

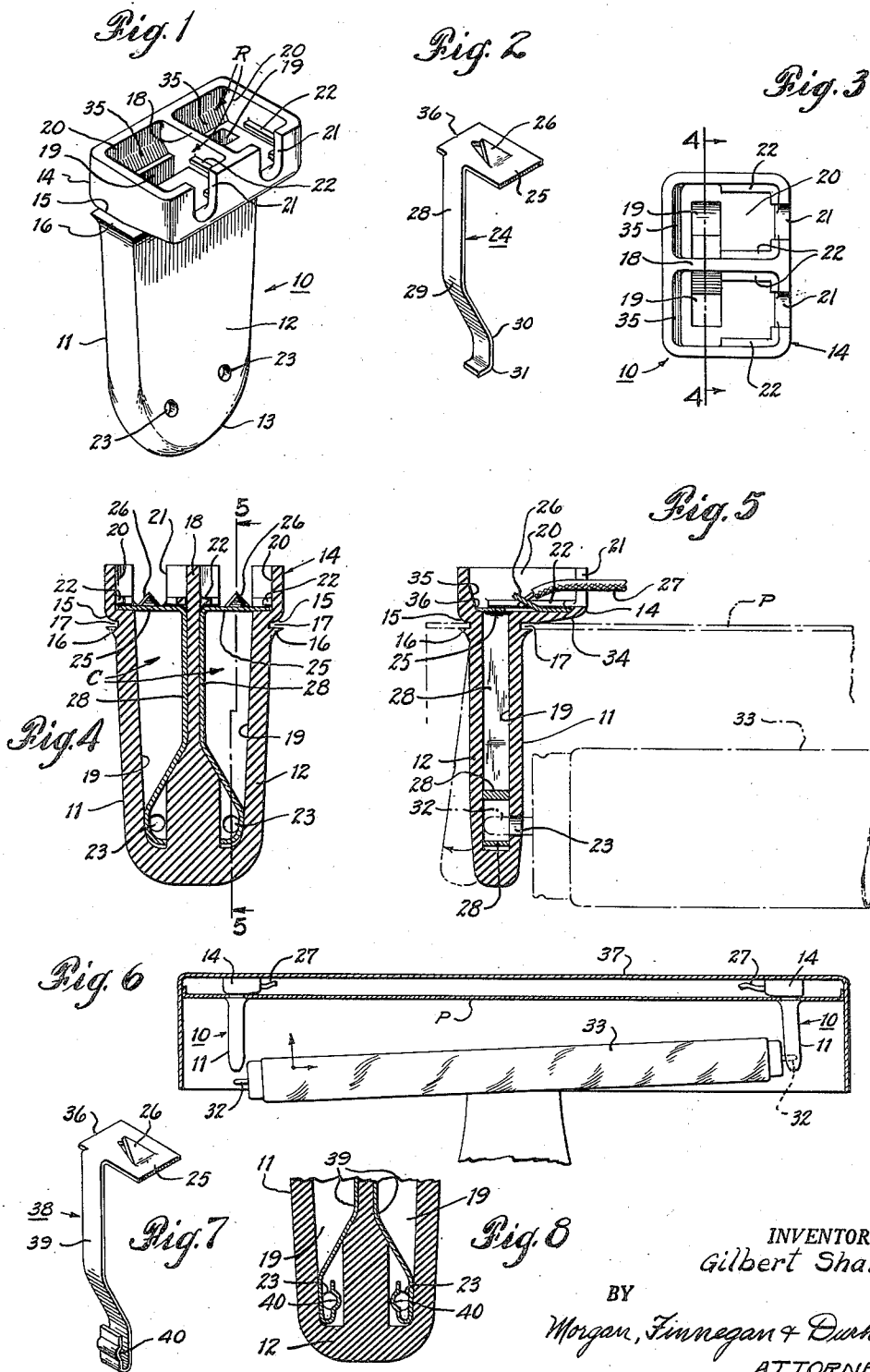
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ONE-PIECE RESILIENT SOCKET FOR FLUORESCENT LAMPS

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ONE-PIECE RESILIENT SOCKET FOR
FLUORESCENT LAMPS

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4 Claims. (Cl. 173—328)

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This invention relates to new and useful improvements in sockets adapted to receive one or more terminal members of an electrical device, such as a fluorescent tube or the like for example, and more particularly to a socket which is self-supporting on an electrical fixture and inherently yieldable relative thereto.

The invention has particular reference to a molded, one-piece, hollow socket formed of a yieldable plastic material in which a pair of metallic contact members are disposed and yieldably retained in insulated relation.

The invention has further reference to a self supporting socket which is adapted to coact with the marginal edges defining a substantially rectangular orifice provided therefor in a fluorescent lamp supporting fixture.

The principal object of the invention is to provide a unitary, non-rigid fluorescent tube socket as specified which does not require screw bolts or the like for attaching the same to a reflector panel of a fluorescent lamp fixture.

Another object of the invention is to provide a socket of the character set forth which obviates the necessity of imparting rotational movement to a fluorescent lamp tube in order to bring the terminal pins thereof into secure engagement with the respective contact members disposed within each of a pair of such sockets.

A further object of the invention is to provide a socket of the character specified wherein a pair of metallic contact members are adapted to yield with the socket casing upon deflection thereof at an angle to the vertical from its point of support.

Another object of the invention is to provide a socket as specified whereby a pair of such sockets are adapted, by reason of their inherent resiliency, to automatically compensate for inequalities in the length of fluorescent lamp tubes.

A further object of the invention is to provide a socket, as specified, which is adapted to receive the terminal pins of a fluorescent tube by a lengthwise insertion of the pins through orifices provided therefor in one side wall of each socket.

Another object of the invention is to provide a socket, as specified, whereby shocks and vibratory forces, ordinarily transmitted to a fluorescent lamp fixture, are substantially damped out whereby the fluorescent lamp tube is protected from the deleterious effects of the same.

With the above and other objects in view, the invention resides in a non-rigid, one-piece, self supporting tube socket which is extremely simple in construction, cheap to manufacture and high-

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ly efficient for the purpose for which it has been designed.

The novel features of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of application, together with additional objects and advantages thereof, will best be understood from the following description of one specific embodiment thereof when read in connection with the accompanying drawing, in which

Fig. 1 is a view in perspective of the yieldable socket casing per se;

Fig. 2 is a view in perspective of one of two similar contact members employed in each socket.

Fig. 3 is a plan view looking into the upper open end of the yieldable socket casing as seen in Fig. 1;

Fig. 4 is a vertical sectional view of a complete socket constructed in accordance with the invention and illustrating the manner in which a pair of metallic contact members are disposed and yieldably retained in the socket casing in assembled insulated relation;

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4 illustrating in fragmentary broken lines the manner in which the socket is self-supported on the reflector panel of a fluorescent lamp fixture and with a terminal pin of a fluorescent tube inserted in the socket and in cooperative engagement with one of the contact members within the socket. The figure illustrates further the manner in which the socket is disconnected from the terminal pin.

Fig. 6 is an elevational view partly in section illustrating the manner in which a fluorescent lamp tube is inserted in and between a pair of sockets, constructed in accordance with the invention, and forming a part of a portable lamp.

Fig. 7 is a view in perspective illustrating another form of the metallic contact member shown in Fig. 2; and

Fig. 8 is a fragmentary vertical sectional view of a complete socket illustrating the manner in which the modified contact members, see Fig. 7, receive the terminal pins of a fluorescent lamp tube.

Referring to the drawing, wherein similar reference characters indicate corresponding parts throughout, the improved tube socket, generally indicated at 10, comprises a hollow one-piece casing 11 molded of a plasticized co-polymer of a vinyl chloride-acetate resin. It is to be expressly understood, however, that other co-

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polymers of a vinyl chloride or, a natural or synthetic rubber compound may be employed.

In accordance with the invention, the casing 11 is molded, preferably although not necessarily, to the configuration illustrated in Fig. 1 and, as shown, comprises a body portion 12, rectangular in cross-section, which is substantially tapered and rounded-off at one end thereof as indicated at 13 in Fig. 1. The opposite end of the body portion 12 is constituted by a relatively large, hollow, rectangular base portion 14 forming a supporting shoulder 15 about the body portion 12. An additional shoulder, constituted by a relatively narrow lip 16, is further provided about the body portion 12 in spaced, facing relation to the supporting shoulder 15, to form a U-shape channel 17 whereby the casing 11 is adapted to be self-supporting upon insertion thereof in a suitable rectangular aperture, formed in a reflector panel P, with the marginal edges defining the aperture, disposed in the channel 17 as best shown in Fig. 5.

Further in accordance with the invention, the casing 11 is so molded as to form a deep cavity C in the body portion 12; a relatively large, shallow recess R in the base portion 14 and forming a continuation of the cavity C; and a central partition 18 extending the full depth of the cavity C and recess R whereby they are equally divided to form a pair of separate compartments 19 of rectangular cross-section, and a pair of separate rectangular recesses 20 in the base portion 14. Thus, each compartment 19 opens only into one of the recesses 20. In the same molding operation, one of the side walls of the base portion 14, defining each of the recesses 20, is provided with an open-ended slot 21, as best shown in Fig. 1, to provide a lead-in passage into each of the recesses 20.

At the same time, two opposite corner portions of each recess 20, adjacent the slot 21, are each provided with a small inwardly projecting rib 22 in spaced relation to the bottom thereof to provide a retaining groove partly along three inner sides of each recess 20.

In addition to the above, one wall of the body portion 12 is also provided, at the same time, with a pair of transversely aligned, spaced apertures 23 with each aperture opening into one of the compartments 19 at a point adjacent the bottom thereof.

Further in accordance with the invention, each of a pair of contact members 24 formed as in Fig. 2 and adapted to be disposed within the casing 11, comprise a rectangular plate 25 having a central tab 26, struck-out of the plate thereof, for the attachment thereto of a suitable electrical conductor 27 in conventional manner.

A relatively narrow contact arm 28, integral with the plate 25, is bent at right angles thereto with the free end portion thereof provided with additional bends as at 29, 30 and 31 whereby the depending contact arm 28 is adapted to conform to the contour of either of the compartments 19 in the casing 11.

In the assembly of a pair of contact members 24 with the casing 11, the depending arm 28 of each member 24 is inserted in one of the recesses 20 and its correlated compartment 19 in opposite facing relation, as best shown in Fig. 4, and the plate 25 thereof pressed to the bottom of the recess 20 while flexing the partially ribbed walls thereof to bring three marginal edges thereof under the ribs 22. When so positioned, each contact member 24 is yieldably retained within the

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casing 11 with that portion of each depending arm 28 between the bends 30 and 31, in proper position for wiping engagement with a terminal pin 32 of a fluorescent tube as shown in Fig. 4.

Fig. 5 illustrates the socket 10 in self-supporting operative relation with the reflector panel P of a fluorescent lamp fixture not shown, with one terminal pin 32 of a fluorescent lamp tube 33 extending into one of the apertures 23, provided therefor in the depending end portion thereof, and in current transfer engagement with the contact member 24. Fig. 5 also illustrates in broken lines the manner in which the depending portion of the socket 10 is manually flexed in the direction of the arrow, to disconnect the socket from one end of the tube 33. It is to be observed that in this flexing of the depending body portion, the contact members 24 move therewith by reason of the angular clearance, between the underside of a portion of the base 14 and the panel P, afforded by the tapered or inclined underside portion 34 of the base 14 whereby the base plate 25 of each contact member 24 is adapted, in a sense, to substantially pivot or heel on its supporting surface, relative to the panel P, when the socket 10 is flexed out of its normal depending position.

In the above described pivotal movement of each base plate 25, the end portion thereof not engaged by the ribs 22, is raised from its supporting surface. Thus, it is not desirable that the ribs 22 in each recess 20 extend entirely thereacross.

With further reference to Fig. 5, a substantial portion of one wall surface of each recess 20, as indicated at 35, is inclined outwardly from the bottom thereof to provide clearance for the end margin 36 of each base plate 25 during movement of one end portion thereof toward and away from its supporting surface.

The manner in which one or more terminal pins 32 at each end of the fluorescent tube 33, for example, are inserted in or withdrawn from a pair of sockets 10, shown as applied to the reflector panel P of a small portable fixture 37 in accordance with the invention, is illustrated in Fig. 6. As shown, one end of the fluorescent tube 33 has been brought into cooperative engagement with one socket 10 with the opposite end of the tube 33 about to be brought into cooperative engagement with the opposite socket 10. With one end of the tube in this position, the adjacent socket is grasped manually and flexed in the direction of the arrow while raising the free end of the tube 33 to the position where the terminal pin or pins 32 are in alignment to be received in the apertures 23 in the socket 10 and the socket 10 restored to its normal depending position whereby the terminal pin or pins 32 engage one or both of the contact members 24 in the socket 10.

In the removal of the tube 33 from each socket 10, one socket is detached from the pin or pins 32 at one end of the tube 33 and the pin or pins 32 at the opposite end of the tube 33 subsequently withdrawn from the opposite socket 10.

In another form of contact member 38, shown in Figs. 7 and 8, the free end portion of the depending arm 39 is bent upon itself and the upstanding end portion provided with a concavo-convex offset, struck-out of the plate thereof, to provide a semi-circular groove 40 which together with the opposite flat portion of the arm 39, provides for a yieldable clamping engagement with the terminal pin or pins 32 at each end of the fluorescent tube 33.

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While the invention has been illustrated and described with respect to one embodiment thereof which gives satisfactory results, it will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope thereof. Therefore, the invention is not to be limited except as is necessitated by the prior art and the scope of the appended claims.

What I claim is:

1. A lamp holder and socket of the character described adapted to receive at least one terminal pin extending from one end of a fluorescent tube making electrical contact therewith and supporting the end of said tube upon an apertured plate, comprising, in combination, an elongated hollow body portion adapted to be received through an aperture in said plate, an enlarged base portion integrally connected to one end of said body portion having a recess communicating with the hollow interior of said body portion, said body and base portions being made from a pliant plastic material, an enlarged shouldered portion about said body portion adjacent said base portion channeled to receive the edges of said plate defining said aperture whereby said holder is held in said aperture, a contact member having a longitudinally extending portion positioned in the hollow interior of said body portion and enlarged plate portions seated in the recess of said base portion, said body portion having an aperture adjacent one end thereof to receive the terminal pin of the fluorescent tube, said contact member longitudinally extending portion having an end positioned adjacent said last mentioned aperture, and shoulder means integral with said base portion extending into said recess about a portion only of the perimeter of said recess leaving a substantial part of said perimeter unobstructed by said means, said shoulder means being adapted to engage over and hold said enlarged plate portion of said contact member seated in said recess.

2. A lamp holder and socket of the character described adapted to receive the terminal pins extending from one end of a fluorescent tube making electrical contact therewith and supporting the end of said tube upon an apertured plate, comprising, in combination, an elongated hollow body portion adapted to be received through an aperture in said plate, an enlarged base portion integrally connected to one end of said body portion having a recess communicating with the hollow interior of said body portion, said body and base portions being made from a pliant plastic material, an enlarged shouldered portion

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about said body portion adjacent said base portion, said shouldered portion being adapted to be forced through an aperture in said plate and to receive between itself and said base portion the edges of said plate defining said aperture, a pair of contact members having longitudinally extending portions positioned in the hollow interior of said body portion and enlarged plate portions seated in the recess of said base portion, said body portion having apertures adjacent one end thereof to receive the terminal pins of the fluorescent tube, said contact member longitudinally extending portions having ends positioned adjacent said last mentioned apertures, and shoulder means integral with said base portion extending into said recess about a portion only of the perimeter of said recess leaving a substantial part of said perimeter unobstructed by said means, said shoulder means being adapted to engage one and hold said enlarged plate portions of said contact member seated in said recess.

3. A lamp holder and socket as set forth in claim 2 in which said base portion is provided with an inclined wall forming the lower wall of its said recess and intersecting said body portion, whereby said lamp holder may be flexed in the aperture of said apertured plate.

4. A lamp holder and socket as set forth in claim 2 in which an integral dividing wall is provided in the hollow interior of said body portion and in the recess of said base portion dividing said recess into a pair of rectangular openings, and said shoulder means extend into each of said openings from three of the defining walls thereof, the fourth defining wall of each said opening being unobstructed by said shoulder means.

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