

(No Model.)

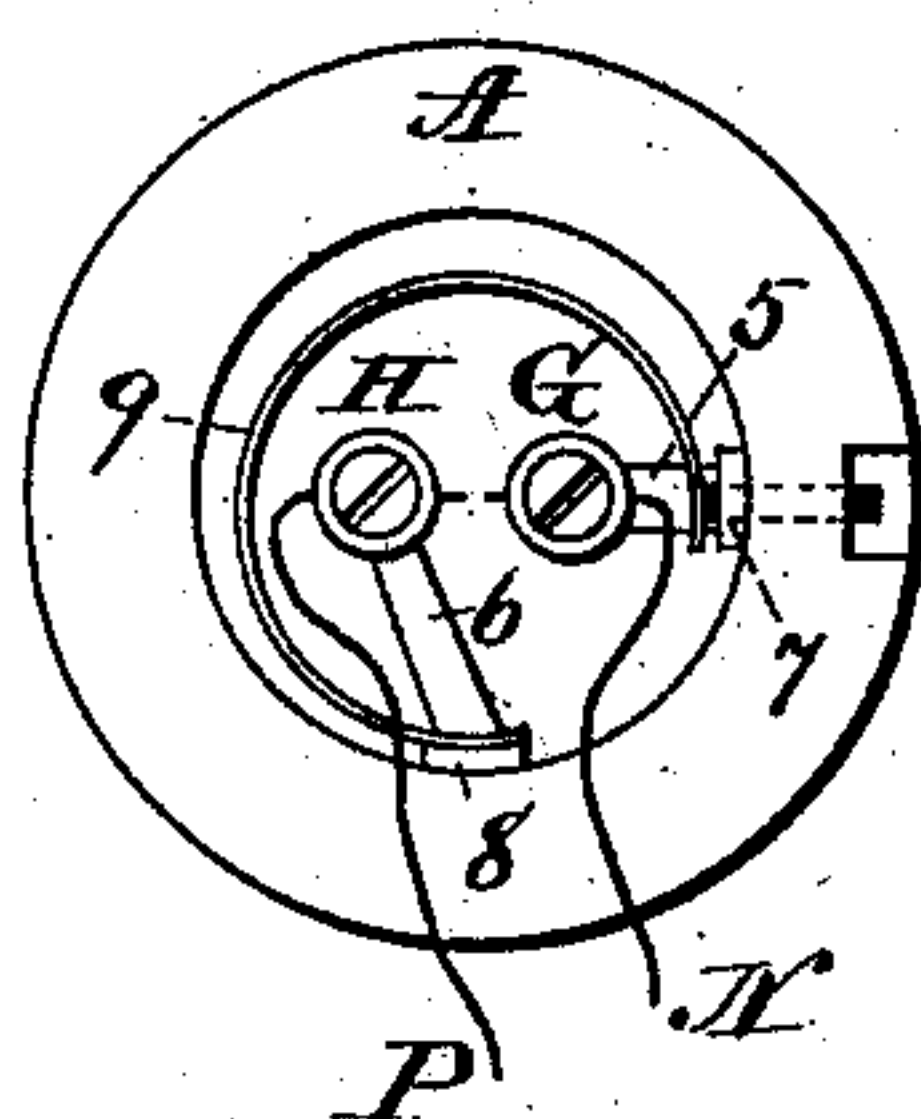
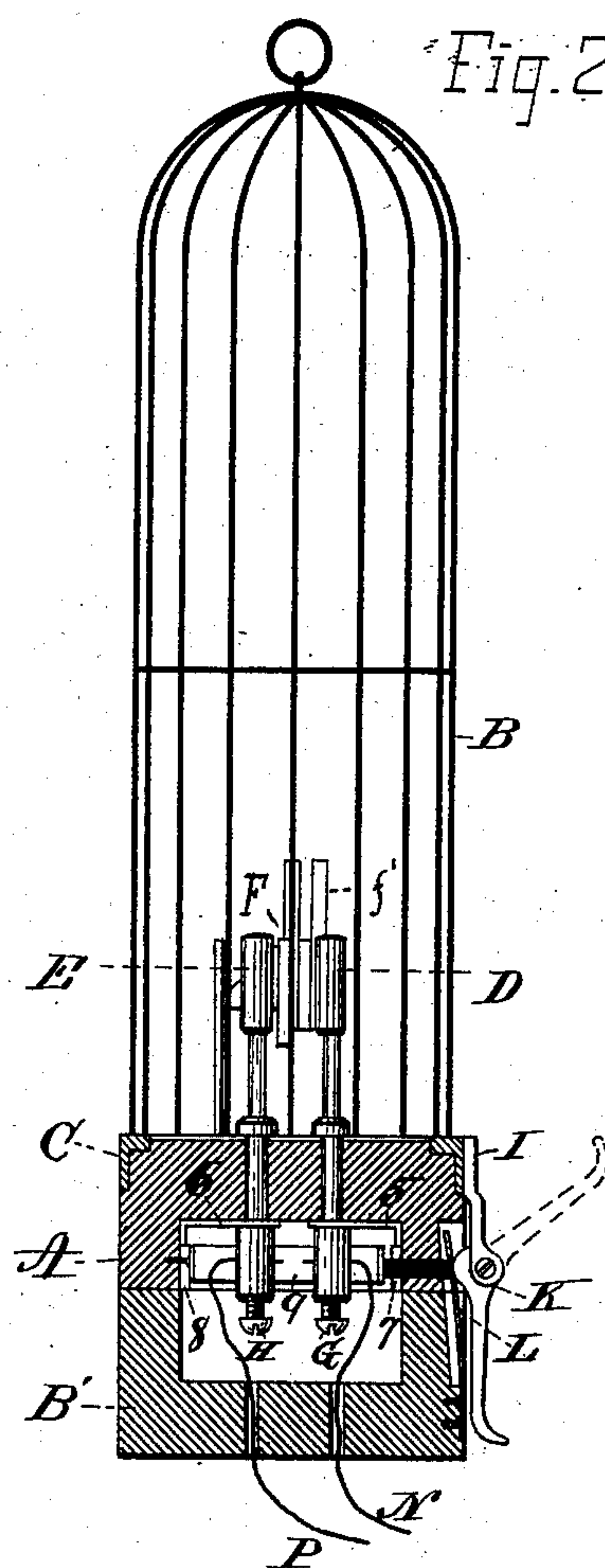
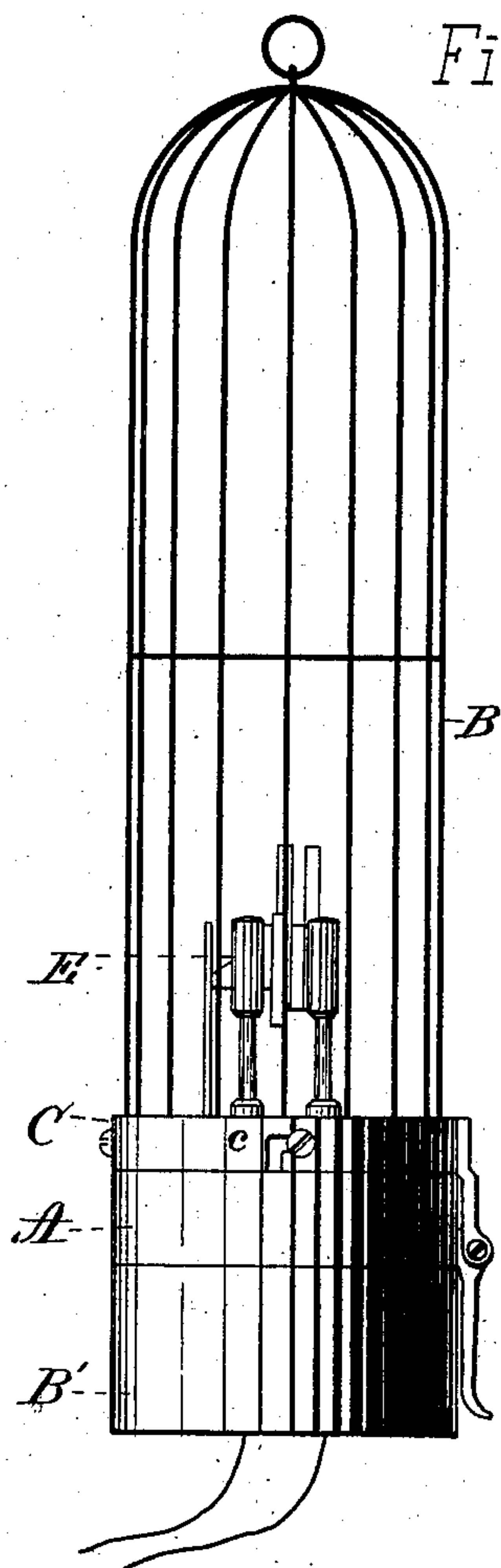
2 Sheets—Sheet 1.

C. A. CHEEVER.

ELECTRIC LAMP.

No. 258,991.

Patented June 6, 1882.



WITNESSES:

Thos. J. J. J.  
Geo. C. C.

INVENTOR

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(No Model.)

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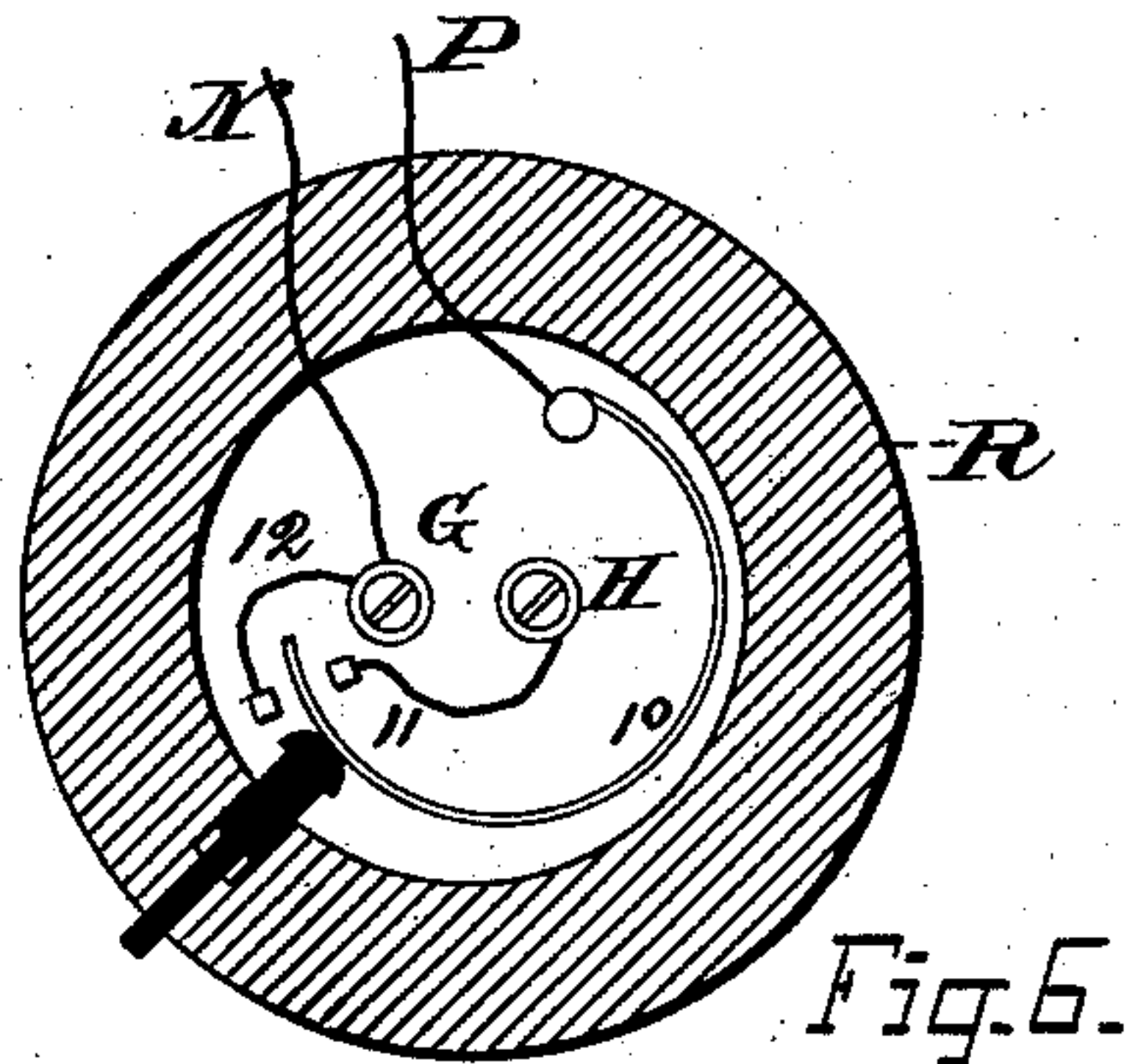
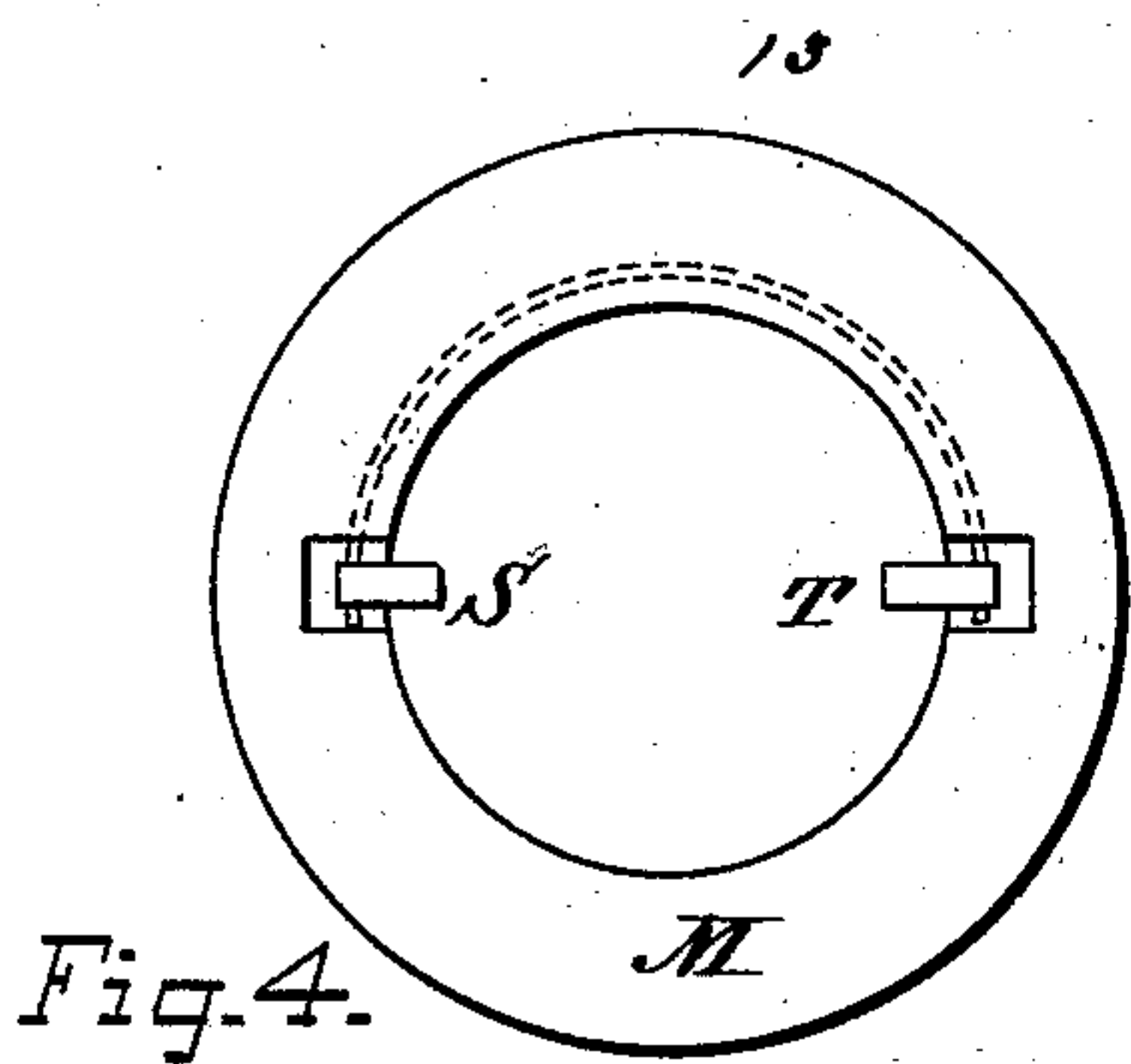


Fig. 10.

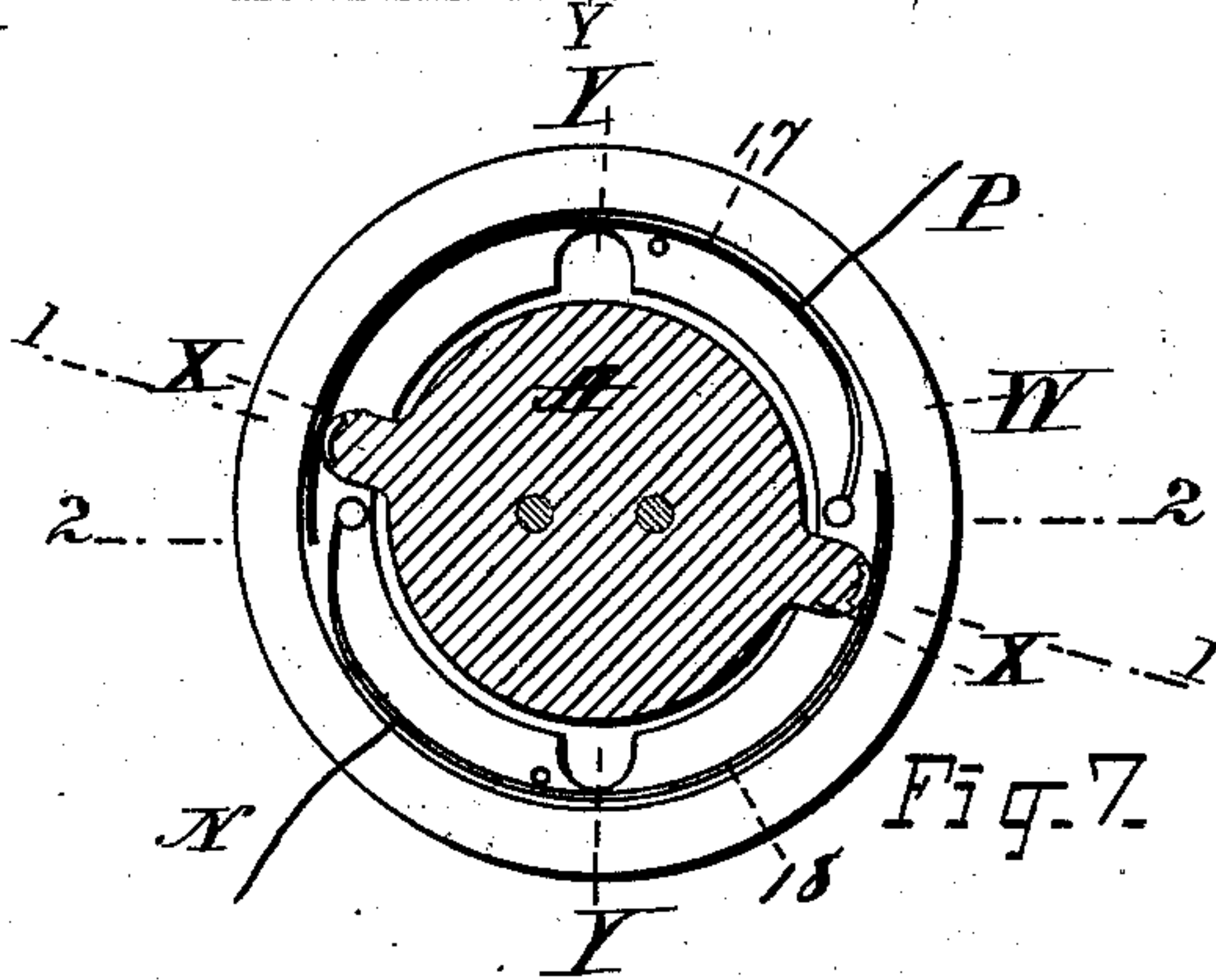
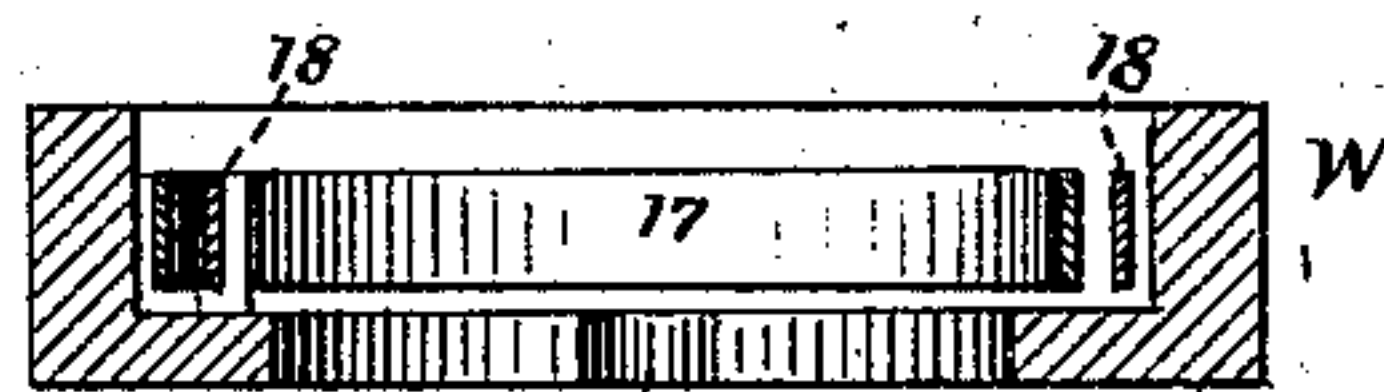
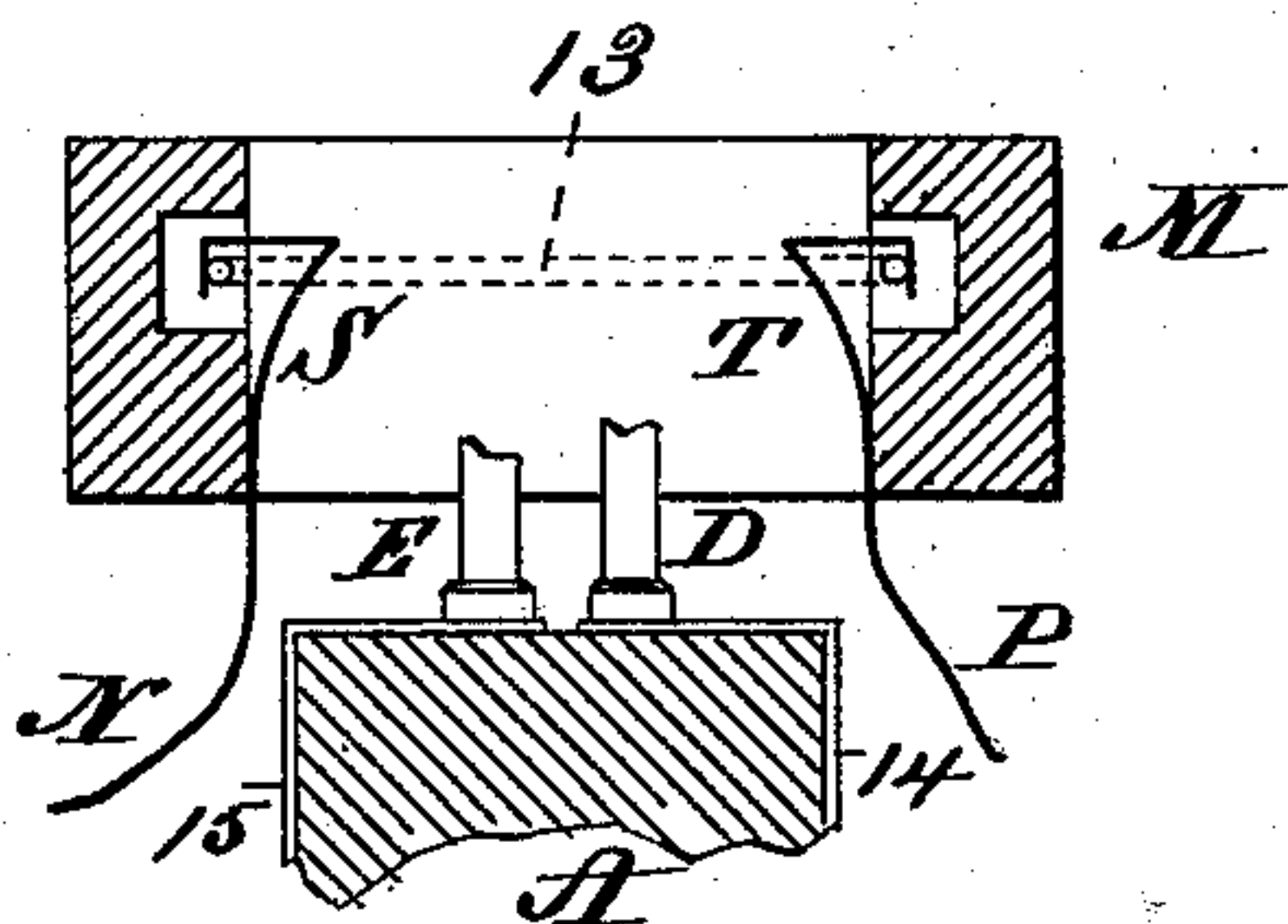


Fig. 5.

Fig. 9.

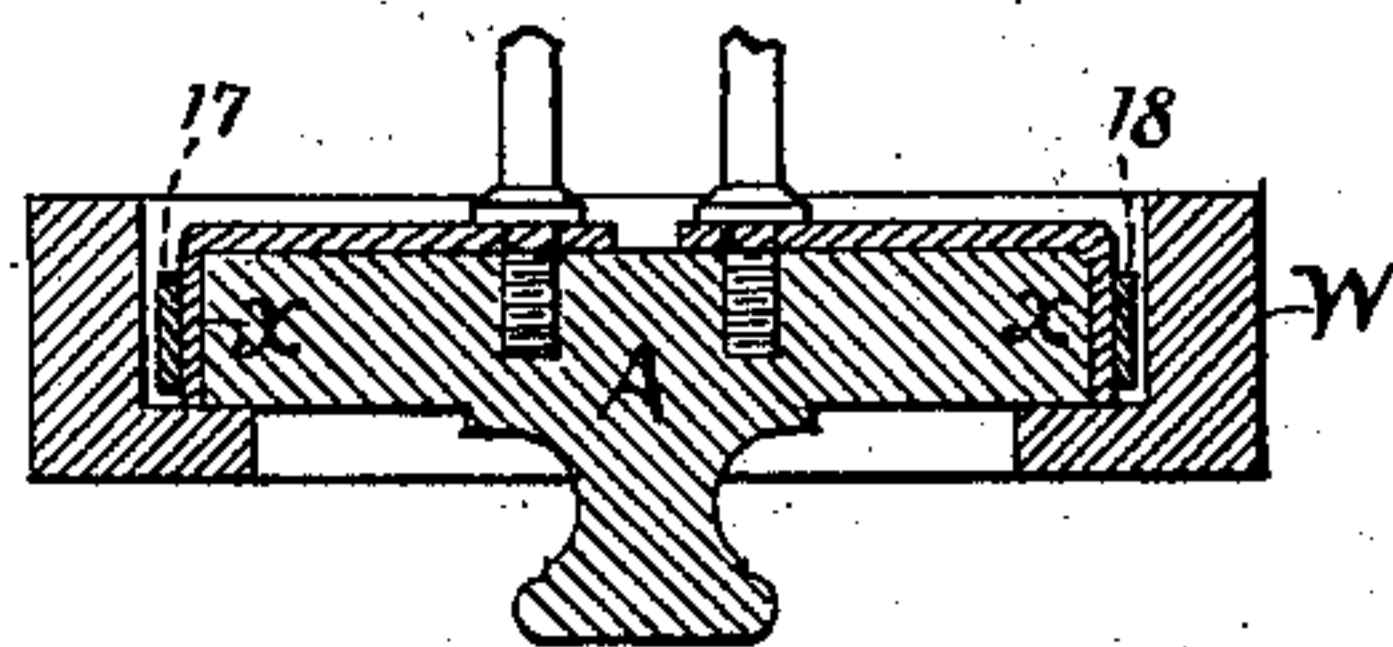
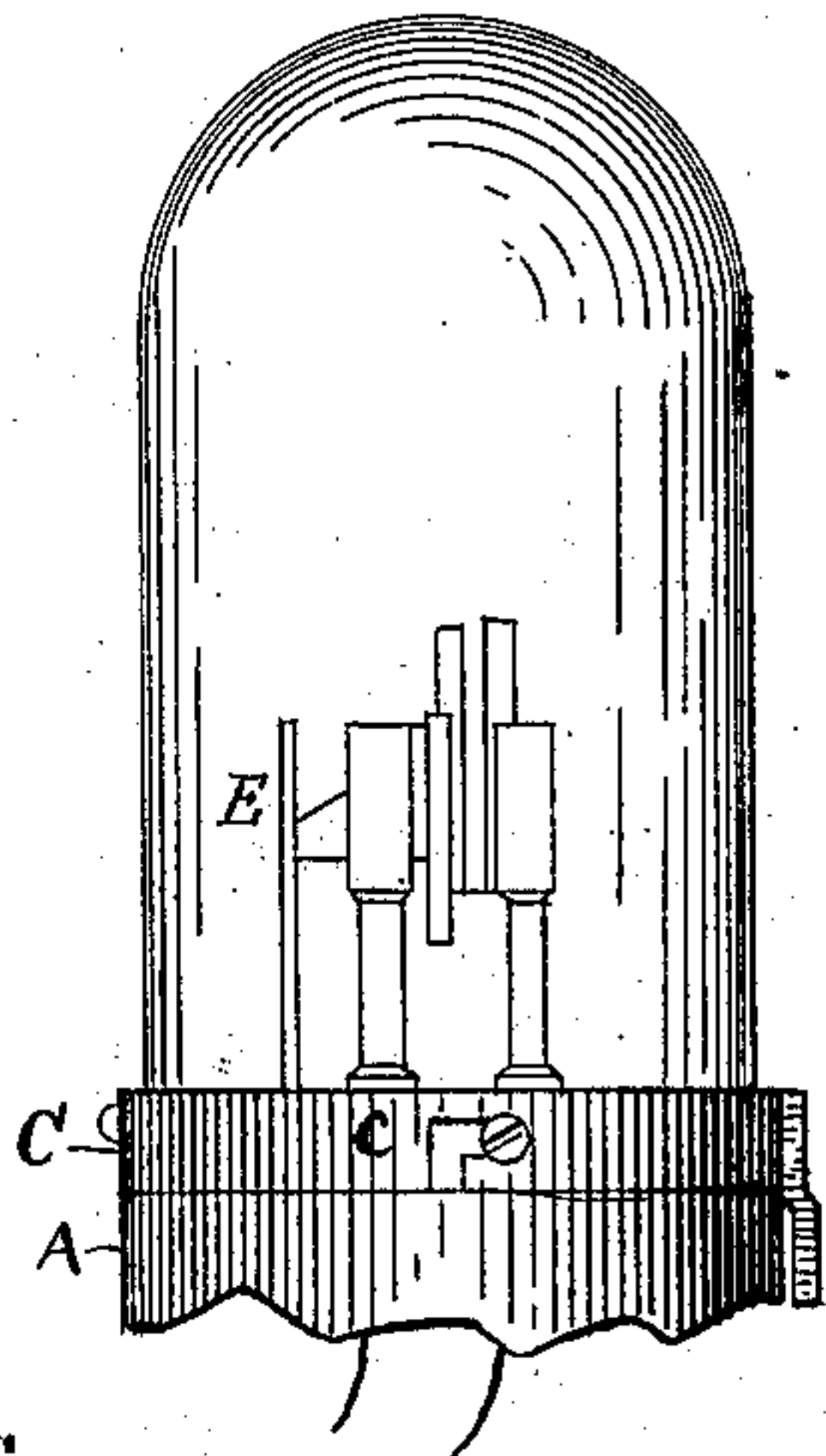


Fig. 8.

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# UNITED STATES PATENT OFFICE.

CHARLES A. CHEEVER, OF NEW YORK, N. Y.

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 258,991, dated June 6, 1882.

Application filed March 28, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. CHEEVER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

The object of my invention is to so combine an electric lamp with an inclosing or protecting cage, cover, or globe for the light-giving portion that the removal or disconnection of said cage, cover, or globe to allow access to the light-giving portion shall automatically cause the formation of a branch circuit around the lamp, so that the continuity of the main or general circuit upon which said lamp is placed shall not be interrupted.

To this end my invention consists in the combination, with the lamp and the inclosing and protecting globe, cage, or casing for the light-giving portion of the lamp, of an electric switch connected to the general circuit, the combination being such that the disconnecting of the lamp and the casing causes or is necessarily attended by the operation of the switch, the latter being provided with contact-points and connections such that when it is operated in the act of removing the cage or globe it shall close a branch around the lamp for the general circuit.

In the accompanying drawings I have shown my invention as applied to one particular form of lamp, in which a Jablochkoff candle is employed and an inclosing-cage of open wire-work is provided for the purpose of protecting the candle from injury. It should be understood, however, that my invention is also applicable in other forms of lamp—as, for instance, to those in which point-to-point carbon sticks are used, the carbon sticks at the point where the arc is formed being protected by a translucent globe. Figure 1 is a side view of a lamp containing my invention. Fig. 2 is a vertical section of the base of the lamp. Fig. 3 shows the bottom of the base-block or support upon which the light-giving portion of the lamp is supported. Figs. 4 and 5 illustrate another method of carrying out the invention. Fig. 6 shows a modified construction of the switch. Fig. 7 illustrates still another method of carrying out the invention. Fig. 8 is a

cross-section on the line 1 1 of Fig. 7. Fig. 10 is a cross-section on the line 2 2 of Fig. 7, the part supporting the candle being removed. Fig. 9 shows the operative portions of the lamp surrounded by a transparent globe, instead of the cage shown in Fig. 1.

Referring to Figs. 1, 2, and 3, A represents the base-piece, upon which the operative portions of the lamp are supported.

D E are posts, of some conducting material, mounted in the base-block, and carrying at their upper portion a clamp, F, of the form ordinarily employed for holding an electric candle of the construction invented by P. Jablochkoff. The lower portion of the candle is represented at *f'*. The posts D E pass through the block A and terminate at their lower ends in binding-posts H G, to which are connected the wires P N of the general circuit. B' represents a protecting cap or cover plate, hollowed out, as shown, to form a recess, in which the posts H and G and other parts to be presently described are contained. By thus locating the posts upon the bottom of the lamp and inclosing them by the cap-piece I am enabled to dispense with projections upon the side of the lamp and with the danger of injury to the binding-posts and accidental disconnection of the conducting-wires. The block B' forms the support for the whole lamp.

B is a protecting cage or cover, of open wire-work, for protecting the candle from breakage.

The lamp as thus constructed is designed more particularly for miners' use and for use in machine-shops.

Connected respectively to the posts H G, and placed upon the lower or inner side of the block A, are metallic strips 5 6, which are in electrical connection with two metallic blocks, 7 8, fixed to the sides of the concavity formed in the bottom of the block A.

Block 8 is in permanent connection with a curved spring, 9, which tends to make contact with the block 7, but which is kept out of contact therewith by a pin of insulating material, which passes through the side of the block A, as shown in Fig. 1, and is forced against the spring by the devices which serve to prevent the disconnection of the cage and the base-piece.

The cage B is mounted upon and connected



to a circular rim, C, which rests upon the top edge of the block A, and is held upon the block by a bayonet-joint, *c*, or in any other suitable manner.

5 Attached to and projecting downwardly from rim C is an arm or bracket, I, in the lower end of which is hung a cam-shaped plate, K, which, when its operating-handle is depressed, as shown, enters, with its enlarged portion, a  
10 vertical slot in the side of the base-block A, as shown, so as to prevent the turning of the rim C. When the handle of the cam K is thrown up into the position shown in dotted lines the cam is removed from the slot, and  
15 the rim and the connecting-cage may be then turned so as to disconnect the cage and base at the bayonet-joint *c*. When the cam is in the position shown in full lines it forces and holds a spring, L, inward against the pin of  
20 insulating material, thus holding the spring 9 out of contact with the block connected to the binding-post G. When the cam is turned so as to allow the cage to be disconnected the spring 9 is allowed to come into electrical con-  
25 tact with block 7. While the lamp is burning the parts are in the position shown in the drawings. Under these conditions the cage cannot be disconnected, because the edge of the cam-plate K is in the vertical slot in the  
30 supporting-base A. The circuit through the lamp is from wire P to post H, stem E, the carbons of the lamp, stem D, post G, and to wire N. The circuit from H to G through spring 9 and 5 is broken, because the spring  
35 is held out of contact with the block 7.

Should access to the light-giving portion of the lamp be desired for the purpose of inserting a new candle, it is necessary to first remove the cage B; but in order to do this the cam K  
40 must first be removed from its slot, so as to allow the cage to be turned slightly. When the cam is thrown into the position shown in dotted lines for this purpose the pressure upon the spring 9 is relieved, and the spring there-  
45 upon makes contact with the block 7 and completes a branch or shunt circuit around the lamp proper from P through H, 6, 8, 9, 7, 5, and G, so as to preserve a path for the current when the circuit is broken by the removal of  
50 the candle.

As will be seen from the above description, the operation of the shunting-switch is automatic and necessarily attends or precedes the disconnection of the cage or protecting-casing  
55 for the purpose of getting access to the carbon or light-giving portion of the lamp.

In Fig. 9 the light is shown as surrounded and protected by a transparent globe, which is mounted upon the circular rim C in the same  
60 manner as the cage B, Fig. 1.

In Fig. 6 I have shown another arrangement of the switch-connections, in which the circuit to the carbons is absolutely broken at the time that the branch circuit is completed. The  
65 spring 10, which corresponds to spring 9 of Fig. 2 and is operated in the same way, plays between two contacts connected with wires 11

and 12, and so with the posts G and H. The wire P is permanently connected to the spring 10 in any suitable manner, while wire N is con-  
70 nected to post G, as before. When the cage or protecting-casing and the lamp are connected the end of spring 10 is pressed inward, as before, and makes connection with wire 11, the circuit being from P through 10, 11, H,  
75 the carbons, post G, and to wire N. When the cage is disconnected the act of disconnecting it allows the spring 10 by its own elasticity to make connection with wire 12, thus break-  
80 ing the circuit from 10 to the carbon and substituting the circuit through 12 to N, the path of the current being then from P through 10 to 12 to N. By preference the spring-switch 10 and its contacts are so arranged that con-  
85 tact is made on one side before it is broken on the other, thus preserving the continuity of the general circuit.

Another method of carrying out my invention is shown in Figs. 4 and 5. M represents an annular block or rim, corresponding to C  
90 of Fig. 2, to which is attached the protecting cage, globe, or casing of the lamp, and which may be connected to the base-block A by any suitable means or disconnected therefrom, at  
95 pleasure. The posts E D, to which the light-giving portions of the lamp are connected, are here in electrical connection with plates 14 15, which extend down over the side of the block and come in contact with correspond-  
100 ing springs, T S, mounted in any suitable manner upon the inside of the annular block when the cage and the block A are connected. The upper ends of the springs are bent over the ends of a curved plate or wire, 13, mounted in any  
105 suitable manner in the annular block M, and tend by their own elasticity to make contact therewith.

The springs S and T are in constant electrical connection with the main-circuit conductors P and N, the connection being made by  
110 any suitable means. When the block A and the cage are connected the block A is so far within the annular block M as to force the springs S T out of contact with 13' at the same time the circuit through the lamp proper  
115 is completed through P, T, 14, D, E, 15, S, and N. When the block M and its connected cage or globe are removed from A the springs are allowed by their own elasticity to make contact with the ends of 13, thus preserving the gen-  
120 eral circuit of P N through T, 13, and S.

In Figs. 7, 8, and 10 I have shown still another method of carrying out my invention. In these figures, W represents the rim or block to  
125 which the globe is joined and A the block to which the lamp proper is connected. Seated in a groove in the inside of block W are two curved metallic springs, 17 18, in constant electrical connection by any suitable means with the conductors P N. Each spring tends to  
130 make contact with a stud or post to which the other is permanently connected, but is kept out of contact by a radial lug or projection, X, upon block A, as indicated. Each lug carries



upon its projecting end a metallic plate in electrical connection with one of the posts electrically connected to the lamp proper. These lugs rest in the groove and serve to hold the parts together. Vertical slots Y Y on the inside of W allow the lugs X X to be slipped into position to register with the groove in which the springs 17 18 are seated. When the block A is turned so as to cause the lugs X X in the groove to register with the slots Y Y, for the purpose of disconnecting the protecting cage or globe, the ends of the springs 17 18 are allowed to make contact each with the end of the other, and the circuit is then from P to N directly through said springs. When the supporting-block A is replaced and turned so as to lock it to W the springs 17 18 are forced out of contact with one another by the ends of the lugs X X, thus breaking the circuit from P to N through the springs and substituting the circuit through the lamp, the path of the current being from P to spring 17, plate upon end of lug X, which is under this condition pressed against the spring, through the lamp proper, and out through the other lug X and spring 18.

Other modifications of the details will readily suggest themselves to those skilled in the art.

My invention is not limited to any particular kind of electric switch, nor to any particular means of locking or securing the inclosing cage, globe, or cover for the light-giving portion of the lamp to the lamp proper.

I make no claim herein to the devices shown in Figs. 5 and 7, as they will form the subject of a separate application for patent; and it is to be understood that these devices enter into the present invention only in so far as they are elements of a combination of which an inclosing or protecting globe mounted upon or connected to the outer ring, M or W, is a feature.

What I claim as my invention is—

1. The combination, substantially as de-

scribed, with an electric lamp, of an inclosing or protecting cage or cover and means, substantially as described, for automatically shunting or diverting the current from the lamp when the inclosing and protecting cage and the parts supporting the light-giving portion of the lamp are disconnected.

2. The combination, substantially as described, with an electric lamp, of an inclosing-cage, an electric switch for cutting out the lamp, and a lock for preventing the detachment of the protecting cage or guard, whereby the disconnection of the cage and the lamp proper is made dependent upon the operation of the lock, and the act of unlocking is made to operate the switch.

3. The combination, substantially as described, with an electric lamp, of a base-block supporting the light-giving portions of the lamp, binding-posts connected to the bottom of the base-block, and an inclosing base-plate, substantially as and for the purpose described.

4. The combination, with an electric lamp, of an inclosing or protecting cage or cover connected to the lamp by a bayonet-joint, a locking device to prevent the turning of the cage or cover to disconnect it, and an electric switch controlled by the locking device, substantially as and for the purpose described.

5. The combination, substantially as described, of an electric lamp, a protecting cage or globe for the light-giving portions of the lamp, an electric switch held in proper position to cause the current to pass through the lamp when the cage and lamp are connected, and means for securing the cage and the lamp together.

Signed at New York, in the county of New York and State of New York, this 27th day of March, A. D. 1882.

CHAS. A. CHEEVER.

Witnesses:

W. L. CANDEE,  
B. G. BOILLEAU.