form an offset 17 somewhat greater than a semicircle. The upper end of the hub 15 is likewise reduced on one side to form a like offset 18. When these hubs are respectively in place upon their shafts, as shown, the flange 14 of the hub 13 of the target-shaft arm lies in the offset 18 of the hub of the crank-shaft arm, and the flange 16 of the hub of the latter arm lies in the offset 17 of the hub 13, and the end of the crank-shaft extends into the hub 13 of the target-shaft arm. Thus the two hubs are, so to say, complementary to each other, and they, with their respective arms, may be interchangeable—that is, cast from the same pattern.

By the construction just described I obtain increased width and consequent strength of the arms 6 and 7 and also a bearing of the crank-shaft in the hub of the target-shaft arm, and the two hubs, and consequently the said shafts, are maintained in alinement, thus insuring lateral rigidity of the same. The hubs of said arms are secured to the shafts, respectively, by any suitable means—as, for example, by set-screws 19, extending through said hubs.

Having thus described the construction of the invention, I shall now explain the mode of operation thereof, as follows: Assuming that when the movable parts of the switch-stand are in the position shown in the drawings the switch is closed, at which time the limb 6^a of arm 6 of the target-shaft, or in this instance the inner end of the screw 8, is in contact with limb 7^a of the crank-shaft arm, and the operating-lever 10 is locked in the slot 11 of the casing-flange 1^d and it becomes necessary to open the switch, the switchman first brings the lever 10 to horizontal position and then proceeds to rotate the target-shaft. There will obviously be an interval before the rotation of the latter will be imparted to the crank-shaft, this interval being determined by the space or gap between the limb 6^b of the target-shaft arm (or rather in this instance the inner end of the adjusting-screw 8^a) and the inner side of the limb 7^b of the crank-shaft arm 7. As the rotation of the lever 10 is continued to the extent of ninety degrees from the starting-point, the target-shaft being always moved ninety degrees, the switch will have been fully opened, whereupon the lever is depressed into the notch 12, thereby locking the movable parts, and consequently the switch, against accidental displacement. By reversing the movement of the target-shaft the limb 6^a (or screw 8) of arm 6 will, when the lost motion has been taken up, contact with the limb 7^a of arm 7 and the switch returned to the closed position and there locked by engaging the lever 10 in the notch 11.

It will be obvious that the extent of the throw of the switch in either direction may be varied as may be desired by varying the

extent of protrusion of the ends of the screws 8 or 8^a beyond the inner faces of their respective limbs of the arms 6 and 7. These adjusting-screws may, however, sometimes be dispensed with, in which case the only advantage (which advantage, however, also obtains when said screws are used) of having the lost motion between the target-shaft and the crank-shaft would be that the switchman would have the benefit of a certain momentum of the target-shaft and adjuncts during the interval before the arms 6 and 7 would come into contact.

The object of using a screw with each of the limbs of arm 6 is to enable any desired adjustments or throw of the movement of the switch in either or both directions. For example, suppose that the projection of said screws is substantially to the same extent as in the drawings, (the screws being equidistant from the center of the target-shaft.) The switch will, when the target-shaft is rotated ninety degrees in either direction, be moved from one point to another a certain distance. If now the screw 8^a of limb 6^b be projected farther inwardly a certain distance and the screw 8 of limb 6^b be undisturbed, the throw of the switch will be correspondingly increased in the opening direction. If, on the other hand, it be desired to increase the throw of the switch in the closing direction without affecting its open position, the switch is first opened by suitably rotating the target-shaft, and the screw 8 is then projected inwardly the desired distance. In this way the position of the switch with relation to the main track may be varied as circumstances may require.

I usually make in the side of the casing an opening 20 in such position, as shown in Figs. 1 and 3, that the screws 8 8^a may be conveniently reached when it is desired to adjust the same. This opening is normally kept closed by a suitable door 21, Fig. 1.

Having described the construction and mode of operation of my invention, I claim as new and desire to secure by Letters Patent—

1. In a switch-stand, the combination of the frame or casing, the rotatable target-shaft journaled therein, the rotatable crank-shaft journaled in said frame or casing, a part on said target-shaft adapted to engage a part on said crank-shaft, there being a predetermined extent of lost motion between said two parts, substantially as and for the purpose set forth.

2. In a switch-stand, the combination of the frame or casing, the rotatable target-shaft journaled therein, the rotatable crank-shaft journaled in said frame or casing, a part of said target-shaft adapted to engage a part on said crank-shaft, there being a predetermined extent of lost motion between said two parts, together with means for varying the extent of said lost motion, substantially as and for the purpose set forth.

3. In a switch-stand, the combination of the

frame or casing, the target-shaft journaled therein, the arm secured to said shaft, the rotatable shaft journaled in said frame or casing, the crank on said last-mentioned shaft, the arm carried by said crank-shaft in opposition to said arm on the target-shaft, there being a space between said arms whereby lost motion results between said shafts, substantially as and for the purpose set forth.

10 4. In a switch-stand, the combination of the frame or casing, the rotatable target-shaft journaled therein, the lever-arm secured to said shaft, the rotatable crank-shaft journaled in said frame or casing, the crank on said last-mentioned shaft, the arms on said shafts respectively in opposition to each other, there being a space between said arms whereby lost motion results between said shafts, and means for varying the extent of such lost motion, substantially as and for the purpose set forth.

15 5. In a switch-stand, the combination of the frame or casing, the vertical rotatable target-shaft journaled therein, the vertical rotatable crank-shaft journaled in said frame or casing, and in line with said target-shaft, the opposed arms on said shafts respectively, having the similar complementary hubs, the hub of the target-shaft arm having a flange in the arc of a circle extending adjacent to and opposite to a reduced circular portion of the

hub of the crank-shaft arm, and the latter hub having an annular flange extending adjacent to a reduced circular portion of the hub of said target-shaft arm, there being a space between said arms, whereby lost motion results between said shafts, substantially as and for the purpose set forth.

6. In a switch-stand, the combination of the frame or casing, the rotatable target-shaft journaled therein, the arm secured to said shaft, the rotatable crank-shaft journaled in said frame or casing, and projecting through the lower end of the latter, the arm on said crank-shaft in opposition to said target-shaft arm, there being a space between said arms, whereby lost motion results between said shafts, the crank on said projecting end of said crank-shaft, the lever pivotally connected to said target-shaft and adapted to swing in a vertical plane, the flange on the upper end of the frame or casing having the notches for locking said lever in place, substantially as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature this 6th day of April, A. D. 1904.

MALCOLM W. LONG.

Witnesses:

C. W. REINOEHL,
B. L. WEAVER.