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3,309,178

WIDE CRIMP BLADE

Filed Feb. 12, 1964

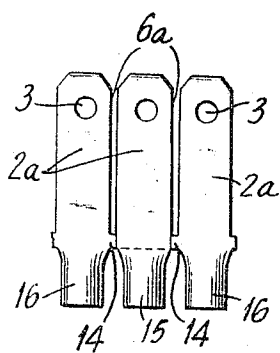


FIG. 6

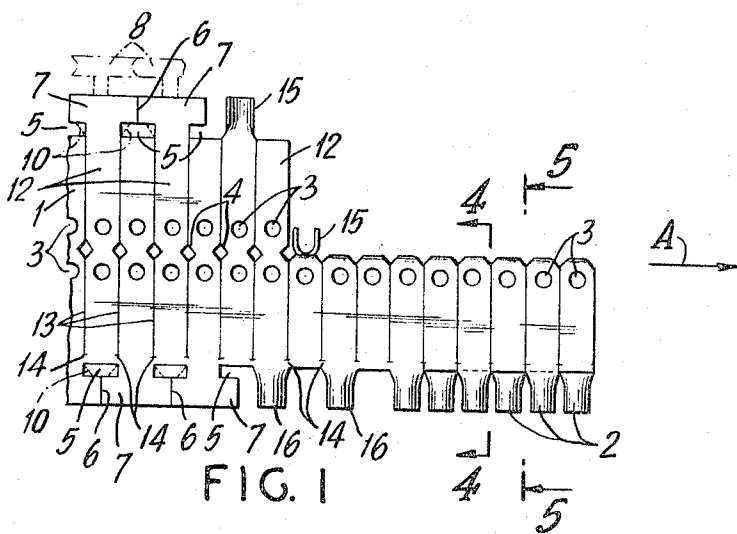


FIG. 1

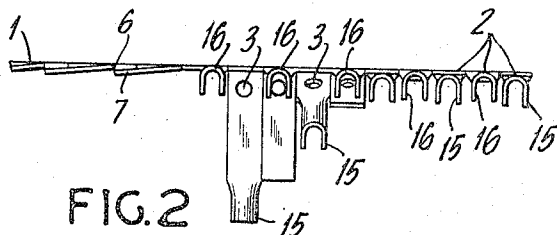


FIG. 2

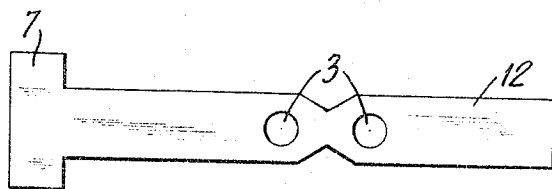


FIG. 3

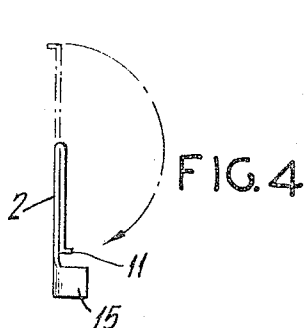


FIG. 4

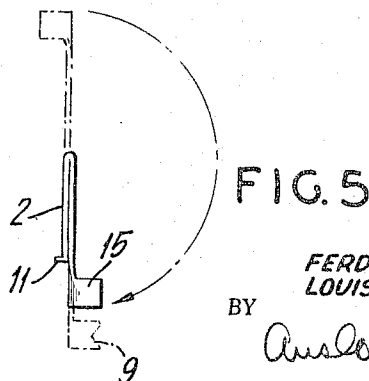


FIG. 5

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WIDE CRIMP BLADE

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In the machine crimping of electrical contact blades, it has been found particularly advantageous to be able to machine crimp blades to wires usually in the form of cord sets which may then be placed into plugs or molded into plugs.

The advantage of machine crimping has saved tremendous amounts of time and money over the former art of soldering and has permitted faster output of less expensive contacts with less labor.

In the machine crimping of wires, the usual wires to be machine crimped are oftentimes machine stripped of insulation so that the wire ends may be easily placed into the contact blade crimp arm end in a crimping die and quickly and effectively crimped, giving a good electrical connection.

In the usual situation where two blades are crimped to two wires, the crimping, separating of the blades from each other and the rest of the stamping strip can be quickly done in one stamping of the die, or more, taking only moments to complete.

Optimum spacing of the crimping ends of the strip of contact blades is such that the centers of the crimping arms are best spaced the same distance apart as the centers of the two wires to be crimped, then the wires are most easily fully placed within the crimp arm end and a minimum separation of the insulated parts of the wire is required.

In a molded plug a long separation may leave separated wires extending beyond the plastic of the molded plug which is undesirable.

Limitations are placed on the wire diameters that can freely be adapted to the spacing of the contact pin crimps since more metal is required to get an acceptable solderless crimp without stray wires sticking out or all wire tightly gripped.

Where strip contact crimp arms are spaced arbitrarily almost any diameter of wire may be used since the crimping arms may come from metal spaced between the individual stampings.

In the past the problem of providing larger crimping arms for closely spaced electrical contact blades has been solved by swedging the crimp arm to provide a greater width than the space between blades. This swedging technique has been advantageous but still limits the wire diameters usable since sufficient thickness of metal must always be provided to give not only a completely encircling crimp but one of strong metal.

According to the present invention a blade blank adapted to a crimp arm portion of greater width than the contact blade itself is provided, or a stamping strip of folded, joined connector blades adapted to crimping arms wider than the blade width, is provided, the stamping strip having easily severable blades.

Although such novel feature or features believed to be characteristic of the invention and are pointed out in the claims, the invention and the manner in which it may be carried out, may be further understood by reference to the description following and the accompanying drawings.

FIG. 1 is a plan view of a stamping strip showing the progressive or different stages of manufacture of contacts of the present invention.

FIG. 2 is a front elevation of FIG. 1.

FIG. 3 is a contact blank of the present invention.

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FIGS. 4 and 5 are side elevation details of folding of contacts of the present invention.

FIG. 6 is a further embodiment of the present invention.

The terms and expressions which are employed are used as terms of description, it is recognized, though, that various modifications are possible within the scope of the invention claimed.

The stamping strip 1 moves in the direction A as the contacts 2 are formed. While FIGS. 1 and 2 show completed contacts emerging at the right of the strip, the first holes punched or cut into the metal strip 1 are the round holes 3, the diamond-shaped holes 4 and the oblong holes 5. The strip is severed at the oblong hole 5 by cuts 6 which define the flat portion 7 which form the crimp portion of the contact.

In FIG. 1 indicated in phantom are cuts defining flat portions 8 which may be cut out of a wider strip 1 ultimately to be formed into an insulated crimp 9 as indicated in FIG. 5.

As indicated in phantom in FIG. 1, a trapezoidal cut 10 may be made, ultimately to be formed into a lip 11 as shown in FIGS. 4 and 5. The insulation crimp 9 or lip 11 are of some advantage for some contact blade needs.

The cuts 6 and oblong holes 5, while being spaced apart from each other the same distance and while being the same size, are eccentric of each other approximately a blade's width apart on the opposite side of the stamping strip 1 so that when the contact blank 12 is formed by cuts 13, identical contact blanks 12 are left on the stamping strip 1. Successive blanks are joined at points 14, juxtaposed in inverted relation. The joints 14 are easily severable, yet are strong enough to maintain the contacts 2 in strip form.

The blanks 12 joined on the strip 1 at a point 14 on each blank 12 are then stamped to form the flat portions 7 or head of the T-shaped blank 12 into U-shaped crimping arms 15, 16, arms 15 are stamped facing in one direction and arms 16 facing in another direction from the stamping strip 1.

Once the crimping arms 15, 16 have been formed, the blanks 12 are underfolded along the leg portion of the T-shaped blank 12 as shown in FIGS. 1, 2, 4 and 5 so that blanks 12 with crimping arms 15 have their crimping arms 15 juxtaposed to blanks 12 with their opposite fold crimping arms 16. Thus folded and stamped unified strip of contacts 2 emerges, held at points 14 and adapted to be strip fed onto a crimping machine for the attachment of wires.

Once molded or otherwise used in an electric plug after being machine crimped, the difference in folding is not apparent and in any event does not affect the electrical characteristics of the blades themselves.

The lip 11 while not essential to invention when desired, has certain uses when such contacts 2 are used in certain molds when being molded into electric plugs.

The provision of an insulation crimp 9 does not alter the folding pattern of the present invention and may be used where a strong grip is required, both as to the electric wires in actual contact and as to the outer insulation of the wire to provide relief against direct strain in use, of the crimped wires and the crimped arms 15, 16.

In the past crimps adapted to heavy gauge wire have not been able to be closely spaced for machine crimping, where the wire centers of even relatively heavy gauge double cord wire are still approximately the same distances apart. It is advantageous to be able to machine strip a double cord of insulated wire and be able to crimp and sever two wires in a crimping die rather than require two separate operations.

Where strip fed wide crimps have been provided in the

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past, it has been generally necessary to individually crimp the wires or separate the individual cords of wire a long enough distance to have the stripped ends in the crimping arms for double crimping. This has always had the attendant problem of making certain that the entire stripped portion of wire is in the crimping die at the time of the crimp. A long separation between the insulated cords of wire oftentimes requires more plastic and a greater size plug to make certain that separated cords of the wires are completely enclosed in the plug or may produce a commercially unacceptable plug with separated cord protruding from the cap.

While the preferred embodiment of the present invention has been shown, alternate folding under and over from the blade blank 12 on the stamping strip 1 produces identically folded blades joined in strip form, as shown in FIG. 6. FIG. 6 also shows contacts 2a further spaced apart by a cut 6a. Such operation has proven satisfactory, especially where, for some reason identical blades are required.

The terms and expressions which are employed are used as terms of description, it is recognized, though, that various modifications are possible within the scope of the invention claimed.

Having thus described certain forms of the invention in some detail, what is claimed is:

1. A plurality of adjacent electric contact blades comprising a first blade portion, a second blade portion folded over said first portion, and a crimping portion extending from one of said blade portions and said crimping portion being of a width greater than said blade portion.

2. A plurality of adjacent electric contact blades comprising a first blade portion, a second blade portion folded over said first portion, and a crimping portion alternately extending from one of said blade portions and said crimping portion being of a width greater than said blade portion.

3. A plurality of adjacent electric contact blades comprising a first blade portion, a second blade portion folded over said first portion, a lip extending from one of said blade portions, and a crimping portion extending from the other of said blade portions and said crimping portion being of a width greater than said blade portion.

4. A plurality of adjacent electric contact blades comprising a first blade portion, a second blade portion folded over said first portion, and a wire crimping portion extending from one of said blade portions; said wire crimping portion being of a width greater than said blade portion; and an insulation crimping portion extending from said wire crimping portion.

5. An electrical contact blade stamping strip comprising a plurality of adjacent cut out T-shaped contact blanks,

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the head portions of each adjacent blank being substantially opposite each other, the leg portions of each said contact blanks being juxtaposed and adapted to be folded, each said head portion being of a width greater than the width of said leg portion, and each said leg portion connected on the same foldable section of said leg portion.

6. An electrical contact blade stamping strip comprising a plurality of adjacent cut out T-shaped contact blanks, the head portions of each adjacent blank being substantially opposite each other, the leg portions of each said contact blanks being juxtaposed and adapted to be folded, each said leg portion including a section adapted to be formed into a lip, each said head portion being of a width greater than the width of said leg portion, and each said leg portion connected on the same foldable section of said leg portion.

7. An electrical contact blade stamping strip comprising a plurality of adjacent cut out T-shaped contact blanks, the head portions of each adjacent blank being substantially opposite each other, said head portion including a further T portion extending therefrom the leg portions of each said contact blanks being juxtaposed and adapted to be folded, each said head portion being of a width greater than the width of said leg portion, and each said leg portion connected in the same foldable section of said leg portion.

8. A plurality of spaced electric contact blades comprising a first blade portion, a second blade portion folded over said first blade portion, and a crimping portion extending from one of said blade portions and said crimping portion being of a width greater than said blade portion.

9. An electrical contact blade stamping strip comprising a plurality of spaced apart cut out substantially T-shaped contact blanks, the head portion of each adjacent blank being substantially opposite each other, the leg portions of each said contact blanks being spaced apart and adapted to be folded, each said head portion being of a width greater than the width of said leg portion, and each said leg portion connected to each other at a point.

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