

No. 619,829.

Patented Feb. 21, 1899.

R. KAES.

PROTECTIVE DEVICE FOR INCANDESCENT ELECTRIC LAMPS.

(Application filed Aug. 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

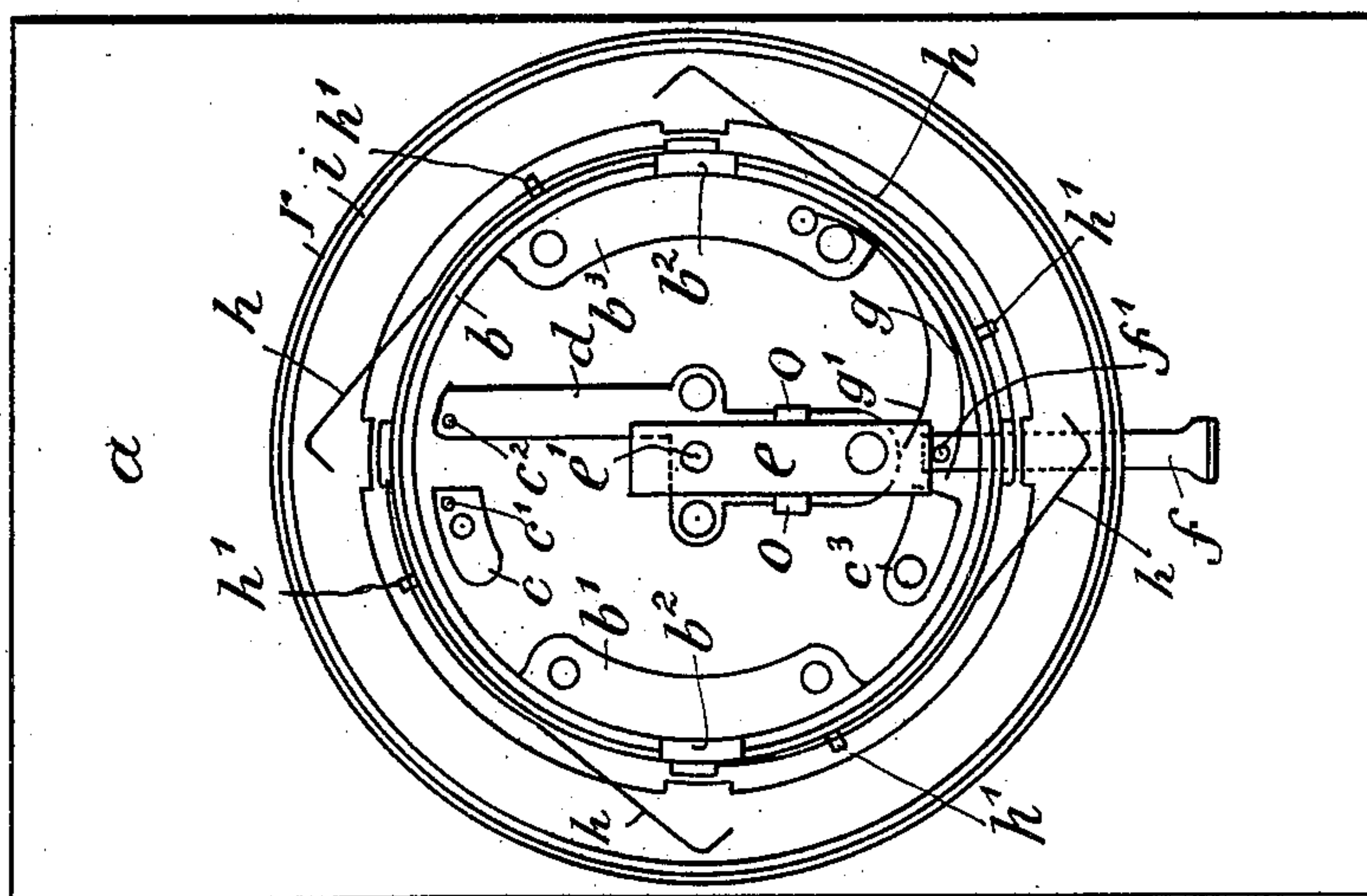
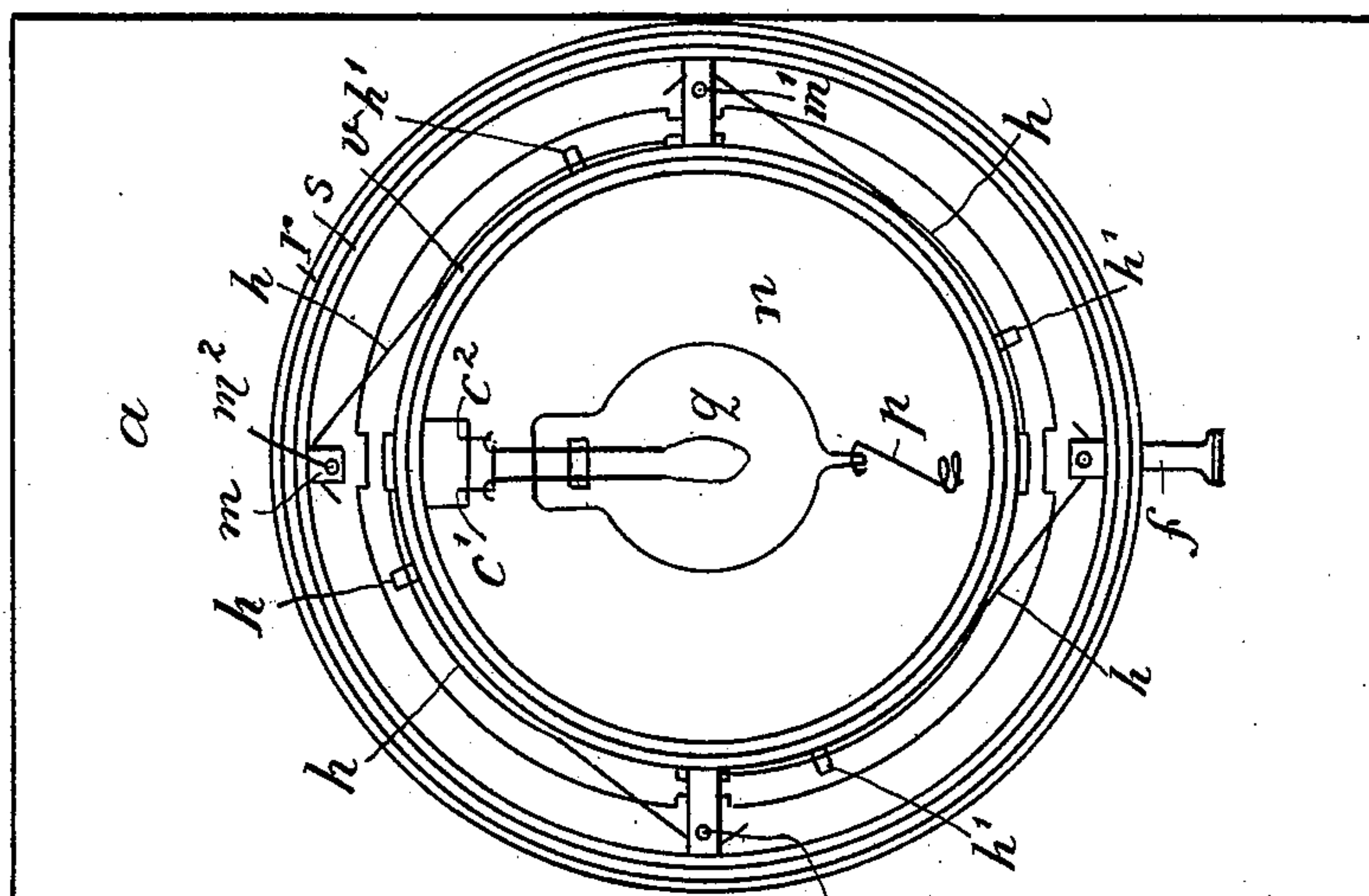


Fig. 1.



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Fig. 4.

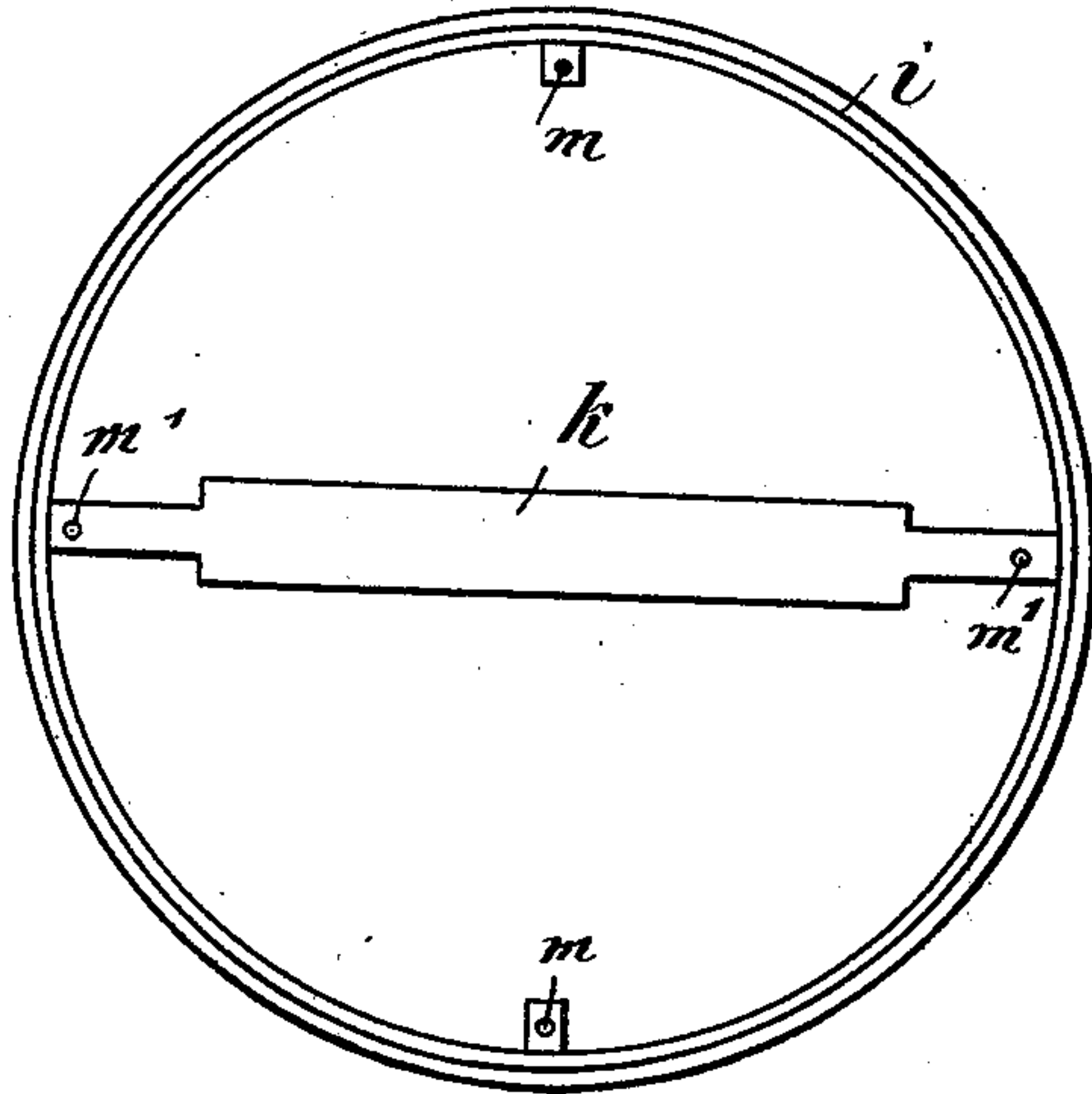


Fig. 5.

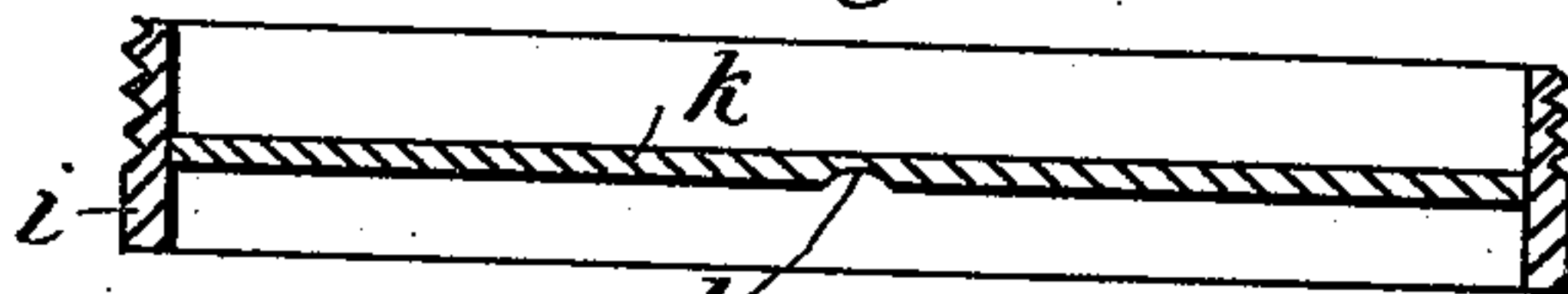


Fig. 8.

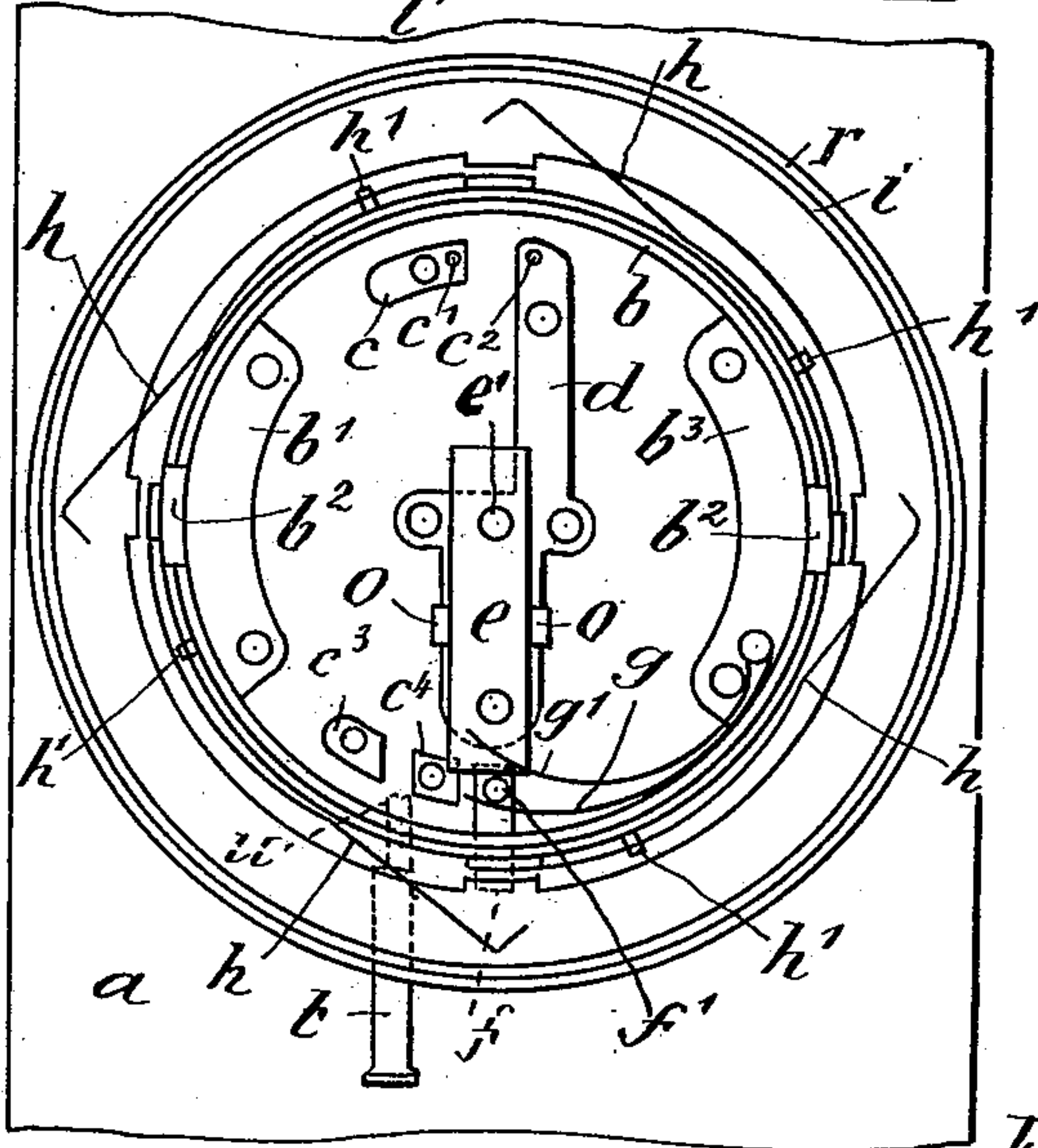


Fig. 6.

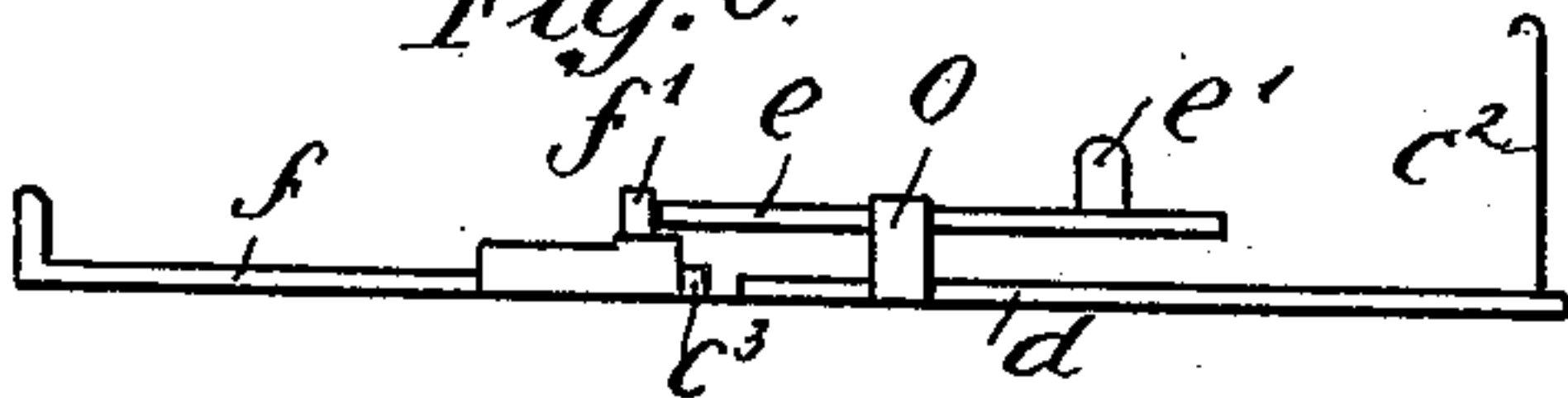
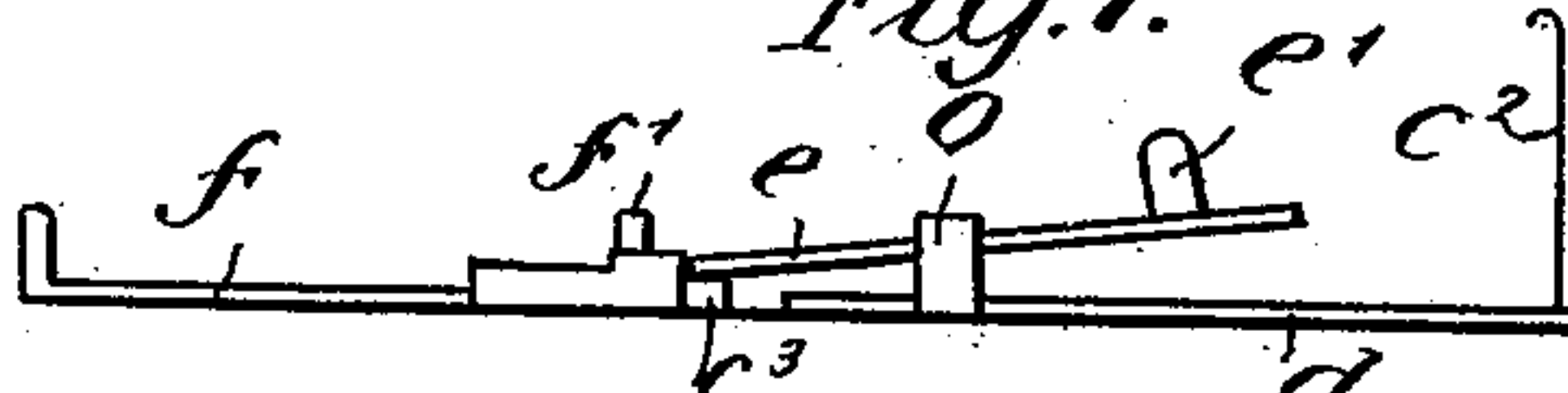


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PROTECTIVE DEVICE FOR INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 619,829, dated February 21, 1899.

Application filed August 11, 1898. Serial No. 688,363. (No model.)

To all whom it may concern:

Be it known that I, RICHARD KAES, a citizen of the Empire of Austria-Hungary, residing at Vienna, in the archduchy of Lower Austria and Empire of Austria-Hungary, have invented certain new and useful Improvements in Protective Devices for Incandescent Electric Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention consists, essentially, in throwing out of circuit an incandescent lamp before the bulb or envelop of the same is broken by a shock or blow, so as to prevent the ignition of explosive gases or other substances in consequence of the burning up of the carbon filament of the broken incandescent lamp.

The device invented by me is more particularly adaptable to miners' electric lamps.

The accompanying drawings show this improved device with all its details.

Figure 1 is a view of the lamp complete. Fig. 2 shows the device after the removal of the incandescent lamp, of the glass shade, and of the reflector. Fig. 3 is a vertical central section of the whole lamp. Fig. 4 is a plan of the ring *i*. Fig. 5 is a cross-section of this ring *i*. Fig. 6 shows the normal position of the contact-maker, (lamp extinguished.) Fig. 7 shows the position of the contact-maker when the same is closed, (lamp burning.) Fig. 8 is a view corresponding to Fig. 2 of a modified form of the protective device.

Upon a wall *a* is fixed the ring *b*. Within this ring and on the bottom of the plate is arranged the contact-piece *c*, Fig. 2, the latter being screwed home and carrying the wire *c'*, the end of which has the form of a hook. On the opposite side is placed the contact-piece *d*, which carries at the top another wire *c''*, whose free end is bent over to form a hook. The two hooks *c'* and *c''* serve to suspend the incandescent lamp and to convey the current thereto. The plate *d* carries a contact maker and breaker lever or key *e*, fulcrumed on *o*, Figs. 2 and 6, and provided at the top with a rounded-off pin *e'*, Fig. 3. The sliding contact *f*, Figs. 1, 2, 3, 6, 7, and 8, is guided in a slot of the ring *b* and is prevented from slip-

ping down by the arm *g* of the two-armed spring *g g'* bearing upon the pin *f'*, its inward motion being limited by the pin *f'* striking the lever or key *e*. The other arm *g'* of this spring *g g'* bears upon the lever or key *e* and tends constantly to bring the same into contact with the contact-piece *c''*, which can only be prevented by the springing therebetween of the sliding contact *f*, which pulls the spring *g* inwardly. The double spring *g g'* is fixed by a screw to the piece *b''*, which is likewise screwed on the wall or plate *a*, as are the parts *b'*, *c*, *d*, and *c''*, Fig. 2. The reflector *n*, Fig. 1, is screwed onto the parts *b'* and *b''*.

Upon the outer periphery of the ring *b* are screwed the four springs *h*, Fig. 2, which are carried by the small screws *h'*. The latter springs have for their object to hold the ring *i*, to which the annular box *r*, Figs. 1 and 3, is fixed by means of screws *m''*, passing likewise through the pieces *m* on the one hand and through the holes *m'*, formed in the bar *k*, Fig. 4, fixed rigidly to the said ring, on the other hand, while the screws *m''* pass likewise through the angles of the springs *h*, Fig. 1, bent at their extremities in the form of a hook, in such a position that the said ring *i*, with its annular box *r*, is held above the plate *a* and is held fixed at the same time by the angles of the springs *h* and the screws *m''*, passing through them, to such an extent that it can only be moved by exerting a certain amount of pressure either from the side or upon the whole screwed hemispherical glass or cover, so as to move the rod *k*, firmly fixed to the ring *i* and provided centrally and downwardly with a small semicircular cavity *l*, Fig. 5, and press the same upon the pin *e'* of the contact maker or breaker in order to depress the latter and thus raise the lever or key *e*, whereupon the contact is broken and the lamp is extinguished. Upon the ring *b* is screwed another ring *v*, Fig. 3. The rod *k* of the ring *i* rests in the recesses *b''* of the ring *b*. Upon the ring *i* is screwed the ring *S*, wherein is fitted the hemispherical glass above referred to. The fitting up is carried out in such a manner that the ring *i* is first placed upon the ring *b* and is screwed up with the annular box by means of the small screws *m''*. Then the ring *v* is screwed upon *b*, after which the reflector *n* is screwed in po-

sition, while the incandescent lamp q is suspended to the wires c' c^2 and is held besides at its pointed end by the spring p , fixed to the reflector n . Over the whole apparatus
 5 the ring s , with the hemispherical glass or cover placed therein, is finally screwed upon the ring i .

This lamp operates in the following manner: To allow the electric current proceeding
 10 from the source of electricity placed at the back of the plate a , Fig. 3, to enter the lamp, the sliding contact is drawn down. As shown in Fig. 7, the lower part of the contact-lever e comes to bear under the action of the springs
 15 g' upon the contact-piece c^3 , so that the electric current introduced through the latter passes along the wire c' , enters the lamp, and follows the wire c' as far as the contact-piece c , the circuit being thus closed and the lamp
 20 burning. If now the glass of the ring i or the ring itself were to receive a knock or a blow, this ring would be sunk, the rod k would depress the pin e' , the lower part of the contact making or breaking key or lever e would
 25 be raised, and the slide f , urged on by the pressure of the spring g , would spring forward, so that this lever or key would come to bear on the slide, as at f , Fig. 6, and would break contact with the contact-piece c^3 . The cur-
 30 rent would then be broken and the lamp extinguished.

Fig. 8 shows a modification whereby when the glass is broken ignition cannot be communicated to the surrounding atmosphere
 35 without thoroughly smashing the lamp—that is to say, when the lamp is extinguished it cannot be lighted again either accidentally or intentionally. In this modification the contact-piece c^3 is broken in the middle, consisting thus of two parts c^3 and c^4 . The contact
 40 is now made or broken by the upper part u of the slide t . All other parts of the device are similar to those hereinbefore described. The slide f is so shortened that it no longer
 45 projects out of the lamp, and hence cannot be further actuated independently, and, in consequence of pressure being exerted on the slide f outwardly and the reestablishment of the contact between the lever e and the con-

tact-pieces c^4 and c^3 , ignition becomes a matter 50 of impossibility unless the whole apparatus is smashed, and the slide f thus becomes depressed.

I claim—

1. In combination with a protective cover 55 for an electric lamp, a supporting device for said cover adapted to be depressed by the fracture or depression of said cover, and a circuit making and breaking device operated by a part or attachment of said supporting de- 60 vice, whereby the depression of said supporting device will break the circuit, substantially as set forth.

2. In combination with a protective cover 65 for an electric lamp, a depressible ring to which the said cover is attached, a rod k moving with the said ring and cover, a circuit-making lever e provided with a pin e' arranged to be acted on by said rod when the latter is thus depressed, a contact-piece arranged for 70 normal contact with the said lever, and electrical connections making circuit through the said lever and contact-piece, the depression of the said ring and rod serving to move the said lever away from the said contact-piece 75 and thereby break the circuit, substantially as set forth.

3. In combination with the protective cover of an electric lamp and its movable support, an attachment depressible with the said sup- 80 port, a circuit-breaking lever arranged to be moved out of contact by the said attachment when thus depressed, a fixed contact-piece which is normally in contact with the said lever, a sliding piece which may be moved to 85 open or close the circuit, electric conductors making circuit through the said lever, movable piece and fixed contact-piece, and a two-armed replacing-spring which acts on the said sliding piece and lever, substantially as set 90 forth.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD KAES.

Witnesses:

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