Sept. 1, 1936. A. L. BECKET 2,053,060

ATTACHMENT PLUG

Filed Dec. 20, 1932

Fig 1

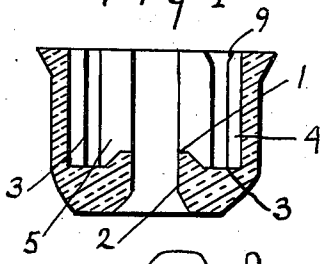


Fig 2

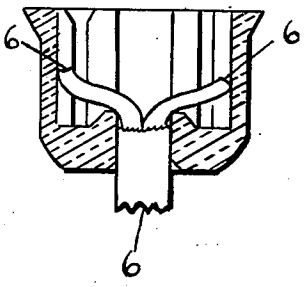


Fig 3

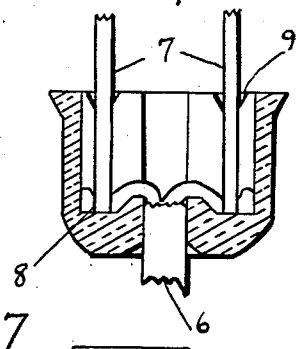


Fig 4a

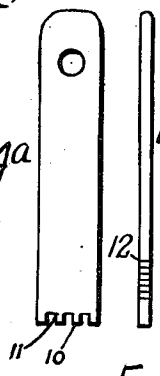


Fig.4b

Fig.4c



Fig.4d.

Fig 5

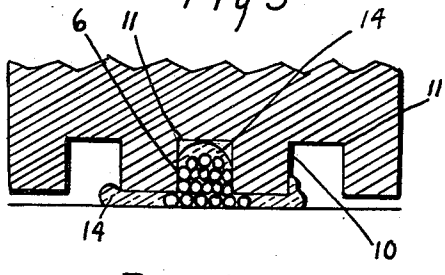


Fig 6

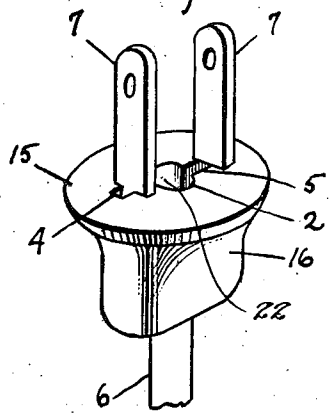
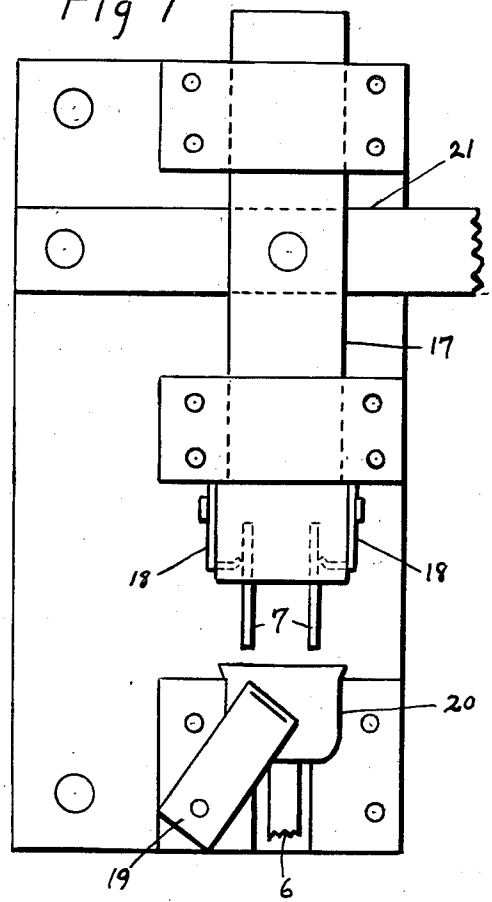


Fig 7



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Patented Sept. 1, 1936 2,053,060

UNITED STATES PATENT OFFICE

2,053,060

ATTACHMENT PLUG

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Application December 20, 1932, Serial No. 648,091

10 Claims. (Cl. 173—361)

This invention relates to an attachment plug in which either screw or spring means of attaching the wires to the terminals is dispensed with entirely. Contact is effected between insulated wires and the terminals by crushing, piercing or impaling the insulation. Pressure is exerted upon sliding terminals so as to contact electric insulated wires by penetrating the insulation thereon.

In the drawing Fig. 1 is a cross section of the main body of the device. Fig. 2 is the same with wires in place. Fig. 3 is the same with wires and terminals in place. Fig. 4*a* is a front view of a terminal. Fig. 4*b* is a side view of a terminal. Fig. 4*c* and Fig. 4*d* are end views of a terminal. Fig. 5 is a cross sectional side view on an enlarged scale of a terminal portion and wire. Fig. 6 is a perspective view of the assembled device. Fig. 7 is a front view of an assembly machine.

Referring to the drawing Fig. 1 is a cross section of the main body of the device having openings indicated at 2, 4 and 5 for accommodating the wire 6 shown in Fig. 2 and the slotted parallel openings 3 for holding terminals 7 shown in Fig. 3. The wires 6 are pushed thru the opening 2 and while extending above the upper face of the main body are spread apart and pulled back into the openings 2, 5 and 4 where they are held in position by their own resiliency as shown in Fig. 2. In Fig. 3 the metal terminals 7 are driven into the slots 3 and press against the insulated wires 6 with sufficient force to break the insulation and contact the metal wires beneath the insulation as shown at 8. The upper end of the slots 3 may be tapered as shown at 9 to guide the terminals 7. Reference character 1 is a prominence to bend the wire 6 and relieve strain upon the electric contact at 8 when wire 6 is pulled.

The terminal shown in Fig. 4*a* shows a tooth construction 10 with open spaces 11 between the teeth 10. The contacts are held securely in the main body thru frictional contact against the walls of slot 3 and the edges of the terminals. The gripping effect may be increased by making the slots 3 slightly smaller than the terminals and depending upon the resiliency of the main body to grip the terminals. The terminals, when made from sheared strip metal have a slight radius caused by the shearing operation. It is found that this condition is an aid in the matter of anchoring the terminals. Reference character 13 in Fig. 4*d* is the end of a sheared terminal showing slight curvature. Reference character 12 in Fig. 4*b* is a burred or roughened edge which may be employed for anchoring the terminal in the main body. Sealing wax or other cementing means 22 to water-proof the device and to aid in holding the contacts in place may be used.

In Fig. 5 the teeth 10 are shown penetrating the insulation 14 and the wires 6 are shown wedged into the space 11 where they make contact against the surfaces of the teeth 10. The blunt teeth 10 cut into the insulation 14 but do not cut the wires. It is to be understood that other forms of terminals 7 can be used to cut thru the insulation and to aid in holding the wires in place in a device of this character.

The assembled device is shown in Fig. 6 in which reference character 15 is a flange which acts as a stop for keeping the user's thumb and finger away from the terminals when introducing the same into a contact receptacle. The flattened grip portion 16 gives an idea to the user thru feel of the position of the terminals when directing the same into the openings of the ordinary contact receptacle. The common round type of attachment plug does not give the user, thru feel alone, a knowledge of the plane in which the terminals lie. This knowledge is helpful for easy insertion, particularly in the dark. The function of slots 4 as a guide for the ends of the wires is shown in Fig. 6. Slot 4 guides the ends of the wires 6 to a central position at right angles to the contacting end of the terminals 7.

In Fig. 7 reference character 17 is a sliding terminal holder. The terminals 7 are inserted into the holder 17 and held in place by pressure exerted by spring means 18. The main body with wires 6 in place, as in Fig. 2, is seated in the holder 20. Spring 19 holds the main body securely in seat 20. Lever 21 propels the sliding holder 17 and drives the terminals 7 into the slotted openings 3 in the main body and forms electrical contact between the wires 6 and the terminals 7. The main body grips the terminals 7 securely and as the sliding holder 17 is returned to the starting position the terminals are withdrawn from the holder 17.

There is a saving in materials used for fabricating this device. The main body is compact and more solid in construction than the common shell type of plug which requires more molding material to give strength. The terminals may be formed from strip metal with little or no scrap envolved. This is a saving over the common type of terminal which is punched and formed from sheet metal resulting in considerable scrap metal. The saving in labor resulting from the elimination of the insulation stripping operation and the

manipulation of screws is a factor in the cost of assembly.

I claim:

1. An attachment plug comprising an insulated body portion having an opening with slots on opposite sides thereof and sliding wire piercing rigid terminals anchored therein, said terminals being rigidly held by a driven fit against the surfaces of said slots.

2. An electric plug comprising an insulated body portion, metal terminals and insulated electric wires, blunt teeth at the end of said terminals to press against and to make electric contact thru the insulation of said electric wires and frictional means for locking said terminals in place when in electrical contact with said wires.

3. An electric plug comprising an insulated body portion with elongated slotted openings, rigid insulation impaling terminals occupying a portion of said openings and being forced under pressure against the friction of the sides of said openings and through said insulated wires to impale said insulated wires, produce an electric contact, and to permanently anchor the terminals in place.

4. An attachment plug comprising an insulated body portion, rigid terminals and electric wires, said body portion having an aperture therein, said aperture being provided with slots on the sides thereof open at one end, the surfaces of said slots contacting the edges of said terminals by a driven fit and frictionally anchoring the same in position when impinging upon said electric wires.

5. An attachment plug comprising an insulated body portion, electric rigid terminals and electric wires, said body portion having an opening with slots on opposite sides thereof, said terminals anchored in said slots by means of a sliding driven fit against the surfaces of said recesses the said terminals being provided with teeth for engaging said electric wires.

6. An electric receptacle having, a main body, rigid insulation piercing contacts and electric wires, the said body portion having rectangular slots closed at one end and a central opening, the said slots holding in a driven fit the said contacts and wires in electrical connection, the said main body providing a raised ridge between said central opening and the closed end of said slot.

7. An electric receptacle having a main body, rigid insulation piercing terminals and electric wires, said body having an opening with channels at the sides thereof forming openings of cross shape, the said channels holding the terminals by a driven fit and maintaining an electrical contact with said wires at a point intermediate the ends thereof.

8. An electric receptacle of the character described having a main body portion having slots therein, rigid insulation piercing terminals and electric wires, the said terminals being burred and being anchored in said slots in electrical contact with said wires by means of a driven fit.

9. A device of the character described comprising a main body portion, rigid insulation piercing terminals and electric wires the said body portion having elongated slots open and tapered at one end thereof, said terminals being held in said slots in electrical contact with said wires by means of a driven fit.

10. An electric receptacle of the character described having a main body portion, rigid insulation piercing terminals and electric wires, the said terminals being driven into said body portion in electrical connection with said wires and said electrical connection being sealed therein by cementing means.

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