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(72) Inventor: **Terziani, Urbano**  
**52020 Pieve A Maiano, Arezzo (IT)**

(74) Representative: **Bardini, Marco Luigi et al**  
**c/o Società Italiana Brevetti S.p.A.**  
**Corso dei Tintori, 25**  
**50122 Firenze (IT)**

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(71) Applicant: **Cento Group S.p.A.**  
**52020 Civitella in val di Chiana (Arezzo) (IT)**

(54) **Spring-catch clasp**

(57) A spring-catch clasp for ornamental chains comprising a clasp body (1) fit for being connected to one end of a chain, and an annular member (5) extending therefrom and engageable with a female member mounted to the other end of the chain. The annular member is formed by an arm (5) extending between two expansions (3,4) of the clasp body and pivotally connected to the body through one end. Elastic means are provided between the end of the arm (5) and the clasp body (1) for forcing a free end of the arm against the respective expansion of the body, the arm (5) comprising means (8,9) for applying a force counteracting that of the elastic means to disengage the free end from its respective expansion and angularly displace the arm moving it away from the clasp body.

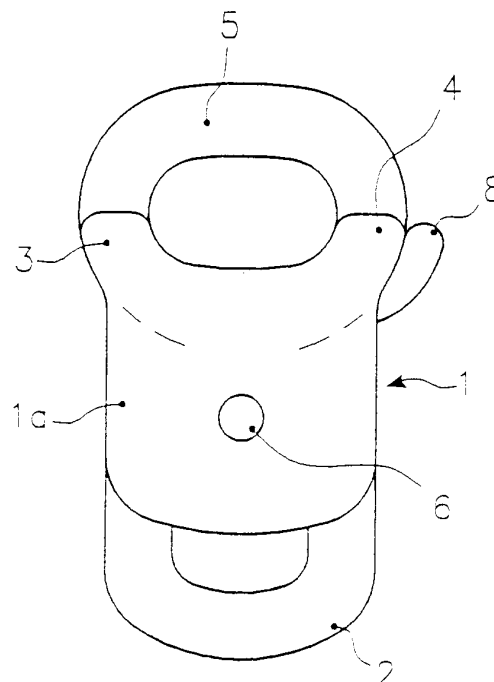


Fig.1

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## Description

**[0001]** The present invention relates to a spring-catch clasp for the field of jewelry and costume jewelry, featured by a better usefulness with respect to the conventional, known clasps of the same type.

**[0002]** The spring-catch clasps of the convention type are formed by a body, to be connected to one end of a necklace, a bracelet or, more generally, an ornamental chain, said end being possibly equipped with a cap or end member, and an annular portion extending from said body. The annular portion is formed by a first element, of greater length, fixed with respect to the body and a second element, or pawl, of lower length, elastically displaceable with respect to said body and operable by acting on a lug projecting radially from the pawl edge, when the clasp has to be opened. The pawl, when operated, displaces angularly toward the inside of the annular portion, thus providing a passage through which the female member of the clasp, fixed to the other end of the necklace or the bracelet, can be engaged or disengaged. Backward displacement of the pawl to the closure position, i.e. circumferentially aligned to the fixed element of the annular portion, occurs elastically by means of a spring arranged between the clasp body and the pawl root.

**[0003]** Although extensively used since many years, the spring-catch clasp is not faultless. The most serious drawback consists in that it is difficult to operate: the smaller the clasp is and the more tight the fit to the neck/wrist is, the greater is the difficulty of operation. As a matter of fact, to open the necklace or the bracelet, it is necessary to use both hands, one operating the pawl and the other one causing the female member of the clasp to slide along the fixed element of the annular member, or, as an alternative, it is necessary that the user be assisted by another person.

**[0004]** In order to get the sliding of the female member to occur, the shape of the fixed element of the annular portion must be such that the distance between the pawl end and any of the points of the fixed element, at each moment of its angular displacement, be substantially greater than the thickness of the female member. This condition requests that the clasp would be of a substantially arched shape and, therefore, the use of a so shaped clasp is limited to only those cases in which the clasp shape is compatible with the design of the necklace or bracelet to which the clasp has to be applied.

**[0005]** The object of the present invention is to provide a spring-catch clasp characterized by such a structure that from one hand, it would result in a easier operation and, from the other one, be less binding for the designer as compared to the spring-catch clasps of the prior art type.

**[0006]** The above object is achieved by the spring-catch clasp according to the invention which comprises a body with an annular portion, fit for engaging with the female member of the clasp, the annular portion being

formed by an arm extending between two expansions of the clasp body and pivotally connected to the latter through one of its ends. Elastic means for forcing the other end or free end of the arm against the respective expansion of the body clasp are provided between the arm end connected to the body and the body itself. Furthermore, the arm comprises means for applying a force counteracting that of the elastic means to disengage the free end of the arm from the respective expansion causing the arm to perform an angular displacement away from the clasp body.

**[0007]** In this way, when the clasp is opened, it is not necessary to guide the sliding of the female member along the arm, but the disengagement occurs by gravity almost automatically, as the arm open out from the body, thus leaving a sufficient room for the female member of the clasp to disengage. As a result, the necklace or bracelet can be released with only one hand, which holds the end of the necklace or bracelet bearing the clasp body and, at the same time, applies the necessary force to overcome the resistance of the elastic means withstanding the clasp opening.

**[0008]** Moreover, since the angular displacement of the arm with respect to the body clasp does not hinder dimensionally the disengagement of the female member, the arm shape is not decisive for a proper operation of the clasp and, therefore, can be freely designed according to the most different needs.

**[0009]** The invention will be shown in more detail with the following description of embodiments thereof, made as non-limiting examples with reference to the attached drawings wherein:

- Figure 1 is a plan view of a spring-catch clasp according to the present invention;
- Figures 2 and 3 are side views taken from opposite sides of the clasp of Figure 1;
- Figures 4 and 5 show, as a plan view and a side view respectively, the clasp body and the relevant arm;
- Figures 6 and 7 show, as a plan view and a side view respectively a variation of the spring-catch clasp according to the invention;
- Figures 8 and 9 show the body and the arm respectively of the clasp of Figure 6;
- Figure 10 is a plan view of a further variation of the spring-catch clasp according to the invention;
- Figures 11 and 12 are views taken from opposite sides of the clasp of Figure 10;
- Figures 13 and 14 show the body and the arm respectively of the clasp of Figure 10;
- Figure 15 shows still another variation of the clasp according to the invention;
- Figure 16 shows the arm of the clasp of Figure 15.

**[0010]** With reference to the Figures 1 to 5, it has been indicated at 1 a clasp body formed by a pair of walls 1a and 1b extending in a parallel, spaced relationship from

a common edge 1c thereof, from which a semiannular element 2 extends for the connection to one end of the necklace or bracelet. At the opposite side of body 1 with respect to that from which semiannular element 2 extends two expansions 3 and 4 extend symmetrically from body 1. An arm 5 bridges expansions 3 and 4 and has an enlarged end 5a housing between walls 1a and 1b and is pivotally connected to these walls by means of a pin 6. Arm 5 comes out from expansion 4 and extends up to the other expansion 3 abutting against it with its free end. A flexural coil spring 7 is arranged around pin 6 and abuts against body 1 with one end and against arm 5 with the other one to force the free end of arm 5 against expansion 3. In particular, spring 7 has two active arms 7a and 7b, spaced to each other of an angle greater than 90°, which abut on body 1 and arm 5 respectively and are oriented toward arm 5 (active arm 7b) and toward the opposite side (active arm 7a).

**[0011]** A lug 8 extends sideways from arm 5 close to its enlarged end 5a. Lug 8 acts as a point of application of a force for overcoming the elastic strength of spring 7, thus causing arm 5 to rotate around pin 6 and move its free end away from expansion 3.

**[0012]** Advantageously, as shown in figure 2, a seat 3a is formed within expansion 3 and the free end of arm 5 engages with seat 3a.

**[0013]** With the arrangement of spring 7 as shown, to open the clasp according to the invention it is necessary to push lug 8 in a substantially tangential direction with respect to body 1 and, more precisely, tangential to the edge of body 1 from which lug 8 protrudes. In this way, arm 5 is caused to rotate and move its free end away from expansion 3. The engagement or disengagement of the female member with, or from, arm 5 are made considerably easier, as the female member can slide along arm 5 without any hindrance.

**[0014]** For the above reason it is no longer necessary to form arm 5 in the shape of an arch as in the known spring-catch clasps and this gives the designer a large freedom to choose the preferred shape for the clasp. As exemplifying, non-limiting examples, Figures 6 to 9 and 10 to 14 show two different embodiments of spring-catch clasp according to the invention of quadrilateral shape and of circular shape respectively. In these figures the same reference numerals are used to identify the same components as in the embodiments shown in figures 1 to 5.

**[0015]** In the embodiment shown in figures 15 to 16, body 1 and expansions 3 and 4 thereof have an asymmetrical shape and the point of application of the force is in the shape of a rounded side protrusion 9 of enlarged end 5a of arm 5. In this case the arm 5-protrusion 9-pin 6 system forms a first-class lever, that is pin 6 is placed between the free end of arm 5 and protrusion 9, which is the power application point. In particular, spring 7 has two active arms 7a and 7b spaced to each other, in this case, of an angle lower than 90°, which abut on body 1 and arm 5 respectively and both extend to the opposite

part of arm 5 with respect to pin 6.

**[0016]** This solution has the advantage of an even easier operation of the clasp. As a matter of fact, when protrusion 9 is operated, the clasp is held tight between two fingers acting on transversally opposed parts with respect to pin 6, i.e. on protrusion 9 and on edge 1c of body 1. In this way, the opening of the clasp is obtained simply by pressing protrusion 9 in a substantially radial direction with respect to body 1 and, more precisely, substantially perpendicular to the edge of body 1 from which protrusion 9 extends, and there is no generation of a moment tending to let the clasp rotate between the fingers as in the case of the previously shown embodiments.

**[0017]** Pin 6 may be riveted to body 1 or there may be provided for a half-pin forming a single piece with body 1, for example extending from the inner face of one of walls 1a and 1b.

**[0018]** Thanks to the lower number of structural restraints exhibited by the spring-catch clasp according to the invention, it is also possible to achieve a considerable reduction of weight of these clasps with respect to the known clasps of the same dimensions.

**[0019]** Finally, it has to be noticed that the possibility of engaging the free end of arm 5 within the expansion 3 of closure body 1 prevents any unwanted disengagement of the female member through the gap that, in the conventional spring-catch clasps, can form between the ends facing each other of the pawl and the fixed portion due either to repeated use or a production defect. This drawback is especially felt when very thin components are used, as often occurs in order to keep the production costs as low as possible.

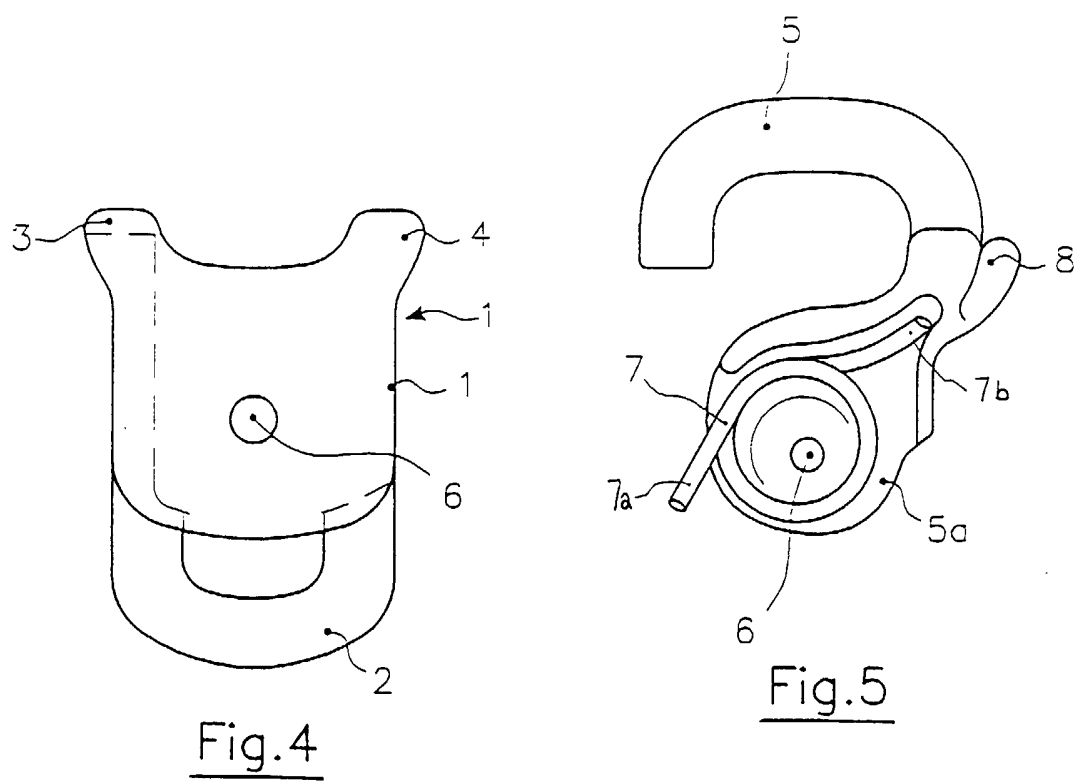
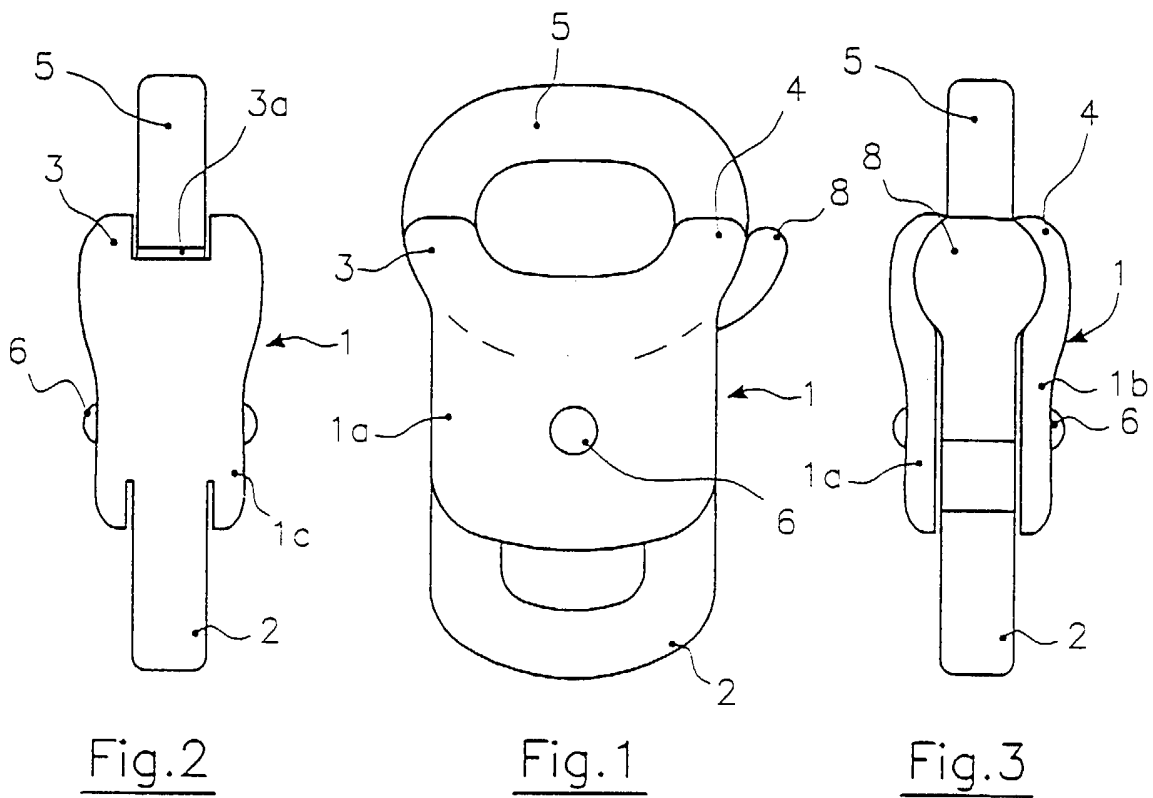
**[0020]** Further variations and/or modifications may be brought to the spring-catch clasp according to the invention without departing from the scope of the invention itself as defined in the attached claims.

## Claims

1. Spring-catch clasp for ornamental chains comprising a clasp body (1) fit for being connected to one end of a chain and having an annular portion (5) engageable with a female member mounted to the other end of the chain, characterized in that said annular portion is formed by an arm (5) extending between two expansions (3, 4) of said clasp body and pivotally connected to said body through one end, elastic means (7) being provided between said end of said arm (5) and said body (1) for forcing a free end of said arm (5) against the respective expansion (3) of said body, said arm (5) comprising means (8,9) for applying a force counteracting that of said elastic means (7) to disengage said free end from said respective expansion and angularly displace said arm moving it away from said clasp body.

2. The clasp according to claim 1, wherein the end of said arm, which is pivotally connected to said body, comprises an enlarged portion (5a) housed within said body and a connection pin (6) between said enlarged portion and said body, said elastic means (7) being wound around said pin and abutting against said body (1) and said arm (5). 5
  
3. The clasp according to anyone of the previous claims, wherein said means for applying a force counteracting that of said elastic means comprise a lug (8) extending sideways from said arm (5) close to said enlarged portion (5a) between the free end of said arm and the pin (6) around which said arm can rotate. 10 15
  
4. The clasp according to anyone of the claims 1 or 2, wherein said means for applying a force counteracting that of said elastic means (7) comprise a side protrusion (9) of the enlarged portion (5a) of said arm (5), said pin (6) around which said arm can rotate being arranged between the free end of said arm and said side protrusion (9) . 20
  
5. The clasp according to anyone of the previous claims, wherein the free end of said arm (5) is engageable within the respective expansion (3a) of said clasp body. 25
  
6. The clasp according to claim 1, wherein said expansions (3,4) of said body are arranged symmetrically. 30
  
7. The clasp according to claim 1, wherein said elastic means comprise a flexural coil spring (7) with two active arms (7a,7b) abutting on said body (1) and said arm (5) respectively, spaced to each other of an angle greater than 90°, one of said active arms (7b) being turned toward said arm (5) and the other one (7a) to the opposite direction, whereby the opening force to be applied is in a substantially tangential direction with respect to said body. 35 40
  
8. The clasp according to claim 1, wherein said elastic means comprise a flexural coil spring (7) with two active arms (7a,7b) abutting on said body (1) and said arm (5) respectively, spaced to each other of an angle lower than 90°, both active arms (7a,7b) being turned toward the opposite side with respect to said arm (5), whereby the opening force to be applied is in a substantially radial direction with respect to said body. 45 50

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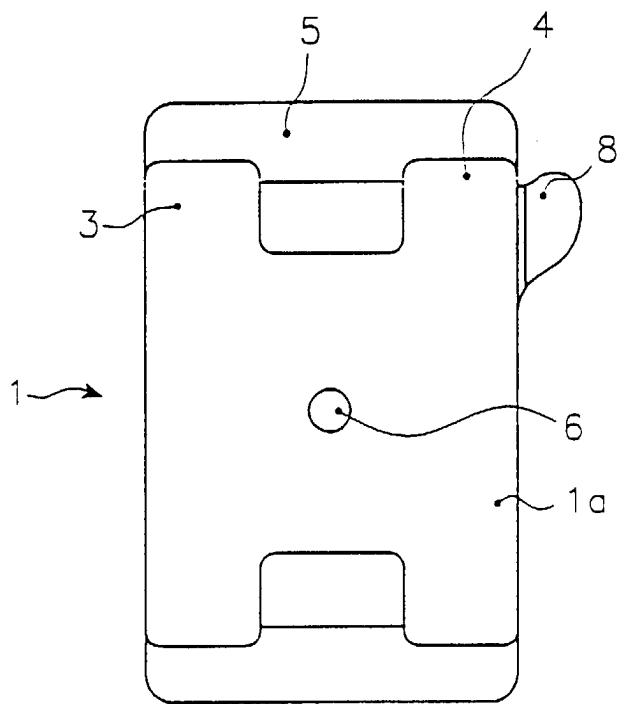


Fig.6

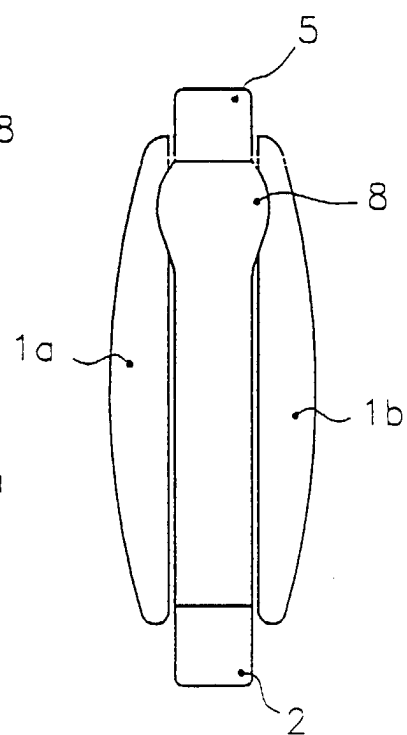


Fig.7

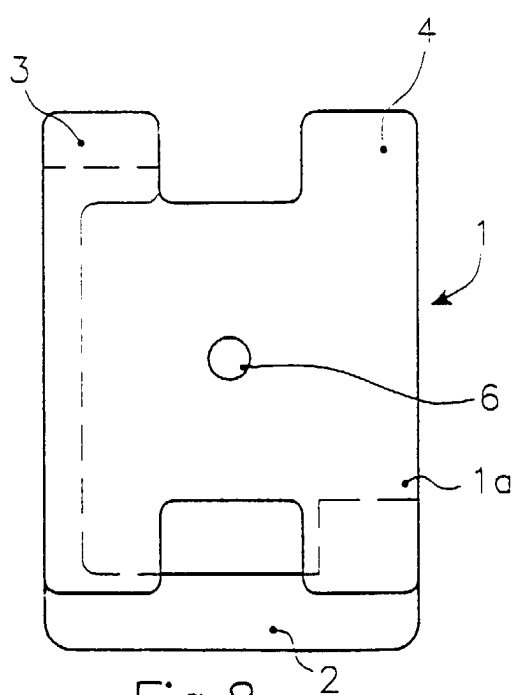


Fig.8

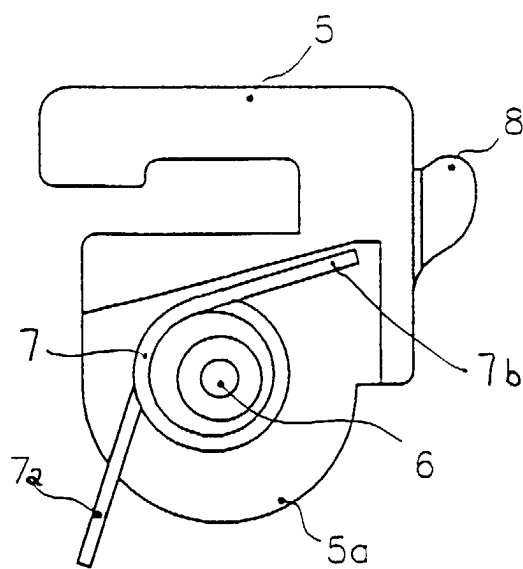


Fig.9

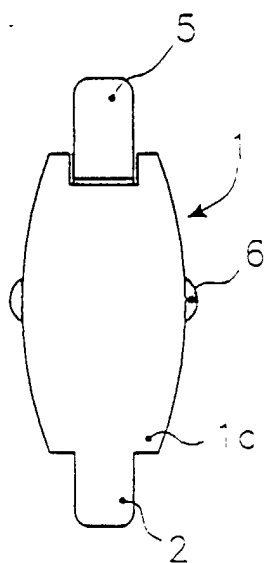


Fig. 11

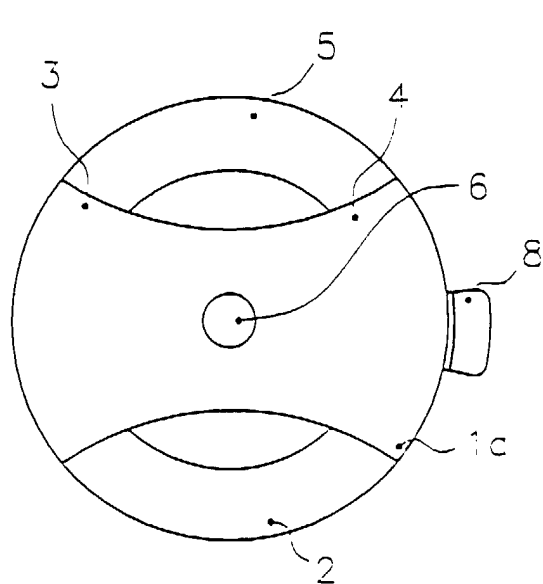


Fig. 10

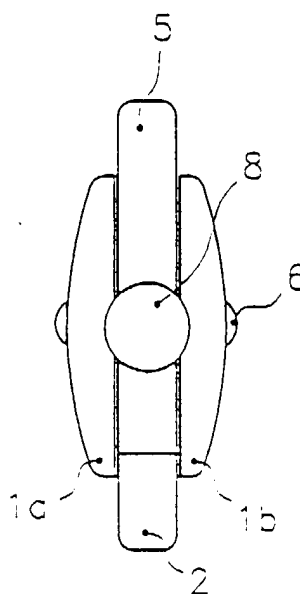


Fig. 12

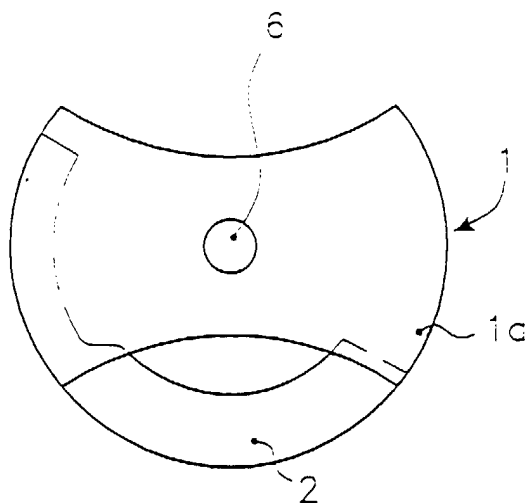


Fig. 13

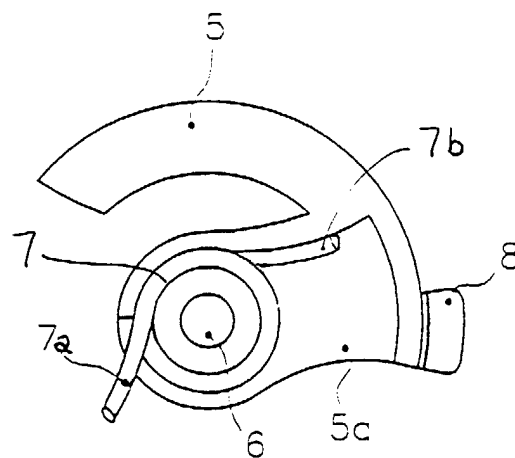


Fig. 14

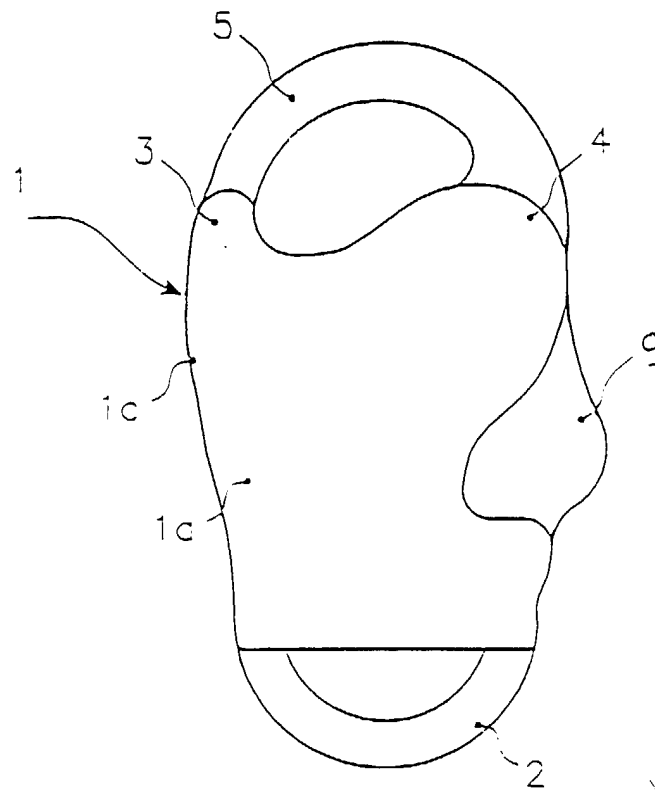


Fig.15

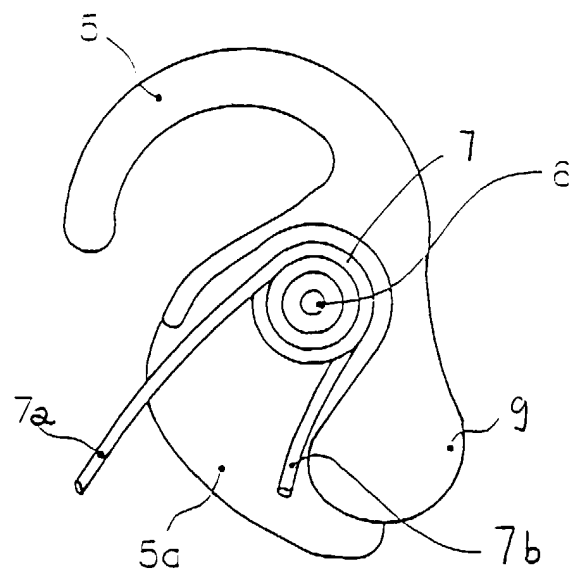


Fig.16