United States Patent [19]

Raitport et al.

[11] **3,754,204**

[45] **Aug. 21, 1973**

[54] **TERMINALS FOR ELECTRIC CIRCUIT AND APPARATUS**

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[22] Filed: **Oct. 8, 1970**

[21] Appl. No.: **79,027**

[52] **U.S. Cl.** ..... **339/32 R,** 339/256 SP, 339/258 S

[51] **Int. Cl.** **H01r 11/22,** H01r 27/00

[58] **Field of Search** ..... 339/32, 33, 276, 339/275 B, 275 C, 278 C, 278 R, 258 R, 258 S, 258 F, 256 R, 256 SP, 252 S, 252 F; 24/129 B

[56] **References Cited**

UNITED STATES PATENTS

3,517,377	6/1970	Olsson	339/273 F
2,727,219	12/1955	Bergan	339/258 S
2,735,998	2/1956	Martines	339/258 S
3,205,470	9/1965	Tyler	339/32 R
1,255,037	1/1918	Oestricher	339/276 T X
2,981,926	4/1961	Boardman	339/256 SP
3,199,068	8/1965	Neenan	339/258 S X
1,536,338	5/1925	Glamzo	339/256 SP
3,048,812	8/1962	Heidler	339/252 S
1,798,812	3/1931	Rosenbeck	339/258 S
3,568,965	3/1971	Clark	24/129 B X
3,222,633	12/1965	Skony	339/258 S
3,546,664	12/1970	De Bolt et al.	339/276 F X

FOREIGN PATENTS OR APPLICATIONS

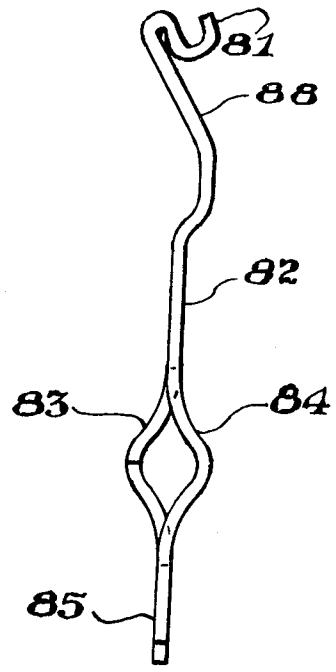
952,531	3/1964	Great Britain	339/258 S
1,278,068	10/1961	France	339/258 S
1,579,511	7/1969	France	339/258 S
500,832	3/1954	Canada	339/258 S

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Assistant Examiner—Terrell P. Lewis

[57] **ABSTRACT**

Universal terminals suitable for connecting conductors through either crimping, soldering or slip on connector, or a combination of any of these.

6 Claims, 6 Drawing Figures



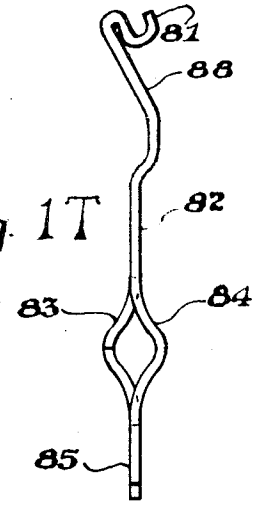


Fig. 1T

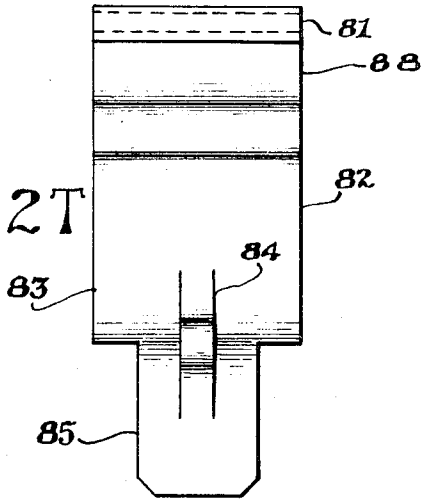


Fig. 2T

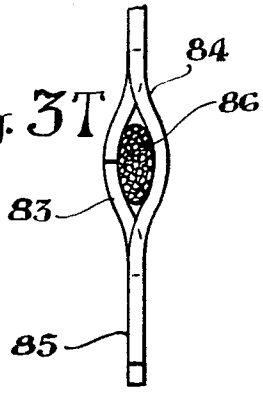


Fig. 3T

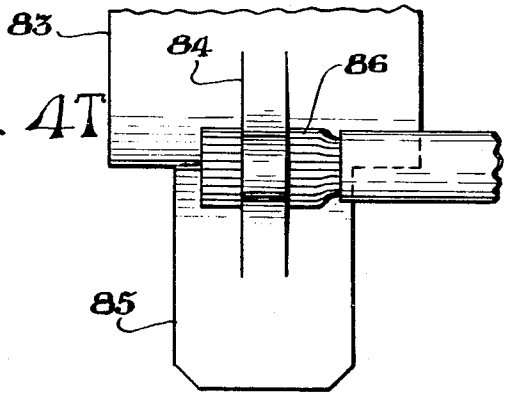


Fig. 4T

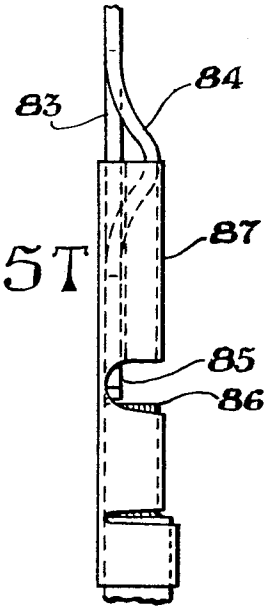


Fig. 5T

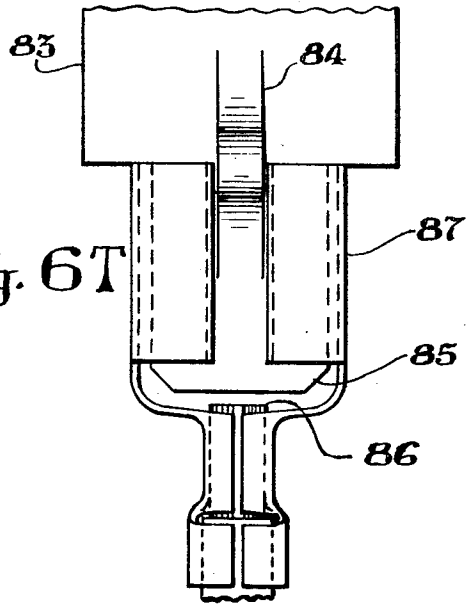


Fig. 6T

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TERMINALS FOR ELECTRIC CIRCUIT AND APPARATUS

The objective of this invention is to reduce the cost of switch wiring, improve the quality and safety of contacts, i.e. reduce amount of electrical resistance by eliminating or reducing probability for foreign matters; reduce or eliminate probability for loosensing contacts due to vibration.

Another objective of this invention is to facilitate future miniaturization of heavy duty switches.

On the attached drawings, FIGS. 1T through 6T represent new universal terminals which are able to hold the conductor by either crimping, soldering or slip-in terminals.

FIG. 1T defines the side elevation view of new type of unversal terminal.

FIG. 2T is the front elevation of the universal terminal.

FIGS. 3T and 4T, respectively represent the universal terminal with the wire-conductor crimped into it.

FIGS. 5T and 6T respectively demonstrate side view and front view of the universal terminal with a slip-on connector.

81 is the contact portion of the terminal which may have an exotic material contact fastened to it. However, since **81** is curled and it receives the moving contact into embracing it from three sides with a spring pressure with relatively a large contact area, exotic contact material might not be needed; or plating only might be satisfactory.

In other cases those terminals might be used without curle **81.** In such event, portion **88** would be the contact area with or without exotic material.

This portion **81** and **88** is located interiorly of a switch. **83** is the portion of the terminal from which the middle is parted to form the bulge **84. 83** is bulged also, however in the opposite direction from **84.** Consequently bulges **83** and **84** together form something similar to a loop. (see FIG. 3T) Conductor **86** is placed into above loop, then bulges **83** and **84** could be squeezed with regular pliers (special tools are not necessary) and the conductor will undergo plastic deformation. The edges of bulge **84** and inner edges of bulges **83** will dig into the wire makeing a good, permanent connection. Spacing of **82** is just for tool clearance. Simultaneously, edges of bulges **84** and **83** would scrape the conductor at four points cleaning off any contamination and so assuring metal to metal contact without preparation work.

85 is the tail end of the terminal for use with conventional slide-on connector **87.** The conductor **86** is conventionally fastened to the connector **87.** Then the connector is slipped on the terminal tail **85.** The connector then elastically deforms the bulge **83** pushing it back into line with tail **85.** This produces a firm spring connection between the terminal and connector.

If desired the conductor could also be soldered. In that case, it would be placed between the bulges **83** and **84** similar to the above said in event of crimping is used without connectors. Then the conductor could be soldered to the bulges **83** and **84.**

It is to be understood that subjected invention is not limited to above description. Many variations of mechanisms could be produced utilizing the same basic invention. Above descriptions are only examples of the almost umlimited applications for this invention.

We request a Letter of Patent to cover the following.

We claim:

1. A spade terminal having one end and an opposite end, said one end having a pair of parallel slits extending longitudinally along the center of said terminal forming a spring strip and a pair of margins on opposing sides of said strip, said strip being bulged outwardly from the plane of said terminal and said margins being bulged outwardly from the plane of said terminal in a direction opposite from that of said strip thereby forming a loop and whereas said bulging of said margins are suitable to engage with a female spade connector.

2. A spade terminal as defined in claim **1,** in which said opposite end is U-shaped to receive a mating terminal.

3. A spade terminal as defined in claim **2,** in which said U-shaped end is curled outwardly and cantilevered from the main body off the axis of the main body of said terminal.

4. A spade terminal as defined in claim **3,** in which legs of said U-shaped end are spring loaded; whereby said U-shaped end applies pressure to mating terminal from three sides and passage of current is distributed over the full area of said U-shape.

5. A spade terminal as defined in claim **1** whereas the said bulged portions are spring loaded and therefore elastically deform when fit into a conventional female spade connector, thereby generating a pressure between said terminal and said connector.

6. A spade terminal for connecting electrical leads formed with a U-shape on one end in combination with a mating terminal embraced by the legs of said U, whereas the opening of said U, which removably receives said mating terminal, is curled outwardly and cantilevered from main body of said terminal; and whereas said curled U is off axial position with main body of said terminal; and whereas said U is spring loaded, wherefore current passes into said mating terminal through both legs of said U shape and said U clamps with pressure said mating terminal.

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