Jan. 9, 1951 J. E. FLOOD 2,537,819

ATTACHMENT PLUG

Filed Jan. 12, 1946

Fig. 1

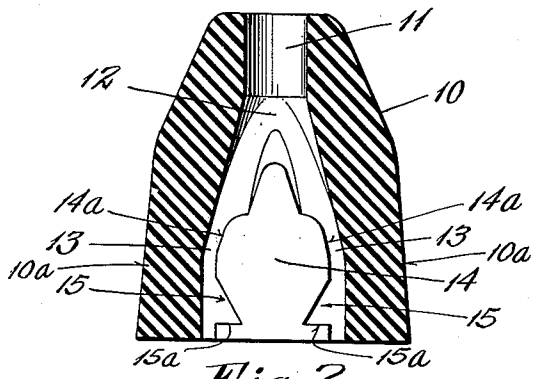


Fig. 2

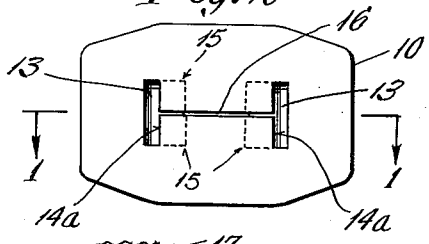


Fig. 3

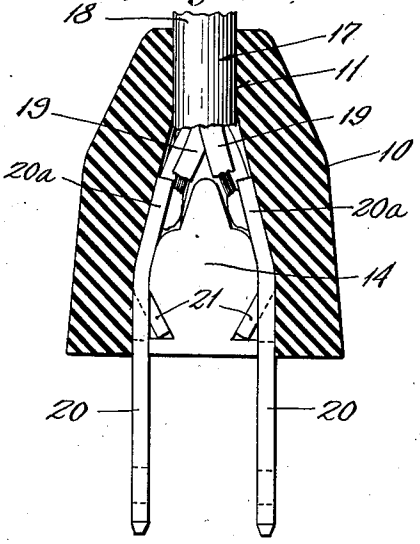


Fig. 4

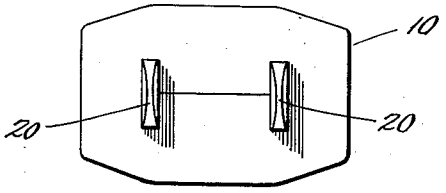


Fig. 5

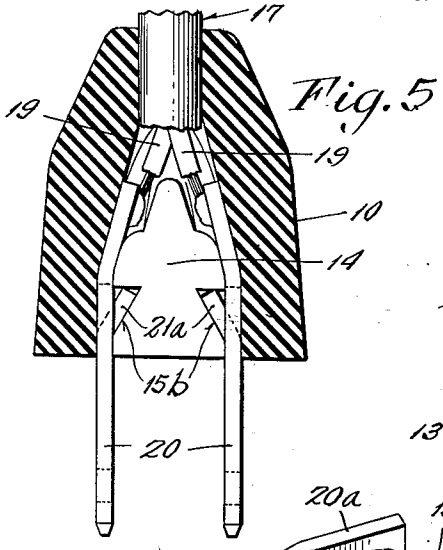
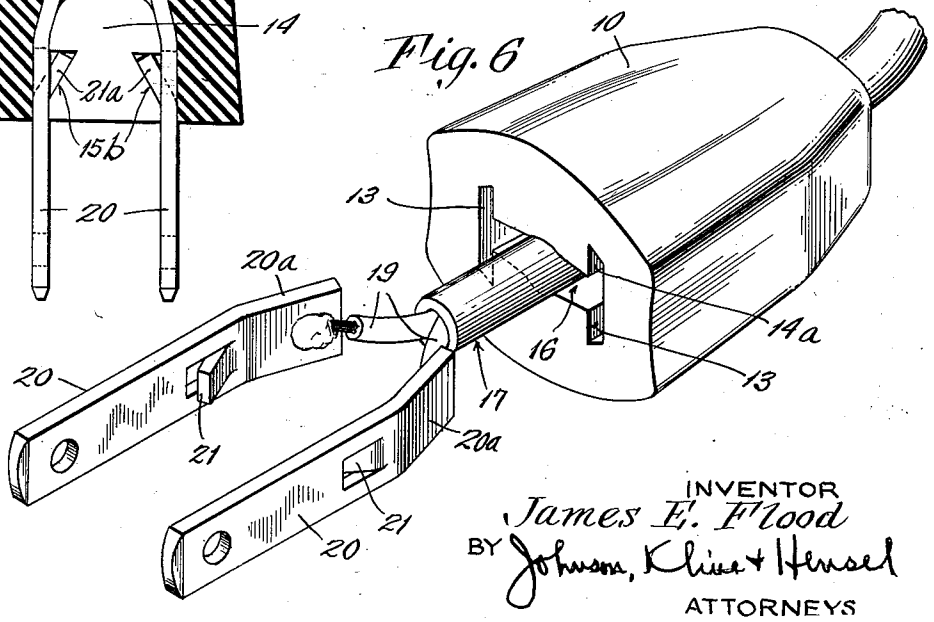


Fig. 6



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ATTACHMENT PLUG

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Application January 12, 1946, Serial No. 640,920

2 Claims. (Cl. 173—361)

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This invention relates to electrical plugs such as are attached to appliance and extension cords to be detachably connected to plug-receptacles.

An object of this invention is to provide an attachment plug which is economical to make and assemble with the wire connected contact blades and yet in which, when assembled, the anchored ends of the blades are permanently secured in the plug body against removal in any manner except by the destruction of the body of the plug.

Heretofore, in plugs of this type in which spaced blade-receiving passages pass through the plug and converge and merge with the cord-receiving cavity at the opposite end of the plug it has been the practice to connect the blades to the conductors, spread the end of the plug having the cord-receiving cavity until the cord-receiving cavity is in substantial alignment with the blade-receiving passages and then draw the assembled blades and conductors in from the back of the plug through the passages into position with the blades projecting from the front of the plug. This has been an expensive operation and requires a good quality of rubber in the plug body to permit the extension thereof. Many times in the assembling operation the end of the insulation on the conductor engages the edge of the plug body and is stripped back unless precautions are taken to protect this end.

The present invention overcomes these difficulties by making the body of a flexible material which may be rubber, synthetic rubber, synthetic resins, or acetates and providing a slit through the usual solid central portion between the blade-receiving passages of the body from end to end thereof so that it extends from the cord-receiving cavity to the front face of the plug. When a squeezing action is applied to the side edges of the plug the slit opens or spreads and facilitates insertion of the conductor from the rear and the assembly of the body and the conductor with its attached contact blades from the front of the plug body after the blades have been attached. It will be noted that in this manner any action of the plug body on the insulation of the conductor will be to pull the insulation into the plug rather than strip it back. After the assembly is completed and the blades are located in the blade-receiving and anchoring passages the surface of the body produced by the slit may be cemented or otherwise inseparably adhered together to make the central portion of the body one solid mass and thereby prevent the anchoring means carried on the contact blades from becoming dislodged from their cooperating elements in the plug.

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In the form of the invention herein illustrated as exemplary thereof, the body is molded with blade-receiving passages in which the blades are confined and these are in communication with the transverse central slit so that as the wires with the blades attached are drawn backwardly into the body, the blades move into the slots while the attached wires pass through the slit until the cord-receiving cavity in the body is reached.

Other features and advantages of the invention will be apparent from the specification and claims when considered in connection with the drawings in which:

Figure 1 shows a sectional view of the plug taken along lines 1—1 of Fig. 2.

Fig. 2 is a front end view of the plug body.

Fig. 3 is a sectional view similar to Fig. 1 showing the prongs in position.

Fig. 4 is an end view similar to Fig. 2 showing the blades in place and the slit closed.

Fig. 5 is a view similar to Fig. 3 showing another form of the invention.

Fig. 6 is a perspective view showing the blades being withdrawn into the plug body.

As shown in the drawings the plug body 10 of flexible material such as rubber, synthetic rubber, polyvinyl chloride and the like synthetic resins or acetates has a conductor-receiving aperture 11 formed at the back end thereof. This opens into a conductor-receiving cavity 12 which has a pair of blade-receiving slots or passages 13 extending therefrom to the forward end of the plug and on opposite sides of a central core 14. The outer walls 14a of the central core form one wall of each of the passages 13. The walls 14a are preferably provided with means for cooperating with the blades to anchor the blades in the passage. This means is herein illustrated as a notch 15 formed in the wall and providing an abutment 15a. As is shown in Fig. 2 the central core is divided by a slit 16 which extends from side to side thereof and intersects the blade passages.

The conductor 17 may have any type of insulation 18 thereon and is provided with two insulated wires 19 which are connected to the contact blades 20 which project from the front face of the plug for insertion into the usual plug receptacle. The blades are anchored in the blade-receiving passages by tangs 21 lanced therefrom and projecting forwardly so as to engage the abutment 15a when the blades are in anchored position.

In assembling the plug of the present invention, the plug body of Fig. 1 is grasped at the sides 10a thereof and compressed so as to com-

press the material of the body and spread open the slit 16 in the central core. The conductor 17 is fed through the aperture 11, the conductor-receiving cavity 12, and through the spread slit as shown in Fig. 6. The blades are then attached to the wires extending from the insulation by soldering or any other suitable means. The assembled blades and conductor are then drawn back into the body through the front face thereof with the blades being positioned in the blade-receiving passages and the wires passing along the slit portion of the central core until they move into the conductor-receiving cavity and the tangs engage the abutment 15*a* in the anchored position as shown in Fig. 3.

The slit in addition to providing for passage of the wires connected to the blades as they are moved into the plug also permits the anchoring tangs 21 to readily drop into the notches 15 and interlock therewith without tearing or damaging the wall of the passage.

When the blades are in anchoring position, the bent inner ends 20*a* will rest against the wall of the passageway as shown in Fig. 3 and cooperate with the tang 21 to hold the blade against movement in either direction.

After the blades have been located in anchored position, the walls of the slit are rendered tacky and pressed together so as to permanently seal the slit as shown in Fig. 4 and render the core a unitary structure. This adds rigidity to the wall 14*a* and anchoring means carried thereby so that the blades are securely held in position and cannot be removed without destroying the body of the plug.

The slit may be permanently sealed by coating the walls thereof with a solvent for the body material by injecting or otherwise applying the solvent thereto. When the walls are pressed together the material merges and the central core becomes a solid mass. Also, the slit may be permanently closed by suitable adhesives applied to the walls of the slit to cause them to adhere together and to hold the blades in position.

If desired, a suitable adhesive may be also applied to the insulation 18 before the conductor is withdrawn into the plug to secure it to the walls of the aperture 11. By securely bonding the two surfaces together the insulation is prevented from pulling back or stripping in use.

The form of the invention of Fig. 5 is similar to that shown in Fig. 3 with the exception that the tangs 21*a* and notches 15*b* are in reverse position to that shown in Fig. 2. This plug is assembled in precisely the same manner as is the plug of Fig. 3. The slit is particularly advantageous in connection with this type of blade since it permits the tang to pass into the notch without tearing or damaging the wall.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. An attachment plug having a body of flexible material provided with blade-receiving and anchoring passages therein on each side of a central core and a conductor-receiving aperture merging with the inner ends of said passages; and a conductor disposed in the aperture and having blades provided with anchoring tangs connected thereto and anchored in the passages in the body, said core having a slit ending in said passages and having a recess facing each respective passage, said slit having walls which may be resiliently urged apart to facilitate the passage of the conductor and its wires and attached contact blades and anchoring tangs into the body from the front thereof during assembly when the body is flexed to cause the slit to open, and said recess cooperating with and being engaged by said anchoring tangs on the blades to anchor the blades in the passages.

2. The invention as defined in claim 1, wherein adhering means is applied to the slit to secure the walls thereof together permanently.

JAMES E. FLOOD.

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