



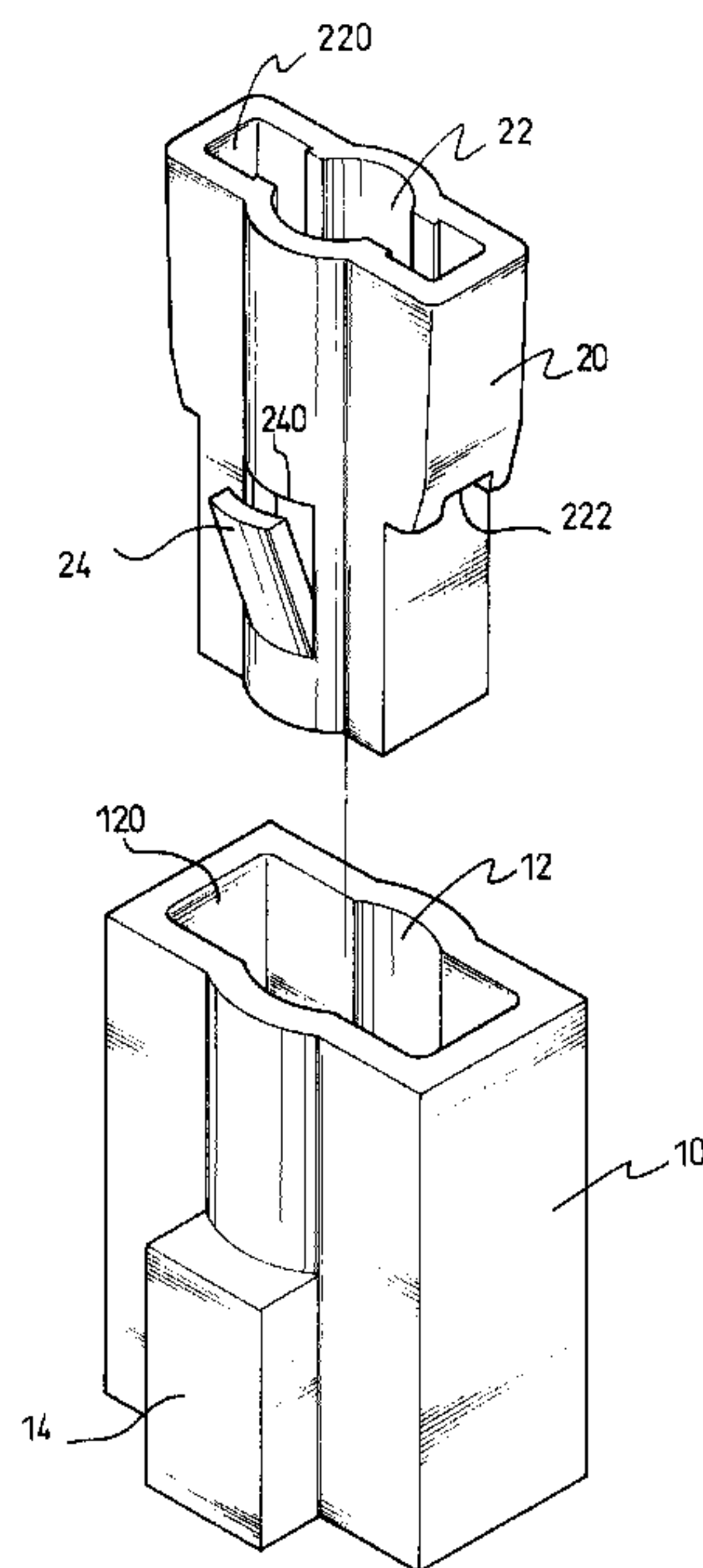
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(54) **CONNECTEUR DE FILS POUR LAMPE DECORATIVE**

(54) **WIRE CONNECTOR FOR A DECORATIVE LAMP**



(57) A wire connector for decorative lamp is disclosed. The wire connector is composed of a casing (10) and a plug (20) to be inserted into the casing (10). The casing (10) has a central passage (12) and two channels (120) to receive the plug and two conducting elements. The plug has a broad top portion and a narrow bottom portion. A longitudinal bore (22) is defined through the plug and two chambers (220) are defined through the top portion of the plug. The chambers receive wires and conducting strips therein. When the plug (20) is inserted in the casing (10), the conducting elements in the channels (120) are electrically connected with the conducting strips in the corresponding chambers (220), then the corresponding wires in the casing and in the plug are also in electrical connection with each other.

1 **ABSTRACT OF THE DISCLOSURE**

2 A wire connector for decorative lamp is disclosed. The wire connector is composed of a
3 casing (10) and a plug (20) to be inserted into the casing (10). The casing (10) has a central
4 passage (12) and two channels (120) to receive the plug and two conducting elements. The
5 plug has a broad top portion and a narrow bottom portion. A longitudinal bore (22) is defined
6 through the plug and two chambers (220) are defined through the top portion of the plug. The
7 chambers receive wires and conducting strips therein. When the plug (20) is inserted in the
8 casing (10), the conducting elements in the channels (120) are electrically connected with the
9 conducting strips in the corresponding chambers (220), then the corresponding wires in the
10 casing and in the plug are also in electrical connection with each other.

11 Fig. 1

WIRE CONNECTOR FOR A DECORATIVE LAMP

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is related to a wire connector for a decorative lamp, and more particularly to a wire connector with which bulbs can be safely and easily fitted to decorative lamp.

2. Description of Related Art

Referring to Fig. 7, a conventional cascade decorative lamp has a primary electric cable (90) and a plurality of secondary electric cables (92) electrically connected with the primary electric cable (90). Bulbs (94) are provided on the secondary electric cables (92). When the cascade decorative lamp is horizontally suspended, it seems to be a light waterfall and provides attractive decorative effect.

In the conventional cascade decorative lamp, the primary electric cable (90) is formed by a plurality of wires twisted together. The secondary electric cables (92) are wires extended from the primary electric cable (90). There are two methods to assemble the decorative lamp.

The first method is to twist wires each having bulbs (94) pre-assembled thereon together to form the decorative lamp as shown in Fig. 7. This process must be performed by hand and is very time-consuming.

The second method is to respectively manufacture the primary electric cable (90) and the secondary electric cables (92), and then electrically connect the secondary electric cables (92) to the primary electric cable (90). There are also problems existing in connecting the secondary electric cables (92) to the primary electric cable (90). If the secondary electric cables (92) are directly electrically connected to the primary electrical cable (90), this also

1 needs a long time and is not efficient. If the secondary electric cables (92) are directly
2 connected to the primary electrical cable (90) by a conventional wire connector, it will not
3 provide proper structure strength for suspension. Moreover, if it rains, there will be water
4 remaining in the wire connector and thus, it is easy for short circuits to occur in the wire
5 connector.

6 Therefore, it is an objective of the invention to provide a wire connector for the
7 decorative lamp to mitigate and/or obviate the aforementioned problems.

8 SUMMARY OF THE INVENTION

9 The main objective of the present invention is to provide a wire connector for a
10 decorative lamp with which a bulb can be easily fitted to a primary electrical cable of the
11 decorative lamp;

12 Another objective of the present invention is to provide a wire connector for a decorative
13 lamp which drains well in wet weather to avoid short circuits therein.

14 Other objects, advantages and novel features of the invention will become more apparent
15 from the following detailed description when taken in conjunction with the accompanying
16 drawings.

17 BRIEF DESCRIPTION OF THE DRAWINGS

18 Fig. 1 is an exploded perspective view of a wire connector for a decorative lamp in
19 accordance with the present invention;

20 Fig. 2 is a cross sectional view of the wire connector for the decorative lamp in
21 accordance with the present invention;

22 Fig. 3 is a cross sectional side view of the wire connector for the decorative lamp in
23 accordance with the present invention;

24 Fig. 4 is an exploded perspective view of a second embodiment of the present invention;

1 Fig. 5 is an exploded perspective view of a third embodiment of the present invention;
 2 Fig. 6 is an exploded perspective view of a fourth embodiment of the present invention;
 3 Fig. 7 is a perspective view of a conventional cascade decorative lamp.

4	10- casing	12- central passage
5	120- chamber	14- hollow projection
6	140- cavity	
7	20- plug	22- longitudinal bore
8	220- channel	222- exit
9	24- barb	240- opening
10	26- slot	28- step
11	30- electrical wire	32- conducting strip
12	34- conducting element	
13	90- primary electrical cable	92- secondary electrical cable
14	94- bulb	

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

16 Referring to Fig. 1, a wire connector in accordance with the present invention comprises
 17 a casing (10) and a plug (20) to be inserted into the casing (10). The casing (10) is hollow
 18 with two opposite long side walls and two opposite end walls. A central passage (12) is
 19 defined longitudinally down the casing (10) and has two channels (120) respectively defined
 20 on opposite sides thereof and in communication therewith. Each side wall has a longitudinal
 21 ridge formed therealong, which terminates in a hollow projection (14) defining a cavity
 22 (140).

23 The plug (20) has two opposite wide outer faces each with a central rib, and two narrow
 24 outer faces. The plug (20) also has a broad top portion, a bottom portion narrower than the top

1 portion, and two shoulders respectively formed in the narrow outer faces and separating the
2 top and bottom portions. A longitudinal bore (22) is defined in the center of the plug (10) and
3 two chambers (220) are respectively defined on opposite sides of the bore (22) and are in
4 communication therewith. The plug (20) is configured to be snugly received in the casing (10)
5 by entering the bottom portion first in the top end of the casing (10). The two chambers (220)
6 extend down the top portion only and terminate in downward exits (222) respectively defined
7 in the shoulders and which communicate the interior of the plug (20) with its exterior. Two
8 resilient barbs (24) respectively protrude outward from the ribs and at the lower portion of the
9 plug (20). An opening (240) is defined in each rib and behind the corresponding barb (24). In
10 an extended condition of the barbs (24), the distance from the distal tip of one barb (24) to the
11 distal tip of the other is greater than the diameter of the central passage (12). When the plug
12 (20) is inserted in the casing (10), the barbs (24) are first compressed by the wall defining the
13 central passage (12) and then released when entering the cavities (140) whereby they resume
14 their extended condition and abut end faces defining the cavities (140), thereby locking the
15 plug (20) in the casing (10). When the barbs (24) are compressed towards each other, they
16 enter the respective opening (240).

17 Referring to Figs. 2 and 3, the plug (20) has two conductive strips (32) securely
18 extending down respective the chamber (220) and exit (222), and at the bottom of the exits
19 (222) each conductive strip (32) is deformed upwardly to follow the respective narrow outer
20 face. Two first electrical wires (30a) respectively extend downward through the tops of the
21 chambers (220) to conductively connect to the conductive strips (32).

22 The casing (10) has two conductive elements (34) securely disposed in respective
23 channel (120). Two first electrical wires (30b) respectively extend upward through bottoms
24 of the channels (120) to conductively connect with the conductive elements (34).

1 In assembly, still referring to Figs. 2 and 3, the plug (20) is received in the casing (10),
2 whereby the barbs (24) are extended into the respective cavity (140), and the conductive
3 strips (32) electrically contact the respective conductive element (34).

4 When a user wants to detach the plug (20) from the casing (10), a tool is used to
5 compress together the barbs (24) via the bottom of the central passage (12) and the plug (20)
6 is pulled away from the casing (10).

7 In practice, a plurality of the casings (10) are attached on a primary electrical cable of a
8 decorative lamp, and bulbs (not shown) are respectively electrically connected with the
9 corresponding plugs (20). By inserting the plugs (20) into the casings (10), the bulbs can be
10 easily and safely assembled together to form the decorative lamp.

11 Figure 4 shows a second embodiment of the present invention. In this embodiment, the
12 bottom portion of the plug (20a) further comprises a slot (26) defined through each narrow
13 outer face and in communication with the respective chamber (220) and respective exit (222).

14 Figure 5 shows a third embodiment of the present invention. In this embodiment, the
15 plug (20b) has two steps (28) respectively formed at a bottom of each longitudinal rib , but
16 lacks the openings (240) of the first embodiment. A slot (26) is defined through the lower
17 portion of each narrow outer face and communicates with the longitudinal bore (22), whereby
18 the lower portion has resilience. The steps (28) can move toward each other when the bottom
19 portion of the plug (20b) is inserted in the casing (10) due to the resilience of the bottom
20 portion. . In assembly, the bottom portion of the plug (20b) is pressed to decrease the width of
21 the slot (26), whereafter the plug (20b) can smoothly enter the casing (10) and the steps (28)
22 are then received in the cavities (140) to fixedly assemble the plug (20b) in the casing (10).

23 Figure 6 shows a third embodiment of the present invention. In this embodiment, the
24 plug (20c) has the steps (28) formed in the lower portion thereof and the slot (26) in

1 communication with the longitudinal bore (22). However, the casing (10a) lacks the
2 protrusions (14) and the cavities (140). The bottom portion of the plug (20c) has a length
3 such that a distal tip thereof with two opposite steps (28) protrudes from the bottom of the
4 casing (10a) when the plug (20c) is fitted therein, whereby the steps (28) engagingly abut the
5 bottom edge of the casing (10a). Thus the plug (20c) is securely but releaseably received in
6 the casing (10a).

7 From the above description, it is noted that the invention has the following advantages:

- 8 1. It is easy to assemble bulbs to a primary electrical cable of a decorative lamp without
9 having to twist wires.
- 10 2. In wet weather, water will drain from the longitudinal bore (22) and the central
11 passage (12) and not accumulate in the wire connector, so it is impossible to have short
12 circuit.

13 It is to be understood, however, that even though numerous characteristics and
14 advantages of the present invention have been set forth in the foregoing description, together
15 with details of the structure and function of the invention, the disclosure is illustrative only,
16 and changes may be made in detail, especially in matters of shape, size, and arrangement of
17 parts within the principles of the invention to the full extent indicated by the broad general
18 meaning of the terms in which the appended claims are expressed.

1 **WHAT IS CLAIMED IS:**

2 1. A wire connector for decorative lamp comprising:

3 a casing (10) having a central passage (12) and two channels (120) defined therethrough;

4 a plug (20) with two opposite wide outer faces, two narrow outer faces, a broad top

5 portion, and a bottom portion which is inserted in the casing (10), a longitudinal bore (22)

6 defined therethrough, and two chambers (220) defined through the broad top portion and

7 each having an exit (222) at the bottom thereof and extending to the respective narrow outer

8 face; a first set of wires (30a) respectively entering the chambers (220) via the top of the plug

9 (20);

10 a second set of wires (30b) respectively entering the channels (120) via the bottom of the

11 casing (10); two conducting elements (34) respectively provided in the channels (120) and

12 electrically connected with the second set of wires (30b) in the channels (120); and

13 two conducting strips (32) respectively provided in the chambers (220) and electrically

14 connected with the first set of wires (30a) in the chambers (220); wherein the conducting

15 strips (32) in the chambers (220) are extended out from the respective exit (222) and bent

16 outwards to be fixed on the outer wall of the respective chamber (220).

17 2. The wire connector as claimed in claim 1, wherein the casing (10) further comprises

18 two opposite long side walls and two opposite end walls, two hollow projections (14)

19 respectively formed on at the long side walls, and two cavities (140) respectively defined

20 within the projections (14) and the plug (20) further comprises two flexible barbs (24)

21 respectively formed on the wide outer faces thereof and received in the cavities (140) when

22 the plug (20) is received in the casing (10).

23 3. The wire connector as claimed in claim 1, wherein the plug (20a) further comprises a

24 slot defined through each narrow outer face and in communication with the respective

1 chamber (220) defined therein.

2 4. The wire connector as claimed in claim 3, wherein the casing (10) further comprises
3 two opposite long side walls and two opposite end walls, each long side wall having a
4 hollow projection (14) at the bottom thereof, each hollow projection (14) defining a cavity
5 (140) therein and in communication with the central passage (12), and the plug (20b) further
6 comprises two steps (28) respectively formed on the opposite outer surfaces thereof and
7 received in the recesses (140) when inserting the plug (20b) into the casing (10).

8 5. The wire connector as claimed in claim 3, wherein the bottom portion of the plug (20c)
9 has a length such that a distal tip thereof with two opposite steps (28) protrudes from the
10 casing (10a) when the plug (20c) is fitted therein, whereby the steps (28) engagingly abut the
11 bottom edge of the casing (10a).

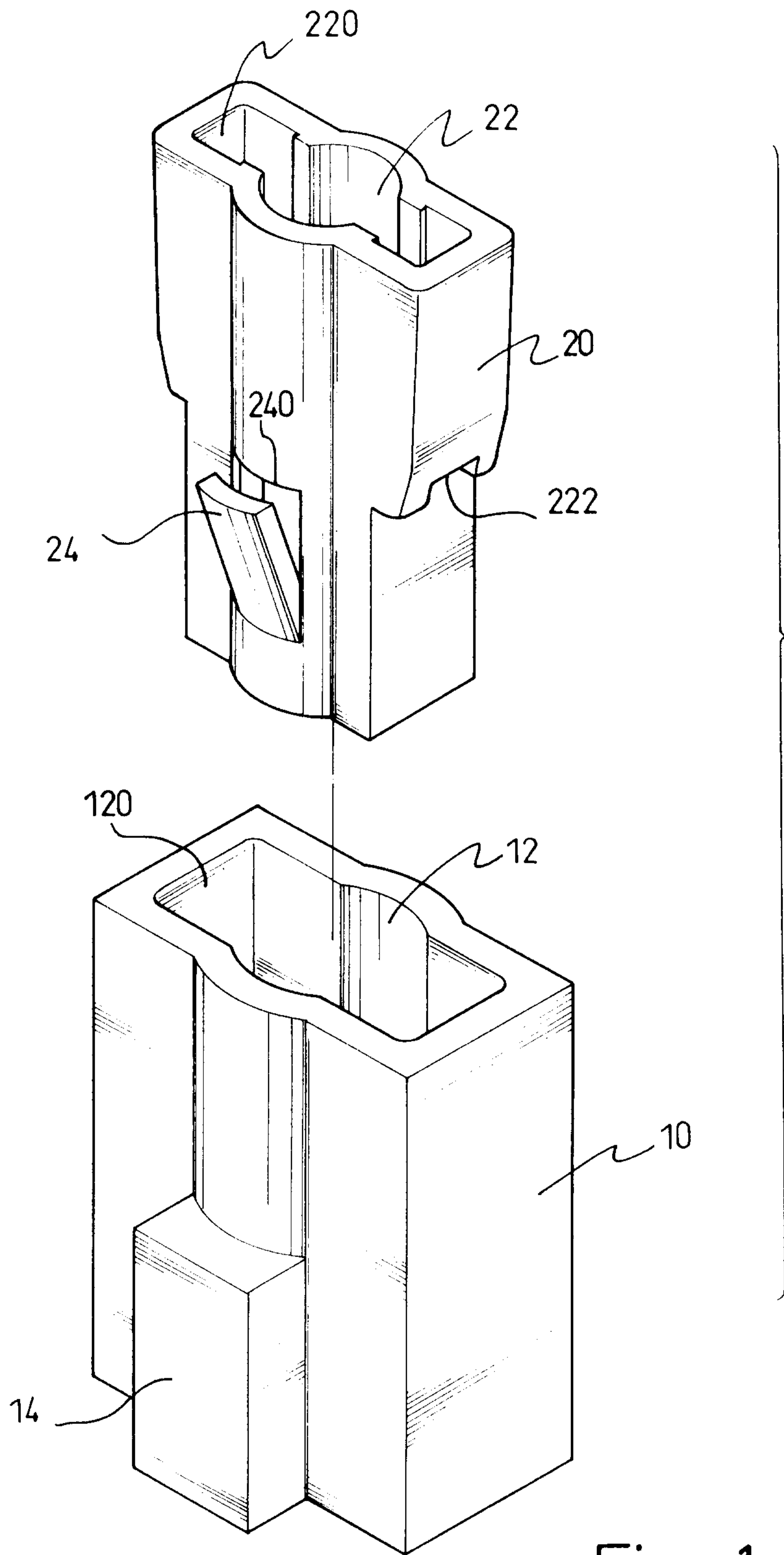


Fig. 1

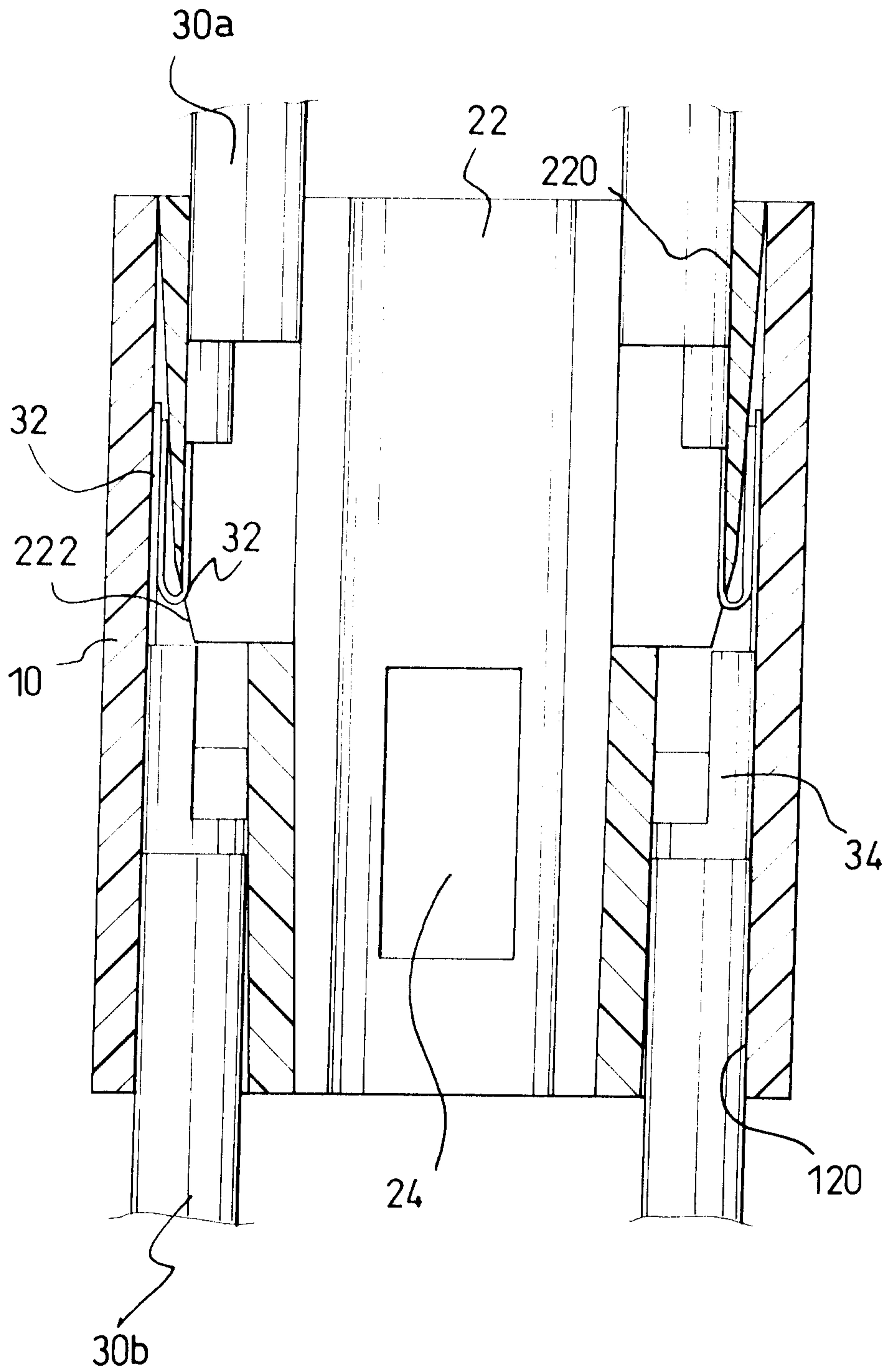


Fig. 2

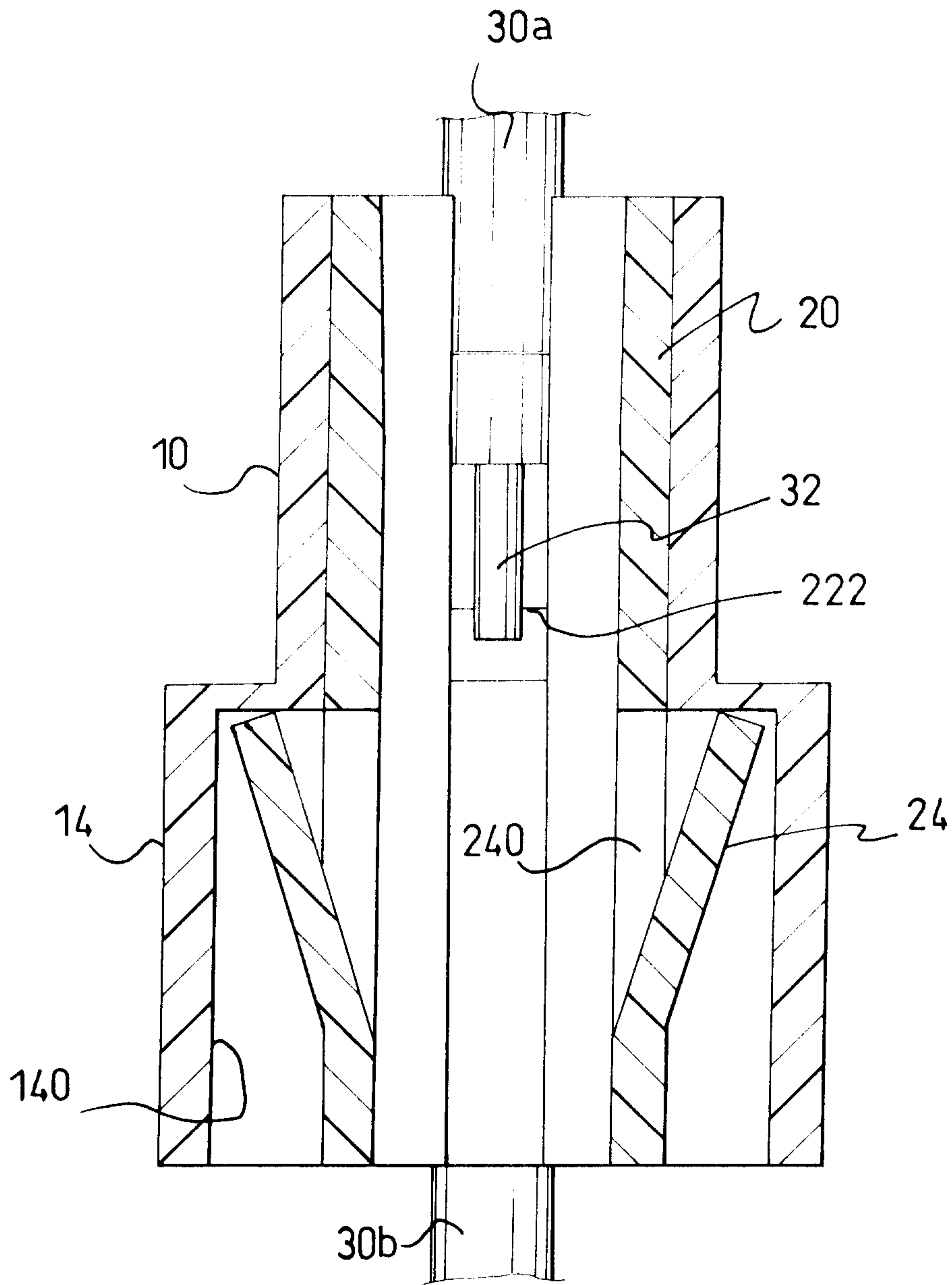


Fig. 3

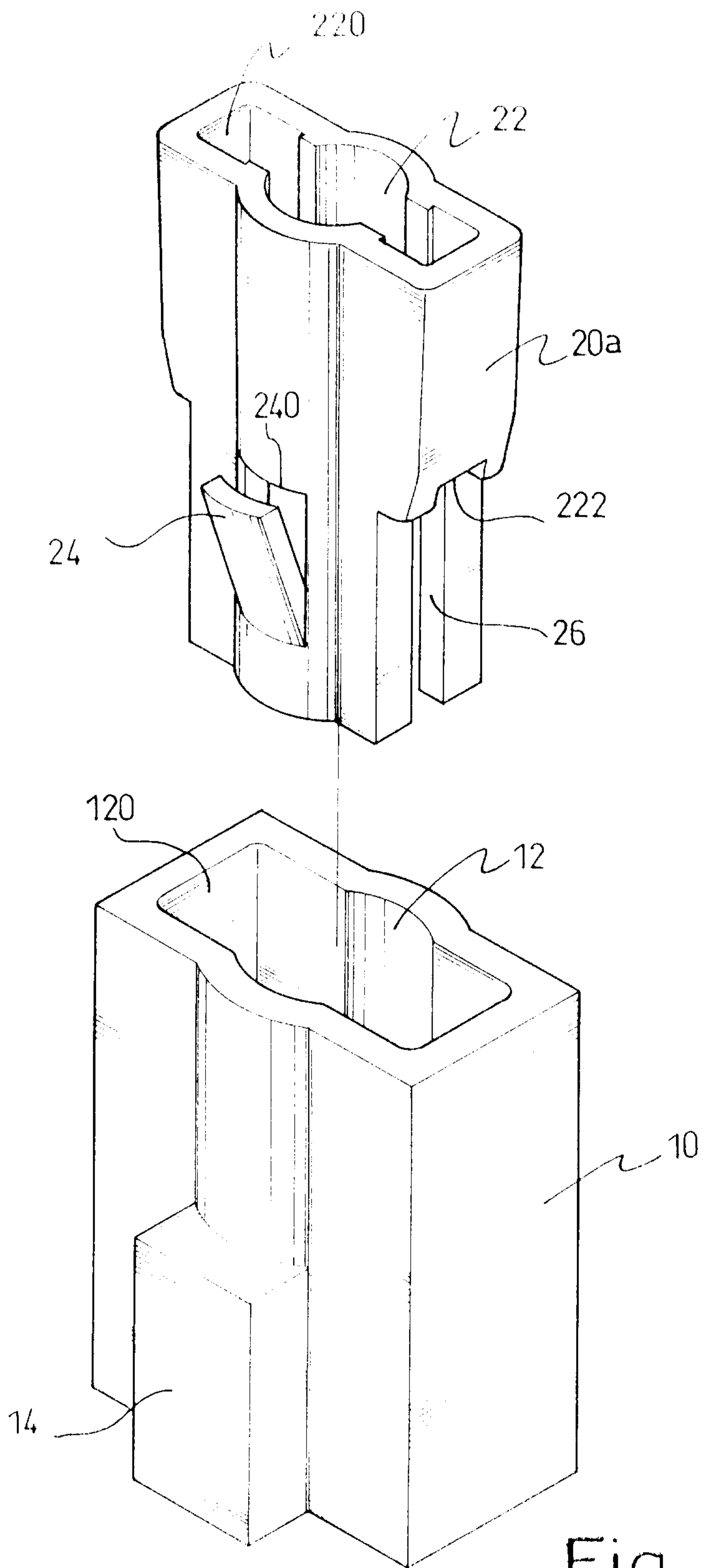


Fig. 4

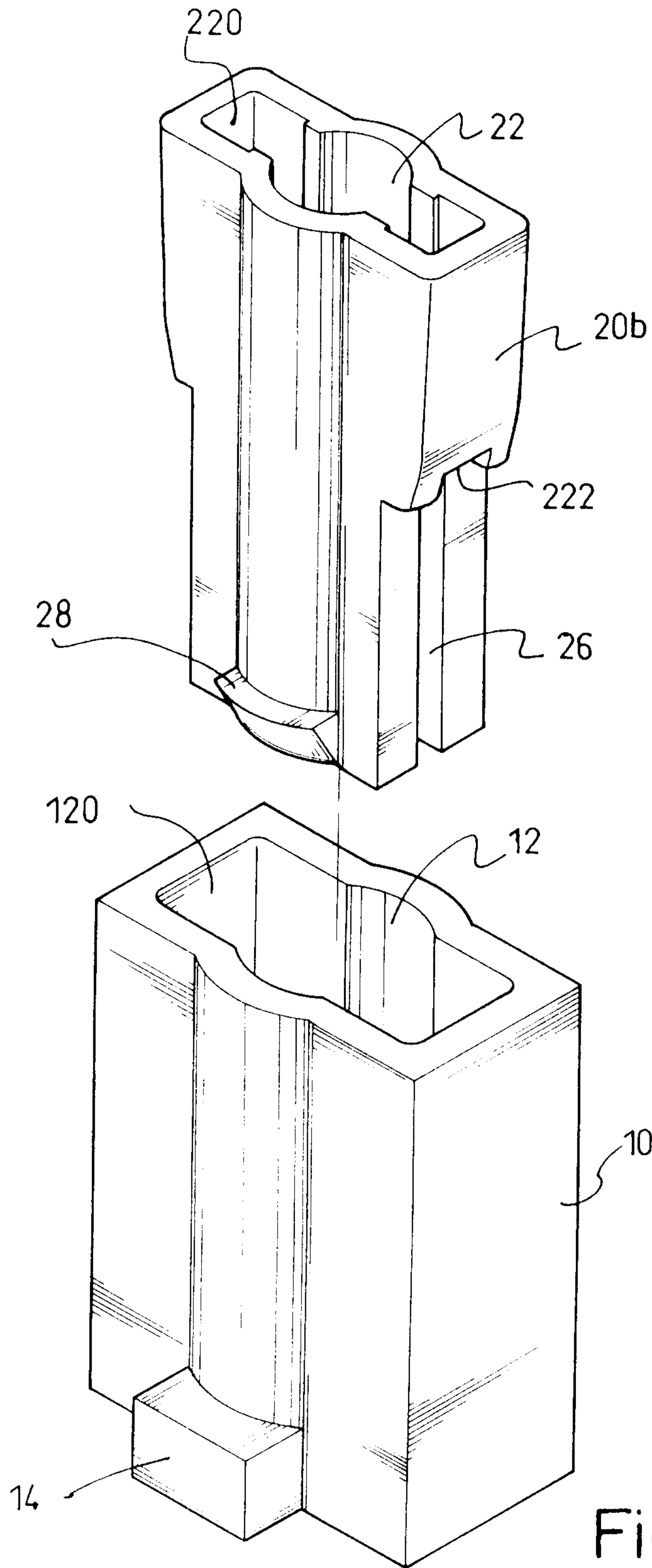


Fig. 5

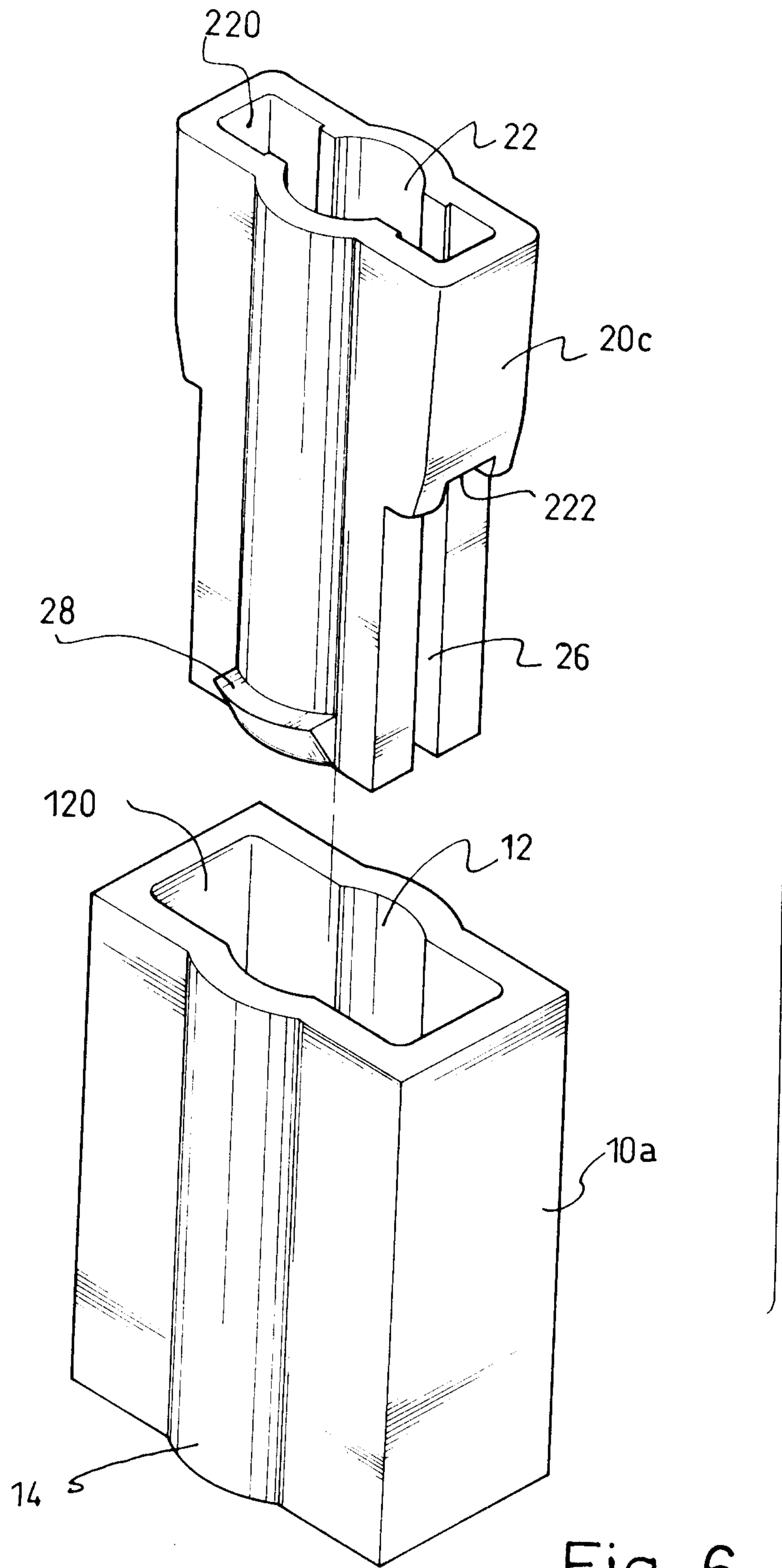


Fig. 6

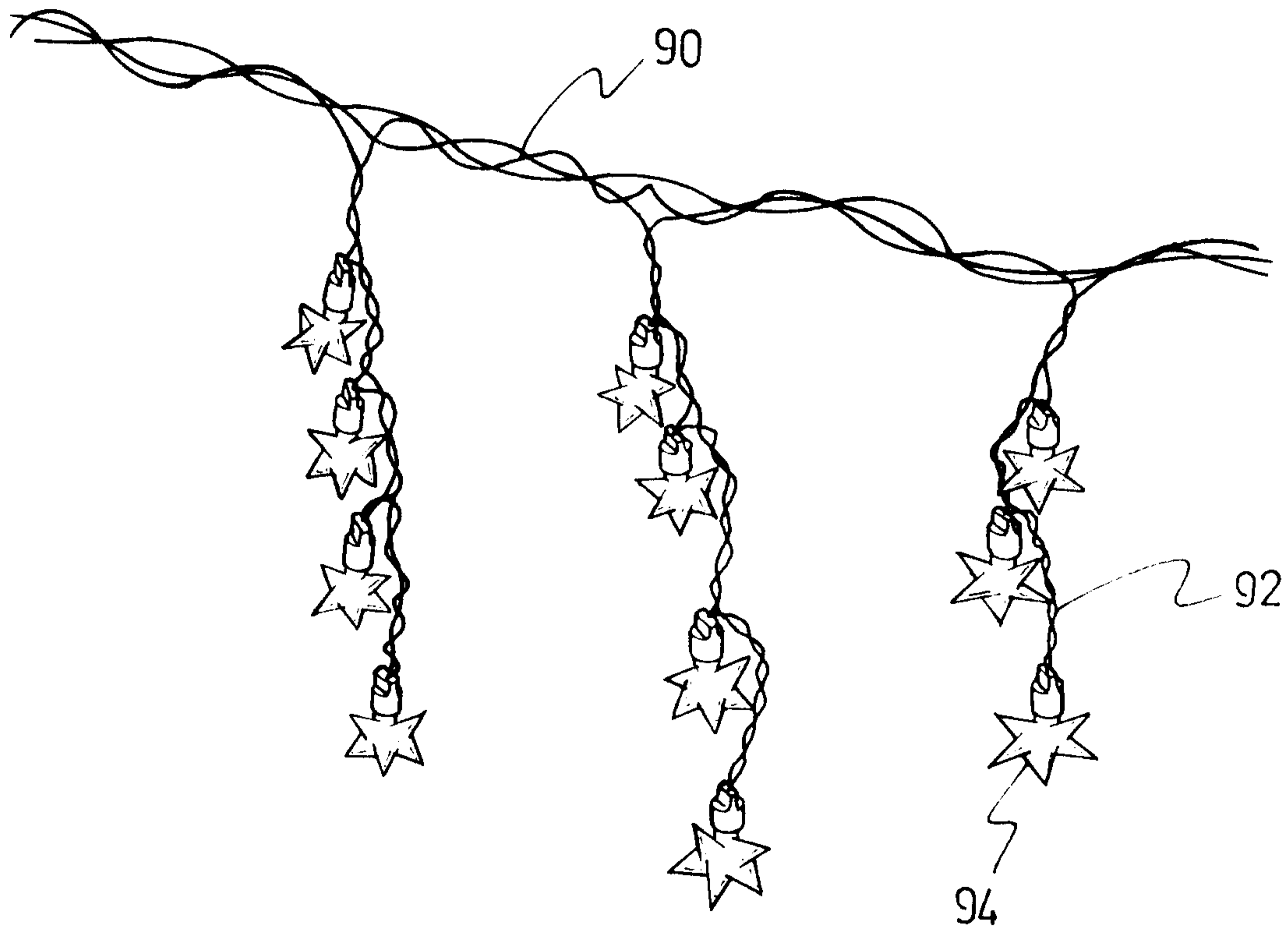


Fig. 7
Prior Art

