United States Patent

Grieshaber

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[54] COMBINATION LEAD WIRE TERMINAL

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[52] **U.S. Cl.** .....**339/246,** 339/264 R

[51] **Int. Cl.**.....**H01r 7/24**

[58] **Field of Search** .....339/246, 249 R, 249 A, 250, 339/264, 266, 269, 270 R, 263

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[57] **ABSTRACT**

A combination lead wire terminal comprising a base having a centrally positioned threaded hole therein and a clamping plate in spaced relation thereto provided with an opening aligned with the threaded hole. The base and clamping plate are connected for relative movement by means of a narrow strip integral with both the base and clamping plate. A terminal screw having a head and a threaded shank is threadedly mounted in the threaded hole in the base with the shank extending through the opening in the clamping plate whereby rotation of the terminal screw will cause the terminal head to engage the clamping plate and move it toward the base.

2 Claims, 5 Drawing Figures

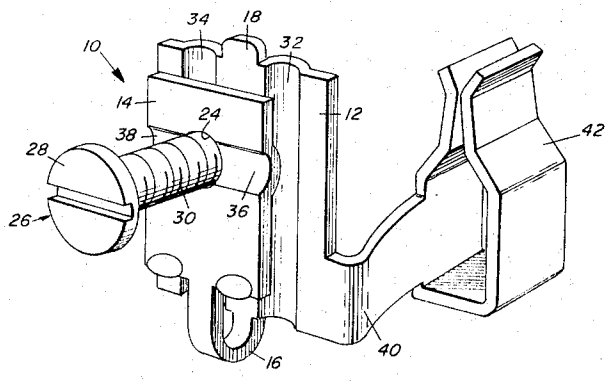
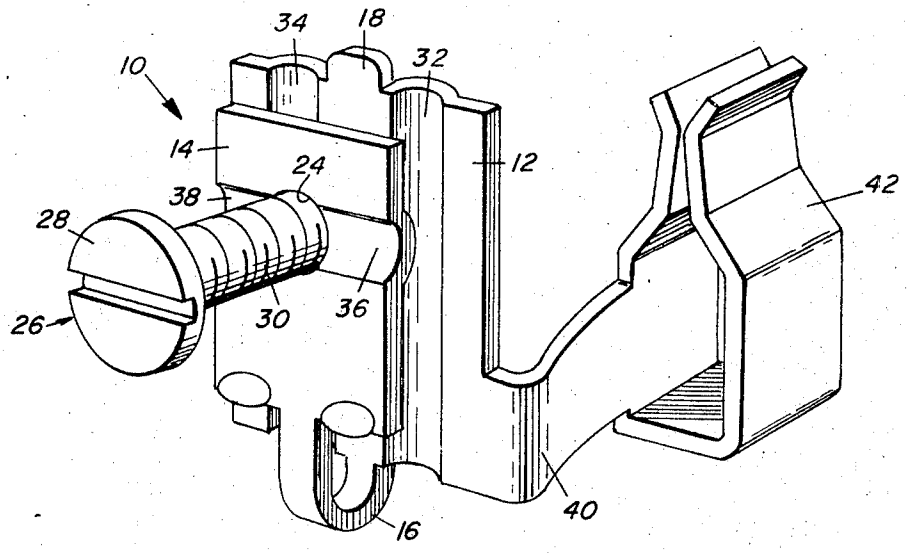


FIG. 1



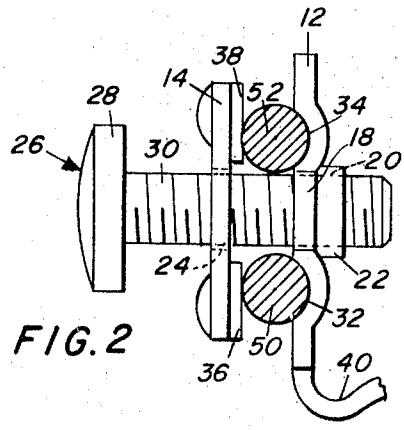


FIG. 2

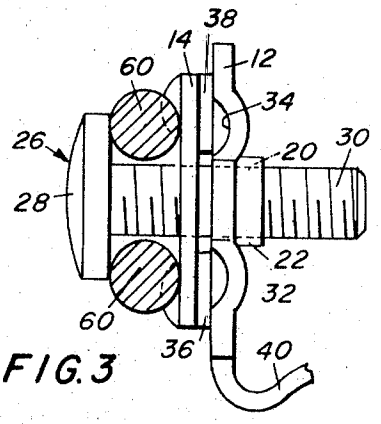


FIG. 3

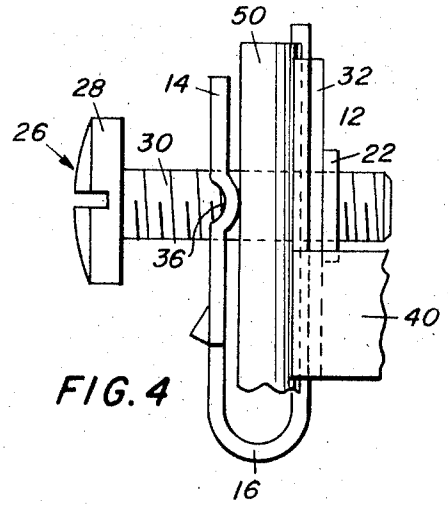


FIG. 4

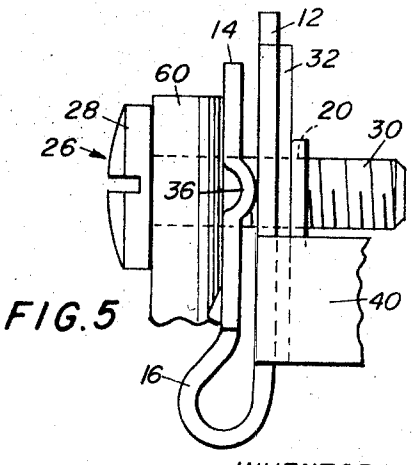


FIG. 5

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COMBINATION LEAD WIRE TERMINAL

SUMMARY OF THE INVENTION

This invention relates to a combination lead wire terminal adapted for both back wiring and loop wiring.

In back wiring a lead wire is stripped of its insulation and inserted into the terminal assembly and then secured by clamping it by means of a terminal screw without the necessity of looping the wire about the terminal screw. This type of wiring is obviously much faster than loop wiring wherein the lead wire is stripped of its insulation and looped around the terminal screw after which the screw is tightened down to secure the looped wire.

The advantages in having a terminal adaptable for either type of installation are immediately apparent.

In view of the above, it is an object of this invention to provide a terminal assembly which is adaptable for either back wiring or loop wiring.

It is another object to provide a combination terminal including a base and a clamping plate wherein the clamping plate is flexibly secured to the base by means of a narrow connector integral with both the base and the clamping plate.

It is yet another object to provide a combination lead wire terminal comprising a base having a threaded hole extending therethrough, a clamping plate spaced therefrom and having an opening aligned with the aforesaid hole, a connecting strip integral with the base and clamping plate to flexibly connect the two, a terminal screw having a head and a threaded shank, said shank extending through the clamping plate opening and being threadedly mounted in the threaded hole in the base whereby rotation of the terminal screw will draw the head into contact with the clamping plate and force it toward the base.

DESCRIPTION OF THE DRAWING

The above and additional objects and advantages will become more apparent when taken in conjunction with the following detailed description and drawing disclosing by way of example one preferred embodiment of this invention.

In the drawing:

FIG. 1 is a perspective view of the combination lead wire terminal in association with a conventional spring contact assembly adapted to receive the contact blade of a standard plug;

FIG. 2 is a top plan view of the combination lead wire terminal as used in back wiring wherein two straight base wires are connected thereto;

FIG. 3 is a top plan view of the combination lead wire terminal as employed in conventional loop wiring;

FIG. 4 is an elevational view of the arrangement of FIG. 2, illustrating the manner in which the straight wire is gripped between the base and clamping plate; and

FIG. 5 is an elevational view of the arrangement of FIG. 3 showing the gripping in the loop wiring use.

DETAILED DESCRIPTION OF THE INVENTION

As illustrated in the various figures of the drawing, the combination lead wire terminal **10** comprises a base **12** with a clamping plate **14** held in spaced and parallel relation thereto by means of connecting strip **16** integral with both the base and clamping plate. It should be noted that the connecting strip **16** is quite narrow as compared to the clamping plate so that the plate may easily move toward the base to provide the desired clamping action.

The base **12** is provided with a centrally disposed hole **18** having a threaded portion **20** in the enlarged integral portion **22** of the base. Similarly, the clamping plate **14** has an opening **24** aligned with threaded hole **18** in the base **12**. A terminal screw **26** having a head **28** and a threaded shank **30** is assembled with its shank extending through hole **24** in the clamping plate and threadedly engaging base threaded portion **20**. With the terminal screw so oriented, the terminal head **28** will be spaced from and outwardly of the clamping plate **14**.

A pair of longitudinal parallel grooves **32** and **34** are provided in base **12** one either side of connecting strip **16**. The clamping plate **14** is formed with outwardly curved clamping portions **36** and **38** aligned respectively with grooves **32** and **34** in the base. It should be noted that clamping portions **36** and **38** are transversely positioned with respect to the grooves **32** and **34** to provide optimum gripping.

As shown in FIG. **1**, the base **12** has a tab portion **40** extending therefrom which is connected to a conventional spring contact assembly **42** adapted to receive the contact blade of a standard plug. Obviously, the combination lead wire terminal of this invention may be used with other types of contact units as well.

As previously set forth, this combination lead wire terminal is adapted for back wiring and the well known loop wiring wherein the conductor is looped around the terminal screw shank and the screw tightened down. The back wiring arrangement is illustrated in FIGS. **2** and **4** while the loop wiring is shown in FIGS. **3** and **5**.

Referring particularly to FIGS. **2** and **4**, a pair of straight bare lead wires **50** and **52** have been placed in base grooves **32** and **34**, respectively, with transverse clamping portions **36** and **38** retaining the wires in said grooves. Tightening down of terminal screw **26** forces the head **28** to engage the clamping plate **14** to cause the lead wires **50** and **52** to be firmly gripped in the position aforedescribed. As illustrated in FIG. **4**, the clamping plate **14** is parallel to base **12**, such condition is maintained at all degrees of tightness. Such is made possible by a number of features. Specifically, the base carries the threaded section into which the terminal shank **30** is threaded. Thus the base **12** is relatively stationary with respect to the clamping plate **14**, which plate moves under pressure of the terminal head **28** bearing against the plate upon the tightening of the terminal screw. Additionally this parallel relationship is made possible by the narrow connecting strip **16** which offers little resistance to movement of the clamping plate. Still further the connecting strip **16** is formed in a loop which provides additional flexibility.

FIGS. **3** and **5** illustrate the use of the well known loop wiring wherein a conductor **60** is looped around terminal shank **30** and the terminal head **28** is drawn down tightly against the wire which in turn is in contact with the clamping plate **14**, thus causing said plate to move until it comes in contact with base **12**. Since the terminal screw **26** is threadedly carried in the base **12**, relative movement between the clamping plate and the base is accomplished as set forth above wherein the clamping plate moves toward the base maintaining its parallel position. This obviously assures a much better and even contact arrangement between the terminal screw head **28**, the wire **60** and the clamping plate **14**.

By employing a very narrow looped converting strip **16** to connect the clamping plate **14** to the base **12**, it is easy to maintain the desired parallel relationship between the base and the clamping plate throughout the range of movement of said plate whether employed in back wiring or loop wiring. Such maintained parallel relation prevents canting of the terminal shank **30** and the attendant angular engagement of the shank threads with those in the base **12**. Continued rotation of the terminal screw in canted manner will result in stripping of the threads in the base, thus resulting in loose connections.

In the prior art, many similar so-called combination lead wire terminals have the threaded portion in the moveable clamping plate. When this arrangement is used and loop wiring is desired, problems arise because the terminal screw head is on the side of the base opposite to that of the present terminal. Thus the clamping plate is drawn tight against the base and there is nothing to maintain the parallel relationship between the face of the clamping plate and the base. Canting is certain to occur and results in damage to the threads on the terminal screw shank and those in the other threaded member.

In view of the foregoing, it now appears that there has been provided by this invention a combination lead wire terminal adapted for both back and loop wiring wherein the terminal is

a somewhat unitary assembly due to the fact that the base and clamping plate are connected together by a connecting strip integral with both the base and the clamping plate and further wherein the terminal screw is threadedly carried by the base.

I claim:

1. A combination lead wire terminal adapted for both back wiring and conventional loop wiring, said terminal comprising a base, a clamping plate spaced therefrom in parallel relation, a centrally connecting narrow strip integral with the base and clamping plate to flexibly connect same whereby the clamping plate is maintained parallel to the base throughout its movement, the base being provided with a centrally disposed threaded hole in a flat portion thereof, the clamping plate having an opening aligned with the threaded hole in the base, a terminal screw having a head and a threaded shank threadedly engaging the threaded hole in the base with the shank freely passing through the opening in the clamping plate and having the terminal screw head spaced therefrom, the base having a pair of parallel grooves one on either side of the threaded opening adapted to receive straight bare lead wires therein for back wiring, the clamping plate having protruding clamping portions transverse to the parallel grooves to grip the wires therein when the terminal screw is tightened to cause the head to engage the clamping plate and cause it to move toward and parallel to the base to grip the conductors between the clamping plate and the base, and further wherein when the terminal is to be used for loop wiring, a looped wire is adapted for positioning around the terminal screw shank between the screw head and the clamping plate whereby upon tightening of the screw the head engages the looped wire forcing it into contact with the clamping plate which is pressed downwardly toward and parallel to the base until the clamping plate abuts the base to provide a secure gripping connection between the screw head and the clamping plate; the screw head, the clamping plate and the base being parallel at all times thus making certain that the proper mechanical and electrical contact is maintained.

2. The combination terminal of claim 1 and wherein the parallel grooves in the base extend for a distance at least equal to the overlying clamping plate.

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