

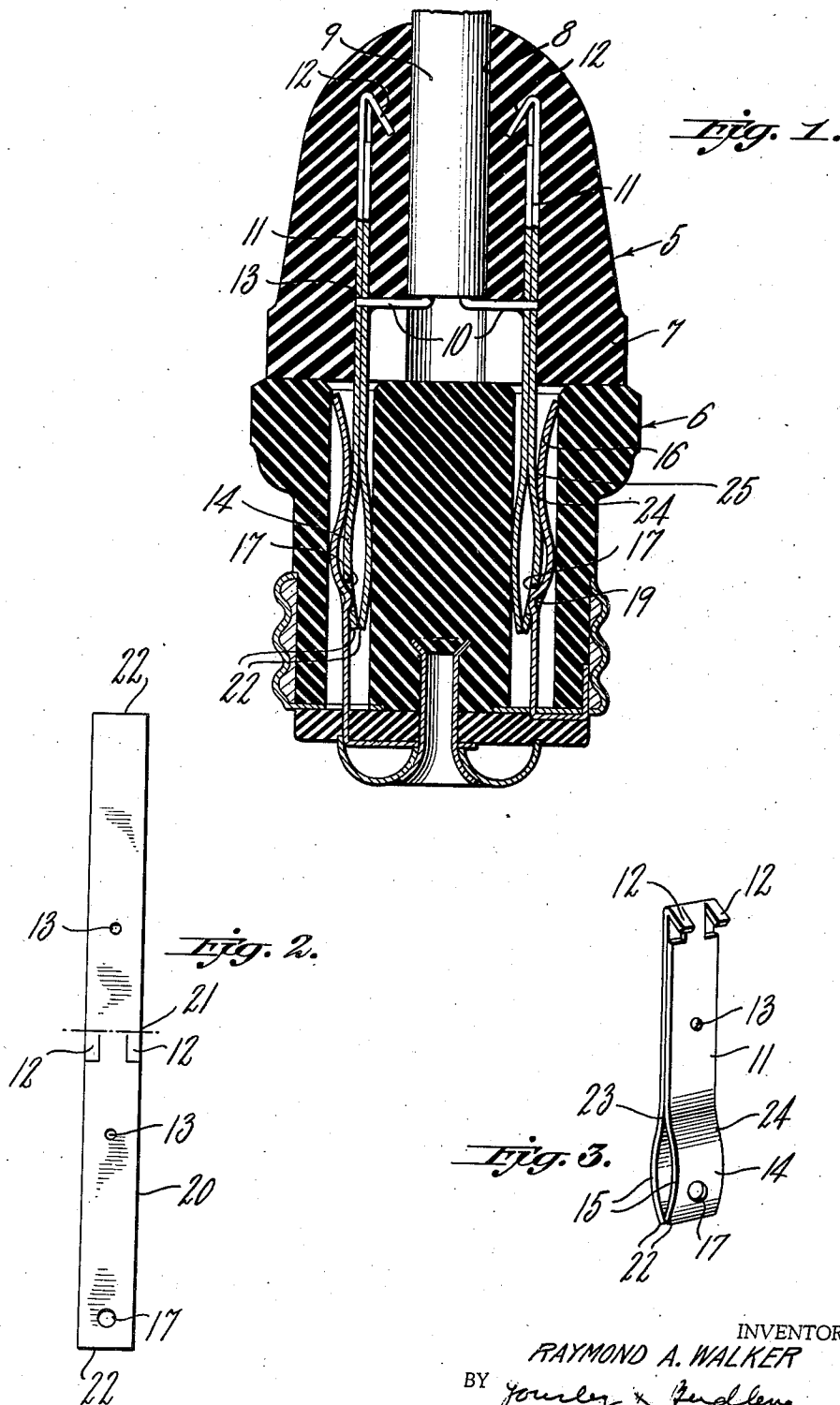
Sept. 3, 1940.

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2,213,293

ELECTRICAL CONNECTOR AND SPRING CONTACT THEREFOR

Filed Dec. 1, 1937



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UNITED STATES PATENT OFFICE

2,213,293

ELECTRICAL CONNECTOR AND SPRING
CONTACT THEREFOR

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Application December 1, 1937, Serial No. 177,454

1 Claim. (Cl. 173—343)

This invention relates to an improved electrical connector and particularly to the improved spring strip metal contact blade used therein. The invention also relates to the method of making the blade.

Heretofore in the manufacture of spring contacts from strip metal, the spring action has been produced by bending one end of the strip of metal backwardly from the front end of the blade so that the bent back end formed the contact portion of the blade. When the blade was inserted in the receptacle the bent back end was flexed at the bend. Such flexing action in the bend often caused the contact to break at this point. Furthermore as the spring action on the contact portion was produced almost entirely by resistance to flexing, at the bend, the spring action was weak and did not effectively cause the blade to exert sufficient pressure on the receptacle at the proper point to form a good contact and to hold the connector in the receptacle.

In accordance with the present invention the contact blade is made from a strip of spring metal which is suitably punched to provide anchoring projections, conductor connecting and locking apertures. The strip is then bent at its middle point, and doubled back on itself so that the ends come together and form the contact end of the blade and the bent end with the anchoring projections thereon forms the anchoring end of the blade. The doubled portions of the strip immediately adjacent the free ends are spaced from one another while such portions are adapted to contact with one another at the free ends and on the other side of such space. Such spaced portions form the spring contact for the blades. As the spring contact portions are supported at both ends they produce a strong resilient action on the sides of the receptacle, which in conjunction with the resilient shoulder formed by the outwardly curved spring contact portions, act to produce a good contact with the receptacle and also to secure the connector to the receptacle.

The foregoing features and objects of this invention are hereinafter described in detail in reference to the accompanying drawing, in which:

Fig. 1 is a cross-sectional view of an electrical connector and the improved contact blades embodying this invention and showing the cooperation between the connector and a receptacle, the inner ends of the connector contact blades being shown in full.

Fig. 2 is a plan view of a punched out strip of metal from which a contact blade may be made; and

Fig. 3 is an isometric view of a finished contact blade.

This invention is illustrated in reference to a male electrical connector 5. The cooperation between the connector 5 and a receptacle 6 of the usual construction is illustrated in Fig. 1. The connector 5 comprises a body 7 which is preferably made of soft rubber as shown herein. The body 7 is provided with a central passage 8 which receives a cord 9 having two conductors 10 incorporated therein. Contact blades 11 are electrically connected to the conductors 10 and are secured in recesses in the body 7 by anchoring projections 12 extending therefrom and into the rubber body. The conductors 10 extend into the connecting holes 13 in the contact blades 11 and are secured thereto by solder.

The contact ends 14 of the blades 11 are provided with spring contacting portions 15 which are adapted to make contact with the contacts 16 in the receptacle 6 of the usual construction. The spring contacting portions 15 are provided with retaining holes 17 which cooperate with the knobs 19 on receptacle contacts 16.

Referring to Fig. 2, the contact blades 11 are made from a strip 20 of metal into which are stamped the conductor connecting holes 13, and connector retaining hole 17, and the outline of the anchoring projections 12. The projections 12 are at the same time bent outwardly and the ends of the strip 20 are bowed outwardly in the direction of the projections 12 to form the spring contacting portions 15. The strip 20 is then bent at its middle point 21 and doubled back on itself so that the ends 22 come together as shown in Figs. 1 and 3 to make the blades 11. If necessary the blades are tempered to provide the desired spring action to the spring contacting portions 15 which are spaced from one another and supported at the point 23 and at the ends 22 when in the receptacle 6, but the ends 22 may be spaced away from each other slightly when out of the receptacle.

When the contact blades 11 of the connector 5 are inserted into the receptacle 6 the shoulders 24 pass over the rounded resilient shoulders 25 on the contacts 16 of the receptacle 6 and the retaining holes 17 fit over the knobs 19 of the contacts 16. The shoulders 24 assisted by the holes 17 acting on the knobs 19 secure the receptacle to the connector.

Due to the fact that the spring contacting portions 15 of the blades 11 are supported at the two points 22 and 23 a strong spring action is exerted between the side of the recess in the

receptacle and the contact 16 by the spring contacting portions 15.

When the blades 11 are inserted in the receptacle 6 the portions 15 are pressed together from the position shown in Fig. 3 to the position shown in Fig. 1. If the spring in the contact 16 is lost and it remains permanently over against the side of the recess in the receptacle, the distance between spring contacting portions 15 is sufficiently great to make contact even though the contact 16 is out of shape.

While the preferred form of this invention has been illustrated and described in detail herein, it will be understood that changes in such details may be made without departing from the spirit of the invention and the scope of the appended claim.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

The combination of a connector and a receptacle, said receptacle having recesses and contacts positioned in said recesses, said receptacle contacts having bowed spring contact portions supported by the walls of said recesses at each of the ends of the bowed portions, said connector having two ply contact blades, said plies being bowed away from each other at the end of said blades to form spring contact portions, the crests of the bowed portions of said connector blades being adapted to spring over the crests of the bowed portions of the receptacle contacts, and when so positioned said bowed portions of said connector blades being compressed between the walls of said recesses and resiliently retained in position by the interlocking spring action of the cooperating bowed portions on the respective receptacle contacts and connector blades.

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