R. B. BENJAMIN.

THIEF PROOF LAMP HOLDING DEVICE.

APPLICATION FILED AUG. 22, 1912.

1,238,482.

Patented Aug. 28, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

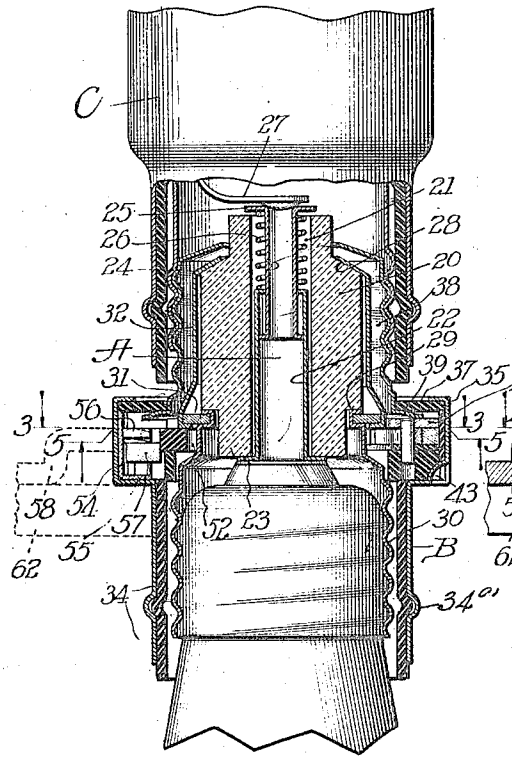


Fig. 2.

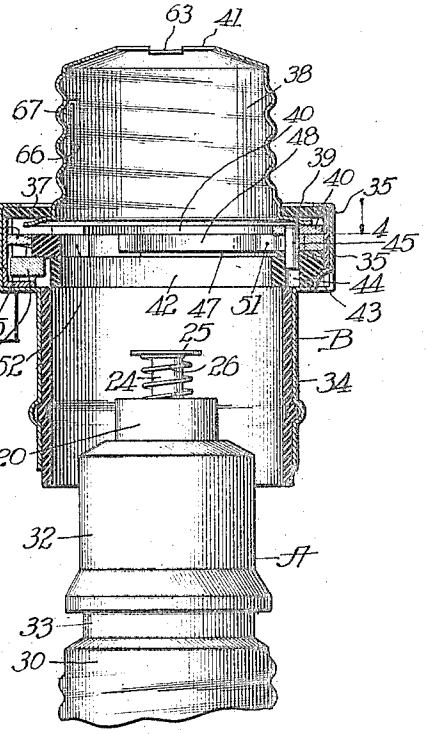


Fig. 6.

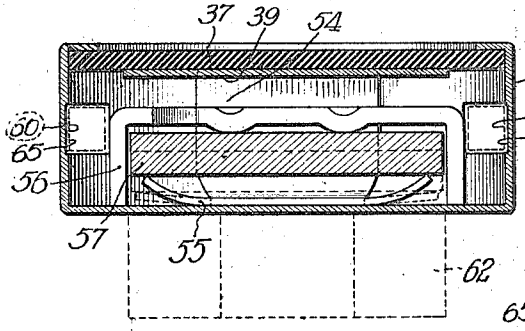


Fig. 12.

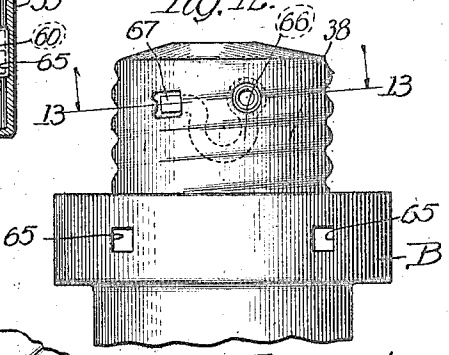
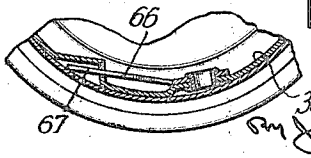


Fig. 13.



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2 SHEETS—SHEET 2.

Fig. 3.

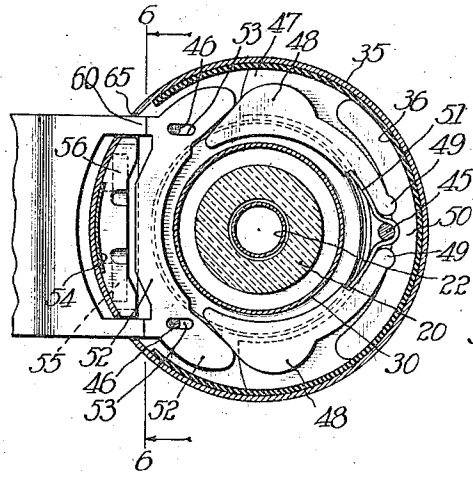


Fig. 4.

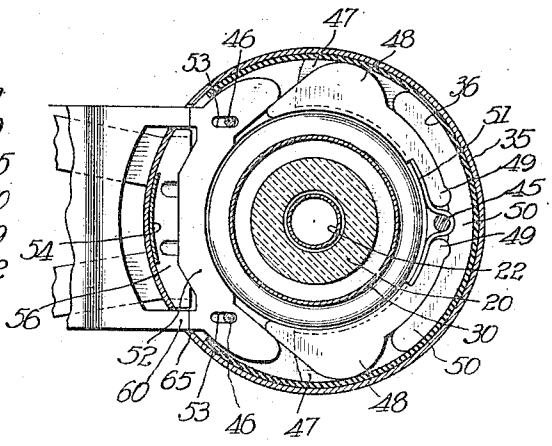


Fig. 5.

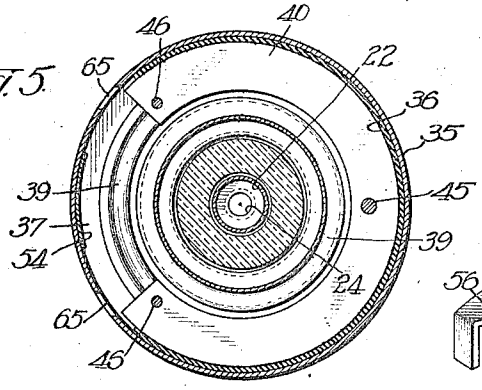


Fig. 7.

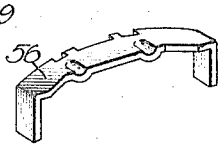


Fig. 11.

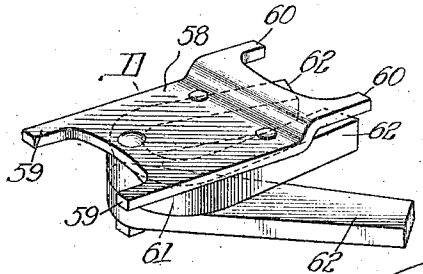


Fig. 8.

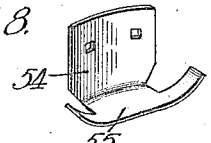


Fig. 9.

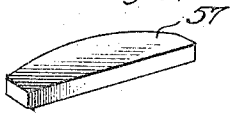
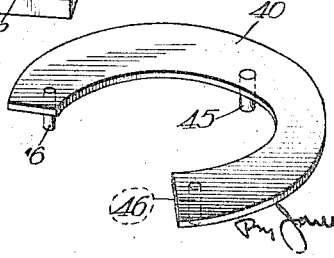


Fig. 10.



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UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MFG. COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

THIEF-PROOF LAMP-HOLDING DEVICE.

1,238,482. Specification of Letters Patent. **Patented Aug. 28, 1917.**

Application filed August 22, 1912. Serial No. 716,491.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Thief-Proof Lamp-Holding Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention pertains to thief-proof lamp-holding devices, and especially relates to thief-proof devices of the kind in which the lamp rotates loosely when an attempt is made to remove it from the lamp-holder, thereby preventing the threaded lamp contact from being screwed out of the corresponding threaded contact of the holder. In devices of this character, a special tool must be employed before the lamp can be removed. It is an important object of my invention to provide a device of the character stated above, in which a tool is employed of such a kind that it would be exceedingly difficult for a thief to produce a makeshift device for doing the work of the tool; that is to say, in which it would be exceedingly difficult for an unauthorized person to operate the mechanism so as to release the lamp. It is another object of my invention to provide a thief-proof lamp-holding device which will be convenient in use and which may be manipulated with the greatest ease possible by an authorized person. It is still another object of my invention to provide a thief-proof lamp-holding device which will be of a strong and durable construction, and which may be produced at a reasonable price. And it is a still further object of my invention generally to improve upon the construction of thief-proof plug lamp sockets.

For purposes of description, I have shown a thief-proof plug lamp socket in the accompanying drawings; but it will be understood that the device shown is only one of many constructions in which my invention may be embodied. My invention may take other form, and changes may be made in the embodiment which I have shown in the drawings, within the scope of the invention, as expressed in the appended claims.

In the drawings:

Figure 1 is a sectional elevation of a plug lamp socket constructed in accordance with my invention, the body being shown as locked in position in the shell;

Fig. 2 is a sectional elevation of the shell with the locking members in their released condition, the body being shown, in full, separated from the shell;

Fig. 3 is a sectional plan, the section being taken on the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a sectional plan, the section being taken on the line 4—4 of Fig. 2, looking in the direction of the arrows;

Fig. 5 is an inverted sectional plan, the section being taken on the line 5—5 of Fig. 1, looking in the direction of the arrows;

Fig. 6 is an enlarged sectional view, the section being taken on the line 6—6 of Fig. 3, looking in the direction of the arrows;

Figs. 7, 8 and 9 are detail perspective views of the armature-containing frame, the armature-actuating spring and the armature itself, respectively;

Fig. 10 is a perspective detail view of the contact plate which is engaged by the threaded plug contact;

Fig. 11 is a perspective view of the tool employed in connection with the device shown in the other figures; and

Figs. 12 and 13 are views showing the means employed for holding the threaded plug contact normally against withdrawal from the socket in connection with which it is used, Fig. 13 being a fragmentary section on the line 13—13 of Fig. 12.

Like reference characters indicate like parts throughout the following description and the several figures of the drawings.

The plug lamp socket shown in the drawings consists of two members which I shall hereinafter term the shell and the body. The shell comprises a casing, having at its rear end a hollow threaded plug contact adapted to engage the threaded contact of the socket or the like in connection with which the device is to be employed; and it carries a releasable locking mechanism, adapted to be operated by a special tool, for retaining the body in position in such a manner that the body may be freely rotated relatively to the shell. The body is capable of being inserted into the shell so as to be inclosed and protected thereby; and it comprises a threaded lamp receiving shell, a base for supporting the same, and a center lamp-terminal-engaging contact which ex-

tends through the body and projects beyond the end of the same, and through the end of the shell, to make connection with the center contact of the socket or the like in connection with which the device is to be employed. The body is held in the shell, by the locking mechanism of the latter, so as to be capable of rotation relatively thereto and relatively to the socket in connection with which the device is used; and it can be bodily removed from the shell when the locking mechanism of the latter is released by a special tool. When the body has been removed from the shell, the shell may be removed from the socket, but not before. It will be seen that, by reason of the fact that the threaded plug contact of the shell is rotatably mounted upon the main portion of the same, the shell cannot be withdrawn from the socket by merely turning the same from the outside, since the main portion of the shell would merely turn relatively to the threaded plug contact. The lamp cannot be removed, since it, together with the body which supports it, will turn freely relatively to the shell and to the socket.

Referring now to the drawings, and particularly Figs. 1 and 2 thereof, A designates the body, B the shell, and C the socket in connection with which the device is used. The body A comprises an insulating base 20 having a hole 21 formed therethrough. In the hole 21 is mounted a tubular member 22, the lower end of which is flared outward, as at 23, to form a center-lamp-terminal engaging contact. A hollow stem 24 is telescopically mounted in the tubular member 22, and extends outward beyond the upper end of the base 20, being flared outward at its upper end, as at 25. A spring 26 is mounted upon the stem 24, between the flange 25 of the latter and the top of the tubular member 22, this spring tending to move the stem 24 outward relatively to the base 20. When the parts A and B are assembled, the end of base 20 extends beyond the end of the threaded plug contact of the shell B, and the flange 25 of the tubular stem 24 makes contact with the center contact 27 of the socket C. As has been said, the center terminal of the lamp makes connection with the end 23 of the tubular member 22. The member 22 is in connection with the stem 24, current from the center contact 27 of the socket being thus transmitted to the center terminal of the lamp. It will be seen that the base 20 can rotate freely with respect to the center contact 27 without disturbing the connection between the center contact 27 and the center terminal of the lamp. Such rotation merely results in the stem 24 turning upon the contact 27, or the stem 24 remaining stationary relatively to the center contact 27 and turning in the tubular member 22.

At a short distance below its upper end, the base 20 is enlarged, so as to form a shoulder 28; and, at its lower end, it is reduced, so as to form a shoulder 29. The upper end of the threaded lamp-terminal-engaging contact 30 is reduced in diameter and fits over the end of the base 20, below the shoulder 29, being crimped over the inner edge of a flat ring 31. Surrounding the base 20, below the shoulder 28, is a sleeve 32, the upper end of which is bent inwardly to engage over the shoulder 28, and the lower end of which is flared outwardly and then bent in beneath the outer edge of the flat ring 31. The sleeve 32 thus retains the threaded contact 30 in position upon the base 20 with its top end clamped against the shoulder 29. The ring 31 is of such width that the lower end of the sleeve 32 projects considerably beyond the reduced upper end of the threaded contact 30, an annular recess 33 (Fig. 2) being thereby formed. It is in the recess 33 that the locking mechanism, carried by the shell B, engages, thereby permitting rotation of the body A relatively to the shell, as will now be described.

The shell B comprises a casing 34 adapted to surround, and completely hide, the threaded contact 30 when the body is in position in the shell, the casing being formed with a bead 34ª for supporting a shade ring or the like. The upper end of the casing 34 is enlarged outwardly, to form an annular chamber 35, having an inwardly extending lip at its upper part. Engaging beneath the said lip, and supported from beneath by a partial ring 36 (Figs. 3, 4 and 5) made of insulating material and partially lining the annular chamber 35, is a flat ring 37 of insulating material. The ring 37 loosely surrounds the lower end of the threaded plug contact 38, the latter being flanged out beneath the ring 37 as at 39. The flange 39 rests upon a contact plate 40, which will be hereinafter described, the threaded contact 38 being thus rotatably mounted with respect to the remainder of the shell. The threaded contact 38 is formed with an aperture 41 at its upper end, through which the upper end of the base 20 of the body A extends when the body is connected with the shell.

Located in the bottom of the chamber 35 is a ring 42, formed of insulating material, which ring is prevented from rotation in the chamber by an indentation 43 formed in the wall of the chamber. The ring 42 is provided with a hole 44 for receiving a pin 45 which extends downwardly from the contact plate 40, which latter is of the shape shown in Figs. 5 and 10. Besides the pin 45, the contact plate 40 is provided with two pins 46, the lower ends of which rest upon the ring 42. Lying upon the ring 42 is an

arc-shaped strip 47 which, in turn, supports the locking dogs 48. The locking dogs 48 are formed of brass or some other conducting material and lie one on each side of the pin 45; their adjacent ends are rounded, as at 49, and fit in corresponding recesses in the inner edge of an arc-shaped plate 50, which may be formed of brass or the like, and which also lies upon the insulating strip 47. The locking dogs 48 are thus mounted so as to be capable of being swung about their ends 49. Surrounding the pin 45, is a leaf spring 51, which bears upon the inner edges of the locking dogs 48 and tend to move them outward. The parts are so positioned and arranged that the locking dogs 48 lie in the plane of the annular recess 33 of the body A, when the latter is in position in the shell B. When the body is in position in the shell, the dogs 48 are forced toward each other against the action of the spring 51, so as to enter the annular recess 33 and lock the body in the shell. Releasable means are provided for holding the parts in such locked position, which means will now be described.

Referring particularly to Figs. 1 to 4, 52 designates an arc-shaped locking plate, which rests upon the insulating ring 42, and is provided with elongated slots 53 through which pass the pins 46 extending downward from the contact plate 40. The locking plate 52 is thus capable of a limited lateral movement upon the top surface of the ring 42. In one of its extreme positions (Fig. 3) the locking plate 52 engages against the outer surfaces of the ends of the locking dogs 48 and forces them inward against the action of the spring 51. When the locking plate 52 is allowed, however, to move back into the position shown in Fig. 4, the locking dogs 48 spring outward under the action of the leaf spring 51.

The ring 42 is cut away, at the side thereof opposite to the pin 45, so as to leave a segment-shaped space at the rear of the locking plate 52. In this space is mounted an L-shaped member 54, formed of brass or the like, the lower part of which lies upon the bottom of the chamber 35 and is bent up at the ends so as to form a leaf spring 55 (Figs. 6–9). Fitted to the member 54 is a bridge 56, which extends over the leaf spring 55, and the ends of which rest upon the bottom of the chamber 35. Mounted between the leaf spring 55 and the bridge 56 is a locking armature 57, formed of soft iron, which is normally pressed up against the under side of the bridge 56, as shown in full lines in Fig. 6. The armature may, however, be moved down, against the action of the spring 55, as will hereinafter appear. When the armature 57 is in its uppermost position, it lies behind the locking plate 52, and holds the latter in the position shown in Fig. 3. When, however, the armature 57 is depressed, the locking plate 52 may be forced back by the action of the end of the locking dogs 48 springing up under the influence of the spring 51.

The locking mechanism is manipulated by means of a tool D. The tool (Fig. 11) comprises a plate 58 provided at its rear end with spaced projections 59. The plate is bent upward and then forward at its front end and provided with spaced projections 60 similar to the projection 59. Riveted beneath the plate 58 is a powerful, permanent magnet 61, the poles 62 of which lie beneath the projections 60. Pivoted beneath the magnet 61 is a flat bar 62, the end of which is adapted for use in removing the shell from the socket C.

The operation of the device is as follows. The shell being separated from the body, its plug contact 38 is screwed into the corresponding contact of the socket C, this operation being effected with the aid of the portion 62 of the tool, the end of which latter is inserted between a pair of notches 63 formed in the edge of the opening 41 of the threaded contact 38. The tool, the part 62 of which may be formed of insulating material, is thus used as a wrench; and the necessity of touching live conducting portions is thus avoided. When the plug contact 38 has been inserted into the socket C, the remainder of the shell may be freely turned relatively to it, as has been stated above. When the body A was previously separated from the shell, the locking mechanism was left in the condition shown in Figs. 2 and 4, the dogs 48 being spread away from each other. With the parts in this position, the body may be pushed up into the shell, the end of the base 20 passing through the aperture 41 of the plug contact 38, and the end 25 of the stem 24 engaging the center contact 27 of the socket C, the spring 26 being compressed as shown. When the body is thus thrust up into the shell, the annular recess 33 thereof is located on the same plane as the locking dog 48 of the shell. With the parts in this position, the projections 59 of the tool D are made to engage against the rear face of the locking plate 52, these projections entering the chamber 35 through properly placed apertures 65 provided for the purpose. The tool is now thrust inward, the locking plate 52 being thus moved toward the locking dogs 48; *i. e.*, the plate 52 is moved from the position shown in Fig. 4 to that shown in Fig. 3. This movement of the locking plate 52 causes the locking dogs 48 to be moved toward each other so as to enter the annular recesses 33 of the body A; and, when the rear edge of the locking plate 52 has passed the front edge of the armature 57, the latter, which was previously held beneath the locking

plate, is permitted to be moved upward by the spring 55, thereby to prevent the locking plate from being moved back again. The locking dogs are thus firmly retained in their position in the annular recess 33. With the parts in such condition, the body is securely locked in the shell, but in such a manner that it may be freely rotated with respect to the shell and to the socket C. If any attempt is made to unscrew the lamp from the device, such attempt only results in the turning of the body relatively to the socket and shell. As has been said, the main part of the shell can turn freely relatively to the plug contact 38 of the shell; so that any attempt to unscrew the shell from the socket would be unsuccessful, the only portion of the shell which is accessible merely turning with respect to the socket C. When it is desired to remove the device from the socket for any reason, such as to replace the lamp, when the latter has become burned out or broken, the projections 60 of the tool D are inserted into the aperture 65 and pressed against the locking plate 52, the locking plate 52 being moved inward to a slight extent from the position shown in Fig. 3. This inward movement of the locking plate removes the pressure of the locking plate against the edge of the armature 57, which pressure would be sufficient to prevent the armature 57 from being moved downward against the action of the spring 55, by magnetic attraction. It will be understood that when the projections 60 of the tool are inserted into the apertures 65, the poles 62 of the magnet 61 enter beneath the bottom of the chamber 35; so that, when the locking plate 52 is pushed inward, as above described, the poles 62 of the magnet will be located immediately below the armature 57. The lateral pressure upon the armature being removed, the magnet poles 62 will draw down the armature 57, against the action of the spring 55, thus removing the armature from its position behind the locking plate 52. If the tool be now withdrawn, the locking plate 52 will be forced back by the action of the spring 51 separating the locking dogs 48, the magnet poles remaining in position beneath the armature long enough to hold the latter down until the locking plate has moved into the position above it. The locking dogs 48 are thus separated, and the body A will be removed from the shell; in fact, the body will spring out, under the action of the coiled spring 26. The body having thus been removed, the end of the portion 62^a of the tool is inserted into the slot 63 of the plug contact, and the latter is unscrewed from the corresponding thread contact of the socket C. The manner of reinserting the device has been described above.

In order to hold the plug contact 38 against removal from the socket C except when a twisting effort of some strength is applied, I provide the threaded plug contact 38, at the inside thereof, with a spring thumb 66, one end of which is riveted to the contact 38, and the other end of which extends outward through the same, as at 67 (Figs. 12 and 13). The end 67 of the spring 66 is located in the line of the threads of the contact 38, and is adapted to engage against the surface of the threaded contact of the socket when the plug contact 38 is screwed thereinto. The spring 66 extends backward as the contact 38 is inserted into the corresponding contact of the socket, and such insertion is, therefore, an easy matter. If an attempt is made to withdraw the contact 38 from the corresponding socket, however, the end 67 of the spring 66 will tend to plow into the metal of the threaded contact of the socket; so that considerable force must be exercised before the contact 38 can be removed from the socket.

It will be seen that the device is such that it is, practically speaking, impossible to release the locking mechanism without the aid of the special tool provided. The down-turned sides of the bridge 56, which lie adjacent the inner sides of the holes 65, prevent access being had, as by means of a bent wire or the like, to the armature 57. Owing to the rotary connection between the stem 24 and the tubular member 22, the body A can rotate very freely relatively to the socket and to the shell B; so that it is impossible to loosen the lamp from the threaded contact 30 by merely turning the lamp. While removal of the lamp by an unauthorized person is very efficiently prevented, the lamp may be removed and replaced with the greatest ease by an authorized person, and such removal and replacement may be effected without in any way disturbing the shade or other parts of the fixture.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A thief-proof lamp-holding device comprising a support, a threaded lamp-terminal-engaging contact formed with a peripheral shoulder, means carried by said support engaging beneath said shoulder so as to connect said contact rotatively with said support, said means being withdrawable from engagement beneath said shoulder, thereby to permit removal of said contact, and means for preventing manual access to said contact when the latter is connected with said support.

2. In a thief-proof lamp-holding device, the combination with means for supporting a lamp so as to be normally irremovable therefrom, of a lock cooperating with said supporting means, and adapted, when operated, to permit removal of the lamp from

said lamp-holding means, said lock being adapted to be operated by pressure and magnetic attraction, and a tool having a portion adapted for engagement with a part of said lock to enable pressure to be applied thereto, and including a magnet.

3. In a thief-proof lamp-holding device, the combination with means for supporting a lamp so as to be freely rotatable with respect to the socket in connection with which the device is employed, and means for normally preventing access to said supporting means, of mechanism coöperating with said supporting means and said access-preventing means, and adapted, when operated, to render said access-preventing means inoperative, said mechanism being adapted to be operated by magnetic attraction, and a magnet for operating said mechanism.

4. A thief-proof lamp-holding device, comprising a shell including a casing and a threaded plug contact, said casing being mounted to rotate with respect to the plug contact, a body including a threaded lamp-terminal-receiving contact, a center-lamp-terminal engaging contact, and an end contact electrically connected with said center-lamp-terminal engaging contact, said body being adapted to be inserted into said shell so that the threaded contact thereof makes engagement with the plug contact of said shell and the end contact thereof makes connection with the center contact of the socket in connection with which the device is employed, and means for retaining said body in said shell so as to be capable of rotation relatively to said shell, said retaining means being adapted to be released by a specially formed tool.

5. The combination with a key, of a lamp supporting device comprising a shell including a casing and a threaded plug contact, said casing being mounted to rotate with respect to said plug contact; a body detachably connected with said threaded plug contact including a center-lamp-terminal engaging contact, an end contact electrically connected with said center-lamp-terminal engaging contact, and a threaded lamp-terminal-engaging contact, said body being adapted to be inserted into said shell with the threaded lamp-terminal-engaging contact in connection with the plug contact of the shell and the end contact in connection with the center contact of the socket in connection with which the device is employed, and said body being adapted to support the lamp so that the latter may be rotated with respect to the socket without disturbing the electrical connections of the lamp end with the contacts of the body; and releasable means for retaining said body in said shell, said retaining means being adapted to be operated by said key.

6. A thief-proof lamp-holding device, comprising a hollow casing, a threaded plug contact, said casing being mounted to rotate with respect to said plug contact, a body detachably connected with said plug contact and contained in said casing and capable of being moved relatively thereto, said body including a threaded lamp-terminal-engaging contact in connection with said plug contact, an end contact adapted to make connection with the socket in connection with which the device is employed, a center-lamp-terminal engaging contact electrically connected with said end contact, and means for supporting said contacts, and releasable means for normally preventing longitudinal movement of said body relatively to said casing, but adapted, when released, to permit said body to be moved longitudinally relatively to said casing to permit access to the body to be had.

7. A thief-proof lamp-holding device, comprising a body including a threaded lamp-terminal-engaging contact, an end contact adapted to make engagement with the center contact of the socket in connection with which the device is employed, and a center-lamp-terminal engaging contact electrically connected with said end contact; a threaded plug contact detachably connected with said body and electrically connected with said threaded lamp-terminal-engaging contact, said casing being mounted to rotate with respect to said plug contact; means for preventing access to said body or to said threaded plug contact; and means for rendering said access-preventing means inoperative.

8. A thief-proof lamp-holding device, comprising a body including a threaded lamp-terminal-engaging contact, an end contact adapted to make engagement with the center contact of the socket in connection with which the device is employed, and a center-lamp-terminal engaging contact electrically connected with said end contact and rotatable with respect thereto; a threaded plug contact electrically connected with said threaded lamp-terminal-engaging contact, and mounted to rotate with respect to said plug contact; means for preventing access to said body or to said threaded plug contact; and means for rendering said access-preventing means inoperative.

9. A thief-proof lamp-holding device, comprising a shell including a casing and a threaded plug contact, said casing being mounted to rotate with respect to said plug contact; a body including a threaded lamp-terminal-engaging contact, an end contact, and a center-lamp-terminal engaging contact in electrical connection with said end contact, said body having an annular recess therein and being adapted to be inserted into said shell with its threaded contact in connection with said plug contact and

its end contact in connection with the center terminal of the socket in connection with which the device is employed; a pair of movable dogs carried by said shell so as to enter the recess of said body, thereby to retain said body in said shell while permitting rotation of the body relatively to the shell; and means for moving said dogs out of engagement with said recess, to permit said body to be removed from said shell, said last-named means being adapted to be operated by a specially formed tool.

10. An electric lamp supporting device comprising a non-rotating support and means for detachably connecting and rotatably supporting an electric lamp with respect to said non-rotating support, comprising movable latching means mounted on said non-rotating support.

11. An electric lamp supporting device comprising a non-rotating support and a member having an annular shoulder, and means for detachably connecting and rotatably supporting an electric lamp with respect to said non-rotating support, comprising movable latching means mounted on said non-rotating support engaging said shoulder.

12. An electric lamp supporting device comprising a non-rotating support and movable latching means mounted on said non-rotating support for rotatably supporting an electric lamp, said latching means being movable substantially radially with respect to the lamp base.

13. An electric lamp supporting device comprising a non-rotating support and movable latching means mounted on said non-rotating support for rotatably supporting an electric lamp, said latching means being pivoted to move about an axis substantially parallel to the axis of the lamp.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

REUBEN B. BENJAMIN.

Witnesses:

E. R. KING,
CHARLES G. COPE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Corrections in Letters Patent No. 1,238,482.

It is hereby certified that in Letters Patent No. 1,238,482, granted August 28, 1917, upon the application of Reuben B. Benjamin, of Chicago, Illinois, for an improvement in "Thief-Proof Lamp-Holding Devices," errors appear requiring correction as follows: In the drawings, Sheet 2, Fig. 11, lower right-hand corner, for the reference-numeral "62" read *62ª;* page 3, line 92 of the printed specification, for the reference-numeral "62" read *62ª;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of October, A. D., 1917.

[SEAL.] F. W. H. CLAY,

Acting Commissioner of Patents.

Cl. 173—356.