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ELECTRICAL TERMINAL AND THE LIKE

Filed Nov. 2, 1961

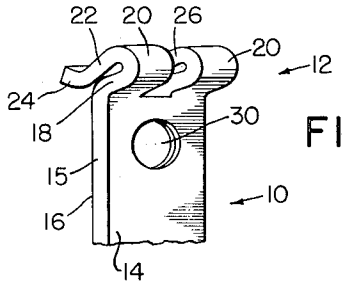


FIG-1

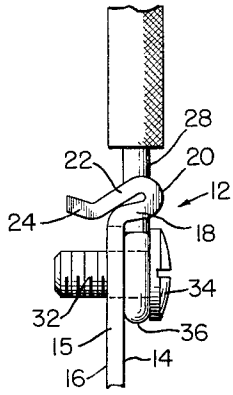


FIG-2

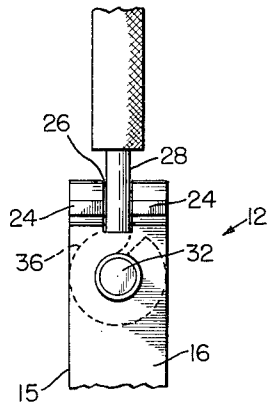


FIG-3

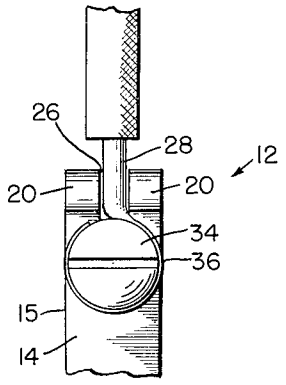
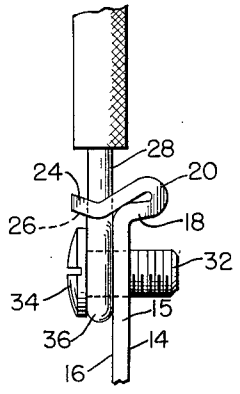


FIG-4

FIG-5



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ELECTRICAL TERMINAL AND THE LIKE

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This invention relates to an electrical terminal and the like which is capable of holding an electrical conductor firmly and without danger of permitting the conductor to become loosely disconnected from the terminal.

Many instances are encountered where the switch panel or the like is removed from the appliance with the switch still assembled on the panel. Such removal of the panel causes movement of the relatively stiff wire which is still connected to the electrical terminal of the switch. This movement of the wire, on present terminals, often loosens the terminal screws. Many times the panel is re-installed without retightening the screws. When this happens, the terminal is almost certain to be burned and destroyed by the arcing that takes place due to the loose terminal screw. The new terminal of this invention will prevent this type of difficulty.

Another feature of this invention includes a terminal construction which permits the connector to be attached to either side of the terminal in a manner which locks the conductor against rocking movement regardless of the side on which the terminal conductor is placed.

Another feature of this invention includes a construction so the terminal may be made of a single rod or ribbon by simple end bending and slotting operations.

Another feature of this invention includes a construction wherein the terminal is provided with means for preventing the rocking movement of the wire conductor which often tends to loosen the screw on the terminal, and this construction may be provided on either side of the terminal, so the conductor may be attached to either side of the terminal.

Accordingly, it is an object of this invention to provide an electrical terminal and the like having one or more of the features herein disclosed.

Other objects are apparent from this description, and from the accompanying drawings in which:

FIGURE 1 is a perspective view of the terminal rod or ribbon.

FIGURE 2 is a side elevation of the electrical terminal and the like.

FIGURE 3 is a side view of FIGURE 2.

FIGURE 4 is a view similar to FIGURE 3, but showing the other side of the electrical terminal.

FIGURE 5 is a view similar to FIGURE 2, but showing the connector and screw being attached to the rod or ribbon on the opposite side from that shown in FIGURE 2.

Certain words indicating direction, relative position, etc., such as "upper," "lower," "above," "below," etc., are used herein for the sake of clearness and brevity. However, it is to be understood that such words are used to describe the positions of various parts on the drawings, but the actual devices may have different directions, relative positions, etc.

In one embodiment of this invention, an electrical terminal or connector may include a rod or flat conductive metallic ribbon **10**, as shown in FIGURE 1. This rod or ribbon **10** may have an end **12** with a side construction which includes opposite broad sides **14** and **16**. The ribbon or rod may be substantially T-shaped with a cross piece having laterally extending arms **20** and **24** and with a longitudinal support **15**.

The end **12** of the support **15** may have a transverse conductor locking construction with oppositely extending

transverse extensions, portions, or arms having oppositely directed electrical conductor receiving and locking notch or opening means which may take the form of an initial bend **18** with a portion **20** extending beyond one broad side **14**. A subsequent reverse bend **22** may have a portion **24** extending beyond the other broad side **16**.

The transverse conductor locking construction at end **12**, such as the bends **18** and **22**, may have electrical conductor receiving and locking means which may take the form of locking openings or notches on opposite sides of said ribbon which may be produced by a slot **26** which may extend along the center of the bends **18** and **22** to receive and lock an electrical conductor, such as conductor **28**, as shown in FIGURES 2–4, which may pass through the slot **26** and which may be received and locked in such slot in a manner to prevent the conductor **28** from rocking back and forth edgewise of the terminal ribbon.

The rod or ribbon **10** may have conductor fastening means effective to receive and hold a conductor. Such means may be a tapped hole **30** extending through the rod or ribbon, for example, transversely to the broad sides **14** and **16** and adjacent to the slot **26**. A screw **32**, which has an electrical conductor retaining screw head **34** is insertable into the tapped hole **30** from either end of the hole and from either broad side **14** or **16**, with the screw head **34** located adjacent either of the respective broad sides **14** or **16** of the ribbon or rod **10**.

The electrical conductor **28** may pass through the opening or slot **26**, where it is locked against sidewise movement and may then extend substantially around the screw **32**, as by the loop **36** which is retained in place by the screw head **34**.

FIGURES 2, 3, and 4 show the screw **32** as having been inserted through the end which is adjacent to the broad side **14**, so the screw head **34** retains the conductor loop **36** in place adjacent the side **14**, and the conductor **28** passes through the opening or slot **26** also adjacent to the side **14**.

FIGURE 5 shows the screw **32** as having been inserted from the other end of the hole **30**, adjacent to the side **16**. The conductor **28** passes through the respective opening or locking means or slot **26**, so it is locked and received against sidewise rocking movement. The conductor **28** may extend substantially around the screw **32**, as by a loop **36**, which may be secured around the screw **32** by tightening the screw head **34** against the loop **36** and the loop against the side **16**.

In view of the fact that the screw **32** may be inserted from either end of the tapped opening **30**, and from either side **14** or **16**, it is possible to assemble the terminal or connector on various switches and the like without regard to which side of the connector is to be made more readily available for attachment of the conductor **28**. Either broad side **14** or **16** and end of tapped hole **30** may be made available for insertion of the screw **32** and the attachment of the conductor without the necessity of access to the other broad side or the other end of the tapped hole.

Regardless of which side of the terminal, such as side **14** or **16**, is used for the attachment of the conductor **28**, the conductor **28** is received and locked by the locking means or slot **26** against sidewise movement which would otherwise tend to unscrew the screw **32** when such rocking movement would tend to turn the screw **32** in a loosening direction, such, for example, in a counterclockwise direction. Also the screw head **34** retains the conductor **28**, at the loop **36**, against detachment from the screw in a direction longitudinal of the screw.

A method of manufacturing an electrical connector and the like, such as terminal **10** has been provided. An initial bend **18** is made at the end of a flat conductive rib-

bon which has opposite broad sides **14** and **16** with a portion **20** of said bend **18** extending beyond one broad side **14**. A reverse bend **22** is made with a portion **24** extending beyond the other broad side **16**. An electrical conductor receiving and locking slot **26** is made or cut in the end of the ribbon **10** at the portions **20** and **24** which are made to extend beyond the broad sides **14** and **16**. A screw hole **30** is tapped through the ribbon **10** transversely to the broad sides **14** and **16** and adjacent to the slot **26**. The hole **30** is tapped to receive a conductor-retaining screw such as **32** from either end of the tapped hole.

The method also may include the insertion of a conductor retaining screw **32** in one end of the tapped hole **30**, which screw is also insertable into the other end of the screw hole **30**.

The method may also include producing a transverse conductor locking construction such as the bends **18** and **22** at the end **12** of the relatively rigid conductive rod **10** with a portion **20** extending beyond one side of the rod and with another portion **24** extending oppositely beyond the other side of the rod. Conductor receiving and locking means may be formed on the portions **20** and **24**, and such means may take the form of the opposed ends of a single slot **26**. The screw receiving hole **30** may be tapped transversely to the rod **10** adjacent to the locking means **26** to receive an electric conductor retaining screw head **34** at either end of the screw hole **30** with the screw head **34** adjacent to either of the respective conductor receiving and locking means at either end of the slot **26**. This method may also include the insertion of the screw **32**, which is a conductor retaining screw, in one end of the tapped hole **30**, which screw is also insertable to the other end of the hole **30**.

It is thus to be seen that a construction and method have been provided for an electrical connector or terminal and the like which is very efficient in retaining the screw and conductor rigidly in place and without danger of having the screw and conductor becoming loose due to the movement of the conductor back and forth in various working operations, such as in the assembly of a panel and the like which is being produced. Also this construction and method prevent any accidental loosening of the screw construction and of the conductor when a repair is being made in the panel and the like which causes the conductor **28** to be moved or rocked transversely of the screw.

In addition, a connector or terminal has been provided in which the conductor **28** may be attached to either side **14** or **16** of the terminal in a manner that the conductor is prevented from rocking back and forth and causing the screw **32** to become loose by such rocking movement regardless of the side to which the conductor is attached.

While the form of the invention now preferred has been disclosed as required by statute, other forms may be used, all coming within the scope of the claims which follow.

What is claimed is:

1. An electrical terminal and the like comprising: a flat conductive ribbon having an end and opposite broad sides with its end having an initial bend with a portion extending beyond one broad side and with a subsequent reverse bend with a portion extending beyond the other broad side, said portions having an electrical conductor receiving and locking slot transverse to said broad sides, said ribbon having a tapped hole extending through said ribbon transversely to said broad sides and adjacent to said slot; and a screw having an electrical conductor retaining screw head, said screw being insertable into said tapped hole from either broad side of said ribbon with its screw head located adjacent either respective broad side of said ribbon adjacent said slot.

2. An electrical terminal and the like comprising: a flat conductive ribbon having an end and opposite broad sides with its end having an initial bend with a portion extending beyond one broad side and with a subsequent reverse bend with a portion extending beyond the other side, said portions having an electrical conductor receiving and locking slot transverse to said broad sides, said ribbon having a tapped hole extending through said ribbon transversely to said broad sides and adjacent to said slot; a screw having an electrical conductor retaining screw head, said screw being inserted into said tapped hole from one broad side with its screw head located adjacent said one broad side of said ribbon adjacent said slot and said screw being insertable into said hole from the other broad side; and an electrical conductor passing through and being locked in said slot, extending substantially around said screw and being retained in place by said screw head.

3. A method of manufacturing an electrical terminal and the like which comprises: making an initial bend at the end of a flat conductive ribbon having opposite broad sides with a portion of said bend extending beyond one broad side; making a reverse bend with a portion extending beyond the other broad side; making a conductor receiving and locking slot in said portions transverse to said broad sides; tapping a screw hole through said ribbon transversely of said broad sides and adjacent to said slot, said hole being tapped to receive a conductor retaining screw from either end of said tapped hole.

4. A method according to claim **3** in which a conductor retaining screw is inserted in one end of said tapped hole and is insertable into the other end of said screw hole.

5. An electrical terminal and the like comprising: a flat conductive ribbon having an end and opposite broad sides with its end having an initial bend with a portion extending beyond one broad side and with a subsequent reverse bend with a portion extending beyond the other broad side, said portions having an electrical conductor receiving and locking slot transverse to said broad sides, and conductor fastening means below said bends and effective to receive and hold a conductor which passes through said slot.

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