

(No Model.)

LE ROY S. WHITE.  
ELECTRIC SWITCH.

No. 451,190.

Patented Apr. 28, 1891.

Fig. 1.

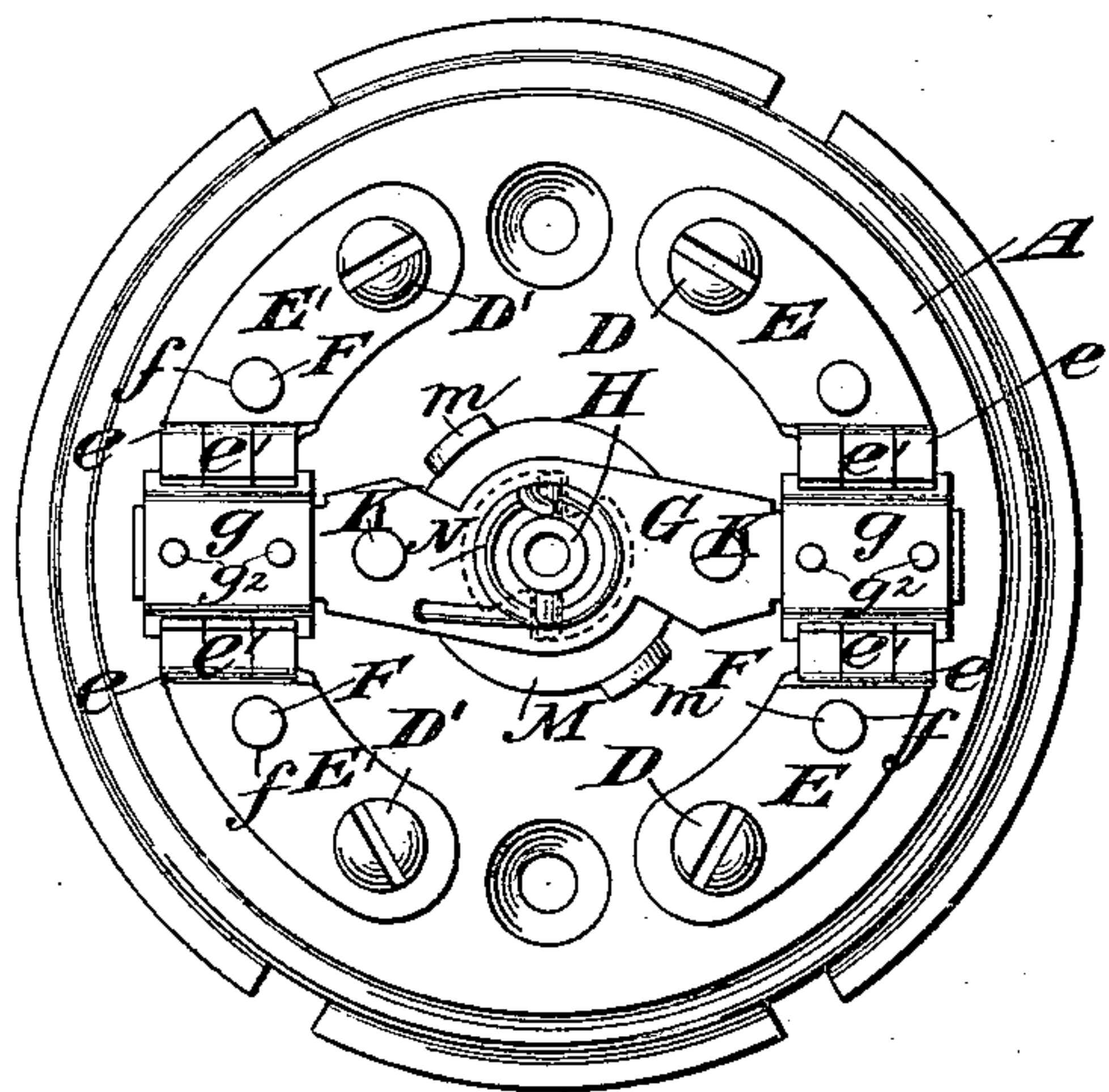


Fig. 2.

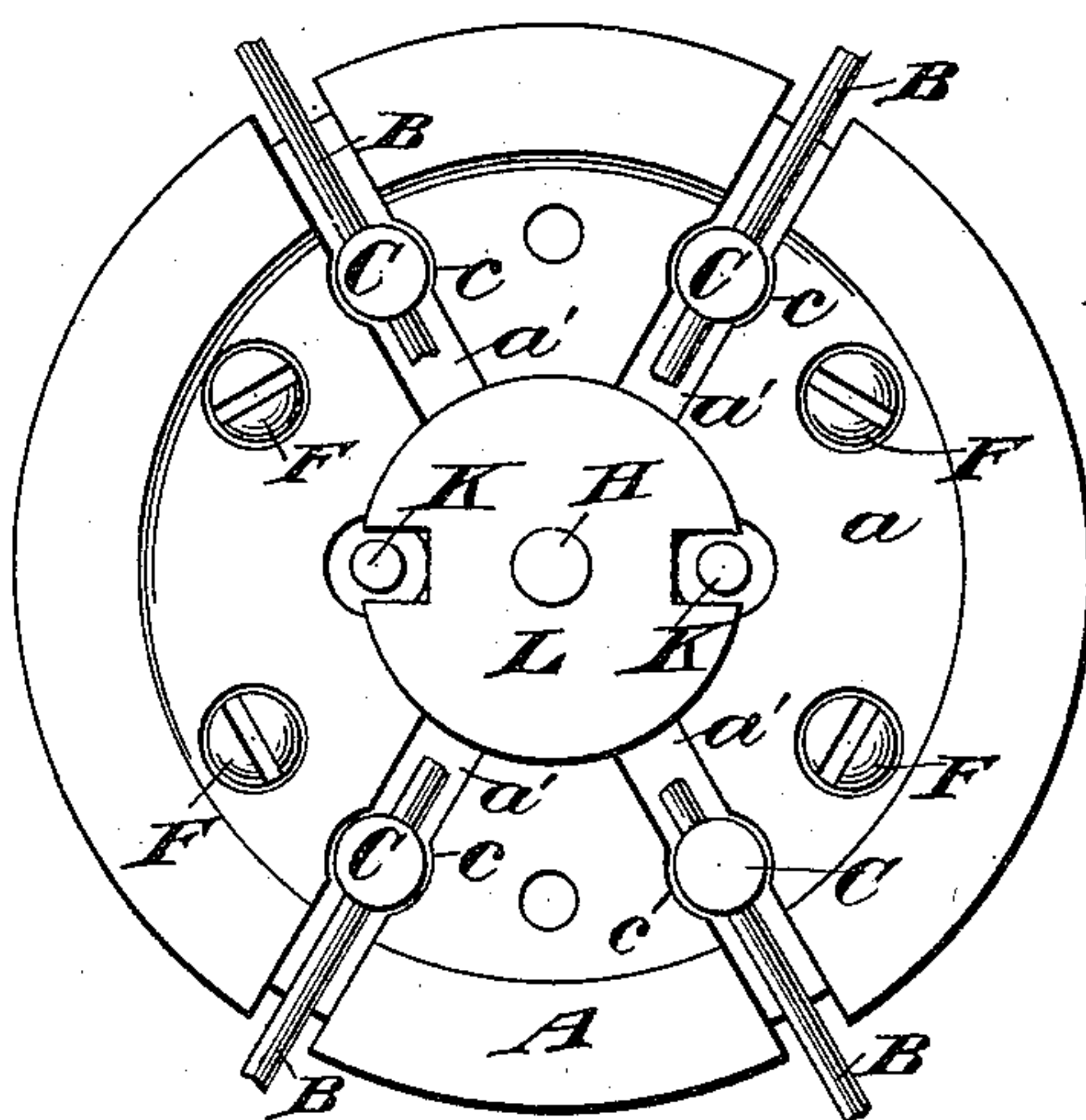


Fig. 3.

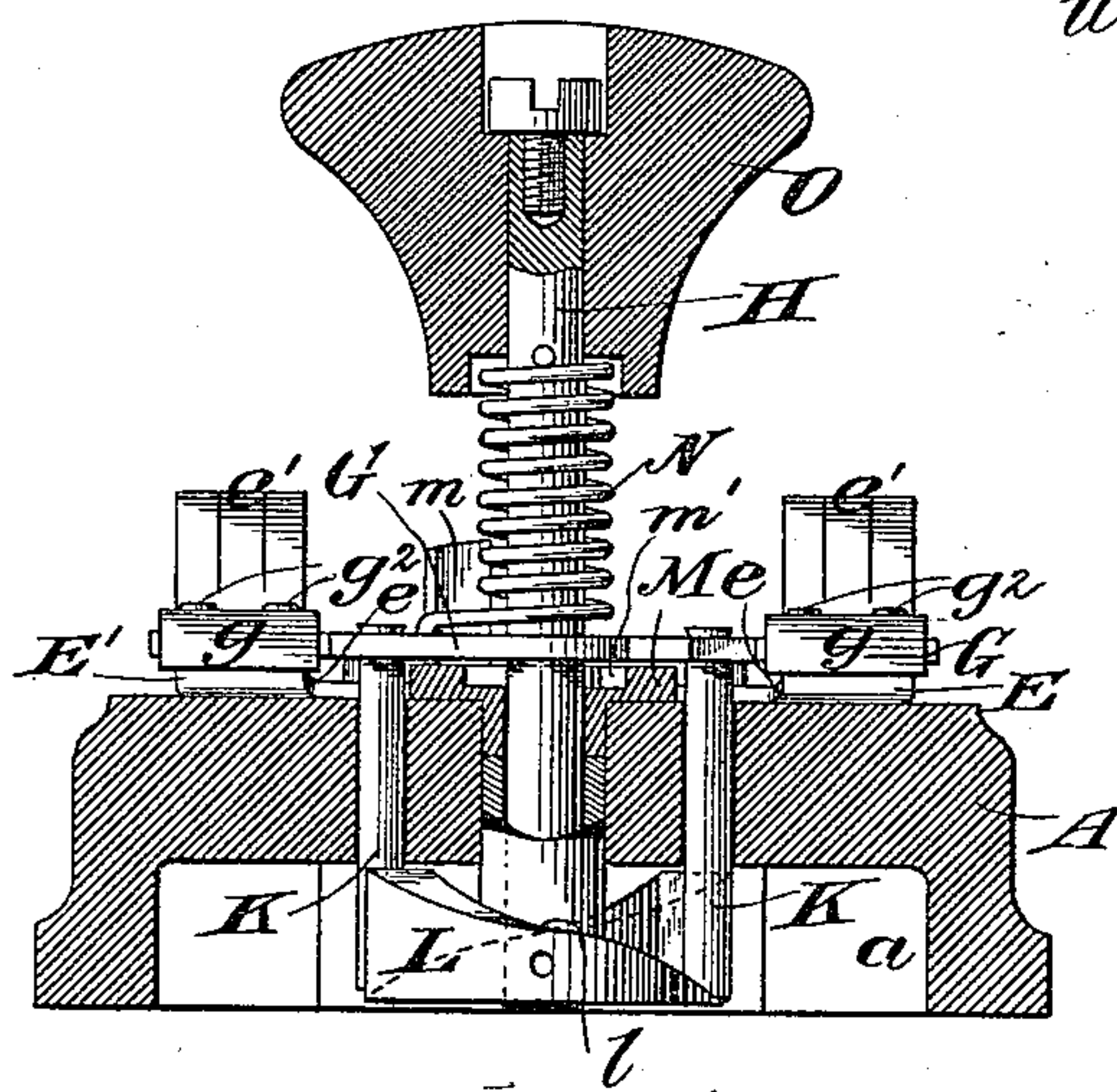


Fig. 5.



Fig. 4.

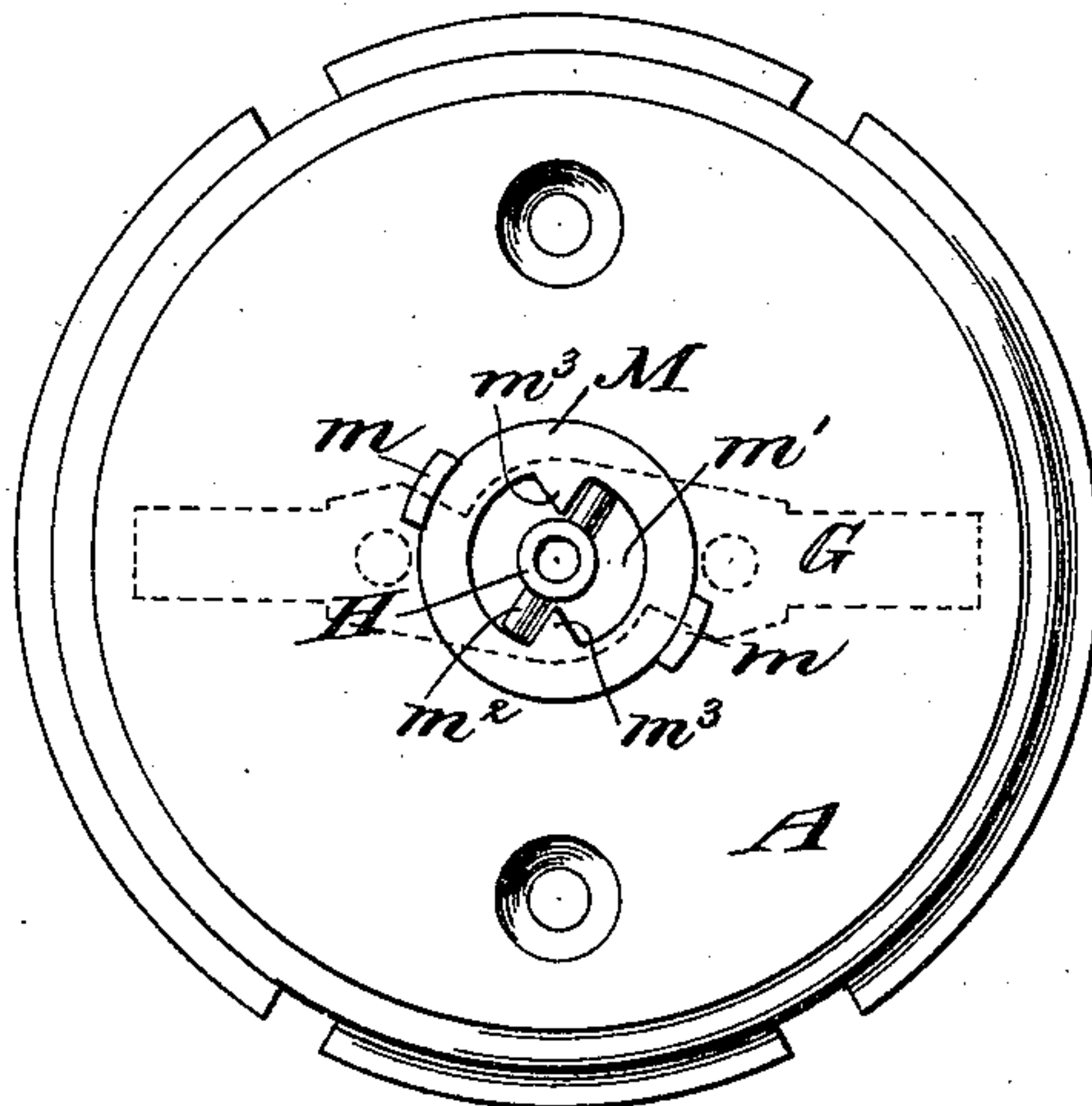
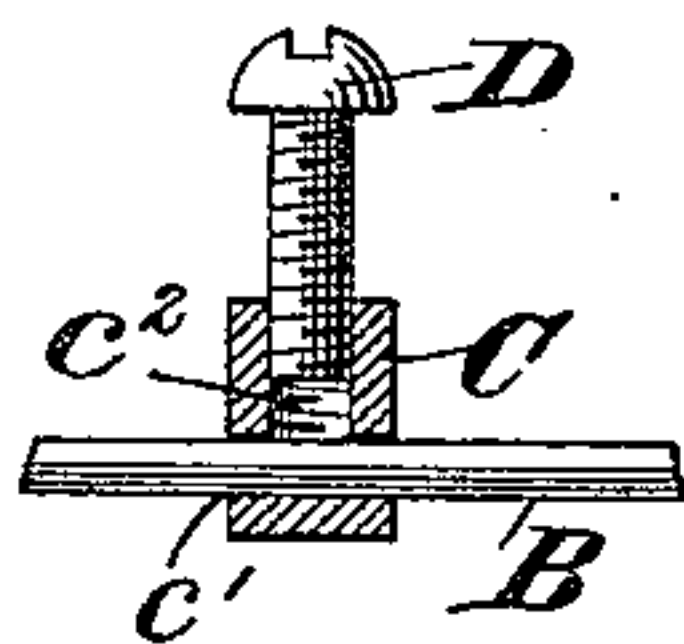


Fig. 6.



Witnesses:-  
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L. A. Legendre.

Inventor:-  
Le Roy S. White  
by attorneys  
Brown & Seward



# UNITED STATES PATENT OFFICE.

LE ROY S. WHITE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE ELECTRICAL APPLIANCE MANUFACTURING COMPANY, OF SAME PLACE.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 451,190, dated April 28, 1891.

Application filed October 11, 1890. Serial No. 367,810. (No model.)

*To all whom it may concern:*

Be it known that I, LE ROY S. WHITE, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

My invention relates to an improvement in electric switches in which a double break and double contact is insured when the switch is turned off or on.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a top plan view with an operating-handle removed. Fig. 2 is a bottom plan view. Fig. 3 is a vertical central section. Fig. 4 is a top plan view with the contact-bar, handle, and contact-plate removed. Fig. 5 is an end view, in detail, of the contact-bar, and Fig. 6 is a view in detail of one of the binding-posts.

A represents the base, which is preferably of circular form, as herein shown, and calculated to be made of porcelain or other suitable material capable of receiving an ornamental finish and to withstand injury from changes in temperature and dampness. The under side of the base A is hollowed out, as shown at *a*, and serves as a receiving-chamber for the ends of the wires B, which conduct the electricity to and from a building. The recess *a* on the under side of the base is provided with radially-extending recesses *a'*, which extend outward through the exterior of the base and form channels for the reception of the ends of the wires B, and the binding-posts C are seated in sockets *c*, intermediate of the ends of the recesses *a'*, and are allowed a vertical movement within their sockets. The said binding-posts are provided with openings *c'* therethrough, through which the ends of the wires B extend, and the upper ends of said binding-posts are provided with interior-threaded perforations *c''*, in which the lower ends of the binding-screws D engage, and serve when screwed downwardly or inwardly to draw the post C into its socket, and thereby cause the wire upon the opposite sides of the post to snugly engage the opposite edges of the socket *c*, and hence bear with a firm contact against the lower side of

the opening *c'* within the post, firmly locking the wire to the base and forming an efficient contact between the post and the wire.

In the present instance there are four ends of wires B represented as secured to the base, two of them corresponding to the adjacent ends of the wire which conducts the electricity into the building and the other two to the adjacent ends of the wire which conducts the electricity out of the building.

I have denoted the binding-screws which correspond to the adjacent ends of the one wire by D, and the binding-screws which correspond to the adjacent ends of the other by D'.

Upon the upper side of the base two pairs of contact-plates are secured, as follows: The contact-plates E, which serve to connect the ends of the wire leading into the building, are firmly fixed to the top of the base at one end by the binding-screws D, which extend through them, and at their opposite ends they extend upwardly and over toward each other, as shown at *e*, the extreme ends being separated into resilient prongs *e'*, preferably, as shown, by forming slits a short distance back from the ends. The said contact-plates are further secured near their upwardly-extending portions to the base by means of screws F, which extend through from the bottom of the base into suitable threaded perforations *f* in the contact-plates. A pair of contact-plates E', similar in construction to the contact-plates E, are secured to the ends of the outgoing wire by the binding-screws D', and their upwardly-projected ends are located at a point upon the top of the base, preferably diametrically opposite the position of the adjacent ends of the plates E. A contact-bar G is mounted at its central portion upon the operating-spindle H, so that it may slide freely on the spindle toward and away from the top of the base. The contact-bar G is provided with oppositely-extending arms bearing on their ends contact-pieces *g*, located between the uprising ends *e* of the contact-plates and secured to and insulated from the ends of the bar G. I find it convenient to effect the insulation by inserting thin layers U of non-conducting material between the under side of the contact-piece *g* and the upper side of



the bar G and between the lower side of the bar G and a washer  $g'$ , the whole being secured together by means of one or more bolts or rivets  $g^2$ .

- 5 I prefer to provide the contact-piece  $g$  with obliquely-extending wings  $g^3$ , so that as the bar G is raised away from the top of the base it will gradually cause the adjacent ends  $e$  of the contact-plates to be spread apart.
- 10 The contact-bar G is held in its proper relation with respect to the pairs of adjacent ends of the contact-plates by means of guide-studs K, fixed at their upper ends to the bar and projecting downwardly through the base A
- 15 into the recess  $a$  in the underside of the base.

The elevating of the bar G and the consequent "making contact" are accomplished by means of a double cam L, fixed to the lower end of the spindle H so as to rotate therewith.

- 20 One of the cam-surfaces  $l$  is clearly shown in Fig. 3, and the opposite side of the cam L is provided with a similar cam-surface  $l$ . The cam-surfaces  $l$  are so located with respect to the lower ends of the guide-studs K that when
- 25 the contact-bar G is near the top of the base and the contact-pieces  $g$  out of contact with the plates E and E' the lower ends of said guide-studs will occupy a position at the lowermost end of the cam-surfaces. From this
- 30 it follows that when the spindle and the cam L fixed thereon are rotated the lower ends of the studs K will ride along on the cam-surfaces  $l$  until they reach the top of said surfaces, at which time the contact-pieces  $g$  will
- 35 have been lifted to points near the upper ends of the fingers  $e'$ , and a firm contact will have been established between the said fingers and the contact-pieces. The cam-surfaces L are so arranged that it will require about a one-
- 40 half rotation of the spindle to accomplish such lifting of the bar G.

- For the purpose of locking the contact-bar G in its elevated adjustment with the contact-pieces  $g$  in engagement with the fingers  $e'$ , or
- 45 with the ends of the contact-plates E, a plate M is loosely mounted upon the spindle below the bar G and provided with a pair of upwardly-extending lugs  $m$ , located upon opposite sides of the plate and having their upper ends
- 50 slightly beveled. The plate M is here shown as of disk form, and is provided with a central recess  $m'$ , in which the ends of a pin  $m^2$ , fixed transversely in the spindle, are allowed to swing. The recess  $m'$  is provided at op-
- 55 posite points with abutments  $m^3$ , which are so located that just before the contact-bar G reaches its highest point, or its farthest point away from the base, the ends of the pins  $m^2$  will engage the abutments  $m^3$ , and
- 60 will thereby rotate the plate M, causing the

beveled ends of the lugs  $m$  to engage underneath the bar G and support it independently of the guide-studs K. This admits of the spindle, together with the cam, being swung back into position, with the pin  $m^2$  in en- 65 gagement with the opposite sides of the abutments  $m^3$ , where the bar G retains its engagement with the contact-plates. When it is desired to break the contact, the spindle is turned slightly in the opposite direction to 70 release the lugs  $m$  from engagement with the bar G, when the latter is free to drop suddenly into its depressed adjustment out of contact.

In order to give the bar G a quick throw out of contact, I provide a spring N, one end 75 of which is secured to the bar G and the other to the spindle, so that when the bar G is moved away from the top of the base the spring N will become compressed and its tension will tend to return the said bar out of 80 contact when the spring is released.

For convenience in operating the spring N, I provide a handle or knob O, which may be fixed thereto in any well-known or approved 85 manner.

What I claim as my invention is—

1. The combination, with a suitable base provided with a recess in its under side and two pairs of contact-plates secured to its top and having their adjacent ends extending 90 upwardly and toward one another, of a rotary spindle mounted in the base, a cam secured on the spindle within the recess in the bottom of the base, a contact-bar carrying contact-pieces located between the ends of 95 the contact-plates, studs extending from the bar through the base into contact with the cam for elevating the contact-bar to bring the contact-pieces into engagement with the approaching ends of the contact-plates, and 100 a locking device to retain the contact-bar in its adjustment away from the base, substantially as set forth.

2. The combination of a base, the contact-plates secured thereto in pairs, the spin- 105 dle having a cam secured thereon, and the contact-bar having an engagement with the cam, whereby the rotation of the spindle moves the bar away from the base, and a locking-plate actuated by the spindle as the con- 110 tact-bar nears the limit of its adjustment away from the base to hold the contact-bar in adjustment to make contact while the spindle is turned in the opposite direction, substantially as set forth.

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Witnesses:

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