

[54] **WIRE LOCATING JIG AND FIXTURE**

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[51] Int. Cl. **H01r 43/00**

[58] Field of Search 29/203 MW, 203 P, 203 R, 29/203 D, 203 B, 203 J, 33 M, 624

[56] **References Cited**

UNITED STATES PATENTS

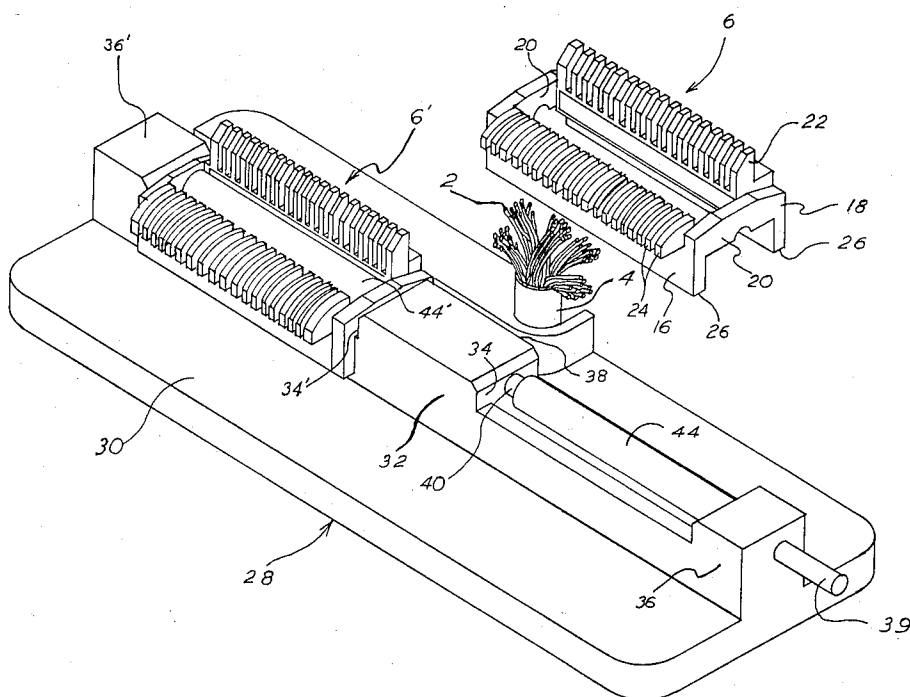
3,758,935	9/1973	Long et al.	29/203 MW
3,800,390	4/1974	Johnston.....	29/203 MW

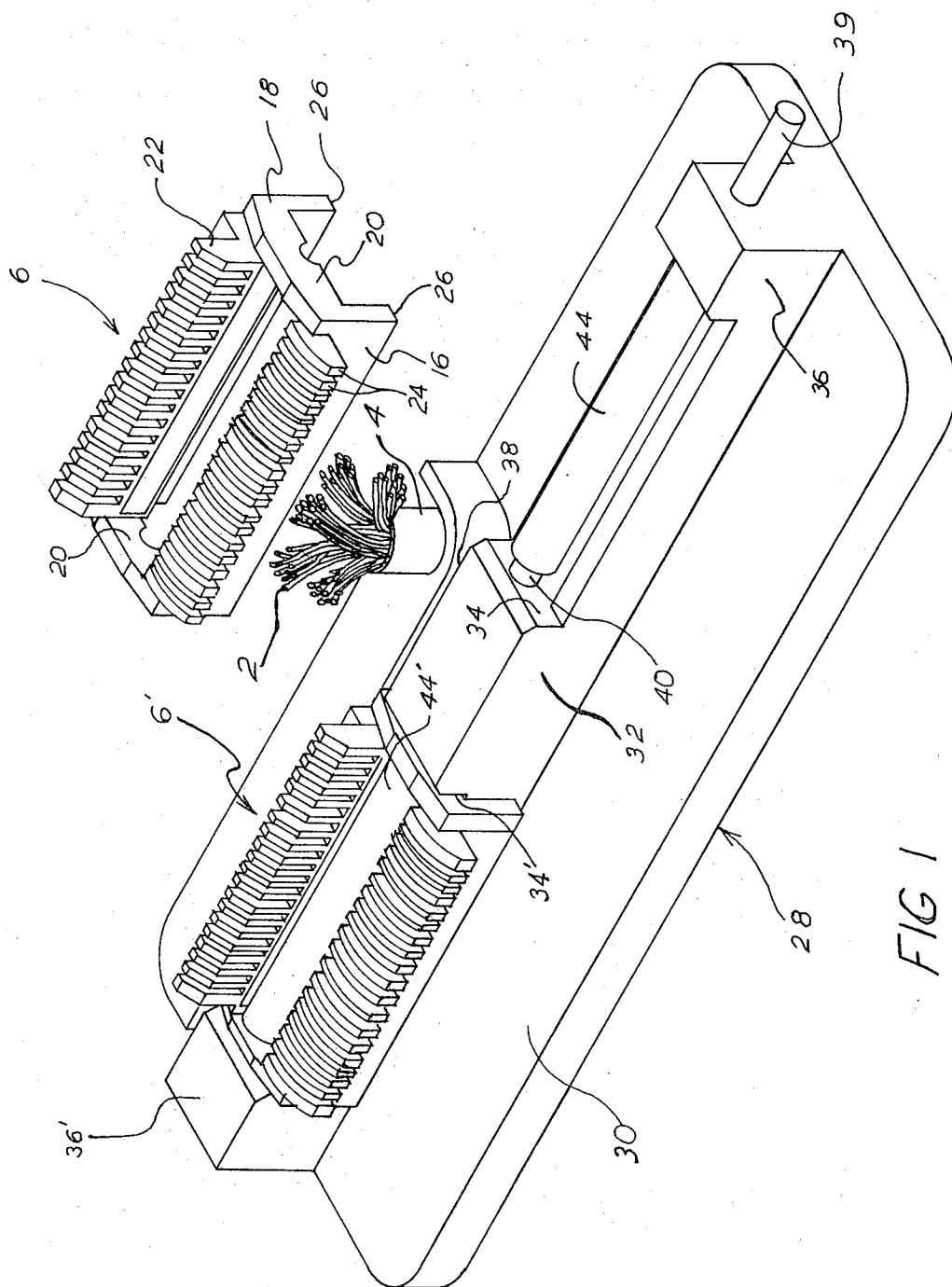
Primary Examiner—Thomas H. Eager
Attorney, Agent, or Firm—F. W. Raring; J. L. Seitchik; W. J. Keating

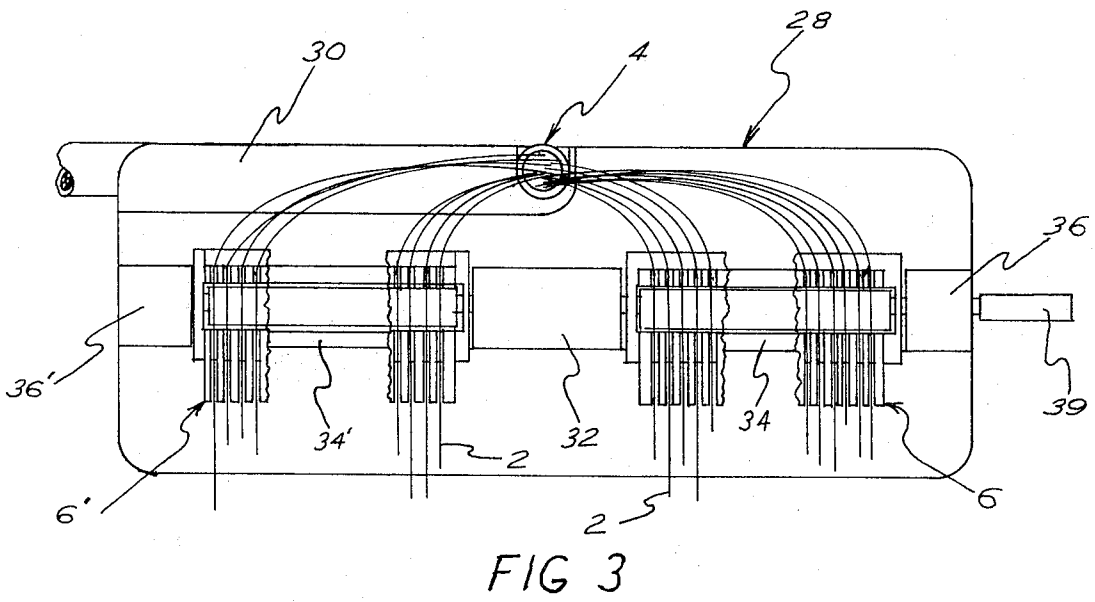
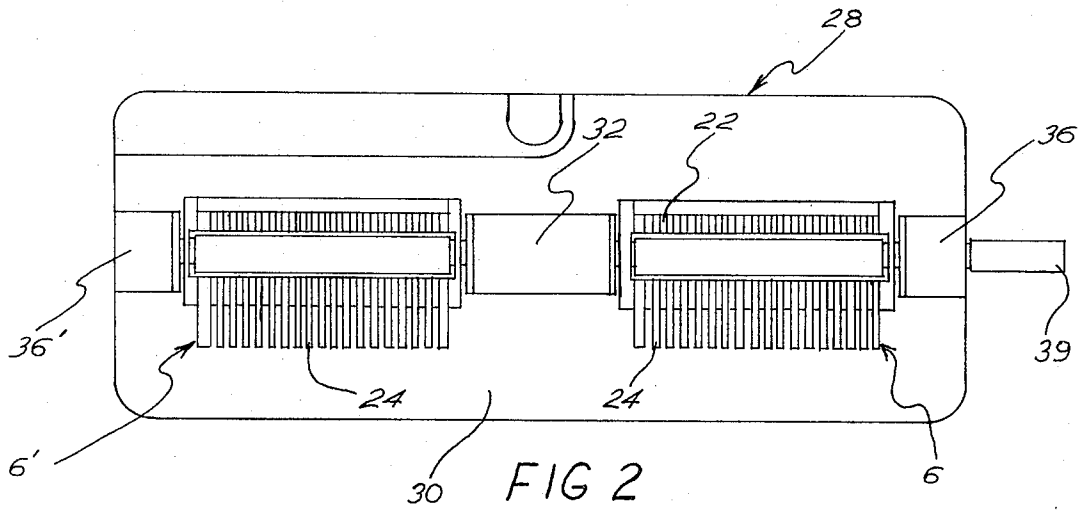
[57] **ABSTRACT**

Fixture and jig means for facilitating insertion of wires into wire receiving portions of contact terminals comprises a fixture having removable wire jigs thereon. The wire jigs have wire receiving recesses so that wires can be located in these recesses in side-by-side parallel relationship. Wire locating guides are mounted on the fixture to indicate specific positions in the jigs in which wires are to be located, each locating guide having two sets of locating indicia thereon which can be selectively positioned proximate to the wire jigs.

6 Claims, 8 Drawing Figures







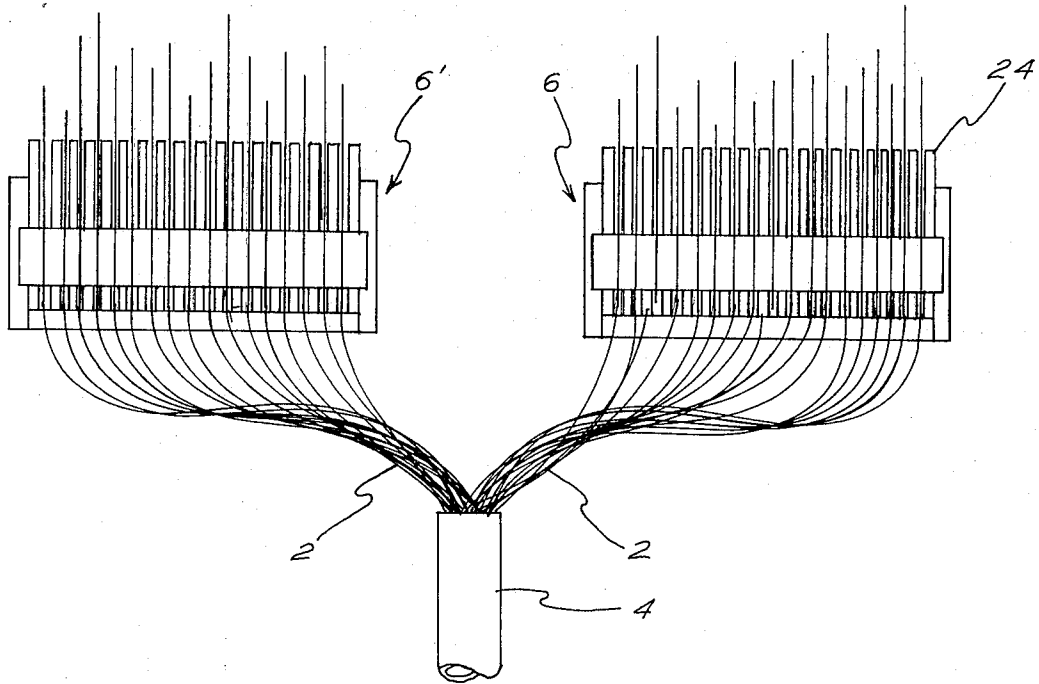


FIG 4

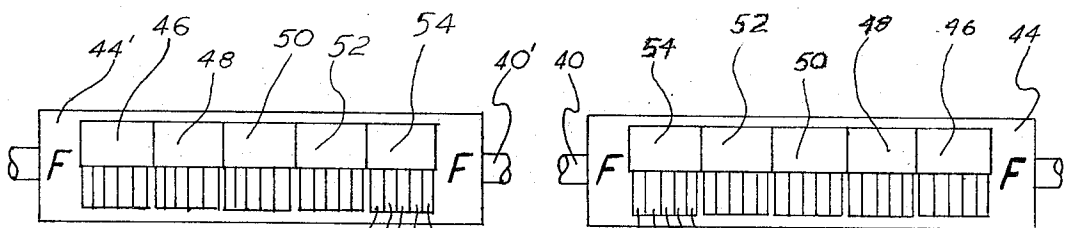


FIG 5

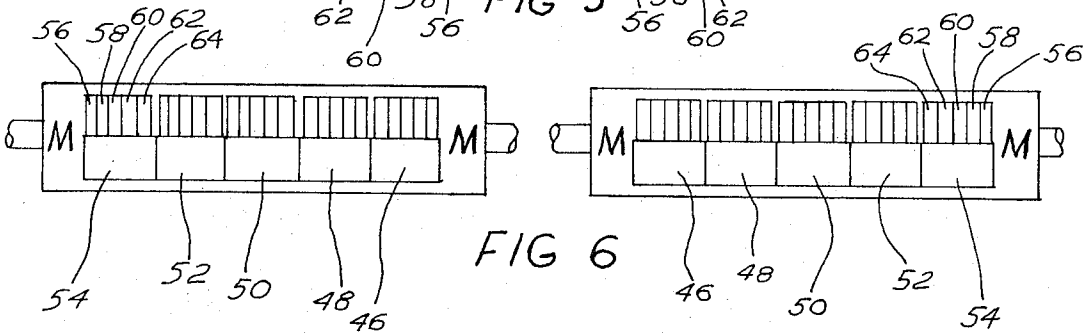


FIG 6

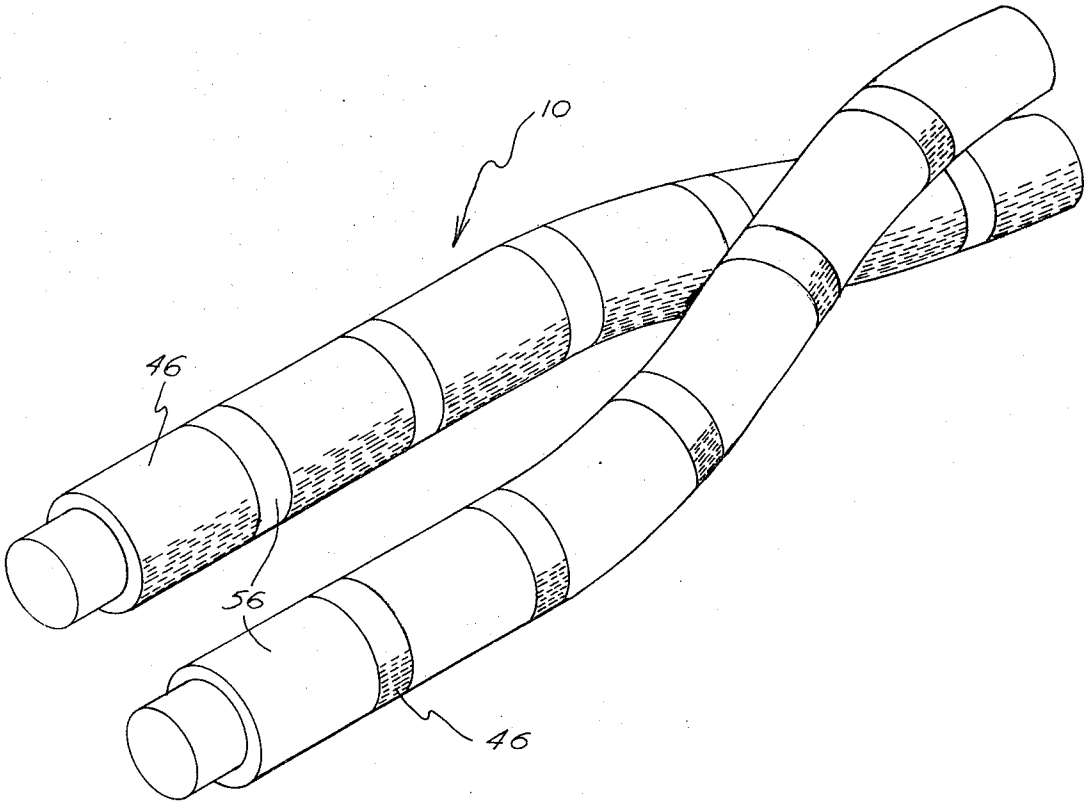


FIG 7

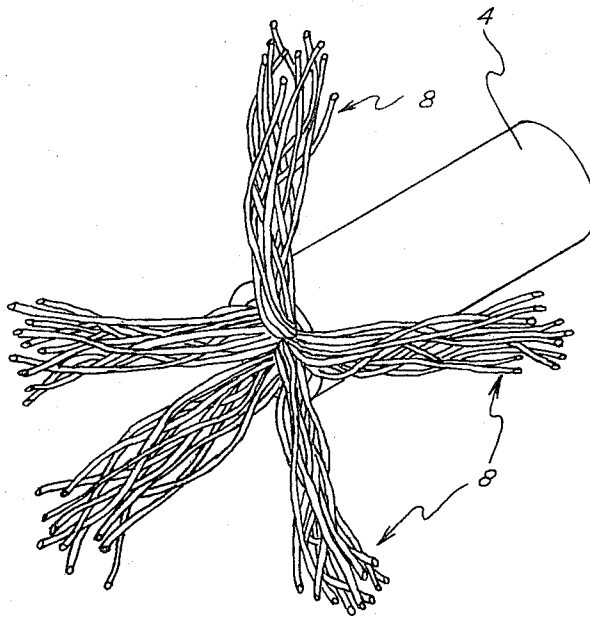


FIG 8

WIRE LOCATING JIG AND FIXTURE

BACKGROUND OF THE INVENTION

This invention relates to wire locating jig and fixtures of the general type disclosed in application Ser. No. 322,537 filed Feb. 14, 1973 and now U.S. Pat. No. 3,800,390.

The above-identified application Ser. No. 332,537 discloses and claims a jig and fixture means for facilitating the insertion wires into the contact receiving portions of electrical contact terminals mounted in an electrical connector of the general type disclosed in U.S. Pat. No. 3,760,335. In accordance with the teachings of application Ser. No. 332,537 and now U.S. Pat. No. 3,800,390, the wires are mounted in wire receiving recesses in two wire jigs which can then be mounted on a suitable wire-insertion tool, such as a tool of the type disclosed and claimed in U.S. Pat. No. 3,758,935. Wire jig and fixtures of the type disclosed in application Ser. No. 332,537 and now U.S. Pat. No. 3,800,390 have proved to be very satisfactory and are currently in relatively wide-spread use.

When wires are to be connected to terminals in an electrical connector, it is frequently necessary to connect specific predetermined wires, which are identified by a color code provided on the wires to specific terminals in the connectors. This color coding method of determining which wires are to be connected to specific positions in the connector has the advantage of permitting the tracing of circuits through a connector with relative ease and is widely used in telephone cables. It is common practice when color coded wires are being connected to terminals in a connector, to use a locating guide which usually consists of a flat bar which is color coded in accordance with the wiring plan for the connector. One type of color coding bar is disclosed in FIG. 20 of the above-identified U.S. Pat. No. 3,758,935. The instant invention is directed to the achievement of an improved wiring jig and fixture which has color coded wire locating guides thereon located immediately adjacent to the wire receiving jigs, each guide having two or more sets of locating indicia thereon so that different wiring plans can be followed for connectors of opposite sexes or polarity.

It is accordingly an object of the invention to provide an improved jig and fixture means for facilitating the forming of connections between the wires of a cable and the terminals in a multi-contact electrical connector. A further object is to provide a wiring jig and fixture in which a color coding wire locating guide is positioned immediately adjacent to the wire receiving jigs so that the possibility of error in locating the wires in the jig is minimized.

These and other objects of the invention are achieved in a preferred embodiment thereof which is briefly described in the foregoing abstract, which is described in detail below and which is shown in the accompanying drawing in which:

FIG. 1 is a perspective view of a jig and fixture means in accordance with the invention, one of the wiring jigs being exploded from the fixture to show the structural details thereof.

FIG. 2 is a top plan view of the jig and fixture means in FIG. 1.

FIG. 3 is a view similar to FIG. 2 but showing a portion of a cable mounted on the fixture and showing the

wires of the cable extending to, and located in, the wiring jigs.

FIG. 4 is a view of the cable having the wires thereof positioned in the wiring jigs after the jigs have been removed from the fixture.

FIG. 5 is a plan view of the two cylindrical wire locating guides which are mounted on the fixture.

FIG. 6 is a plan view of the opposite sides of the wire-locating guides of FIG. 5.

FIG. 7 is a perspective view on a greatly enlarged scale of a twisted pair of wires.

FIG. 8 is a perspective view of the end portion of a multi-conductor cable.

The disclosed embodiment of the invention is intended for use with a cable 4 (FIG. 8) containing twenty-five twisted pairs of individual wires, this being a common size of cable used in the telephone industry. It will be understood that the principles of the invention can be adapted to cables containing larger or smaller numbers of conductors.

The conductors in the cable are associated with each other as twisted pairs 10 as shown in FIG. 7 and, to facilitate tracing of circuits, each pair is identified in accordance with a pre-determined color coding scheme. Specifically, the twenty-five pairs of the cable are divided into five groups 8, each group containing five pairs of wires. Each group 8 is commonly called a color group and the wires in this group can be distinguished from the other wires in the cable by a common color which may be white, 46, red, 48, black 50, yellow, 52, and purple, 54. In addition, the five pairs in each group are distinguished from each other by a secondary color (grey, 56, brown, 58, green, 60, orange, 62, and blue, 64) which is combined with the group color. Finally, the individual pairs within each group are separated one from the other in the manner shown in FIG. 7 in which the upper wire has broad white bands 46 and narrow grey bands 56 while the other wire of the pair has broad grey bands 56 and narrow white bands 46.

As will become apparent as this description proceeds, specific wires in the cable can readily be connected to predetermined terminals in a connector so that when the connector is mated with a complementary connector, the same predetermined wires will be connected to corresponding predetermined wires in the next adjacent section of cable.

Referring now to FIG. 1, a preferred embodiment of the invention comprises a fixture 28 comprising a flat plate 30 having a transversely extending integral rib 32 thereon. The rib is recessed adjacent to its end at 34, 34' for reception of the wire positioning jigs 6 which are described below. A shaft 40 extends into the rib and is supported in the central and end portions thereof 36, 36', 38, 38'. The end of shaft 39 extends beyond the portion 36 of the rib to permit manual rotation of the shaft.

First and second wire locating guides 44, 44' are mounted on the shaft 40 and each guide has two sets of wire locating indicia thereon as shown in FIGS. 6 and 7. Referring first to FIG. 6, the guides each comprise a right circular cylinder with one set of indicia, identified by the letter F being intended for a female connector and the other set of indicia, FIG. 7, being identified by the letter M and intended for a complementary male connector. Two guides are provided, one for each wire locating jig 6 so that wires will be con-

nected to predetermined positions in each of the two rows of terminals in the connector.

It will thus be seen that the wire guide on the left in FIG. 6 has five broad color bands 46-54 which are colored white, 46, red 48, black 50, yellow 52, and purple 54 respectively. Adjacent to each of the bands 46-54 are five narrow bands colored grey, blue, orange, green and brown and identified by the reference numerals 56-64. It will be noted from FIGS. 5 and 6 that the colors are reversed end for end as between the guide 44, 44' for each set (M and F) of indicia. This arrangement ensures that the wires of an individual pair will be connected to corresponding positions on the upper and lower rows in the connector. Either set of indicia (M or F) can be rotated such that it will face upwardly by rotating the shaft 40 through an angle of 180°.

Each of the wire jigs 6 comprises a pair of parallel side rails 16, 18 and parallel end rails 20. Spaced-apart relatively high barriers 22 are provided on the upper surface of the side rail 18 and relatively low barriers 24 are provided on the rails 16. These barriers thus extend on each side of the central opening 21 in the jig and are in alignment so that a wire positioned between adjacent barriers in the two rows will extend across this central opening 21. Each jig has depending flanges 26 which extend downwardly from the side rails 16, 18 and the underside of the jigs are otherwise dimensioned and contoured such that they will fit on the rib 32 and in the recesses 34, 34'.

In use, the wire jigs are positioned on the fixture as shown in FIG. 1 and the end portion of the cable is located in a recess which extends along the righthand edge of the plate 30 so that the wire groups 8 will extend upwardly as shown in FIG. 1. The operator first selects an appropriate color group, separates the individual pairs thereof and positions the wires in the jigs in accordance with the coding of the locating guides. Thus if the operator were locating wires in the jigs for subsequent connection to the terminals in a female connector, he would select the group having purple as an identifying common color and locate the wires in the appropriate positions in the jigs in accordance with the identifying colors 56-64 and with the wires having purple as a body color in one of the jigs 6 and the wires having purple as a tracer color, the narrow bands, in the other jig 6'. After all of the wires have been positioned in the jigs, the cable and the jigs are removed from the fixture and the jigs are mounted on the wire insertion apparatus as described in the above-identified application Ser. No. 332,537.

A distinct advantage is achieved in the practice of the invention in that the color coding indicia of the cylindrical locating guides are positioned between the side rails 16, 18 of the wire locating jigs rather than on one side of the jigs as is common in prior art practice. When the operator places a wire in a jig, the color coding of the wire is thus immediately above, and adjacent to, the color coding on the wire guides so that the wires can be readily matched with the color coding. The fact that the color coding on the guides is immediately adjacent to the wire receiving recesses in the jigs reduces the possibility of errors in location of the wires to an absolute minimum.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the

foregoing description and accompanying drawings is offered by way of illustration only.

We claim:

1. A wiring fixture which is intended for use with first and second wiring jigs which are identical to each other, each of said jigs comprising a frame member having a central opening and having parallel side rails on each side of said central opening, said side rails having aligned wire positioning means thereon for locating wires in parallel side-by-side relationship with portions of said wires extending across said central opening, said wiring fixture comprising:

a frame member,

first and second wire locating guides, each of said guides comprising a cylinder having at least two sets of wire locating indicia thereon, each of said sets of indicia occupying a portion of the surface of said cylinder which extends for substantially the full length of said cylinder and which extends angularly partially around said cylinder,

said cylinders being supported on said frame in coaxial relationship,

first and second wire jig supporting means on said frame for supporting said wire jigs thereon in surrounding relationship to said cylinders with the said side rails of said cylinder extending parallel to the axis of said cylinders, and

means for rotating said cylinders whereby, upon placement of said jigs on said wire jig supporting means and rotation of said cylinders to position desired sets of said indicia opposite to said openings in said wire jigs, wires can be positioned in said jigs in accordance with said indicia.

2. A wiring fixture as set forth in claim 1, said frame member comprising a flat plate having integral bosses on one surface thereof, a shaft rotatably supported in said bosses, said cylinders being mounted on said shaft.

3. A wiring fixture as set forth in claim 2, each of said sets of indicia extending angularly around its respective cylinder for a distance of substantially 180°.

4. A wiring fixture as set forth in claim 3 having cable holding means thereon adjacent to, and between said first and second wire jig supporting means.

5. A wiring fixture as set forth in claim 1, said frame member comprising a flat plate having an integral rib extending thereacross, said rib having first and second recesses, a shaft extending through said rib and through said recesses, said cylinders being in said recesses and on said shaft, said rib having surface portions adjacent to said recesses for supporting said first and second wire locating jigs.

6. A wiring fixture in combination with first and second wiring jigs, said jigs being identical to each other, each of said jigs comprising a frame member having a central opening and having parallel side rails on each side of said central opening, said side rails having aligned wire positioning means thereon for locating wires in parallel side-by-side relationship with portions of said wires extending across said central opening:

said wiring fixture comprising a plate-like frame member having an integral rib extending across one surface thereof, said rib having first and second recesses therein,

first and second wire locating guides, each of said guides comprising a cylinder having two sets of wire locating indicia thereon, each of said sets of locating indicia extending for the full length of said

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cylinder and substantially half way around said cylinder
a shaft extending through said rib and through said
recesses, said guides being mounted on said shaft
in said recesses,
said first and second wire jigs being removably
mounted on said rib with said side rails of each of

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side wire jigs extending beside one of said wire
guides whereby,
said shafts can be rotated to locate a preselected set of
indicia between said side rails of each of said wire jigs,
and wires can be positioned in said wire jigs at locations
indicated by said indicia.

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