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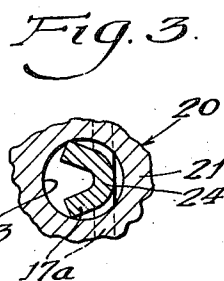
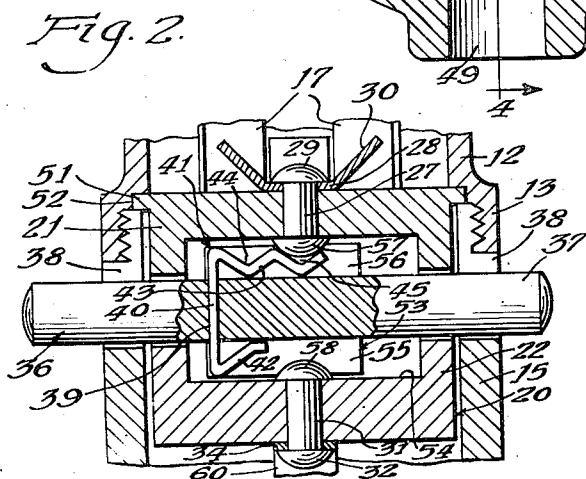
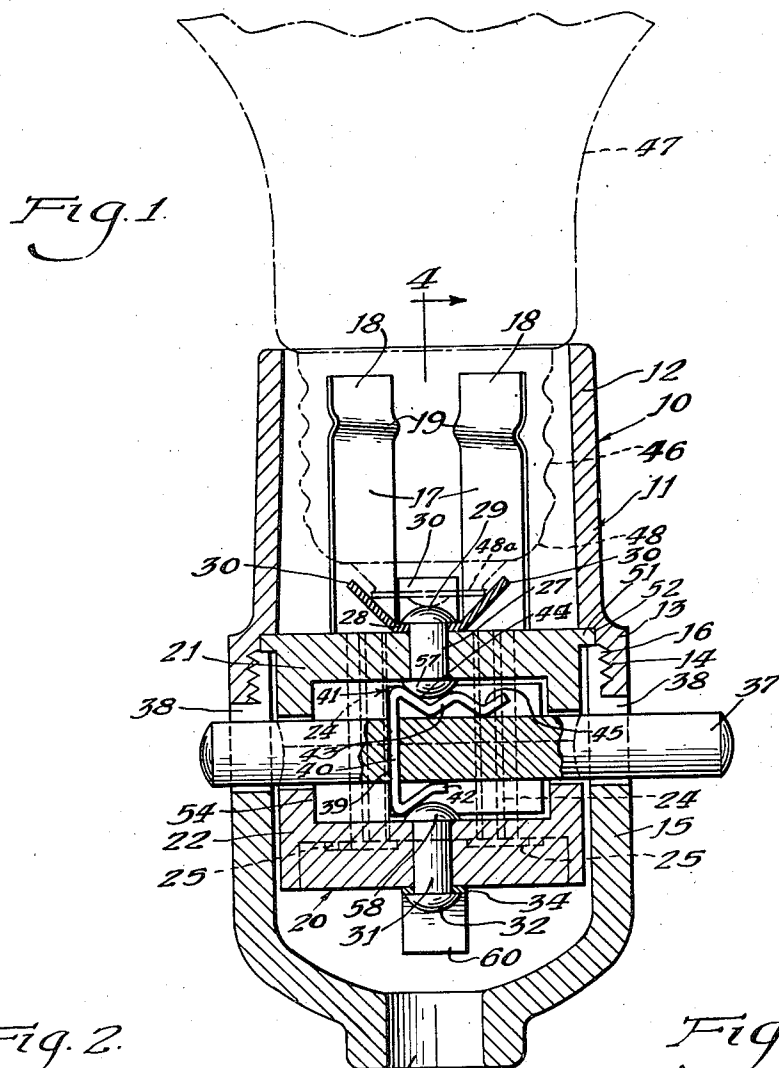
T. G. LEFLER

2,454,069

ELECTRIC SOCKET CONSTRUCTION

Filed June 24, 1946

2 Sheets-Sheet 1



INVENTOR.
Theodore G. Lefler

BY
Wallace and Cannon
Attorneys

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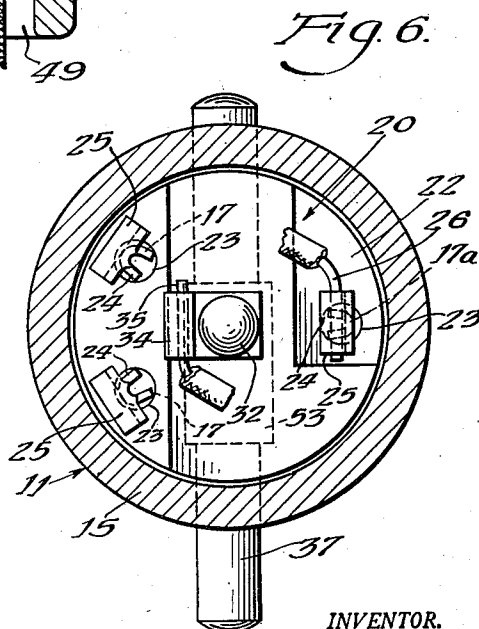
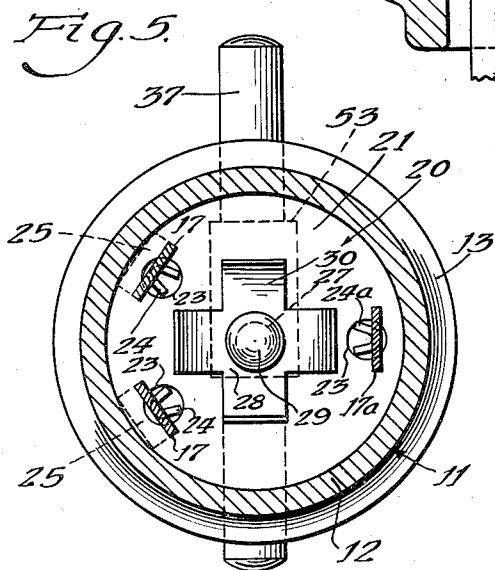
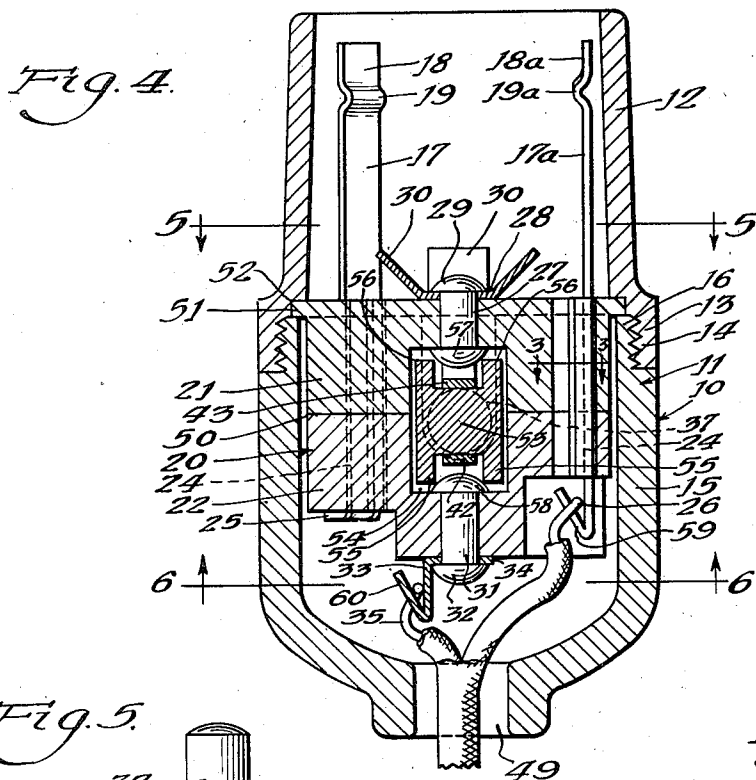
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INVENTOR.

Theodore G. Lefler

BY

Wallace and Cannon

Attorneys

UNITED STATES PATENT OFFICE

2,454,069

ELECTRIC SOCKET CONSTRUCTION

Theodore G. Lefler, Chicago, Ill.

Application June 24, 1946, Serial No. 678,833

6 Claims. (Cl. 200—51.16)

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This invention relates to an electric socket construction adapted for holding an electric light bulb.

An object of the present invention is to provide a new and improved electric socket construction for releasably holding an electric light bulb therein in such a manner that the light bulb may be expeditiously inserted into and removed from position of use in the socket.

A further object of the invention is to provide a novel construction and arrangement of resilient lamp bulb-holding or clamping members adapted for releasably holding a light bulb in position of use in the socket and in which one of the said resilient lamp bulb-holding or clamping members also serves and functions as a resilient electrical contact engaging the metallic base of the lamp bulb when the bulb is in position of use in the socket.

Still another object of the invention is to provide a new and improved electric socket construction which is simple and economical in construction and may be made of a relatively small number of parts.

Another object of the invention is to provide a novel method of and construction for mounting the resilient lamp bulb-holding or clamping members in the body of the new socket.

A further object of the invention is to construct the resilient metal lamp bulb-holding or clamping members in such a manner that a lamp bulb may be slidably inserted into the new socket among the said resilient metal lamp bulb-holding or clamping members and then secured in position therein by imparting a slight rotative movement to the lamp bulb. This slight rotative movement of the lamp bulb causes the threads on the base of the lamp bulb to threadedly engage portions of the said resilient lamp bulb-holding or clamping members which are so inclined relative to each other that they follow the pitch of the threads on the base of the lamp socket and thus secure the lamp bulb in position of use in the socket and against accidental or unintentional dislodgment therefrom.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments of the present invention and the principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used

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and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is an enlarged central vertical sectional view of the new electric socket construction embodying a preferred form of the present invention and showing the switch embodied in the socket in closed position;

Fig. 2 is a fragmentary central vertical sectional view illustrating the switch construction which is embodied in the new electric socket and showing the movable switch contacts moved into open position from the closed position in which they are shown in Fig. 1;

Fig. 3 is a fragmentary transverse sectional plan view on line 3—3 in Fig. 4 illustrating the novel manner in which the resilient lamp bulb-holding or clamping members are mounted in position of use in the body of the new electric socket;

Fig. 4 is a central vertical sectional view on line 4—4 in Fig. 1;

Fig. 5 is a sectional top plan view on line 5—5 in Fig. 4; and

Fig. 6 is a sectional bottom plan view on line 6—6 in Fig. 4.

A preferred embodiment of the new electric socket construction is illustrated in the drawings, wherein it is generally indicated at 10, and comprises a socket housing or casing 11, the component parts of which are preferably molded of any suitable electrically non-conductive resinous molding plastic material such, for example, as a phenol-formaldehyde molding resin, or the like. The socket casing or housing 11 includes a tubular portion 12 which is adapted to receive and to house the base 48 of a lamp bulb 47, and this portion 12 of the socket housing 11 has an enlarged flange portion 13 which is internally threaded as at 14. The housing or casing 11 also includes a base portion 15 which has an externally threaded inner end portion 16 which is threaded into detachable engagement with the internally threaded flange 13—14 of the portion 12 of the socket housing 11. The base portion 15 of the socket housing 11 is provided at its lower end with an opening 49 for the passage of the lead-in wires or conductors 26 and 35 (Fig. 4).

The new electric socket construction 10 includes a pair of resilient metal lamp bulb-holding or clamping members 17 and a third and substantially similar resilient metal lamp bulb-hold-

ing or clamping member 17a which also functions as a resilient electrically conductive contact member, which is adapted to engage the metal base 48 of the lamp bulb 47, as will be described hereinafter. The three resilient clamping members 17-17-17a are radially spaced within and around or relative to the socket casing or housing 11 and each of the three resilient lamp bulb-holding or clamping members 17 includes an axially outer end portion 18 which is provided with an inwardly deformed or offset portion 19 (Fig. 1). These inwardly deformed or offset portions are so inclined at angles relative to each other and to the long axes of the resilient clamping members 17 that they will follow the pitch of the threads 46 on the metal base 48 of the lamp bulb 47, when the lamp bulb 47 is inserted into position of use in the socket, for a reason and as will be described more fully hereinafter.

The new electric socket 10 includes a supporting unit or body 20 which is arranged within the casing or housing 11. This supporting unit 20 may be made of any suitable electrically non-conductive resinous plastic molding composition such, for example, as a phenol-formaldehyde molding resin, or other suitable material. The supporting unit 20 includes an upper portion 21 and a lower portion 22 which are held together in a manner which will be described hereinafter. The upper portion 21 of the supporting unit 20 is provided with a substantially annular external flange 51 which is seated in a correspondingly shaped groove 52 formed in the upper socket section 12 so that the supporting unit 20 is thus held in position of use in the socket casing 11 by the clamping action of the upper and lower socket sections 12 and 15, respectively, on opposite sides of the flange 51.

The supporting unit 20 has an opening or passage 54 extending therethrough and a switch operating and switch contact-supporting rod 37 is slidably mounted in this opening or passage 54. The switch-operating and switch contact-supporting rod 37 has an enlarged and generally channel-shaped central or middle portion 53 which is slidable in the opening or passage 54. The said central portion 53 of the switch-operating and contact-supporting rod 37 has a pair of spaced parallel guiding flanges 55 formed in the lower end portion thereof and has a pair of spaced parallel guiding flanges 56 formed in the upper portion thereof, as the new socket 10 is shown and seen in the drawings. The lower guiding flanges 55 are arranged upon opposite sides of the upper head 58 of a binding post in the form of a metal rivet 31 which is mounted in the lower portion 22 of the supporting unit 20. Similarly, the upper guiding flanges 56 are arranged in opposite sides of the lower head 57 of a binding post in the form of a metal rivet 27 which is mounted in the upper portion 21 of the switch-supporting unit 20. The switch-operating and contact-supporting rod 37 also has an opening or slot 39 extending vertically therethrough and the right portion 40 of a generally U-shaped switch contact member 41 extends through and is mounted in the slot 39. The switch contact member 41 may be made of any suitable electrically conductive resilient metal and includes a lower resilient switch contact arm 42 and an upper resilient switch contact arm 43. As shown in the drawings (Figs. 1 and 2) the upper resilient switch contact arm 43 is substantially longer than the lower resilient switch contact arm 42 and is undulated in form so as to provide two

spaced recesses or pockets 44 and 45 on the upper surface thereof, and the functions of which will be described more fully hereinafter.

A group of holes 23 are provided in and extend completely through the supporting unit 20, there being one of the holes 23 for each of the resilient lamp bulb-holding or clamping members 17-17-17a. Each of the three resilient lamp bulb-holding or clamping members 17-17-17a is made of flat metal stock and a portion of the flat metal stock of each of the members 17-17-17a is deformed in any suitable manner, as by means of a stamping operation, into a substantially V-shaped formation, as seen in cross section, throughout a portion thereof and the thus previously deformed portion of each of the members 17-17-17a is extended through one of the openings or holes 23, as best shown in Fig. 3. After the two resilient lamp bulb-holding or clamping members 17 have been inserted through the corresponding holes or openings 23 the lower end portions 25 thereof (as seen in the drawings) are bent over under the bottom surface of the lower portion 22 of the supporting unit 20 and at approximately a right angle to the long or vertical axes of the said members 17. Hence it will be seen that when the two resilient lamp bulb-holding or clamping members 17 are thus disposed they are held in position in the supporting unit 20 by the bent-over or angled lower end portions 25 thereof in cooperation with the main extent or substantially uniplanar flat portion of each of the said two resilient lamp bulb-holding or clamping members 17 and which project laterally over the upper surface of the upper portion 21 of the supporting unit 20 and at opposite sides of the corresponding holes 23 therein, as shown in Fig. 3.

However, the third resilient lamp bulb-holding or clamping member 17a, which also serves as an electrically conductive contact member, as will be described hereinafter, while being substantially similar in design and shape to the other two resilient lamp bulb-holding or clamping members 17, has its lower end portion 59 bent angularly relative to the long axis of the said member 17a so as to form a hook-shaped lower end portion 59 to which the lead-in wire or conductor 26 may be attached. This operation of flattening and bending the lower end portion 59 of the said member 17a may be performed in any suitable manner after the member 17a has been inserted through the corresponding one of the holes 23. This hook-shaped lower end portion of the resilient clamping and contact member 17a cooperates with the deformed V-shaped portion 24a thereof to retain the said member 17a in the corresponding hole 23 in the supporting unit 20, in substantially the same manner as the other two resilient clamping members 17 are held in position of use, as hereinbefore described. Moreover, the three members 17-17-17a cooperate with each other to hold the upper and lower parts 21 and 22, respectively, of the supporting unit 20 in assembled relationship, as shown in the drawings.

A relatively stationary metallic contact member 28 is mounted centrally on the upper surface of the upper portion 21 of the supporting unit 20, as the same is seen in the drawings, and is held in position thereon by the upper head portion 29 of the rivet 27. This metallic contact member 28 includes a plurality of radially spaced resilient metal contact arms 30 against which the base 48

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of the lamp bulb 47 seats when the base 48 of the lamp bulb 47 is mounted in the socket 10.

As shown in Fig. 4, one of the lead-in wires or conductors 26, to which the new socket 10 may be connected, is attached to the angularly extending or hook-shaped lower end portion 59 of the resilient combination clamping and contact member 17a and the other lead-in wire or conductor 35 is attached to a hook-shaped arm 60 of a metal strip 34. This metal strip 34 is mounted on the binding post rivet 31 below the lower surface of the lower portion 22 of the supporting unit 20 and is held thereon by the lower head portion 32 of the binding post rivet 31.

In the use and operation of the new electric socket construction the same may be assembled with the parts arranged in the positions shown and with the lead-in wire 35 electrically connected to the hook-shaped lower end portion 60 of the contact strip 34 and with the other lead-in wire or conductor 26 electrically connected to the hook-shaped lower end portion 59 of the resilient combination lamp bulb-holding or clamping contact member 17a.

The metallic base 48 of a conventional electric lamp bulb 47 may then be slid into position of use in the portion 12 of the socket housing 11 by manually sliding the same among the three resilient lamp bulb-holding or clamping members 17-17-17a until the major portion of the metallic base 48 of the lamp bulb 47 has thus been projected among, and has been clamped by, the three resilient lamp bulb-holding or clamping members 17-17-17a which are spread or forced apart against the force of their own innate resiliency during this operation. The lamp bulb 46-47 may then be given a slight rotative movement (in a clockwise direction as seen from the top thereof), whereupon the offset or deformed portions 19 of the resilient lamp bulb clamping members 17-17-17a will follow the pitch of the threads 46 on the metallic base 48 of the lamp bulb 47 and thus force the inner end portion of the metallic base 48 of the lamp bulb 47 into a firm tight seating engagement and electrical contact with the three resilient contact fingers 30 of the stationary contact member 28.

At this time the slidable contact-supporting switch bar or rod 37-53 will be disposed in the open circuit or open switch position in which it is shown in Fig. 2 with the lower resilient contact arm 42 disposed out of engagement with the headed upper portion 58 of the lower stationary contact terminal 31. However, the electrical circuit through the new socket 10 may be completed, so as to illuminate the lamp bulb 47 mounted therein, by manually pressing the switch-operating and contact-supporting slide bar or rod 37-53 to the right, as shown in Fig. 2, thereby moving the lower switch contact arm 42 into engagement with the headed upper portion 58 of the lower stationary contact terminal 31. During this operation the upper resilient switch contact arm 43 slides under the lower headed end portion 57 of the upper stationary contact terminal 27 and the said headed lower end portion 57 of the upper stationary contact terminal 27 seats in the recessed portion 44 of the upper resilient switch contact arm 43. During this movement of the slidable switch contact supporting and operating bar or rod 37 the latter is slidably guided by movement of the upper flange portions 56 and the lower flange portions 55

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thereof between and on opposite sides of the headed lower end portion 57 of the stationary upper contact 27 and the headed upper portion 58 of the lower stationary contact terminal 31, respectively, as the parts are seen in the drawings.

The manually operable and slidable switch contact supporting and operating rod 37, and the resilient switch contact arms 42 and 43 carried thereby, will then be disposed in the position in which the parts are shown in Fig. 1 of the drawings, with the lower resilient contact arm 42 engaged with the headed upper portion of the lower stationary contact terminal or rivet 31 and with the recessed portion 44 of the upper resilient switch contact 43 engaged with the headed lower portion 57 of the upper stationary contact terminal or rivet 27.

The electrical circuit through the new socket 10 and the lamp bulb 47 mounted therein will then be completed as follows: from one of the lead-in wires or conductors 26, through the hook-shaped lower end portion 59 of the resilient combination lamp bulb clamping and contact member 17a, through the latter, thence into and through the metallic base 48 of the lamp bulb 47, into and through the filament of the lamp 47, then through the metal contact plate or disc 48a at the lower end of the metal base 48 of the lamp bulb 47, into and through the resilient contact arms 30 of the stationary contact member 28, thence through the upper stationary contact terminal or rivet 27, through the upper switch contact arm 43 and the right portion 40 of the switch member 41, thence through the lower switch contact arm 42 into and through the lower stationary terminal 31 into and through the contact strip 34 and the hook-shaped lower end portion 60 thereof back into the other lead-in wire or conductor 35, thus completing the circuit through the socket 10 and thereby illuminating the lamp bulb 47 held thereby.

It will be noted that when the slidable switch-operating bar or rod 37 and the switch unit 41 carried thereby are thus disposed in closed circuit position, as in Fig. 1, the switch-operating bar 37 and the switch unit 41 carried thereby are held in closed switch or closed circuit position by the latching engagement of the recessed portion 44 of the upper resilient switch contact arm 43 with the headed lower end portion 57 of the upper stationary contact terminal or rivet 27.

However, when it is desired to open the circuit through the new socket 10 this is readily accomplished by pressing the slidable switch-operating bar or rod 37 to the left from the position in which the parts are shown in Fig. 1. This operation moves the lower resilient switch contact arm 42 of the switch unit 41 out of engagement with the headed upper portion 58 of the lower stationary contact terminal 31 and thus breaks the circuit through the socket 10.

It will be noted, however, that as the switch-operating and switch contact-supporting member or rod 37 is thus moved to the left, from the position which the parts are shown in Fig. 1, the headed lower end portion 57 of the upper stationary contact terminal 27 comes into latching engagement with and seats in the recessed portion 45 of the upper resilient switch arm 43. When the parts are so disposed the recessed portion 45 of the upper resilient switch arm 43 thus cooperates with the headed lower end portion 57 of the upper stationary contact terminal 27 to

provide a latch which holds the slidable switch operating and switch contact supporting member 37—53 and the switch unit 41 carried thereby in open circuit or open switch position and against accidental or unintentional movement out of such open circuit position into closed circuit or closed switch position. It will be noted, in this connection, that the force required to overcome the tension of the upper switch contact arm 43 causes the contact to be made and broken thereby practically instantaneously so that any danger of arcing of the current between the upper switch contact arm 43 and the stationary contact terminal 27, or between the lower switch contact arm 42 and the lower stationary contact terminal 31, is substantially eliminated or at least minimized.

During this movement of the switch-operating and switch contact-supporting member 37 from closed circuit or closed switch position into open circuit or open switch position, the switch-operating and switch contact-supporting member 37—53 is guided by the upper flange portions 56 and the lower flange portions 55 thereof which slide on opposite sides of the headed lower end portion 57 of the upper stationary contact terminal or rivet 27 and the headed upper portion 58 of the lower stationary contact terminal or rivet 31, respectively.

In order to remove the lamp bulb 47 from the new socket 10 it is merely necessary to give the lamp bulb 47 a slight rotative movement (in a counterclockwise direction as seen from the top thereof) so as to release the offset portions 19 of the three resilient lamp bulb clamping members 17—17—17a from engagement with the threads 46 of the metallic base 48 of the lamp bulb 47. The base 48 of the lamp bulb 47 may then be slid outwardly from among the three resilient lamp bulb clamping members 17—17—17a which are spread slightly apart against the force of their own innate resiliency during this operation so as to enable the base 48 of the lamp bulb 47 to be thus withdrawn from the socket 10.

It will thus be seen from the foregoing description, considered in conjunction with the accompanying drawings, that the present invention provides a novel and relatively simple and inexpensive electric lamp bulb socket embodying a novel and simple but efficient switch construction housed therein, and that the invention thus has the desirable advantages and characteristics, and accomplishes its intended objects, including those hereinbefore pointed out and others which are inherent in the invention.

I claim:

1. An electric lamp socket comprising means including a plurality of resilient members for supporting an electric lamp bulb in operative position, and a switch unit for controlling the flow of electrical current to such a bulb so positioned in said first named means, said switch unit comprising an upper supporting member and a lower supporting member, said resilient members providing means for holding said supporting members together, a pair of stationary electrical contacts mounted in said supporting members and adapted to be connected to such a lamp bulb and to a suitable source of power, respectively, and a movable electrical contact slidably mounted between said supporting members and movable into and out of interconnecting engagement with said stationary contacts to thereby control the opening and closing of electrical connection between said stationary contacts.

2. An electric lamp socket comprising means, including a plurality of elongated resilient members having transversely extending projections carried by one end thereof adapted to engage complementary portions of an electric lamp bulb, for supporting such a bulb in operative position, and a switch unit for controlling the flow of electrical current to such a bulb so positioned in said first named means, said switch unit comprising an upper supporting member and a lower supporting member, means comprising the other end portion of said resilient members extending through said supporting members for holding said supporting members together, a pair of stationary electrical contacts mounted in said supporting members and adapted to be connected to such a lamp bulb and a suitable source of electrical energy, and a movable electrical contact slidably mounted between said supporting members and movable into and out of interconnecting engagement with said stationary contacts.

3. An electric lamp socket comprising means, including a plurality of elongated resilient members having transversely extending projections formed in one end thereof adapted to engage complementary portion of an electric lamp bulb, for supporting such a bulb in operative position, and a switch unit for controlling the flow of electrical current to such a bulb so positioned in said first named means, said switch unit comprising an upper supporting member and a lower supporting member, means comprising the other end portion of said resilient members extending through said supporting members for fastening said supporting members together, a pair of terminal contact members mounted in said supporting members, one of said resilient members forming one of said terminal contact members, and means including a movable contact slidably mounted between said supporting members for opening and closing electrical connection between said terminal members.

4. An electric lamp socket comprising a housing, a pair of supporting members mounted in said housing, a plurality of elongated resilient members extending through said supporting members for holding said supporting members together, said resilient members projecting from said supporting members in one direction and each having a transversely extending projection on one end portion adapted to engage complementary portions on a lamp bulb for supporting such a lamp bulb in operative position in said housing, a pair of electrical terminal contact members mounted in said supporting members, one of said resilient members forming one of said terminal contact members, and means including a movable contact member slidably mounted between said supporting members for establishing an electrical connection between said terminal contact members when such a bulb is so positioned in said housing.

5. An electric lamp socket comprising a housing formed of electrically non-conductive material, a pair of supporting members mounted in said housing, said supporting members being formed of electrically non-conductive material, a plurality of elongated resilient members extending through said supporting members in spaced relation to each other for securing said supporting members together, one of said resilient members being formed of electrically conductive material, said resilient members projecting from said supporting members in one direction and each having a transversely extending bend formed in the projecting end portion thereof adapted to en-

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gage complementary portions on a lamp bulb for supporting such a lamp bulb in operative position between said resilient members in said housing, a pair of terminal contact members including said one resilient member, and means effective to open and close an electrical connection between said terminal contact members when such a bulb is in said operative position in said housing, said means including a movable contact member slidably mounted between said supporting members.

6. An electric lamp socket comprising a housing formed of electrically non-conductive material, a pair of supporting members having a plurality of aligned openings formed therein mounted in said housing, said supporting members being formed of electrically non-conductive material, a plurality of elongated resilient members formed of substantially flat pieces of metal stock each extending through corresponding aligned openings in said supporting members for fastening said supporting members together, each of said resilient members having the portion which extends through the said corresponding aligned openings deformed into a substantially V-shaped formation, as seen in cross section, and each having substantially flat opposite end portions, arranged at opposite sides of said supporting members in engagement therewith, each of said resilient members having a transversely extending

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bend formed in one end portion thereof adapted to engage complementary portions on a lamp bulb for supporting such a lamp bulb in operative position between said resilient members in said housing, a pair of terminal contact members formed of electrically conductive material mounted in said supporting members, said pair of terminal contact members including one of said resilient members, and means for establishing electrical connection between said terminal contact members when such a bulb is in said operative position in said housing, said means including a movable electrical contact member slidably mounted between said supporting members.

THEODORE G. LEFLER.

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