

H. HUBBELL.
SEPARABLE ATTACHMENT PLUG.
APPLICATION FILED AUG. 25, 1909.

964,863.

Patented July 19, 1910.

Fig. 1.

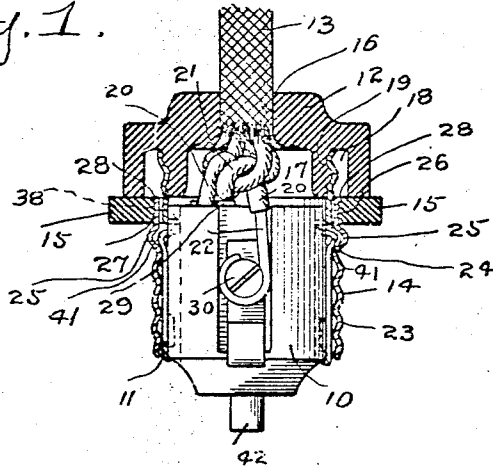


Fig. 2.

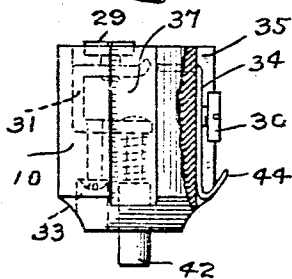


Fig. 3.

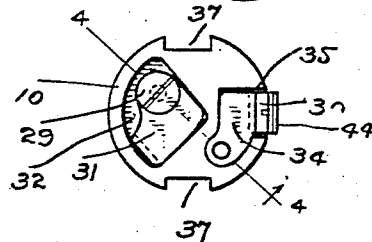


Fig. 4.

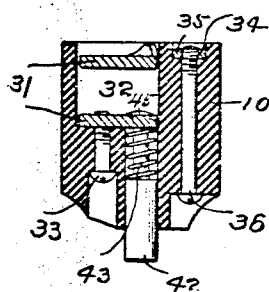


Fig. 5.

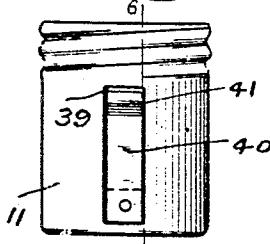


Fig. 6.

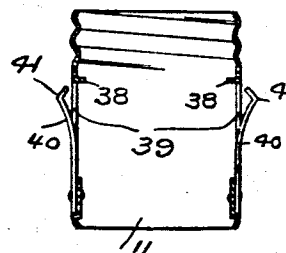
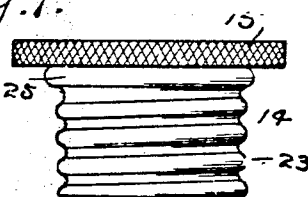


Fig. 7.



WITNESSES:

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SEPARABLE ATTACHMENT-PLUG.

964,863.

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To all whom it may concern:

Be it known that I, HARVEY HUBBELL, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Separable Attachment-Plugs, of which the following is a specification.

This invention relates to certain improvements in separable attachment plugs.

It is one of the objects of the invention to produce an attachment plug which shall be so constructed that the plug may be attached to and detached from the screw shell, so called, by a direct longitudinal movement, and without rotation of either plug or shell to attach, to lock or to withdraw, and which shall be so constructed that the plug will be securely retained in place without danger of jarring loose and may be readily detached by a pull requiring no greater power than is possessed by any person who would be required to make an electric connection.

A further object of the invention is to provide an attachment plug having a spring-controlled contact plunger for engagement with the center contact of a socket.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements and combinations which will be hereinafter described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawing forming part of this specification, Figure 1 is a view partly in elevation and partly in longitudinal section, illustrating my novel attachment plug in engagement with a screw shell as in use; Fig. 2 an elevation partly broken away of the insulating block or plug with the cap and plug shell removed, the point of view being at right angles to that in Fig. 1; Fig. 3 a plan view of the insulating block or plug detached, the position corresponding with Fig. 2; Fig. 4 a section of the plug on the line 4-4 in Fig. 3; Fig. 5 an elevation of the plug shell detached; Fig. 6 a section on the plug shell on the line 6-6 in Fig. 5; and Fig. 7 is an elevation of the screw shell detached.

10 denotes an insulating block or plug, 11 a metallic shell inclosing the plug and extending beyond it which for convenience I term the plug shell, 12 the cap, 13 an electrical cable, 14 a screw shell and 15 an insulating ring to which the screw shell is attached. The cap is provided with a central

hole 16 through which the cable passes and in its under side with a recess 17 and a circular groove 18 the inner wall of which is threaded as at 19 for engagement by a corresponding thread at the end of the plug shell, forming a means of attachment of the plug shell to the cap. Within the cable are the usual insulated conductors 20. The cable is secured to the cap by means of a knot 21 tied in the conductors. The cable fits hole 16 in the cap closely. The cable is drawn through the cap, then the insulation is removed leaving the conductors bare and the knot is tied in the conductors. The knot lies in recess 17 and is so much larger than the hole through the cap that it is impossible to pull the cable out after the knot is tied. The insulation at the ends of the wires is then removed and the wires, indicated by 22, are connected to the binding screws in the usual manner. The important function of the knot is to prevent any pull upon the wires and thereby render detachment from the binding screws impossible.

The screw shell is provided with the usual screw thread 23 which is adapted to be engaged by the thread on the base of a lamp (not shown). Above the thread is a circular internal groove 24. The exterior of groove 24 forms a circular rib, indicated by 25. Above this rib is a straight portion 26 which passes through a central opening 27 in insulating ring 15, the upper end of the straight portion being then headed over outward upon the ring forming a flange as at 28. The insulating ring is thus clamped between rib 25 and the flange which locks the screw shell securely to the ring.

29 and 30 denote the binding screws to which the wires 22 are connected. Binding screw 29 is carried by a U-shaped bracket 31 which lies in a recess 32 in the insulating block and is secured in place by a screw 33. Binding screw 30 is carried by a plate 34 which lies in a recess 35 in the top and side of the insulating block and is secured in place by a screw 36. This plate is provided with a spring contact 44 which engages the plug shell. The insulating block is provided on opposite sides with grooves 37 which are engaged by lugs 38 formed by striking in the metal of the plug shell. These grooves and lugs are for assistance in assembling the parts to insure the correct alinement of the insulating block with the plug shell and to prevent the possibility of the block turning

in the shell in use, and also to permit movement of the attaching springs presently to be described. Below lugs 38 on the plug shell are slots 39 in which the attaching springs 40 lie by which the plug as a whole, consisting of the insulating block and the plug shell, is attached to the screw shell. One or more attaching springs may be used as preferred, two being shown in the present instance. These springs are riveted or otherwise rigidly secured to the shell at the lower ends of slots 39, and are provided at their upper ends with engaging portions indicated by 41. These engaging portions are formed by bending the upper ends of the springs outward and then inward to adapt them to engage groove 24 in the screw shell. The springs in practice are made stiff enough to retain the plug securely in engagement with the screw shell so that the use of quite a little power is required to disengage the plug from the shell. The relative stiffness of the springs employed will depend of course upon the number used and the special requirements of use. When the plug is pushed into the screw shell the springs will yield and the engaging portions will pass freely over the threads 23 of the screw shell and will snap into place and seat themselves in groove 24 when the plug has been pushed home. The shape of the engaging portions makes attachment relatively easy but they engage the groove with a pressure quite sufficient to resist vibration and the ordinary strains of use and require an intentional pull to detach them. It will be noted that it is not necessary to place the plug and screw shell in any special position relatively to each other for attachment and that they will engage and lock in any position when the plug is pushed straight into the screw shell.

As a novel means of effecting the electrical connection between the plug and the center contact of a lamp socket, I provide a contact plunger 42 which is socketed in the insulating block and is provided with a shoulder and a reduced inner end which passes through one of the arms of U-shaped bracket 31. A spring 43 bearing against the bracket and against the shoulder acts to retain the plunger in operative position and yields when it is pushed upward by engagement with a contact, as the center contact in a lamp base. A head 45 upon the reduced end of the plunger engages the upper side of the arm of the bracket and prevents the plunger from being disengaged therefrom.

Having thus described my invention I claim:

1. An attachment plug comprising a shell having a longitudinal slot and a spring lying in said slot and attached to the shell below the slot, and having at its upper end

an engaging portion adapted to engage the thread of a screw shell to retain the plug in place.

2. An attachment plug comprising an insulating block having a recess, a U-shaped bracket secured in said recess, a plunger socketed in the block and engaging the bracket and having a head to prevent disengagement from the bracket and a spring acting to retain the plunger in position to engage a center contact.

3. The combination with a screw shell, having a circular groove, of an attachment plug having springs provided with engaging portions adapted to yield when the plug is pushed into the shell and to engage the groove when the plug is seated.

4. The combination with a screw shell having a circular groove above the thread, of a plug shell having springs provided with engaging portions, said springs yielding when the plug is directly inserted and the engaging portions seating themselves in the groove to retain the plug in place.

5. The combination with a screw shell having a circular groove above the thread, the exterior of said groove forming a rib and a straight portion above the rib, of an insulating ring having a central opening through which the straight portion is passed and then headed over outward, and a plug having a shell provided with springs adapted to engage the groove to retain the parts in engagement.

6. The combination with a screw shell having a groove above the thread, of an attachment plug having a shell provided with a slot and a spring lying in said slot and attached to the plug shell and provided with attaching portions adapted to engage the groove in the screw shell.

7. The combination with an insulating block and a shell inclosing the block and having a thread extending above the block, of an insulating cap having a circular groove, one wall of which is threaded to engage the cap.

8. The combination with an insulating block having longitudinal external grooves, of a plug shell having lugs adapted to engage said grooves, for the purpose set forth, slots below the lugs, attaching springs lying in the slots and having engaging portions and a screw shell having an internal groove adapted to receive the engaging portions.

9. The combination with an insulating block having recesses, of a plate secured in one of said recesses and provided with a binding screw and a spring contact, a bracket secured in the other recess and provided with a binding screw and a spring-controlled contact plunger socketed in the block and extending therefrom and engaging the bracket.

10. The combination with an insulating block having recesses, of a plate secured in

one of said recesses and provided with a binding screw and a spring contact, a U-shaped bracket secured in the other recess and provided with a binding screw in one arm and a spring-controlled contact plunger socketed in the block and extending therefrom and passing through the other arm of the bracket.

11. The combination with an insulating block having longitudinal grooves and recesses, a current-carrying plate secured in one of said recesses and provided with a binding screw and a bracket secured in the other recess and provided with a binding screw, of a spring-controlled contact plunger socketed in the block and extending therefrom and engaging the bracket and a plug shell inclosing the insulating block and provided with inwardly extending lugs engaging the grooves.

12. The combination with an insulating block having recesses, a current-carrying plate secured in one of said recesses and provided with a binding screw and a bracket secured in the other recess and provided with a binding screw, of a spring-controlled contact plunger socketed in the block and extending therefrom and engaging the bracket, a plug shell inclosing the block and extending above the block, an insulating cap threaded to engage the plug shell and an electric cable entering the cap and carrying wires which are connected to the binding screws.

13. The combination with an insulating block having recesses, a current-carrying plate secured in one of said recesses and provided with a binding screw and a bracket secured in the other recess and provided with a binding screw, of a spring-controlled contact plunger socketed in the block and extending therefrom and engaging the bracket, a plug shell inclosing the block and having a threaded portion extending above the block, an insulating cap engaging the plug shell and an electric cable entering the cap and comprising conductors which are knotted to connect the cable to the cap and inclose wires which are connected to the binding screws.

14. The combination with an insulating block having recesses, a current-carrying plate secured in one of said recesses and provided with a binding screw and a bracket secured in the other recess and provided with a binding screw, of a spring-controlled contact plunger socketed in the block and extending therefrom and engaging the bracket, a plug shell inclosing the block and carrying attaching springs and a screw shell inclosing the plug shell and engaged by the contact springs.

In testimony whereof I affix my signature in presence of two witnesses.

HARVEY HUBBELL.

Witnesses:

A. M. WOOSTER,
S. W. ATHERTON.