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(54) **Method for manufacturing semi-finished products adapted to form levers, particularly for sports shoes**

Verfahren zum Herstellen von halbfertigen Produkten angepasst zur Bildung von Hebeln, insbesondere für Sportschuhe

Procédé de fabrication de produits semi-finis adaptés pour former des leviers, en particulier pour chaussures de ski

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(56) References cited:
EP-A1- 1 774 864
EP-A1- 1 922 944
EP-A1- 1 922 945
EP-A2- 0 880 912
WO-A1-03/035295
IT-A1- PN20 050 009

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Description

[0001] The present invention relates to a method for providing semi-finished products adapted to form levers, particularly for sports shoes, and to levers obtained with the method.

[0002] In the field of sports shoes it is known to use levers that are designed to allow the fastening of a first flap and of a second flap that constitute the shoe.

[0003] These known types of lever comprise a first lever arm, which can be gripped by the user and is associated with a first flap to be joined and is connected, by means of an interconnection element, to a ring that interacts for example with a rack or hook that can be associated with the second flap to be joined of the shoe.

[0004] The lever arm and the ring are usually provided by die-casting:

> however, this solution entails a large investment in the dies and it is further necessary to take into account the fact that each different shape and dimension of the lever arm or of the bridge require the use of a separate die.

[0005] It is also known to provide these components for levers by cold pressing; although this solution allows a smaller investment in providing the dies, more usually aluminum rods of a given diameter, approximately 25 mm are adopted, which are flattened at an appropriately provided impression, obtaining the semi-finished product which has a large perimetric flash that has to be cropped and finished.

[0006] This solution entails the production of a high percentage of waste of more than 50% of the material.

[0007] It is also known to provide these components by drawing by removal of material; even this solution, however, has high costs which limit its use only to upper-range products sold to the public at high prices that justify its investment.

[0008] It is also known to provide these components by drawing by removal of material; even this solution, however, has high costs which limit its use only to upper-range products sold to the public at high prices that justify its investment.

[0009] It is also known to provide these components for levers made of plastics; this solution, however, still has a high investment in molds.

[0010] Italian patent application IT PN2005050009 discloses a method for manufacturing semi-finished products adapted to form levers, particularly for sports shoes, in which each product is manufactured starting from a portion of tube or bar.

[0011] The aim of the present invention is to solve the above-mentioned drawbacks of the cited background art, by providing a method that allows to obtain, with a small investment, components for levers particularly for sports shoes.

[0012] Within this aim, an object of the invention is to provide semi-finished products that are adapted to form levers particularly for sports shoes that have no flash to be removed.

[0013] Another object of the invention is to provide a method that allows to obtain semi-finished products for forming levers particularly for sports shoes that have very little waste, so as to achieve an optimum saving in material.

[0014] Another object of the invention is to provide a method that allows to obtain semi-finished products adapted to form levers particularly for sports shoes that requires low investments.

[0015] Another object of the invention is to obtain a method that combines the above cited characteristics with the characteristic of allowing to obtain semi-finished products that are adapted to form levers particularly for sports shoes that have low costs and weights.

[0016] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a method for manufacturing semi-finished products adapted to form levers, particularly for sports shoes, as defined in claim 1.

[0017] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

> Figure 1 is a plan view of a lever for sports shoes;
>
> Figure 2 is a sectional view, taken along the line II-II of Figure 1;
>
> Figure 3 is a side view of the lever of Figure 1;
>
> Figure 4 is an exploded view of the components and of the structure of the lever;
>
> Figures 5 and 6 are front and side views of a rod;
>
> Figures 7 and 8 are side and front views of the rod after a first flattening step;
>
> Figure 9 is a view of the semi-finished product of Figure 7, rotated through approximately 90°;
>
> Figures 10 and 11 are a side view and a front view of the semi-finished product after a blanking step;
>
> Figure 12 is a view of the semi-finished product of Figure 10 rotated through approximately 90°;
>
> Figure 13 is a view of the semi-finished product after the shaping step to obtain a lever arm or a bridge or a ring;
>
> Figure 14 is a sectional view, taken along the line XIV-XIV of Figure 13;

Figure 15 is a top view of the semi-finished product;

Figure 16 is a view, similar to Figure 13, of the semi-finished product subjected to a further coining step to obtain a lever arm or a bridge or a ring;

Figure 17 is a sectional view, taken along the line XVII-XVII of Figure 16;

Figure 18 is a rear view of the semi-finished product according to the invention.

[0018] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0019] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0020] With reference to the figures, the reference numeral 1 designates a lever constituted by a lever arm 2 that is substantially U-shaped so as to form a first base 3 and a pair of first wings 4a, 4b, which are rotatably interconnected at their ends, by means of a pair of first rivets 5a, 5b, at two wings 6a, 6b, which are perforated and protrude from a base 7 that is coupled to a first flap of a shoe.

[0021] Between the first wings 4a and 4b there is an interposed first pivot 8a for the pivoting of an element 9 for interconnection, by means of a second pivot 8b, to a ring or bridge 10, which is also U-shaped, so as to form a pair of second wings 11, which are blended by a second base 12 that is designed to engage a rack or hook 13, which can be associated with a second flap of a shoe.

[0022] The lever arm 3 and the bridge or ring 10 are provided by means of a method that initially starts from a tube or rod or bar made of metal, for example preferably of aluminum, which has a preferably round cross-section.

[0023] The method then provides for flattening, for example at the ends of the rod so as to form two flat regions, designated by the reference numerals 15a and 15b.

[0024] As an alternative or in combination, it is possible to obtain coining, this term being used to reference a flattening by impression in a positive or negative form, used for example to insert an acronym or lettering or a logo.

[0025] The method then provides for the possibility to perform a blanking step, for example at the flat regions 15a and 15b, in order to obtain for example one or more pairs of holes 16a and 16b.

[0026] As an alternative, blanking can provide for the obtainment of preset slots.

[0027] The method then provides for the repetition of the preceding steps, for example a further flattening and/or coining of a central region of the tube that was not affected previously by flattening and blanking; it is thus possible to obtain for example a flattened and slightly arc-like region 17, as shown in Figure 17.

[0028] The method then provides for the shaping of the tube or rod or bar until it is given a substantially U-shaped configuration, so as to obtain for example the lever arm 2, which is also shown in Figure 16, or the ring or bridge 10.

[0029] Two semi-finished products are thus obtained which have respectively a shape that can be traced back to the first base 3 and to the second base 12, both of which are blended with the pair of first wings 4a, 4b, the tips of which have the flat regions 15a and 15b which are conveniently perforated and on which the one or more holes 16a, 16b for subsequent interconnection to the remaining components of the lever 1 are provided.

[0030] It has thus been shown that the invention has achieved the proposed aim and objects, a method having been provided which allows to obtain, with a small investment, components for levers particularly for sports shoes without having, in such components, flash to be removed but only possibly a very small amount of waste, so as to obtain an optimum saving of material.

[0031] The investment in machinery and equipment is low with respect to the described background art, and this allows to provide semi-finished products at low costs which have modest weights.

[0032] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to specific requirements.

[0033] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated. The characteristics indicated as advantageous, convenient or the like can also be omitted or be replaced with equivalents.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A method for manufacturing semi-finished components adapted to form levers (1), particularly for sports shoes, **characterized in that** it comprises the steps of:

   a) flattening and/or coining of one or more parts of a tube or rod or bar made of metal,
   b) blanking to obtain one or more holes and/or slots (16a, 16b);
   c) repetition of steps a) and b) on the tube or rod

or bar;
d) shaping said tube or rod or bar until it assumes an essentially U-shaped configuration;

the lever component being constituted by said tube or rod or bar made of metal that is flattened and/or coined and/or blanked and contoured so as to obtain a tensioning lever arm (2), for association with a first flap of the shoe to be joined
and can be actuated by the user, and a ring or bridge (10) adapted to interact with a rack or hook (13) associated with a second flap of the shoe to be joined; the method further comprising an additional step for flattening and/or coining a central region of said tube or rod or bar made of metal not affected previously by flattening and blanking so as to obtain a flattened and slightly arc-like region (17) forming the portion of the ring or bridge adapted to interact with a rack or hook associated with the second flap of the shoe.

2. The method according to claim 1, **characterized in that** said component is obtained starting from a tube or rod or bar made of metal, preferably made of aluminium, which has a polygonal, preferably circular, cross-section.

3. The method according to claim 2, **characterized in that** said tube or rod or bar made of metal is subjected to at least one flattening.

4. The method according to claim 3, **characterized in that** said at least one flattening is obtained at the ends of said tube or rod or bar made of metal so as to form two flat regions (15a, 15b).

5. The method according to claim 4, **characterized in that** said tube or rod or bar made of metal is subjected to at least one coining.

6. The method according to one or more of the preceding claims 2 to 5, **characterized in that** said tube or rod or bar made of metal worked previously is subjected to a blanking step.

7. The method according to claims 6, **characterized in that** said blanking is obtained at the flat regions formed at the ends of said tube or rod or bar made of metal in order to obtain one or more pairs of slots or holes (16a, 16b).

8. The method according to one or more of the preceding claims, **characterized in that** it provides for the shaping of said tube or rod or bar made of metal so as to give it a substantially U-shaped configuration and obtain said lever arm (2) and said ring or a bridge (10).

Patentansprüche

1. Verfahren zum Herstellen von halbfertigen Komponenten, die für die Ausbildung von Hebeln (1), insbesondere für Sportschuhe, geeignet sind, **dadurch gekennzeichnet, dass** es die Schritte;

a) Abflachen und/oder Prägen von einem oder mehreren Teilen eines Rohres oder eines Stabes oder einer Stange aus Metall;
b) Stanzen, um ein oder mehrere Löcher und/oder Schlitze (16a, 16b) zu erhalten;
c) Wiederholen der Schritte a) und b) an dem Rohr oder dem Stab oder der Stange;
d) Formen des genannten Rohres oder des genannten Stabes oder der genannten Stange bis es/er/sie eine im wesentlichen U-förmige Gestalt angenommen hat;

umfasst, wobei die Hebelkomponente von dem genannten Rohr oder dem genannten Stab oder der genannten Stange aus Metall gebildet wird, welches/welcher/welche abgeflacht und/oder geprägt und/oder gestanzt und so konturiert ist, dass ein Spannhebelarm (2), welcher mit einer ersten Klappe des zu verbindenden Schuhs assoziiert ist und der von dem Benutzer betätigt werden kann, und ein Ring oder eine Brücke (10) erhalten werden, der/die geeignet ist, um mit einer Zahnstange oder einem Haken (13) in Wechselwirkung zu treten, welche/welcher mit einer zweiten Klappe des zu verbindenden Schuhs assoziiert ist;
wobei das Verfahren ferner einen zusätzlichen Schritt zum Abflachen und/oder Prägen eines zentralen Bereiches des genannten Rohres oder des genannten Stabes oder der genannten Stange aus Metall umfasst, welcher zuvor durch das Abflachen und Stanzen nicht betroffen war, um so einen abgeflachten und leicht bogenförmigen Bereich (17) zu erhalten, der den Bereich des Ringes oder der Brücke bildet, der zur Wechselwirkung mit einer Zahnstange oder einem Haken vorgesehen ist, welche/welcher mit der zweiten Klappe des Schuhs assoziiert ist.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Komponente ausgehend von einem Rohr oder einem Stab oder einer Stange aus Metall, vorzugsweise aus Aluminium, erhalten wird, welches/welcher/welche einen polygonalen, vorzugsweise kreisförmigen, Querschnitt besitzt.

3. Verfahren nach Anspruch 2, **dadurch gekennzeichnet, dass** das genannte Rohr oder der genannte Stab oder die genannte Stange aus Metall wenigstens einem Abflachen unterzogen wird.

4. Verfahren nach Anspruch 3, **dadurch gekenn-**

zeichnet, dass das wenigstens eine Abflachen an den Enden des genannten Rohrs oder des genannten Stabes oder der genannten Stange aus Metall erfolgt, um so zwei flache Bereiche (15a, 15b) auszubilden.

5. Verfahren nach Anspruch 4, **dadurch gekennzeichnet, dass** das genannte Rohr oder der genannte Stab oder die genannte Stange aus Metall wenigstens einem Prägen unterzogen wird.

6. Verfahren nach einem oder mehreren der vorstehenden Ansprüche 2 bis 5, **dadurch gekennzeichnet, dass** das genannte Rohr oder der genannte Stab oder die genannten Stange aus Metall, das/der/die zuvor bearbeitet wurden, einem Stanzschritt unterzogen werden.

7. Verfahren nach Anspruch 6, **dadurch gekennzeichnet, dass** das genannte Stanzen in den flachen Bereichen erfolgt, die an den Enden des genannten Rohrs oder des genannten Stabes oder der genannten Stange aus Metall ausgebildet sind, um ein oder mehrere Paare von Schlitzen oder Löchern (16a, 16b) zu erhalten.

8. Verfahren nach einem oder mehreren der vostehenden Ansprüche, **dadurch gekennzeichnet, dass** es das Formen des genannten Rohrs oder des genannten Stabes oder der genannten Stange aus Metall vorsieht, um diesem/dieser eine im wesentlichen U-förmige Gestalt zu verleihen und den genannten Hebelarm (2) und den genannten Ring oder eine Brücke zu erhalten (10).

Revendications

1. Procédé pour fabriquer des composants semi-finis adaptés de façon à former des leviers (1), en particulier pour des chaussures de sport, **caractérisé en ce qu'**il comprend les étapes :

a) d'aplatissement et/ou emboutissage d'une ou de plusieurs parties d'un tube ou d'une tige ou d'une barre constitué de métal,
b) de découpage afin d'obtenir un ou plusieurs trous et/ou fentes (16a, 16b) ;
c) de répétition des étapes a) et b) sur le tube ou la tige ou la barre ;
d) de mise en forme dudit tube ou de ladite tige ou de ladite barre jusqu'à ce qu'il prenne une configuration essentiellement en forme de U ;

le composant de levier étant constitué par ledit tube ou ladite tige ou ladite barre constitué de métal qui est aplati et/ou embouti et/ou découpé et mis en forme de façon à obtenir un bras de levier de tension (2), pour l'association avec un premier volet de la chaussure devant être attachée et qui peut être actionné par l'utilisateur, et une bague ou un pont (10) adapté à interagir avec une crémaillère ou un crochet (13) associé à un deuxième volet de la chaussure à attacher ;
le procédé comprenant de plus une étape additionnelle pour aplatir et/ou emboutir une région centrale dudit tube ou de ladite tige ou de ladite barre constitué de métal non affectée précédemment par l'aplatissement et le découpage de façon à obtenir une région aplatie et légèrement en forme d'arc (17) formant la partie de la bague ou du pont adaptée à interagir avec une crémaillère ou un crochet associé au deuxième volet de la chaussure.

2. Procédé selon la revendication 1, **caractérisé en ce que** ledit composant est obtenu à partir d'un tube ou d'une tige ou d'une barre constitué de métal, de préférence réalisé en aluminium, qui a une section transversale polygonale, de préférence circulaire.

3. Procédé selon la revendication 2, **caractérisé en ce que** ledit tube ou ladite tige ou ladite barre constitué de métal est soumis à au moins un aplatissement.

4. Procédé selon la revendication 3, **caractérisé en ce que** ledit au moins un aplatissement est obtenu aux extrémités dudit tube ou de ladite tige ou de ladite barre constitué de métal de façon à former deux régions plates (15a, 15b).

5. Procédé selon la revendication 4, **caractérisé en ce que** ledit tube ou ladite tige ou ladite barre constitué de métal est soumis à au moins un emboutissage.

6. Procédé selon l'une ou plusieurs des revendications 2 à 5 précédentes, **caractérisé en ce que** ledit tube ou ladite tige ou ladite barre constitué de métal travaillé précédemment est soumis à une étape de découpage.

7. Procédé selon la revendication 6, **caractérisé en ce que** ledit découpage est obtenu dans les régions plates formées aux extrémités dudit tube ou de ladite tige ou de ladite barre constitué de métal de façon à obtenir une ou plusieurs paires de fentes ou de trous (16a, 16b).

8. Procédé selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**il produit la formation dudit tube ou de ladite tige ou de ladite barre constitué de métal de façon à lui donner une configuration sensiblement en U et à obtenir ledit bras de levier (2) et ladite bague ou ledit pont (10).

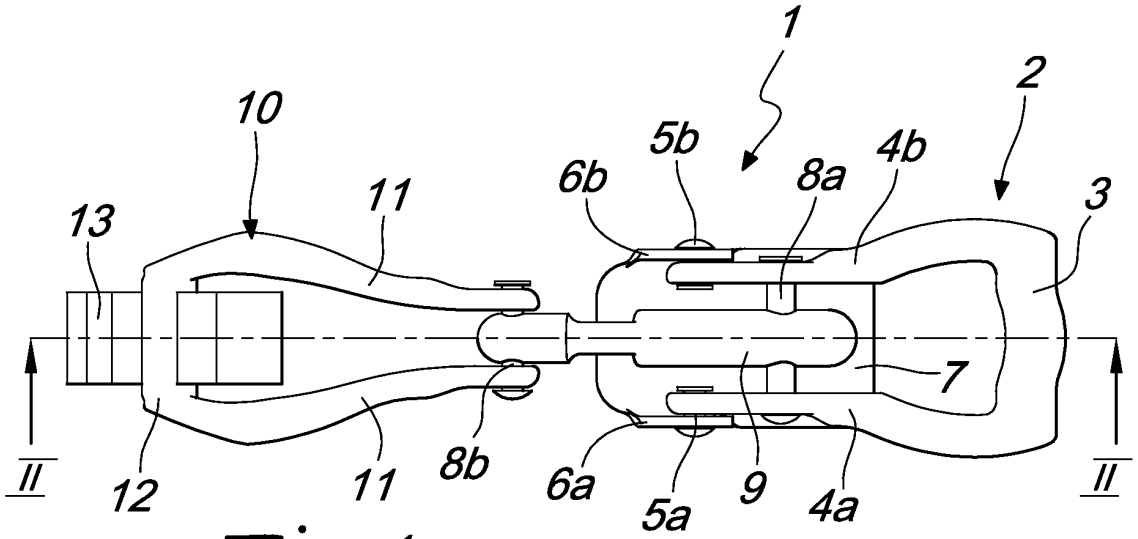

Fig. 1

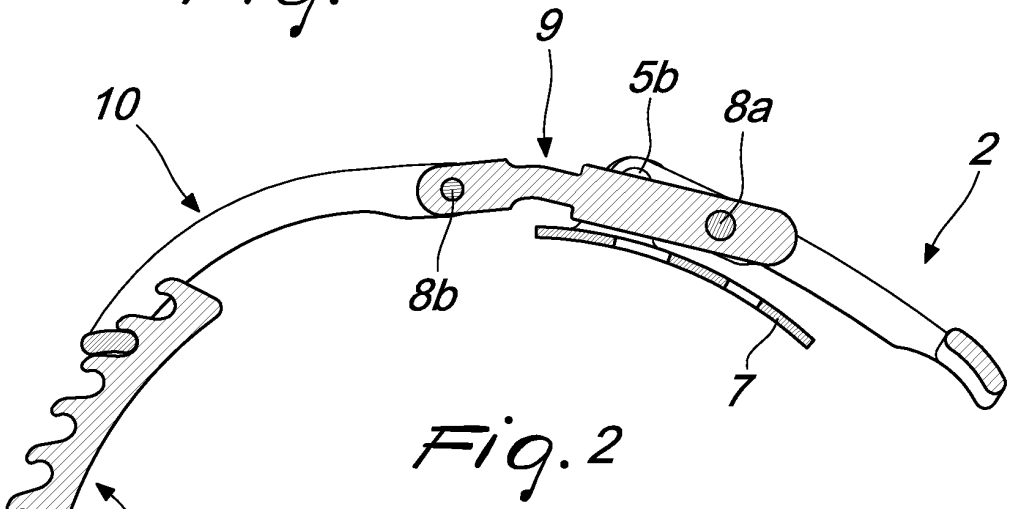

Fig. 2

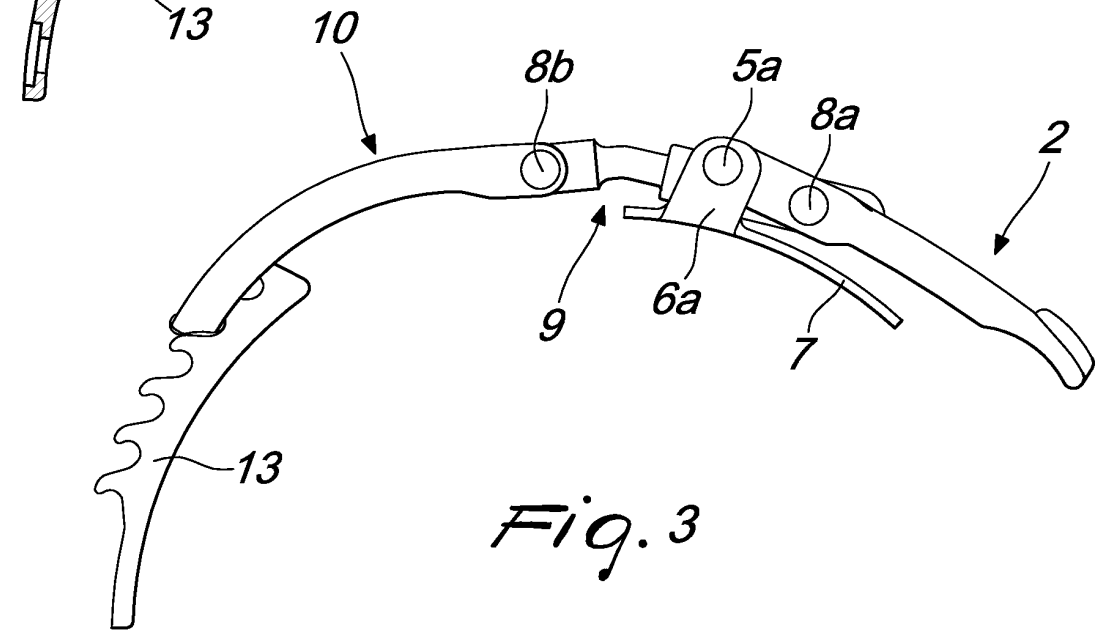

Fig. 3

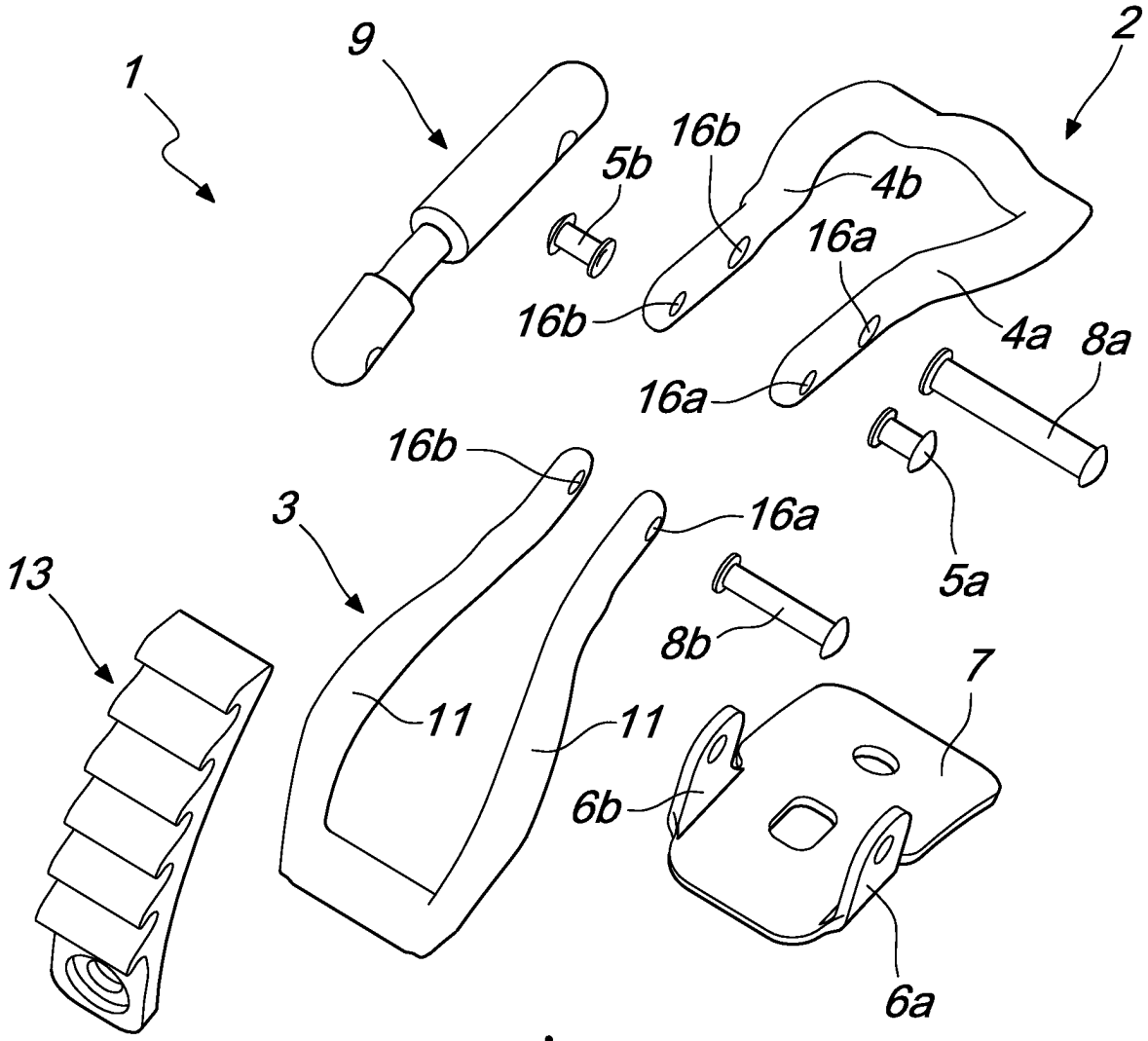

Fig. 4

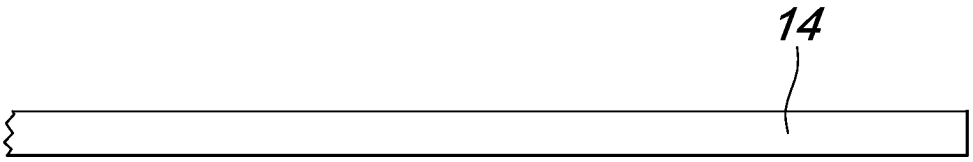

Fig. 5

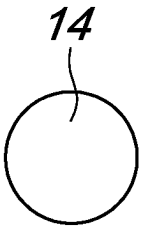

Fig. 6

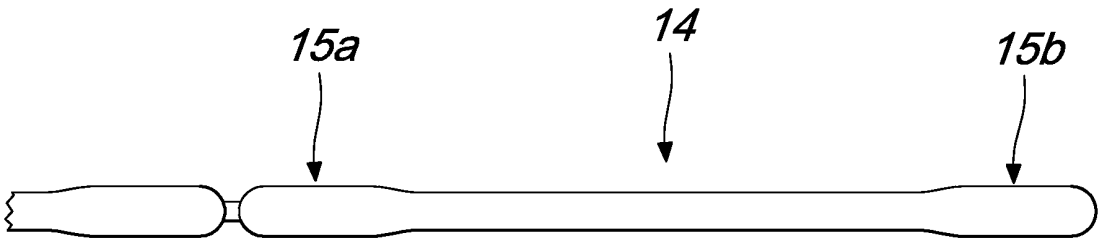

Fig. 7

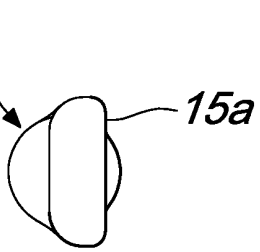

Fig. 8

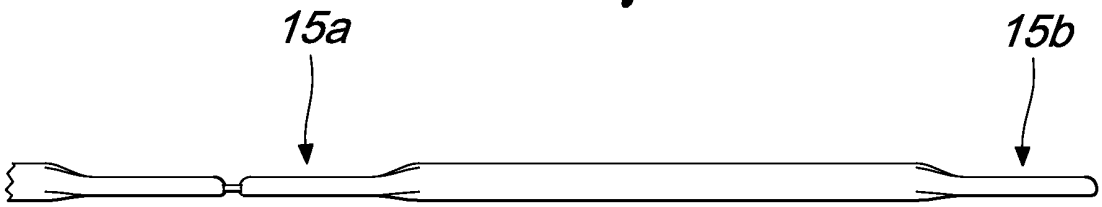

Fig. 9

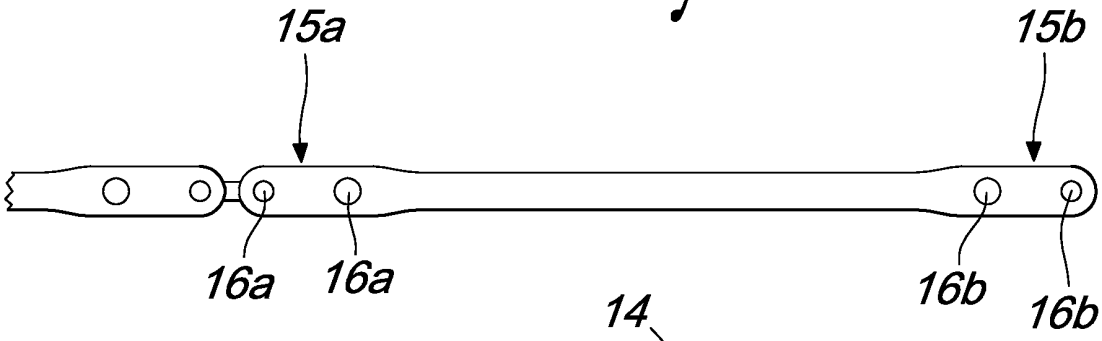

Fig. 10

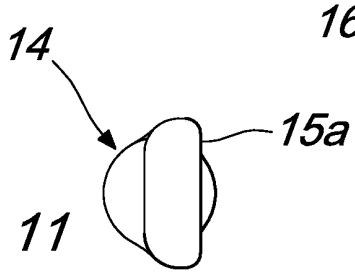

Fig. 11

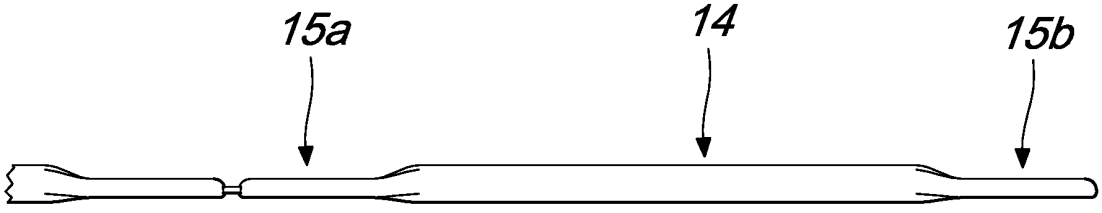

Fig. 12

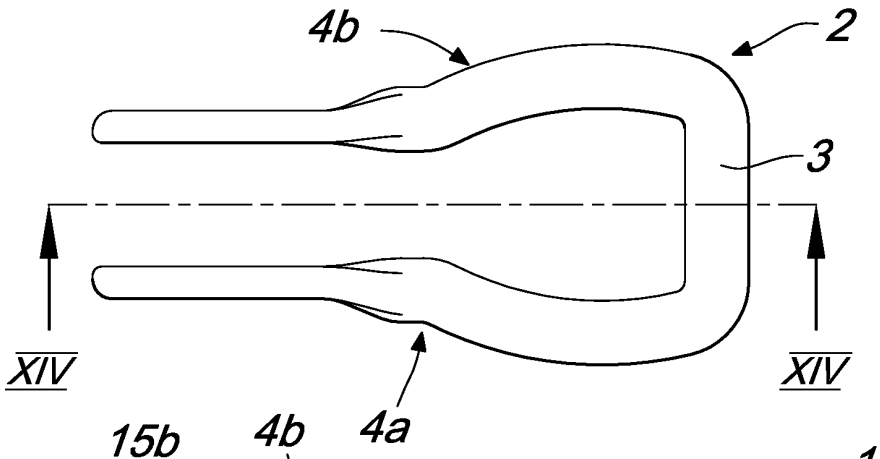

Fig. 13

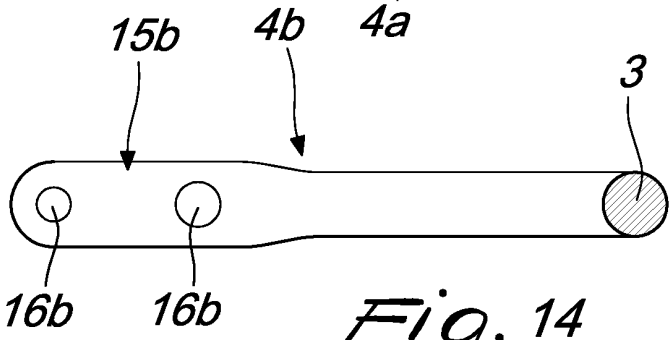

Fig. 14

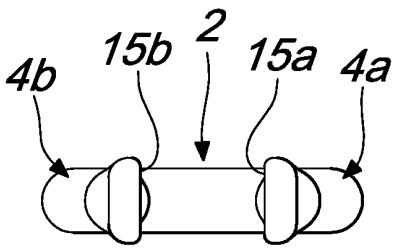

Fig. 15

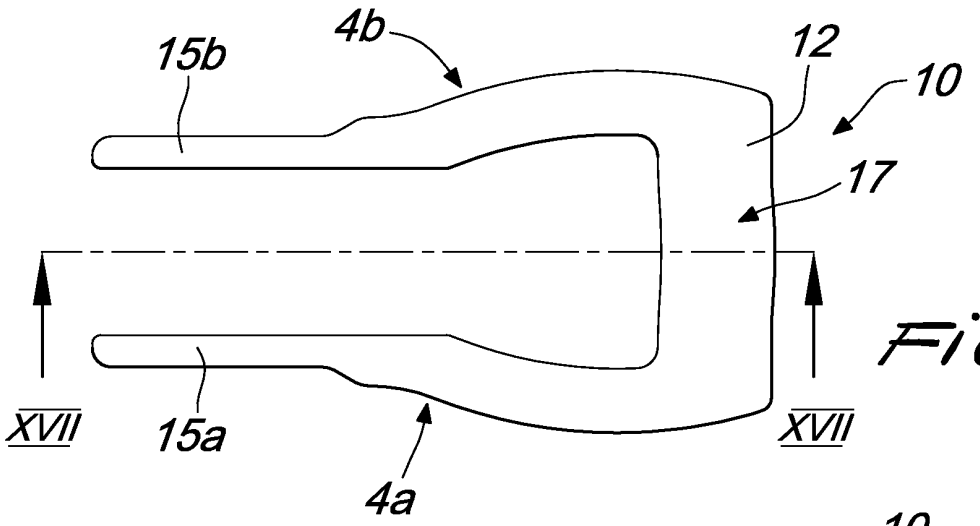

Fig. 16

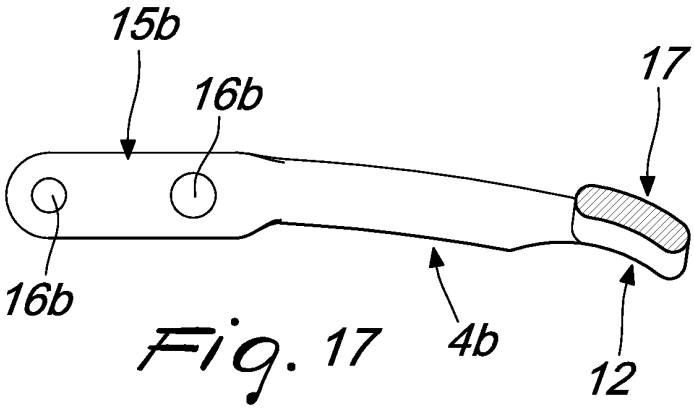

Fig. 17

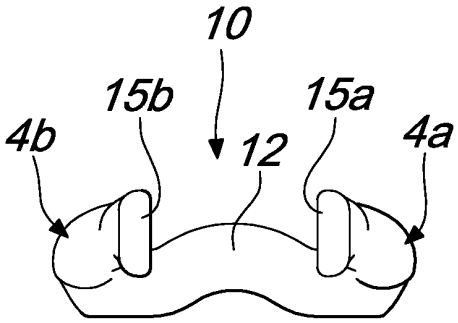

Fig. 18

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT PN2005050009 **[0010]**