

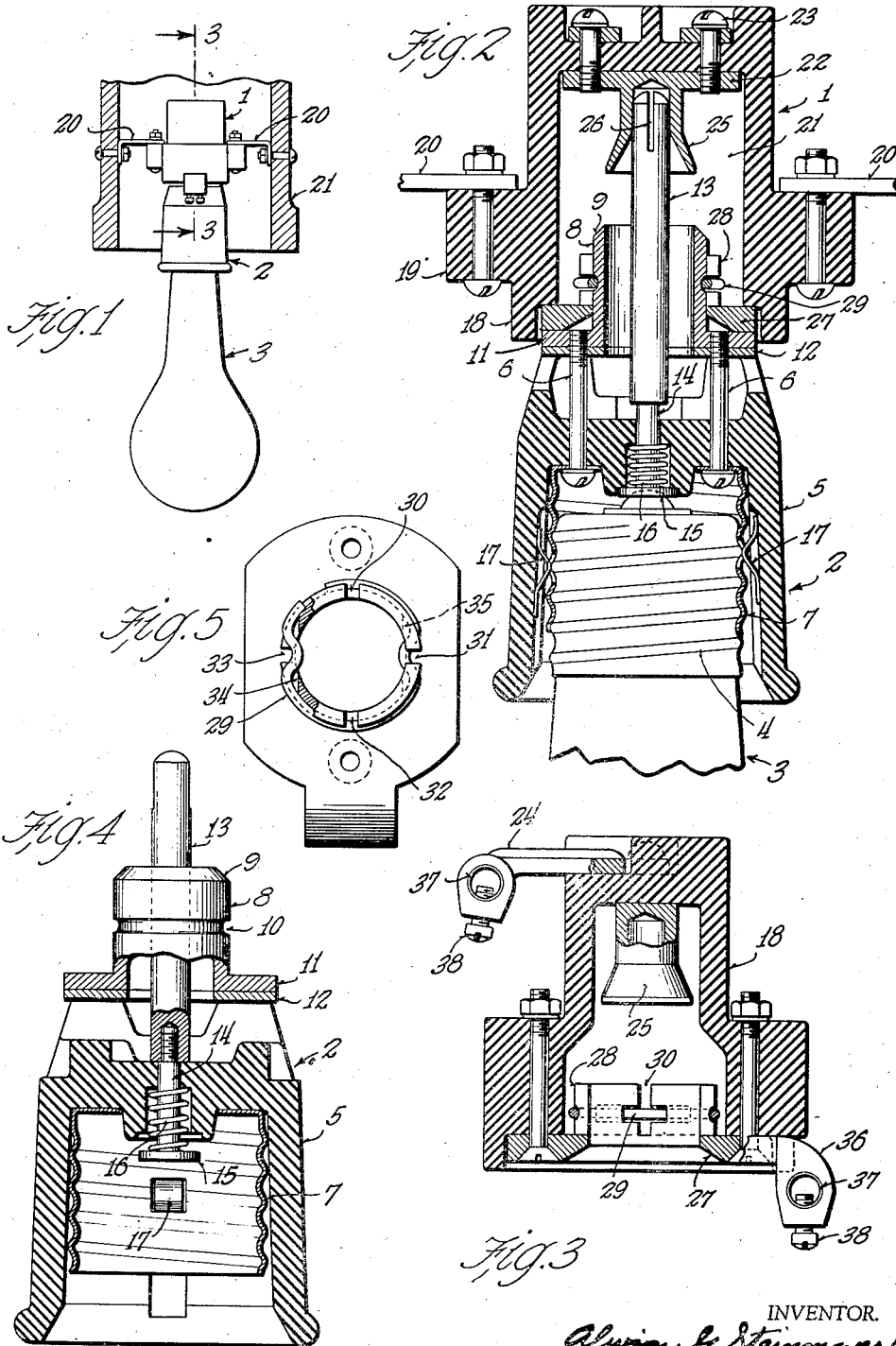
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LAMP ADAPTER AND RECEPTACLE

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## LAMP ADAPTER AND RECEPTACLE

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This invention relates to lamp adapters and receptacles and has to do more especially with street-lighting equipment and other lighting installations where it is desirable to be able to extract and replace light bulbs by means of a long-handled tool and to effect the extraction and replacement operations by simple pulling and pushing manipulations instead of being required to unscrew the burned-out bulbs from their sockets and to screw into the sockets the replacement bulbs.

Street lighting circuits are of two types—"series" and "parallel." For "series" installations it has long been the practice to provide a lamp bulb adapter comprising a screw socket and a pair of elongated contact springs which can be pushed into a receptacle having complementary contacts and withdrawn therefrom by merely pulling on the bulb. But for "parallel" installations it has been the universal practice not to provide such adapters—it having been necessary in those cases to screw the bulbs into their sockets and unscrew them with a long-handled tool or to employ a tower for the purpose of gaining direct access to the lamp.

The primary object of the present invention is to provide a lamp adapter and receptacle of the push-pull type which can be employed advantageously on "parallel" lighting installations, and which, to avoid confusion, is wholly dissimilar to the type used on "series" installations.

Another object is to provide a lamp adapter and receptacle so designed that the adapter can be pushed into engagement with the receptacle without having to turn the bulb and adapter to a certain angular position in order to secure registration between the adapter and receptacle.

The preferred embodiment of the invention is illustrated in the accompanying drawing wherein:

Fig. 1 is an elevational view of a combined receptacle and adapter together with a light bulb inserted in the adapter;

Fig. 2 is a vertical sectional view;

Fig. 3 is a section of the receptacle taken along line 3-3 of Fig. 1;

Fig. 4 is a section of the adapter taken along the same plane as that of Fig. 3; and

Fig. 5 is a plan view of a sub-assembly of some parts shown in Figs. 2 and 3.

The receptacle is identified as a whole by reference numeral 1, the adapter by reference numeral 2, and the light bulb by reference numeral 3.

The light bulb is of conventional design, having a screw-base 4.

The adapter 2 comprises a socket-like housing

5 of porcelain or other dielectric material within which is secured by screws 6 a metal shell 7 which is formed with a thread to receive the screw-base of the light bulb.

Secured to the upper end of porcelain housing 5 by means of screws 6 is a tubular metal contact sleeve 8, beveled at 9 and having an external annular latching groove 10. The contact sleeve has a flange 11 in which two tapped holes are provided for engaging screws 6. A resilient gasket 12 is interposed between flange 11 and the top of porcelain housing 5. This serves as a shock absorbing medium to guard against porcelain breakage in event the lamp and adapter are pushed into the receptacle too vigorously.

A center pin 13 is co-axial with sleeve 8 and is internally threaded at its lower end to engage a screw 14 having a contact button 15. A spring 16 urges screw 14 downwardly and serves to hold pin 13 in its down position, as shown in Fig. 4, when there is no bulb in the socket.

As shown in Fig. 2, screw 14 and pin 13 are forced upwardly against the pressure of spring 16 when the bulb is screwed into the socket. For the purpose of restraining the light bulb against unscrewing as a result of vibration, a pair of crimped leaf springs 17 are arranged to project through openings in shell 7 into engagement with the screw base of the bulb. These bear against the screw base and exert frictional restraint against rotation thereof but do not prevent the bulb being intentionally unscrewed and do not materially interfere with insertion of the bulb into the adapter. Sleeve 8 and pin 13 are the contact members through which electrical connections are made with the power line, through the medium of the receptacle. These elements being co-axial are capable of being pushed into the receptacle without regard to the angular position of the adapter about its axis, relatively to the receptacle.

Receptacle 1 comprises a molded housing 18 of porcelain or other suitable dielectric and is provided with an external flange 19 to which is attached straps 20 which serve to connect it with a lamp housing 21—see Fig. 1.

Housing 18 has a recess 21' in the upper end of which is mounted a fixed contact member 22. The latter is secured to housing 18 by screws 23, which also serve to anchor to the housing a terminal connector 24.

Contact member 22 has a depending socket portion 25 which is flared at its lower end to facilitate engagement with the upper end of pin 13—which latter is split lengthwise as indicated at 26 (Fig. 2) in order to render it laterally com-

pressible, thus affording good contact while at the same time permitting the pin to be inserted without too much pressure being required.

Secured to the lower end of housing 18 and projecting up into recess 21 is a second contact member 27 which is designed to engage and effect electrical connection with sleeve 8.

Contact member 27 is bored centrally to receive sleeve 8 and has an upstanding collar portion 28 which is grooved peripherally to receive a spring-wire ring 29. Collar portion 28 is also split vertically at 30, 31, 32, and 33 whereby it is rendered somewhat yieldable laterally and thus capable of being contracted into engagement with the outer peripheral surface of sleeve 8. This ensures good electrical contact between contact member 27 and sleeve 8.

Grooves 34 and 35 are milled in opposite sides of collar portion 28 (see Fig. 5) and these afford openings through which crimped portions of wire ring 29 project to the interior of the collar portion 28 to engage groove 10 on sleeve 8. The wire ring is discontinuous, as shown in Fig. 5, and is yieldable outwardly to permit insertion of sleeve 8, as shown in Fig. 2.

Wire ring 29 serves as a yieldable locking means for securing the adapter and light bulb in the receptacle while permitting their withdrawal in response to downward pull. Contact member 27 is provided with a laterally extending terminal connector 36.

Electrical connection to the power line is effected through terminal connectors 24 and 35, which are provided with wire-receiving apertures 37 and binding screws 38.

What is claimed is:

1. A socket member comprising a dielectric housing having a recess, a socketed terminal in the bottom of said recess having an opening flared toward the other end of said recess, and a cylindrical terminal at said other end of said housing, said terminals being substantially concentrically correlated and fixedly mounted on said housing; in combination with an adapter comprising a socket-like insulating housing, a tubular contact secured to the base of said housing and positioned within and in contact with said cylindrical terminal, a rod-like contact concentric with said tubular contact and projecting into and frictionally engaging said socketed terminal, said rod-like contact being slidably movable through the base of said housing and having a contact head within said housing, stop means on said rod-like contact engageable with said base for limiting the inward movement of said rod-like contact inwardly of said housing, and spring means interposed between said contact head and housing urging said rod-like contact inwardly of said housing.

2. A socket member comprising a dielectric housing having a recess, a socketed terminal in the bottom of said recess, and a cylindrical terminal at said other end of said housing, said

terminals being substantially concentrically correlated and fixedly mounted on said housing; in combination with an adapter comprising a socket-like insulating housing, a tubular contact secured to the base of said housing and positioned within and in contact with said cylindrical terminal, a rod-like contact concentric with said tubular contact and projecting into and frictionally engaging said socketed terminal, said rod-like contact being slidably movable through the base of said housing and having a contact head within said housing, stop means on said rod-like contact engageable with said base for limiting the inward movement of said rod-like contact inwardly of said housing, and spring means interposed between said contact head and housing urging said rod-like contact inwardly of said housing, the distance between the end of said rod-like contact engaging said socketed terminal and the corresponding end of said tubular contact when said rod-like contact is moved inwardly of said housing being less than the distance between the corresponding contact receiving ends of said socketed and cylindrical terminals, whereby said adapter upon insertion into said socket member will be aligned therewith before contact is made between said rod-like contact and socketed terminal.

3. A socket member comprising a dielectric housing having a recess, a socketed terminal in the bottom of said recess having an opening flared toward the other end of said recess, and a cylindrical terminal at said other end of said housing, said terminals being substantially concentrically correlated and fixedly mounted on said housing; in combination with an adapter comprising a socket-like insulating housing, a tubular contact secured to the base of said housing and positioned within and in contact with said cylindrical terminal, a rod-like contact concentric with said tubular contact and projecting into and frictionally engaging said socketed terminal, said rod-like contact being slidably movable through the base of said housing and having a contact head within said housing, stop means on said rod-like contact engageable with said base for limiting the inward movement of said rod-like contact inwardly of said housing, and spring means interposed between said contact head and housing urging said rod-like contact inwardly of said housing, the distance between the end of said rod-like contact engaging said socketed terminal and the corresponding end of said tubular contact when said rod-like contact is moved inwardly of said housing being less than the distance between the corresponding contact receiving ends of said socketed and cylindrical terminals, whereby said adapter upon insertion into said socket member will be aligned therewith before contact is made between said rod-like contact and socketed terminal.

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