

No. 775,933.

PATENTED NOV. 29, 1904.

I. H. PARSONS.  
ELECTRIC SWITCH.

APPLICATION FILED FEB. 23, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

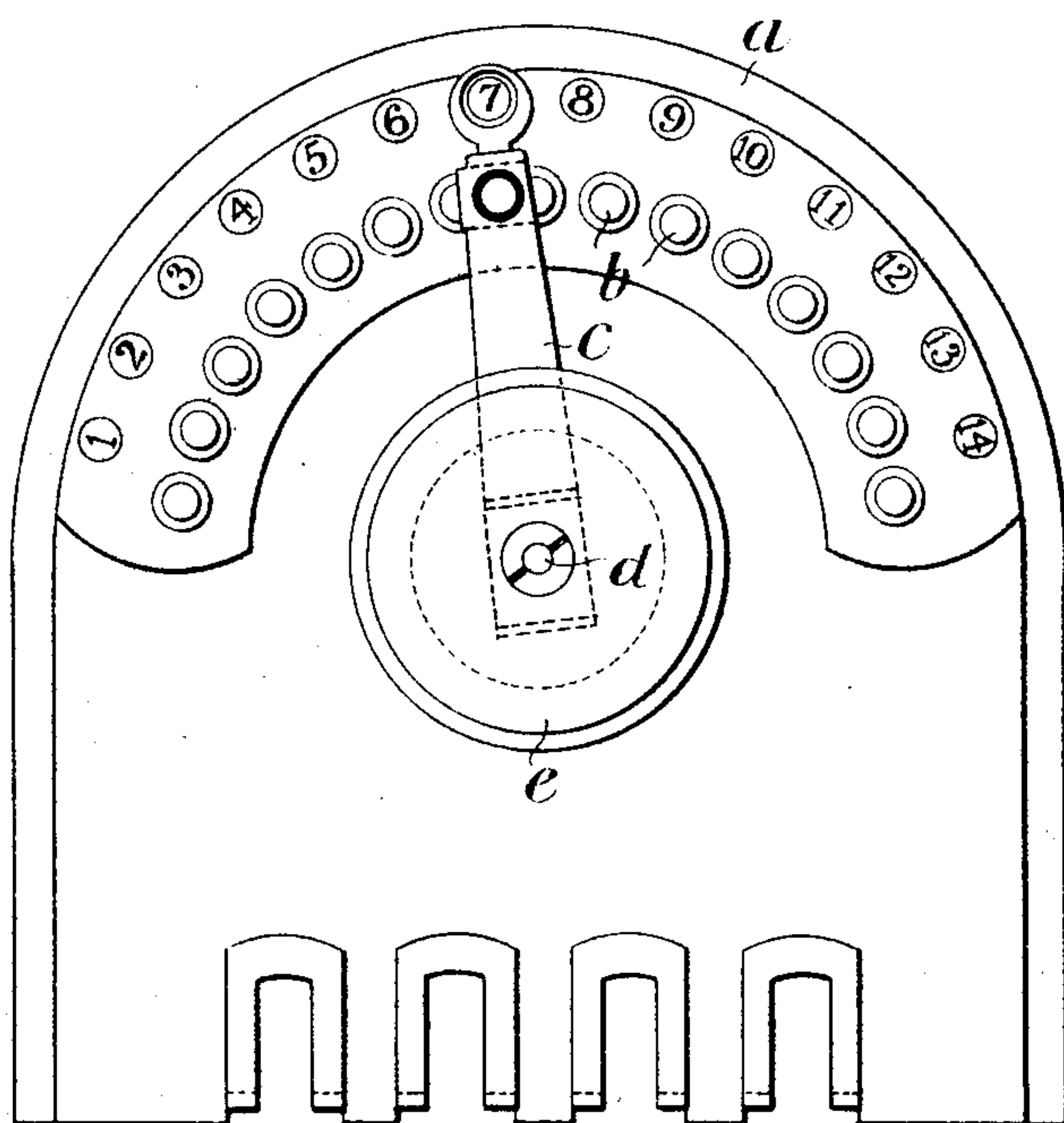


Fig. 2.

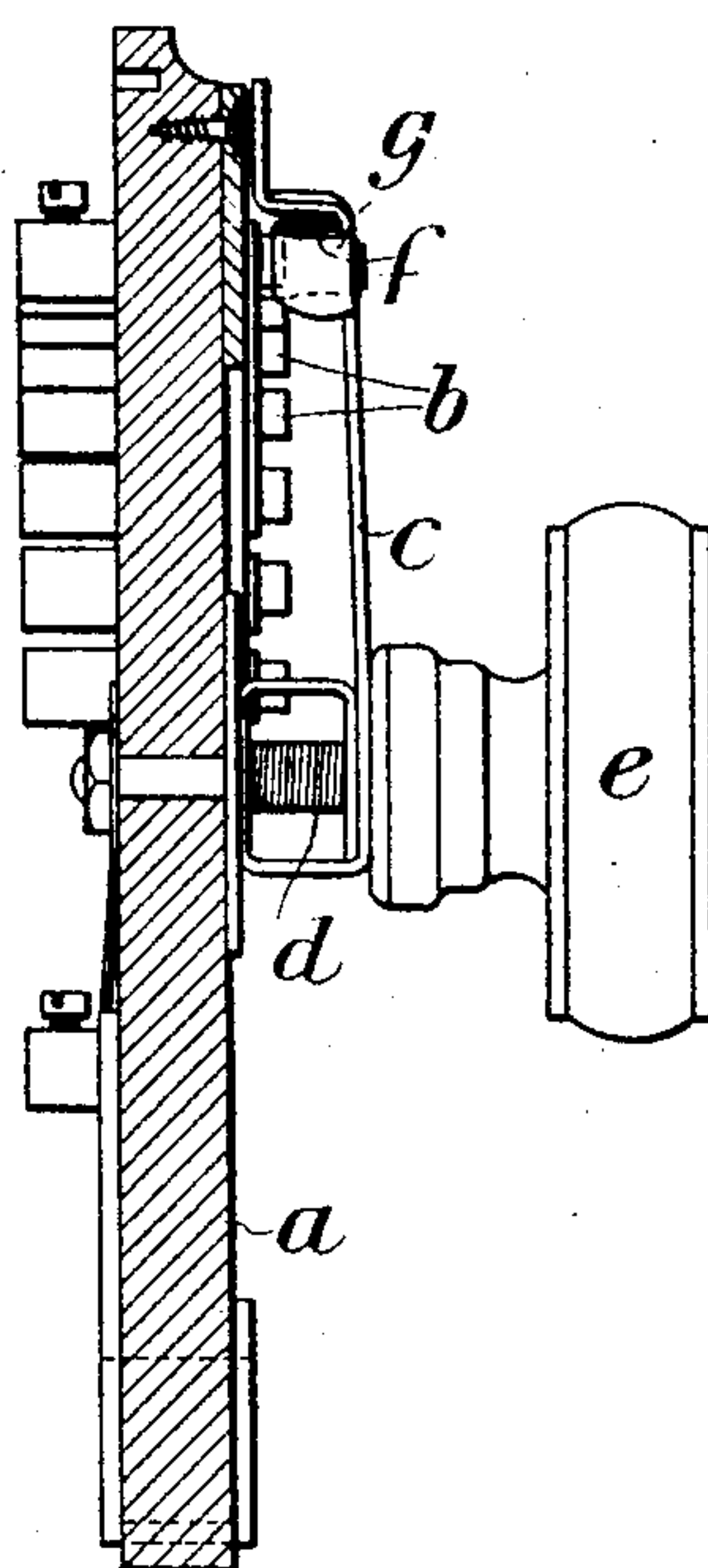
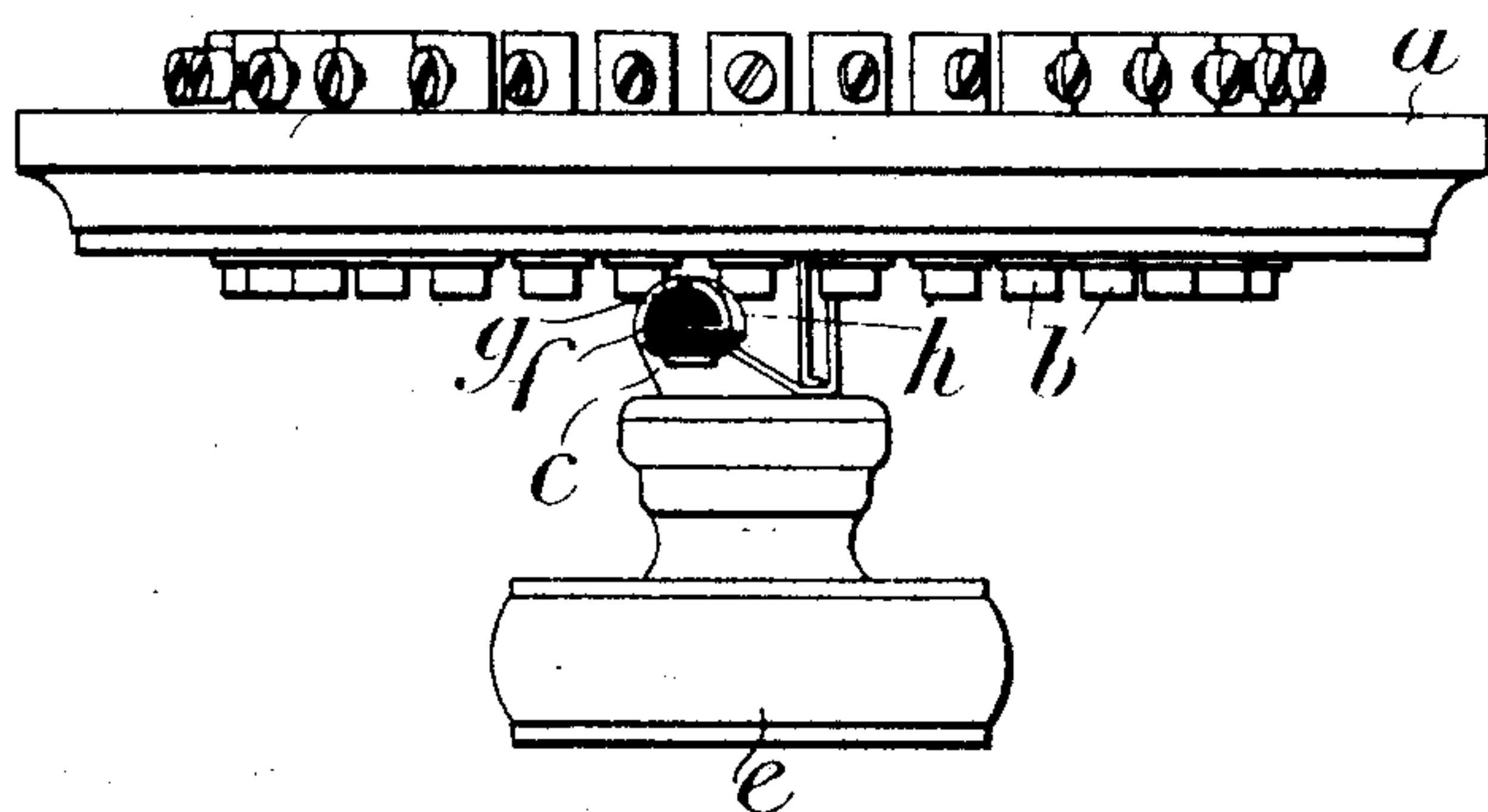


Fig. 3.



Witnesses.

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3 SHEETS—SHEET 2.

Fig. 4.

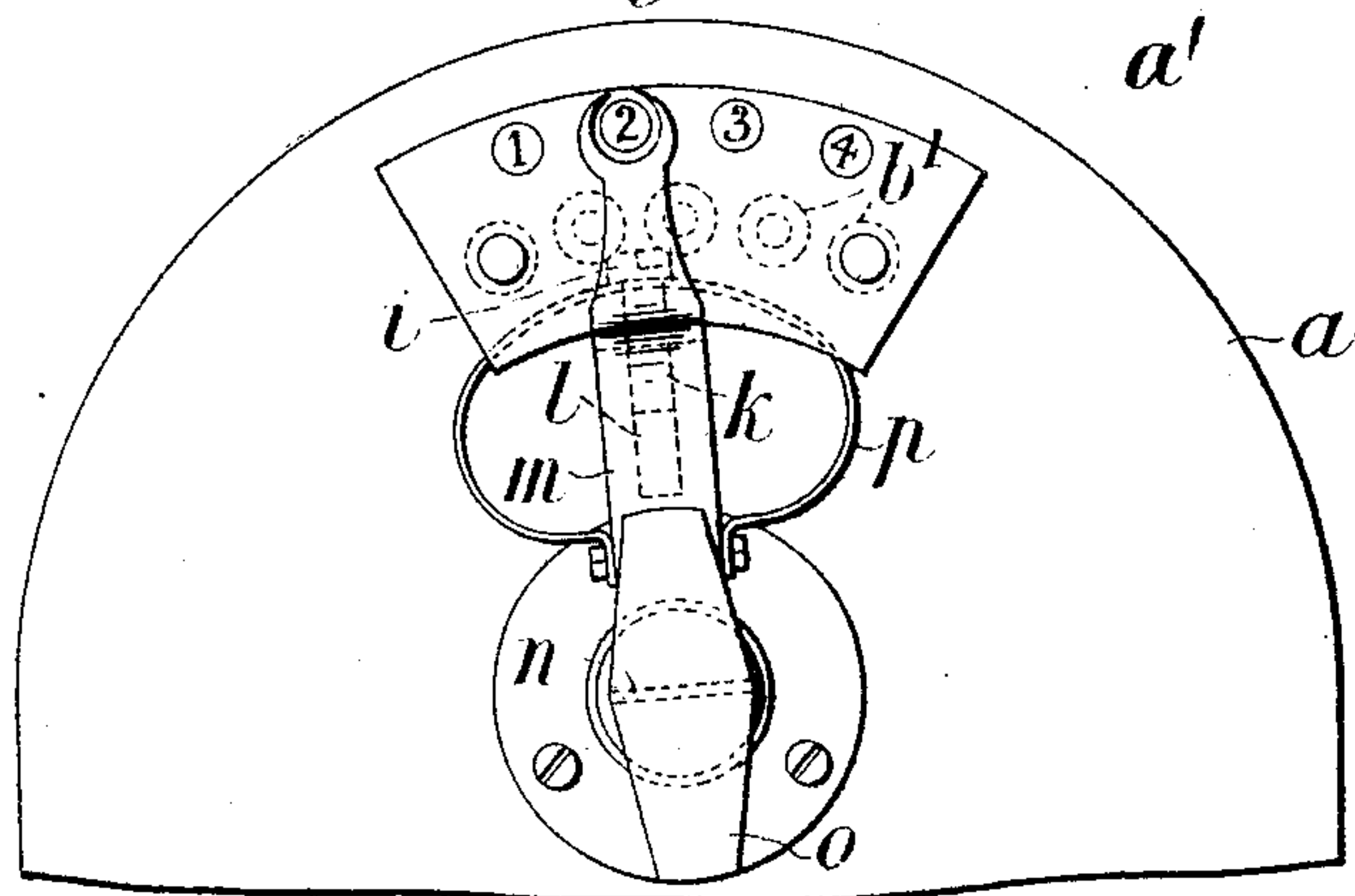


Fig. 5.

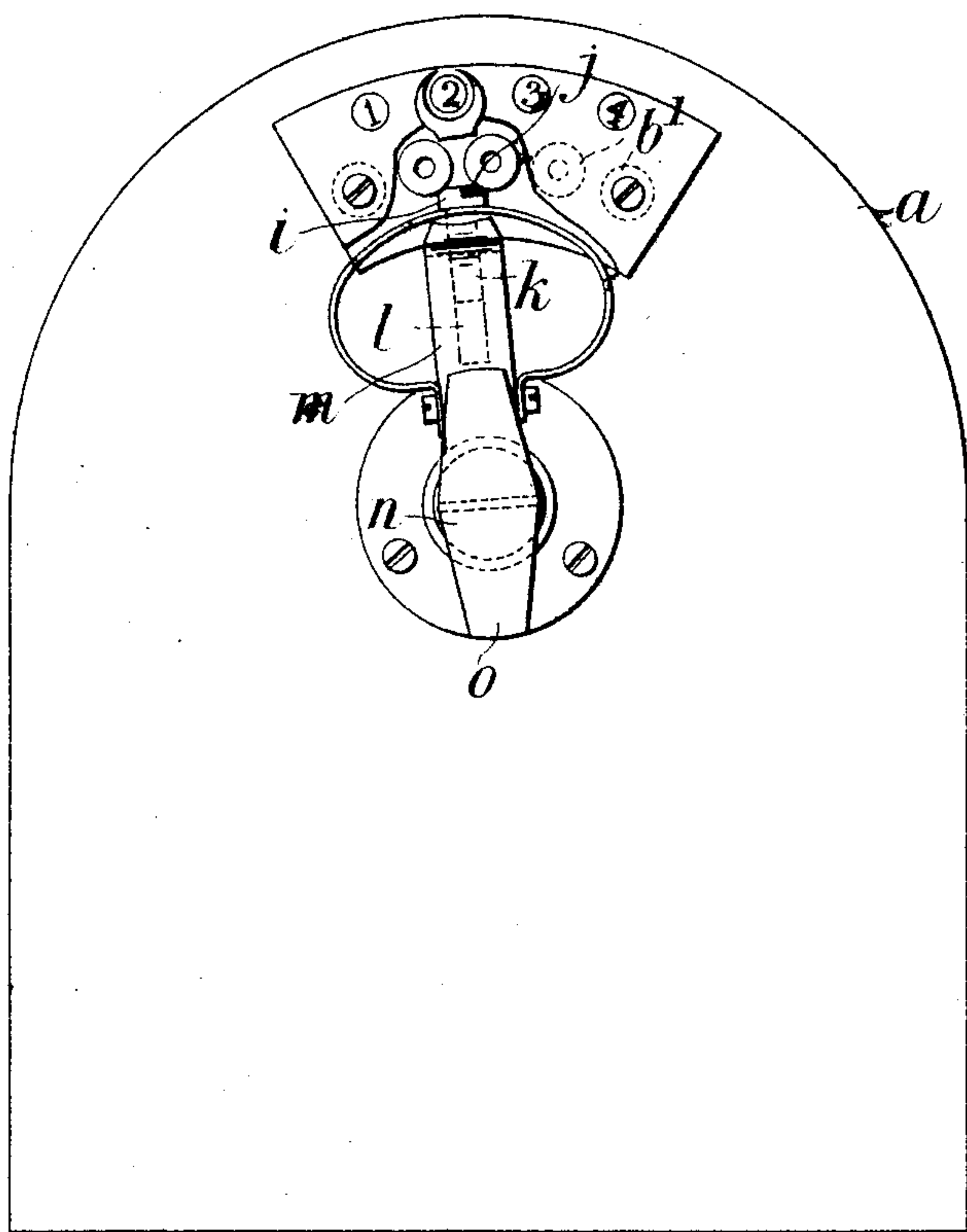
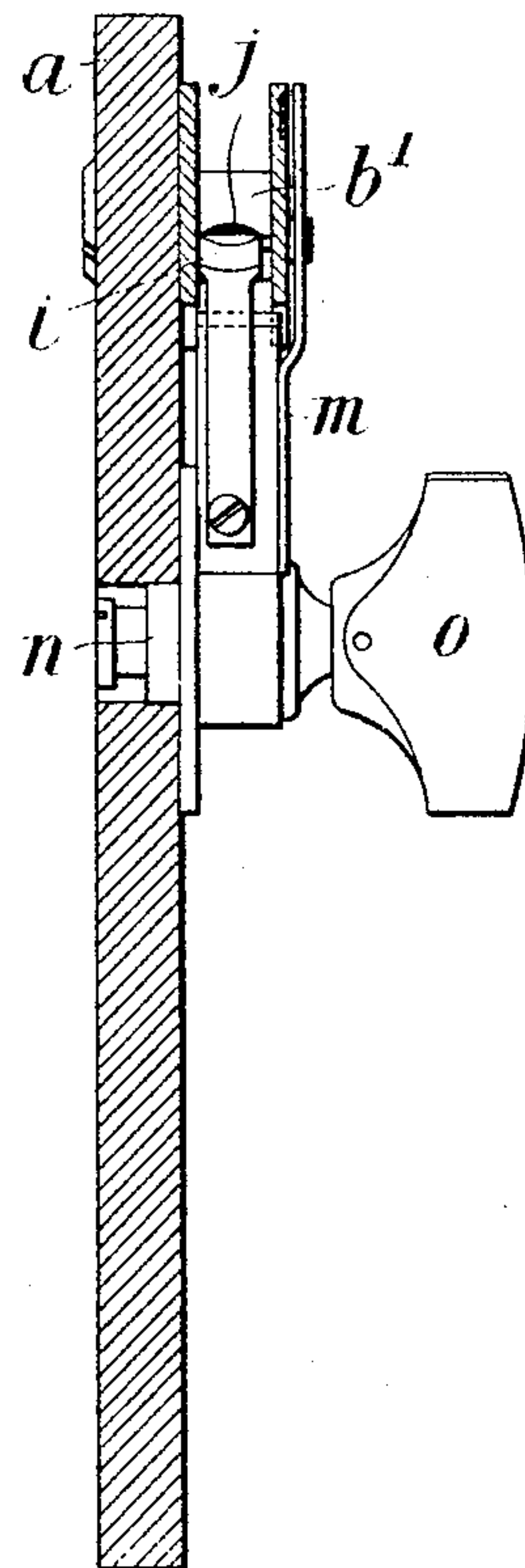


Fig. 6.



Witnesses

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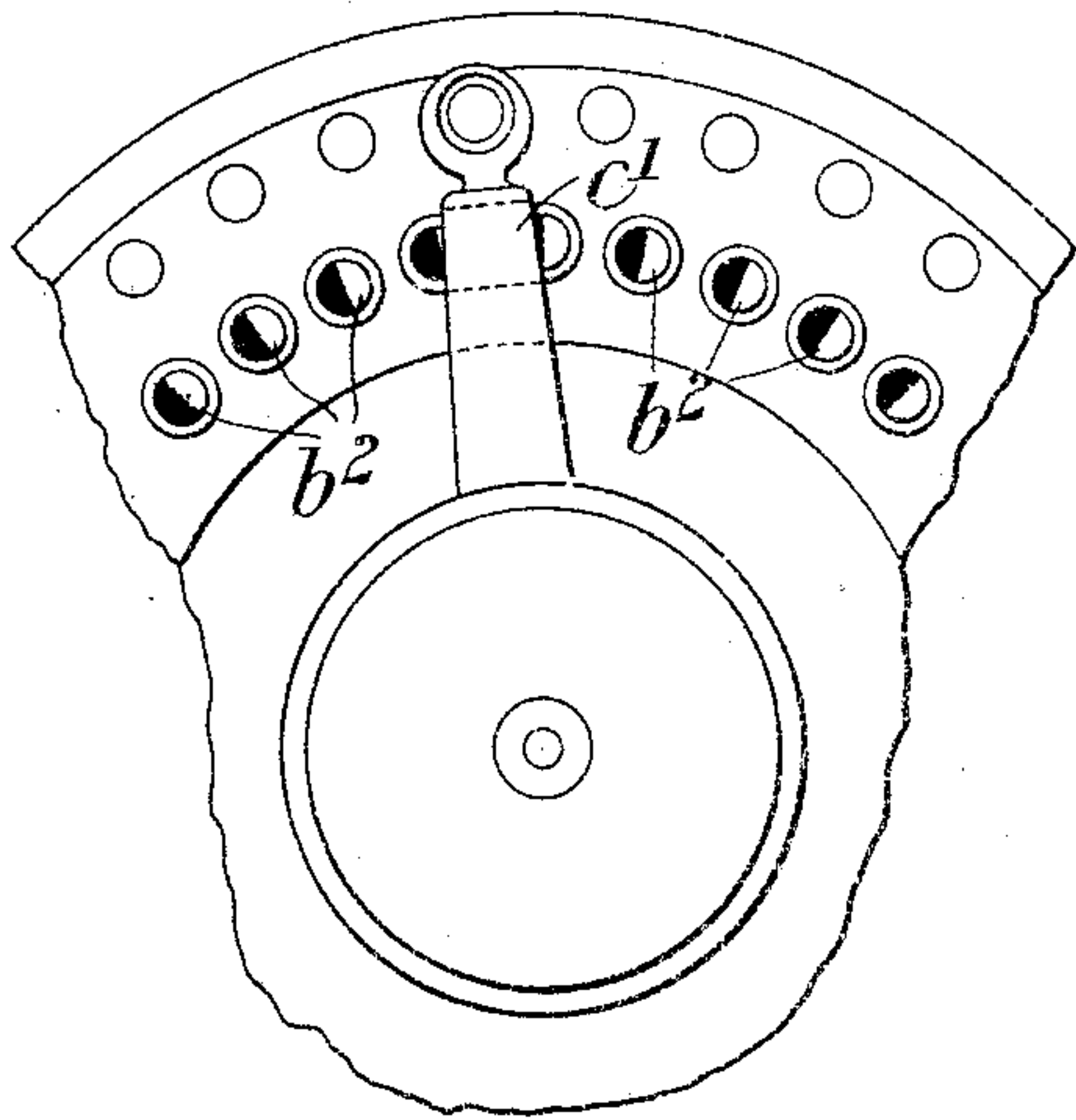
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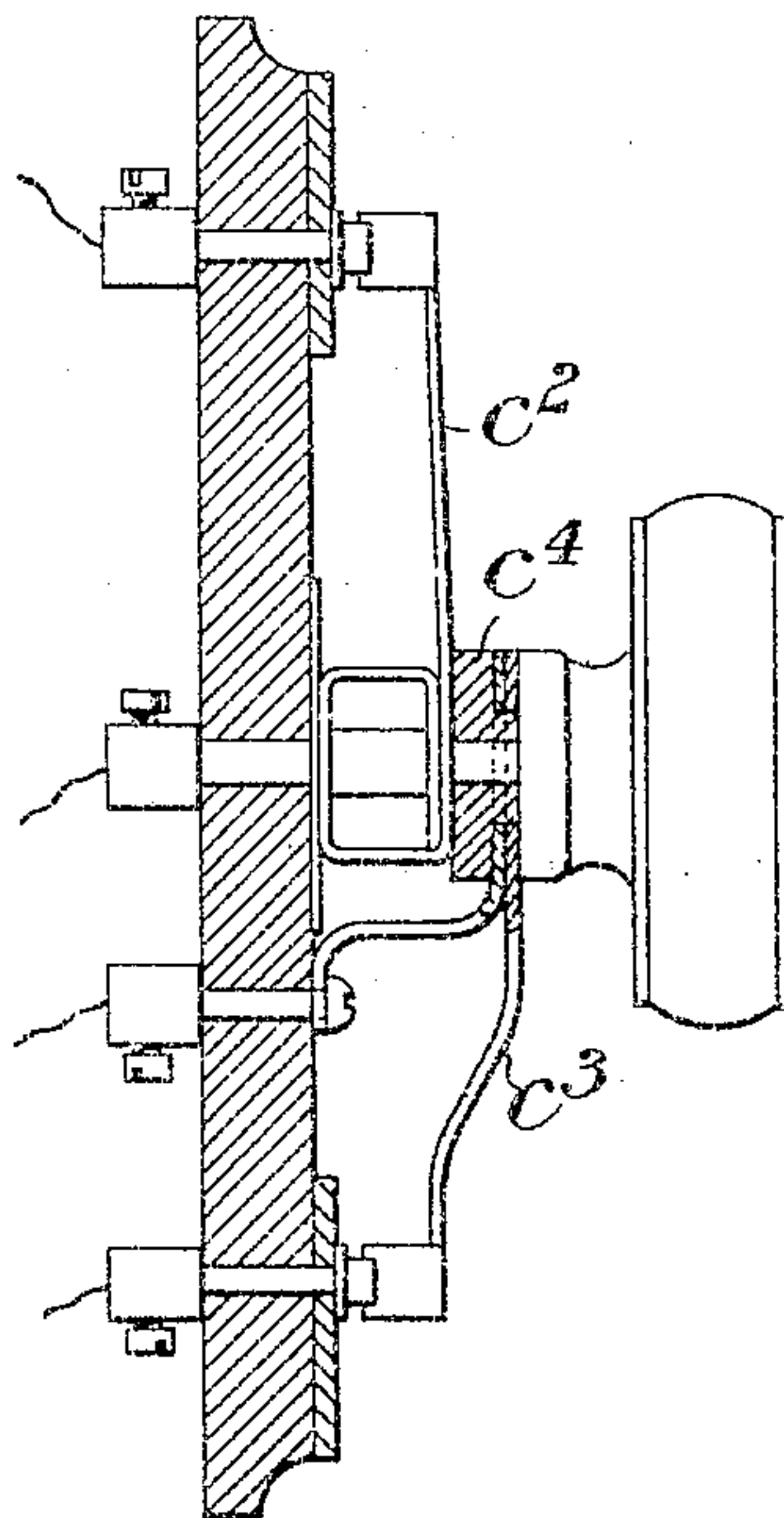
NO MODEL.

3 SHEETS—SHEET 3.

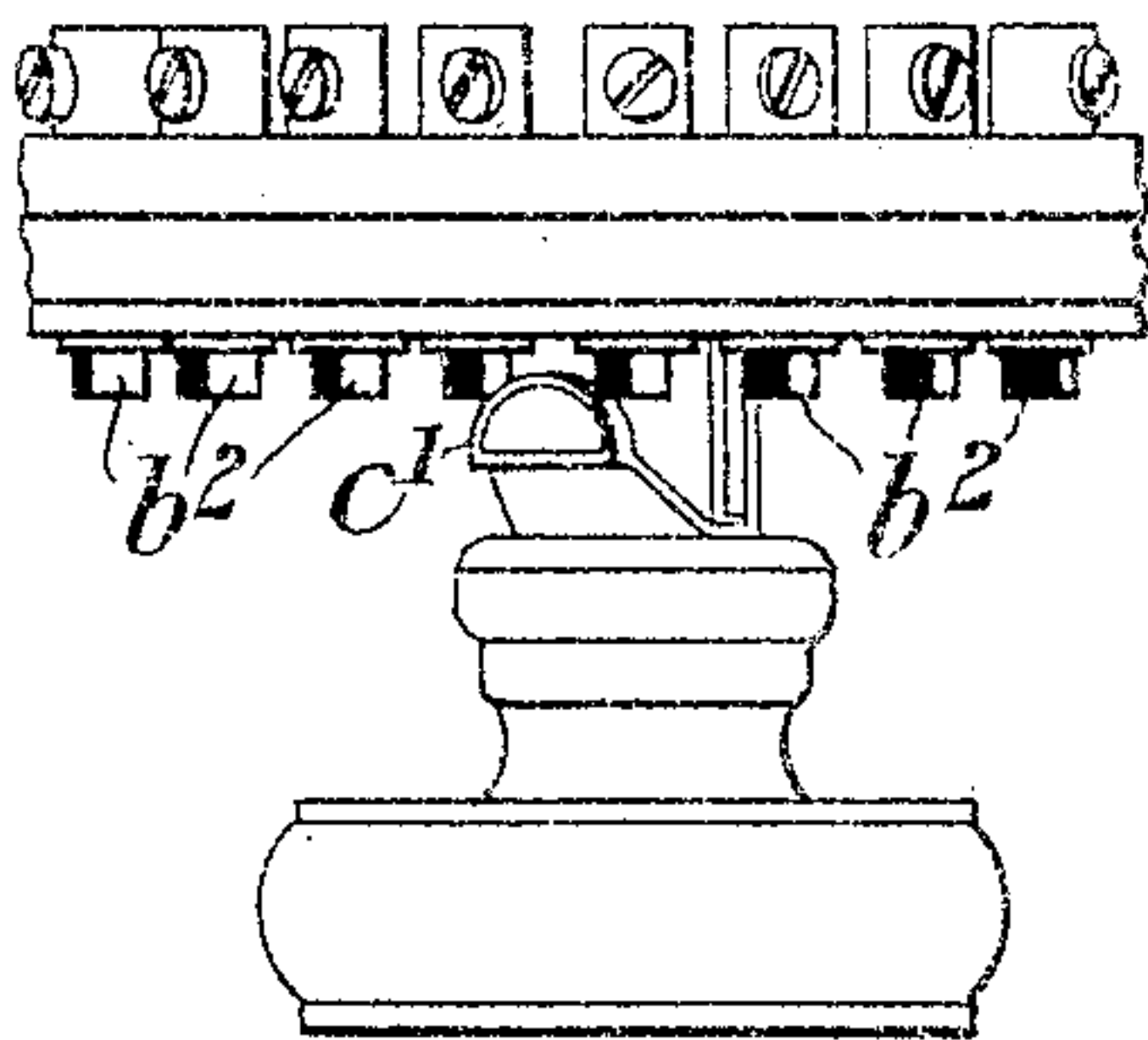
*Fig 7*



*Fig 9*



*Fig 8*



Witnesses

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*D. W. Edlin.*

*Isaac Hardy Parsons* Inventor.  
*By Whitaker Frost* Atty.



## UNITED STATES PATENT OFFICE.

ISAAC HARDY PARSONS, OF LEICESTER, ENGLAND.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 775,933, dated November 29, 1904.

Application filed February 23, 1904. Serial No. 194,887. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC HARDY PARSONS, of the firm of Gent & Co., Ltd., residing at Faraday Works, Leicester, in the county of Leicester, England, a subject of the King of Great Britain, have invented new and useful Improvements in Electric Switches, of which the following is a specification.

This invention relates to improvements in electric switches of the kind wherein a pivoted contact-arm moves over a series of fixed contacts, the object being to provide a switch in which the movable arm cannot effect a short circuit between two adjacent fixed contacts and in which the movable contact shall snap into its proper position.

According to the invention the fixed contacts are in the form of projecting studs and the movable contact is mounted upon an elastic or spring arm. The said movable contact is so arranged that when the arm is turned upon its pivot it snaps into a space between two adjacent studs. In order that the movable contact when snapped into position shall not electrically connect the said two contact-studs, I make a portion of the movable contact or of each of the fixed contact-studs of insulating material. The movable contact can work over the tops of the fixed contact-studs or against the sides thereof, and in this latter case the studs can form terminals and all the working parts of the switch can be concealed.

To enable the invention to be fully understood, I will describe it by reference to the accompanying drawings, in which—

Figure 1 is a front view of a switch made according to the invention. Fig. 2 is a vertical section thereof, and Fig. 3 is a plan view. Fig. 4 is a front view of a modified form of the switch. Fig. 5 is a similar view, but with part removed, and Fig. 6 is a vertical section thereof. Fig. 7 is a front view of a switch, illustrating a modification of the invention. Fig. 8 is a plan thereof. Fig. 9 is a section showing a double-pole switch constructed according to the invention.

Referring first to the arrangement illustrated in Figs. 1, 2, and 3, *a* is the switch-board, and *b b* the fixed contacts, which are, as shown, in the form of projecting studs. *c*

is the spring or elastic movable contact-arm, which is pivoted at *d*, so that it can be moved over the series of fixed contacts *b* through the medium of the handle *e* in the usual way. The free end of the spring contact-arm *c* is provided with the curved projection *f*, of insulating material, upon its under side, this forming the piece which snaps into the spaces between the consecutive studs *b b* when the knob *e* is turned. One half of this projection *f* is covered by the metal strip *g*, which is in electrical connection with the spring-arm *c*. The other half of the projection *f* is left insulated, so that when the said projection has sprung into the space between any two consecutive studs *b* the arm *c* is in electrical contact with one of such studs only. In the drawings I have shown the insulated half of the projection *f* protected by a metal strip *h*, this having for its object to prevent the said projection from unduly wearing in use.

In the form of switch illustrated in Figs. 4, 5, and 6 the movable contact is designed to move against the sides of the fixed pins or studs *b' b'* instead of on top, as in the construction above described. To this end the movable contact-piece is in the form of a button, one half of which is of conducting material *i* and the other half of insulating material *j*, the said button being formed upon the end of a pin *k*, fitting within the socket *l* upon the outer end of the arm *m*, which is pivoted at *n* and is adapted to be turned by the knob *o*. The button *i* is held against the fixed pins *b' b'* by the spring *p*, which is connected to the said button and to the arm *m*. With this arrangement the fixed studs *b' b'* can form the terminals for the conducting-wires, and a board *a* (see Fig. 4) can be employed to conceal the working parts of the switch.

It will be obvious that instead of making the movable contact-piece partially conducting and partially insulating I can effect the same result, as illustrated in Figs. 7 and 8, by employing a conducting movable contact-piece *c'* and making the fixed contacts *b<sup>2</sup>* partially conducting and partially insulated. It will also be clear that my invention is applicable to double-pole switches, as shown in Fig. 9, the movable contact-arm being in two parts



$c^2$   $c^3$ , connected together, but insulated from one another.  $c^4$  represents such insulation.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an electric switch, the combination with a stationary member provided with a plurality of fixed contacts, of a movable member  
10 provided with a contact arranged to enter the spaces between adjacent fixed contacts, and insulating material applied to the contact portions of one of said members, so that said movable contact is prevented from making elec-  
15 trical connection with more than one of the two stationary contacts between which it rests, substantially as described.

2. In an electric switch the combination with a stationary member provided with a row  
20 of fixed contacts, of a movable member having a contact adapted to enter the space between adjacent fixed contacts, said movable contact being provided with insulated portions for engaging one of said adjacent con-  
25 tacts, substantially as described.

3. In an electric switch, the combination with a stationary part provided with a series of fixed contacts, of a pivoted arm provided with a yieldingly-supported contact adapted to snap into the spaces between adjacent con- 30 tacts, said movable contact being provided with an insulated portion for engaging one of the adjacent contacts between which it rests, substantially as described.

4. In an electric switch, the combination 35 with a series of fixed contacts, of a pivoted spring-arm provided with a contact adapted to snap into the space between adjacent fixed contacts, said movable contact having a conducting part for engaging the fixed contact on 40 one side and an insulated part for engaging the contact on the other side, whereby said movable contact is prevented from making electrical connection with more than one of said fixed contacts at a time, substantially as 45 described.

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Witnesses:

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