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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Insulating terminal base of a connector**

(57) An insulating terminal base of a connector includes a body, plural terminals and a clamping member. The body has plural terminal grooves for the terminals, and each terminal groove has a terminal guiding hole so that each male terminal may be inserted in each terminal groove. The body has a side wall with a circumference for receiving the clamping member. Then the terminals in the terminal grooves are combined with the body. The

terminals have two small diameter sections with a large diameter section between the two small diameter sections. Further, a large diameter circumference extends outward from each small diameter section so that each terminal may be stably positioned in each terminal groove. The clamping member has an opening for a proper elasticity to open and close, so that the terminals are completely combined with the body, prevented from loosening out or shifting.

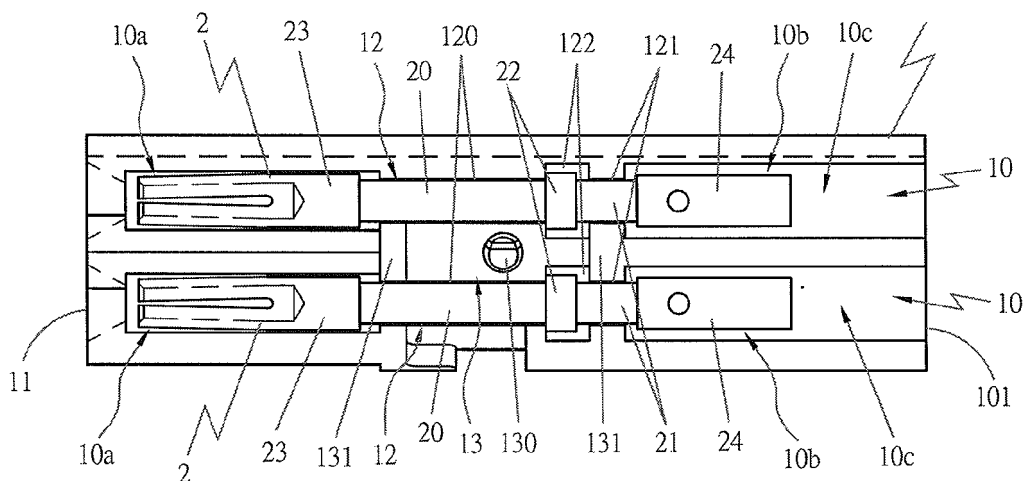


FIG 7

Description

BACKGROUND OF THE INVENTION

1. Field of the invention

[0001] This invention relates to an insulating terminal base of a connector, particularly to place the terminal in the terminal grooves of the body, combining it with the body by means of a clamping member as integral so that the terminal can be prevented from loosening off.

2. Description of the prior art

[0002] A conventional insulating terminal base, such as one disclosed in EP No.1825575 B1 and German Patent DE No. 20 2005 009 962 U11, is mainly provided with a insulating member (100, 200, 300) for a conducting member (16) in the connector, and the insulating member (100, 200, 300) is formed with a shaft hole (12) for receiving the conducting member (16) therein, and the shaft hole (12) is provided with a diametrical groove (14), which extends along just the same length of the insulating member (100, 200, 300). In addition, the diameter of the shaft hole (12) is less than that of the conducting member (16) so that the conducting member (16) may be combined with the insulating member (100, 200, 300), preventing the conducting member (16) from falling off the insulating member (100, 200, 300).

[0003] Though the prior art has a simple structure, if the combining angle is not proper after the interior insulating member is combined with the exterior male terminal, a fault may occur that the interior conducting member may loosen off the shaft hole of the insulating member or shift off the proper location. Moreover, if the interior conducting member of the insulating terminal base should be pressed forcefully by the male terminal, it might shift to one end, resulting in inferior connection.

SUMMARY OF THE INVENTION

[0004] One object of the invention is to offer an insulating terminal base of a connector able to improve the above-said faults of a conventional one.

[0005] The insulating terminal base of a connector in the present invention includes a body provided with plural terminal grooves, a terminal guiding hole formed in one end of the terminal groove and the other end being open. Then a male terminal is guided into to combine with a female terminal placed in the insulating terminal base so as to restrict the inserted angle of the male terminal, preventing the male terminal from an incorrect angle.

[0006] The body is provided with a clamping member circumference for receiving a clamping member to combine the terminals with the body in order to prevent the terminals from loosening off the terminal grooves or shifting.

[0007] The clamping member is provided with plural

curved surfaces in an inner wall to contact and tightly press the outer surface of the terminals so that the terminals are stably combined with body, preventing the terminals from loosening off the body or shifting to result in stabilizing transmission of signals.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] This invention will be better understood by referring to the accompanying drawings, wherein;

Fig. 1 is a front view of a body in the present invention; Fig. 2 is a rear view of the body in the present invention;

Fig. 3 is a side view of the body in the present invention;

Fig. 4 is a cross-sectional view of the line A - A in Fig. 3;

Fig. 5 is a cross-sectional view of the line B - B in Fig. 3;

Fig. 6 is an exploded perspective view of the insulating terminal base of a connector in the present invention;

Fig. 7 is side view of the insulating terminal base of a connector combined with terminals in the present invention;

Fig. 8 is an upper view of a clamping member in the present invention;

Fig. 9 is a cross-sectional view of the line C - C in Fig. 8;

Fig. 10 is a side view of the insulating terminal base of a connector combined together in the present invention;

Fig. 11 is a cross-sectional view of the line D - D in Fig. 10;

Fig. 12 is a perspective view of the insulating terminal base of a connector in the present invention;

Fig. 13 is a perspective view of an example of the insulating terminal base of a connector combined with a terminal shell in the present invention;

Fig. 14 is a perspective of another example of the insulating terminal base of a connector combined with a terminal shell in the present invention; and

Fig. 15 is a perspective view of the insulating terminal base of a connector combined with a connector in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] An insulating terminal base of a connector in the present invention, as shown in Figs. 1 to 3, includes a body 1, a plurality of terminals 2, and a clamping member 3 as its components combined together.

[0010] As shown in Figs. 1, 2, and 3, the body 1 is made integral, provided with a plurality of terminal grooves 10, a first groove 10a and a second groove 10b formed in each terminal groove 10, and a position groove

12 formed between each first groove 10a and each second groove 10b. The length of each first groove 10a, each second groove 10b and each position groove 10c may be all the same or not the same.

[0011] In addition, each terminal groove 10 has an opening 10c for a terminal to be inserted

[0012] As shown in Fig. 1 and 3, one end of the terminal groove 10 or one end of the first groove 10a is a terminal guiding hole 100, so that a male terminal may be inserted to combine with the female terminal 2 placed in the insulating terminal base. All the terminal guiding holes 100, as shown in Figs. 2 and 3, are located in a front end surface of the body 1, and formed in an annular shape as those of all the terminal grooves 10. The other end of the terminal grooves 10 is the other end of the second grooves 10b, or as open end 101.

[0013] As shown in Figs. 2 and 3, the position groove 12 of each terminal groove 10 is provided with two small diameter sections 120, 121 of the same or different length, and in this embodiment, they are illustrated as not the same. In addition, a large diameter section 122 is formed between the two small diameter sections 120, and 121, having a smaller or a larger length as that of the two small diameter sections 120 and 121 as shown in Fig. 5. The large diameter section 122 has an inner diameter larger than that of the two small diameter sections 120 and 121, but also may be smaller than that of the two small diameter sections 120 and 121. Moreover, the inner diameter of the large diameter section 122 is larger than that of the terminal groove 10.

[0014] Next, as shown in Figs. 2 and 3, the two small diameter sections 120 and 121 has the inner diameter smaller than that of the inner diameter of the terminal groove 10, so the two small diameter sections 120 and 121 are higher than the bottom wall 103 of the terminal groove 10.

[0015] As shown in Figs. 3, 5, 6 and 7, the position groove 12 is provided with a clamping member circumference 13 formed recessed in the outer surface of the body 1, so as to match with the thickness of the wall of the clamping member 3. The clamping member circumference 13 has the same shape as the clamping member 3, provided with two positioning edges 130 to fit in the edge hole of the clamping member 3 and two guiding faces 131 formed on two sides for the clamping member 3 to correctly and quickly be combined together.

[0016] The terminals 2 can be a signal terminal or a conducting terminal, as shown in Fig. 6 and 7, provided with two small diameter sections 20 and 21, with a large diameter section 22 formed between the two small diameter sections 20 and 21. The small diameter sections 20 and 21 are equally or not equally long, but preferably matching with the length of the two small diameter sections 20 and 21. The large diameter section 22 may be larger or smaller than the two small diameter sections 20 and 21, but preferably larger. Moreover, the large diameter section 22 is formed to match with the large diameter section 122 of the position groove 12. The two small di-

ameter sections 20 and 21 are provided with two large diameter circumferences 23 and 24. In addition, the outer diameter of the large diameter section 22 of the terminal may be equal to, larger than or smaller than the large diameter section 122 of the position groove 12.

[0017] Next, as shown in Fig. 7, In combining the terminals 2 with the body 1, the two small diameter sections 20 and 21 and the large diameter section 22 of the terminals 2 are respectively placed in the two small diameter sections 120 and 121 of the position groove 12, resulting in combining the terminals 2 with the position grooves 12, and also combining the terminals 2 with the body 1.

[0018] The clamping member 3 is provided with an opening 30, as shown in Figs. 6, 8 and 9. The opening 30 has a width smaller than the diameter of the clamping member 3, so as to give the clamping member 3 some flexibility to open and close. The clamping member 3 is also provided with plural curved surfaces 31, which are made to correspond to the location and number of the terminal grooves 10 of the body 1. The clamping member 3 is also provided with plural edge holes 32 corresponding to the location of the position edge 130 of the clamping member circumference 13. Then the edge holes 32 fit with the position edges 130, combining the clamping member 3 with the body completely.

[0019] In combining the insulating terminal base of a connector, firstly, the terminals 2 are inserted in the terminal grooves 10, and the clamping member 3 is placed in the clamping member circumference 13 of the body 1, forming a circular body as shown in Figs. 10 and 11, with the curved surfaces 31 of the clamping member 3 tightly pressing the surface of the terminal 2, with the edge hole 32 of the clamping member 3 and the position edge 130 of the clamping member circumference 13 mutually fitting with each other, stably combining the body 1 and the terminal 2 with the clamping member 3, as shown in Figs. 12 and 13. Thus, the terminals 2 can be prevented from loosening off the terminal grooves 10, avoiding inferior contact and thereby stabilizing signals transmitted through the connector.

[0020] Next, as shown in Figs. 12 and 13, the insulating terminal base (A) is directly positioned in the shell 4 of the terminals and than placed in a connector (B), becoming a practical connector as shown in Fig. 15.

[0021] Or as shown in Fig. 14, a flexible sleeve 5 is installed around an outer surface of the insulating terminal base (A), provided with a front circumference 50 and a rear circumference 51 with a comparatively large outer diameter so as to smoothly be inserted in the terminal hole 40. The flexible sleeve 5 is provided with plural long holes 52, which have a circumference 53 curved and having an outer diameter gradually becoming smaller from the rear circumference 51 to the front circumference 50 so that the circumference 53 flexibly open and close a little. In addition, the flexible sleeve 5 is provided with an opening 54 for producing outer diameter change properly for convenience of assembling and operation. Therefore, the provision of the flexible sleeve 5 in the terminal shell

4 in the terminal hole 40 can maintain the outer surface of the terminal hole 40 completely closed.

[0022] While the preferred embodiment of the invention has been described above, it will be recognized and understood the various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.

Claims

1. An insulating terminal base of a connector comprising:

a body provided with a plural terminal grooves for placing terminals therein, said body also provided with a clamping member circumference for receiving a clamping member therein for combining terminals stably enough;

terminals placed in said terminal grooves;

a clamping member provided with an opening to produce proper flexibility to open and close, said clamping member also provided with plural curved surfaces to correspond to the number of said terminals; and

said terminals positioned in said terminal grooves and clamped by said clamping member inserted in said clamping member circumference with said curved surfaces tightly pressing said terminal surfaces so as to combine said terminals with said body completely and also to prevent said terminals from loosening off or shifting.

2. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminal grooves of said body are provided with first grooves, second grooves and position grooves, said first grooves, said second grooves and said position grooves having a length the same or not the same as those of terminal guiding holes formed at one end of said first grooves, said terminal guiding holes formed in a front wall surface of said body so as to guide an exterior male terminal to combine with said terminal in said insulating terminal base, said second grooves having another end being open.

3. The insulating terminal base of a connector as claimed in Claim 1, wherein said position grooves of said terminal grooves in said body are respectively provided with two small diameter sections and a large diameter section set between said two small diameter sections, said small diameter sections located higher than a bottom wall of said terminal groove; said two small diameter sections have the same inner diameter, but the length the same or not the same; said large diameter section of said position

groove in said body has the same length as or smaller or larger than said two small diameter sections, and said large diameter section has an inner diameter larger than those of said small diameter sections, or the same or larger than that of an inner diameter of said terminal groove

4. The insulating terminal base of a connector as claimed in Claim 1, wherein said clamping member circumference is formed recessed in a surface of said body to correspond to wall thickness and shape of said clamping member; said clamping member circumference is provided with two position edges to fit with said edge holes of said clamping member.

5. The insulating terminal base of a connector as claimed in Claim 1, wherein said clamping member circumference of said body has a guiding face at two sides to correctly and quickly combine with said clamping member together.

6. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminals are respectively provided with two small diameter sections and a large diameter section, said small diameter sections have the same or not the same length, and said large diameter has an outer diameter larger than those of said two small diameter sections.

7. The insulating terminal base of a connector as claimed in Claim 1, wherein said opening of said clamping member has a width smaller than the diameter of said clamping member to enable said clamping member to flexibly open or close properly; said clamping member is provided with an edge hole to correspond to a location of said position edge of said clamping member circumference of said body, so that mutual combination of said edge hole with said position edge of said clamping member circumference of said body can completely combine said body, said terminals and said clamping member.

8. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminals are firstly positioned in said terminal grooves of said body in assembling said insulating terminal base, next, said clamping member is placed in said clamping member circumference of said body to let said curved surfaces of said clamping member tightly pressing the surface of said terminals, with said edge hole of said clamping member fitting with said position edge of said clamping member circumference, thus combining together said body, said terminals and said clamping member as integral.

9. The insulating terminal base of a connector as claimed in Claim 1, wherein a flexible sleeve is placed around an outer surface of said insulating ter-

terminal base of a connector, said flexible sleeve is provided with a front circumference and a rear circumference with a comparatively large diameter so as to smoothly be inserted in a terminal hole of a terminal shell; said flexible sleeve is also provided with plural long holes, said long holes have a curved circumference, which flexibly opens properly by means of said long holes; said flexible sleeve is also provided with a long opening in order to flexibly open or close properly so as to change its outer diameter for convenience of installment and operation of said flexible sleeve.

Amended claims in accordance with Rule 137(2) EPC.

1. An insulating terminal base of a connector comprising:

a body provided with a plural terminal grooves for placing terminals therein, said body also provided with a clamping member circumference for receiving a clamping member therein for combining terminals stably enough;

terminals placed in said terminal grooves;

a clamping member provided with an opening to produce proper flexibility to open and close, said clamping member also provided with plural curved surfaces to correspond to the number of said terminals; and

said terminals positioned in said terminal grooves and clamped by said clamping member inserted in said clamping member circumference with said curved surfaces tightly pressing said terminal surfaces so as to combine said terminals with said body completely and also to prevent said terminals from loosening off or shifting.

2. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminal grooves of said body are provided with first grooves, second grooves and position grooves, said first grooves, said second grooves and said position grooves having a length the same or not the same as those of terminal guiding holes formed at one end of said first grooves, said terminal guiding holes formed in a front wall surface of said body so as to guide an exterior male terminal to combine with said terminal in said insulating terminal base, said second grooves having another end being open.

3. The insulating terminal base of a connector as claimed in Claim 1, wherein said position grooves of said terminal grooves in said body are respectively provided with two small diameter sections and a large diameter section set between said two small

diameter sections, said small diameter sections located higher than a bottom wall of said terminal groove; said two small diameter sections have the same inner diameter, but the length the same or not the same; said large diameter section of said position groove in said body has the same length as or smaller or larger than said two small diameter sections, and said large diameter section has an inner diameter larger than those of said small diameter sections, or the same or larger than that of an inner diameter of said terminal groove.

4. The insulating terminal base of a connector as claimed in Claim 1, wherein said clamping member circumference is formed recessed in a surface of said body to correspond to wall thickness and shape of said clamping member; said clamping member circumference is provided with two position edges to fit with said edge holes of said clamping member.

5. The insulating terminal base of a connector as claimed in Claim 1, wherein said clamping member circumference of said body has a guiding face at two sides to correctly and quickly combine with said clamping member together.

6. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminals are respectively provided with two small diameter sections and a large diameter section, said small diameter sections have the same or not the same length, and said large diameter has an outer diameter larger than those of said two small diameter sections.

7. The insulating terminal base of a connector as claimed in Claim 1, wherein said opening of said clamping member has a width smaller than the diameter of said clamping member to enable said clamping member to flexibly open or close properly; said clamping member is provided with an edge hole to correspond to a location of said position edge of said clamping member circumference of said body, so that mutual combination of said edge hole with said position edge of said clamping member circumference of said body can completely combine said body, said terminals and said clamping member.

8. The insulating terminal base of a connector as claimed in Claim 1, wherein said terminals are firstly positioned in said terminal grooves of said body in assembling said insulating terminal base, next, said clamping member is placed in said clamping member circumference of said body to let said curved surfaces of said clamping member tightly pressing the surface of said terminals, with said edge hole of said clamping member fitting with said position edge of said clamping member circumference, thus combining together said body, said terminals and said

clamping member as integral.

9. The insulating terminal base of a connector as claimed in Claim 1, wherein a flexible sleeve is placed around an outer surface of said insulating terminal base of a connector, said flexible sleeve is provided with a front circumference and a rear circumference with a comparatively large diameter so as to smoothly be inserted in a terminal hole of a terminal shell; said flexible sleeve is also provided with plural long holes, said long holes have a curved circumference, which flexibly opens properly by means of said long holes; said flexible sleeve is also provided with a long opening in order to flexibly open or close properly so as to change its outer diameter for convenience of installment and operation of said flexible sleeve.

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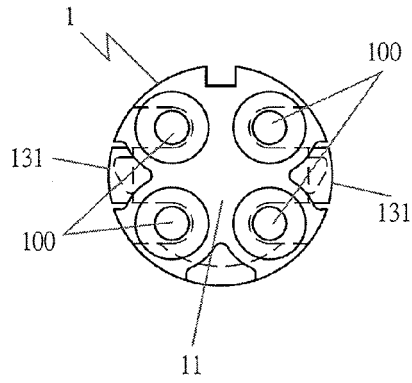


FIG 1

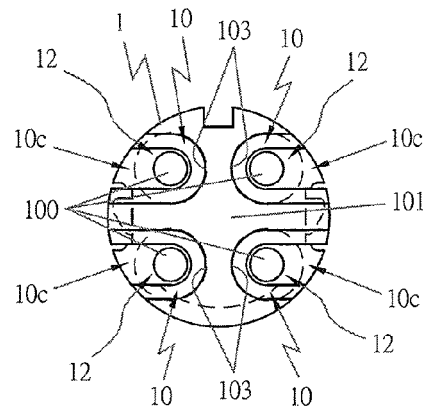


FIG 2

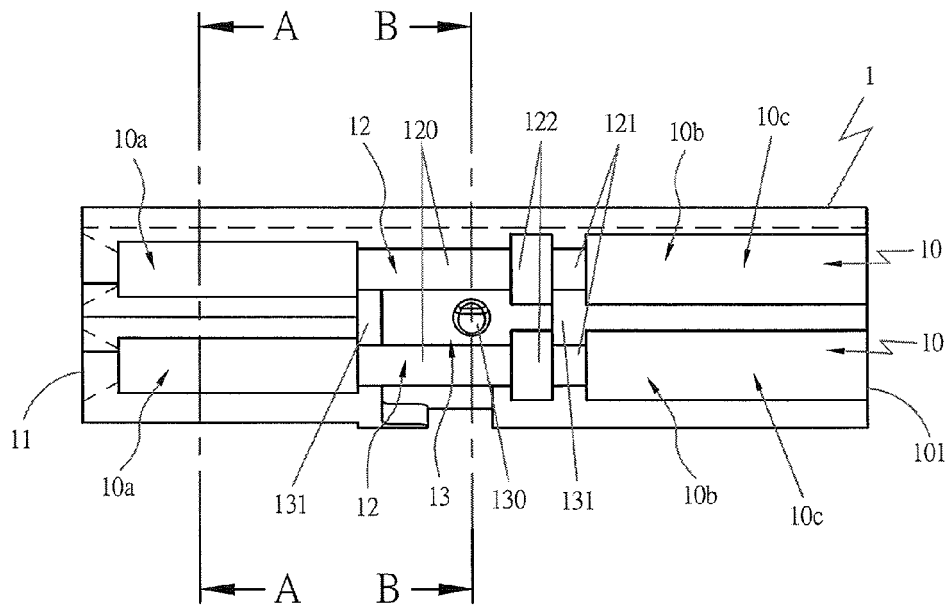


FIG 3

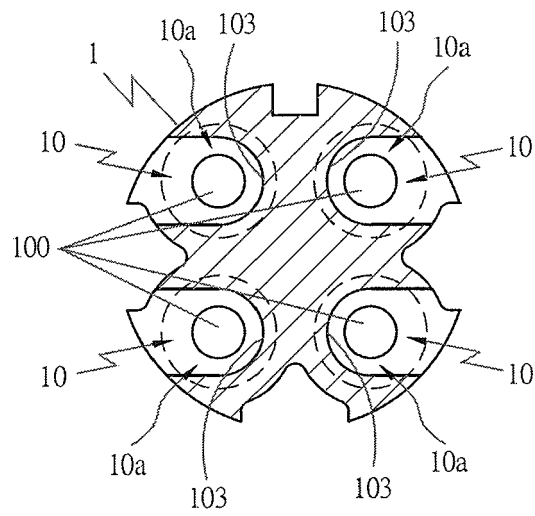


FIG 4

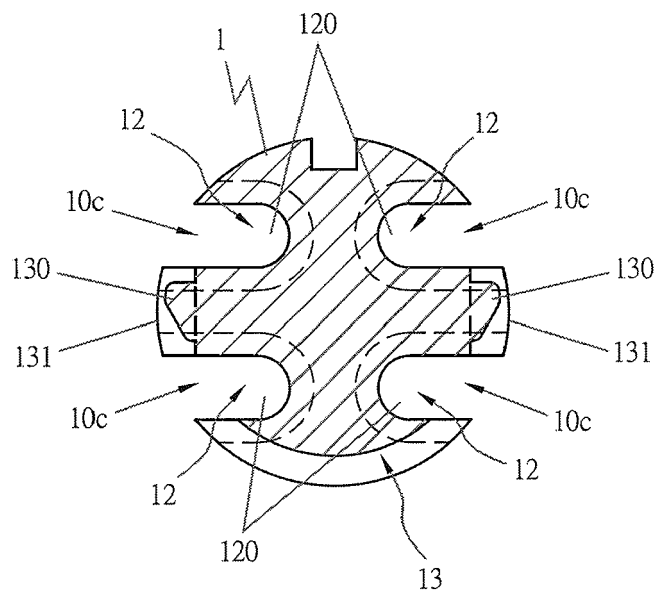


FIG 5

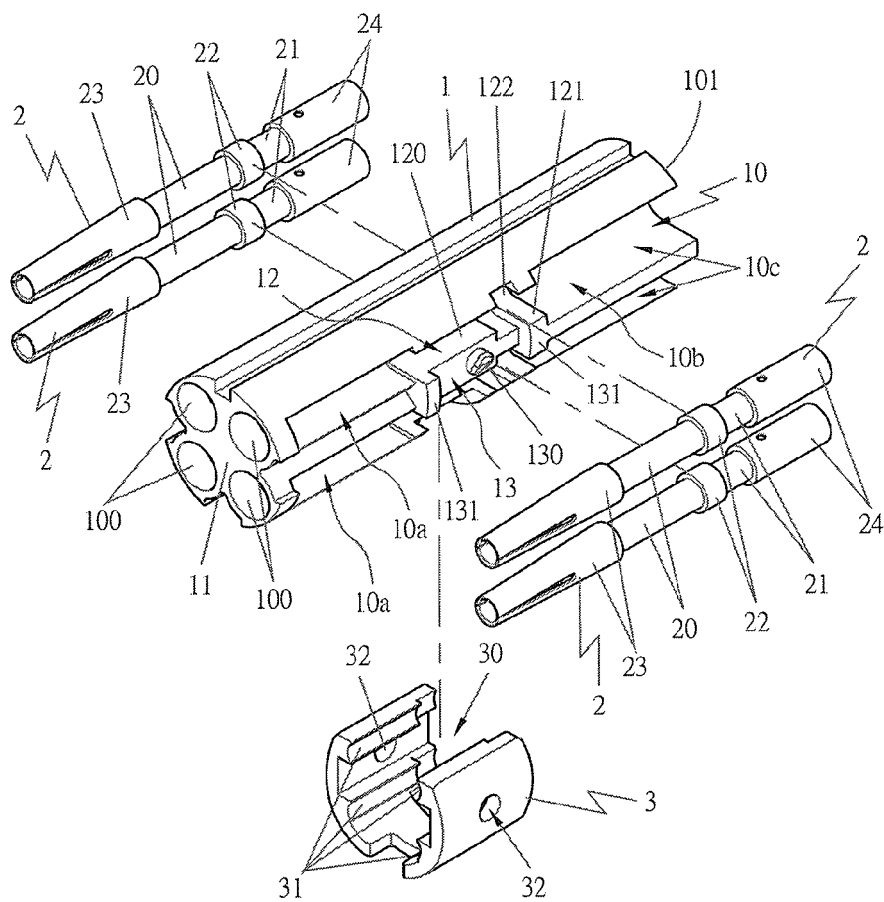


FIG 6

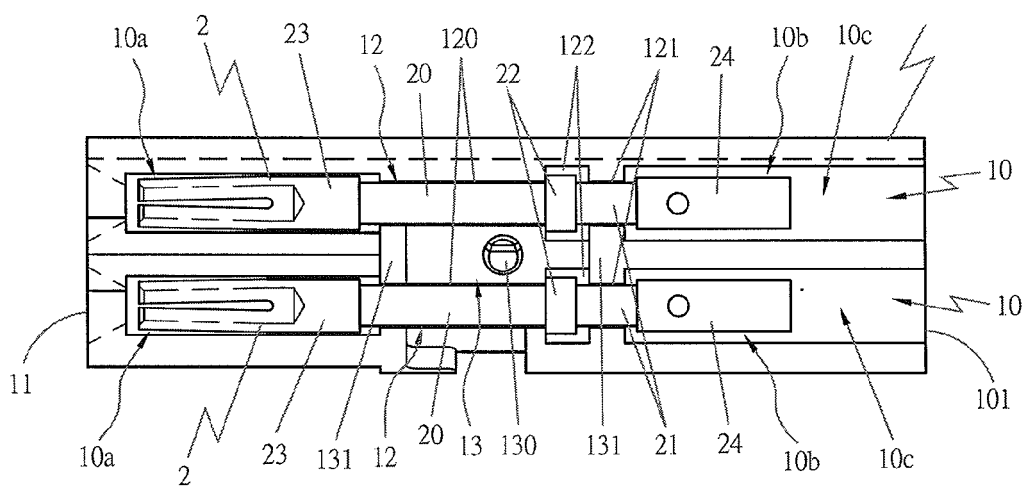


FIG 7

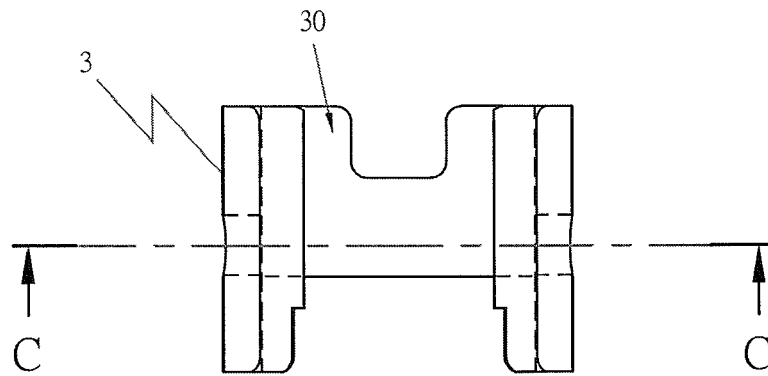


FIG 8

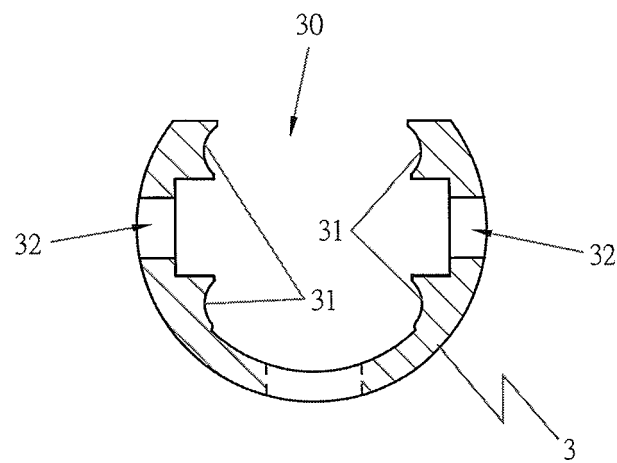


FIG 9

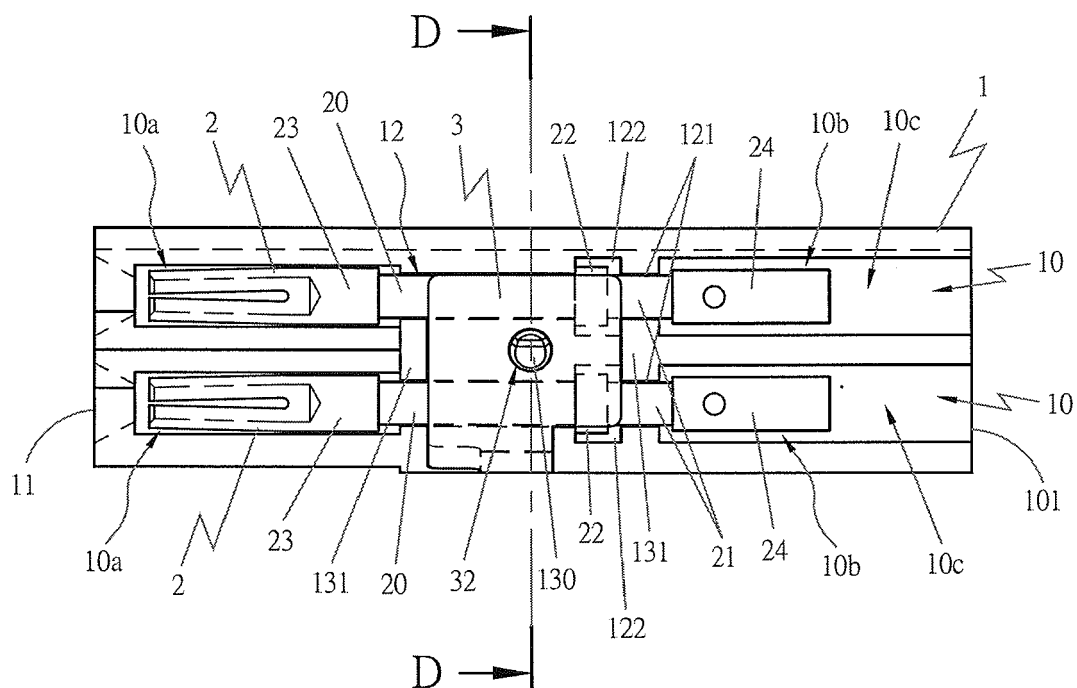


FIG 10

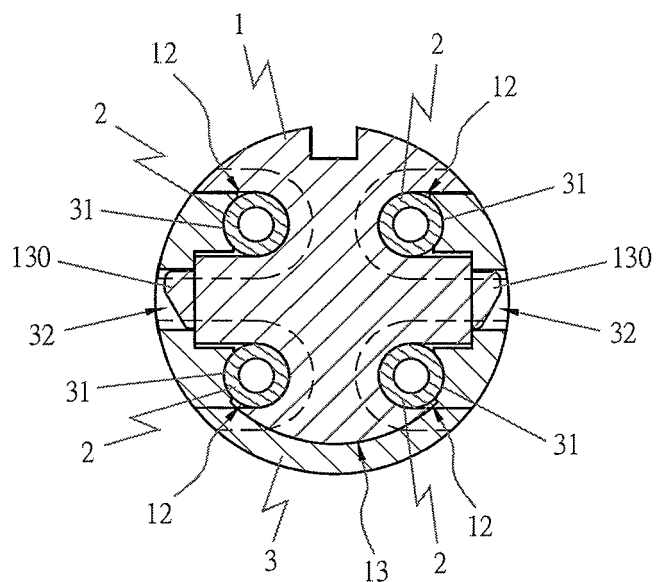


FIG 11

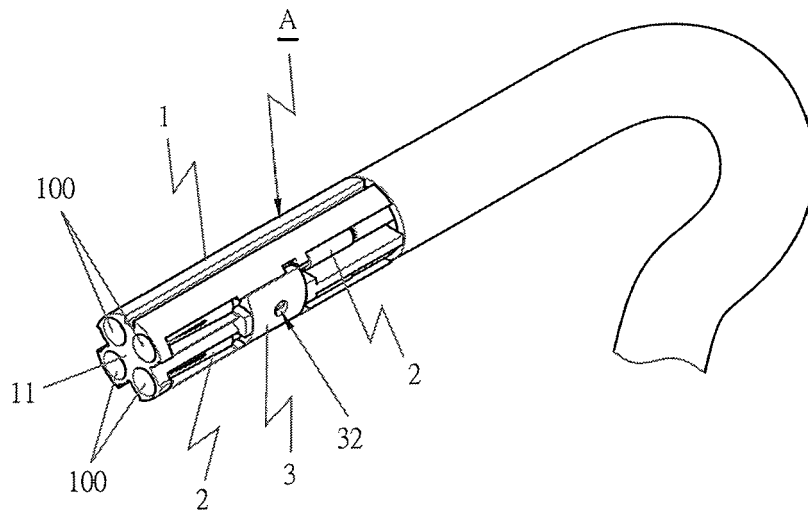


FIG 12

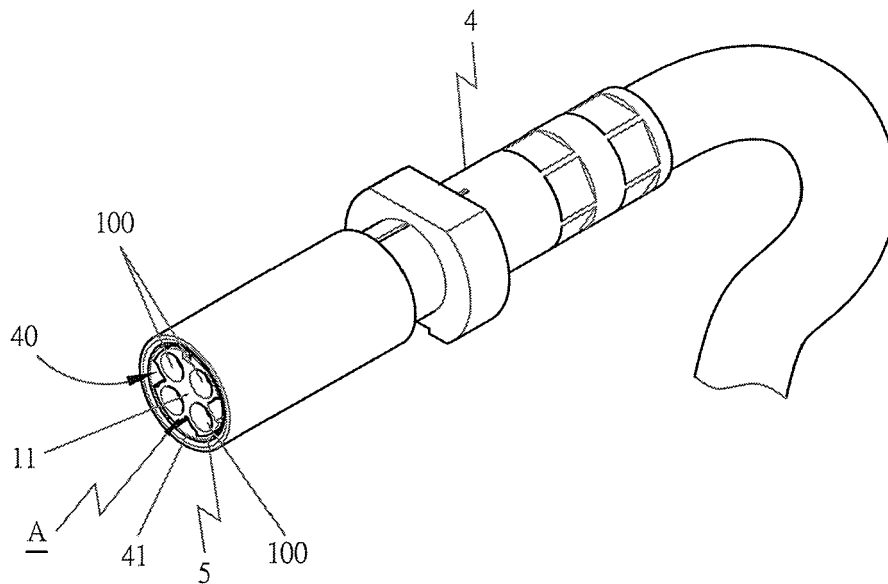


FIG 13

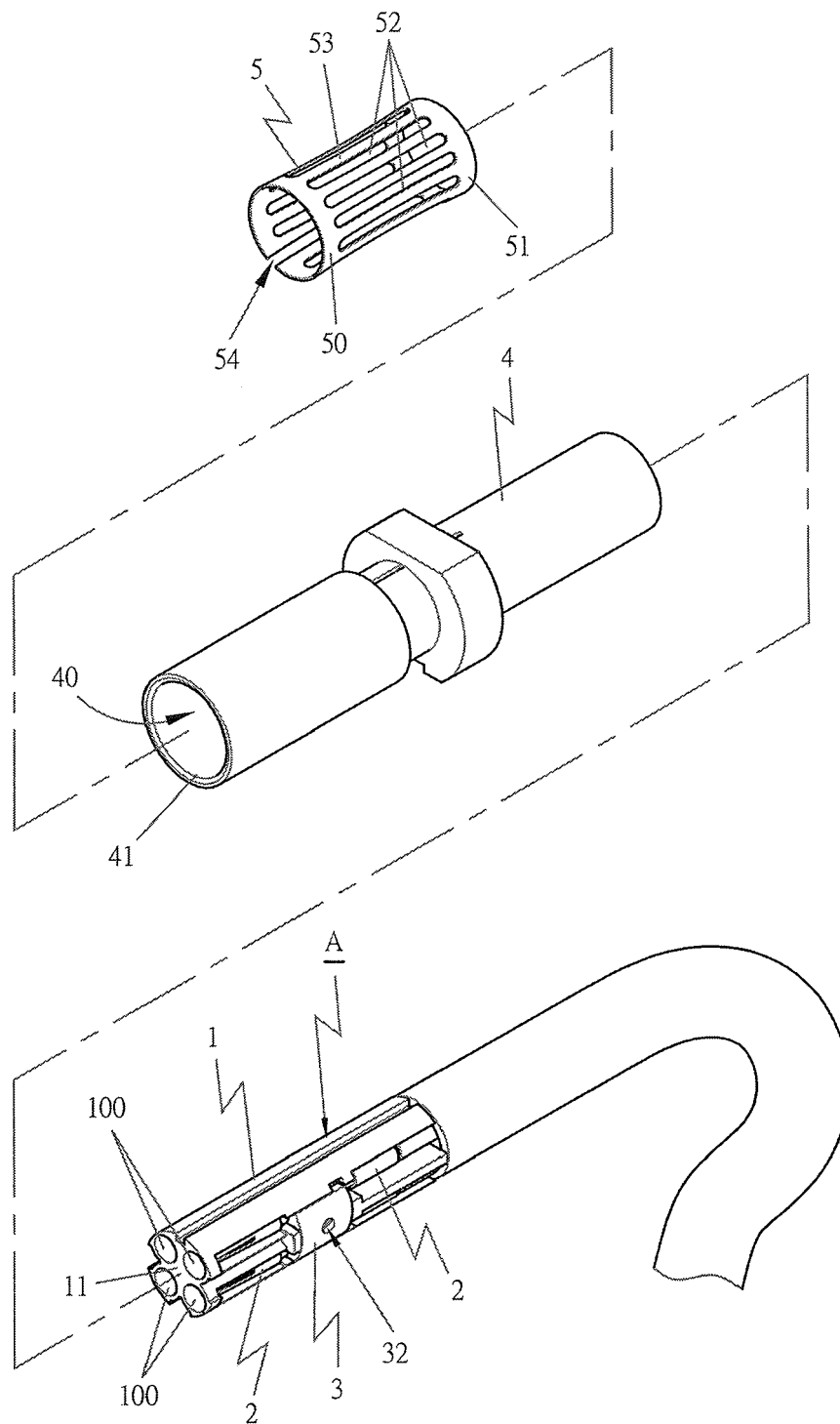


FIG 14

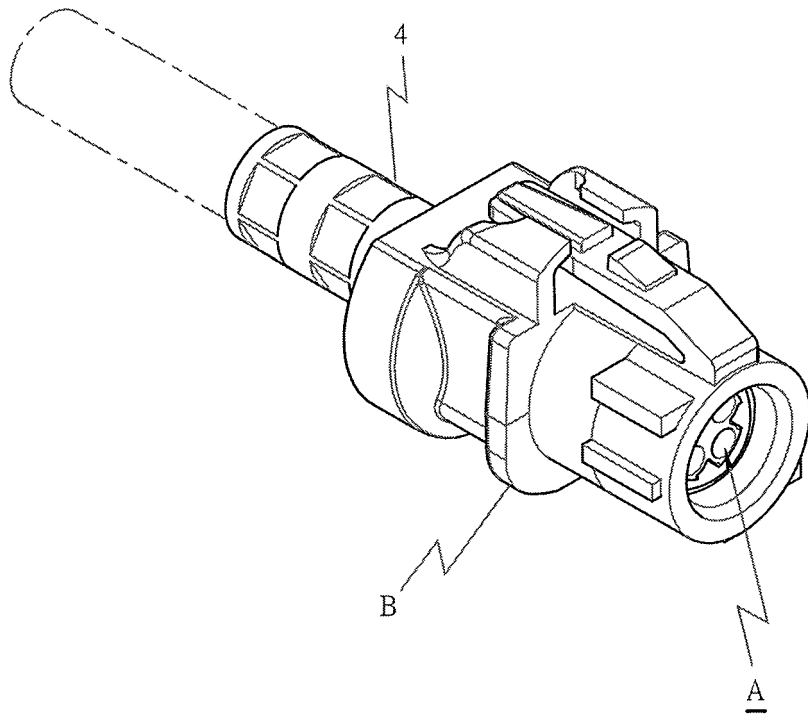


FIG 15



EUROPEAN SEARCH REPORT

Application Number
EP 12 16 5495

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 843 435 A2 (ITT MFG ENTERPRISES INC [US]) 10 October 2007 (2007-10-10)	1,2,4-9	INV. H01R13/436
Y	* paragraph [0022] - paragraph [0025]; figures 6,7 *	3	
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A	* page 4, line 35 - page 5, line 16; figure 1 *	1,6	

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			TECHNICAL FIELDS SEARCHED (IPC)
			H01R
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		28 September 2012	Bouhana, Emmanuel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 (03.02) (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 16 5495

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The members are as contained in the European Patent Office EDP file on
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28-09-2012

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REFERENCES CITED IN THE DESCRIPTION

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