

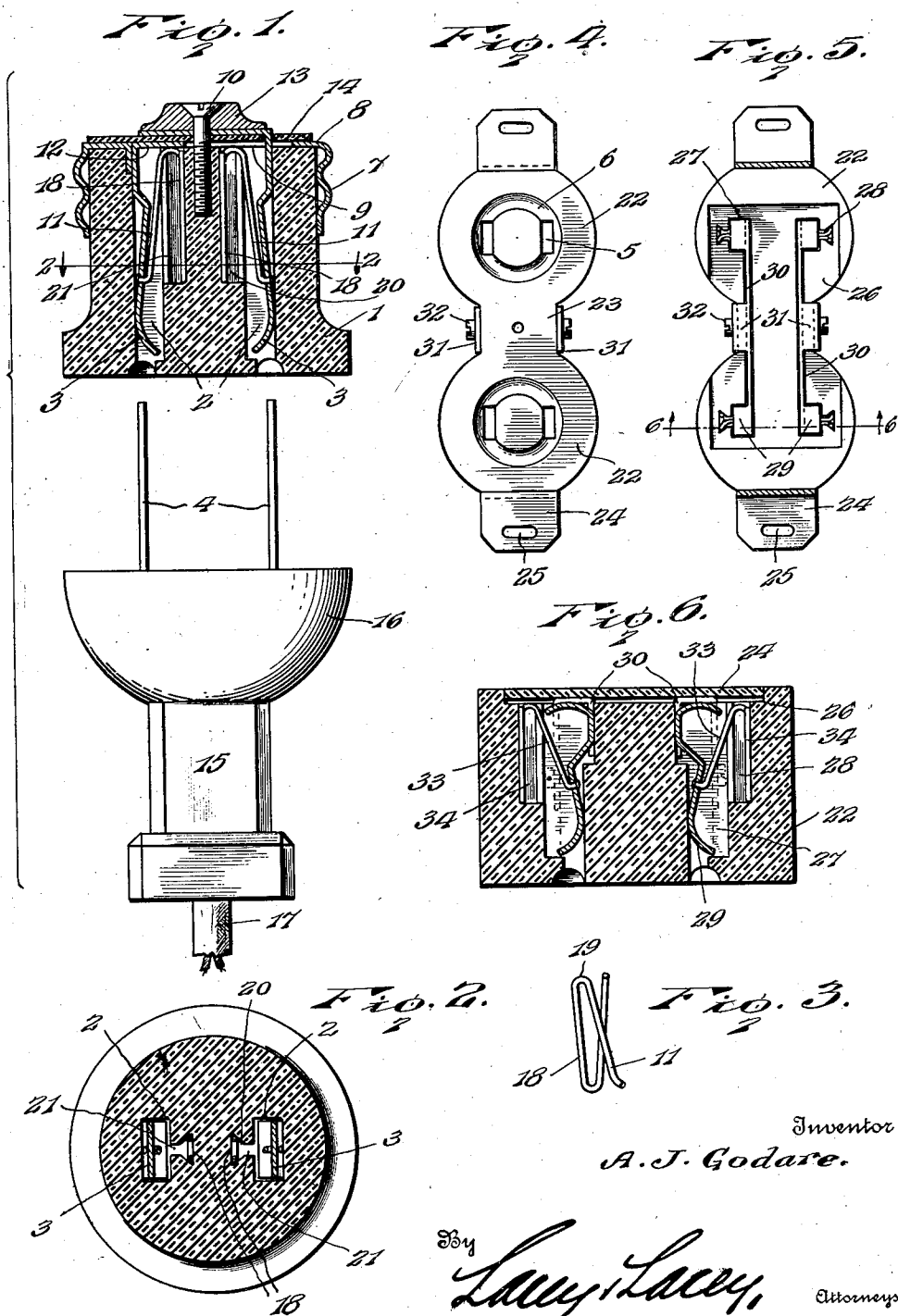
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PLUG-IN RECEPTACLE

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## PLUG-IN RECEPTACLE

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3 Claims. (Cl. 173—330)

This invention relates to plug-in receptacles or connectors for electric conductors and has for its object the provision of a simple and inexpensive structure whereby a very firm engagement between the contacts in the receptacle and the contacts on the plug will be effected. The invention is illustrated in the accompanying drawing and will be hereinafter fully described, the novel features being particularly defined in the appended claims.

In the drawing,

Figure 1 is a view showing a cap or socket in section and showing a plug in elevation in position to be engaged in the cap or socket.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a detail perspective view of the spring which is mounted in the cap and acts to maintain the contact points against the contact elements of the plug.

Figure 4 is a face view of a duplex outlet.

Figure 5 is a rear elevation of the same with parts in section.

Figure 6 is an enlarged section on the line 6—6 of Figure 5.

The cap or socket comprises a body 1 of bakelite, porcelain or other insulating material which possesses the requisite durability and cheapness. This body is circular in the form of the invention shown in Figure 1 and is provided with chambers 2 on opposite sides of its axis in which are mounted the contact blades 3, the said chambers opening through the outer face or end of the cap so as to facilitate the entrance of the tines or blades 4 of the plug. The openings which permit access to the chambers 2 are in the form of slots, such as shown at 5 in Figure 4, and in the face of the cap is a circular recess, such as shown at 6 in Figure 4, which will aid in guiding the tines or blades into the slots. The cap is equipped with the usual rim terminal 7 in the form of a thimble having a corrugated rim whereby it may be screwed into a mating socket and having its base portion fitted against the end of the cap, as clearly shown at 8 in Figure 1, the base portion being formed with a slot or opening 9 through which may be inserted the screw 10 which constitutes the center terminal and also serves to secure one of the contacts 3 in place. The contacts 3 are resilient metallic plates or strips each having its outer extremity curved away from one wall of the respective chamber 2 and having its intermediate portion slightly offset so as to be readily engaged by the spring 11 which serves to maintain the proper engagement between the plate

and the tine or blade of the plug. The inner or rear end of each terminal 3 is disposed through or within the opening 9 of the rim terminal and one of said terminals 3 has its rear end bent against the back or rear end of the cap, as clearly shown at 12, while the other terminal 3 has its end extended beyond the end of the cap and bent laterally to bear against the knob or clamping plate 13 which is secured against said bent end of the terminal by the center contact and clamping screw 10. An insulating plate 14 is disposed against the base of the rim terminal and between the rear ends of the two terminals 3, as clearly shown in Figure 1, so that short circuits will be avoided and the proper circuits established when the plug is inserted. The plug comprises a handle member 15 which has a flat-sided shank and an enlarged semi-spherical head 16 from which the tines or blades 4 project. The conducting cable 17 is threaded through the shank and has its separate wires connected to the ends of the respective tines or blades within the head 16, as will be understood. By providing a flat-sided shank, twisting of the cable as it is inserted in the cap is avoided without causing a fatiguing strain upon the fingers of the holder.

The resilient terminal-engaging elements 11 are each formed from resilient wire bent to form an anchoring member 18 and the terminal-engaging tongue 11 extending in the same general direction and being connected by a fold or bend 19, as clearly shown in Figure 3. The anchoring member 18 has two sides or arms connected at their ends remote from the fold 19 and is inserted through the rear end of the cap into a groove or channel 20, which is formed in the cap and opens through the rear end of the same and also has a relatively narrow open side 21 establishing communication with the respectively adjacent chamber 2. The anchoring member is easily inserted in the holding channel and the side arms resiliently and frictionally engaging the sides of the channel will firmly hold the device therein. The end of the terminal-engaging tongue 11 is inserted through an opening provided therefor in the terminal and upset against the face of the terminal, as clearly shown in Figure 1, so that the terminal and the holding member will be firmly united and will be in the proper operative relation at all times.

The terminals with the assembled holding members are inserted into the cap through the rear side of the same and the separating insulating plate 14 is then put in place, after which the clamping plate 13 and the center terminal 10 are

secured to the cap and the device is ready for use. In use, the cap may be screwed into a socket in a baseboard or other place and the plug is then inserted in the cap so that the ends of the tines or blades will impinge against the convex surfaces of the curved ends of the terminals 3 and, consequently, will force the terminals away from the walls against which they are resting and will pass between said walls and the terminals, the resilient holding tongues 11 forcing the terminals against the tines so that a perfect electrical contact will be effected.

In Figures 4, 5 and 6, I have illustrated the invention applied to a duplex outlet. The duplex outlet comprises two substantially circular bodies 22 corresponding to the body 1 of the cap, previously described, said bodies being connected by an integral central neck 23, as shown. An attaching bracket 24 is secured over the rear side of the body and has its ends extended laterally and provided with slots or openings 25 through which fastening devices may be inserted to secure the device in place, this bracket being of insulation, as will be understood. In the rear side of the device, recesses 26 are formed and these recesses communicate with the rear ends of the chambers 27 and 28 which correspond in all respects to the chambers 2 and 20 of the device shown in Figures 1 and 2, and it may be noted at this point that the slot or opening which establishes communication between the chambers 2 and 20 or between the chambers 27 and 28, is contracted so that the anchoring base inserted into the chamber 20 or 28, as the case may be, will be firmly held against rocking or tilting movement which might dislodge it. Within each chamber 27 is mounted a terminal 29 corresponding to the terminals 3 and these terminals 29 are connected by strips 30 of conducting material which extend longitudinally of the body of the device and are secured to the sides of the same by means of screws or similar fastenings which are inserted through tongues 31 struck up from the respective strips and bearing against the sides of the body, as will be understood upon reference to Figures 4 and 5. The leading-in wires are secured to these tongues 31 by the fastening screws or other elements 32, and it will be noted that the strips are insulated from each other by the interposed portions of the body, but each strip has a contact terminal at each end and if the terminals at the corresponding ends of the two strips be engaged by the blades of a plug, a circuit will be established through the cord connected to the inserted plug. It will thus be obvious that two plugs may be engaged at the same time in the receptacle and current supplied from the receptacle to two lamps or to two other instrumentalities. The terminal contacts 29 are held in engagement with the inserted blades or tines by resilient members 33 corresponding in all respects to the resilient tongues 11 and extending from anchoring members 34 which are inserted in and held by the chambers 28 in the same manner that the anchoring plates 18 are held.

From the foregoing description, taken in connection with the drawing, it will be seen that I have provided an exceedingly simple device whereby a firm engagement between the terminals and inserted tines will be had without excessive wear upon any of the parts so that the device will prove very durable. The several parts may be very quickly and easily assembled inasmuch as the terminals and the holding members cooperating therewith may be simultaneously inserted into the cap or other receptacle through the rear ends of the same and the shape of the chambers in which the anchoring members are received is such that said members will be held in place without the use of screws or any other fastening devices so that if, for any reason, the device should fail to operate access to the parts and examination of the same may be very easily had.

Having thus described the invention, I claim:

1. A plug-in receptacle comprising an insulated body having parallel chambers therein and a recess at one side of each chamber extending longitudinally thereof and in communication therewith through a relatively narrow slot, conductor terminals disposed within the respective chambers, and holding members each consisting of an anchor inserted into the adjacent recess, and a resilient tongue extending from one end of said anchor through the slot and engaged with the adjacent terminal whereby the terminals will be constantly held against the inserted elements of a plug.
2. A plug-in receptacle comprising a body of insulation having longitudinally extending separated chambers having side walls, recesses formed in the side walls of the chambers and extending substantially half their length and communicating with said chambers at one side thereof, terminals disposed within the chambers and extending substantially the entire length thereof, and holding elements mounted in the recesses, said holding elements having tongues adapted to project from the recesses into engagement with the terminals whereby to press them against the tines of an insulated plug, said holding elements engaging corresponding mid-portions of the terminals and permitting free movement of the corresponding ends of said terminals.
3. A plug-in receptacle including a body having axially extending separated chambers having side walls, recesses formed in the side walls of said chambers throughout substantially half their length, terminals disposed within said chambers, said recesses having relatively narrow openings at the sides of the chambers and communicating with said chambers, anchors normally carried in the recesses, said recess having walls inclined toward each other for retaining the anchors in position, and tongues projecting from said anchors and engaged with the terminals for pressing the terminals against the tines of a plug inserted between the terminals and the outer walls of the chambers.

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