Sept. 23, 1924. 1,509,096

R. B. BENJAMIN

PLUG CLUSTER

Filed July 30 . 1920 2 Sheets-Sheet 1

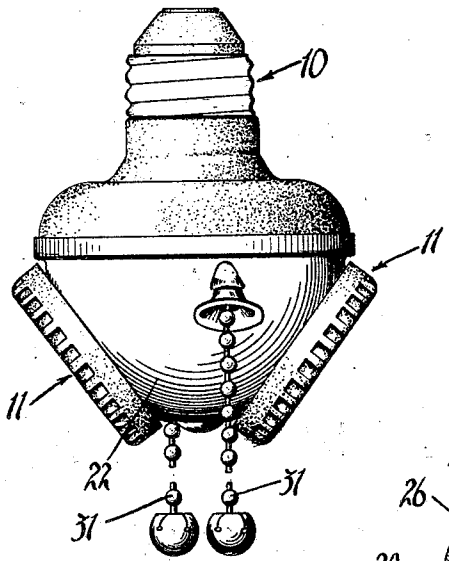

Fig. 1.

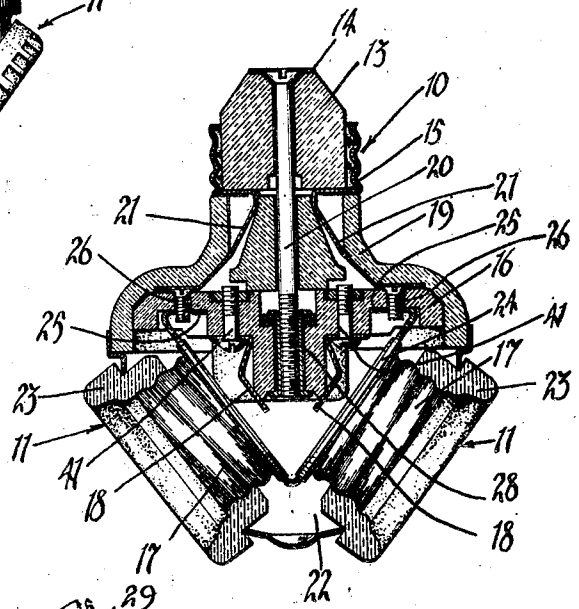

Fig. 2.

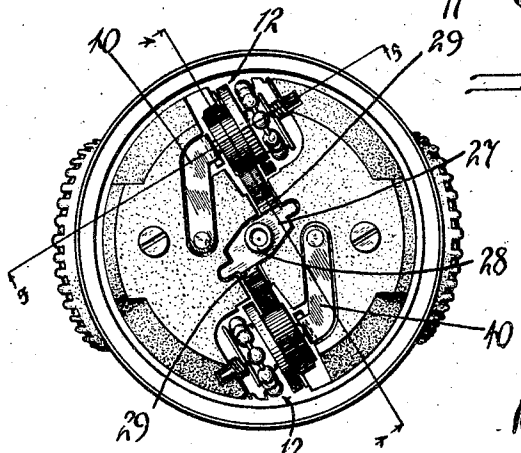

Fig. 3.

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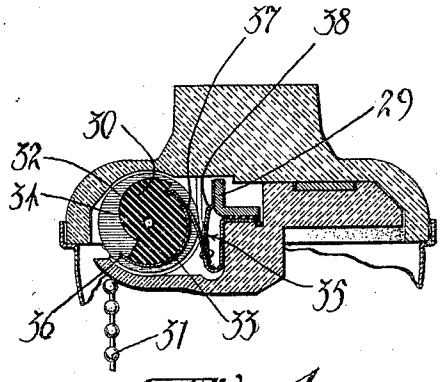

Fig. 4.

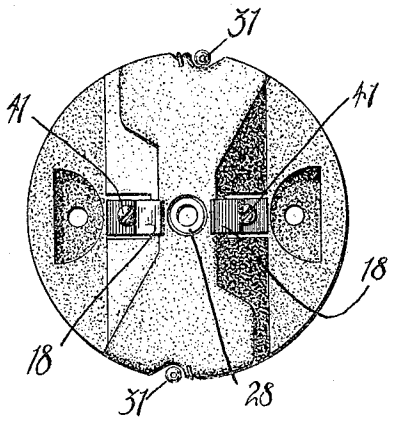

Fig. 6

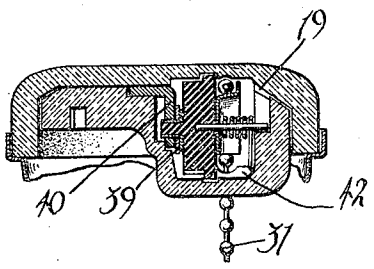

Fig. 5.

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Patented Sept. 23, 1924. 1,509,096

UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PLUG CLUSTER.

Application filed July 30, 1920. Serial No. 400,062.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Plug Clusters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing forming a part of this specification.

My invention relates to electrical connector devices, and more specifically to plug clusters provided with pull switches.

One of the objects of my invention is to provide an improved electrical connector device which will be efficient and durable in operation, simple in construction and cheap to manufacture.

A further object of my invention is to provide an improved pull switch plug cluster.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings in which one embodiment of my invention is shown—

Fig. 1 is a side elevation of a pull switch plug cluster;

Fig. 2 is an axial section of the plug cluster shown in Fig. 1;

Fig. 3 is a plan view of the lower part of the plug cluster;

Fig. 4 is a section substantially on the line 4—4 of Fig. 3;

Fig. 5 is a section substantially on the line 5—5 of Fig. 3; and

Fig. 6 is a bottom plan view of the lower insulating member and related parts.

The pull switch plug cluster shown in the drawings comprises in a general way a plug portion 10 for screwing into an Edison socket, a pair of receptacle portions 11, and a pair of pull switch mechanisms 12 for controlling the circuit between the plug portion 10 and the receptacle portions 11 respectively.

The various contacts, conductors and switch mechanisms are supported in proper relation with respect to each other and suitably insulated by means of three insulating members as follows: A generally cylindrical upper insulating member 13, which supports the center plug contact 14, and insulates it from the threaded shell plug contact 15; a lower substantially circular insulating base 16, which supports the switch mechanisms 12 and the shell and receptacle contacts 17 and 18 respectively, and an intermediate spacing and housing member 19, which covers the switch mechanism supported by the lower insulating member 16, and which is provided with passages for the conductors 20 and 21 leading from the plug portion of the device to the receptacle portion.

The threaded shell contacts 17 of the receptacle portion of the device are always electrically connected with the threaded shell contact 15 of the plug portion, the switch mechanisms 12 controlling the circuit between the center contact 14 of the plug portion and the center contacts 18 respectively of the receptacle portions.

The conducting member 20 is in the form of a screw which not only serves as part of the electrical circuit but also to hold the three insulating members 13, 16 and 19 together.

A hemispherical sheet metal housing 22 is provided for the receptacle contacts, this housing 22 being secured in place by means of insulating bushings 23 which extend through openings in the housing 22 and are threaded onto the threaded shell contacts 17 which are secured to the lower insulating base 16.

The threaded shell contacts 17 are secured to a V-shaped sheet metal stamping 24, having inturned ears 25 which are secured to the lower base 16 by means of a pair of screws 26. The heads of these screws 26 are in engagement with the lower end of of the conducting strip 21, so that the screws form part of the electrical circuit as well as securing means. The circuit from the threaded shell contact 15 of the plug to the threaded shell contacts 17 of the receptacles is from the flange of the threaded shell contact through the conducting strip 21, screw 26 and sheet metal stamping 24 to the threaded shell contact 17. As previously stated the threaded shell contacts 17 of the receptacle portion are thus always in electrical connection with the threaded shell contact 15 of the plug portion, the switch mechanisms controlling the circuit between the center contact 14 of the plug portion and the center contact 18 of the receptacle portions respectively.

The central screw 20 extends from the

plug center contact 14 to a conducting and contact member 27 which is common to the two switch mechanisms 12, this contact and conducting member being secured to the lower insulating member 16 by means of an eyelet 28 into which the lower end of the screw 20 is threaded. This contact and conducting member 27 is provided with a pair of upstanding contact portions 29 for cooperation with the switch mechanisms 12 respectively. Each switch mechanism 12 controls the circuit between one of these contact portions 29 and the center contacts 18 respectively. Each of these switch mechanisms 12 comprises a ratchet-operated commutator 30 which alternately makes and breaks the circuit on each actuation of the pull chain member 31. This commutator 30 comprises a rotatable insulating brush-carrier 32 to which is secured an eccentrically located brush 33, the brush-carrier having a semi-circular eccentrically arranged portion 34 upon which the spring contact member 35 snaps when it rides off the rear end 36 of the semi-circular brush 33. The spring contact member 35 has two spring tongues 37 and 38 respectively, which cooperate with the commutator 32 and the upstanding contact portions 29 respectively, the construction being such that when the spring contact member 35 snaps off from the rear edge of the contact 33 the circuit will be broken in two places, that is to say, the contact portion 37 will snap out of engagement with the contacts 33 and the contact portion 38 will simultaneously snap away from engagement with the upstanding contact 29.

The semi-circular brush 33 has formed integrally therewith an inwardly-extending arm 39, by means of which the semi-circular brush 33 is electrically connected with a bracket 40, which bracket 40 is in turn electrically connected with one of the center contacts 18 by means of a screw 41. This screw 41 serves not only to electrically connect the center contact 18 with the bracket 40 but also serves to hold the center contact 18 and bracket 40 in place on the lower insulating base 16. The circuit through the switch is thus from the upstanding contact member 21 through the spring contact member 35, brush 33, inwardly-extending arm 39, bracket 40 and screw 41 to the center contact 18.

The switch mechanisms 12 are located in recesses 42 in the upper face of the lower insulating base 16, the intermediate base 19 fitting down over the lower base 16 and forming a cover for the switch mechanisms 12.

The use and operation of the device is obvious from the description of the construction and circuit above. The plug portion 10 is screwed into a receptacle and the circuit between the plug portion 10 and receptacle portions 11 respectively may be controlled by pulling on the pull chains 31 respectively.

Access may be had to the switch mechanisms when desired for adjustment or repairs simply by unscrewing the screw 20 and lifting off the plug portion 10 together with the intermediate insulating member 19.

The spacing and housing member 19 serves as an insulating petticoat and, in combination with the bowl-shaped housing member 22, forms an enclosing housing for the receptacle sub-assembly, which sub-assembly comprises the insulating base 16, the receptacle contacts 17 and 18 and the switch mechanism 12.

Certain generic claims covering broadly certain features shown in this application are presented in my copending applications Serial No. 343,757 filed December 10, 1919, electrical receptacle, and Serial No. 356,672, filed February 6, 1920, plug cluster.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A pull switch plug cluster comprising a plug portion, a receptacle sub-assembly, an insulating petticoat and a metal bowl shaped housing member, said receptacle sub-assembly comprising an insulating base, with receptacle contacts and pull switch mechanism mounted thereon, said petticoat and bowl shaped housing member being combined to form an enclosing housing for said sub-assembly.

2. A pull switch plug cluster comprising a plug portion, a receptacle sub-assembly, an insulating petticoat and a metal bowl shaped housing member, said receptacle sub-assembly comprising an insulating base, with receptacle contacts and pull switch mechanism mounted thereon, said petticoat and bowl shaped housing member being combined to form an enclosing housing for said sub-assembly, said bowl shaped housing member being suspended from said sub-assembly.

3. A pull switch plug cluster comprising a plug portion, a receptacle sub-assembly, an insulating petticoat and a metal bowl shaped housing member, said receptacle sub-assembly comprising an insulating base, with receptacle contacts and pull switch mechanism mounted thereon, said petticoat and bowl shaped housing member being combined to form an enclosing housing for said sub-assembly, said bowl shaped housing member being suspended from said sub-assembly, and said sub-assembly being suspended from said plug portion.

4. A pull switch plug cluster comprising a plug portion, a receptacle sub-assembly, an insulating petticoat and a metal bowl shaped housing member, said receptacle sub-assembly comprising an insulating base, with receptacle contacts and pull switch

mechanism mounted thereon, said petticoat and bowl shaped housing member being combined to form an enclosing housing for said sub-assembly, said petticoat being clamped between said plug portion and receptacle sub-assembly.

5. A pull switch plug cluster comprising a plug portion, a receptacle sub-assembly, an insulating petticoat and a metal bowl shaped housing member, said receptacle sub-assembly comprising an insulating base, with receptacle contacts and pull switch mechanism mounted thereon, said petticoat and bowl shaped housing member being combined to form an enclosing housing for said sub-assembly, and a screw extending through said plug portion, petticoat, and insulating base, for supplying current to the receptacle portion, and clamping said petticoat between said plug portion and sub-assembly.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.