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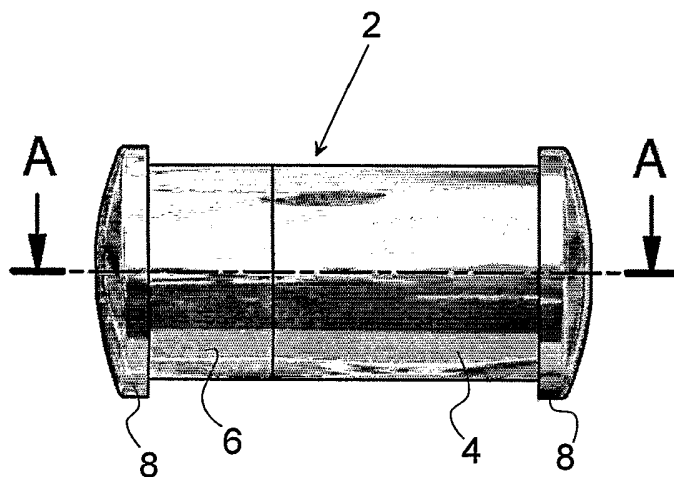
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ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: LOCKING SYSTEM FOR JEWELLERY



(57) Abstract: Locking system (2) for
a piece of jewellery, including mutually
complementary interacting locking parts (4, 6)
in the shape of coupling parts of the male and
female type, where each locking part (4, 6)
additionally includes polarised magnets (10,
12), where each locking part (4, 6) opposite the
coupling parts additionally include loose end
parts (8) which are designed with connecting
means (9) adapted for connecting the end
parts (8) with one or more pieces of jewellery,
e.g. in the form of necklaces, bracelets, ankle
bands, headbands, belts or the like.



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Locking System for Jewellery

Field of the Invention

The present invention concerns a locking system for a piece of jewellery and of the kind indicated in the preamble of claim 1.

5 Background of the Invention

Locks for jewellery of this kind are usually designed as a combination of a chain end and a jewellery lock used as termination or lock for jewellery, respectively, for one or more parallel necklaces, bracelets, ankle bands, headbands, belts or corresponding items, as ends of the chain or chains are fastened to the lock which consists of two
10 parts, each containing a magnet so that the two parts may be held together (locked).

US-B2-6 640 398 describe a jewellery lock for securing opposing ends of chains and other pieces of jewellery. Each locking part contains an arrangement for securing separate locking parts by means of magnets arranged so that their poles attract each
15 other. In a first embodiment, disc-shaped magnets are used inserted in slots of complementary interacting elongated bodies. In a second embodiment, disc-shaped magnets are disposed at opposite ends of mutually interacting locking parts, which are also designed with a bayonet locking mechanism. Common to the two embodiments is that connecting parts for the said chains are constituted by permanent eyelets at the
20 ends of respective locking parts.

Object of the Invention

The invention has the purpose of indicating an improved locking system for jewellery of the kind mentioned in the introduction, which by means of simple technical means improve the function of the locking system and provides the possibility of completely
25 new applications.

Description of the Invention

The locking system according to the invention is characterised in that each locking part opposite the coupling parts additionally include loose end parts which are designed with connecting means adapted for connecting the end parts with one or
30 more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands,

headbands, belts or the like. A new locking system is hereby provided by means of simple technical means, with improved function and enabling completely new applications.

5 The locking system according to the invention may suitably be formed so that it further includes one or more intermediate pieces that include interacting locking parts in the form of coupling parts adapted for connecting with either the first-mentioned coupling parts or with locking parts of attachments, other jewellery or the like.

10 In order to enable use of the locking system according to the invention for separate parts of jewellery, it may advantageously be designed so that it includes a tubular intermediate piece which is adapted for enclosing one of the said intermediate pieces, and which is designed with a radial eyelet for connecting with an attachment or similar part of jewellery.

15 In a preferred embodiment, the locking system according to the invention is so designed that the loose end parts at the side facing the coupling parts is designed with a connecting flange which is adapted for engaging end parts of the coupling parts by means of interacting screw threads formed in respective parts.

20 Alternatively, the locking system according to the invention may be designed so that the loose end parts at the side facing the coupling parts is designed with a connecting flange which is adapted for engaging end parts of the coupling parts by means of interacting glued faces formed in respective parts.

25 In a preferred embodiment, the locking system according to the invention may be designed so that the loose end parts at the side facing away from the coupling parts is designed with a central hole which is adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands,
30 belts or the like.

Alternatively, the locking system according to the invention may be designed so that the loose end parts at the side facing away from the coupling parts is designed with a

projecting collar or flange which is adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

- 5 Or the locking system according to the invention may be designed so that the loose end parts at the side facing away from the coupling parts is designed with a centrally projecting tube which is adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

10

In a particular embodiment, the locking system according to the invention may be designed in that it includes separate parts of jewellery which are designed or provided with locking parts in the form of coupling parts of the male and female type, and which are adapted to be connected with one or more pieces of jewellery in the form of

15 attachments, necklaces, bracelets, ankle bands, headbands, belts or the like.

20

The locking system according to the invention may in yet an embodiment be so designed that it includes separate parts of jewellery in the shape of mutually hinged connected spatial parts of jewellery which are designed with a mainly cylindric hollow adapted to receive the first-mentioned coupling parts of the male and female type, preferably not in assembled state, and which at opposing ends are adapted to be connected with one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

Description of the Drawing

- 25 The invention is now explained more closely in connection with the drawing, in which:

Fig. 1 shows a side view of an embodiment of a locking system according to the invention;

30

Fig. 2 shows a sectional view, cf. the section line A-A in Fig. 1;

Fig. 3 shows a perspective, exploded view of the locking system shown in Fig. 1;

- Fig. 4 shows a side view of a locking part of the female type for the locking system shown in Fig. 1;
- Fig. 5 shows a sectional view, cf. the section line A-A in Fig. 4;
- Fig. 6 shows a perspective, exploded view of the locking part shown in Fig. 4;
- 5 Fig. 7 shows a side view of a locking part of the male type for the locking system shown in Fig. 1;
- Fig. 8 shows a sectional view, cf. the section line A-A in Fig. 7;
- Fig. 9 shows a perspective, exploded view of the locking part shown in Fig. 7;
- Fig. 10 shows a side view of a loose end part for a locking part, cf. Figs. 4 and 7;
- 10 Fig. 11 shows a sectional view, cf. the section line A-A in Fig. 10;
- Fig. 12 shows a perspective view of the end part shown in Fig. 10;
- Fig. 13 shows a side view of a second embodiment of a locking system according to the invention;
- Fig. 14 shows a sectional view, cf. the section line A-A in Fig. 13;
- 15 Fig. 15 shows a perspective, exploded view of the locking system shown in Fig. 13;
- Fig. 16 shows a side view of a locking part of the female type for the locking system shown in Fig. 13;
- Fig. 17 shows a side view, partly in section, cf. the section line A-A in Fig. 16;
- Fig. 18 shows a perspective view, partly sectional, of the locking part shown in Fig. 17;
- 20 Fig. 19 shows a side view of a locking part of the male type for the locking system shown in Fig. 13;
- Fig. 20 shows a side view, partly in section, cf. the section line A-A in Fig. 19;
- Fig. 21 shows a perspective view, partly sectional, of the locking part shown in Fig. 20;
- 25 Fig. 22 shows a perspective view of the locking part shown in Fig. 19;
- Fig. 23 shows a side view of yet an embodiment of a locking system according to the invention;
- Fig. 24 shows a side view, partly in section, cf. the section line A-A in Fig. 23;
- 30 Fig. 25 shows a perspective view, partly in section, of the locking system shown in Fig. 24;
- Fig. 26 shows a perspective, exploded view of yet an embodiment of a locking system according to the invention;

Fig. 27 shows a perspective view of yet an embodiment of a locking system according to the invention;

Fig. 28 shows a perspective view of yet an embodiment of a locking system according to the invention;

5 Fig. 29 shows a perspective view of a modified embodiment of a locking system according to the invention; and

Fig. 30 shows a perspective view of yet an embodiment of a locking system according to the invention.

Detailed Description of the Invention

10 The locking system 2 shown in Figs. 1-3 consists of a locking part 4 of the female type and a locking part 6 of the male type, which locking parts 4 and 6 each includes end parts 8, respectively, with connecting holes 9 that serve to the passing through of a cord for a piece of jewellery, e.g. a string of pearls. The locking parts 4 and 6 are internally fitted with magnets 10 and 12 polarised so that they attract each other when
15 the locking parts 4 and 6 are joined, as shown in Figs. 1 and 2. The end parts 8 and the locking parts 4 and 6 may be designed with complementary screw threads or glued faces 11.

In Fig. 2 is shown with punctuated lines that the locking system 2 may include a
20 tubular part 14 which is adapted to be disposed between the end parts 8 externally of the locking parts 4 and 6, and which has a radial connecting eyelet 16. In Figs. 4-12, respective parts are designated with the same reference number as in Figs. 1-3.

The locking system 18 shown in Figs. 13- 15 is constructed in principle entirely
25 corresponding to the above described locking system 2, as the locking system 18 consists of a locking part 20 of the female type and a locking part 22 of the male type. Both locking parts 20 and 22 are provided with loose end parts 8 with connecting holes 9 serving to the passing through of a cord of a piece of jewellery, e.g. a string of pearls. Both locking parts 20 and 22 have internal holding magnets 10, 12.

30 Besides, the locking part 20 is provided with or designed with supplementing internal locking pins 24 which are disposed diametrically opposite each other, and which are

adapted to interact with external locking grooves 26 formed in the locking part 22, so that the locking parts 20 and 22 may be interlocked by mutual rotation. In Figs. 16-22, respective parts are designated with the same reference number as in Figs. 13-15.

5 The locking system 28 in Figs. 23-25 consists of a locking part 30 of the female type and a locking part 32 of the male type. Each of the locking parts 30 and 32 are screw thread connected with loose end parts 36 with a centrally projecting tubular connecting part 38. Each of these are intended for externally receiving a part of jewellery, e.g. a first pearl of a pearl string, the carrier cord of which runs through the tubular
10 connecting part 38 into locking parts 30 and 32 and is fastened in end parts 36 by means of suitable fastening means, e.g. glue or knots or a combination thereof. The locking parts 30, 32 are provided with internal holding magnets 10, 12 and with supplementing locking means in the form of an external locking pin 40 on the locking part 32 and a complementary internal locking groove 42 on the locking part 30.

15 The locking system 44 shown in Fig. 26 consists of a locking part 46 of the female type and a locking part 48 of the male type. The locking parts 46, 48 are e.g. made of noble metal, e.g. gold or silver, why the locking parts 46, 48 are provided with inserts 50, 52, of which the insert 50 is made of stainless steel with a locking groove 54 and a
20 locking position with a locking hole 56, respectively, in which the insert 56 of stainless steel may engage with an external locking pin 58. The locking parts 46, 48 furthermore have internal holding magnets 10, 12 disposed in the inserts 50 and 52. Besides, the locking parts 50 and 52 have loose end parts 60 with relatively large connecting holes 62 for leather straps, of which loose ends may be fastened in the end
25 parts 60 by means of locking pins inserted through transverse holes 64 of the end parts 60.

Fig. 27 shows a locking system 62 which, besides a locking part 64 of the female type and a locking part 66 of the male type, comprises an intermediate piece 68 which at
30 opposite ends is provided with complementing locking parts so that the intermediate piece 68 may be fixed in a secure way between the locking parts 64 and 66. The intermediate piece 68 may e.g. be used to connect a separate part of jewellery to one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands,

headbands, belts or the like. As indicated, the intermediate piece 68 may possibly consist of several lesser intermediate pieces so that the length may be adjusted thereby.

5 Fig. 28 shows a locking system 70 where a spatial jewellery part 72 consists of two hingedly connected halves 74 in which is formed a mainly cylindric hollow 76 adapted for receiving a locking part 78 of the female type and a locking part 80 of the male type in such a way that the locking parts 78, 80 may be fixed in the hollow 76 when the halves 74 are joined together. The jewellery part 72 consists of a magnetic material so that the holding magnets in the locking parts 78, 80 also can hold the jewellery part
10 72 closed around the locking parts 78, 80. If the jewellery part 72 is made of non-magnetic material, there may - as shown in Fig. 29 - be provided an external lock 82 for holding the jewellery part 72 closed around the locking parts 78, 80.

The locking system 84 shown in Fig. 30 includes a larger jewellery part 86 which at
15 one side is fitted with a locking part 88 of the male type that interacts with a locking part 90 of the female type which is mounted at the end of a jewellery cord 92, which at the opposite end is provided with a locking part 94 of the male type interacting with a locking part 96 of the female type which is fitted in the jewellery part 86 diametrically opposite the locking part 88.

CLAIMS

1. A locking system (2, 18, 28) for a piece of jewellery, including mutually complementary interacting locking parts (4, 6, 20, 22, 30, 32) in the shape of locking parts of the male and female type, where each of the locking parts (4, 6, 20, 22, 30, 32) also includes polarised magnets (10, 12), **characterised in that** each locking part (4, 6, 20, 22, 30, 32) opposite the coupling parts additionally include loose end parts (8, 36) which are designed with connecting means (9, 38) adapted for connecting the end parts (8, 36) with one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.
2. Locking system (62) according to claim 1, **characterised in that** it further includes one or more intermediate pieces (68) that include interacting locking parts in the form of coupling parts adapted for connecting with either the first-mentioned coupling parts or with locking parts of attachments, other jewellery or the like.
3. Locking system (2, 18, 28) according to claim 1 and 2, **characterised in that** it includes a tubular intermediate piece (14) which is adapted for enclosing one of the said intermediate pieces, and which is designed with a radial eyelet (16) for connecting with an attachment or similar part of jewellery.
4. Locking system according to claim 1, **characterised in that** the loose end parts at the side facing the coupling parts is designed with a connecting flange which is adapted for engaging end parts of the coupling parts by means of interacting screw threads formed in respective parts.
5. Locking system according to claim 1, **characterised in that** the loose end parts at the side facing the coupling parts is designed with a connecting flange which is adapted for engaging end parts of the coupling parts by means of interacting glued faces formed in respective parts.
6. Locking system according to claim 1, **characterised in that** the loose end parts at the side facing away from the coupling parts is designed with a central hole which is

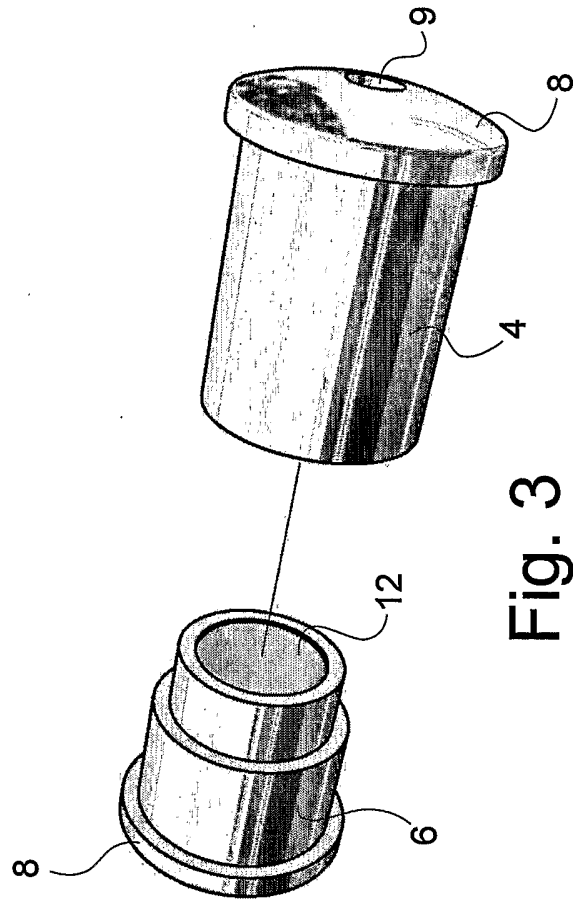
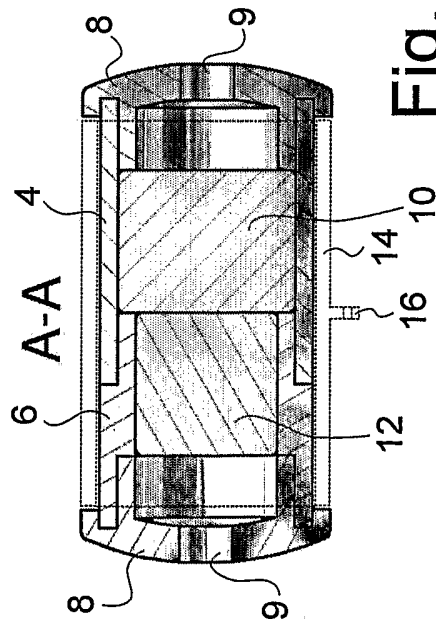
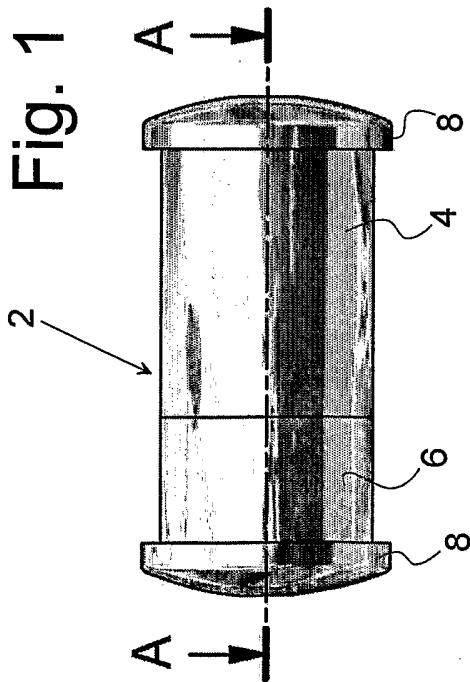
adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

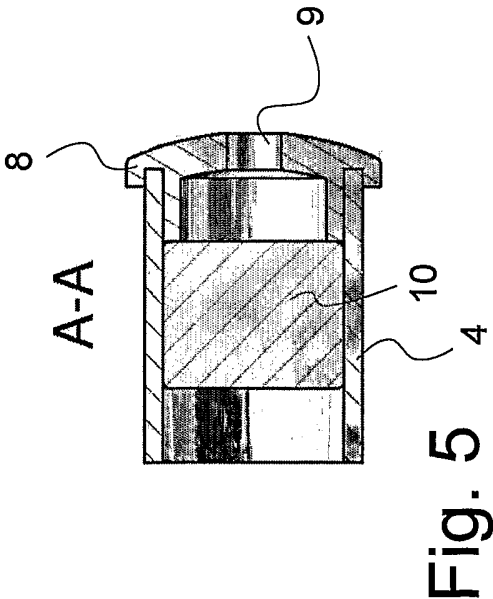
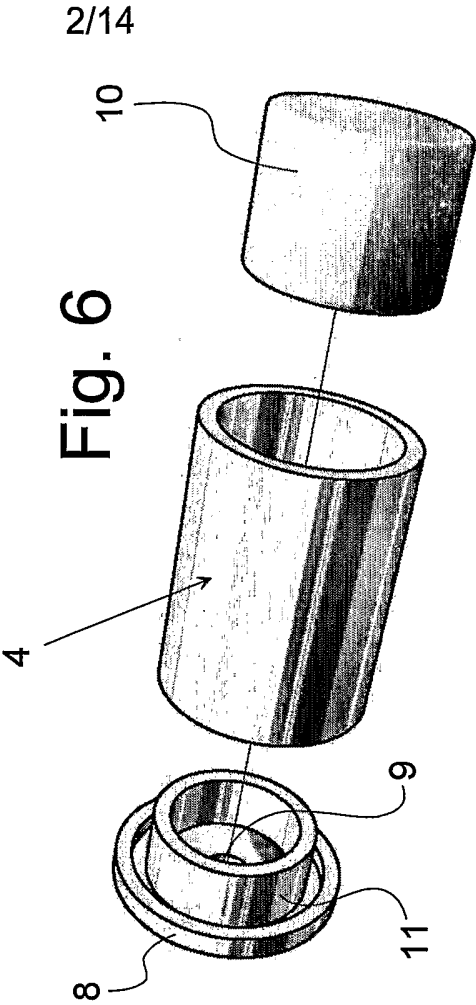
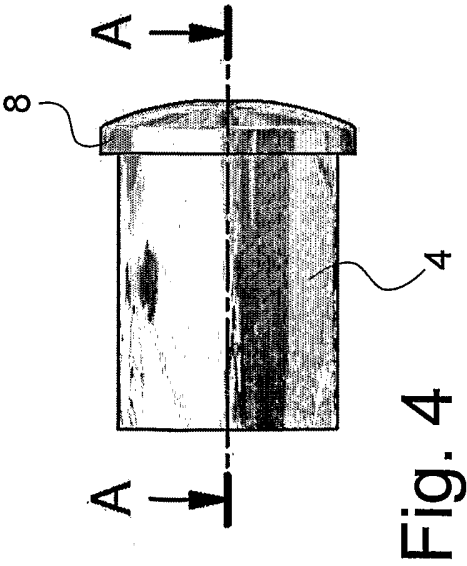
5 7. Locking system according to claim 1, **characterised in that** the loose end parts at the side facing away from the coupling parts is designed with a projecting collar or flange which is adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

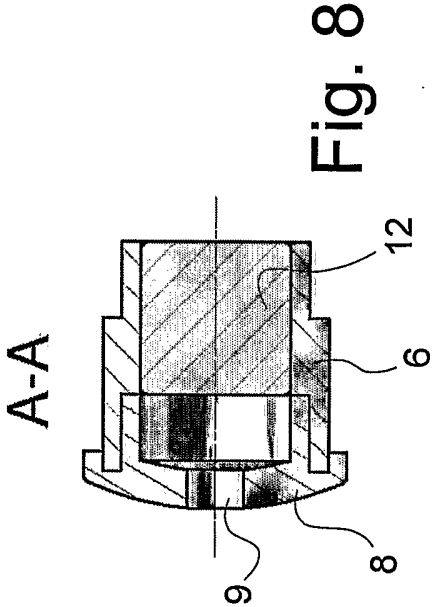
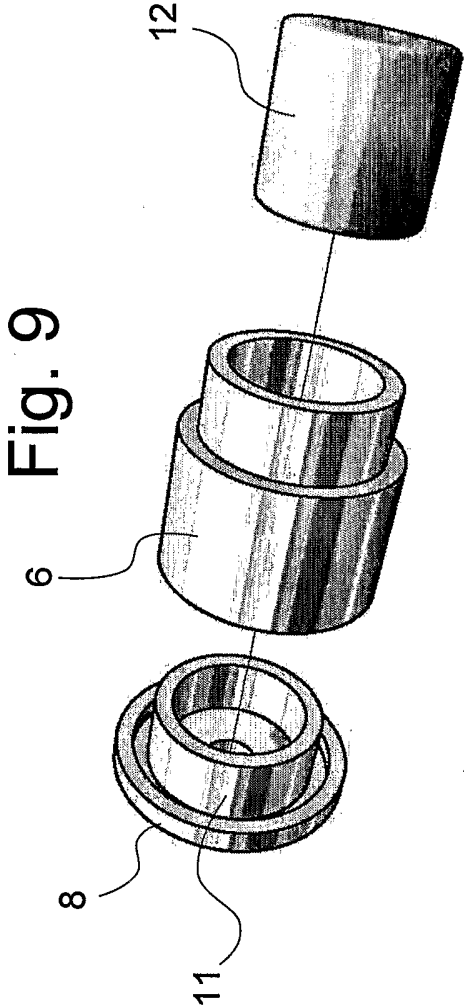
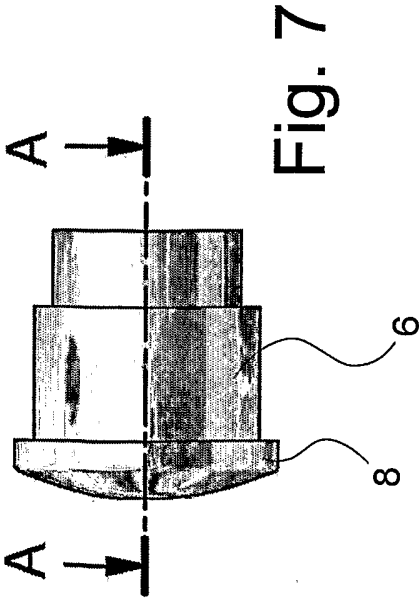
10 8. Locking system according to claim 1, **characterised in that** the loose end parts at the side facing away from the coupling parts is designed with a centrally projecting tube adapted for receiving end parts of one or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.

15 9. Locking system according to claim 1, **characterised in that** it includes separate parts of jewellery which are designed or provided with locking parts in the form of coupling parts of the male and female type, and which are adapted to be connected with one or more pieces of jewellery in the form of attachments, necklaces, bracelets, ankle bands, headbands, belts or the like.

20 10. Locking system according to claim 1, **characterised in that** it includes separate parts of jewellery in the shape of mutually hinged connected spatial parts of jewellery which are designed or provided with a mainly cylindric hollow adapted to receive the first-mentioned coupling parts of the male and female type, preferably not in assembled state, and which at opposing ends are adapted to be connected with one
25 or more pieces of jewellery, e.g. in the form of necklaces, bracelets, ankle bands, headbands, belts or the like.







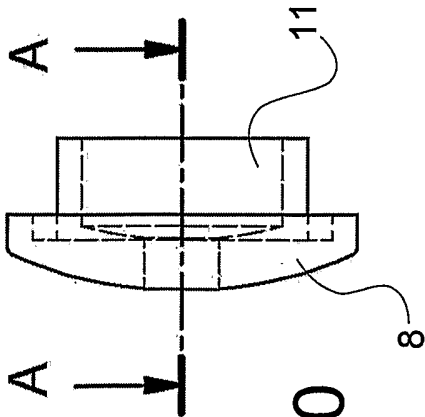


Fig. 10

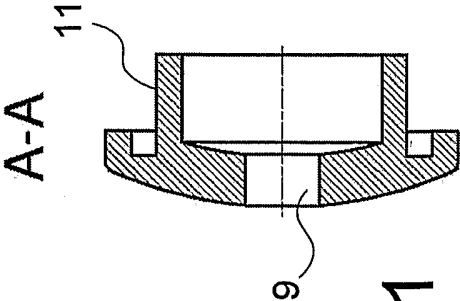


Fig. 11

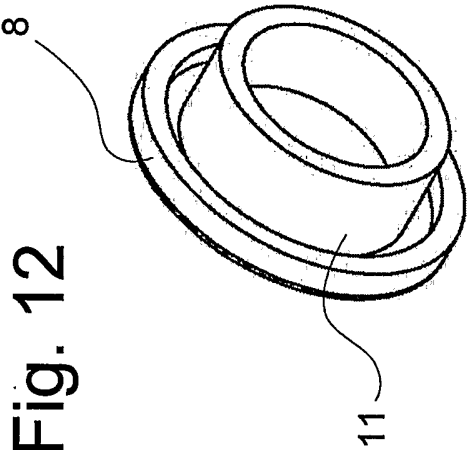


Fig. 12

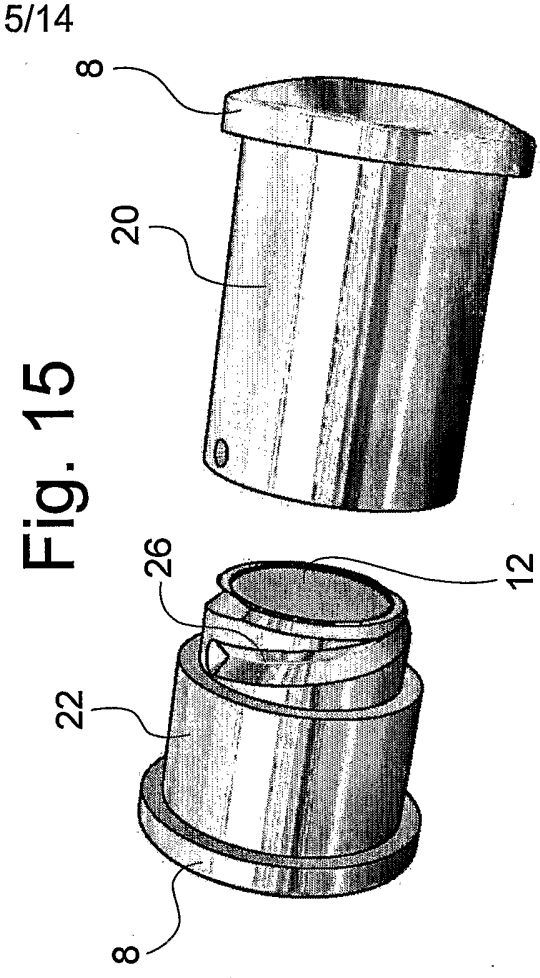
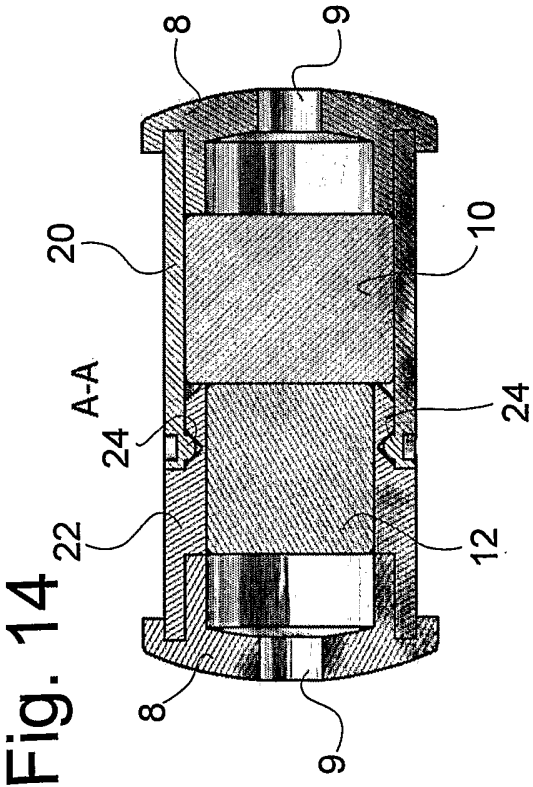
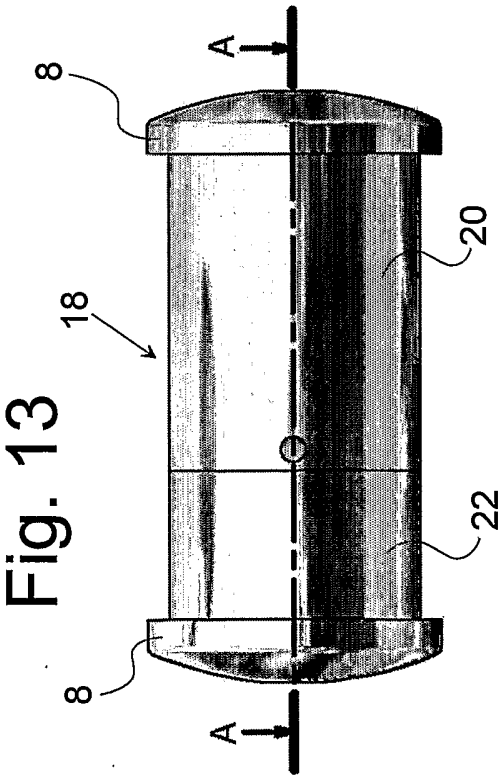


Fig. 16

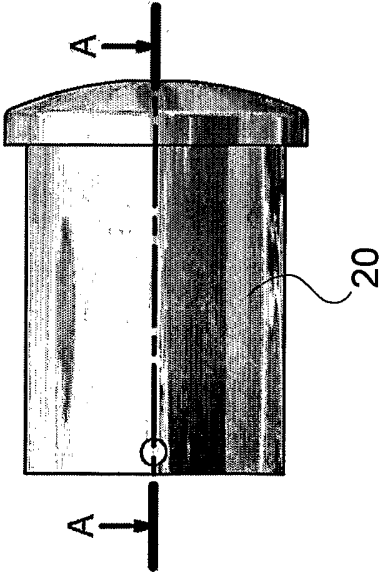


Fig. 18

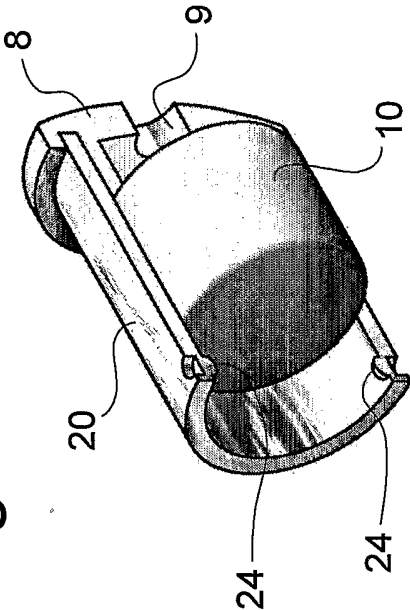
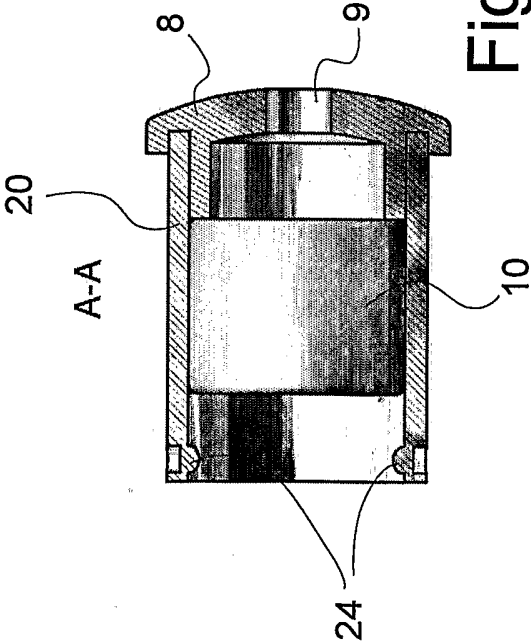


Fig. 17



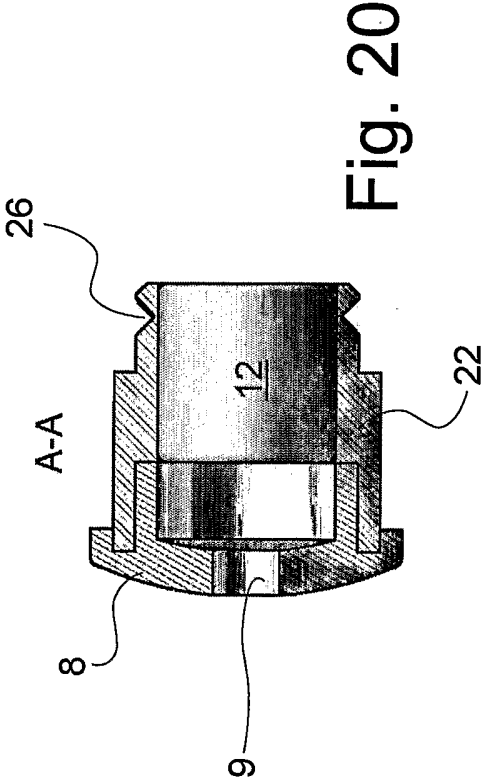
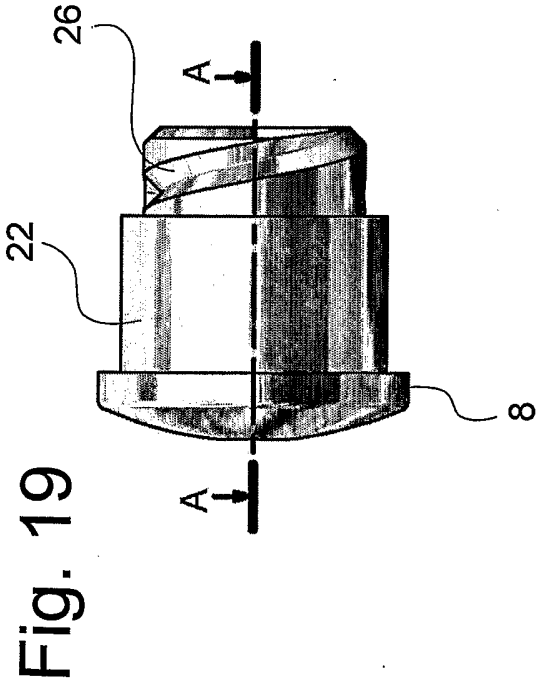
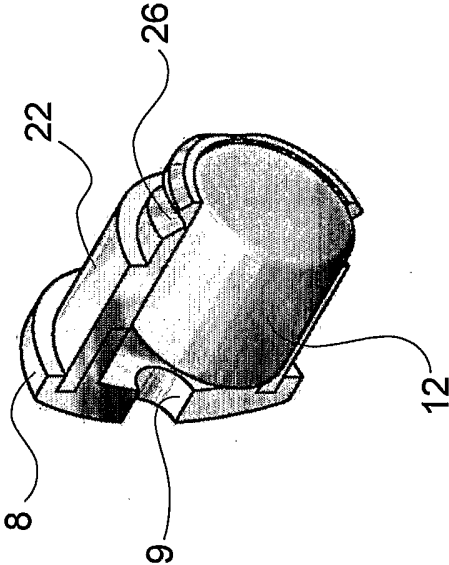


Fig. 21



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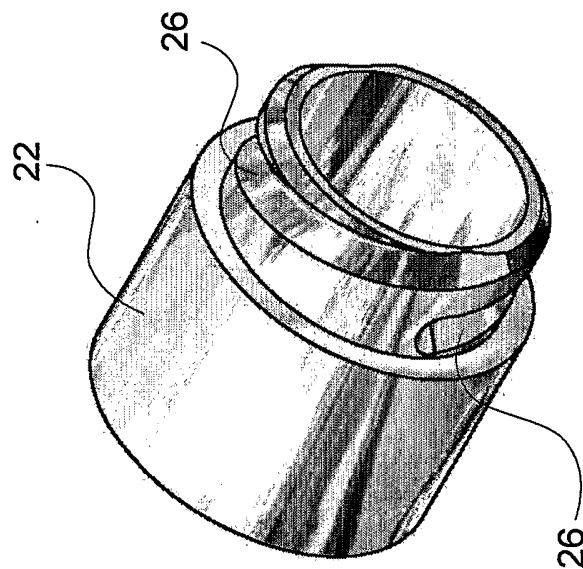
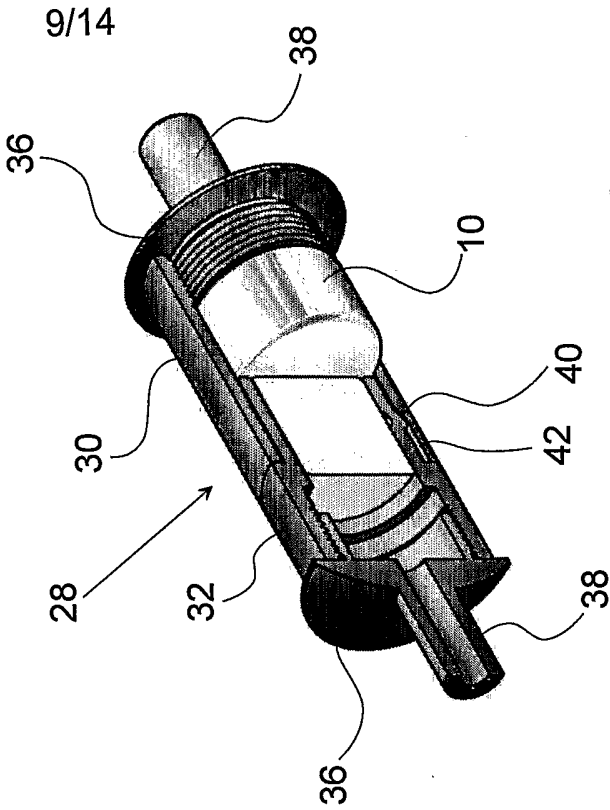
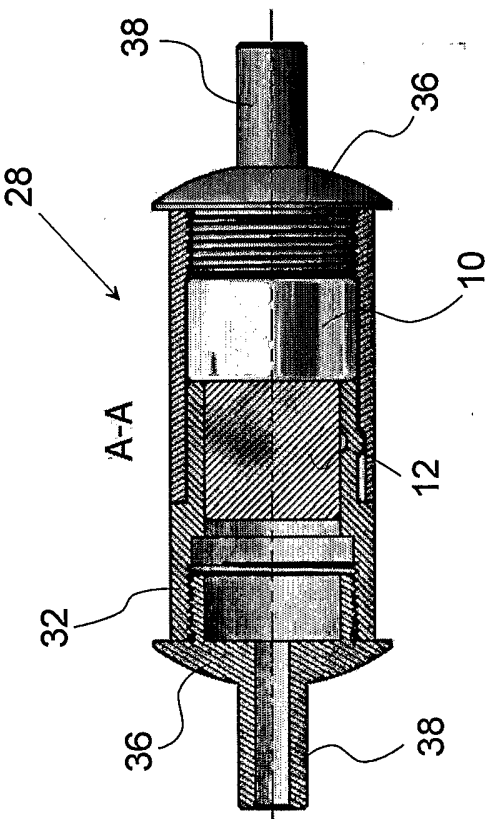
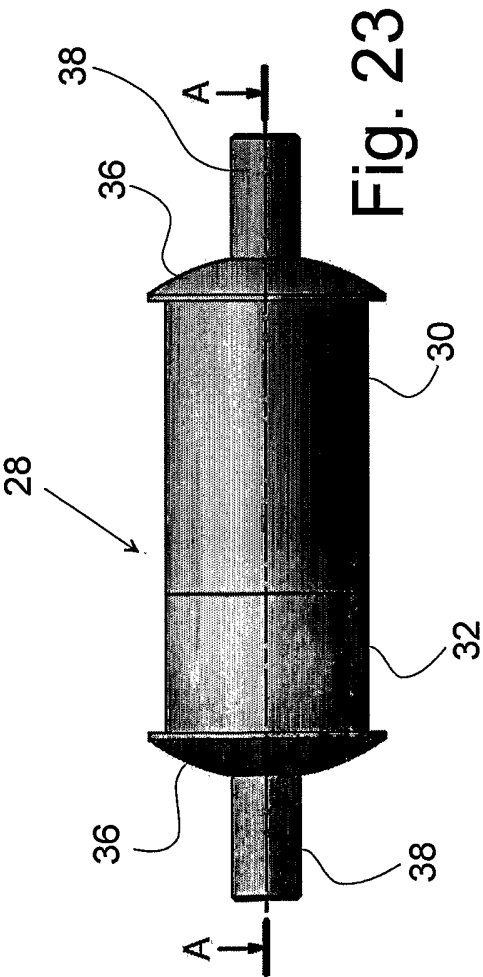


Fig. 22



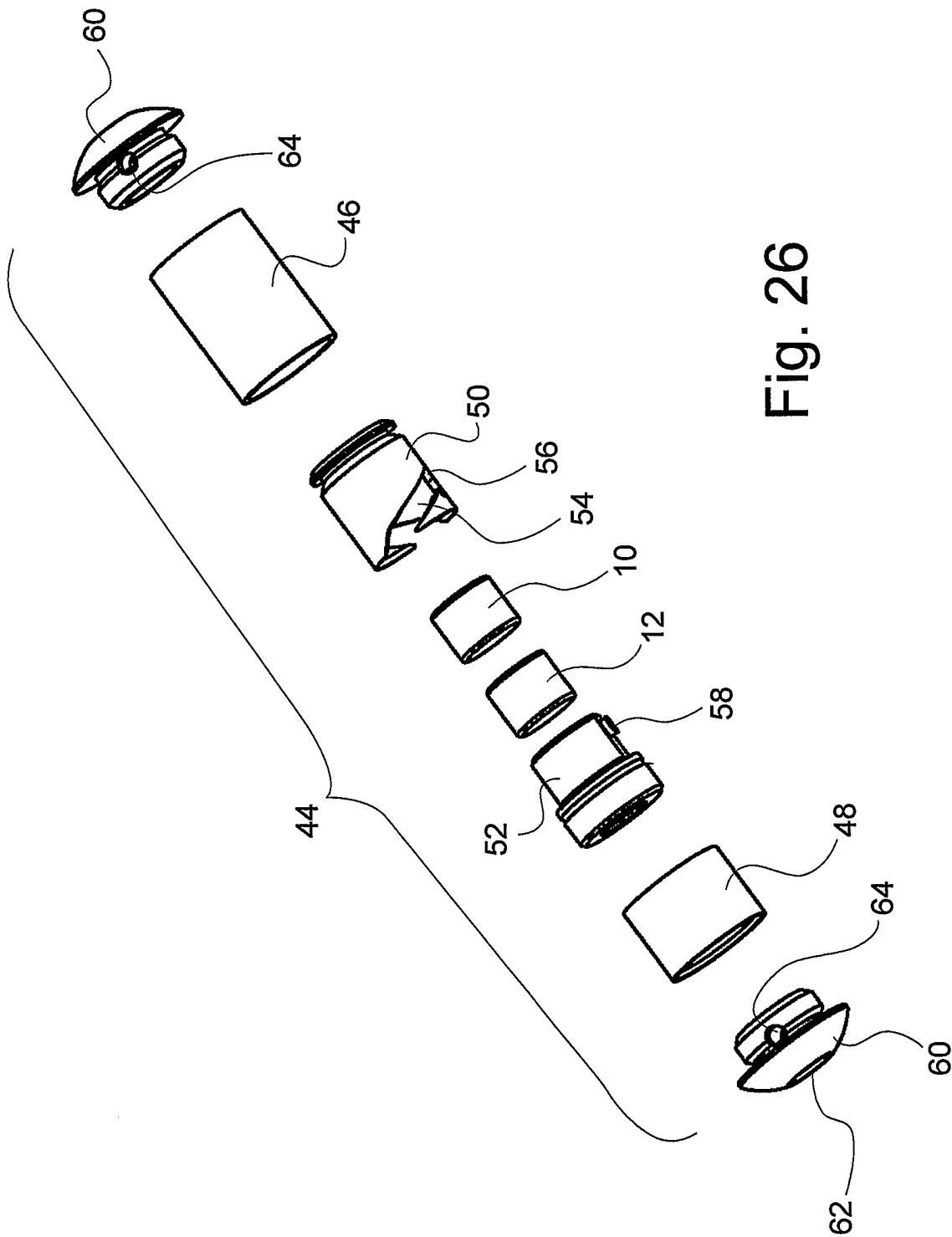
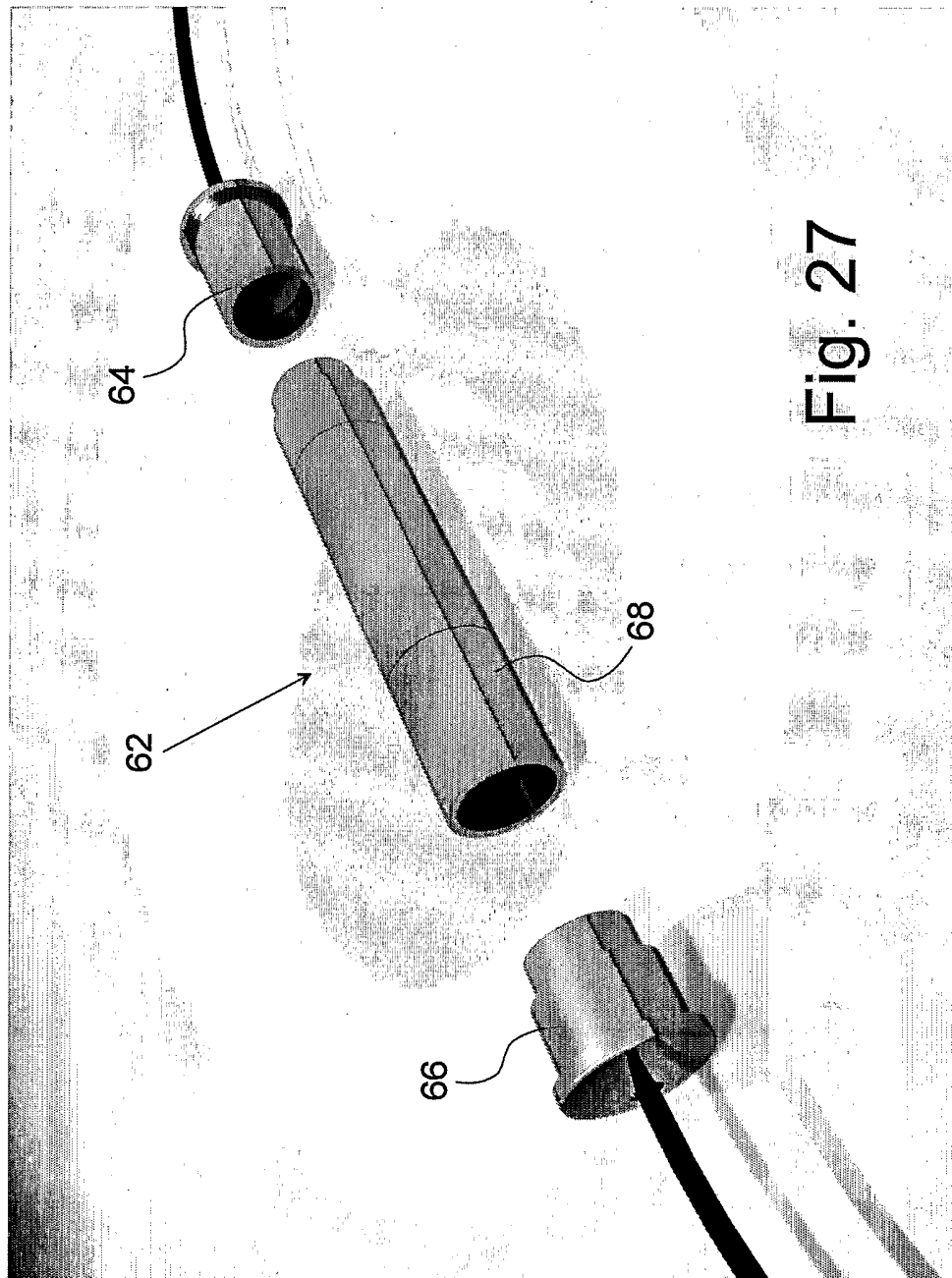


Fig. 26

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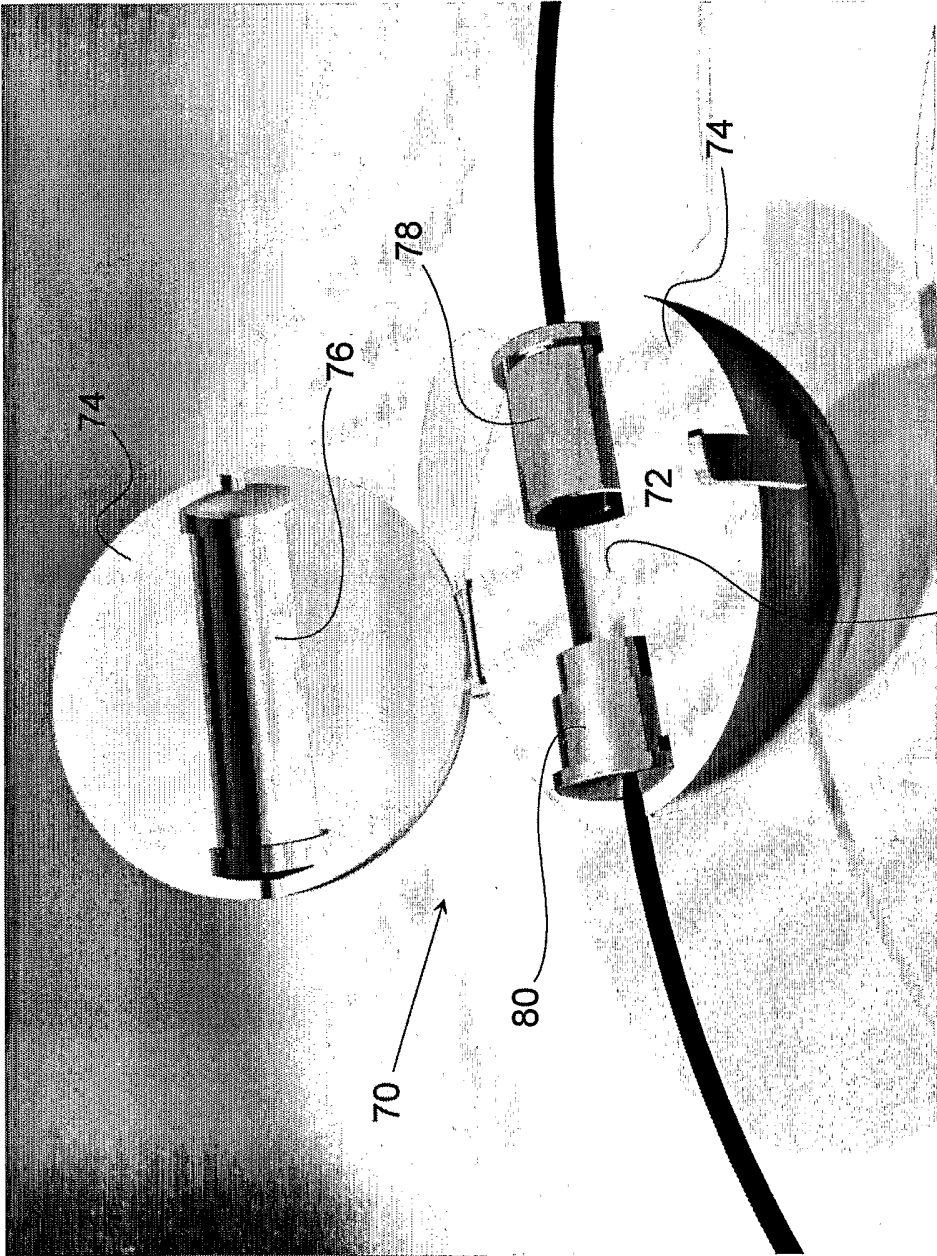


Fig. 28

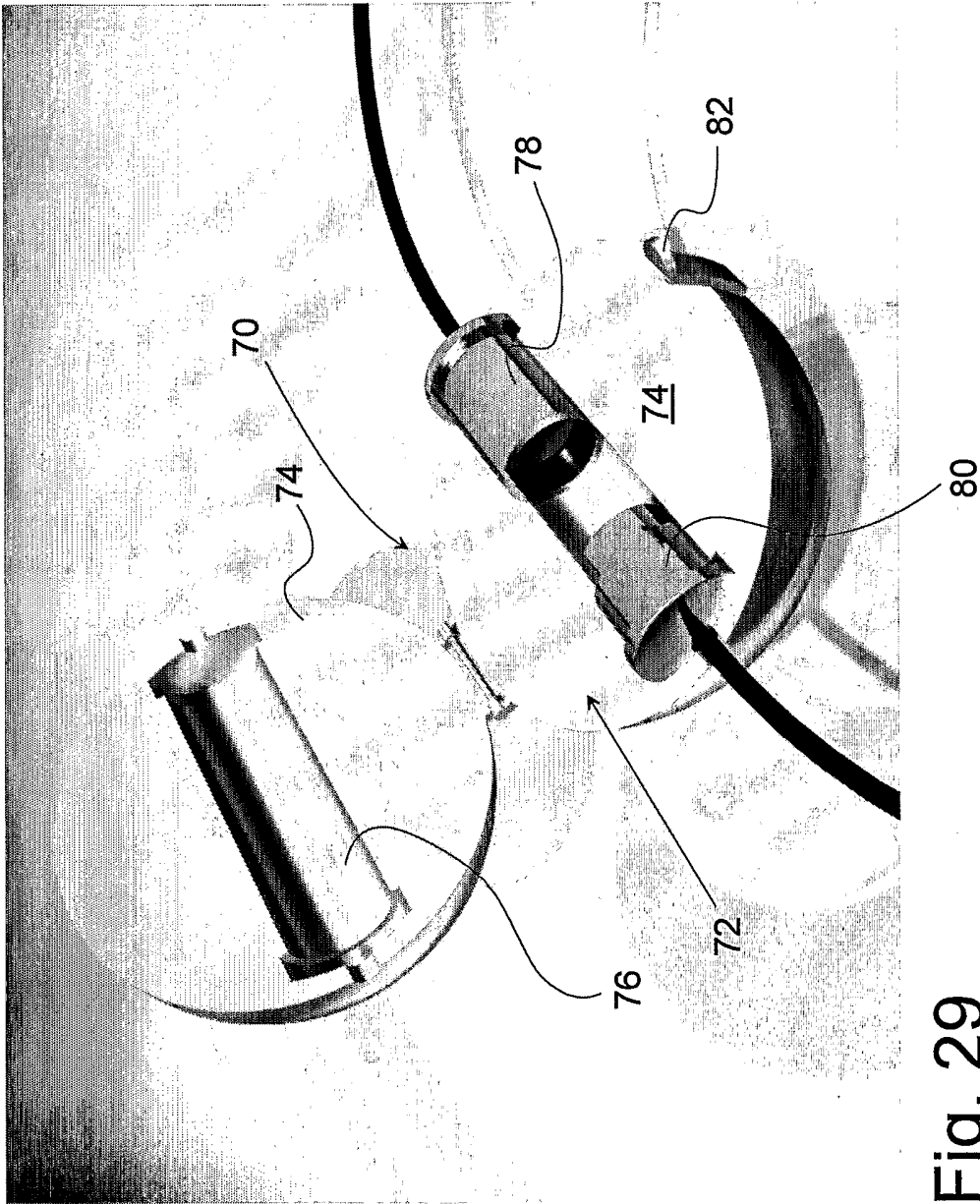


Fig. 29

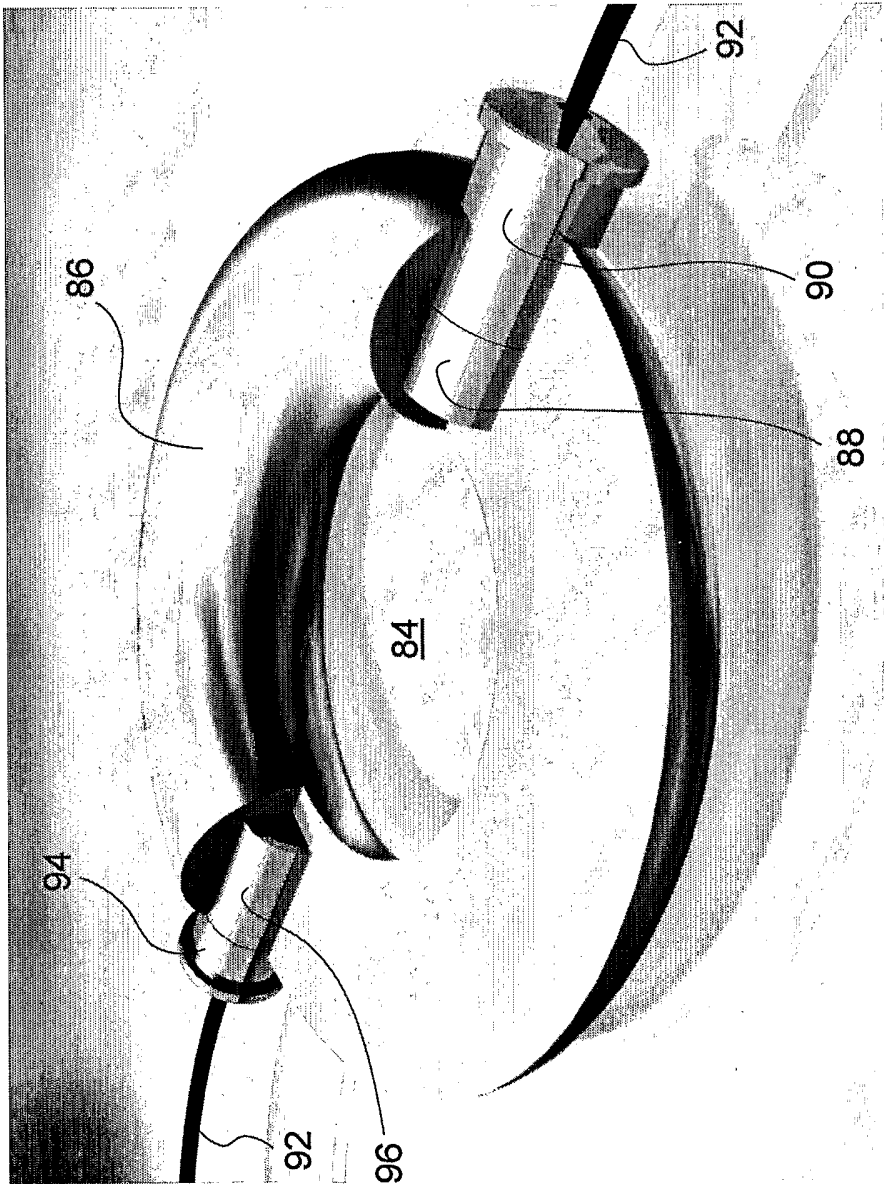


Fig. 30

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK2006/000065

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: A44C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3129477 A (MITSUO MIZUNO), 21 April 1964 (21.04.1964), whole document --	1-10
A	US 5722260 A (MANGANO), 3 March 1998 (03.03.1998), column 1, line 7 - line 11; column 1, line 54 - line 63; column 2, line 9 - line 65, figures 1-4c, abstract, column 4 line 24 -column 5 line 29 --	1-10
A	DE 20012555 U1 (KEIL, ULRICH), 19 April 2001 (19.04.2001), abstract, figures --	1-10

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.

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A	DATABASE WPI Week 200002 Derwent Publications Ltd., London, GB; Class P23, AN 2000-016396 & JP 11235220 A (YOSHIKI SHOJI YG), 31 August 1999 (1999-08-31) abstract --	1-10
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