

(No Model.)

3 Sheets—Sheet 1.

J. S. GEORGE, Jr.  
PUSH BUTTON.

No. 500,199.

Patented June 27, 1893.

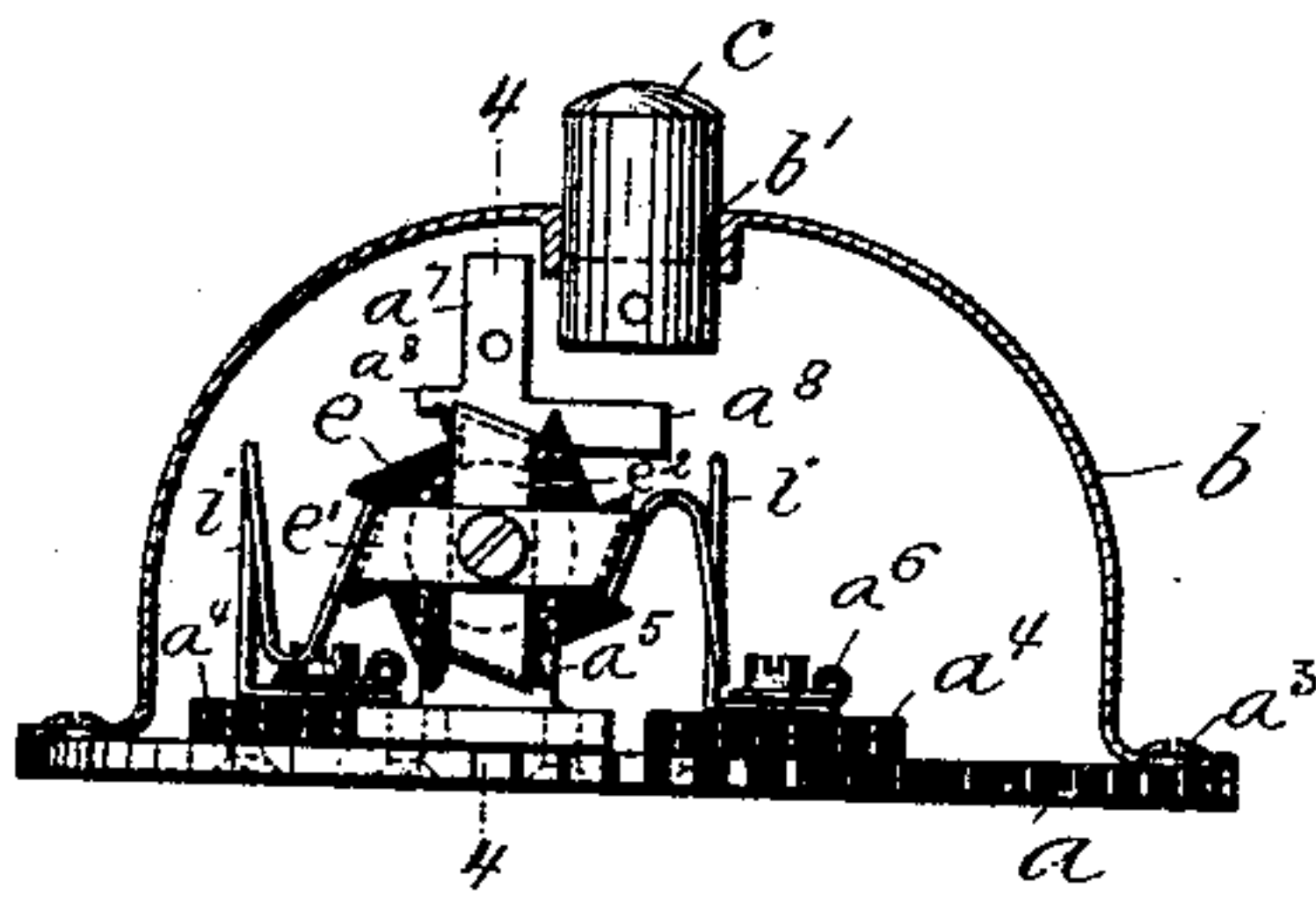


FIG. 1.

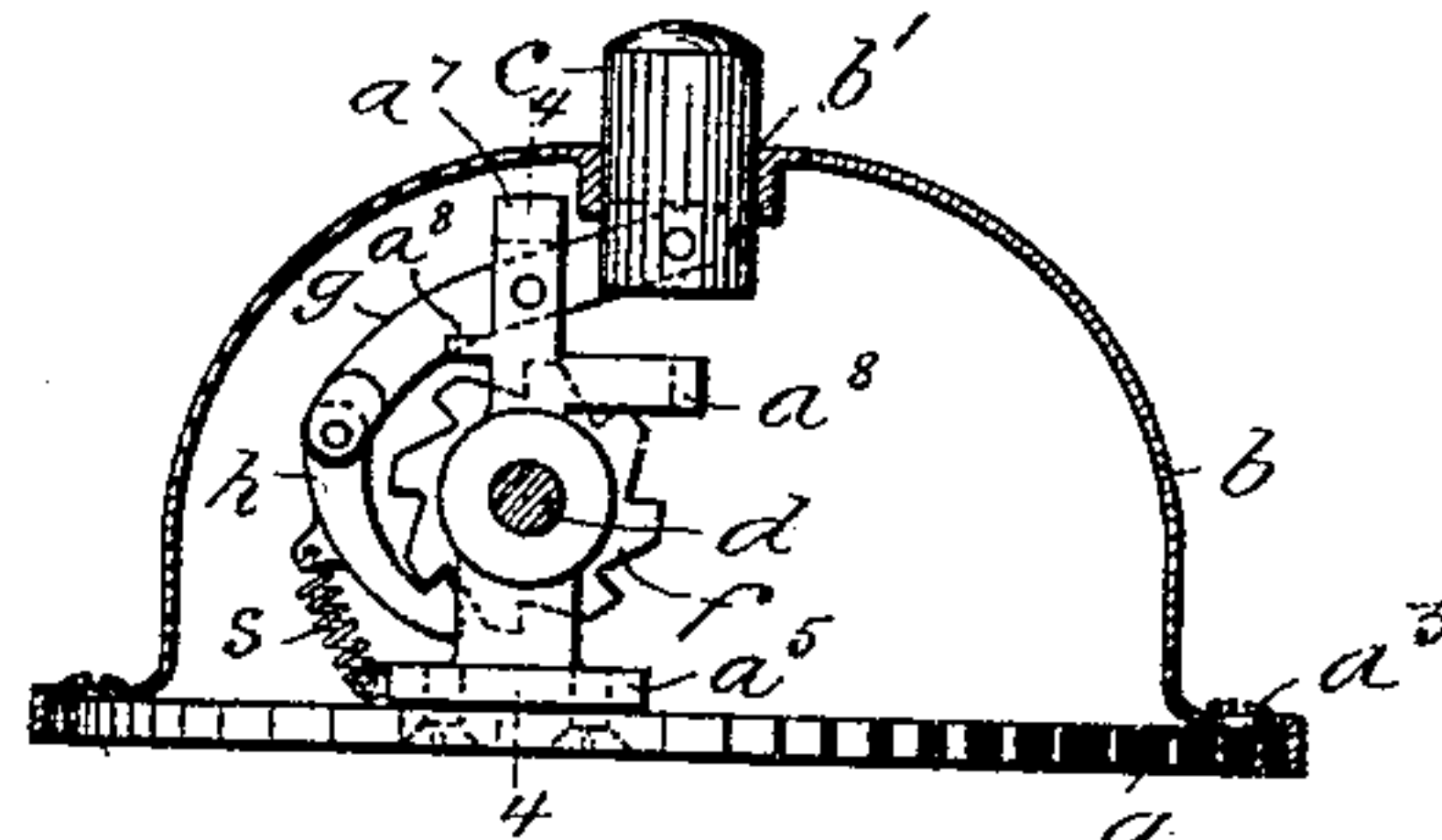


FIG. 2.

FIG. 3.

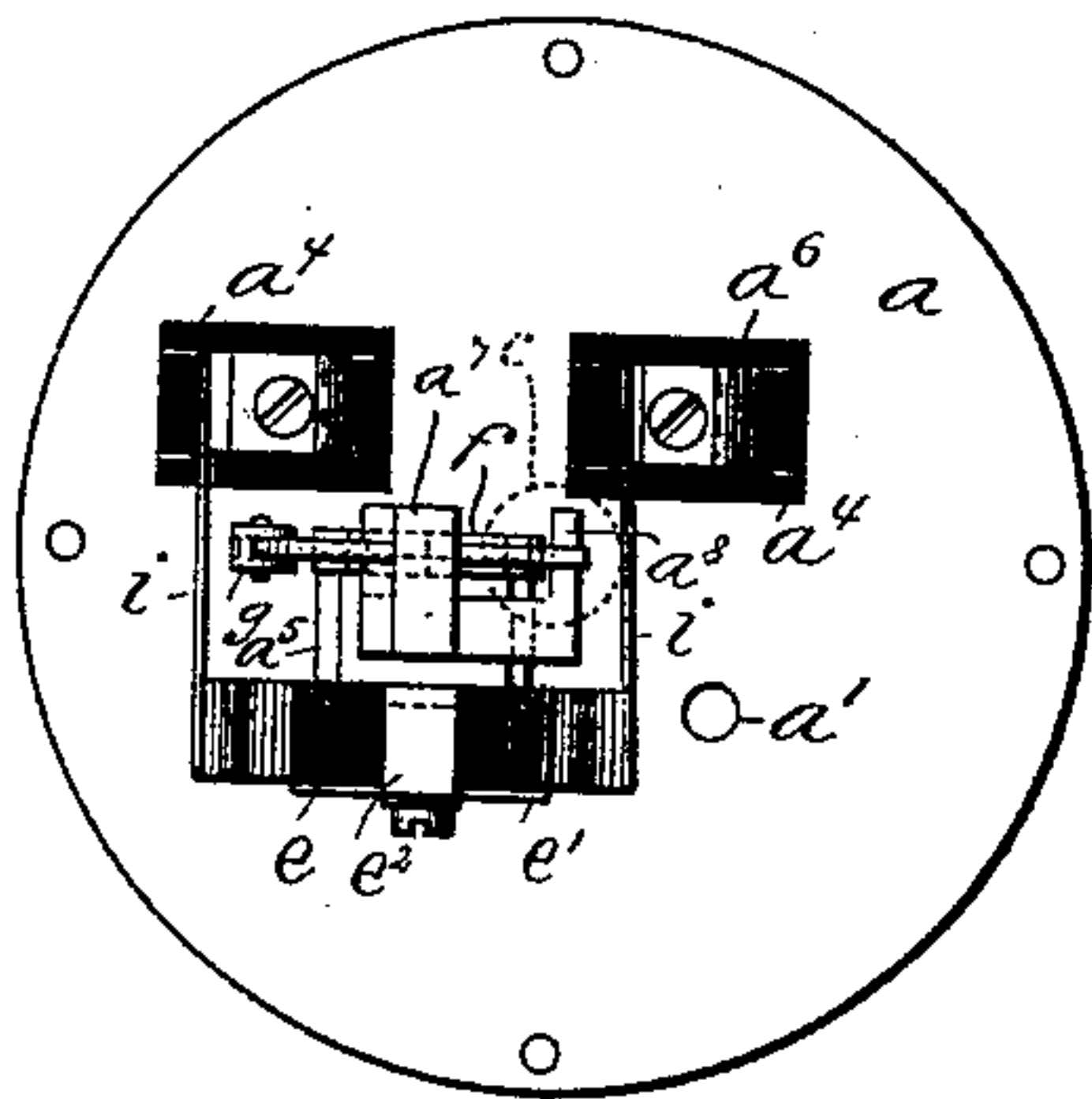


FIG. 4.

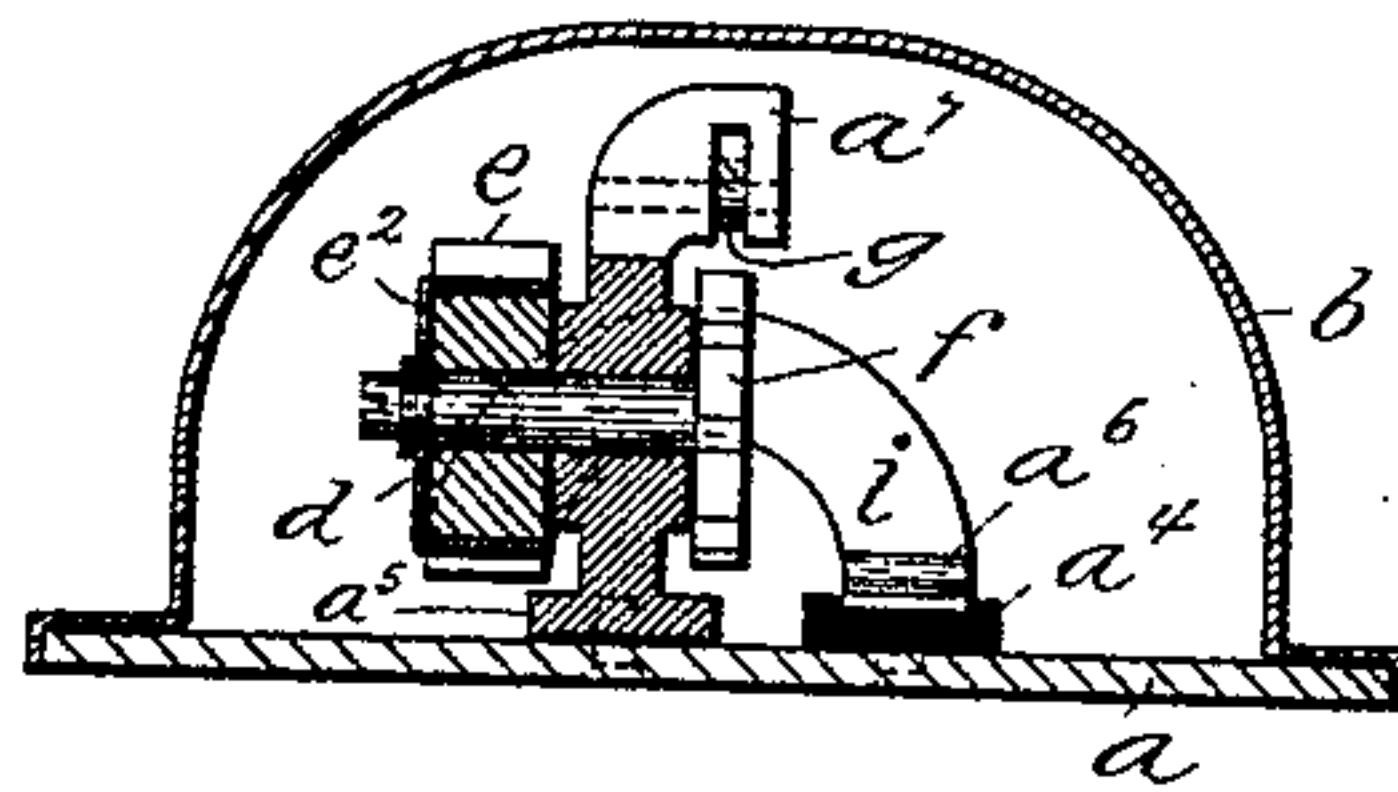


FIG. 5. FIG. 6.

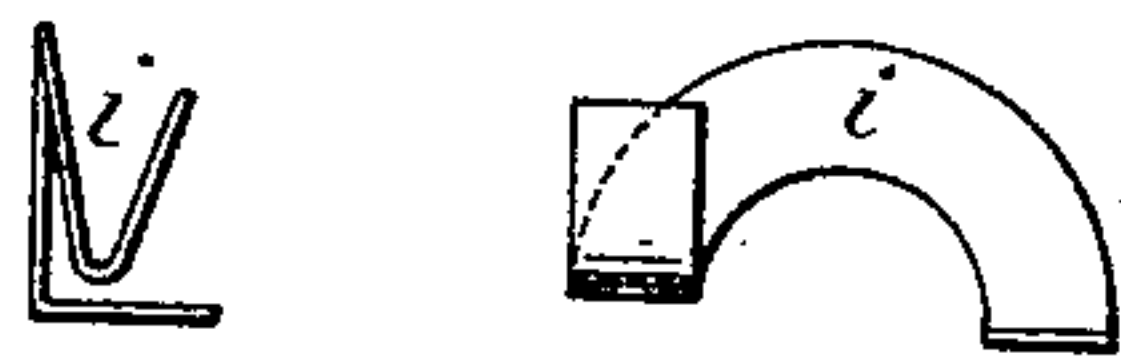


FIG. 7. FIG. 8.

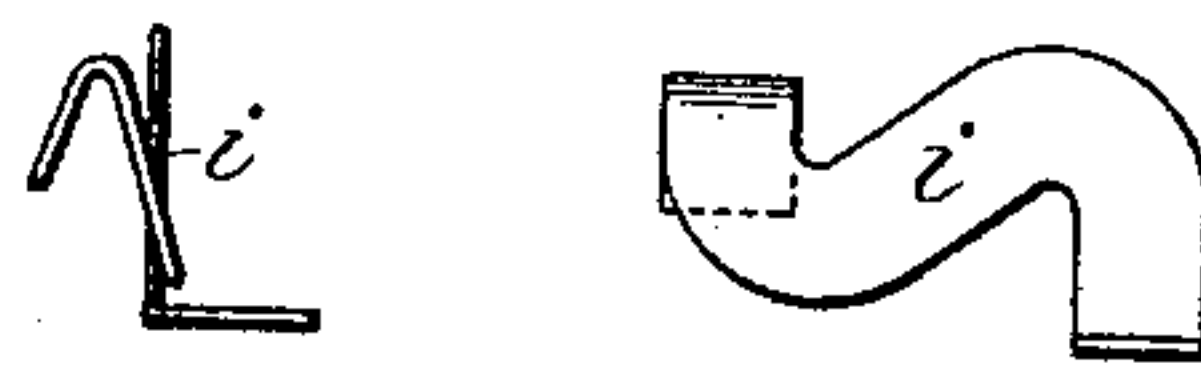


FIG. 9.

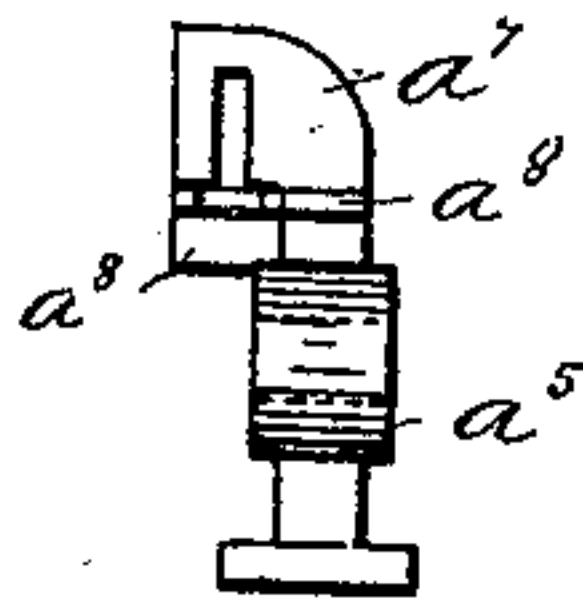


FIG. 10.

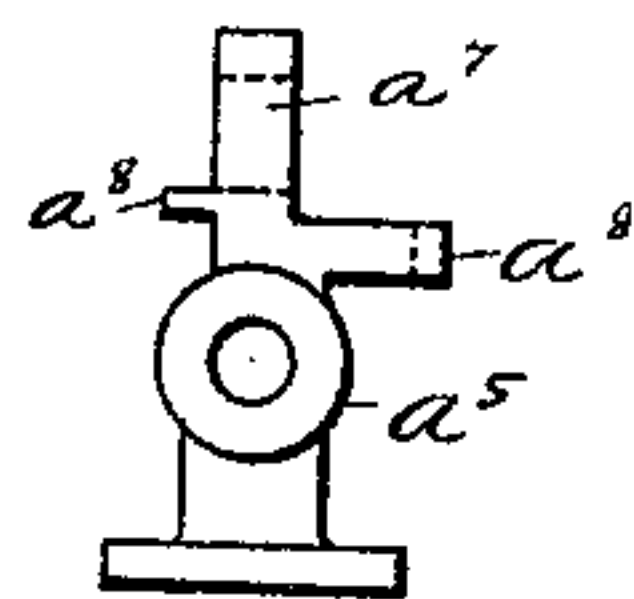


FIG. 11.

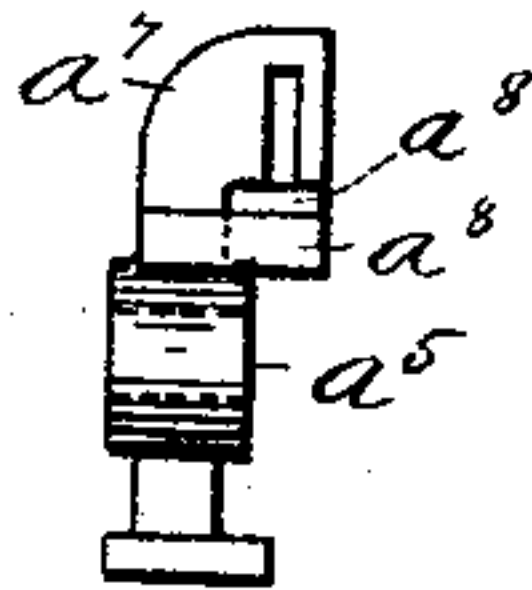
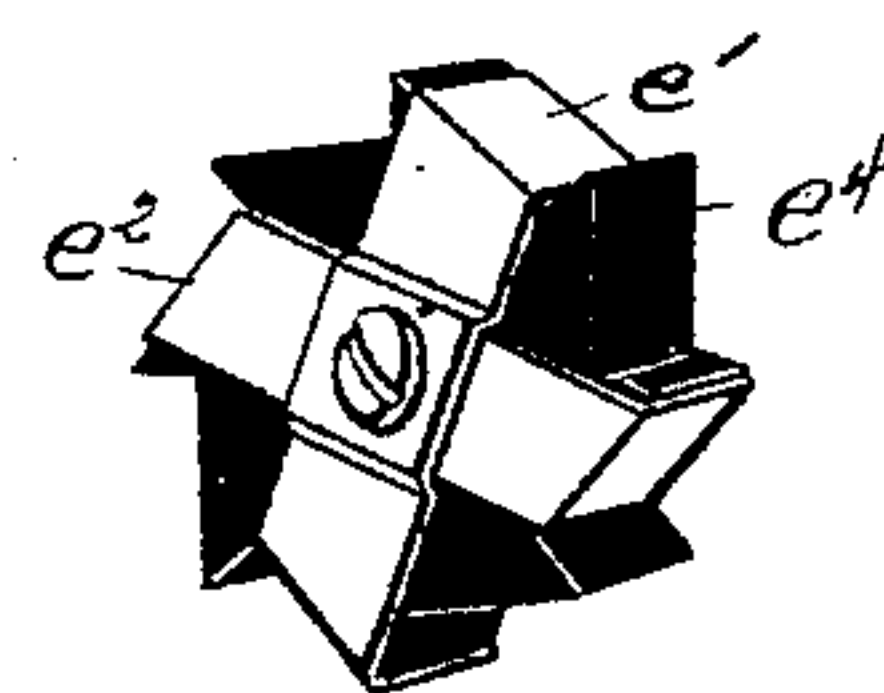


FIG. 12.



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FIG. 13.

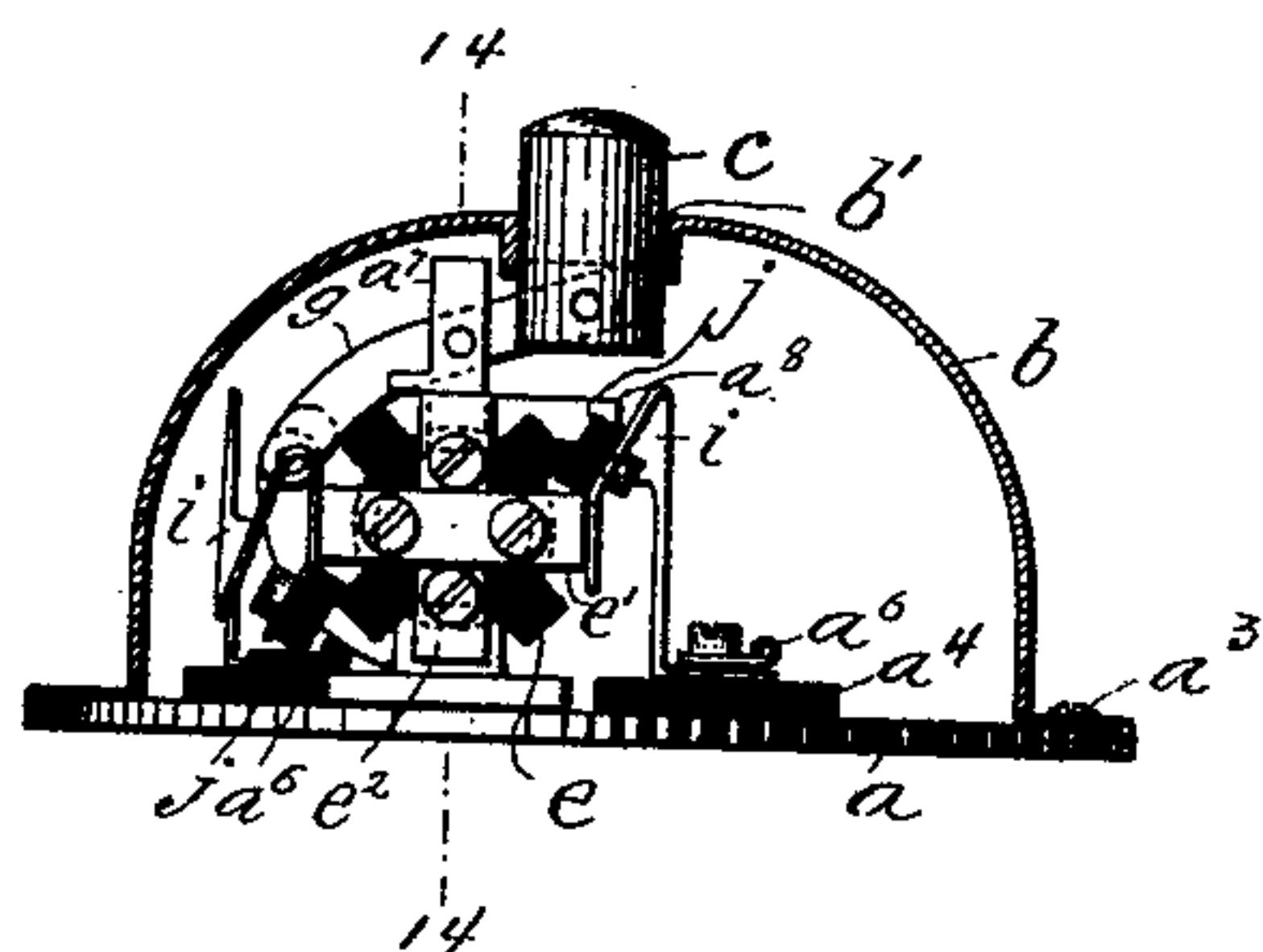


FIG. 14.

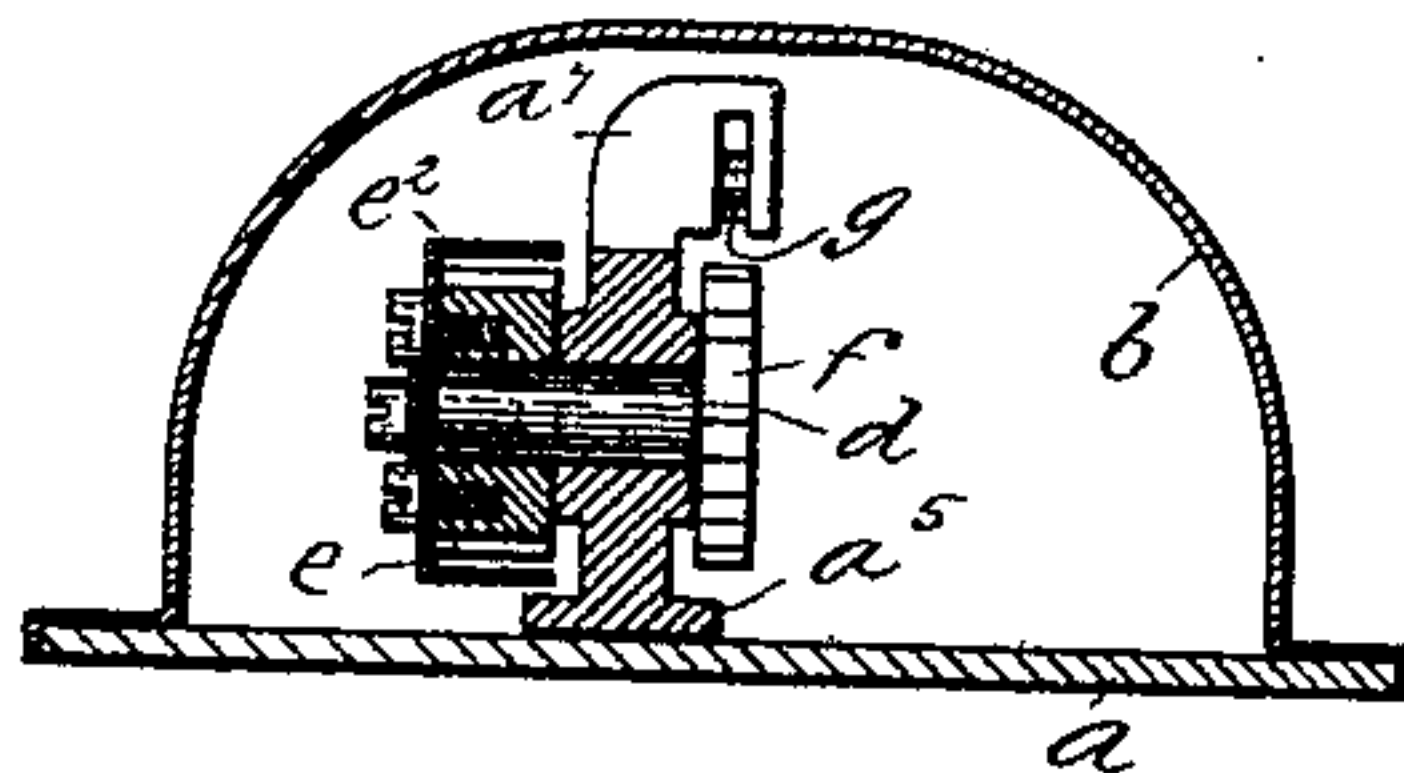


FIG. 15.

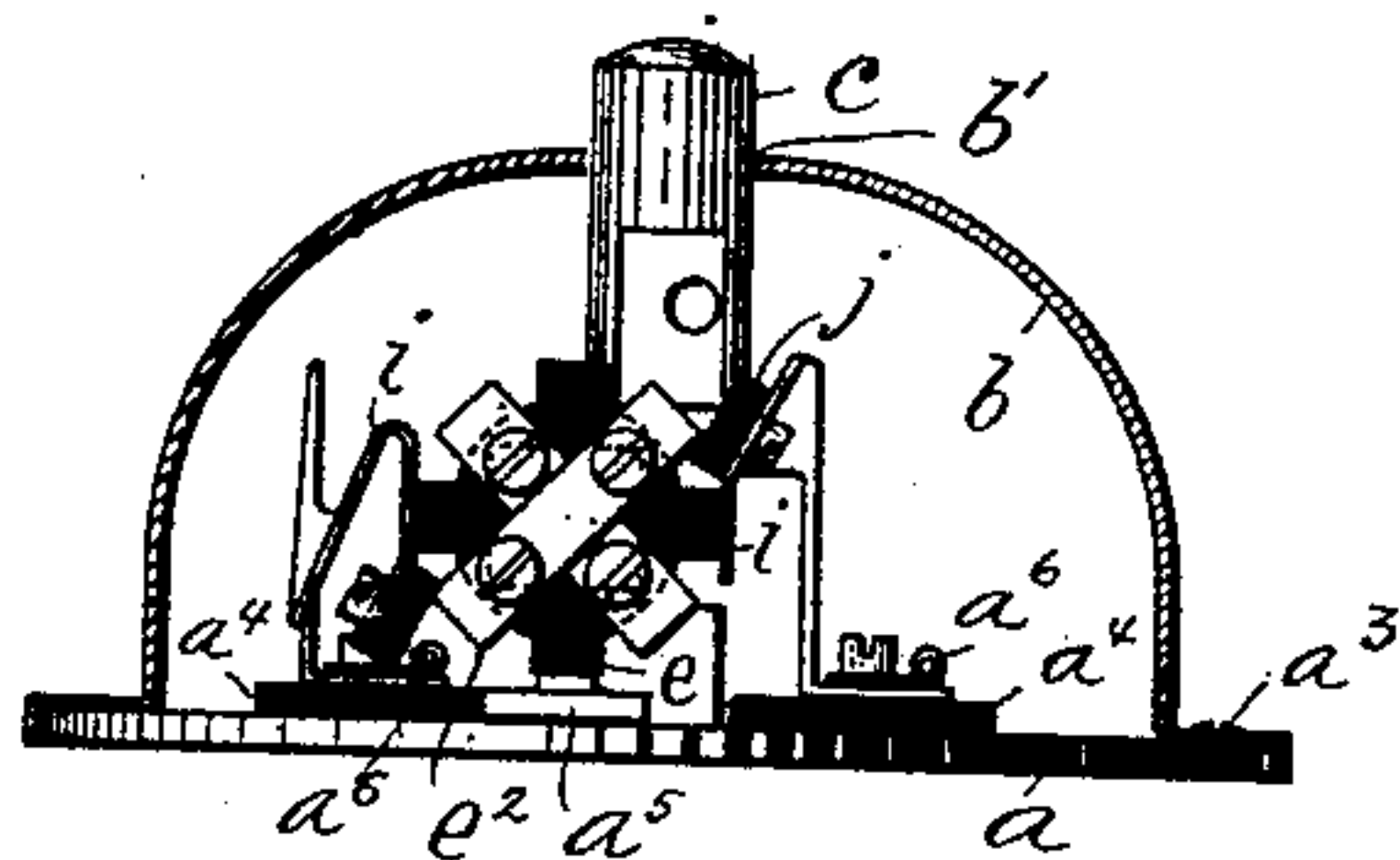


FIG. 16.

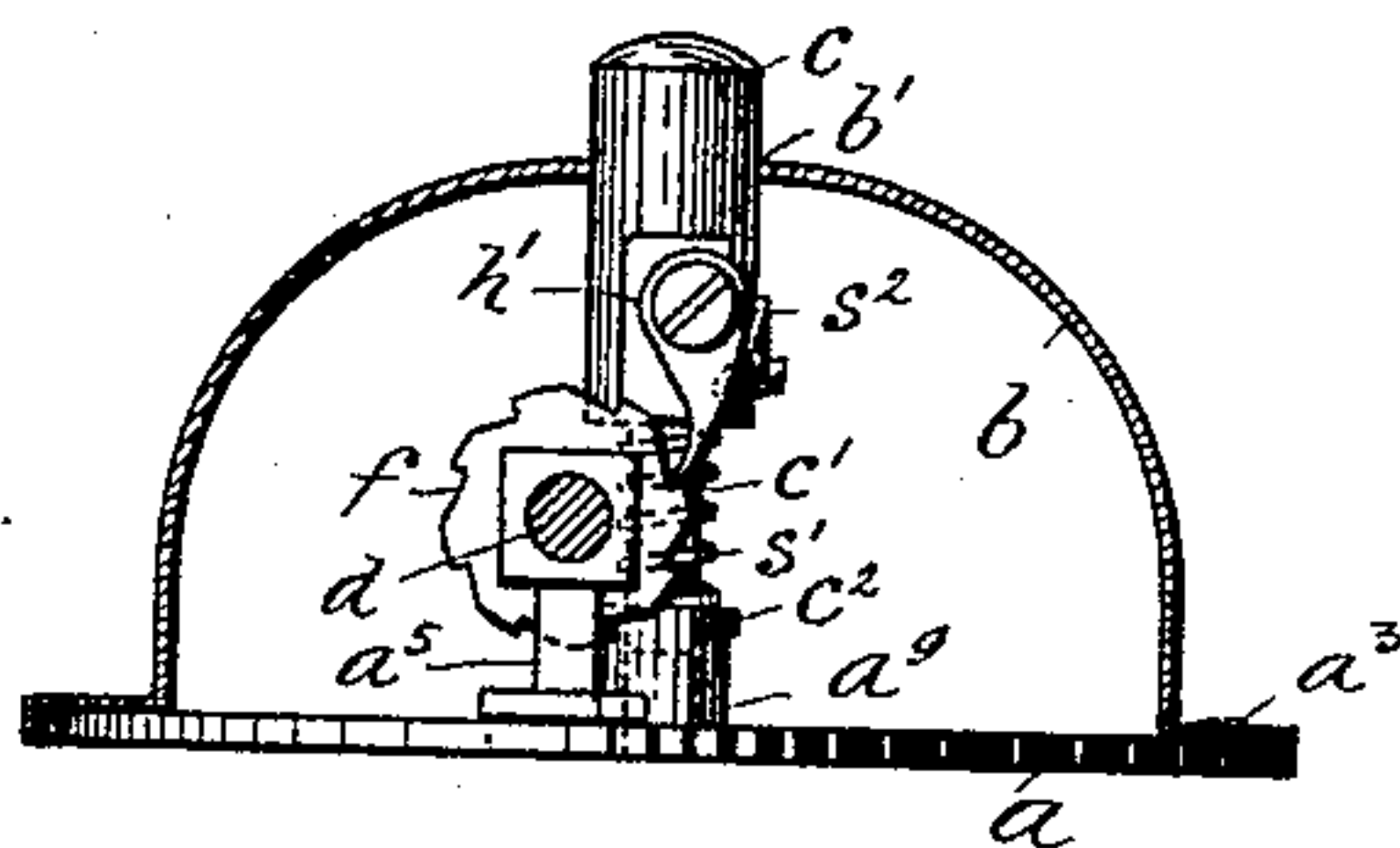


FIG. 17.

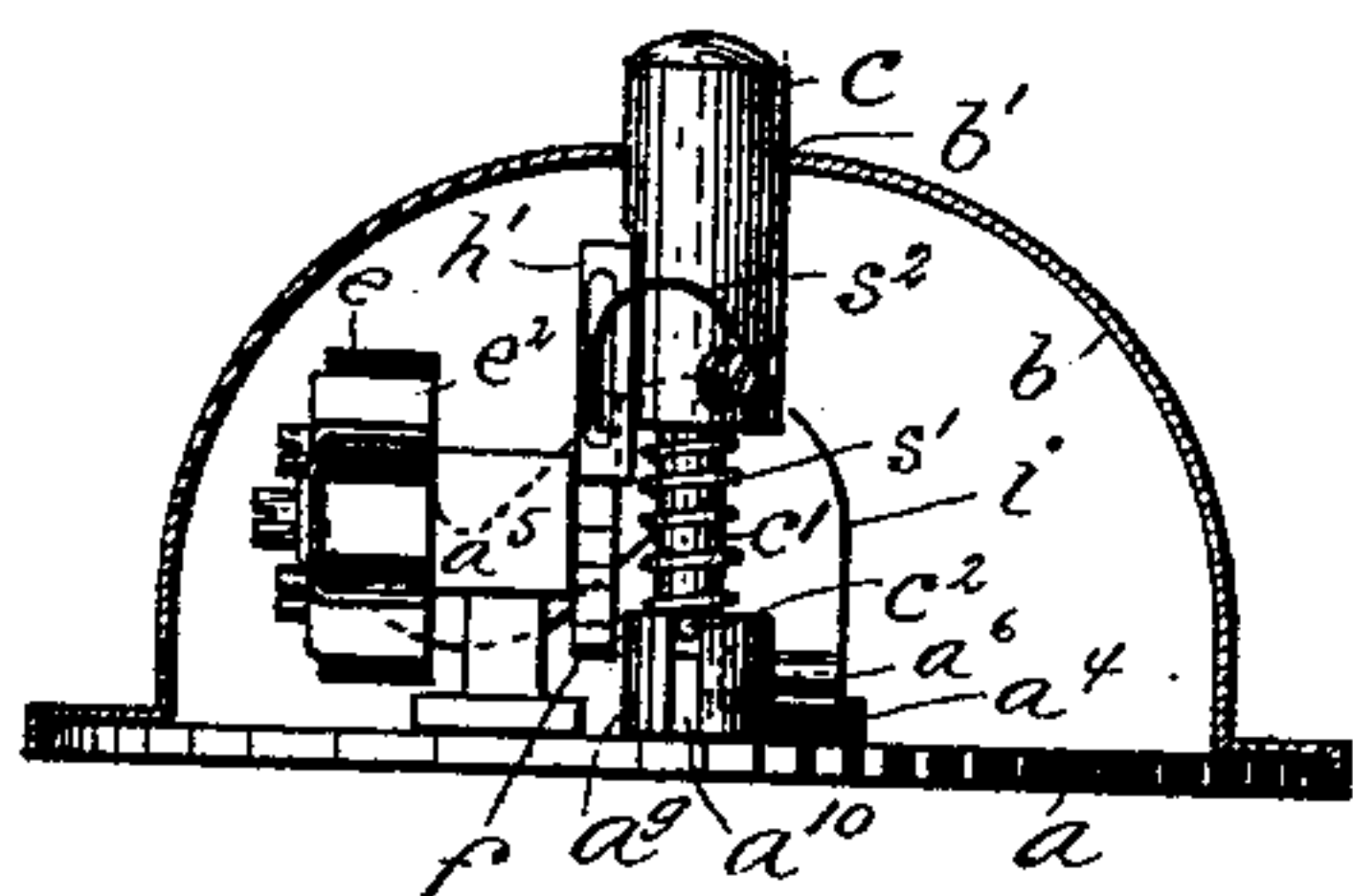


FIG. 18.

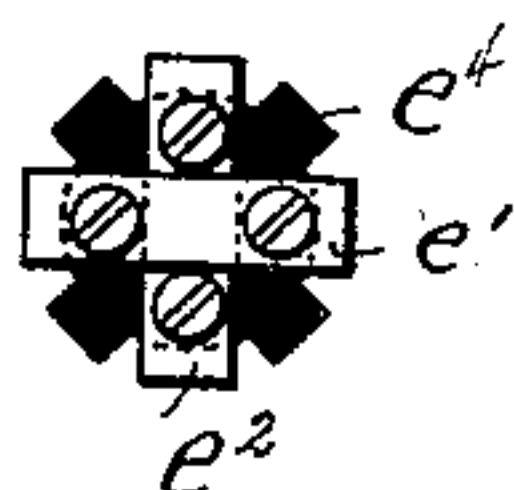


FIG. 19.

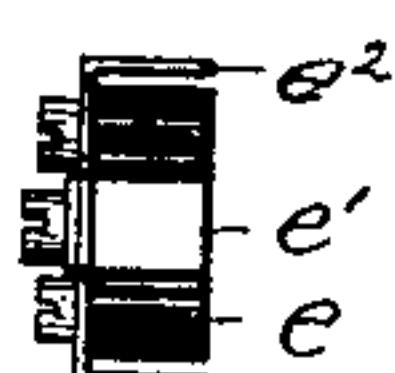


FIG. 20.

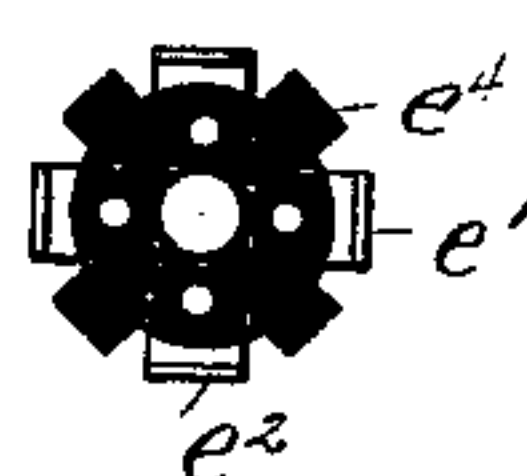


FIG. 21.

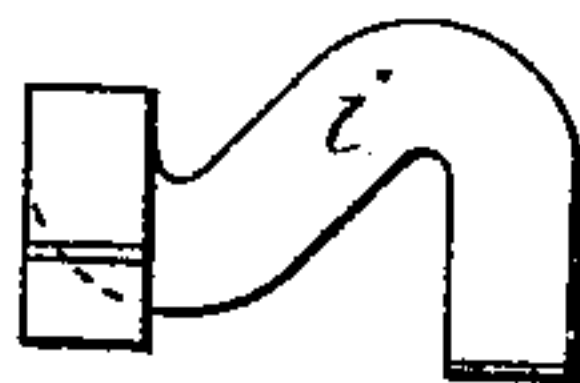
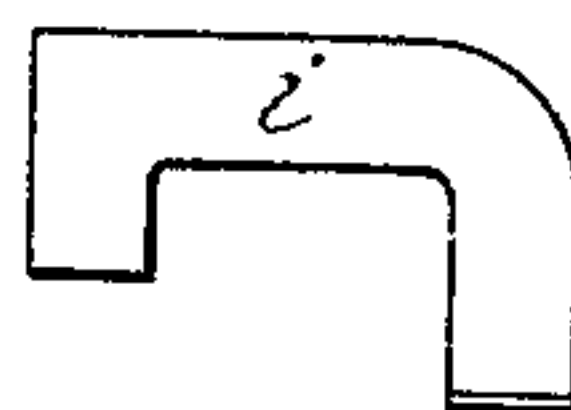


FIG. 22.



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3 Sheets—Sheet 3.

J. S. GEORGE, Jr.  
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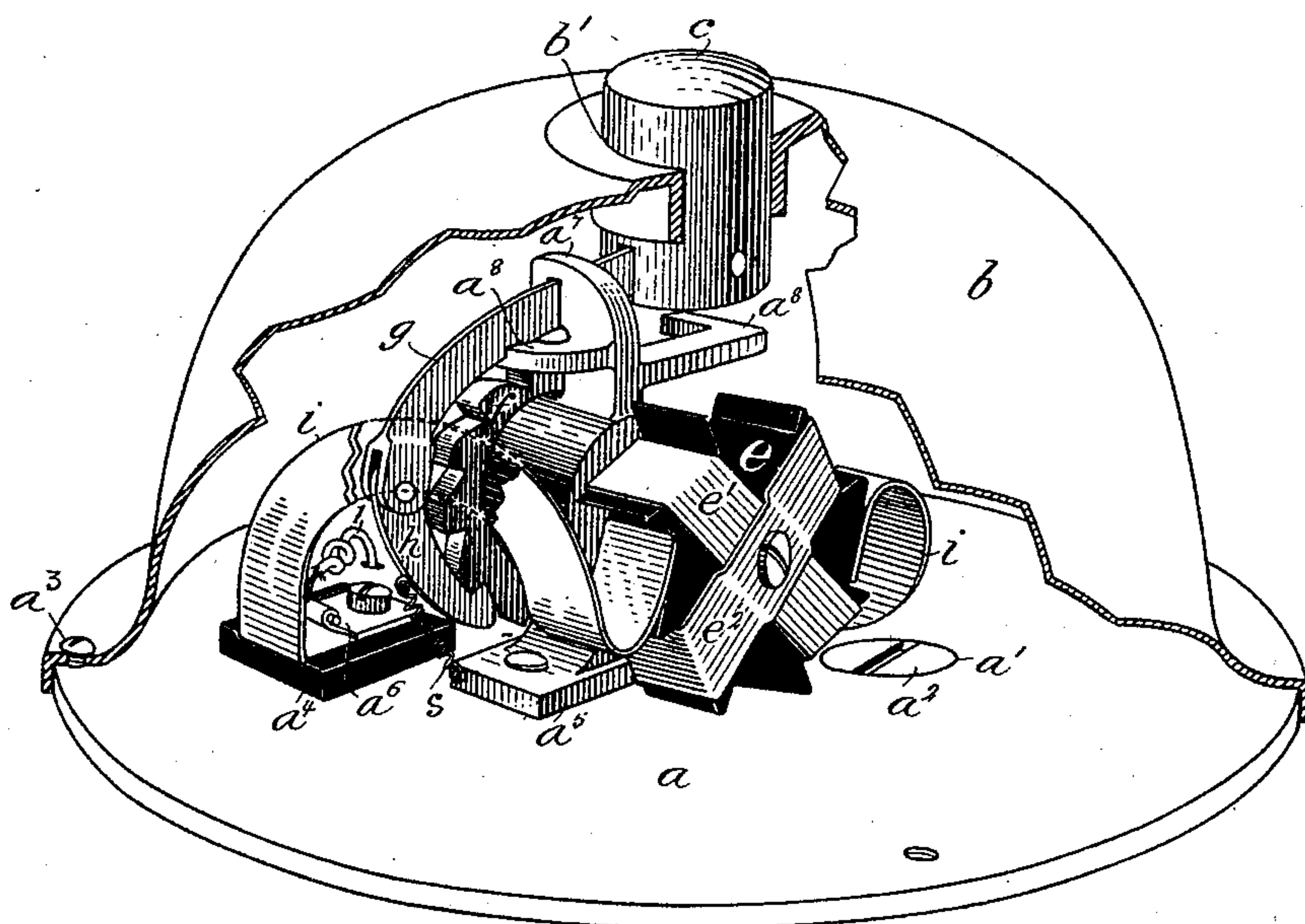


FIG. 23

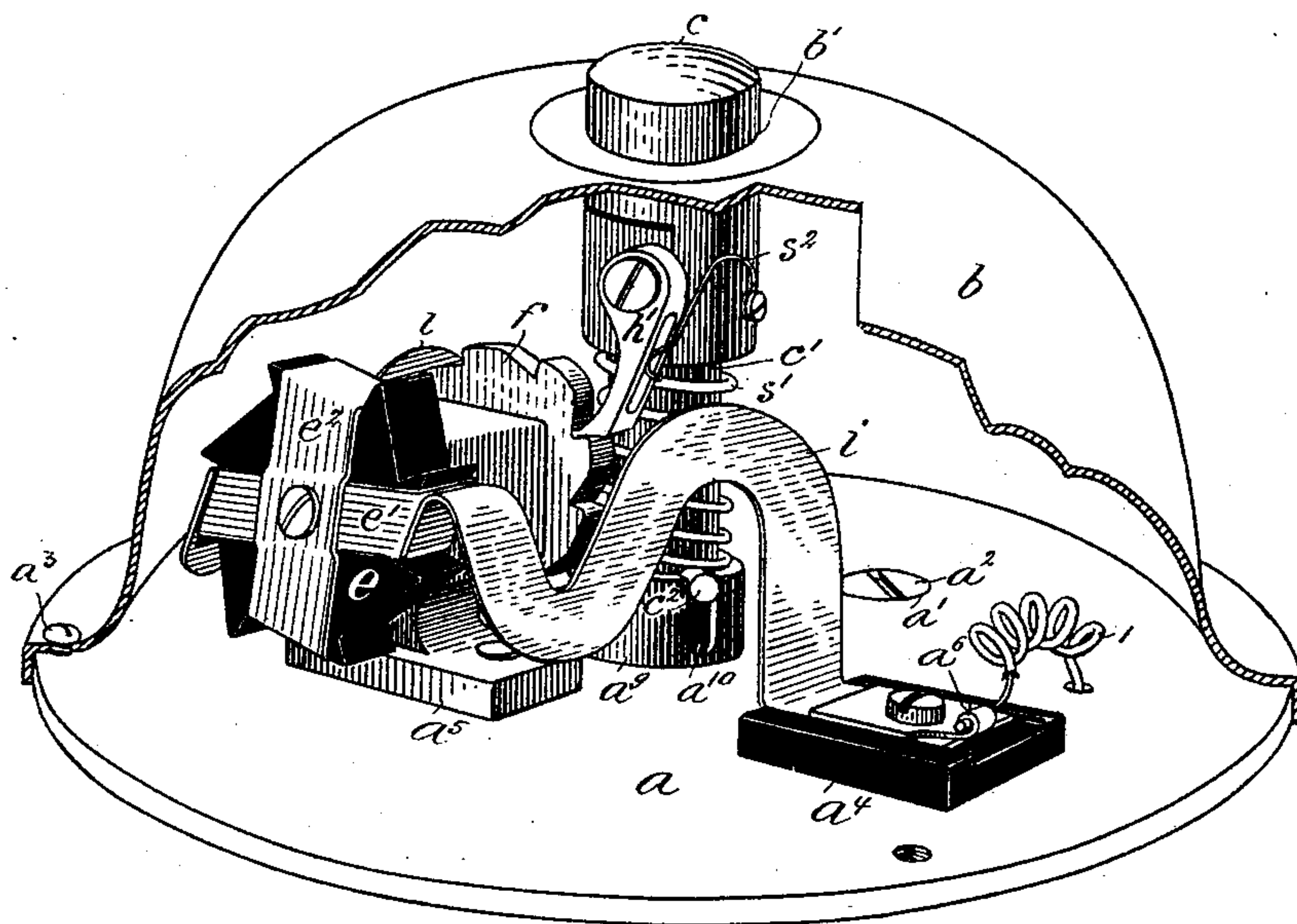


FIG. 24

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# UNITED STATES PATENT OFFICE.

JAMES SCOTT GEORGE, JR., OF PHILADELPHIA, PENNSYLVANIA.

## PUSH-BUTTON.

SPECIFICATION forming part of Letters Patent No. 500,199, dated June 27, 1893.

Application filed October 20, 1892. Serial No. 449,430. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES SCOTT GEORGE, Jr., a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Push-Buttons for Electric-Lamp Circuits, of which the following is a specification.

My invention relates to a device actuated by a single push button for switching in and then cutting out an electric circuit for lighting and extinguishing a single or a series of lamps included therein.

The principal objects of my present invention are first, to provide a simple, durable, efficient and comparatively inexpensive device actuated by a push-button for alternately switching in and cutting out an electric circuit applicable to lighting systems; second, to provide a device with a detachable housing and with simple switch mechanism adapted to be actuated by a push-button for alternately including and excluding the lamp circuit with respect to a lamp or series of lamps; third, to provide a circuit switch device with a detachable housing for affording access to the interior thereof and having a spring controlled push-button for actuating the mechanism of the device for alternately including and excluding the lamp circuit; and fourth, to provide a switch device having a removable cover with a push button protruding there-through and controlled by suitable means or devices for actuating the switch mechanism for including and excluding the circuit to an incandescent electric lamp or lamps.

My invention consists of the improvements hereinafter described and claimed.

The nature, scope and general characteristic features of my invention will be more fully understood by reference to the accompanying drawings forming part hereof; and in which—

Figure 1, is a central sectional view illustrating a push-button for electric lamp circuits embodying features of my invention with the bell crank lever removed in order to illustrate one form of an improved make and break wheel. Fig. 2, is a view of the same with the contact springs removed and showing the bell crank lever in position. Fig. 3, is a top or plan view of the device with the cap re-

moved and the push-button illustrated in dotted lines. Fig. 4, is a section taken on the line 4—4, of Figs. 1 and 2. Figs. 5 to 12, are detached detail views of certain of the parts comprising the device illustrated in Figs. 1, 2 and 3. Fig. 13, is a central sectional view showing a device embodying my invention and provided with a push-button and connections of Figs. 1, 2 and 3 and with a slightly different form of make and break wheel in which the conducting springs are provided with insulating blocks. Fig. 14, is a section taken on the line 14—14, of Fig. 13, with the contact springs removed. Fig. 15, is a view showing a device provided with the make and break wheel of Fig. 13, and with a modified form of push-button having its accessories removed. Fig. 16, is a view similar to Fig. 15, showing the accessories of the push-button. Fig. 17, is a view taken from the right hand sides of Figs. 15 and 16. Figs. 18 to 22 are detached views of certain of the parts shown in Figs. 13, 14, 15, 16 and 17. Fig. 23, is a perspective view showing the preferred form of device embodying my invention and provided with the make and break wheel of Figs. 1, 3, 4 and 12, and with the push-button and its accessories of Figs. 1, 2, 3, 4, 13 and 14; and Fig. 24, is a perspective view illustrating another form of device embodying features of my invention and showing the push-button and its accessories of Figs. 15, 16 and 17, and the make and break wheel of Figs. 1, 3, 4 and 12.

In the drawings *a*, is a circular base-plate adapted to support the working parts of the device and provided with an aperture *a'*, for the reception of a screw *a<sup>2</sup>*, by means of which it may be secured to the wall or to any other object.

*b*, is a bell-shaped cap provided with a central opening *b'*, through which a push-button *c*, protrudes. This cap *b*, is detachably connected with the base-plate *a*, by means of screws *a<sup>3</sup>*, so that the cap *b*, may be readily removed in order to afford access to the interior of the device.

The base-plate *a*, is provided with insulating standards *a<sup>4</sup>*, a post *a<sup>5</sup>*, and circuit connections *a<sup>6</sup>*.

*d*, is a shaft revolvably supported in a bearing in the post *a<sup>5</sup>*, and provided at one extremity thereof with a make and break wheel



e. The push-button *c*, which protrudes through the opening *b'*, in the cap *b*, is adapted to operate the make and break wheel *e*, through the intervention of a ratchet-wheel *f*, secured to the other extremity of the shaft *d*, and its accessories.

Referring now to Figs. 1 to 14 inclusive and to Fig. 23, the post *a*<sup>5</sup>, is provided with an extension *a*<sup>7</sup>, to which the bell-crank lever *g*, is pivoted, and with back-stops *a*<sup>8</sup>, for limiting the range of movement of the bell-crank lever *g*, and push-button *c*. One arm of the bell-crank lever *g*, is pivotally connected with the push-button *c*, and the other arm thereof is provided with a depending pawl *h*, adapted to engage the respective teeth of the ratchet-wheel *f*, to pull the same around when the push-button *c*, is depressed. *s*, is a spring connected at its respective extremities with the pawl *h*, and post *a*<sup>5</sup>, and adapted to keep the pawl *h*, up to its work and also to cause the push-button *c*, to normally project beyond the cap *b*. In the devices of Figs. 15, 16, 17 and 24, the bell-crank lever *g*, and extension *a*<sup>7</sup>, are omitted. The push-button *c*, is provided with a shank *c'*, that works in a seat *a*<sup>9</sup>, formed on the base-plate *a*, and is held against rotary motion by means of a radial pin *c*<sup>2</sup>, projecting from the shank *c'*, and working in a slot *a*<sup>10</sup>, in the seat *a*<sup>9</sup>. *s'*, is a spiral spring engaging the seat *a*<sup>9</sup>, and push-button *c*, and tending to push the latter normally outward. *h'*, is a pawl pivotally connected with the push-button *c*, and held in engagement with the ratchet-wheel *f*, by means of a spring *s*<sup>2</sup>, so that when the push-button *c*, is depressed the ratchet-wheel *f*, is rotated. The make and break wheel *e*, is constructed of insulating material and is provided with diametrical conducting strips *e'* and *e*<sup>2</sup>, that co-operate with contact springs *i*, connected with the circuit connections *a*<sup>6</sup>.

Referring now to Figs. 1, 3, 4, 12, 23 and 24, the make and break wheel is provided with teeth and the extremities of the strips *e'* and *e*<sup>2</sup>, are folded onto the faces of two diametrically opposite teeth, so that the extremities of the springs *i*, are adapted to rest upon the extremities of the strips, and thus make the circuit, or upon the intermediate insulating teeth and thus break the circuit. It may be remarked that the free ends of the contact springs ride up on the faces of the teeth of the make and break wheel *e*, and thus snap into position for making or breaking the circuit, so that an arc is not drawn. The drawing of an arc is also avoided by reason of the fact that the contact springs contact with the make and break wheel *e*, at points diametrically opposite each other. In Figs. 13, 14, 15 and 17, the make and break wheel *e*, is of the form of a disk of insulating material with diametral projections *e*<sup>4</sup>, alternating with the extremities of the conducting strips *e'* and *e*<sup>2</sup> and the extremities of the conducting strips *e'* and *e*<sup>2</sup>, project radially beyond the face of the same. The contact

springs *i*, are provided with insulating blocks *j*, so that the strips *e'* and *e*<sup>2</sup>, traverse the blocks *j*, and then release the contact springs *i*, which are thus snapped into and out of position for breaking and making the circuit.

The mode of operation of the hereinabove described devices is as follows:—Assuming that one of the conducting strips *e'*, is in engagement with both of the contact springs *i*, as shown in Figs. 1, 13 and 24, and that each of the terminal devices *a*<sup>6</sup>, is connected with a suitable conductor *l*, then it follows that the circuit through the conductor and terminals is completed or made through the conducting strip *e'*. This circuit may be broken by the simple operation of depressing the push-button *c*, once, because this motion of the push-button *c*, acting through the instrumentality of its complementary pawl and ratchet connections, effects the required revolution of the make and break wheel *e*, for turning the conducting strip *e'*, out of engagement with the contact springs *i*, as shown in Figs. 15 and 23. The next depression of the push-button *c*, acting through the instrumentality of the pawl-and-ratchet connections in the manner above described, causes the other conducting strip *e*<sup>2</sup>, to be brought into engagement with the contact springs *i*, whereby the circuit is again completed or made through the same. Of the subsequent depressions of the push button *c*, one causes the circuit through the conductor *l* to be broken and the next causes said circuit to be completed or made. The making and breaking of the circuit through the conductor *l*, may be availed of for closing and making a shunt circuit and thus short circuiting or excluding the lamp circuit of a series distribution system. In a multiple arc or parallel system of distribution, the hereinabove described device is interposed in one of the leads of the lamp circuit, so that in such case the conductor *l*, would represent one of the leads in which the lamps are interposed. In such case the operation of the device results in the making and breaking of the lamp circuit.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in details without departing from the spirit thereof, hence I do not limit myself to the precise construction and arrangement hereinabove set forth and illustrated in the accompanying drawings; but

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A lamp circuit switch and cut-out device provided with leading in wires and connections, circuit springs, a ratchet-wheel and a make-and-break wheel connected with each other, a bell-crank lever pivotally attached to a standard provided with back-stops and said lever provided with a spring controlled pawl and a push-button, substantially as and for the purposes set forth.



2. A lamp circuit switch and cut-out device provided with leading in wires and connections, circuit springs, a make-and-break wheel, a bell-crank lever provided with a push-button, and pawl-and-ratchet connections interposed between the bell-crank lever and wheel, substantially as and for the purposes set forth.

3. A lamp circuit switch and cut-out device provided with leading in wires and connections, circuit springs, a make-and-break wheel, a ratchet-wheel connected with the make-and-break wheel, a bell-crank lever provided with a push-button, back stops for said lever, a pawl on said lever, and a spring engaging said pawl, substantially as and for the purposes set forth.

4. A lamp circuit switch and cut-out device provided with leading in wires and connections, an insulating wheel having diametral projections alternating with the extremities of diametral conducting strips applied to the face of the insulating wheel, a bell crank lever provided with a push-button and complementary pawl-and-ratchet connections for operating said wheel, and circuit springs adapted to snap onto said insulating projections and onto the extremities of said strips, substantially as and for the purposes set forth.

5. A lamp circuit switch and cut-out device provided with leading in wires and connections, a shaft journaled in a post, an insulating wheel connected with said shaft and provided with diametral projections alternating with the end portions of diametral conducting strips applied to the face of the

insulating wheel, a ratchet-wheel connected with said shaft, a push button provided with a pawl for operating said ratchet-wheel, and circuit springs adapted to snap onto said insulating projections and onto the ends of said strips, substantially as and for the purposes set forth.

6. A lamp circuit switch and cut-out device provided with a base-plate having a detachable cover, leading in wires and connections, circuit springs, a ratchet-wheel and a make-and-break wheel connected with each other, a bell-crank lever pivotally attached to a standard connected with the base-plate, and said lever provided with a spring controlled pawl and a push-button, substantially as and for the purposes set forth.

7. A lamp circuit switch and cut-out device provided with leading in wires and connections, a wheel having insulating portions alternating with the extremities of diametral conducting strips, a bell crank lever provided with a push-button and complementary pawl-and-ratchet connections for operating said wheel, and circuit springs adapted to snap onto said insulating portions of the make-and-break wheel and onto the extremities of said diametral conducting strips, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JAMES SCOTT GEORGE, JR.

Witnesses:

THOMAS M. SMITH,  
RICHARD C. MAXWELL.