Oct. 28, 1941. N. CHIRELSTEIN 2,260,509

ATTACHMENT PLUG

Filed June 27, 1940

Fig. 1

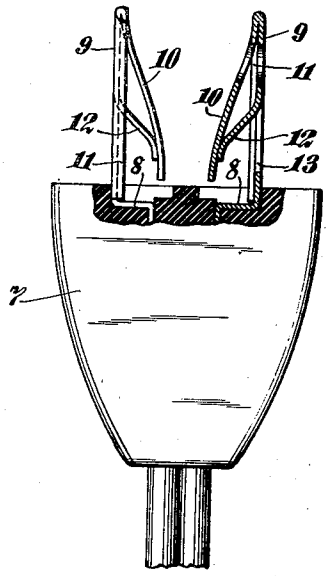


Fig. 2

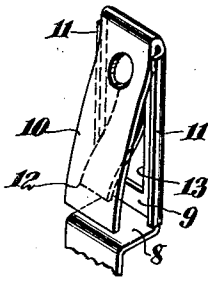


Fig. 3

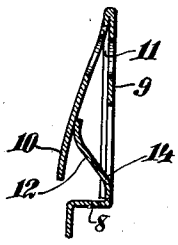


Fig. 4

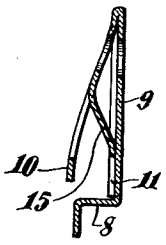


Fig. 5

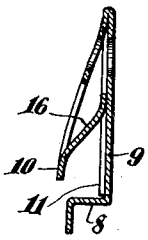
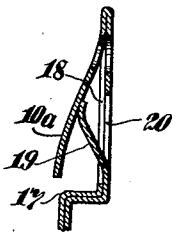


Fig. 6



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2,260,509

ATTACHMENT PLUG

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Application June 27, 1940, Serial No. 342,649

1 Claim. (Cl. 173—361)

The invention herein disclosed relates to electrical attachment plugs, particularly those of the so-called "spring action" type covered in Chirelstein Patent 2,037,562 of April 14, 1936.

As to some features, the present invention relates as well to other Chirelstein Patents 2,159,938, 2,159,939 of May 23, 1939, and 2,187,489 of Jan. 16, 1940.

Objects of this invention particularly are to reduce costs by employing light gage metal for the contact elements and yet retain necessary stiffness of the contact stems and full resiliency of the return bent spring tips or branches of the contact stems.

Further desirable objects and the novel features of construction by which all objects are attained are set forth or will appear in the course of the following specification.

The drawing accompanying and forming part of the specification illustrates the invention as embodied in a number of different forms. Structure however may be modified and changed in various ways, all within the true intent and scope of the invention, as will be apparent from the following description and claim.

Fig. 1 is a broken part sectional and part side elevational view of a plug having contact blades incorporating one embodiment of the invention.

Fig. 2 is a detached perspective view of one of the contact blades, the base portion being broken away.

Figs. 3, 4, 5 and 6 are broken sectional details illustrating other modified forms of the invention.

In Fig. 1, the invention is illustrated in its adaptation to a molded elastic plug body 7, of the type covered in Patent 2,187,489 and the contact blades are accordingly formed with base constructions 8, to fit that particular design of plug body. For other forms of plug bodies, the base portions of the contact blades may be modified to suit.

The projecting straight stem portions 9, of the contact blades are shown as having return bent ends 10, providing spring tips or branches for yielding engagement with companion contacts of the receptacle which the plug is intended to cooperate with.

These blades are made of thin, inexpensive strip metal. To provide the strength and stiffness desirable for the stem portions, the edges of such portions may be formed with angularly turned flanges 11, 11, substantially as disclosed in the Patent 2,159,939 above mentioned.

Such reinforcement overcomes possible inherent weakness in the stem but this may still leave the spring branch portion, in the light metal employed, possibly too yielding for the best electrical and mechanical coupling purposes.

Accordingly, it is a feature of the present invention to reinforce the spring contact branches also and thus make it entirely feasible to employ very light sheet metal in the manufacture of the blades.

In the form of the invention first shown, Figs. 1 and 2, the return bent spring tips or branches 10, are yieldingly reinforced and supported at the back by spring tongues 12, struck out of the intermediate or web portions of the stems 9, in the channel between the reinforcing edge flanges 11.

In the first form of the invention, the spring tongues 12, which back up the return bent spring branches 10, have their free ends severed at 13, from the base portions of the stems, that is, nearest the plug body, so as to slidingly engage the backs of the free ends of the spring branches.

In some instances, it may be found desirable to have the stationary ends of the spring tongues 12, rooted in the base portions of the contact stems, substantially as indicated at 14, Fig. 3, in which instance, the tongues will project in the opposite direction from the spring branches and may engage the latter at points further inward from the free ends of the same.

In some cases, it is found possible to form the spring tongue out of the return bent branch of the contact. Instances of this are shown in Figs. 4 and 5. In the first of these views, the spring tongue 15, is struck back out of the branch portion 10, with its free end directed in the same way as the branch.

In Fig. 5, the spring tongue 16 is rooted in the free end of the branch and extends in the reverse direction.

In both instances, Figs. 4 and 5, the spring tongue struck back from the branch slidingly engages the channel of the stem between the reinforcing side flanges and adds a desired degree of yielding support to the spring branch.

The base portions of the contact blades by reinforcement of the plug body to which they are attached are usually strong enough even in light metal. Where additional reinforcement at the base is desirable, the thin strip material may be doubled after the manner of the above Patent 2,159,938 as here shown at 17, Fig. 6, and in which instance, the spring branch 10a may be struck out at 18, from the inner layer of the doubled stem portion and the spring tongue 19,

be struck out at **20**, from the outer layer of the stem, so as to project through the opening **18**, into engagement with the inner face of the spring branch. This construction may require a greater length of material but the reinforcement of one layer by the other throughout the base and stem may permit use of a slightly thinner gage metal. This relation of one layer reinforcing the other is in effect carried out throughout, where as shown, the spring branch struck out of one layer is reinforced by the spring tongue struck out of the other layer.

While in the several forms shown, the stem of the contact is specially reinforced, by flanging in the one instance, and by doubling the material in the other instance, the invention may be used without any such special reinforcement, that is heavy enough stock be employed to leave the stem sufficiently stiff and strong, without flanges or other reinforcement and the invention is claimed accordingly.

What is claimed is:

A one piece blade for attachment plugs, comprising a single strip of thin sheet metal doubled upon itself into the form of a stem portion and a spring branch portion, said stem portion being substantially straight and having an integral attaching base by which the stem may be mounted in a plug cap, said spring branch portion being inclined away from the straight stem portion, an integral spring tongue struck out of the material of the stem portion between the edges of said stem portion, said spring tongue extending from near the free end of the stem portion on an incline in the same general direction as the spring branch portion and engaging at its free end the inside face of said spring branch portion near the free end of the latter and angularly turned flanges along the longitudinal edges of said stem portion bracing and stiffening the latter to compensate for weakness resulting from striking the spring tongue out of the same.

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