

(No Model.)

F. THONE.
INCANDESCENT ELECTRIC LAMP SOCKET.

No. 418,426.

Patented Dec. 31, 1889.

Fig. 1.

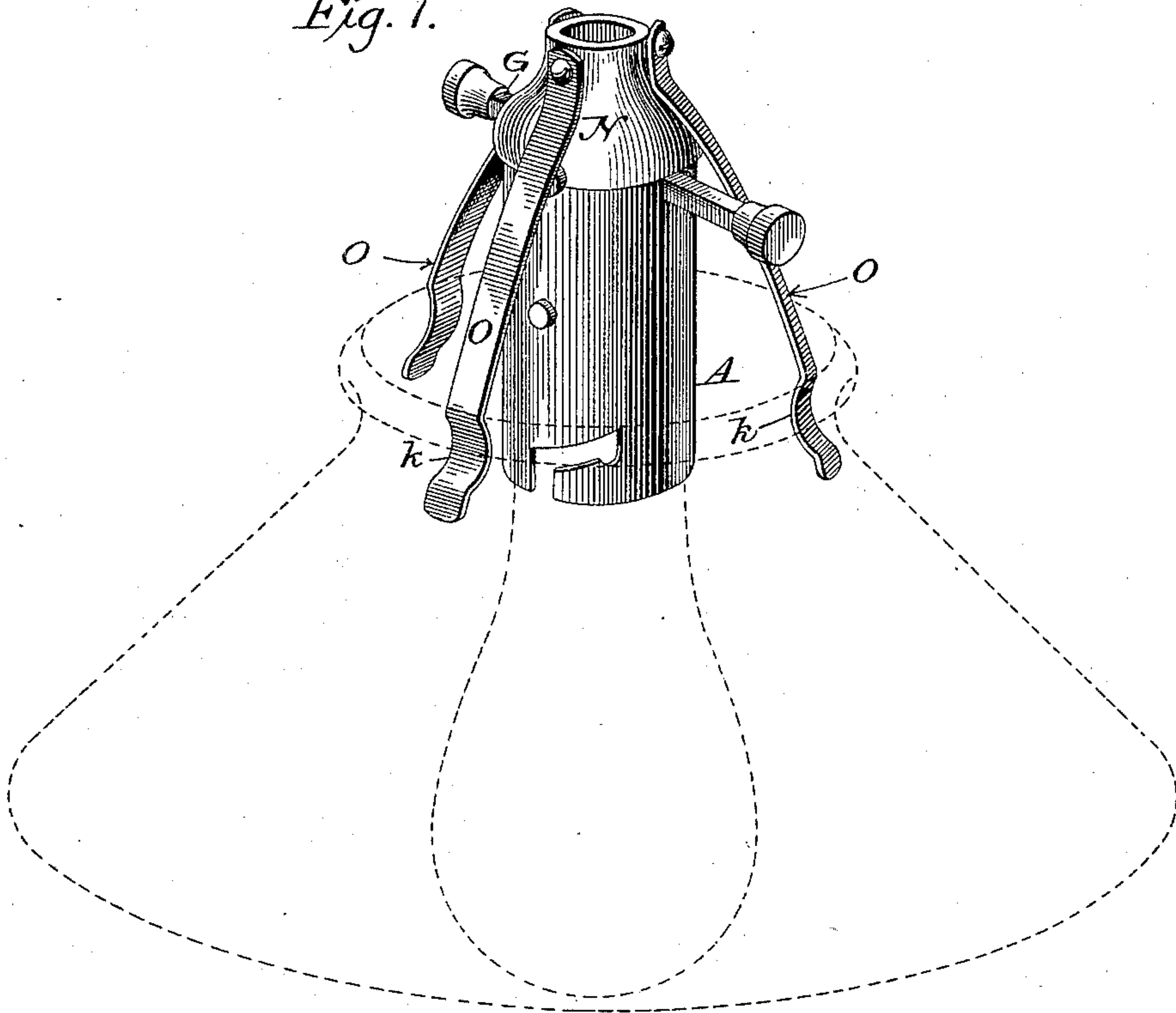


Fig. 2.

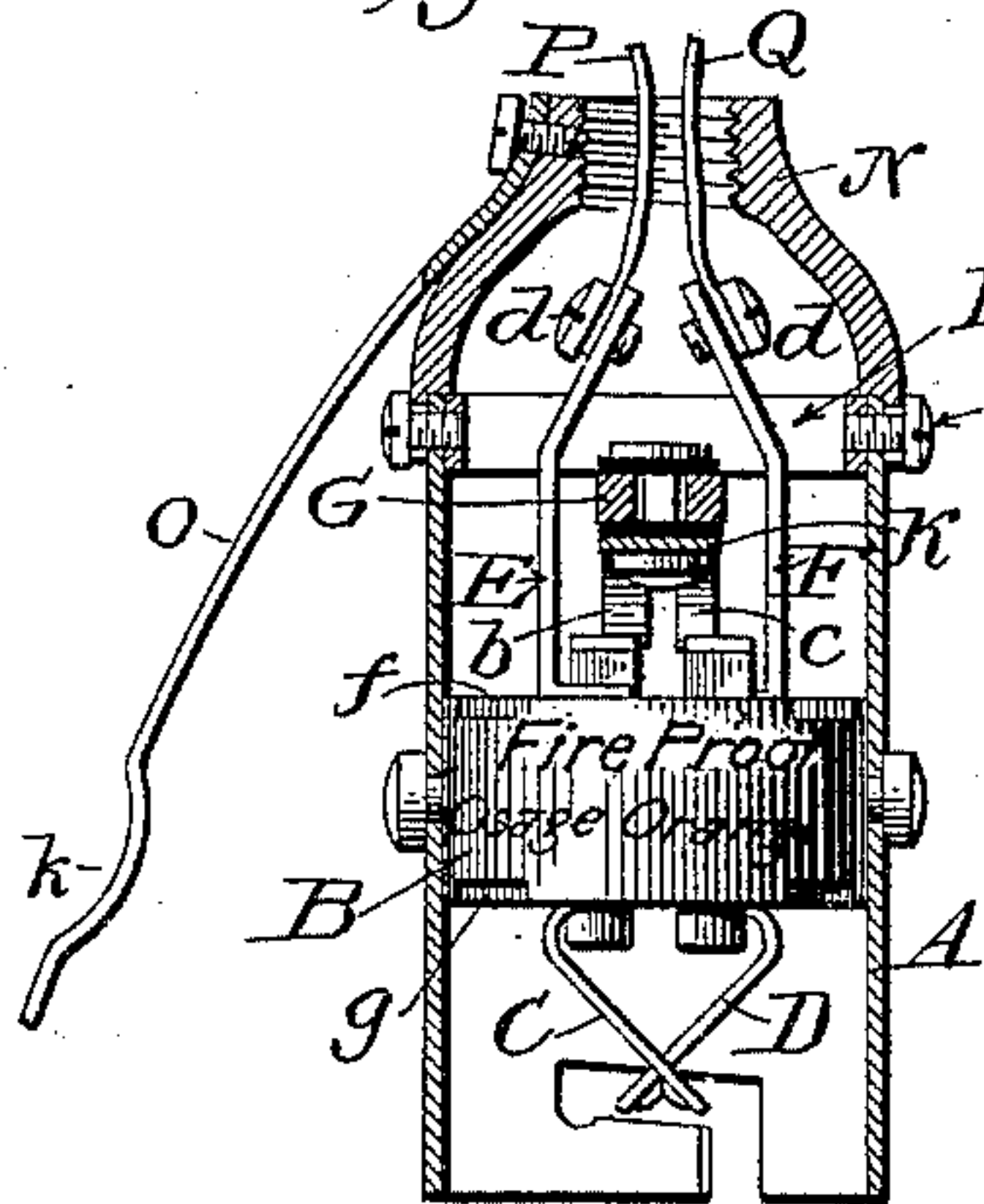


Fig. 3.

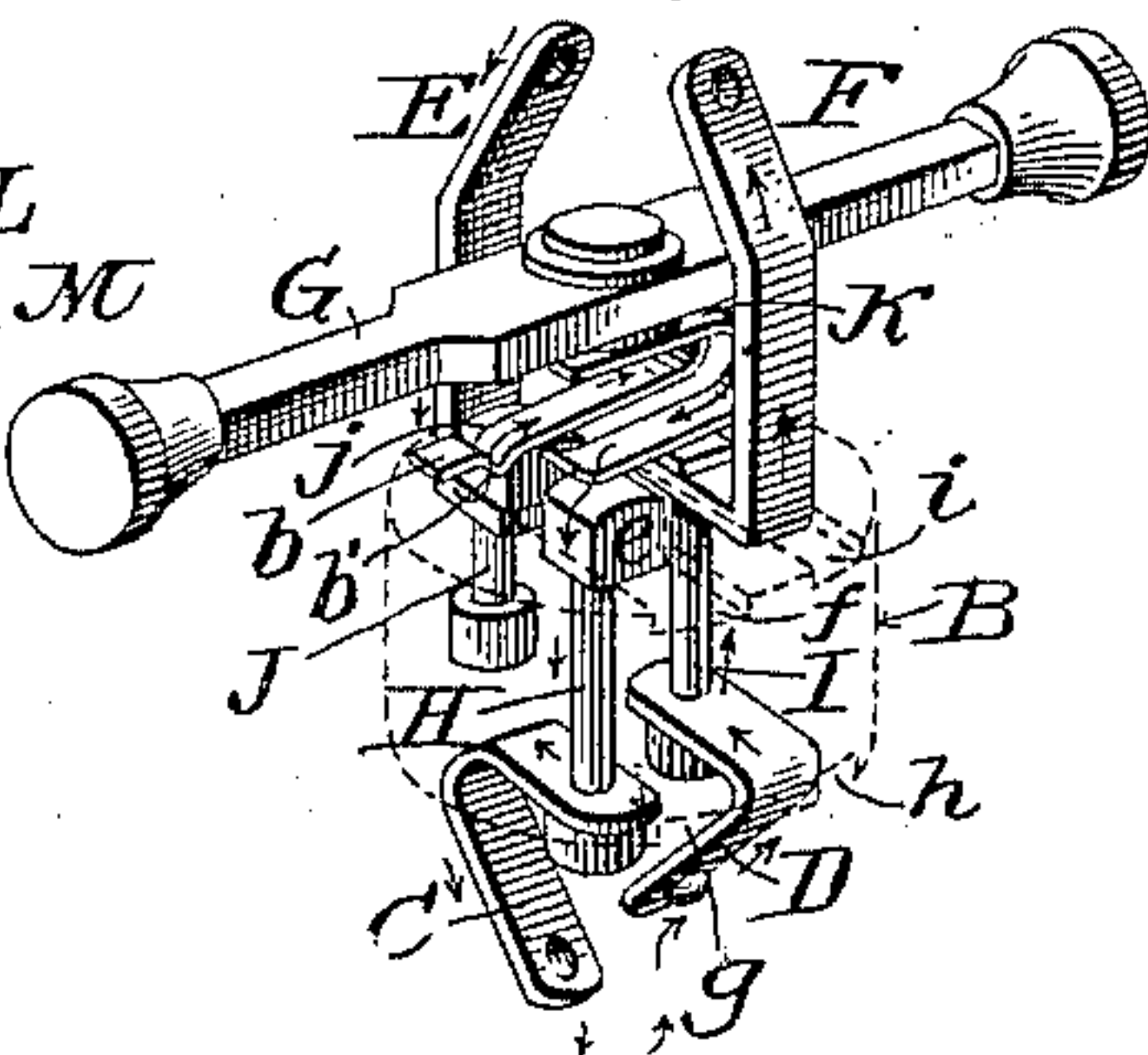


Fig. 4.

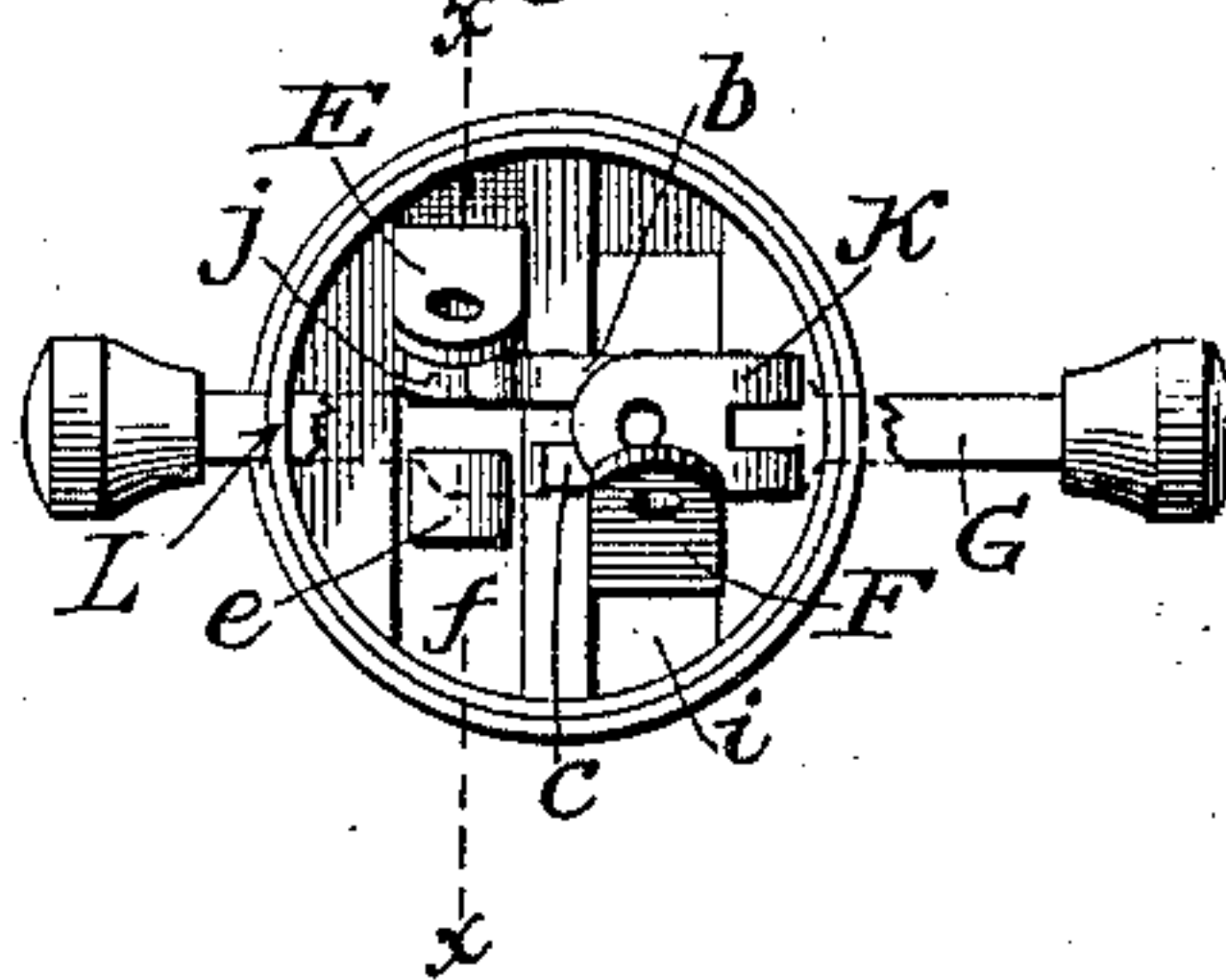
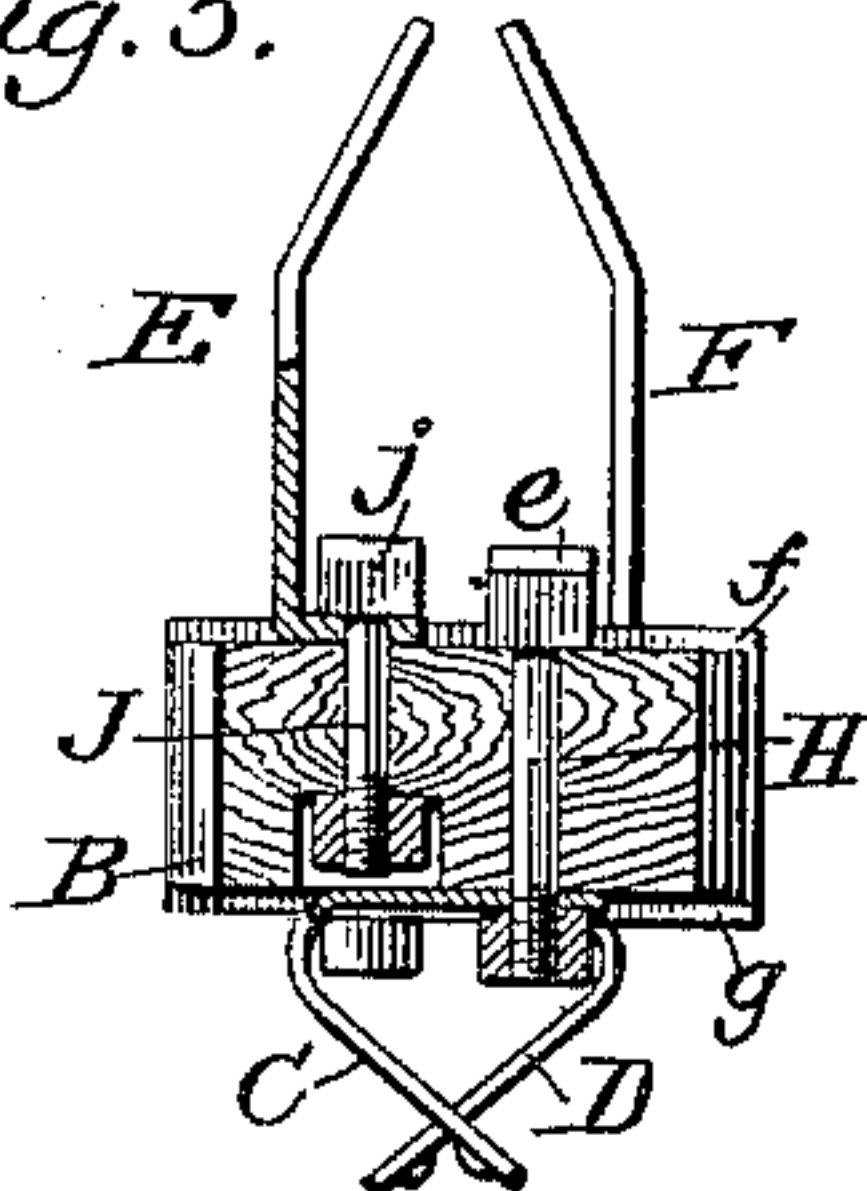


Fig. 5.



Witnesses:

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Frank Thone,
by Dodge & Sons,
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UNITED STATES PATENT OFFICE.

FRANK THONE, OF OSKALOOSA, IOWA.

INCANDESCENT-ELECTRIC-LAMP SOCKET.

SPECIFICATION forming part of Letters Patent No. 418,426, dated December 31, 1889.

Application filed August 1, 1888. Serial No. 281,637. (No model.)

To all whom it may concern:

Be it known that I, FRANK THONE, of Oskaloosa, in the county of Mahaska and State of Iowa, have invented certain new and useful
5 Improvements in Electric Lights, of which the following is a specification.

My invention relates primarily to sockets or holders for incandescent electric lamps, and is as to its principal features in the nature of an improvement upon the device for
10 which Letters Patent were granted to me bearing date the 13th day of March, 1888, and numbered 379,255.

The present improvements are designed to
15 simplify and cheapen the construction of the socket, to prevent the shrinkage and consequent loosening of the filling-piece or block which supports the contacts, and to adapt the socket to support a shade.

20 In the drawings, Figure 1 is a perspective view of my improved device, the lamp globe and shade being shown in dotted lines; Fig. 2, a vertical sectional view; Fig. 3, a perspective view of the switch and connections, the
25 supporting-block being shown in dotted lines; Fig. 4, a top plan view of the shell with the cap removed, and Fig. 5 a sectional view on the line *x x* of Fig. 4.

30 In the practical use of devices of this character considerable difficulty has been experienced through the contraction of the filling-piece or block which carries the contacts, and this notwithstanding the fact that the material known as "vulcanized fiber" has been
35 employed for such block or filling. Under my former construction the spring by which the slide or switch bar was retained at different adjustments projected through the side of the shell, producing a somewhat unsightly
40 appearance and causing considerable wear of the spring and the shell wherever one bore upon the other, and no provision was made for the application of a shade, which is found to be generally desirable. These objections
45 to the former construction are remedied in the new one, as I will now explain.

A indicates a tubular shell provided at one end with slots *a*, of the form shown in Figs. 1 and 2, and usual to lamp-sockets of this class,
50 to receive studs or lugs of the lamp-neck, which, with the slots, constitute a bayonet-joint.

Within the shell A is a block B, of insulating material, which carries the contact-springs C D and the attaching-arms E F and the fast-
55 ening or securing devices thereof, the latter consisting of bolts with rounded heads, upon which the spring-fingers *b* and *c* of the sliding switch-bar G bear, as hereinafter explained. The contact-springs C and D are designed to
60 bear upon and make electrical contact with the terminals of the lamp when the latter is applied to the socket or holder, and the arms E F, which are furnished with binding-screws *d*, are for the attachment of the wires by
65 which the lamp is introduced into the circuit. Spring-arm C is secured to block B by means of a bolt H, the head *e* of which is squared and seated slightly in a groove *f* in the upper face of the block as it stands in the drawings,
70 this arrangement preventing the bolt from turning.

The top face of the bolt-head *e* is rounded in one direction, as indicated in Figs. 2, 3, 4, and 5, and a nut applied to its lower end holds
75 the upper end of spring-arm C in a groove or recess *g* in the lower face of block B, thereby preventing the spring from shifting its position. It will be observed that spring-arm C is thus normally insulated from the shell and
80 other parts of the holder. Spring-arm D is similarly seated in a recess *h* and held by a bolt I, which passes through block B and through the attaching-arm F, which arm is by said bolt drawn down into and held in a
85 recess *i* in the upper face of block B, the bolt I serving to electrically connect the spring D and attaching-arm F, as plainly shown in Fig. 3. Attaching-arm E has its lower end seated in the groove or recess *f*, which receives bolt-
90 head *e*, and is held in place by a bolt J, the nut of which is set into block B beyond its lower face, as shown in Fig. 5, so that no contact can be made by it with the spring-arm C or other part below the block. The head *j* of
95 bolt J is rounded in one direction similarly to head *e* of bolt H, the two heads standing in line a short distance apart, as shown in Figs. 2, 3, 4, and 5.

G indicates the sliding switch-bar, the
100 ends of which are reduced to pass through slots or openings *k* in the sides of the shell A, and furnished with knobs or buttons to produce a neat finish and to give a good hold

in operating the slide. The shoulders formed at the union of the reduced end portions and the broader middle portion serve as stops to limit the longitudinal play of the slide or bar.

K indicates a spring-plate carried by but carefully insulated from the bar G, and having two branches or fingers *b* and *c*, the former serving both as an electrical contact and as a detent, being formed with a rib or ridge *b'*, which rides upon and to one or the other side of the crown of bolt-head *j*. The curvature of this bolt-head causes the spring to ride forward or backward thereon as the center is passed.

When the bar or slide G is moved forward or to the position indicated in Fig. 3, the shorter finger *c* will rest upon bolt-head *e*, and the longer finger *b* will, as always, rest upon bolt-head *j*, but with its rib *b'* at the forward side of said bolt-head, whereby it will serve to maintain the finger *c* in contact with head *e*. When the bar or slide G is moved backward, or to the position indicated in Fig. 4, the finger *c* will pass out of contact with bolt-head *e*, and the rib *b'* of finger *b* will pass to the rear side of bolt-head *j*, thereby maintaining the separation of finger *c* and head *e* and preventing the passage of current from head *e* to head *j*, or vice versa.

The sliding bar G is held down to its place by a ring or band L, inserted into the end of shell A and retained in place by screws M, which serves the further purpose of holding in place a cap or head N, which gives a finish to the socket or holder, protects the arms E F, and serves to support and carry spring-arms O, by which a shade is held in proper position over the lamp.

The cap or head N is threaded internally to permit its ready application to a fixture or support of any kind, the opening being sufficiently large to permit the passage also of the circuit-wires P Q.

The form of the shade-supporting arms O is well shown in Figs. 1 and 2, said arms branching outward from cap N and being each formed with a depression *k* near the outer end to receive the curved inner rim or edge of the smaller opening of the shade, as indicated in Fig. 1. The arms O being elastic, the shade may be applied from above or below at will and without detaching the lamp from the socket or holder.

As stated, much difficulty has been encountered in obtaining a block or filling B combining the qualities of cheapness, durability, good insulating qualities, and freedom from expansion or contraction in use. After long and costly experimenting I have found that wood properly treated fulfills all these conditions admirably, and that, while various kinds of wood answer well when so treated, exceptionally good results are attained by the use of osage orange, (*Maclura*, called also *bois d'arc*.) To prepare this material for use the blocks are turned nearly to proper

size, and are then soaked in a strong alum solution or other solution or compound adapted to render the wood fire-proof, or practically so. After being soaked for a proper length of time, sufficient to permit the solution to thoroughly permeate it, the block is thoroughly dried and turned somewhat smaller, but not small enough to readily enter the shell B. It is then again treated with the fireproofing solution and thoroughly dried. The parts which it carries are secured in position upon it and the block is heated and forced into the shell while still warm. In some cases the shell may also be treated, though this is not ordinarily necessary. Steady and long-continued use of the blocks thus prepared has thus demonstrated their efficiency and suitability for the purpose set forth.

Block B is retained in place by a bolt R passing through the shell and block, as in Fig. 2. Screws or tap-bolts may be substituted for the bolts H, I, and J; but through-bolts are preferred, especially for H and I.

Having thus described the construction of the socket or holder, the circuit may be traced and the operation of the device thus made entirely clear. Entering by wire P, the current passes by binding-screw *d* and arm E to bolt-head *j*, thence by spring-fingers *b c* to bolt-head *e*, through bolt H and spring-arm C to one of the terminals of the lamp, through the filament thereof and by the other terminal to spring-arm D, thence by bolt I to arm F, and by it and its binding-screw *d* to wire Q, thus completing the circuit from the ingoing to the outgoing wire. Of course, the direction may be just the reverse of that stated.

It will be seen that the same arrangement of sliding switch-bar, contacts, and connections may be used for wall-switches, cut-outs, and switches generally, and therefore I wish it understood that my claims are not restricted to a lamp socket or holder embracing these parts, but apply to switches generally. A screw may obviously be substituted for bolt J.

I am aware that it is not new to provide lamp-sockets with switch-blocks of incombustible material, and that wood has been used for such blocks. I am not, however, aware that any one has ever before made use in a lamp-socket of a wooden switch-block rendered by suitable treatment, as above set forth, practically incombustible and proof against shrinkage.

The filling of the pores of the wood by the fireproofing preparation effectually protects the wood against shrinkage or expansion, as practical and continued use has thoroughly demonstrated.

Having thus described my invention, what I claim is—

1. In an electric switch, the combination of two bearings, as *e* and *j*, insulated one from the other, a sliding bar, as G, and a conducting-plate, as K, carried by but insulated from said bar and provided with two fingers *b*

and *c*, the former of a length to rest upon bearing *j* under all adjustments of bar *G*, and the other of such length as to rest upon bearing *e* when the bar *G* is in one position, but to pass out of contact therewith when the bar is moved away from such position.

2. The herein-described electric switch, consisting of bearings or contacts *e* and *j*, electrically insulated from each other, bar *G*, and spring-plate *K*, carried by but insulated from said bar and provided with fingers *b* and *c*, the former having a rib *b'*, substantially as and for the purpose specified.

3. In combination with shell *A* and a filling-piece or block *B*, arm *E*, bolt or fastening *J*, spring contact-arm *C* and its fastening-bolt *H*, spring contact-arm *D*, fastening-bolt *I*, and arm *F*, electrically connected with each other, but insulated from other parts of the device, bar *G*, and plate *K*, carried by said bar and provided with arms *b* and *c*, all substantially as described and shown.

4. In a switch, the combination of shell *A*, block *B*, provided with insulated contacts, as *e* and *j*, bar *G*, having its ends seated in slots in the shell, spring-plate *K*, carried by said bar and provided with fingers *b* *c*, and ring or band *L*, applied to the shell and serving to retain the bar *G* in place.

5. In a lamp socket or holder, the combination of shell *A*, block *B*, provided with insulated contacts, bar *G*, provided with spring-fingers to electrically connect said contacts, ring or band *L*, to retain said bar in place, cap *N*, and screws *M*, serving to retain both the ring and the cap in position.

6. In a socket for incandescent lamps, the combination of a containing shell or body and a switch-block inserted therein and composed of wood chemically treated to render it substantially fire-proof and to prevent shrinkage.

7. In an electric switch, a block or support to receive the contacts and connecting devices, consisting of wood chemically treated to render it substantially fire-proof.

8. In an electric switch, a block or support for the contacts and connections, consisting of osage-orange wood impregnated with alum, substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

FRANK THONE.

Witnesses:

W. A. DURFEE,
WM. BOWEN.