

(No Model.)

T. J. HOUCK.  
BUSHING FOR ELECTRIC ARC LAMPS.

No. 523,893.

Patented July 31, 1894.

Fig. 1.

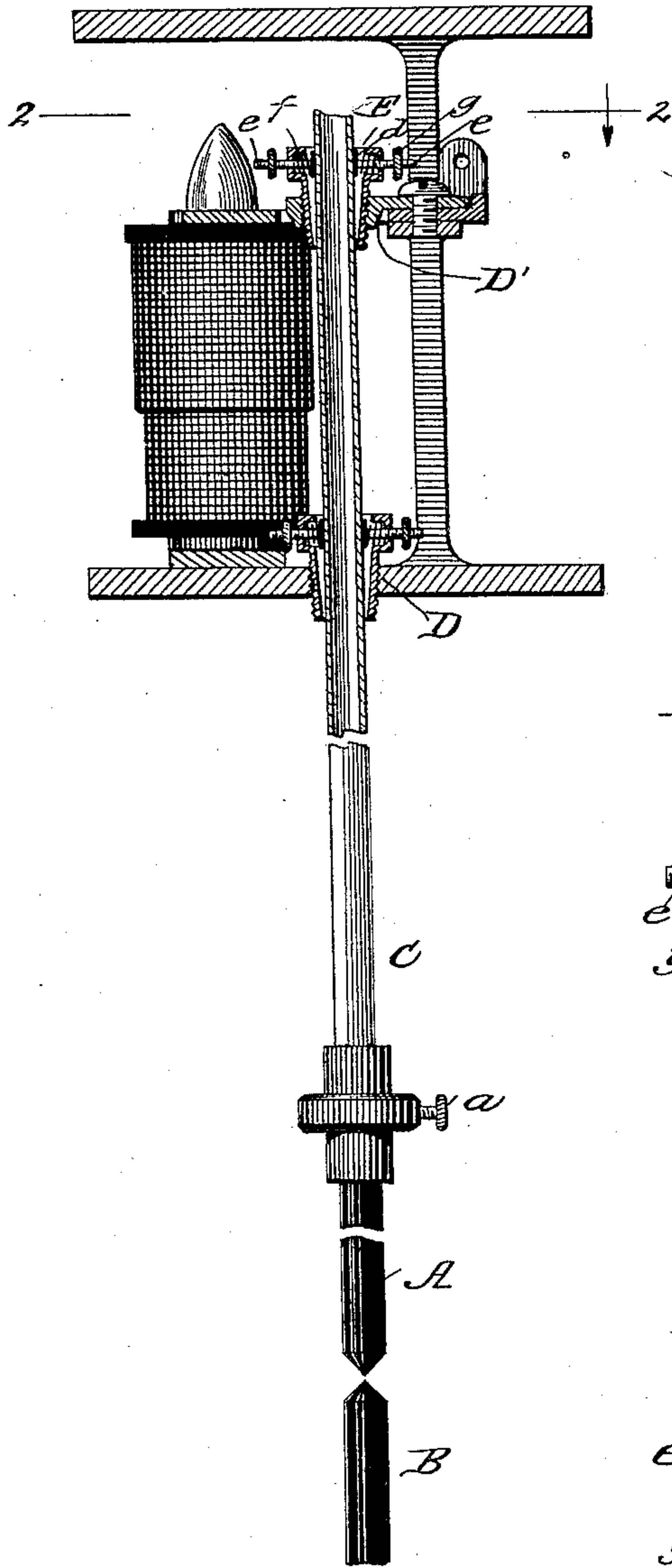


Fig. 2.

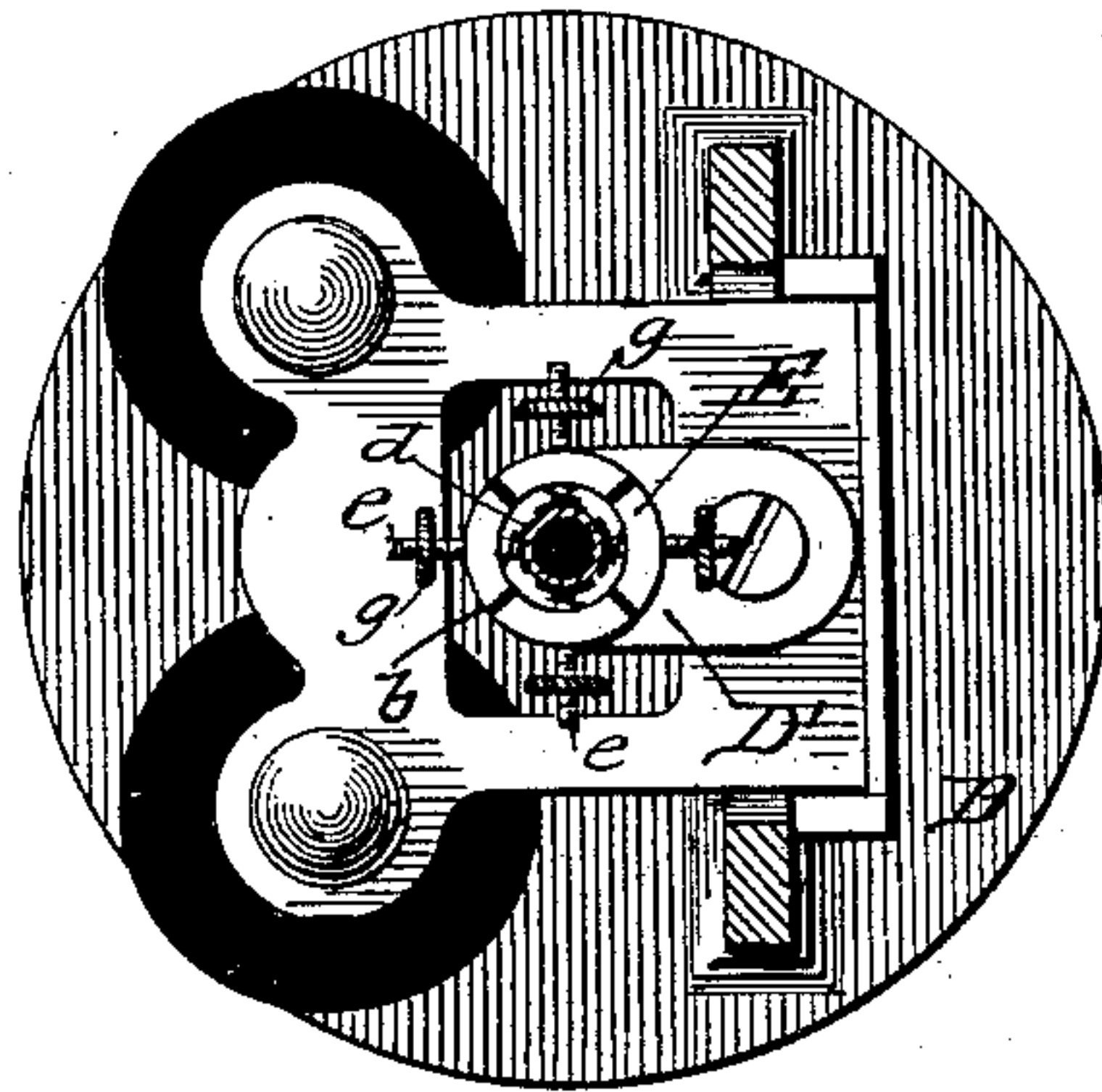


Fig. 3.

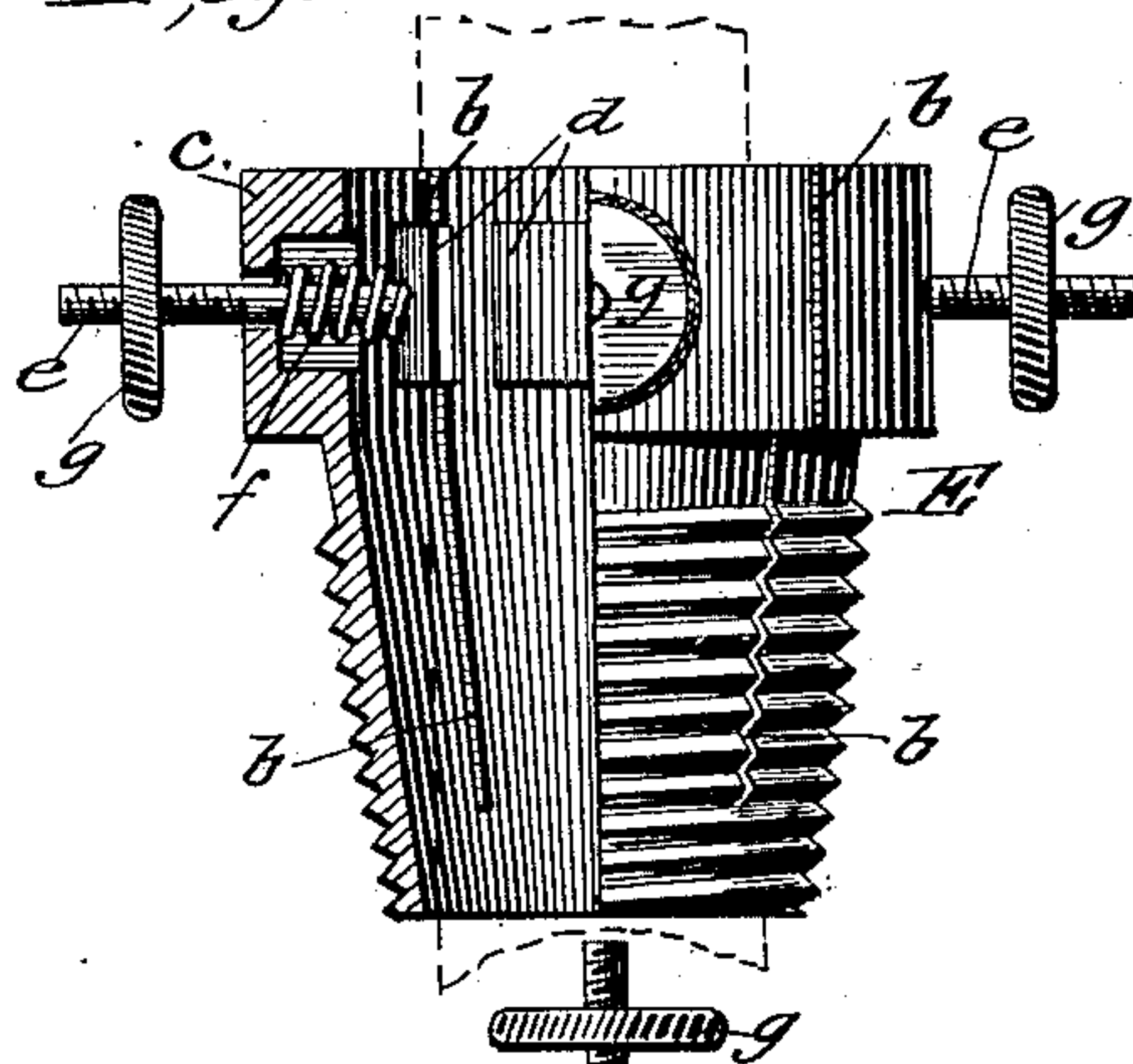
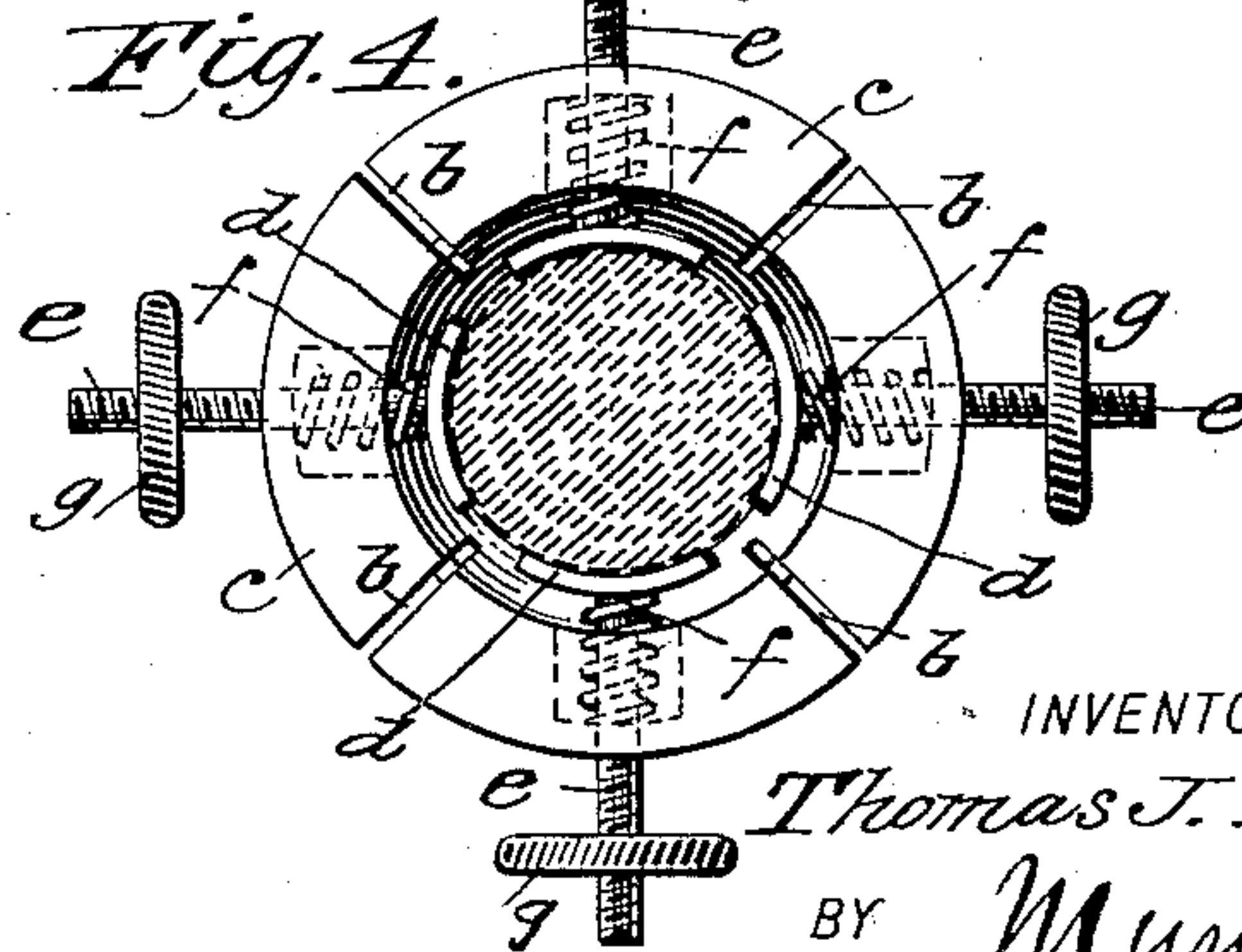


Fig. 4.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

THOMAS J. HOUCK, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF  
TO JAMES FRANK MORRISON, OF SAME PLACE.

## BUSHING FOR ELECTRIC-ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 523,893, dated July 31, 1894.

Application filed April 23, 1894. Serial No. 508,675. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. HOUCK, of Baltimore city, in the State of Maryland, have invented a new and useful Improvement  
5 in Bushings for Electric-Arc Lamps, of which the following is a specification.

In electric lamps of the arc type the tube which holds the upper carbon passes through two guides which soon become worn in consequence of the friction of the holder through the same, due to the continued motion of the holder in automatically adjusting the arc and feeding the carbon down as it is consumed. When these guides for the carbon holder become worn, so that they are too large, the carbon holder is liable to assume positions which are out of true vertical alignment with the lower carbon, and sometimes the carbon will become jammed in this false position and remain stationary, so that the distance between the carbons soon becomes so great from the burning away of the carbon without feeding down, as to permit the arc to be destroyed and the light to go out. This involves great inconvenience to the community and corporation, and danger to the lineman whose duty it is to fix it while the current is on.

My invention is designed to provide a detachable and adjustable bushing for these  
30 carbon holder guides which may be tightened or adjusted from time to time to take up wear and always hold the upper carbon holder and its carbon in true vertical alignment, and at the same time to avoid the necessity and expense of throwing away the old guides and replacing them with new ones.

To these ends my invention consists in the peculiar construction and arrangement of the bushings for the said carbon holder guides, and their combination with the adjoining parts, which I will now proceed to describe with reference to the drawings, in which—

Figure 1 is a front view of a part of an ordinary Thomson-Houston lamp with the carbon holder guides in section, and showing my invention applied thereto. Fig. 2 is a cross section through the line 2—2 of Fig. 1. Fig. 3 is an enlarged side view of my bushing partly shown in section, and Fig. 4 is a top  
50 or plan view of the same.

A is the upper and B the lower carbon of

an ordinary arc lamp. The upper carbon is held in a tubular holder C by means of a set screw *a* and this tubular holder moves vertically through guide plates D and D'. It is the bushings for these guides which constitute my invention. As the bushings for both these guides are substantially alike it will be sufficient to describe one of them.

Referring to Figs. 3 and 4, E is the bushing, which consists of a metal sleeve provided on its exterior with a tapered screw thread, and has a central hole large enough to permit the carbon holder to freely pass through the same. At the larger end the bushing is slitted longitudinally at *b*, and at its edge it has a thickened rim *c* carrying a series of radial spring seated stems *e* having upon their inner ends plates *d* which bear against and form an electrical contact with the carbon holder. Where these stems *e* pass through the rim *c* the latter is chambered out to receive a spiral spring *f*, one end of which bears against the bushing and the other against the plate *d*. This stem at its outer end is screw threaded and carries an adjusting nut *g* which may be turned to regulate the position of the plate *d* and the tension of the spring *f*. This spring serves to hold the plate *d* against the carbon holder with a constant pressure, while the nut *g* allows the plate *d* to be drawn away from or advanced to the carbon holder to compensate for variations in size or looseness that comes from wear.

The bushing E is screwed into an internal screw thread of the guide plates D and D', and its tapering form in connection with the slits *b* give it also another adjustment to take up looseness or wear, for by simply turning up the bushing more tightly its slits and the taper of the screw thread cause its larger end to be compressed like spring tongues about the carbon holder, causing the plates *d* to bear more closely against the same. The expansive tendency of the large end of the bushing also causes the screw threads to bind against the screw threads of the guides with a frictional contact which causes the bushing to hold or maintain its adjustment and prevent all looseness and accidental turning of the bushing.

Having thus described my invention, what



I claim as new, and desire to secure by Letters Patent, is—

1. An adjustable bushing for the carbon holder of electric arc lamps, having longitudinal slits forming spring tongues, and having upon its exterior a tapering screw thread adapted to compress said spring tongues when screwed into a socket, substantially as described.
2. The combination with the carbon holder guide in an electric arc lamp; of a removable bushing having an external tapering screw thread and slits at the larger end of the same substantially as and for the purpose described.
3. The combination with the carbon holder guide in an electric arc lamp; of a detach-

able bushing having a set of radially arranged and spring seated contact plates having screw threaded stems with adjusting nuts thereon substantially as and for the purpose described.

4. The combination with the carbon holder guide in an electric arc lamp; of a detachable bushing having tapered screw thread and slitted end, and also radially arranged and spring seated electrical contacts, and means for adjusting the same substantially as shown and described.

THOMAS J. HOUCK.

Witnesses:

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H. J. ROBINSON.