

(No Model.)

H. B. WHITEHEAD.  
ELECTRIC SWITCH.

No. 554,557.

Patented Feb. 11, 1896.

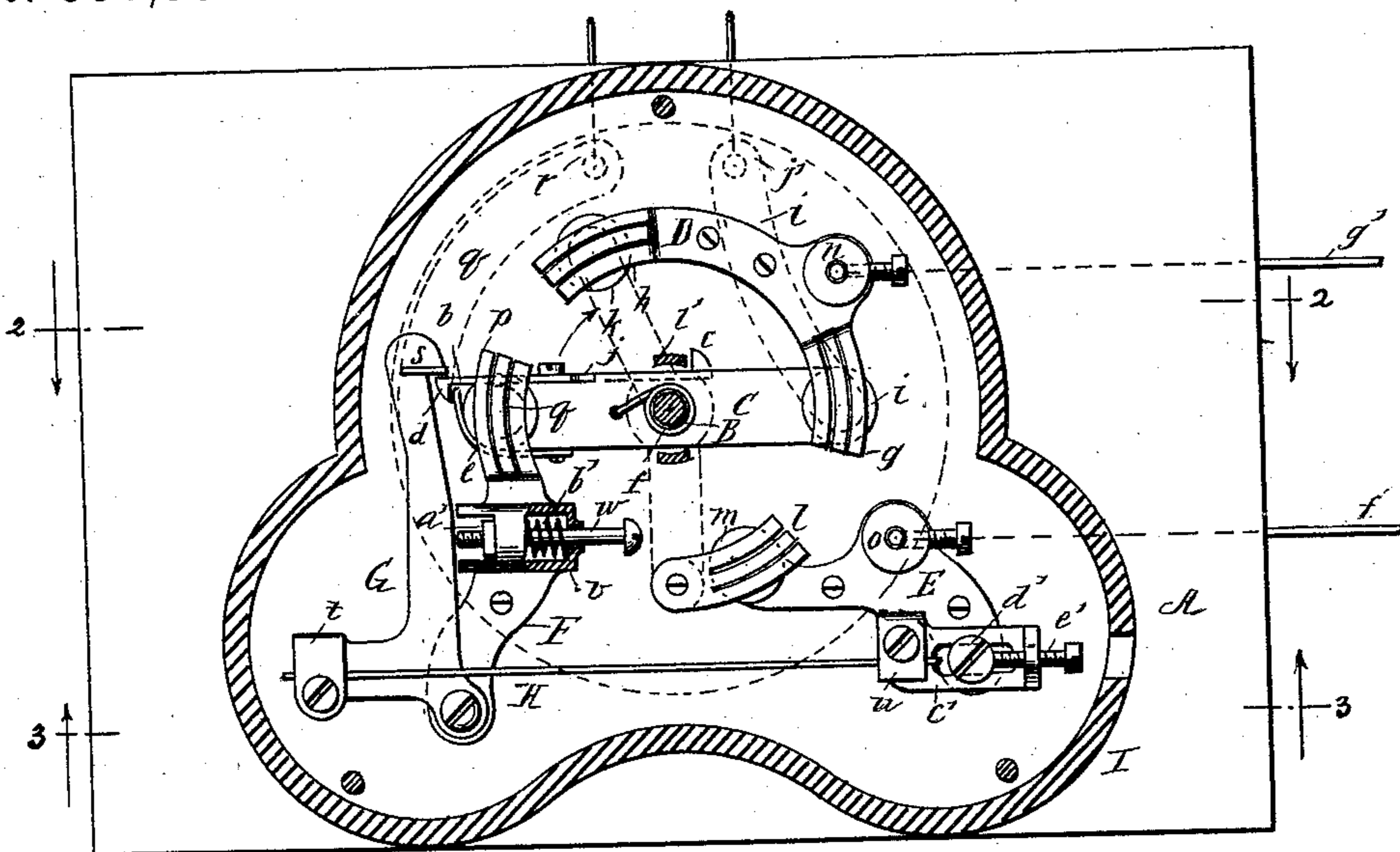


Fig. 1

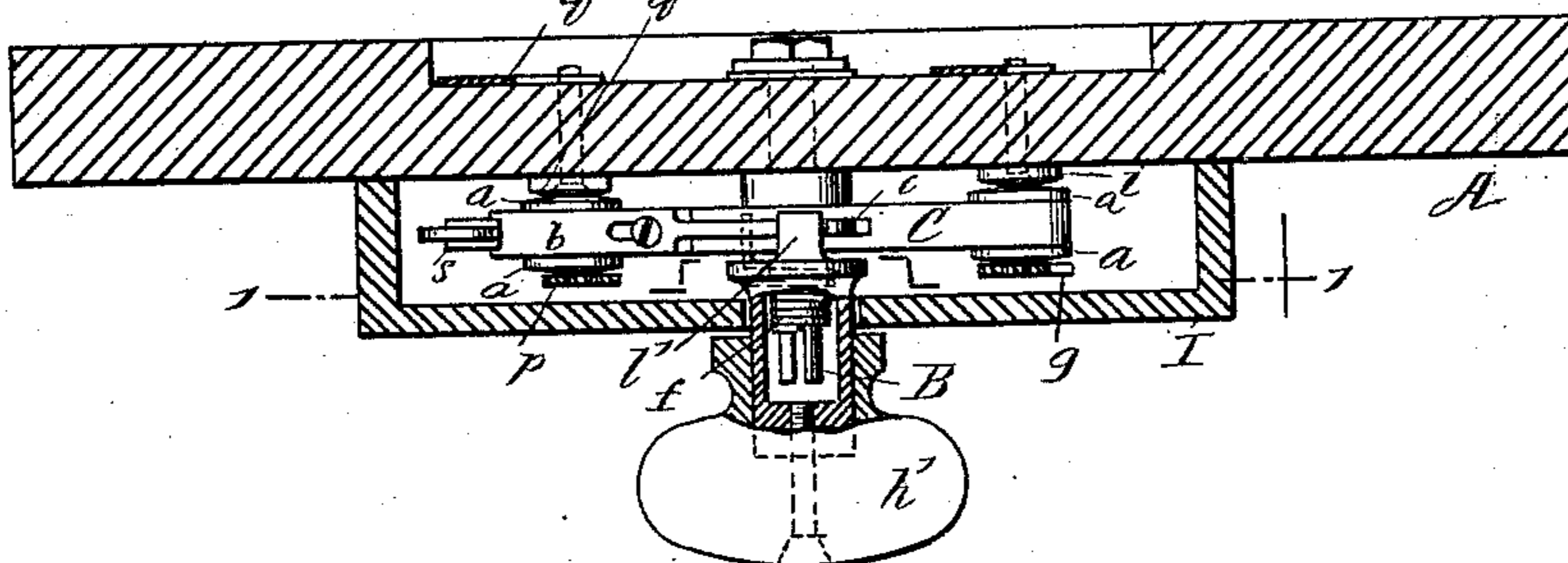


Fig. 2

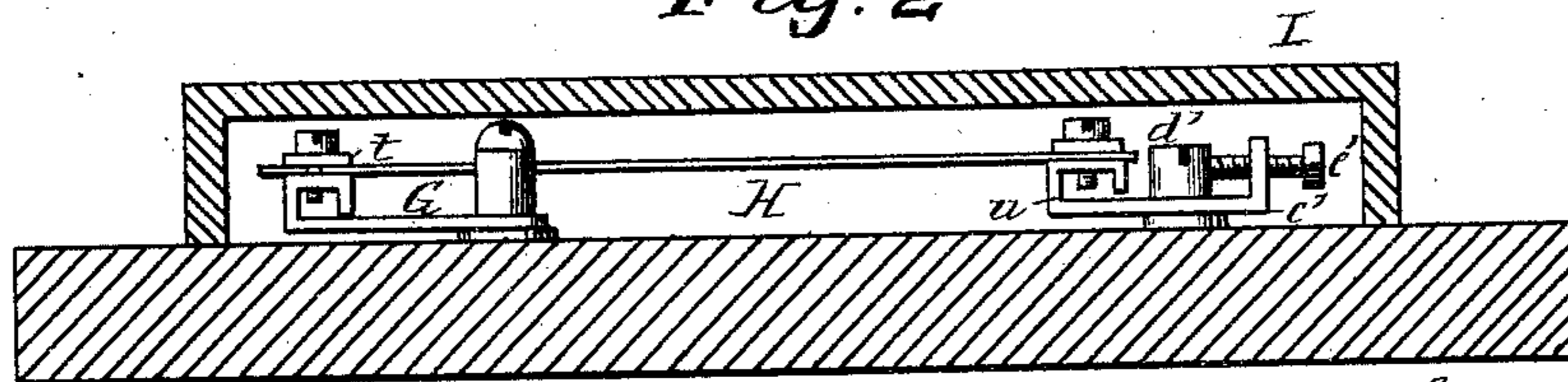


Fig. 3

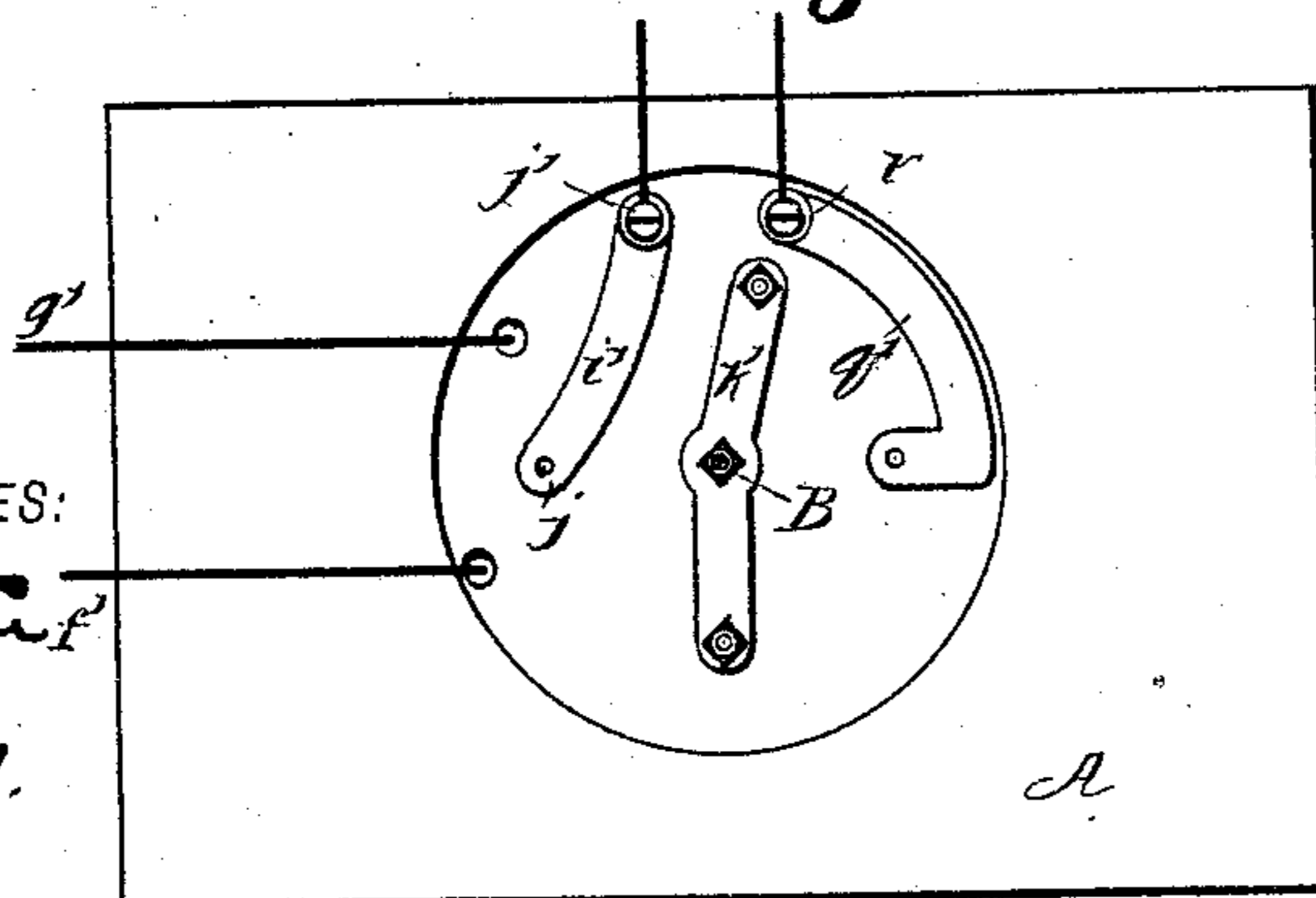


Fig. 4

WITNESSES:

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HENRY B. WHITEHEAD, OF MEMPHIS, TENNESSEE.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 554,557, dated February 11, 1896.

Application filed August 29, 1894. Serial No. 521,629. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY B. WHITEHEAD, of Memphis, in the county of Shelby and State of Tennessee, have invented a new and Improved Electric Switch, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical longitudinal section taken on line 1 1 of Fig. 2. Fig. 2 is a horizontal section taken on line 2 2 in Fig. 1. Fig. 3 is a horizontal section taken on line 3 3 in Fig. 1, and Fig. 4 is a rear elevation.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide a simple and effective switch, capable of being used as an ordinary switch and also as a cut-out for preventing the passage of an excessive current to a particular portion of the circuit.

My invention consists in the combination, with a spring-actuated switch-arm, of a detent-lever adapted to engage the switch-arm, a spring tending to disengage the detent-lever from the switch-arm, and an expansion-wire used as a conductor and arranged to normally hold the detent-lever in engagement with the switch-arm, and to release the detent-lever when the wire is expanded by heat due to excessive current.

It also consists in a device whereby the switch-arm may be released from the detent-lever and turned by hand, all as will be hereinafter fully described and pointed out in the claims.

The base A, which is of insulating material, is recessed at the back to receive the electrical connections, and on a stud B projecting from the base is fulcrumed a straight switch-lever C, having arms of equal length. The switch-lever C, which is made of insulating material, carries at its ends and upon opposite sides contact-buttons *a*, the buttons of each pair being connected by a rivet passing through the button and through the end of the lever C.

In a groove in the upper edge of the lever C is inserted a metal bar *b*, having at its inner end an upwardly-turned nib *c*, and at its outer end a downwardly-turned nib *d*. The bar *b* is slotted to receive a screw inserted in the switch-lever. To the lower edge of the

switch-lever C, at the end carrying the bar *b*, is attached a curved spring *e*, the free end of which presses against the inner side of the nib *d*, forcing the bar *b* outward.

On the stud B is placed a helical spring *f*, one end of which is attached to the switch-lever C, the other end being secured to the stud. The stud B may be turned in its bearings in the base A to vary the tension of the spring *f*, but it is held with sufficient friction to prevent it from being turned by the spring.

To the base A are secured three plates D E F, the plate D being curved and offset at its ends, forming contact-springs *g h*. On the base A, under the contact-spring *g*, is placed a contact-button *i*, which is connected electrically with a metal strip *i'* placed in the recess in the back of the base and connected with a binding-screw *j*, which clamps the circuit-wire to the strip. On the base A, under the contact-spring *h*, is placed a contact-button *k*, which is connected electrically with the contact-spring *l* by a metal strip *k'*. The contact-spring *l*, which is elevated from the base by a block of insulating material, projects over a contact-button *m*, formed on the plate E. The plates D and E are provided with binding-posts *n o*, which receive wires passing through holes in the base.

The extremity of the plate F is offset and formed into a contact-spring *p*, and on the base A below the said contact-spring is placed a button *q*, connected by a metal strip *q'* with a binding-screw *r*. An angled lever G pivoted to the plate F is provided with a nib *s* at the end of its longer arm for engaging the bar *b* carried by the lever C. The shorter arm of the lever G is provided with a clamp *t*, which receives and holds one end of an expansion-wire H, the other end of which is received in a clamp *u* adjustably connected with the plate E. To the plate F, opposite the edge of the lever G, is secured a sleeve *v* containing a bolt *w*. On the said bolt, within the sleeve *v*, is placed a nut *a'*, between which and the partly-closed end of the sleeve, and surrounding the bolt *w*, is placed a spiral spring *b'*, the pressure of which holds the expansion-wire H under tension. The base-plate *c'* of the clamp *u* is slotted longitudinally to receive the screw *d'* inserted in the plate E, and in the angled end of the base-

plate *c'* is inserted an adjusting-screw *e'*, which bears against the side of the screw *d'*. By turning the screw *e'* inwardly the clamp *u* is carried outward away from the lever *G*,  
 5 thereby increasing the tension of the wire *H* and holding the spring *b'* under compression.

The cover *I*, which fits over the working parts of the switch, is provided with a key having outside the cover a thumb-piece *h'*  
 10 and inside a fork *l'*, which loosely embraces the lever *C*. One of the arms of the fork *l'* is in position to engage the nib *c* when the thumb-piece *h'* is turned. This permits of operating the switch by hand, since by turn-  
 15 ing the thumb-piece *h'* the nib *c* is engaged by the arm of the fork, withdrawing the bar *b* from underneath the nib *s*, thereby liberating the switch-arm and allowing it to take its position under the springs *h l*.

20 The current entering by the wire *f'* passes from the binding-post *o* through the plate *E*, clamp *u*, the wire *H*, plate *F*, buttons *a* on the lever *C*, and metal strip *q'*, binding-screw *r* to the circuit containing the translating de-  
 25 vices, thence returning to the binding-screw *j'*, through the strip *i'*, buttons *a* carried by the lever *C*, the contact-spring *g*, plate *D*, and binding-post *n* to the wire *g'*, which extends to the generator. Should the current taken  
 30 by the translating devices exceed the limit of safety, the wire *H* becomes heated and expands to release the lever *G*, which is turned on its pivot by the spring *b'*, thus releasing the lever *C*, allowing the spring *f* to turn so  
 35 as to bring the buttons *a* of one end between the contact-spring *l* and the button *m* on the plate *E*, the other pair of buttons *a* being carried between the contact-spring *h* and the button *k*. Under these conditions the current  
 40 arriving by the wire *f* passes through the plate *E*, through the buttons on the lever *C*, contact-spring *l*, metal strip *k'*, button *k*, buttons *a* on the opposite end of the lever, the contact-spring *h*, plate *D* to the generator through the  
 45 wire *g'*, as before, thus cutting out the translating devices.

When the circuit containing the translating devices is restored to its normal condition, the lever *C* is returned to its normal position,  
 50 the bar *b* yielding in its passage over the nib

*s*, and springing outwardly after it has passed the nib, thus holding the switch-lever *C* in its original position.

Having thus described my invention, I claim as new and desire to secure by Letters 55 Patent—

1. In an electric switch, the combination with contact-springs, of a spring-impelled switch-lever, a releasing-bar adapted to slide 60 on the lever and having a portion extended over the end of the lever, a detent-lever for engaging with the end of said bar, an adjustable spring for operating the detent-lever in one direction and an expansion-wire in the electric circuit for normally holding the de- 65 tent in engagement with the sliding bar, substantially as specified.

2. In a switch, the combination, with contacts and a spring-pressed switch-lever, of a bar mounted to slide on said lever and hav- 70 ing a nib projecting over the end of the lever and also having a nib at its opposite end to be engaged by a key, and a detent for engaging the bar, substantially as specified.

3. In an electric switch, the combination 75 with a switch-lever having a rotary motion, of a curved plate having contact-springs on each of its ends, a plate provided with a binding-post and having a contact-button, a spring-contact adapted for electrical connection with 80 the button, a plate having a spring-contact normally in engagement with one end of the switch-lever, a detent-lever pivoted on said last-named plate and an expansion-wire en- 85 gaging with the detent-lever, substantially as specified.

4. In a switch, the combination with a switch-lever, of a detent therefor, an expansion-wire having one end engaging with the detent-lever, and a clamp engaging the other 90 end of said wire and comprising a slotted plate, a screw passing through said slot and an adjusting-screw passing through a tapped hole in the upturned end of the plate and im- 95 pinging against the first-named screw, substantially as specified.

HENRY B. WHITEHEAD.

Witnesses:

W. H. WHITEHEAD,  
 Z. S. OLIVER.