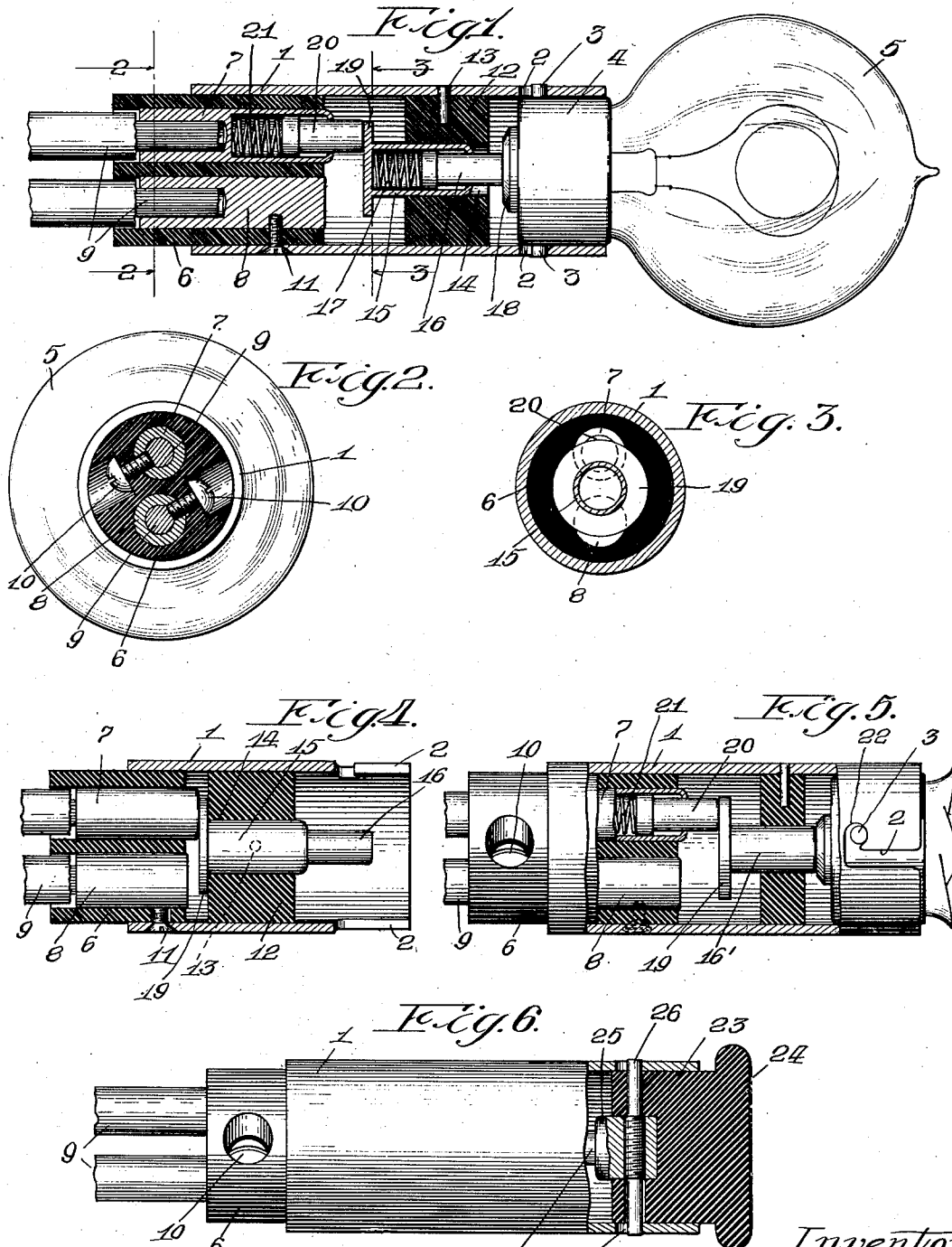


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ELECTRIC SOCKET.
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Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE C. KNAUFF, OF CHICAGO, ILLINOIS.

ELECTRIC SOCKET.

1,090,629.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE C. KNAUFF, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Sockets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sockets for electric lamps or plugs and more particularly to the class of sockets used in connection with lamps or plugs having axially disposed endward contacts, such as the lamps used for the head and tail lights of automobiles.

One object of my invention is to provide a simple construction in which an axially disposed contact plunger is maintained in effective electrical connection with a wire terminal positioned out of axial alinement with the said contact.

Another object is to provide spring-actuated means for simultaneously maintaining the current-carrying parts of the socket in good contacting relation and holding the lamp interlocked with the socket.

A further object is to provide a simple socket construction in which the effective action will not depend on great exactness in the positioning of the various parts.

Other objects will appear from the accompanying drawings, in which—

Figure 1 is a longitudinal section of a socket embodying my invention. Figs. 2 and 3 are transverse sections through the socket of Fig. 1 along lines 2—2 and 3—3 respectively. Figs. 4 and 5 are partial sectional views of alternative embodiments of my invention. Fig. 6 shows the socket of my invention as used with a short-circuiting plug.

In the embodiment of Fig. 1, the socket of my invention has a cylindrical casing 1 equipped at its forward ends with slots 2 having retaining formations at their inner ends; these slots being adapted to receive, and to interlock with, projections 3 upon the base 4 of the lamp 5 to couple the lamp to the casing. The rear end of the casing 1 partially houses a cylinder 6 of insulating material, which cylinder carries a pair of wire terminals 7 and 8, the said terminals being positioned parallel to the axis of the insulating body 6 and of the casing 1, but

out of alinement with the said axis. Each of the wire terminals 7 and 8 has at its rear end a bore adapted to receive the bared end of a wire 9, which wire is secured to the terminal by a side screw 10. The main insulating body 6 is fastened to the casing 1 by a screw 11 passing through a portion of said body into the wire terminal 8, whereby the wire terminal is also electrically connected or grounded to the casing.

Mounted within the casing 1 forwardly of the insulating body 6, but between the latter and the interlocking formations 2 of the casing, is an auxiliary insulating body 12, which is held in place by a pin 13, and which has an axial perforation 14 in which a compressible contact member is adapted to slide longitudinally of the casing. The said slidably mounted contact member consists preferably of a cylindrical portion 15 housing a plunger 16 which is pressed outwardly by a spring 17 and which abuts at its forward end against the central endward terminal 18 of the lamp 5. The inner end 19 of the cylinder 15 is radially enlarged to form a head extending beyond the axis of the ungrounded wire terminal 7, which wire terminal has its inner end bored to form a cylinder. Slidably mounted in this cylinder is a plunger 20 which is pressed outwardly by a spring 21 and which bears at its forward end against the edge portion of the said enlarged member 19 of the slidably mounted contact member.

When the lamp is withdrawn from the socket, the spring 21 will coact with the plunger 20 pressed forwardly thereby to slide the compressible contact member forwardly within the auxiliary insulating body 12 until the head 19 impinges against the latter. When the lamp is inserted, it slides the contact member toward the rear end of the socket, compressing the springs 17 and 21 in so doing, whereby the said springs cause the plungers 20 and 14 to contact firmly with the head 19 and the contact tip respectively.

Instead of equipping both the wire terminal member 7 and the slidable contact member with spring-pressed plungers, one of the said members may be made solid or incompressible, in which case the outward forcing of the sliding contact is all done by a single spring. For example, Fig. 4 shows the wire terminal 7 as solid and as abutting directly against the head 19 of a contact

member equipped with a spring-pressed plunger 16. Fig. 5 shows a contact member 16' made of a single brass turning and abutting at its enlarged inner end against the spring-pressed extension or plunger 20 of the wire terminal 7. In either case, it will be noticed that the spring forcing the contact member forwardly will simultaneously maintain this contact member in good contacting relation to the wire terminal and the lamp terminal, and will also coact with the interlocking formations upon the casing of the lamp base for holding the lamp coupled with the socket. Thus, in the form shown in Fig. 5, the pressure of the spring 21 on the abutting plungers 20 and 16' will tend to slide the lamp base forwardly of the casing and in doing so will hold the projections 3 in the notches 22 at the inner ends of the slots 2.

The body of the contact member is preferably cylindrical so that it may rotate freely within the auxiliary insulating body 12, thereby causing the edge portion of the enlarged member 19 and the tip of the extension 20 of the wire terminal to rub upon each other so as to maintain clean and well conducting contact surfaces. By equipping both the insulated wire terminal member and the sliding contact member with springs and plungers, I permit both of these members to adjust themselves to variations caused by irregularities of workmanship, so as to avoid the cramping or binding of parts which might otherwise be caused by the coaction of members positioned out of axial alinement with one another.

While the socket of my invention is particularly adapted for use with incandescent lamps, it may also be used with other contact carriers, provided that the latter are equipped with interlocking formations and with endward contacts adapted to abut against the tips of the slidable contact members of the sockets. Thus Fig. 6 shows my socket as used with a short-circuiting plug consisting of a rubber cylinder 23 having an enlarged knob or head 24 at its outer end and an endward contact 25 at its inner end. The end contact 25 is held in position by a screw 26, the ends of which form the projections for interlocking the plug with the notches of the slots upon the casing. It will be evident from Fig. 6 that when the plug is in position, the screw 26 will short-circuit the socket by making an electrical connection between the contact plunger 16 and the casing to which one of the wire terminals is grounded. Consequently, the inserting of the plug will electrically connect the wires, while the removing of the plug will disconnect the same, so that the plug coacts with the socket to serve as a switch.

While I have illustrated my invention as embodied in a socket having the main in-

sulating body projecting beyond one end of the casing, I do not wish to be limited to this or other details of the construction disclosed herewith, it being obvious that the same might be modified in many ways without departing from the spirit of my invention.

I claim as my invention:

1. In a socket for a contact carrier provided with a contact, a casing connected to one terminal of a circuit and equipped at its forward end with means for coupling the casing with the contact carrier; a main and an auxiliary insulating body mounted in the casing, the latter forwardly of the former; a wire terminal member carried by the main insulating body and connected to the other terminal of the said circuit, and a contact member slidably mounted upon the auxiliary insulating body, each of the said members including two relatively slidable portions and a spring interposed therebetween; the free ends of the contact member abutting respectively against the forward end of the wire terminal member and against the said contact of the contact carrier; the said springs simultaneously tending to separate the said relatively slidable portions to effect the said abutting engagements, and coacting with the said coupling means for maintaining the casing in its coupled relation to the contact carrier.

2. In a socket for a contact carrier equipped with projections and carrying a contact, a casing equipped with notched slots receiving the said projections, the notches of the said slots interlocking with the said projections to couple the contact carrier to the casing; a contact member axially mounted within the casing and insulating therefrom, one end of the said member abutting against the said contact of the contact carrier, the other end of the said member radially enlarged; a wire terminal member out of axial alinement with the contact member and bearing at one end against the said radially enlarged portion of the contact carrier; one of the said members comprising a pair of relatively slidable portions and a spring interposed therebetween, the said spring coacting with the said members to tend to eject the contact carrier from the casing the said ejectional tendency coacting with the notches of the slots and the said projections on the contact carrier to maintain the latter coupled to the casing.

3. A socket for a contact carrier equipped with an axially disposed contact and with lateral projections, comprising a casing equipped at its forward end with notched slots respectively receiving the said projections, the notches of the said slots interlocking with the said projections to couple the contact carrier to the casing; main and auxiliary insulating bodies mounted within

the casing, the latter forwardly of the former; a contact member mounted upon the auxiliary insulating body axially thereof, one end of said member abutting against the
 5 said contact of the contact carrier, the other end thereof radially enlarged; and a wire terminal member carried by the main insulating member out of axial alinement with the said contact member and bearing at its
 10 forward end against the said enlarged end of the contact member, one of said members comprising two relatively slidable portions and a spring interposed therebetween, the said spring serving to effect the said abutting of the members and coacting with the
 15 said notches and projections to maintain the contact carrier coupled to the casing.

4. A socket for a contact carrier equipped with an axially disposed contact and with
 20 lateral projections, comprising a casing equipped at its forward end with notched slots respectively receiving the said projections, the notches of the said slots interlocking with the said projections to couple the
 25 contact carrier to the casing; main and auxiliary insulating bodies mounted within the casing, the latter forwardly of the former; a contact member mounted upon the aux-

iliary insulating body axially thereof, one end of said member abutting against the
 30 said contact of the contact carrier, the other end thereof radially enlarged; and a wire terminal member carried by the main insulating member out of axial alinement with
 35 the said contact member and bearing at its forward end against the said enlarged end of the contact member the said terminal member connected to one terminal of a circuit, one of said members comprising two
 40 relatively slidable portions and a spring interposed therebetween, the said spring serving to effect the said abutting of the members and coacting with the said notches and projections to maintain the contact carrier
 45 coupled to the casing; and a second wire terminal carried by the main insulating body and electrically connected to the casing, the said second terminal being connected to the other terminal of the said circuit.

In testimony whereof I have signed my
 50 name in presence of two subscribing witnesses.

GEORGE C. KNAUFF.

Witnesses:

ALBERT SCHEIBLE,
 M. M. BOYLE.