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(54) Title: COLOR CODING ACCESSORIES FOR CABLES AND CONNECTORS

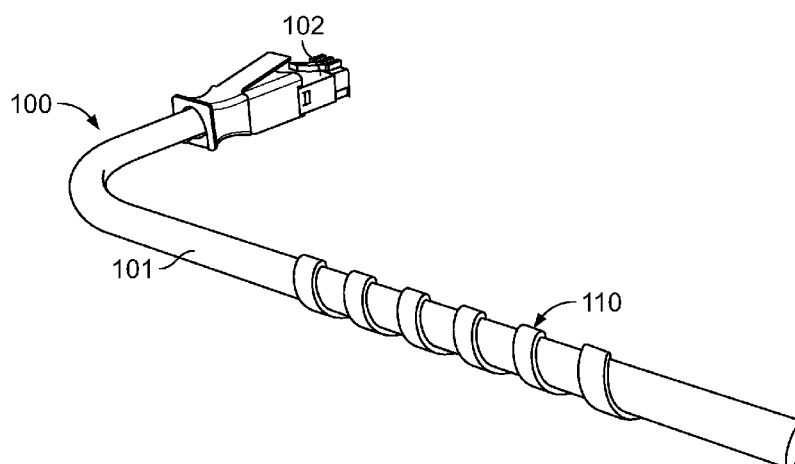


FIG. 1

(57) Abstract: Various color coded accessories that can be added to cables and/or connectors that are manufactured with non-indicative base colors. The accessories can aid in identifying or tracing network connections. The accessories can aid in identifying types of connectors and/or cables. The accessories can aid in labeling the network connections. Color also can be added directly to the otherwise non-indicatively colored cable jackets subsequent to installation.



COLOR CODING ACCESSORIES FOR CABLES AND CONNECTORS

Cross-Reference to Related Application

This application claims the benefit of U.S. Patent Application Serial No. 62/144,080, filed on April 7, 2015, the disclosure of which is incorporated herein by reference in its entirety.

Background

Color coding the cables and connectors facilitates identifying and tracing network connections. In addition, connectors and/or cable jackets can be color coded to distinguish various types of the connector, types of network connections, and types of cables. For example, the color of a connector can indicate a type of keying included on the connector, the level of security of the network connection, or the identity of the network in a multi-network environment.

In existing systems, the cables and connectors can be colored at the factory during manufacturing. For examples, the connectors can be molded in various colors and cable jackets can be extruded in various colors. Improvements are desired.

Summary

Some aspects of the disclosure are directed to a method of identifying network connection components including: installing a portion of a network using cables and connectors having a non-indicative base color; and adding color coded components to the cables and/or connectors to indicate a feature of the cables and/or connectors.

In certain implementations, the color coded components include clips that secure to the connector and/or connector boot.

In certain implementations, the color coded components include wrap-style color coded arrangements.

In certain implementations, the color coded components include boots.

In certain implementations, the color coded components include lever release arrangements.

In certain examples, the color coded components include label mounts.

Other aspects of the disclosure are directed to a method of identifying network connection components including: installing a portion of a network using cables that share a common base color that is non-indicative of aspects of the cables; and coloring portions of the cables during or after installation with an indicative color.

In certain implementations, the cables are colored with ink.

In certain implementations, the cables are colored with tape.

In certain implementations, the method also includes adding color coded components to the cables.

Other aspects of the disclosure are directed to a network installation kit including: a plurality of cables terminated by connectors; and a plurality of color coded accessories that are configured to mount to the cables and/or the connectors. Each of the cables is manufactured with a non-indicative base color.

In certain implementations, the color coded accessories include clips that secure to the connector and/or connector boot.

In certain implementations, the color coded accessories include wrap-style color coded arrangements.

In certain implementations, the color coded accessories include boots.

In certain implementations, the color coded accessories include lever release arrangements.

In certain examples, the color coded accessories include label mounts.

Other aspects of the disclosure are directed to a tool for coloring a portion of a cable having a non-indicative base color. The tool includes: a housing configured to hold a marking source; and a guide configured to support and guide the cable as the cable is marked.

In certain implementations, the marking source includes a marking member and wherein the guide directs the cable towards a tip of the marking member.

In certain implementations, the marking source includes tape and wherein the guide directs the cable towards a dispensing head that presses the tape against the cable.

Other aspects of the disclosure are directed to a connector accessory for mounting to a cable connector. The connector accessory includes: a body configured to mount to a connector having a latch; and first and second ramp members disposed at the body at opposite sides of the latch. The first and second ramp members face rearwardly of the connector. Ramp surfaces of the first and second ramp surfaces are disposed further rearward than a distal tip of the latch so that the distal tip of the latch laterally aligns with highest portions of the ramp members.

A variety of additional inventive aspects will be set forth in the description that follows. The inventive aspects can relate to individual features and to combinations of features. It is to be understood that both the forgoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the broad inventive concepts upon which the embodiments disclosed herein are based.

Brief Description of the Drawings

The accompanying drawings, which are incorporated in and constitute a part of the description, illustrate several aspects of the present disclosure. A brief description of the drawings is as follows:

FIGS. 1 and 2 illustrate example wrap-style color coding arrangements;

FIG. 3 illustrates an example cable including a conductor or optical fiber surrounded by a cable jacket;

FIG. 4 illustrates a first example clip configured in accordance with the principles of the present disclosure;

FIG. 5 shows the first clip of FIG. 4 disposed on a cable;

FIG. 6 illustrates a second example clip configured in accordance with the principles of the present disclosure;

FIG. 7 shows the first clip of FIG. 6 disposed on a cable;

FIG. 8 illustrates a cable with an alternative connector boot;

FIG. 9 illustrates a third example clip configured in accordance with the principles of the present disclosure and disposed on the connector boot of FIG. 8;

FIG. 10 illustrates an alternative implementation of the clip of FIG. 9;

FIG. 11 illustrates an alternative implementation of the clip of FIG. 9;

FIG. 12 illustrates a first example color coded boot;

FIG. 13 illustrates a second example color coded boot with label mount;

FIG. 14 illustrates a boot and label mount for receiving a colored label;

FIGS. 15 and 16 illustrate a first example lever release arrangement configured in accordance with the principles of the present disclosure;

FIGS. 17 and 18 illustrate a second example lever release arrangement configured in accordance with the principles of the present disclosure;

FIGS. 19 and 20 illustrate a third example lever release arrangement configured in accordance with the principles of the present disclosure;

FIG. 21 illustrates a plurality of the third lever release arrangements of FIGS. 19 and 20 aligned in a row;

FIG. 22 illustrates an alternative connector boot having ramp members;

FIG. 23 illustrates a first tool for marking a cable jacket; and

FIG. 24 illustrates a second tool for marking a cable jacket.

Detailed Description

Reference will now be made in detail to exemplary aspects of the present disclosure that are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

The present disclosure is directed to various accessories that can be added to cables and/or connectors in a network. In accordance with some aspects, the accessories aid in identifying or tracing network connections. In accordance with other aspects, the accessories aid in identifying types of connectors and/or cables. In accordance with other aspects, the accessories aid in labeling the network connections.

In accordance with aspects of the disclosure, the cables and connectors are all manufactured in a common base color (e.g., white, black, gray, etc.). The base color is not indicative of any feature of the cable or connector. Colored accessories are subsequently added (e.g., during installation) to indicate one or more features (e.g., type, size, identity, etc.) of the cables and/or connectors.

FIGS. 1 and 2 illustrate example wrap-style color coding arrangements that are configured to be disposed around cables. The example wrap-style color coding arrangement 110 is disposed around a cable jacket 101 of an example cable 100. In the example shown in FIG. 1, the wrap-style color coding arrangement 110 is spaced from the connector 102 terminating the cable 100. In the example shown in FIG. 2, a portion of the wrap-style color coding arrangement 110 surrounds a boot 103 of the connector 102.

FIGS. 3-11 illustrate various clip-type color coding arrangements that fit over the boot 103 of the connector 102. Each of the clips can be manufactured (e.g., molded, extruded, etc.) in one or more desired colors. FIG. 3 illustrates an example cable 100 including a conductor or optical fiber surrounded by a cable jacket 101. One end of the cable 100 is terminated at a connector 102 having a boot 103. In the example shown, the connector 102 is an RJ-45 connector. In other examples, the connector 102 can be any type of electrical, optical, or optoelectrical connector.

FIG. 4 illustrates a first example clip 120 that extends from a first end 121 to a second end 122. The first end 121 of the first clip 120 is configured to fit over a body of the connector 102 and the second end 122 of the first clip 120 is configured to fit over the boot 103 (see FIG. 5). In the example shown, the first end 121 is generally rectangular and the second end 122 is generally C-shaped. The first clip 120 defines a slit 123 extending between the first and second ends 121, 122. To install the first clip 120 on a cable 100, the cable 100 (e.g., a jacketed section of the cable and/or the boot) is inserted through the slot 123. Edges of the first clip 120 defining the slot 123 snap around the cable 100 to hold the first clip 120 to the cable 100 (e.g., see FIG. 5).

FIGS. 6 and 7 illustrate a second example clip 124 that extends from a first end 125 to a second end 126. The first end 125 of the second clip 124 is

configured to fit over a boot 103 of the connector 102 and the second end 126 of the second clip 124 is configured to fit over a jacketed portion of the cable 100 (see FIG. 7). The second clip 124 includes a first portion 124a and a second portion 124b that are coupled together at a hinge 127 (e.g., a living hinge) to form a clam-style closure. In the example shown, the hinge 127 extends along an axis that extends between the first and second ends 125, 126. Distal edges 128a, 128b of the first and second portions 128a, 128b can be secured together to hold the second clip 124 to the cable 100. In certain examples, the second clip 124 defines an inwardly tapered portion adjacent a distal end of the boot 103. In certain examples, the second clip 124 is configured to provide bend protection for the cable 100 adjacent the boot 103.

FIG. 8 illustrates an example cable 100' including a conductor or optical fiber surrounded by a cable jacket 101. One end of the cable 100' is terminated at a connector 102 having a boot 104. The boot 104 has a first end that surrounds the connector 102, a tapered middle, and a flared second end.

FIG. 9 illustrates a third example clip 130 that extends from a first end 131 to a second end 132. The first and second ends 131, 132 of the third clip 130 are configured to fit over the boot 104. The third clip 130 defines a longitudinal slot through which the boot 104 can be inserted to mount the third clip 130 to the cable 100. In the example shown, the first and second ends 131, 132 are generally C-shaped. In certain examples, the third clip 130 includes an inwardly tapered section 133 between the first and second ends 131, 132. In the example shown, the second end 132 of the third clip 130 wraps around a distal end of the boot 104.

FIGS. 10 and 11 illustrate alternative implementations of the third clip 130. FIG. 10 illustrates one implementation 135 of the third clip 130 that includes a flange 136 extending rearwardly from the second end 132. Accordingly, the flange 136 extends along the cable jacket 101. In the example shown, the flange 136 extends around less than half a circumference of the cable jacket 101. In other examples, however, the flange 136 can mostly or fully encircle the cable jacket 101. FIG. 11 illustrates another implementation 137 of the third clip 130 in which a latch protector 138 extends forwardly of the first end 131 of the third clip 130. The latch protector 138

is sufficiently long to extend over at least a distal end of a latch 105 (FIG. 8) of the connector 102. Accordingly, the latch 105 can be depressed by depressing the latch protector 138.

FIGS. 12-14 illustrate various color-coded boots that can be mounted to cables 100. The boots can be molded or extruded in one or more desired colors. FIG. 12 illustrates an example boot 140 that extends between first and second ends 141, 142. The first boot 140 aids in controlling cable bending. The first end 141 mounts over a portion of the connector 102 (e.g., a connector boot 103, 104). The second end 142 is disposed over a jacketed portion of the cable 100. In certain examples, the first end 141 may have a larger cross-dimension (e.g., diameter) than the second end. In certain implementations, the first boot 140 is longer than a standard sized boot. In certain examples, the first boot 140 is no less than three times longer than a standard sized boot. In certain examples, the first boot 140 is no less than four times longer than a standard sized boot.

FIG. 13 illustrates the boot 140 with a label mount 144 disposed towards the second end 142. The label mount 144 is formed in the same color as the boot 140. A label 145 can be disposed at the label mount 144. For example, in some implementations, a label can be adhesively affixed to a flat surface of the label mount 144. In other implementations, a label can be slid through a slot defined in the label mount 144. In other implementations, the label mount 144 defines a flat surface on which text and/or graphics can be added (e.g., written, drawn, printed, etc.). FIG. 14 illustrates the boot 140 and label mount 144 of FIG. 13 formed of a generally translucent material. In such an implementation, the label 145 can be colored for identification or tracking purposes.

FIGS. 16-21 illustrate various color coded lever release arrangements configured to mount to a connector 102 and depress the latch 105 sufficient to release the connector 102 from a socket or port. FIGS. 15 and 16 illustrate a first example lever release arrangement 150 that extends from a first end 151 to a second end 152. The first lever release arrangement 150 is disposed over a cable 100 so that the first end 151 is disposed over a body of the connector 102 and the second end 152 is disposed over a

jacketed portion of the cable 100. The first lever release arrangement 150 includes a boot portion 153 that extends over the transition between the cable jacket 101 and the connector 102. In some examples, the boot portion 153 extends over a connector boot 103, 104. In other examples, the boot portion 153 forms the connector boot.

The first end 151 of the first lever release arrangement 150 includes a flange 154 that extends in front of the latch 105. For example, the first lever release arrangement 150 may define an aperture 156 through which a distal end of the latch 105 can extend. Pulling rearwardly on the first lever release arrangement 150 moves the flange 154 rearwardly along a slide axis S, which depresses the latch 105. Moving the first lever release arrangement 150 forwardly moves the flange 154 forwardly along the slide axis S, which allows the latch 105 to be biased upwardly by an internal mechanism of the connector 102.

The second end 152 of the first lever release arrangement 150 includes grip hooks 155 that facilitate manipulating of the first lever release arrangement 150 by the user. For example, the user can grasp the grip hooks 155 to move the first lever release arrangement 150 forwardly or rearwardly along the slide axis S.

In certain implementations, the connector 102 is configured to guide the first lever release arrangement 150 along the slide axis S. For example, the connector 102 (or connector boot 103, 104) can include a guide rail 106 that fits in the aperture 156 defined by the first lever release arrangement 150. Engagement between the guide rail 106 and inner edges of the first lever release arrangement 150 at the aperture 156 inhibits torquing or other movements of the first lever release arrangement 150 relative to the connector 102 other than sliding along the slide axis S.

FIGS. 17 and 18 illustrate a second example lever release arrangement 160 that extends from a first end 161 to a second end 162. The first end 161 mounts to a connector 102 and the second end 162 extends rearwardly of the connector. The second lever release arrangement 160 includes a rigid member 163 that extends between the first and second ends 161, 162. In an example, the second end 162 of the second lever release arrangement 160 is not directly coupled to the cable 100. Rather, the second end 162 is cantilevered off the connector 102.

The first end 161 of the second lever release arrangement 160 includes a flange 164 that extends in front of the latch 105. For example, the second lever release arrangement 160 may define an aperture 166 through which a distal end of the latch 105 can extend. Pulling rearwardly on the second lever release arrangement 160 moves the flange 164 rearwardly along a slide axis S, which depresses the latch 105. Moving the second lever release arrangement 160 forwardly moves the flange 164 forwardly along the slide axis S, which allows the latch 105 to be biased upwardly by an internal mechanism of the connector 102.

The second end 162 of the second lever release arrangement 160 includes a grip pad 165 that facilitate manipulating of the second lever release arrangement 160 by the user. For example, the user can grasp the grip pad 165 to move the second lever release arrangement 160 forwardly or rearwardly along the slide axis S.

In certain implementations, the connector 102 is configured to guide the second lever release arrangement 160 along the slide axis S. For example, the connector 102 (or connector boot 103, 104) can include a guide rail 106 that fits in the aperture 166 defined by the second lever release arrangement 160. Engagement between the guide rail 106 and inner edges of the second lever release arrangement 160 at the aperture 166 inhibits torquing or other movements of the second lever release arrangement 160 relative to the connector 102 other than sliding along the slide axis S.

FIGS. 19-21 illustrate a third example lever release arrangement 170 that extends from a first end to a second end. The first end mounts to a connector 102 and the second end extends rearwardly of the connector. The third lever release arrangement 170 includes a rigid member 173 that extends between the first and second ends so that the second end is cantilevered off the connector 102. In certain implementations, the rigid member 173 also includes mounting fingers 173a that curve around to hold the third lever release arrangement 170 to the cable 100 (e.g., to the connector 102, the connector boot 103, 104, or the cable jacket 101).

The first end of the third lever release arrangement 170 includes a flange 174 that extends in front of the latch 105. For example, the third lever release arrangement 170 may define an aperture 176 through which a distal end of the latch 105

can extend. Pulling rearwardly on the third lever release arrangement 170 moves the flange 174 rearwardly along a slide axis S, which depresses the latch 105. Moving the third lever release arrangement 170 forwardly moves the flange 174 forwardly along the slide axis S, which allows the latch 105 to be biased upwardly by an internal mechanism of the connector 102.

In certain implementations, the connector 102 is configured to guide the third lever release arrangement 170 along the slide axis S. For example, the connector 102 (or connector boot 103, 104) can include a guide rail 106 that fits in the aperture 176 defined by the third lever release arrangement 170. Engagement between the guide rail 106 and inner edges of the third lever release arrangement 170 at the aperture 176 inhibits torquing or other movements of the third lever release arrangement 170 relative to the connector 102 other than sliding along the slide axis S.

The second end of the third lever release arrangement 170 includes a grip portion 175 that facilitates manipulation of the third lever release arrangement 170 by the user. For example, the user can grasp the grip portion 175 to move the third lever release arrangement 170 forwardly or rearwardly along the slide axis S. In certain implementations, the second end of the third lever release arrangement 170 also includes a label mount 176 that facilitates identification of the network connection made by the connector 102. For example, the label mount 176 can be configured to receive a paper label. In other examples, the label mount 176 is configured to be marked (e.g., with ink) to create a label. In the example shown, the grip portion 175 is disposed at an opposite side of the rigid member 173 from the label mount 176.

In certain implementations, the third lever release arrangement 170 includes ramp members 177 disposed adjacent the latch 105 when the third lever release arrangement 170 is mounted to the connector 102. The ramp members 177 are disposed at opposite sides of the latch 105. In some implementations, the ramp members 177 are configured to inhibit accidental depression of the latch member 105. In other implementations, the ramp members 177 inhibit tangling of the connector 102 in adjacent cables. For example, in certain implementations, the ramp members 177 deflect adjacent cables away from the latch 105 as the connector is being removed from

a port. The adjacent cables cam up the ramp members 177 so that the adjacent cables are not caught beneath the latch 105.

FIG. 22 illustrates another example connector boot 103' that includes ramp members 107 similar to ramp members 177 of FIGS. 19-21. The ramp members 107 are disposed at opposite sides of the distal end of the latch 105. The ramp members 107 face rearwardly of the connector 102 and have shoulders facing forwardly of the connector 102. The ramp members 107 are sufficiently large to guide cables away from the latch 105 when the connector 102 is pulled through a plurality of cables.

FIGS. 23 and 24 illustrate techniques for adding one or more indicative colors to a base color of the cable jacket and/or connector. FIG. 23 illustrates a first tool 180 that is configured to attach to a marking device M (e.g., a marker, a pen, a highlighter, a paint dispenser, etc.). The tool 180 includes a mounting portion 181 that couples to the marking device M. The tool 180 also includes a guide portion 182 that aids in aligning a marking portion of the marking device M with the cable jacket 101. In the example shown, the guide portion 182 includes a hook through which the jacketed cable can slide. As the cable slides through the guide portion 182, the marking device M deposits color onto the cable jacket 101 to form a colored section 101a.

FIG. 24 illustrates a second tool 190 having a housing 191 configured to hold a roll of colored tape 192. The tool 190 is configured to dispense the colored tape 192 onto the cable jacket 101 to form a colored section 101b. The tool 190 includes a dispensing head 193 that presses the unrolled tape 192 onto the cable jacket 101. The tool 190 also includes a guide 194 that holds the cable 101 to the dispensing head 193.

Having described the preferred aspects and implementations of the present disclosure, modifications and equivalents of the disclosed concepts may readily occur to one skilled in the art. However, it is intended that such modifications and equivalents be included within the scope of the claims which are appended hereto.

List of Reference Numerals and Corresponding Features

100, 100'	cable
101	jacket
102	connector
103, 103', 104	connector boot
105	latch
106	guide rail
107	ramp member
110	wrap-style color coding arrangement
120	clip
121	first end
122	second end
123	slot
124	clip
124a, 124b	first and second portions
125	first end
126	second end
127	hinge
128a, 128b	distal edges
130	clip
131	first end
132	second end
135	clip implementation
136	rearward flange
137	clip implementation
138	latch protector
140	boot
141	first end
142	second end
144	label mount
145	label
150	first lever release arrangement

151	first end
152	second end
153	boot portion
154	flange
155	grip hooks
156	aperture
160	second lever release arrangement
161	first end
162	second end
163	rigid member
164	flange
165	grip pad
166	aperture
170	third lever release arrangement
173	rigid member
173a	mounting fingers
174	flange
175	grip portion
176	aperture
177	ramp members
180	first tool
181	housing
182	guide portion
190	second tool
191	housing
192	tape
193	dispensing head
194	guide
S	slide axis
M	marking device

What is claimed is:

1. A method of identifying network connection components comprising:
installing a portion of a network using cables and connectors having a non-indicative base color; and
adding color coded components to the cables and/or connectors to indicate a feature of the cables and/or connectors.
2. The method of claim 1, wherein the color coded components include clips that secure to the connector and/or connector boot.
3. The method of claim 1, wherein the color coded components include wrap-style color coded arrangements.
4. The method of claim 1, wherein the color coded components include boots.
5. The method of claim 1, wherein the color coded components include lever release arrangements.
6. The method of any of claims 1-5, wherein the color coded components include label mounts.
7. A method of identifying network connection components comprising:
installing a portion of a network using cables that share a common base color that is non-indicative of aspects of the cables; and
coloring portions of the cables during or after installation with an indicative color.
8. The method of claim 7, wherein the cables are colored with ink.
9. The method of claim 7, wherein the cables are colored with tape.

10. The method of claim 7, further comprising adding color coded components to the cables.
11. A network installation kit comprising:
a plurality of cables terminated by connectors, each of the cables being manufactured with a non-indicative base color; and
a plurality of color coded accessories that are configured to mount to the cables and/or the connectors.
12. The network installation kit of claim 11, wherein the color coded accessories include clips that secure to the connector and/or connector boot.
13. The network installation kit of claim 11, wherein the color coded accessories include wrap-style color coded arrangements.
14. The network installation kit of claim 11, wherein the color coded accessories include boots.
15. The network installation kit of claim 11, wherein the color coded accessories include lever release arrangements.
16. The network installation kit of any of claims 11-15, wherein the color coded accessories include label mounts.
17. A tool for coloring a portion of a cable having a non-indicative base color, the tool comprising:
a housing configured to hold a marking source; and
a guide configured to support and guide the cable as the cable is marked.

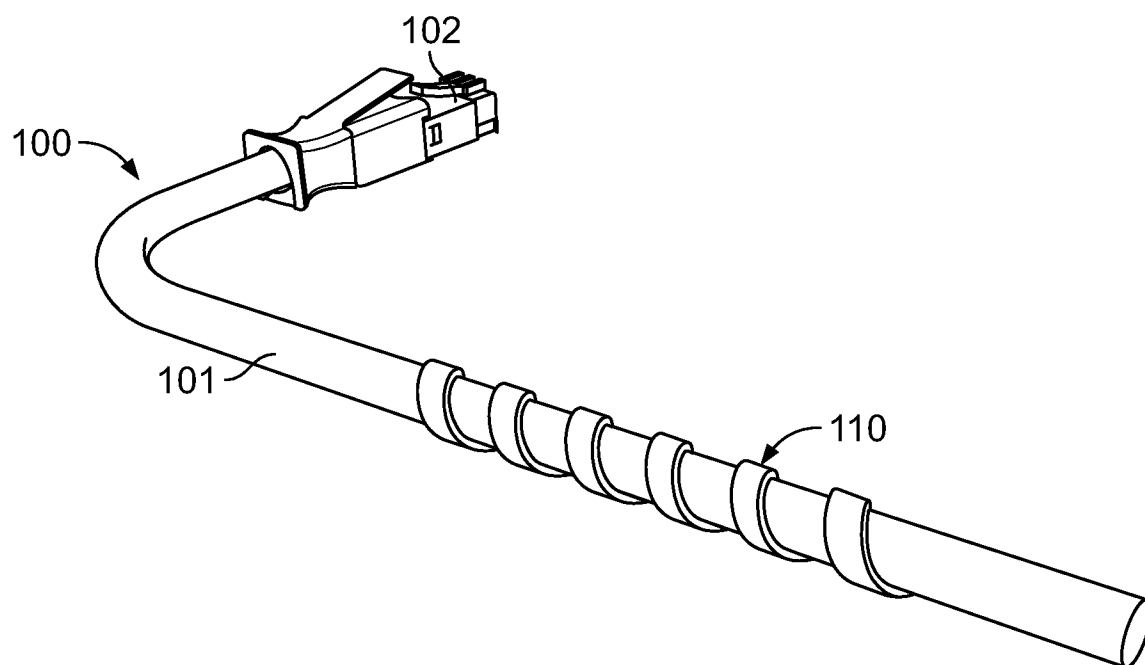
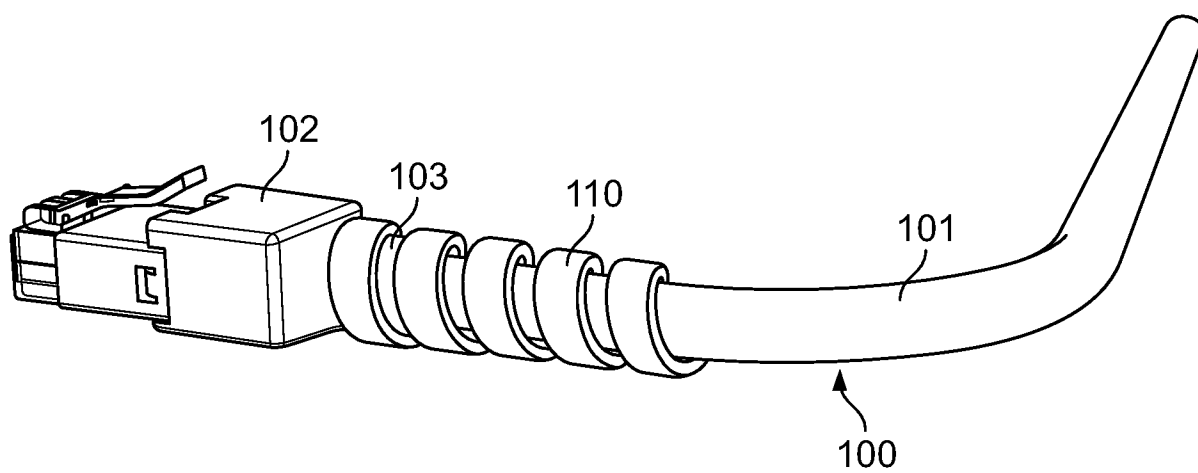
18. The tool of claim 17, wherein the marking source includes a marking member and wherein the guide directs the cable towards a tip of the marking member.

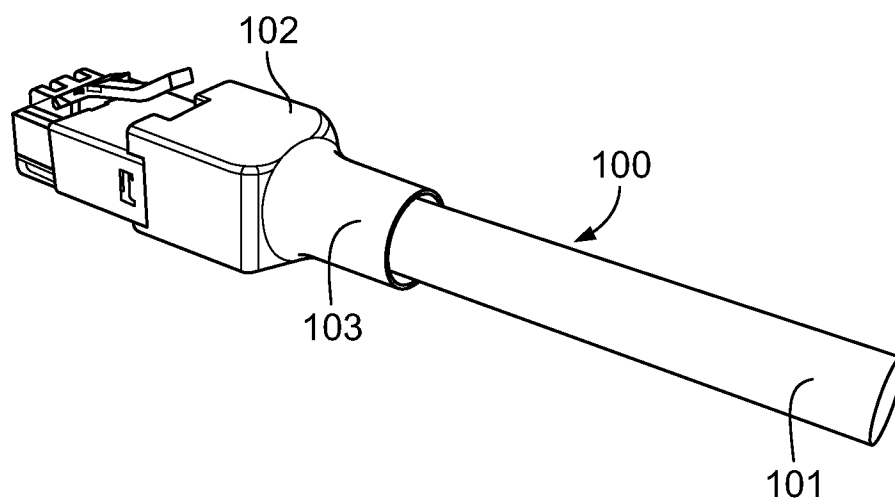
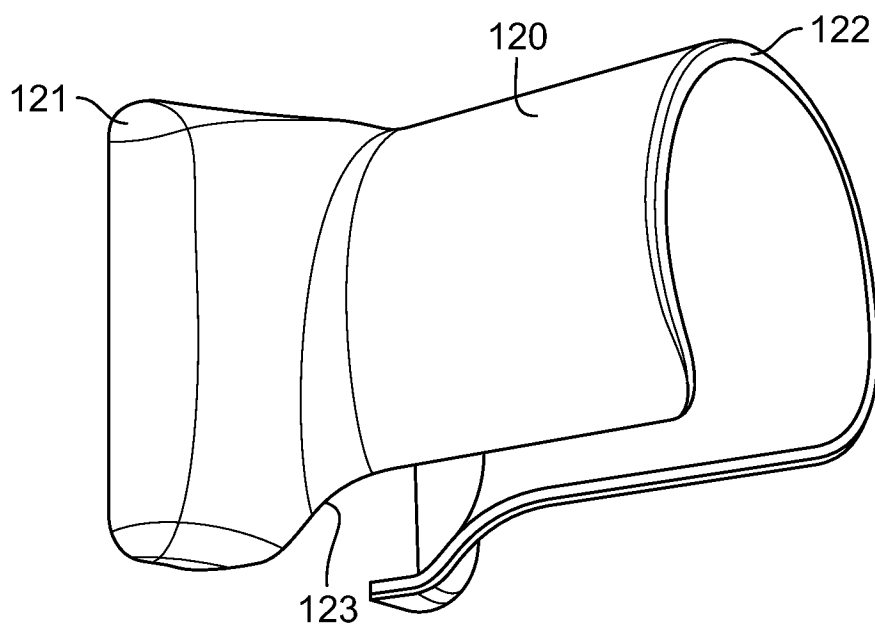
19. The tool of claim 17, wherein the marking source includes tape and wherein the guide directs the cable towards a dispensing head that presses the tape against the cable.

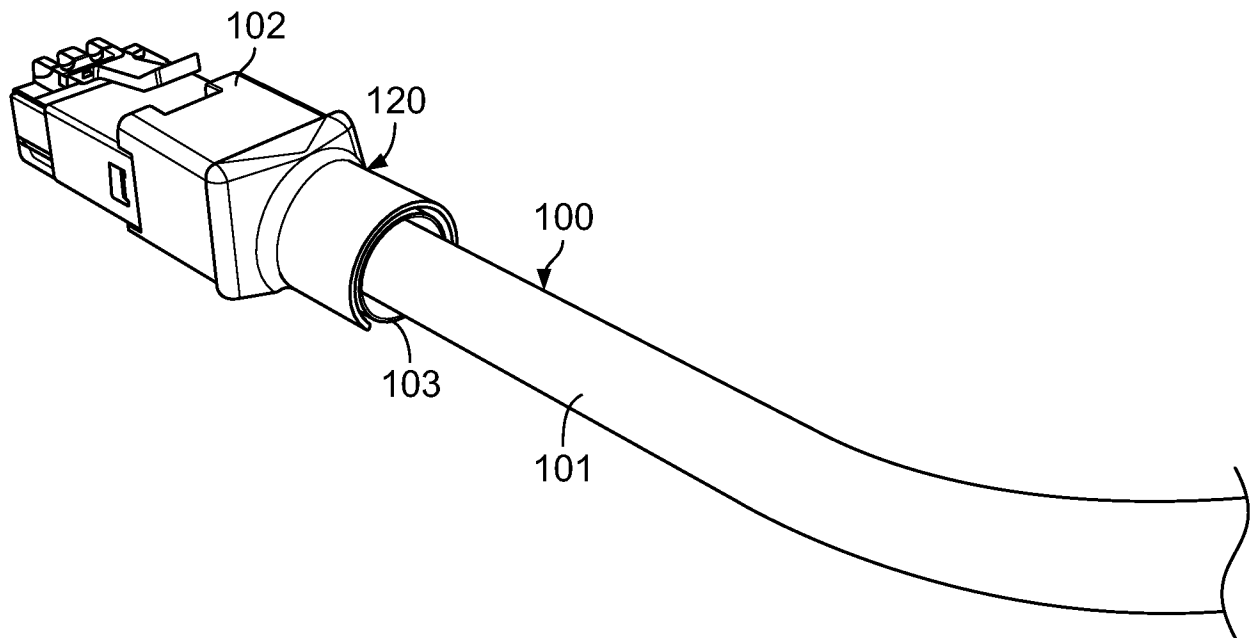
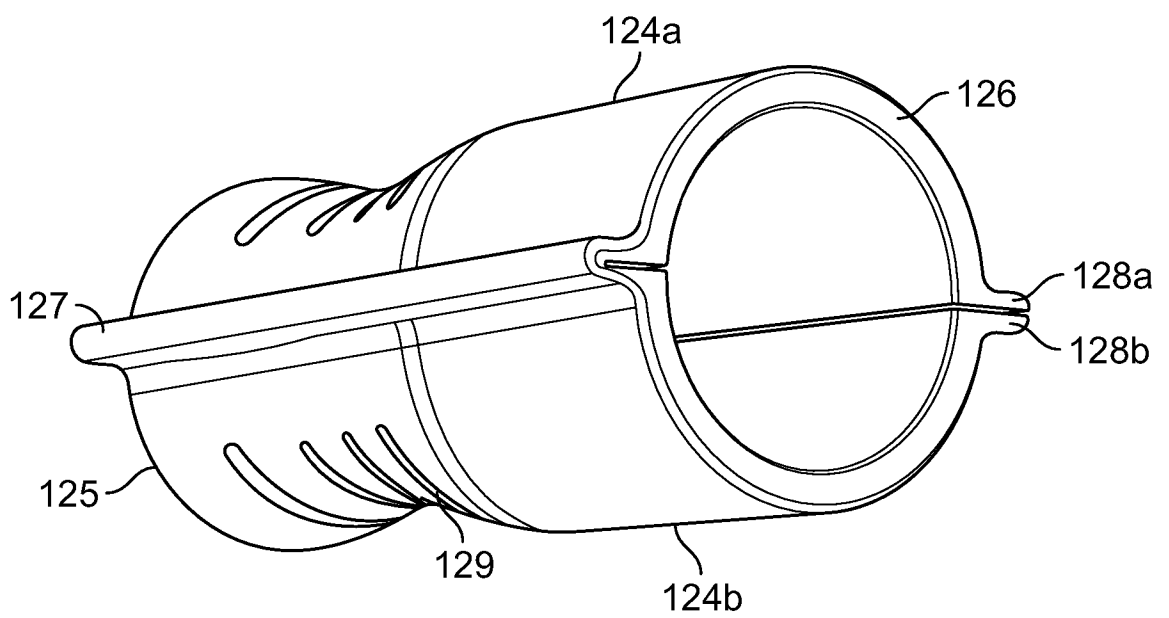
20. A connector accessory for mounting to a cable connector, the connector accessory comprising:

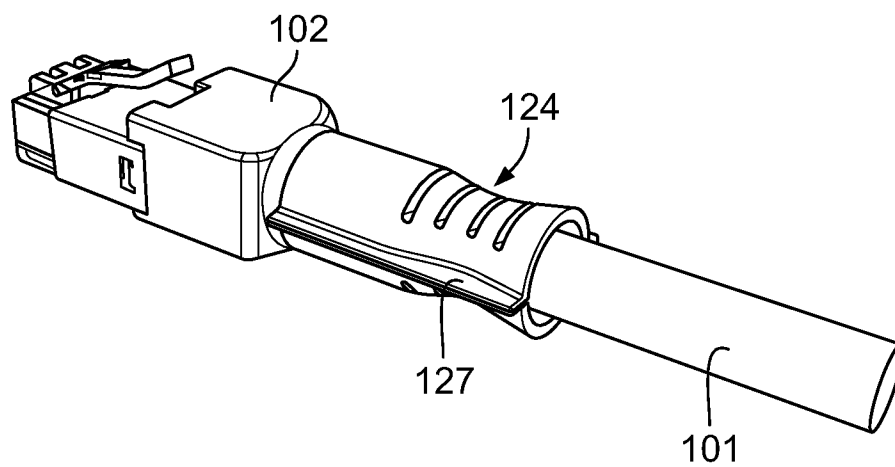
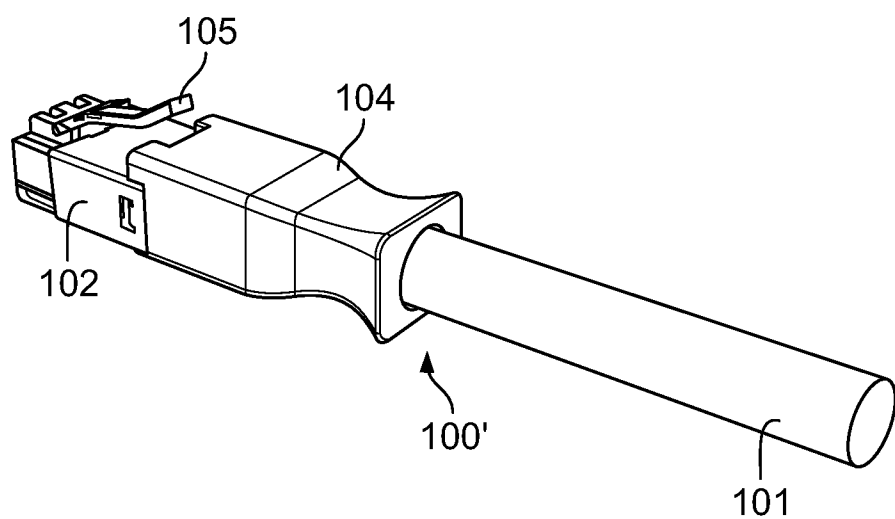
a body configured to mount to a connector having a latch; and

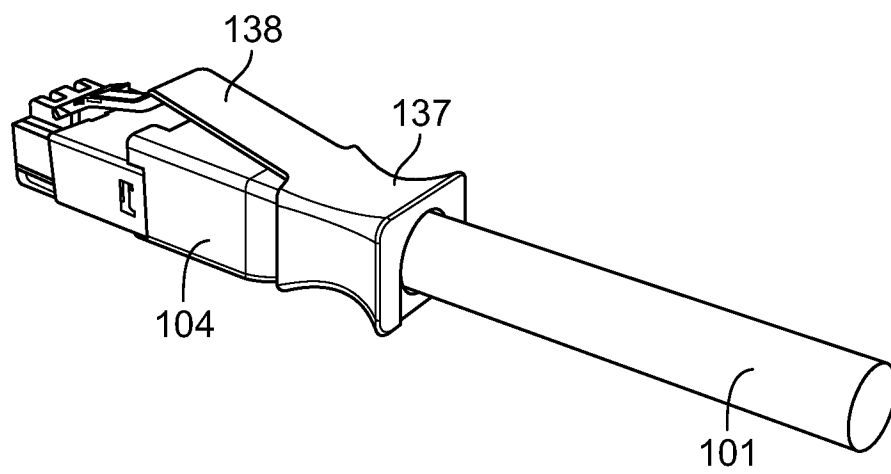
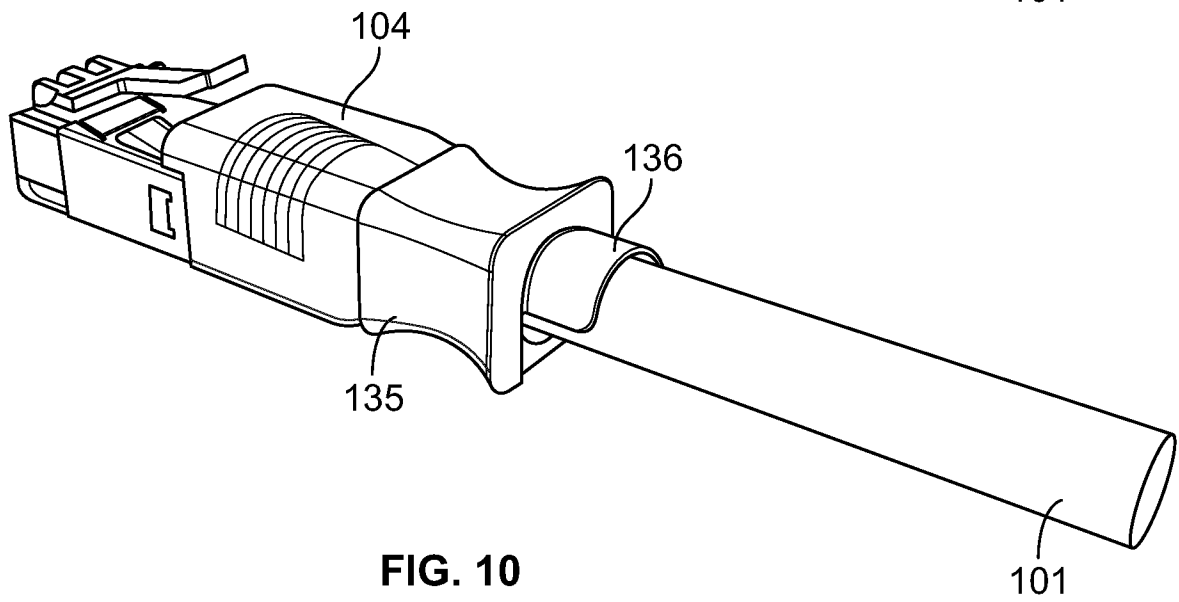
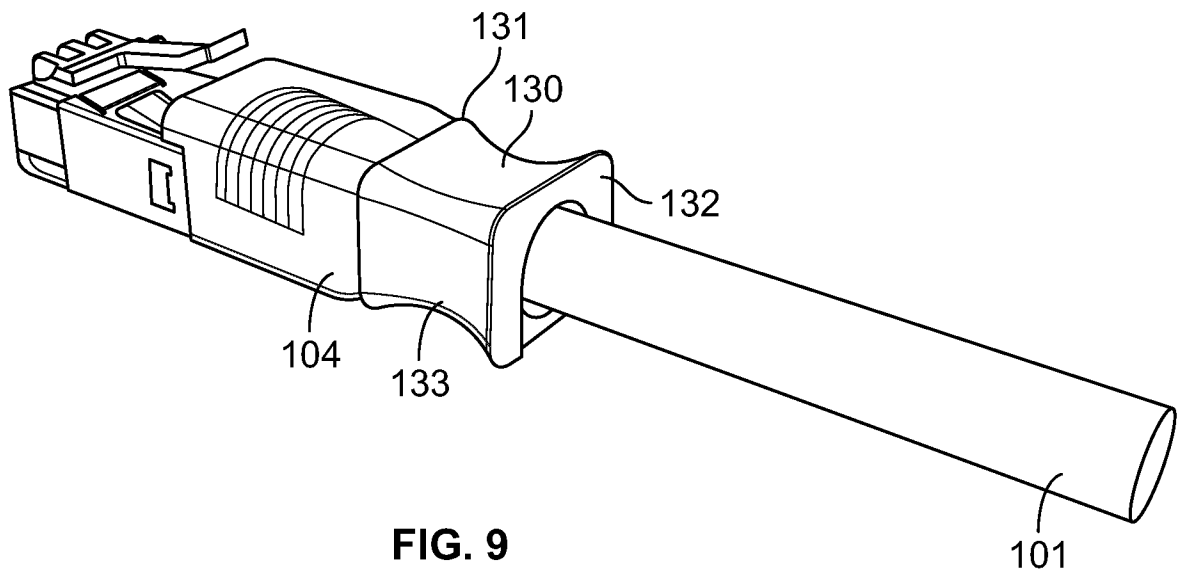
first and second ramp members disposed at the body at opposite sides of the latch, the first and second ramp members facing rearwardly of the connector, ramp surfaces of the first and second ramp surfaces being disposed further rearward than a distal tip of the latch so that the distal tip of the latch laterally aligns with highest portions of the ramp members.

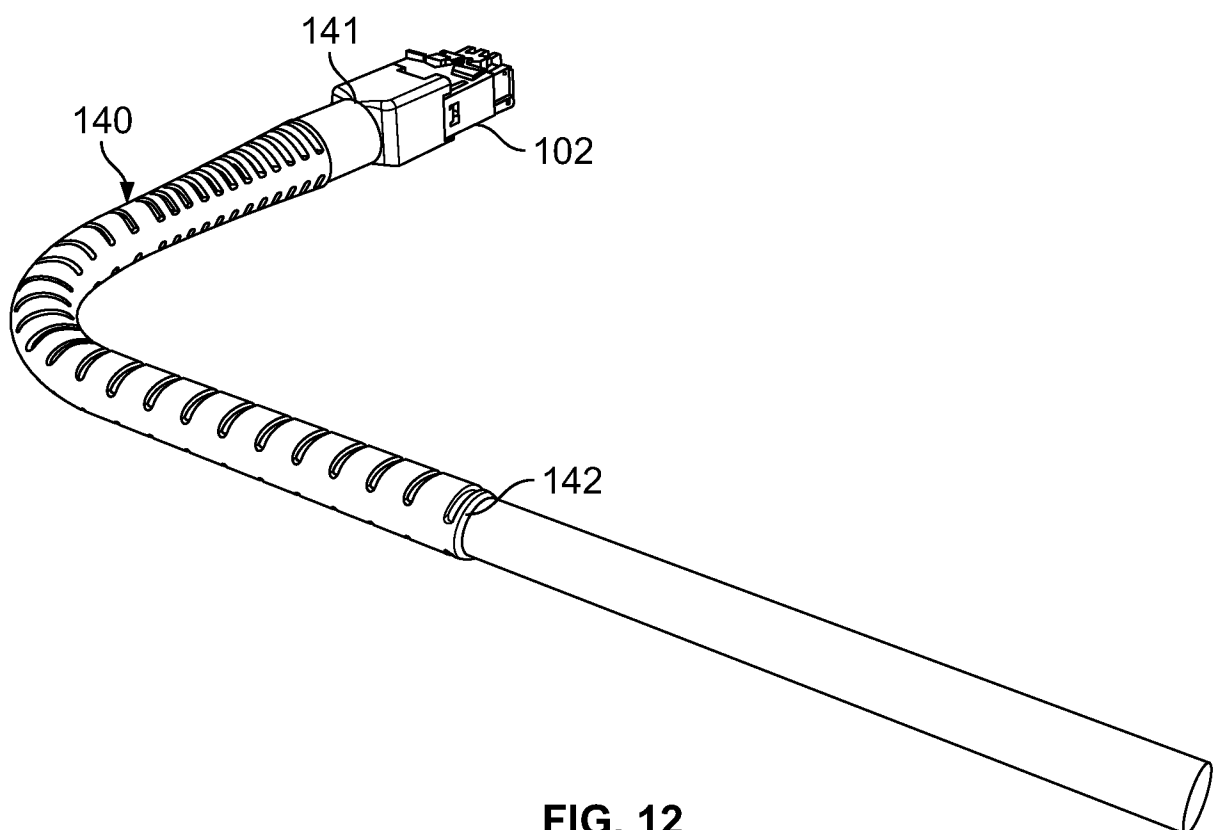
**FIG. 1****FIG. 2**

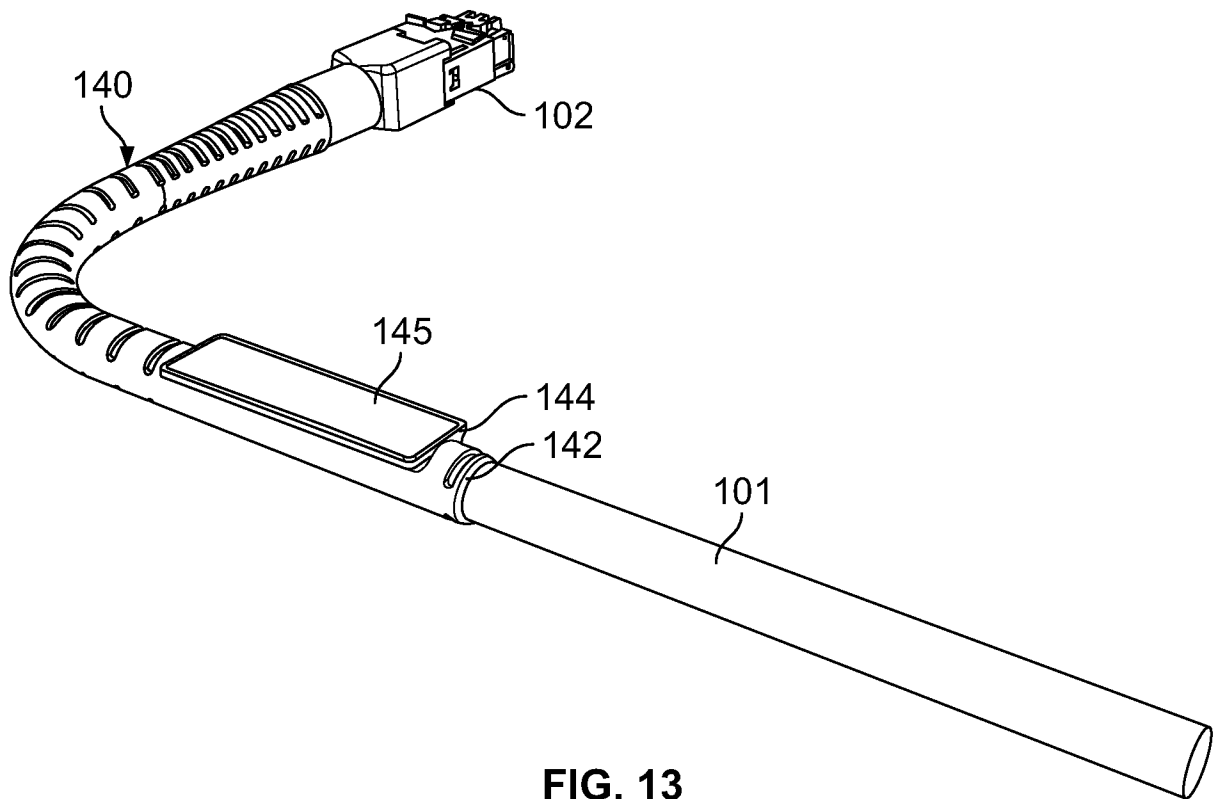
**FIG. 3****FIG. 4**

**FIG. 5****FIG. 6**

**FIG. 7****FIG. 8**



**FIG. 12**



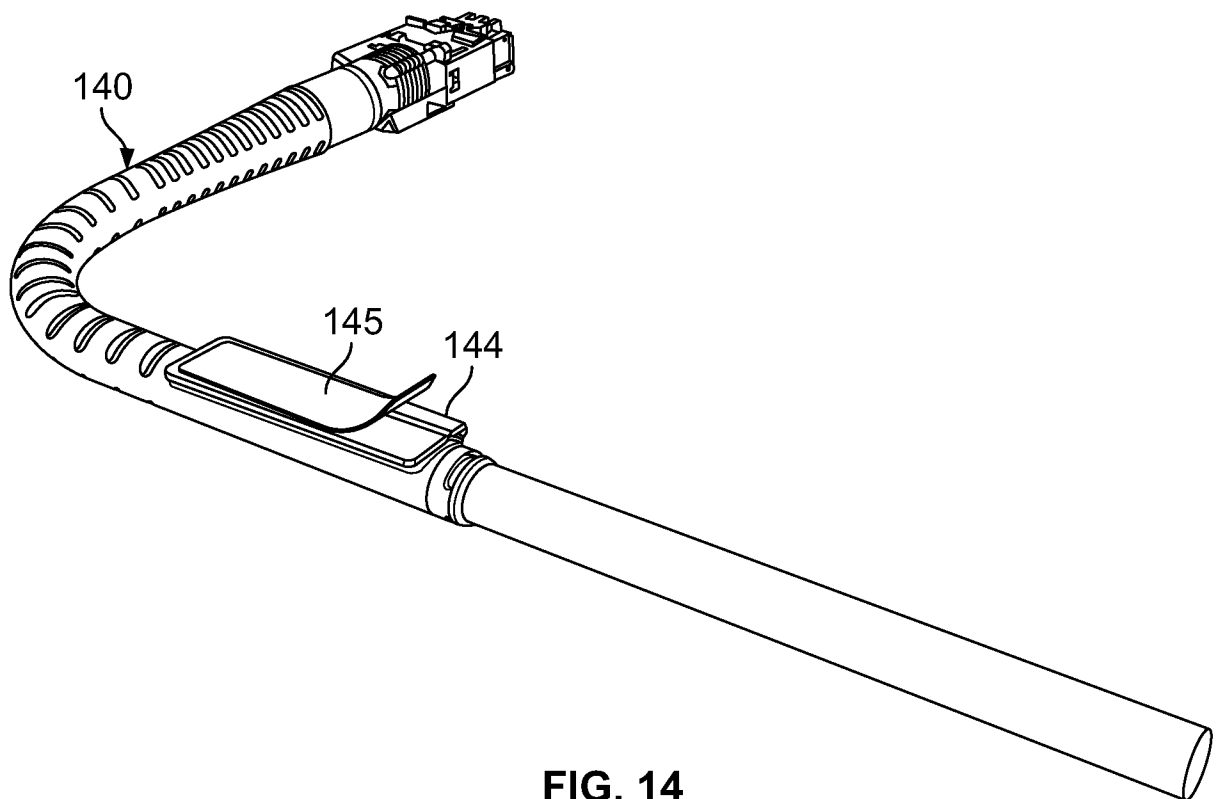
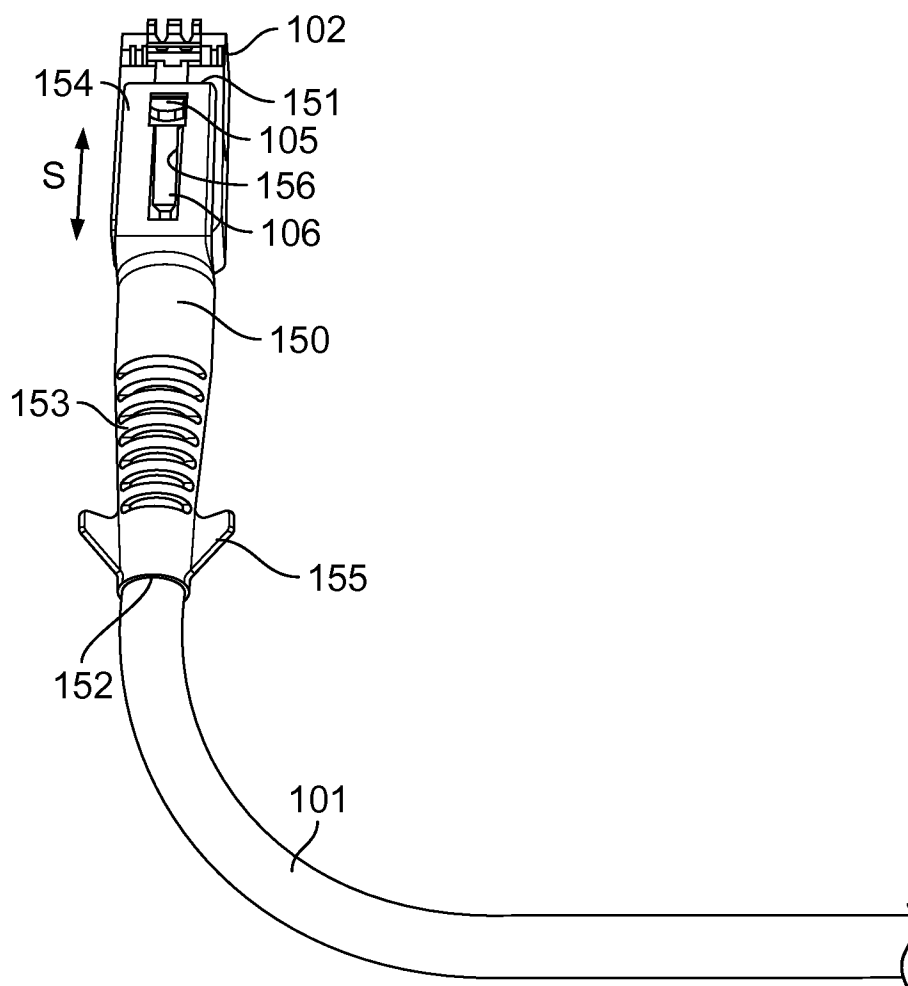
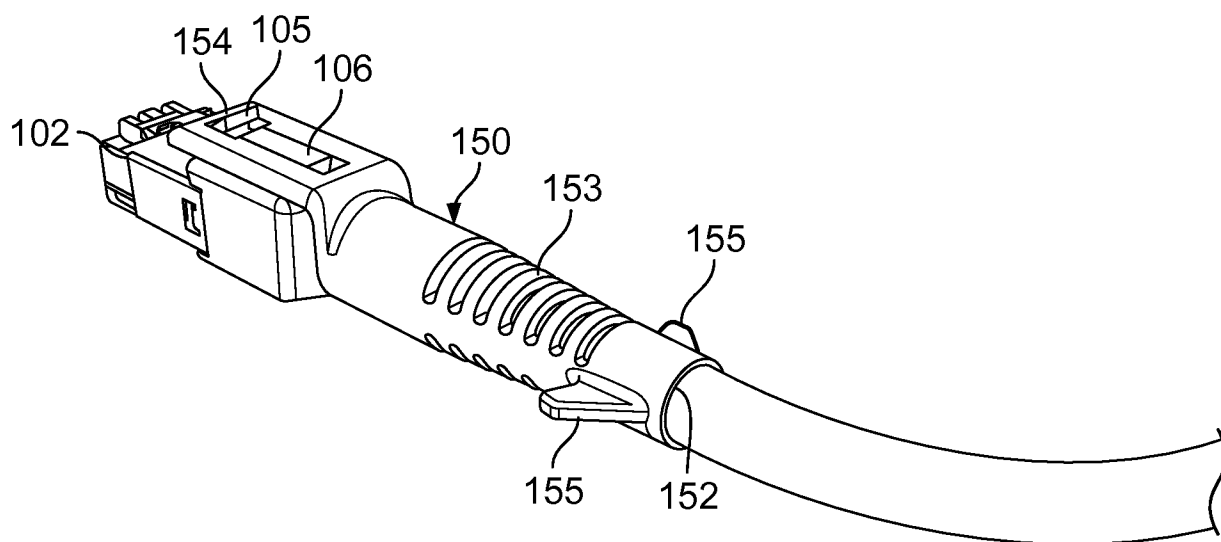


FIG. 14

**FIG. 15****FIG. 16**

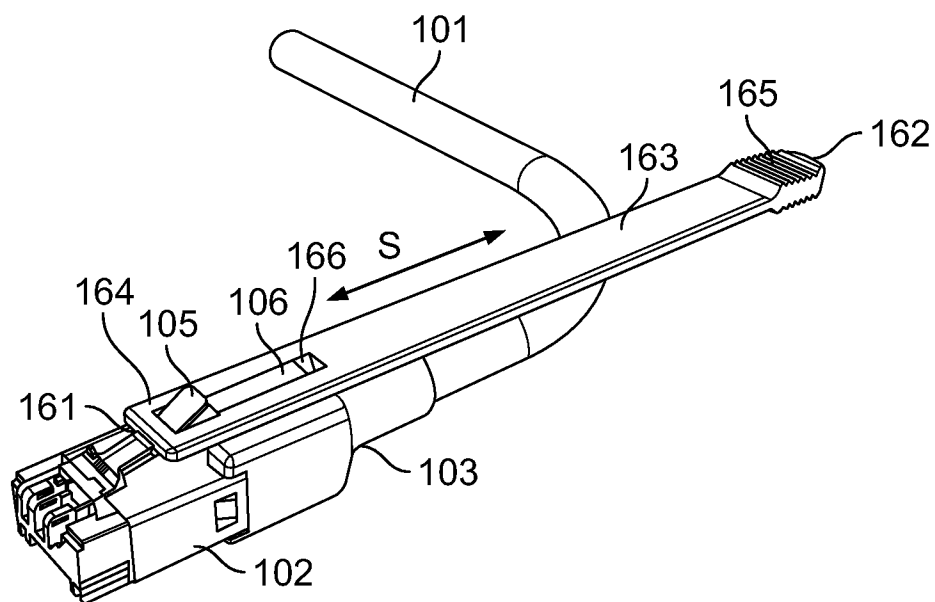


FIG. 17

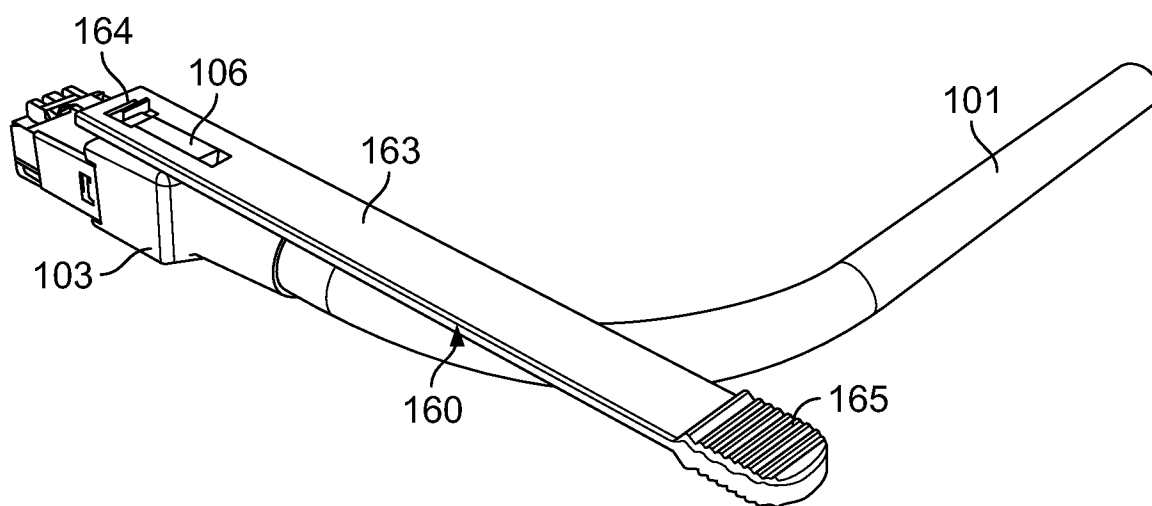
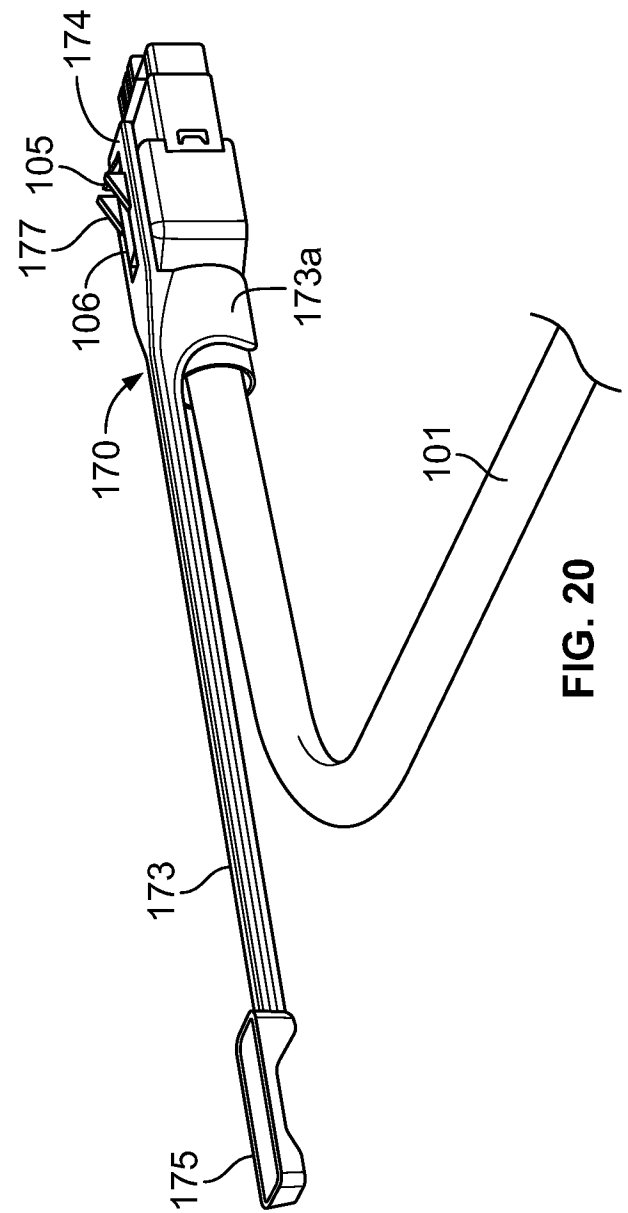
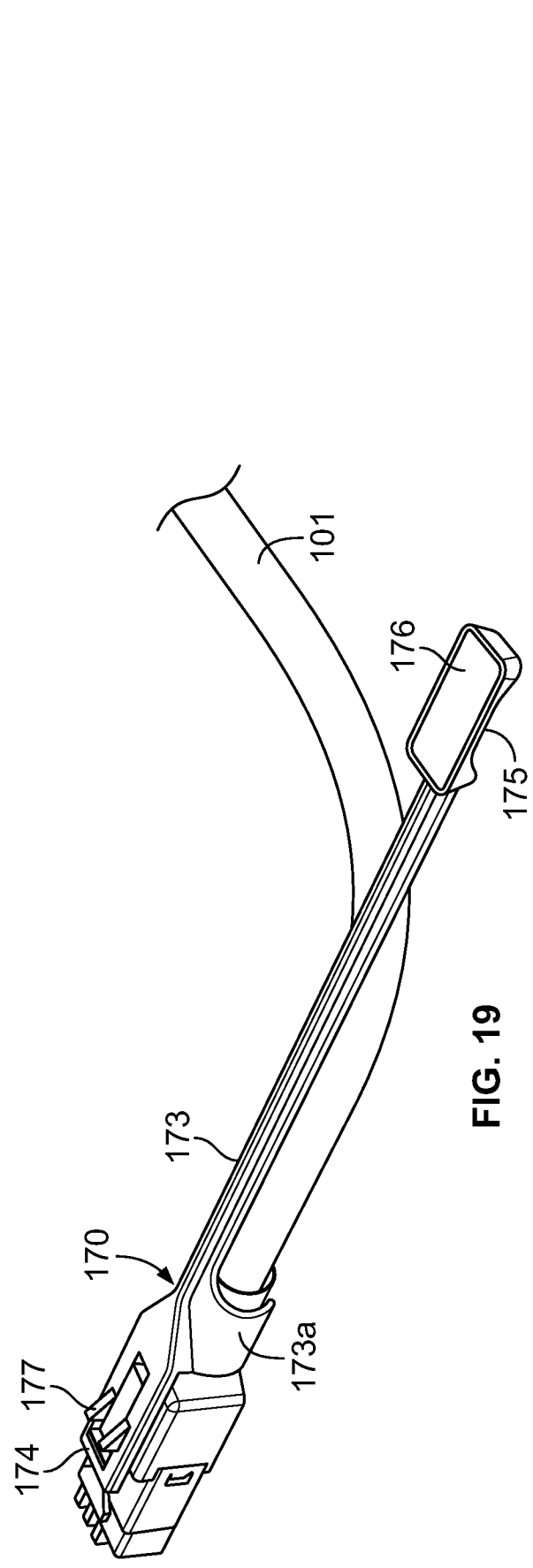


FIG. 18



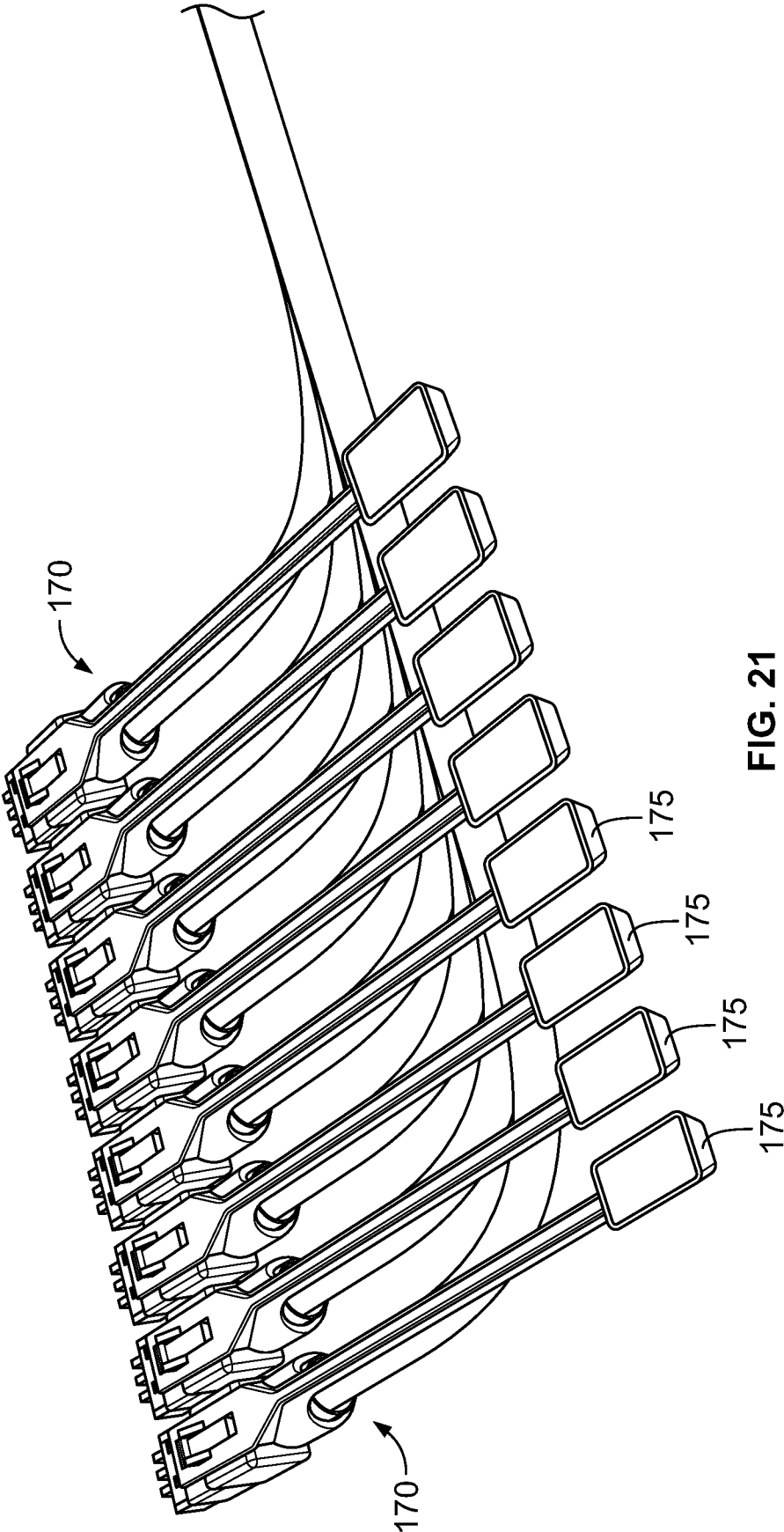
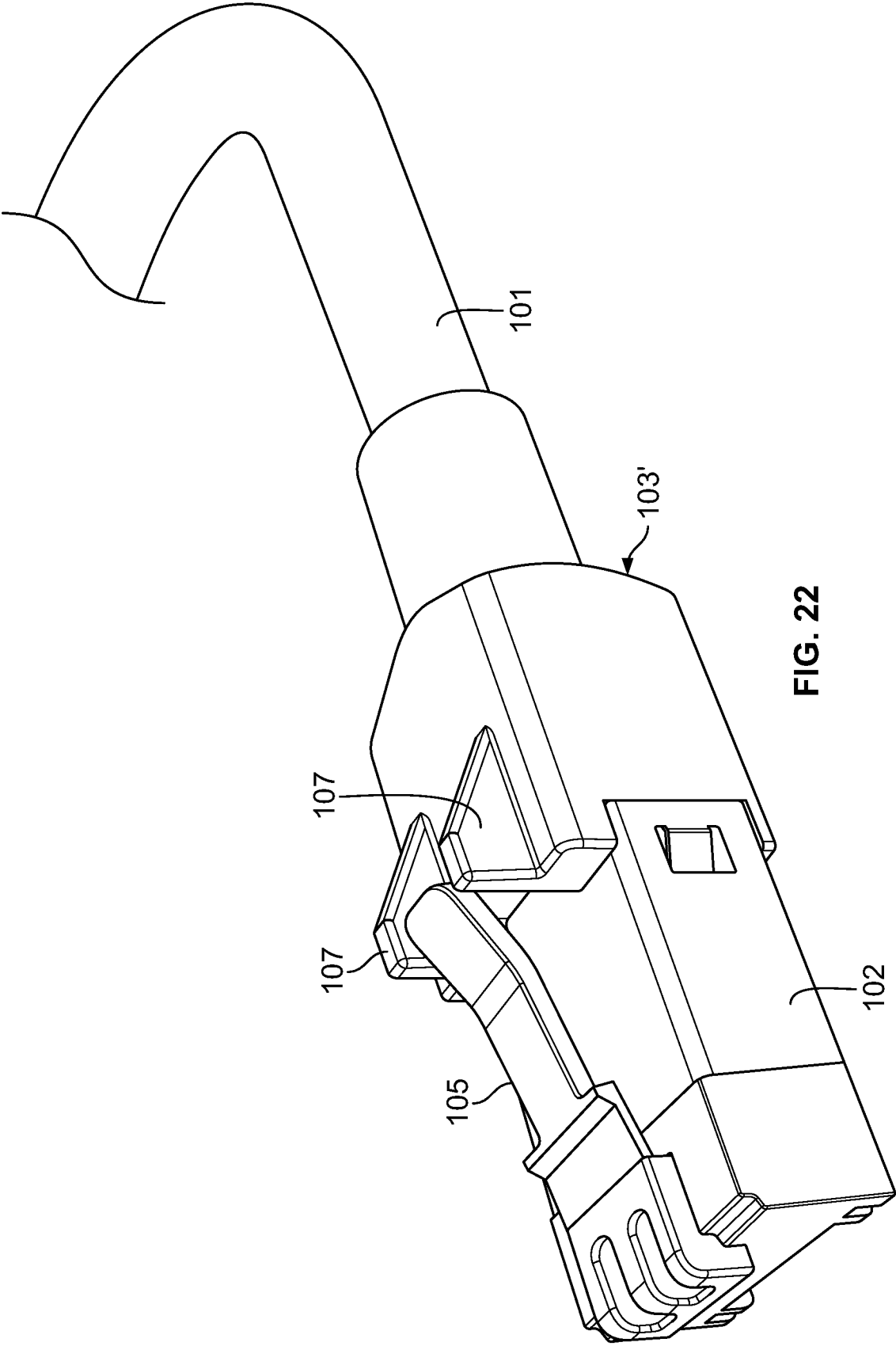
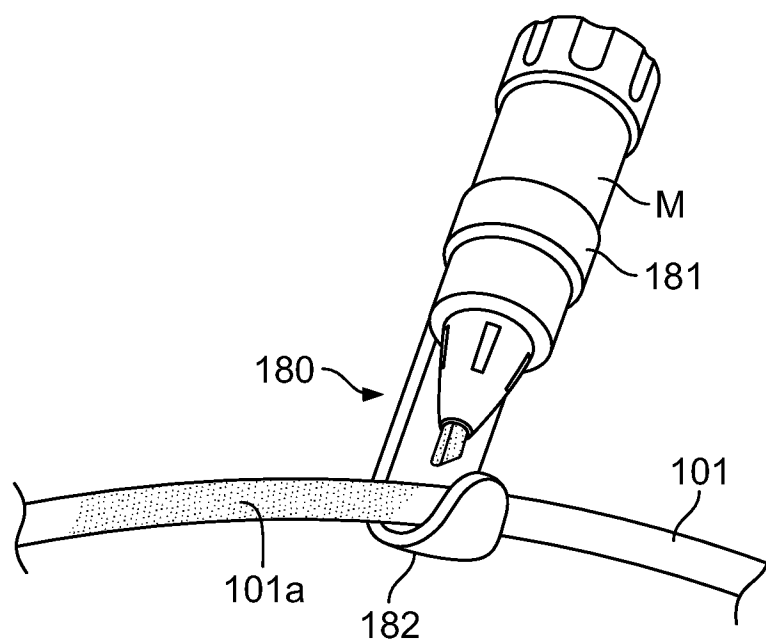
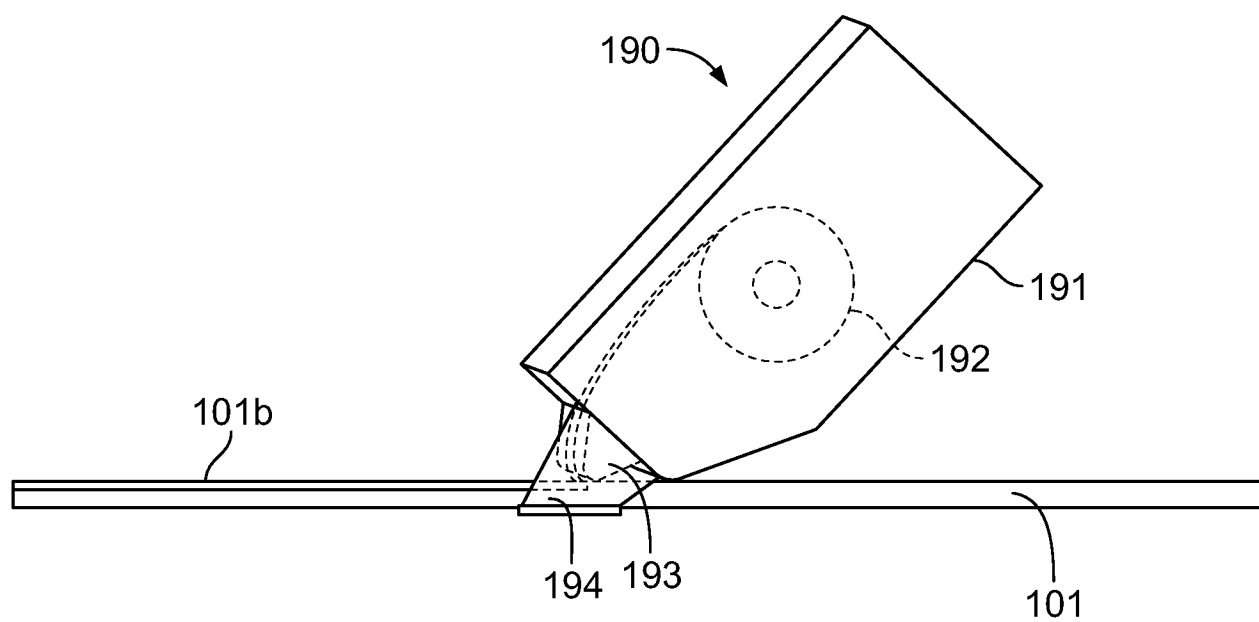


FIG. 21



**FIG. 23****FIG. 24**

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/057518

A. CLASSIFICATION OF SUBJECT MATTER INV. H01R13/46 H01R43/28 H01R24/64 H01R13/633 H01B13/34 B65H37/00 B65H35/00 B43K23/00 ADD. According to International Patent Classification (IPC) or to both national classification and IPC																	
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) H01R G02B B44B H01B B43K B43L B25B B65H Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data																	
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category*</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td>US 2013/323949 A1 (DE DIOS MARTIN LONGINOS [ES] ET AL) 5 December 2013 (2013-12-05) paragraphs [0057], [0060], [0090] - [0092]; figures 1-3, 15-17 -----</td> <td style="text-align: center; vertical-align: top;">1-6, 11-16</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td>US 6 520 796 B1 (REICHLE HANS [CH]) 18 February 2003 (2003-02-18) column 4, lines 1-34, column 5, lines 2-13; figures 1a, 1b, 2, 3 -----</td> <td style="text-align: center; vertical-align: top;">1-3, 11-13</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td>US 2012/088392 A1 (WAGNER JUSTIN S [US]) 12 April 2012 (2012-04-12) paragraph [0039]; figure 3 -----</td> <td style="text-align: center; vertical-align: top;">1,5,11, 15</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">X</td> <td>US 2011/243640 A1 (BOGERT RICHARD W [US]) 6 October 2011 (2011-10-06) paragraphs [0015] - [0035]; figures 1-9 ----- -/-</td> <td style="text-align: center; vertical-align: top;">7,8,17, 18</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 2013/323949 A1 (DE DIOS MARTIN LONGINOS [ES] ET AL) 5 December 2013 (2013-12-05) paragraphs [0057], [0060], [0090] - [0092]; figures 1-3, 15-17 -----	1-6, 11-16	X	US 6 520 796 B1 (REICHLE HANS [CH]) 18 February 2003 (2003-02-18) column 4, lines 1-34, column 5, lines 2-13; figures 1a, 1b, 2, 3 -----	1-3, 11-13	X	US 2012/088392 A1 (WAGNER JUSTIN S [US]) 12 April 2012 (2012-04-12) paragraph [0039]; figure 3 -----	1,5,11, 15	X	US 2011/243640 A1 (BOGERT RICHARD W [US]) 6 October 2011 (2011-10-06) paragraphs [0015] - [0035]; figures 1-9 ----- -/-	7,8,17, 18
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.															
X	US 2013/323949 A1 (DE DIOS MARTIN LONGINOS [ES] ET AL) 5 December 2013 (2013-12-05) paragraphs [0057], [0060], [0090] - [0092]; figures 1-3, 15-17 -----	1-6, 11-16															
X	US 6 520 796 B1 (REICHLE HANS [CH]) 18 February 2003 (2003-02-18) column 4, lines 1-34, column 5, lines 2-13; figures 1a, 1b, 2, 3 -----	1-3, 11-13															
X	US 2012/088392 A1 (WAGNER JUSTIN S [US]) 12 April 2012 (2012-04-12) paragraph [0039]; figure 3 -----	1,5,11, 15															
X	US 2011/243640 A1 (BOGERT RICHARD W [US]) 6 October 2011 (2011-10-06) paragraphs [0015] - [0035]; figures 1-9 ----- -/-	7,8,17, 18															
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.																	
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family																	
Date of the actual completion of the international search 19 July 2016		Date of mailing of the international search report 24/08/2016															
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer López García, Raquel															

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2016/057518

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 551 688 A1 (DIGO PHILIPPE [FR]) 15 March 1985 (1985-03-15) the whole document -----	7,10,17
X	US 3 196 780 A (IMRE TERNOVITS ERNEST ET AL) 27 July 1965 (1965-07-27) column 4, lines 12-24, 33-52; figure 10 -----	7,9,17, 19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2016/057518

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

1-19
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 11-16

The subject-matter of claim 1 refers to a method of identifying network connection components by adding color coded components to the network cables and connectors. The subject-matter of claim 11 refers to the corresponding network installation kit comprising cables terminated by connectors and color coded accessories.

2. claims: 7-10, 17-19

The subject-matter of claim 7 refers to a method of identifying network connection components by coloring portions of the cables with an indicative color and tool for coloring a portion of a cable. The subject-matter of claim 17 appears prima-facie to refer to a corresponding apparatus for implementing the method of claim 7.

3. claim: 20

The subject-matter of claim 20 refers to a connector accessory for mounting to a cable connector comprising a body to be mounted to a connector having a latch and two ramp members disposed at the body at opposite sides of the latch.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/057518

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013323949	A1	05-12-2013	CN 103718391 A 09-04-2014
			EP 2673853 A1 18-12-2013
			ES 2402632 A2 07-05-2013
			US 2013323949 A1 05-12-2013
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US 6520796	B1	18-02-2003	AT 240595 T 15-05-2003
			DE 50100233 D1 18-06-2003
			EP 1128487 A2 29-08-2001
			US 6520796 B1 18-02-2003
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US 2011243640	A1	06-10-2011	NONE
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US 3196780	A	27-07-1965	NONE