June 1, 1937. H. C. KISSEL 2,082,453

ELECTRICAL CONNECTER

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Fig. 1.

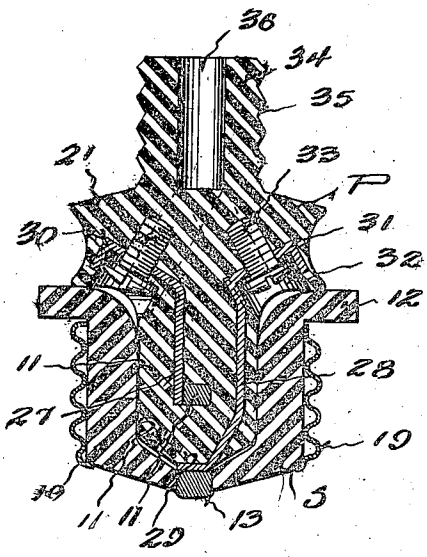


Fig. 2.

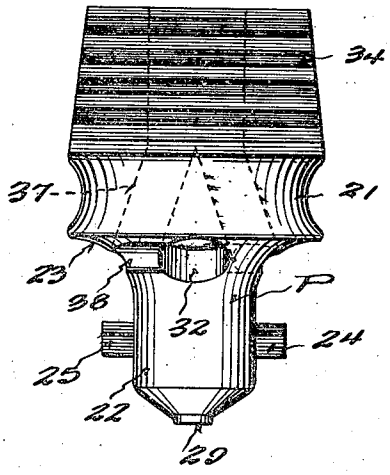


Fig. 3.

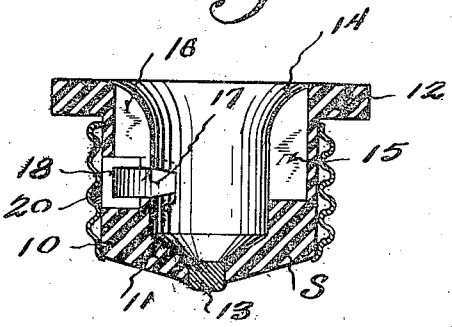
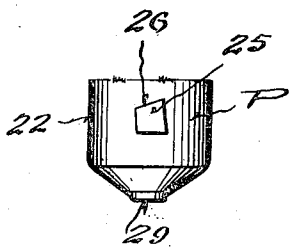


Fig. 4.



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Fig. 5.

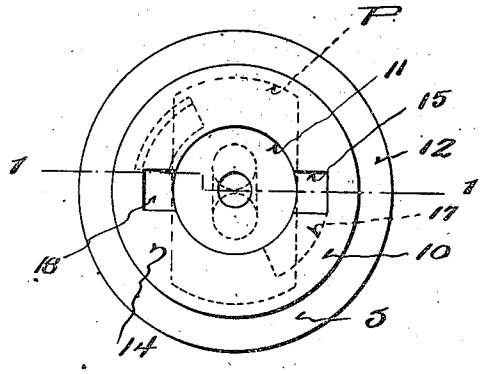


Fig. 6.

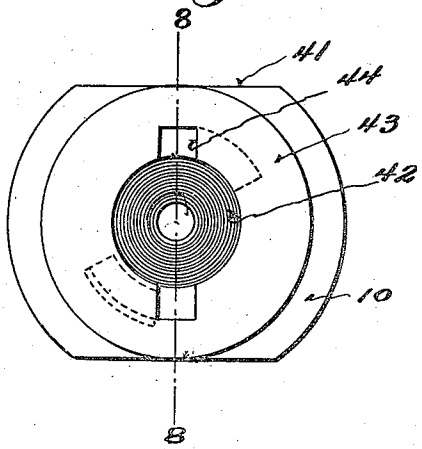


Fig. 7.

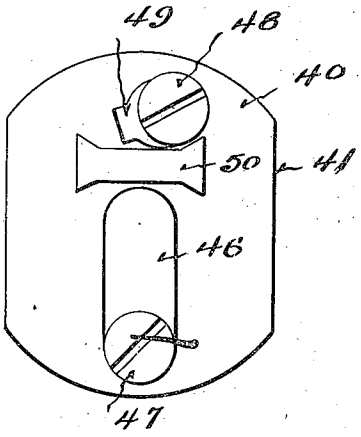
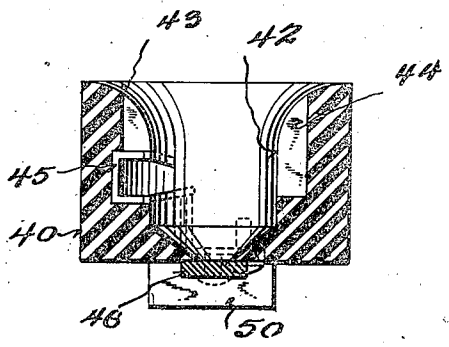


Fig. 8.



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ELECTRICAL CONNECTER

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Application December 7, 1934, Serial No. 756,384

2 Claims. (Cl. 173—343)

This invention appertains to electrical connecters, and more particularly to a novel outlet socket, or receptacle, and plug therefor.

With the use of the customary pronged plug, considerable difficulty is experienced in properly alining the prongs with the socket recesses for making the desired connection. This is particularly true in the night time or where the socket is located in the baseboard at an inconvenient point (such as behind articles of furniture).

Therefore, one of the salient objects of my invention is to provide an outlet socket and plug which can be quickly and conveniently coupled together and make the desired connection without necessitating the careful alining of conductor prongs and recesses.

Another object of my invention is the provision of an outlet socket, or receptacle, having an enlarged opening and a wide flaring mouth, or entrance throat, leading to said opening, and a plug having a tapered inner end for fitting in said opening and guided therein by the throat, having novel contacts for engagement with novelly arranged contacts in the socket.

Another important object of my invention is the provision of an outlet socket, or receptacle, having an enlarged opening with bayonet slots formed in the side walls thereof, and a plug for fitting in the opening having lugs for reception in the bayonet slots, the lugs forming contacts for engagement with conductor members disposed in the slots for forming one connection, the other connection being made by centrally located contacts carried respectively by the plug and socket, the provision of the bayonet slots and lugs preventing the accidental pulling apart of the plug and socket.

A further object of my invention is to provide novel means for arranging the contacts in the socket, or receptacle, whereby the accidental receiving of shocks is prevented, even though a person should inadvertently insert his finger in the opening of the socket.

A further object of my invention is to provide novel means for forming the plug itself, whereby a convenient grip can be obtained thereon for facilitating the insertion and removal thereof from the socket.

A further object of my invention is the provision of novel means for leading the cord into the plug and for connecting the conductor wires thereof to the contacts carried by the plug.

A still further object of my invention is to provide a quick coupling plug and socket of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings:—

Figure 1 is a longitudinal section through my improved plug and socket, showing the same connected together, the socket being of the lamp base type.

Figure 2 is a side elevation of the improved plug.

Figure 3 is a central vertical section through the improved socket, the view being taken at right angles to Figure 1.

Figure 4 is a fragmentary side elevation of the base of the plug, looking at right angles from Figure 2 and illustrating the formation of the connecter lugs carried thereby.

Figure 5 is a top plan view of my novel socket, showing a part of the plug in dotted lines.

Figure 6 is a top plan view of a socket of the flush baseboard type embodying my improvements.

Figure 7 is a bottom plan view of the socket shown in Figure 6.

Figure 8 is a central section taken substantially on the line 8—8 of Figure 6.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter S generally indicates my improved socket, and the letter P the novel plug used in connection therewith.

The socket S comprises a porcelain or other insulating body 10 having an axially disposed cavity, or opening 11. This cavity, or opening, 11 terminates short of the inner end of the socket and opens out through the outer end of the socket. If preferred, the socket can be surrounded at its outer end by an annular flange 12 for facilitating the gripping of the socket by the operator. Embedded in the inner wall of the body 10 at the axial center thereof is the central contact 13, and it is to be noted that this contact is exposed both interiorly and exteriorly of the socket.

In accordance with my invention, the outer end of the opening 11 is beveled, or curved, to provide the wide flaring entrance mouth, or throat, 14, which facilitates the guiding of the

plug P into the opening without undue effort on the part of the operator.

The opposite sides of the socket S are provided with bayonet slots 15, and thus the inner faces of the wall 11 at diametrically opposed points are provided with vertical grooves 16 and oppositely extending arcuate grooves 17. Either one or both of the arcuate grooves 17 can be provided with U-shaped conductor strips 18, and these strips are preferably tapered and inclined toward one end, for a purpose which will be later set forth. It will be noted that the inner faces of the conductor strips are covered by insulation to prevent shocks from being inadvertently received.

As the socket S is of the lamp base type, the outer face thereof has rigidly secured thereto the threaded metallic conductor shell 19. A drop of solder or the like 20 is employed for electrically and rigidly connecting the shell with the U-shaped conductor strip 18.

From the description so far, it can be seen that the socket is provided with a centrally disposed conductor, or button, 13 and a side conductor 18.

The improved plug P is also formed from porcelain or other insulating material, and includes a main body 21 having formed thereon the forwardly extending, axially disposed plug projection proper 22. The diameter of the plug projection 22 is the same as, or slightly less than the interior diameter of the socket S, and the plug projection is adapted to fit within the opening 11.

As is clearly shown in Figure 1 of the drawings, the insertion of the plug projection in the opening is considerably facilitated by the flaring guide mouth 14. If desired, the plug P at the juncture of the body 21 and the plug projection 22 can be shaped, as at 23, to fit in said flaring mouth when the plug and socket are coupled, so as to completely close the opening.

Extending diametrically through the plug projection 22 at a point intermediate its ends is a conductor rod 24. The terminals of the conductor rod 24 are extended a material distance beyond the opposite sides of the plug projection, so as to form connecter lugs 25.

By referring to Figure 4 of the drawings, it will be noted that the inner, or rear, face of the lugs are beveled, as at 26, so as to form a substantially wedge-shaped structure for reception in the tapered arcuate ways 17 formed in the socket.

Molded in the bottom of the plug P are conductor strips 27 and 28. The forward end of the conductor strip 27 is electrically connected with the conductor rod 24, as is clearly shown in Figure 1 of the drawings. The forward end of the conductor strip 28 is extended exteriorly of the plug projection 22 at its axial center, as indicated by the reference character 29, for engagement with the central contact, or button, 13.

The inner ends of the conductor strips 27 and 28 are extended laterally to provide attaching feet 30 and 31 respectively, and the plug body is formed with openings 32 to permit access to be had to said feet. Binding screws 33 are threaded through the feet and into the plug body to permit the attaching of conductor wires thereto.

The inner end of the plug body is formed with a transversely extending hand grip 34 which can have its opposite sides corrugated or otherwise treated, as at 35, to facilitate the gripping thereof. This hand grip 34 is provided with a central bore 36, through which is adapted to be inserted the electric cord (not shown) leading from an electric iron or other electrical appliance. This central bore 36 has communicating therewith diverging bores 37 which open out through the forward end of the plug body 21 between the cavities 32.

Grooves 38 are formed in the outer face of the body and communicate with the cavities 32 and with the forward ends of the diverging bores 37. When the electric cord is placed in the bore 36, the conductor wires thereof are threaded through the bores 37 and are then brought into the grooves 38 and into the cavities 32 and electrically connected with the conductor strips 27 and 28 by the screws 33 heretofore mentioned.

In use of my novel plug and socket, the plug P is gripped by the handle 34, and the plug projection 22 is inserted in the socket. The plug projection will be guided in place by the flaring mouth, and the terminals of the conductor rod 24 will strike this mouth and the plug can be rotated until the terminals of the conductor rod ride into the longitudinal grooves 16 of the bayonet slots.

The plug is now pushed all the way into the socket and is again turned, so as to move the connecter lugs, or terminals, of the conductor rod 24 into the arcuate ways 17 of the bayonet slots. Obviously, the conductor strip 28 electrically contacts with the button 13, and the conductor strip 20 through the medium of the conductor rod 24 electrically connects with the shell 19 through the conductor strip 18 and the solder 20.

Due to the inclined shape of the ways and the U-shaped conductor strips 18, and the beveled faces of the lugs 25, a wedging action will be had, which will effectively couple the plug and socket together. This wedging action or inclined plane principle will take up any play caused by wear, and will always keep the contacts tight and prevent sparking and heating. This type of coupling positively prevents the accidental uncoupling of the plug and socket.

Obviously, the plug can be quickly and easily removed by grasping the handle 34 and rotating the same in a reverse direction until the terminals of the conductor rod again aline with the longitudinal grooves 16 of the bayonet slots, at which time the outward pull on the plug will uncouple the plug from the socket.

In Figures 6, 7, and 8, I have illustrated a flush type of receptacle, or socket, and, as shown, the same includes the porcelain or other insulating body 40. The opposite sides of the body are cut away to form parallel flat faces 41 to permit the convenient anchoring thereof in the baseboard and cover plates.

The body 40 is provided with the axially extending opening 42, the outer end of which is curved to provide the flaring entrance mouth, or guide throat, 43. The side walls of the opening are provided with the bayonet slots 44, and anchored in one or both of the curved portions of the slots is the U-shaped conductor 45.

Attached to the inner face of the body is a conductor plate 46 which is adapted to be engaged by the central contact of the plug. As shown, a binding screw 47 is carried by the plate 46 to permit one of the house line wires to be connected therewith. A similar binding screw 48 is provided for the other house line wire, and this screw is carried by the conductor strip 49, which can be molded in the socket, and which is electrically connected with the U-shaped conductor strip 45.

A boss 50 is formed on the inner face of the body between the conductors 46 and 49, so as to prevent the contacting of the line wires when the same are secured to the binding screws.

This socket is very similar to the socket shown in Figures 1, 3, and 5, and the plug P is inserted therein in the same manner.

With my type of plug and socket, no shock can be received by inserting a finger or tool in the receptacle, or socket, even when standing on a perfect ground, due to the fact that the neutral wire goes to the central terminal, and live wire to the contact in the arcuate way 17, and the face of this contact is covered by insulating material.

Obviously, the principles of my invention apply to all types of receptacles, or sockets, with which the plug can be used, and the sockets, or receptacles, can be made in multiple without departing from the invention.

Particular attention is invited to the fact that there are no moving parts in either the plug or socket with the exception of the terminal screws; and that the connection between the plug and the socket, or receptacle, is not dependent upon springs and the like.

The entire assembly of both the plug and socket, or receptacle, are of one piece molded, and are not various stampings pressed together and inserted in insulated cores.

Stress is again laid on the novel means employed for uniting the socket, or receptacle, and the plug together. The pitch of the inclined ways 17 and the tapered terminals of the conductor bar 24 form, substantially, a screw thread connection which holds the parts tight and takes up any play due to wear and the like. Obviously, as the plug is inserted and turned, the same is fed inwardly, insuring proper contact between the axial conductors 13 and 28.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable form of plug and socket, which will permit the convenient and quick coupling of these members together.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:—

1. In a separable electrical connecter, a socket, or receptacle, including a body of insulation having a central opening therein, a central contact for the body, the opposite sides of the wall of the opening being provided with bayonet slots, a threaded metallic shell fitted on the outer face of the body, a U-shaped conductor strip embedded in one of the bayonet slots and having electrical connection with the shell, a plug for movement into and out of the opening at the will of the operator, an axially disposed contact on the plug for engagement with the axial contact of the body, and a conductor bar extending diametrically through the plug having its terminals protruding beyond the plug for detachable reception in the bayonet slots and in electrical engagement with the U-shaped conductor strip.

2. In an electrical connecter, a socket, or receptacle, including a body of insulation having a central opening therein, an axial contact for the body, the opposite sides of the wall of the opening being provided with bayonet slots, a threaded metallic shell fitted on the outer face of the body, a U-shaped conductor strip embedded in one of the bayonet slots and having electrical connection with the shell, a plug for movement into the opening, an axially disposed contact on the plug for engagement with the axial contact of the body, and a conductor bar extending diametrically through the plug having its terminals protruding beyond the plug for reception in the bayonet slots and in electrical engagement with the U-shaped conductor strip, the U-shaped conductor strip and the terminals of the conductor bar being of a wedge shape.

HOWARD C. KISSEL.