

(No Model.)

O. P. LOOMIS.
INCANDESCENT LAMP SOCKET.

No. 412,962.

Patented Oct. 15, 1889.

Fig. 1.

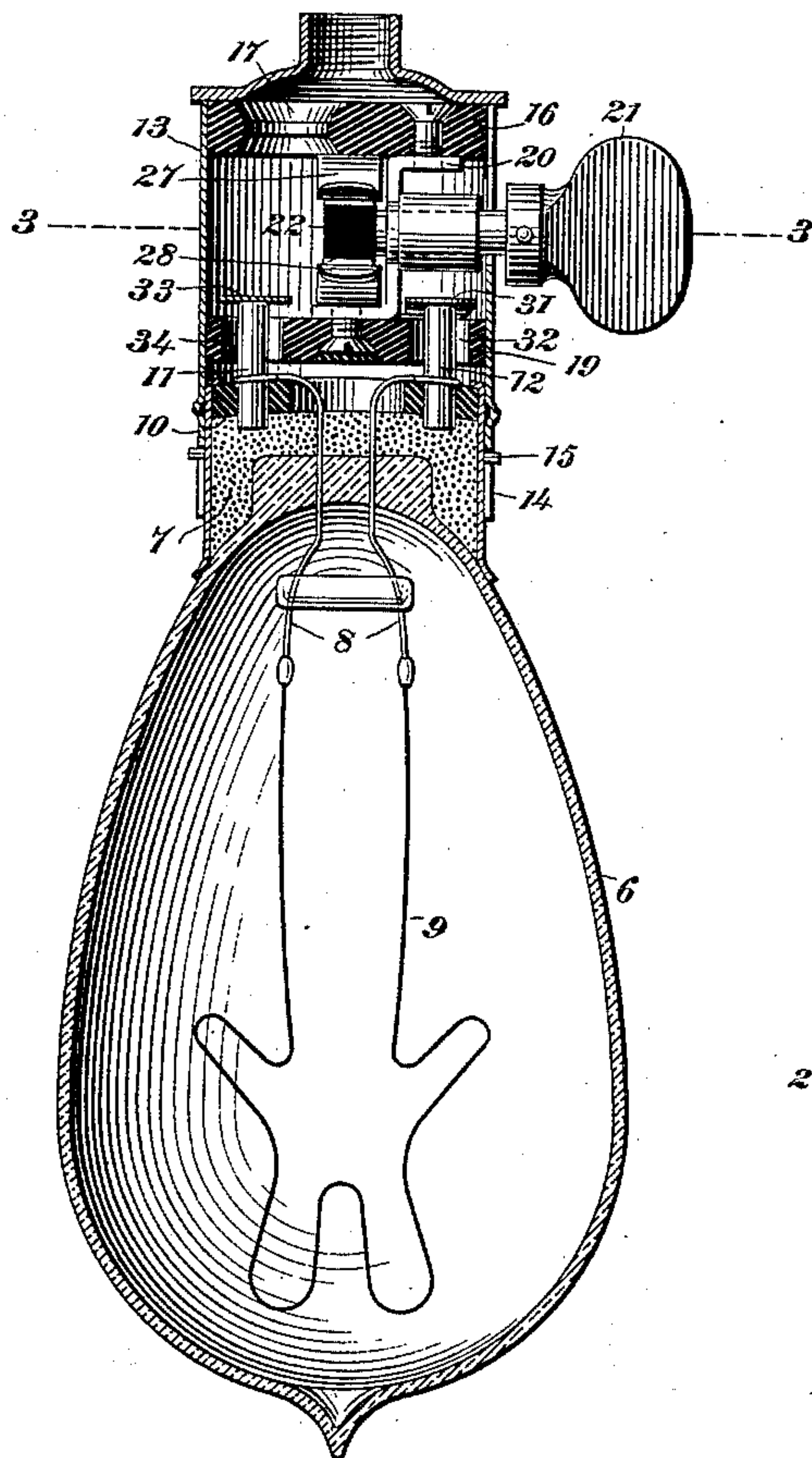


Fig. 2.

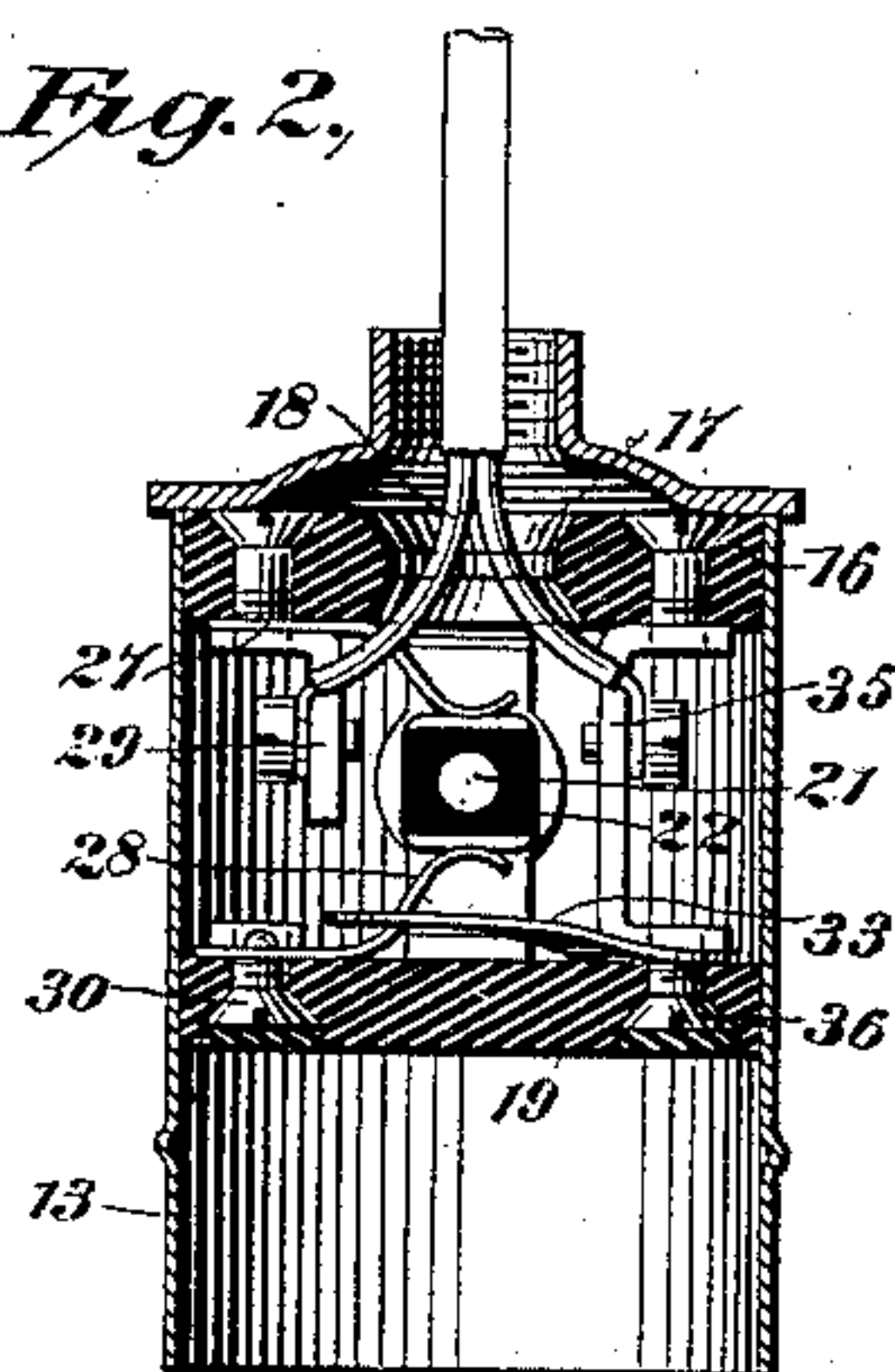


Fig. 3.

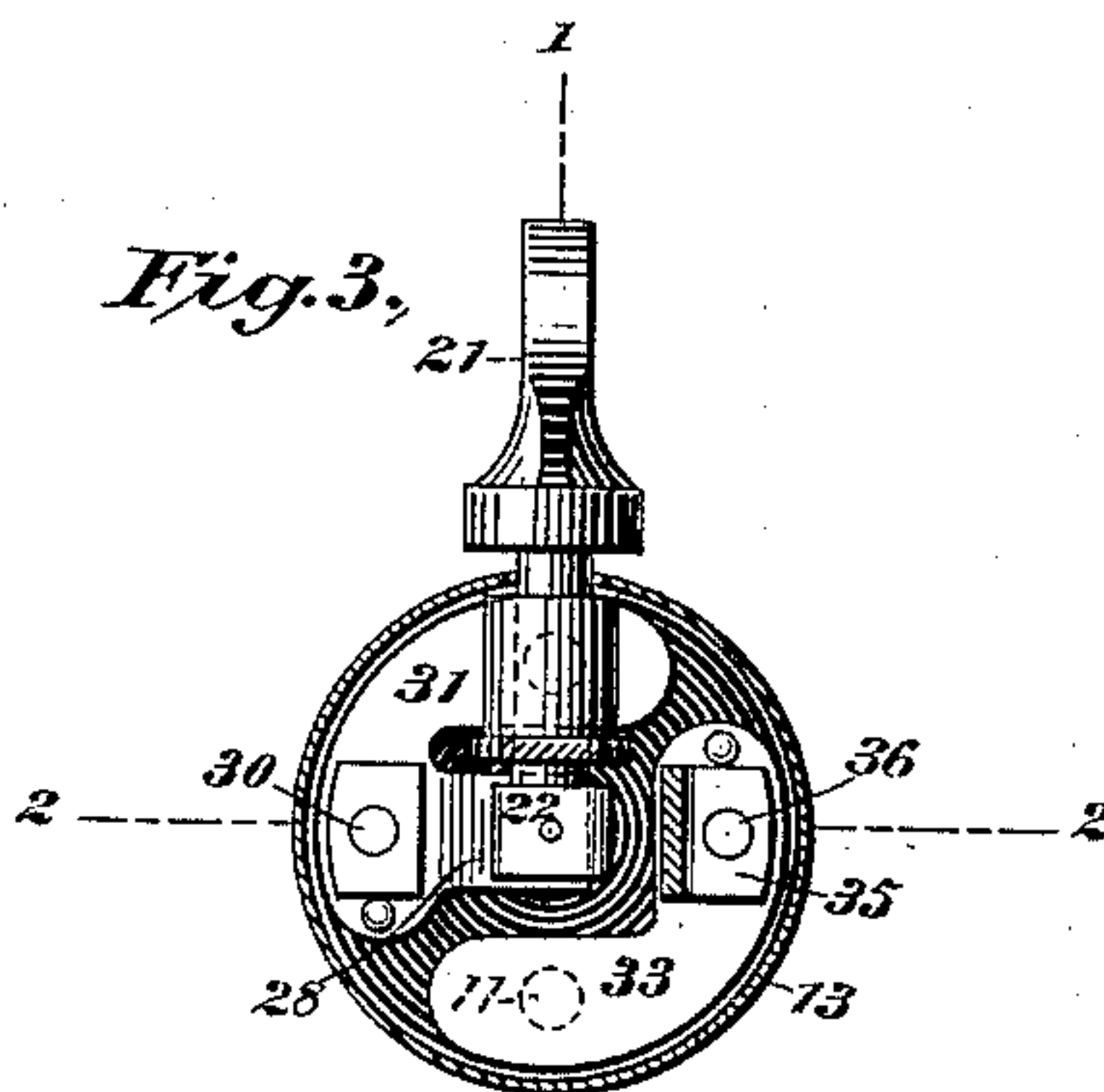
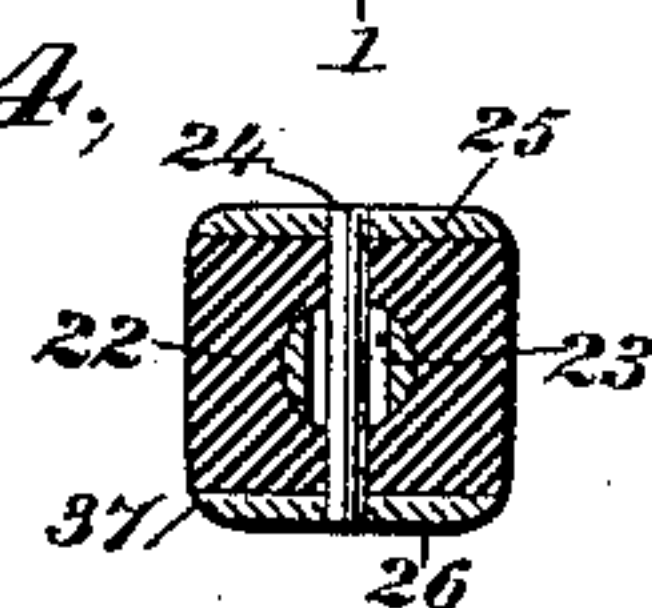


Fig. 4.



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INCANDESCENT-LAMP SOCKET.

SPECIFICATION forming part of Letters Patent No. 412,962, dated October 15, 1889.

Application filed September 3, 1888. Serial No. 284,398. (No model.)

To all whom it may concern:

Be it known that I, OSBORN P. LOOMIS, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an incandescent electric lamp having the spring-contacts, which are connected to line, engaging with a firm contact or pressure the lamp-terminals, which I preferably locate on the stem of the lamp when the lamp-stem is set in the lamp socket or holder, and having a non-conducting guide-plate disposed within the lamp-socket for directing the lamp-terminals to the said spring-contacts, the plate presenting a complete non-conducting outer face and acting as a shield for the parts of the lamp in circuit to prevent false contact of the lamp-terminals when the lamp is being put together; and the invention further relates to the novel form of spring-contacts and to the key-switch for admitting the current to the lamp and shutting it off therefrom, the switch comprising a peculiar switch-block having a limited rotary play on the key-shank and embraced by two spring contact-fingers, so as to automatically operate with a shifting snap action under the spring-power of the contact-fingers, all as hereinafter fully described, and then pointed out in the claims.

The objects of my invention are to guide the lamp-terminals with certainty onto the spring-contacts, to prevent the possibility of false contact of the lamp-terminals with any parts of the lamp in circuit when the lamp is being put together, and to maintain a firm and therefore more perfect contact between the same, and to have the key-switch only partly under control of the operating-key, so that upon the initial movement of the key the switch will at first respond thereto and will then act independently thereof; and a further object of the invention is to provide

a neat and compact connection between the key-switch and the lamp-terminal.

In the accompanying drawings, in which like numbers of reference designate like and corresponding parts throughout, I have illustrated my invention as embodied in an incandescent lamp.

Figure 1 is a sectional view of the complete lamp, taken on a plane through the longitudinal axis thereof, as indicated by line 1 1, Fig. 3. Fig. 2 is a longitudinal sectional view of the lamp socket or holder having, in addition to the devices shown in Fig. 1, a part of the line-connection, the section being taken at right angles to that in Fig. 1, as indicated by line 2 2 in Fig. 3. Fig. 3 is a transverse sectional view of the lamp socket or holder, taken on line 3 3, Fig. 1. Fig. 4 is an enlarged detached cross-sectional view of the switch-block, the plane of the section being indicated by line 1 1, Fig. 3.

Referring to the drawings, 6 designates the lamp-globe, having an ordinary form of stem 7, through which pass the leading-in wires 8 to the filament 9 within the globe. The stem or butt 7 of the lamp is provided with an insulating-plate 10, and in this stem are fixed the lamp-terminals 11 and 12, which are electrically connected with the leading-in wires, respectively. These lamp-terminals are, by preference, located equidistant from the axis of the lamp-stem and project parallel thereto.

The parts just described are arranged together, and the stem 7 is removably set in the tubular cylindrical lamp-socket or holder 13 by means of a bayonet-joint consisting in the studs 14 on the stem and the slots 15 formed in the holder.

Within the lamp-socket 13, and near the butt-end thereof, is a disk 16, made of suitable insulating material and formed with an opening 17 for the line-wires 18 to pass through, and this disk is rigidly attached to the guide-plate 19, also made of suitable insulating material, by means of the intermediate bracket 20, which has its ends secured to the disk and guide-plate, respectively, by screws, as shown in Fig. 1.

In the bracket 20 is preferably journaled the rotative key 21, which extends through

the socket-piece and is provided with the usual handle upon the outer end. This key operates the controlling-switch of the lamp, and through its operations the current is admitted to and shut off from the lamp. The switch-block 22 is mounted on the inner end of the key 21 in such a manner as to permit it to be partially rotated thereon in either direction relatively to the axis of the key. Any suitable construction may be adopted in mounting the switch-block on the key, so that it may have the requisite rotative play thereon. In the construction here adopted the key-shank, which is formed with the enlarged transverse perforation 23, is passed centrally through the block, which is made of a suitable insulating material. A pin 24 is also passed through the center of the block at right angles to the key-shank, so as to extend loosely through the opening 23 of the shank, the opening being considerably greater in diameter than the diameter of pin 24, as shown in Fig. 4, from which view it is evident that the switch-block may be partially rotated on the key-shank to either side of the position there shown, so as to throw the pin 24 out of the vertical without moving the key. By this construction the movements of the switch-block are rendered partly independent of those of the key. Two of the opposite faces of the switch-block 22, lying parallel to the axis of the key, are provided with the contact-plates 25 and 26, respectively, and these plates are in electrical communication through pin 24.

The switch-block 22 is embraced by two spring contact-fingers 27 and 28, which are so disposed that the rotation of the switch-block will alternately break and establish the electrical connection between the fingers by bringing them alternately in contact with the bare insulating material of the block and then the respective contact-plates in an obvious manner. When the spring-fingers 27 and 28 are in contact with the flat sides of the switch-block, they are, of course, under the least tension. Now, as the key is rotated in either direction the switch-block will take up its movement because of the fixed pin 24 taking against the diagonally-opposite edges of the opening 23. (See Fig. 4.) As the block rotates, the tension of the contact-fingers will obviously increase until the diagonal or oblique axis of the block is brought perpendicularly between the two fingers, when the tension thereof becomes the greatest. The edges of the block being rounded, as shown at 37, Fig. 4, the spring contact-fingers will now quickly snap the block through one-eighth of a revolution and bring the flat faces thereof between and in contact with the fingers. Thus the spring-fingers will automatically turn the block independently of the key upon which it is mounted. In this way the switch, whether in the opening or closing of the same, is always operated with the same quick and positive movement, and

is at such time rendered wholly independent of the key, and consequently of the person operating the key, so that the contact-plates are automatically moved into and out of connection with the respective fingers at the same time, which is a manifest advantage in incandescent lighting where a high-tension current is used.

The contact-finger 27—the upper one in the views—is in electrical connection with the line 18 through means of the binding-post 29, which is secured to the non-conducting plate 16 by a screw, as shown in Fig. 2. The contact-finger 28 is fastened to the guide-plate 19 by screw 30, and the other end or wing thereof constitutes the spring-contact 31, which projects over the guide-perforation 32 of plate 19 and engages with the lamp-terminal 12, the other lamp-terminal 11 being engaged by the spring-contact 33, which is likewise fastened on the inner face of the plate 19 and extends over the opening 34 thereof, and is connected to line by the binding-post 35, which by means of screw 36 clamps the contact 33 to the guide-plate.

The guide-perforations 32 and 34 are disposed so as to easily receive the projecting lamp-terminals 11 and 12, respectively, and are much too large therefor, in order to permit the ready locking and unlocking of the bayonet-joint arranged between the lamp-stem and socket.

The contacts 27 and 28 engage the lamp-terminals with a firm spring-pressure, and a good connection is thereby insured, and the rubbing of the terminals against the contacts in separating and putting together the lamp will keep the contacting surfaces of both said parts clean, so as to always give a perfect electrical contact.

It is to be observed that the outer face of the guide-plate 19 acts as a shield to prevent false contact between the terminals 11 and 12 and any parts of the apparatus within the lamp-socket which may be in circuit when the lamp is being put together, since the heads of the several screws 30 36 for holding the contacts of the terminals are embedded in the plate, so as not to be exposed to the exterior thereof. Thus all liability of false contact is wholly avoided, for the lamp-terminals can only make electrical contact when they are properly passed through the guide-perforations 32 and 34 and engage the spring-contacts on the other side of the plate.

In Fig. 1, showing the complete lamp, the current is on the lamp, and it may be supposed to enter from the line 18 by binding-post 29 and to lead over the switch contact-finger 27, contact-plate 25, pin 24, contact-plate 26, finger 28, the terminal-contact 31, lamp-terminal 11, over one of the leading-in wires 8 and the filament 9, thence over the other leading-in wire, terminal 12, contact 33, and to pass out by the binding-post 35.

Having thus described my improvements in incandescent electrical lamps, what I claim

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

1. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12 mounted thereon and connected to the leading-in wires and projecting from the face of the lamp-stem, of a lamp-socket 13, adapted to receive and hold the said lamp-stem, and provided with the guide-plate 19, presenting an insulating surface or face toward the lamp-stem, said guide-plate formed with suitable perforations 32 and 34, for receiving the lamp-terminals 12 and 11, respectively, and the spring-contacts 31 and 33, mounted within the lamp-socket 13 and connected to line, the said contacts arranged to the opposite side of said guide-plate from where the lamp-terminals are entered and having their free ends disposed so as to extend transversely across the perforations 32 and 34 of the guide-plate 19 and near thereto, so as to engage with spring-pressure the flat ends of the lamp-terminals 11 and 12, respectively, when the lamp is put together, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination, with a pair of suitably-spaced spring contact-fingers 27 and 28, connected to line, of a switch-key 21, mounted to rotate in its bearings and having its shank formed with a transverse opening 23, a switch-block 22, made of insulating material and loosely mounted on the shank of the key 21 and covering the opening 23 thereof, a fixed metallic pin 24, extending transversely through the block 22 and passing through the opening 23 of the key-shank, the diameter of the pin 24 being considerably less than that of opening 23 to give the necessary lost motion to the switch-block, and the contact-plates 25 and 26, mounted, respectively, upon opposite sides of the switch-block and in electric communication through means of the pin 24, the said block being embraced by the said contact-

fingers 27 and 28, substantially as and for the purpose set forth.

3. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12, of the lamp-socket 13, adapted to receive and sustain the said stem in position, the non-conducting guide-plate 19, formed with the guide-perforations 32 and 34, the contacts 31 and 33 for the lamp-terminals, such contacts being secured to the guide-plate by screws 30 and 36, respectively, and the screws having their heads embedded in the said plate, so as not to be exposed upon the outer face thereof, substantially as and for the purpose set forth.

4. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12 projecting therefrom, of the lamp-socket 13, adapted to receive said lamp-stem, a lock for uniting the socket and stem, such lock operated by turning said stem on its axis, the insulating guide-plate 19, located within said socket and provided with the perforations 32 34, arranged to correspond with the disposition of said lamp-terminals which enter therethrough and having a diameter considerably greater than the diameter of said terminals, whereby the lamp-stem may be turned on its axis to lock and unlock the stem and socket, and the spring-contacts 31 33, engaging with firm spring-pressure the said lamp-terminals when the same are entered through the perforations of the guide-plate and the stem and socket are united, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand and seal, this 20th day of August, 1888, in the presence of the two subscribing witnesses.

OSBORN P. LOOMIS. [L. S.]

Witnesses:

CHAS. H. PIERCE,
ROBT. N. CLARK.