(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 815 894 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
03.06.2009 Bulletin 2009/23

(51) Int Cl.:
A63C 5/12 *(2006.01)* ***A63C 9/00*** *(2006.01)*

(21) Application number: **07100642.3**

(22) Date of filing: **17.01.2007**

(54) **Method for producing a sports article and sports article produced with such method**

Verfahren zur Herstellung eines Sportartikels und mit einem solchen Verfahren hergestellter Sportartikel

Procédé pour la fabrication d'un article de sport et article de sport fabriqué par un tel procédé

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(30) Priority: **27.01.2006 IT PN20060006**

(43) Date of publication of application:
08.08.2007 Bulletin 2007/32

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Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention refers to a method for producing a sports article, in particular a sports article adapted to glide over a cloak of snow or an iced surface, such as a ski, a snowboard or an ice-skate, or to roll on the ground, such as a roller skate, as well as to a sports article produced with a method according to the invention.

[0002] More specifically, the present invention refers to a method for producing a sports article, whose structures incorporates an arrangement enabling a footwear fastening device to be quickly mounted thereto and adjusted to the actual size of the footwear.

[0003] WO 02/49728 A1 discloses a ski that incorporates an assembly for the attachment of a boot fastening device in an adjustable manner; such assembly comprises at least a guide rail arranged within the ski and, furthermore, at least a slide member adapted to be received in the guide rails and movable lengthwise along the ski to be eventually locked in the desired position.

[0004] Although allowing for a quick mounting of such slide member or members, as the case may be, each one of which supporting a fastening element of the related boot fastening device, generally comprised of a heel-piece and a toe-piece, the above mentioned guide rails are each formed of a metal plate with a C-shaped contour that is inserted at a central portion of the ski and extends thereacross over approximately the whole width of the ski; including this plate in the ski structure therefore causes the overall weight of the ski to be sensibly increased. In addition, owing to the particular construction of the assembly, the load-bearing sections of such guide rails have a rather reduced thickness in an area that typically undergoes particularly heavy stresses during skiing: in fact, the force applied by the skier during skiing is transmitted to the ski via - among other things - the connection between the ski and the boot fastening device; a reduced cross-section of the guide rails in this area may therefore be quite easily subject to warping and wearing under load conditions, thereby causing the boot fastening device to detach from the ski with quite serious consequences for the skier.

[0005] DE 20 2004 001 356 U1 discloses a similar arrangement, in which the guide rails are formed of separate, independent elements, each one of them being either bonded by gluing to the surface of the body of the ski, as illustrated in Figure 3 of the above-cited utility model, or integrally formed with the core portion of the ski, as illustrated by way of example in Figure 4 of the same utility model. Although the guide rails are in this case provided with a load-bearing section having a greater thickness and, as a result, being exposed to possible distortions to a corresponding lesser extent, the risk of accidental separation still exists in the first case, in which the guide rails are attached to the ski by gluing, owing to the particularly heavy stresses which the mutually glued portions are subjected to.

[0006] This risk is practically done away with in the other case, i.e. in the embodiment calling for the guide rails being an integral part of the core portion of the ski. However, this construction - further to implying considerable moulding difficulties due to the undercuts being defined by the guide rails - calls for the core portion to be necessarily made of a high-strength material, instead of low specific-weight filling materials, such as polyurethane foam. This again implies a greater overall weight of the ski, further to a higher cost thereof owing to the use of premium-grade material in portions where it would not be necessary.

[0007] DE 20 2004 019 710 U1 discloses a solution in which the guide rails are again formed integrally with the body of the ski, so that even in this case considerable difficulties are therefore encountered when moulding the outer shell and/or the core portion, owing to the presence of the undercuts. A particular embodiment, which is illustrated in Figure 7 of the above-cited German utility model, calls for an undercut-free profile section to be inserted at each side of the upper surface of the ski; once such profile section is inserted, the guide rails are formed by milling the same profile section. The description of and the drawings accompanying the same utility model do not sufficiently disclose the way in which such profile sections are added or inserted: if they would be applied by gluing or mechanical fastening to the surface of the ski, it can be readily appreciated that the same drawbacks as described above in connection with the risk of the ski separating from the boot fastening device would still be there; if, on the other hand, the profile section would be inserted in the ski according to some other construction mode, such other construction mode is not described in the German utility model to any adequate extent for it to be concretely put into practice.

[0008] It is therefore a main object of the present invention to solve the above-noted problems, thereby doing away with the drawbacks of the cited prior art, by providing a method for producing a sports article that enables to incorporate in the structure of the same article mounting means adapted to allow for a quick mounting of appropriate footwear fastening means, or of support means for such fastening means; it is also an object of the present invention to provide a sports article produced in accordance with such method.

[0009] Within such general objects as stated above, it is a purpose of the present invention to provide a method wherein the above-cited mounting means are capable of being incorporated in the structure of the sports article in such a manner that the mounting of the footwear fastening means can be reliable and safe during the use of such sports article.

[0010] Another purpose of the present invention is to provide a method wherein the load-bearing section of the mounting means is adequate to resist both the static and dynamic mechanical stresses that are imposed thereon during the use of the sports article.

[0011] A further purpose of the present invention is to

provide a method that is effective in ensuring an adequate resistance of the above-mentioned mounting means to abrasion and/or wear and tear.

[0012] Yet a further purpose of the present invention is to provide a method for producing a sports article that can be manufactured at fully competitive costs using existing machinery and technologies as generally known as such in the art.

[0013] According to the present invention, these aims and advantages, along with further ones that will become apparent from the following disclosure, are reached by a method for producing a sports article as defined in claim 1.

[0014] Subsequent dependent claims define further features and advantages of the method according to the present invention, which will anyway be more readily understood from the description of a particular, although not sole embodiment that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a perspective exploded view of the component parts of a sports article, such as a ski, obtainable with a method according to the present invention;

- Figure 2 is a perspective top view of the ski shown in Figure 1 in an intermediate step of the method according to the present invention;

- Figure 2a is a cross-sectional view taken along the plane II-II of the ski shown in Figure 2;

- Figure 3 is a view similar to that of Figure 2 showing the ski of Figure 1 in a final step of the method according to the present invention;

- Figure 3a is a cross-sectional view taken along the plane III-III of the ski shown in Figure 3;

- Figure 4 is a view similar to the preceding ones, showing the ski of Figure 3 to which support means for appropriate footwear fastening means have been applied thereto;

- Figure 5 is a view similar to the preceding ones, showing the ski of Figure 3 featuring a different embodiment of the support means;

- Figure 6 is a view similar to the preceding ones, showing the ski of Figure 3 featuring yet a further different embodiment of the support means.

[0015] With reference to the above-cited Figures, the main component parts of a sports article, such as a ski 1, are shown in Figures 1 to 3, wherein such component parts are adapted to be assembled with a method according to the present invention; although throughout the following description reference will be made to a manufacturing method as applied to the production of a ski for reasons of illustrative convenience, it shall be appreciated that the same method may be equally well be used to manufacture any other kind of sports article that anyway requires to be provided with mounting means for footwear fastening means, as this is for instance the case of a snowboard, an ice skate or a roller skate. To this purpose, the ski 1 comprises a body 2 having an essentially two-dimensional conformation, which - according to current construction techniques - generally includes a bottom sole 3 provided with metal edges at the sides thereof, and a ski top portion 4 obtained through generally known methods, such as the combined superposition in a sandwich-like manner of sheet-like metal and/or wooden layers, or forming such portion by moulding and/or injection moulding of foamed materials, or a combination of such methods thereof. To complete the finished product, to the top side of the body 2 there may be associated at least a semi-finished product formed into an essentially three-dimensional shape with a hollow interior, which may serve as a structural member or simply as a covering member; in the embodiment shown by way of example in Figure 1, the ski 1 comprises, on top of the body 2, a covering member 6 in the form of a shell; a filler member 5 arranged between the body 2 and the covering member 6 may be advantageously provided. The covering member 6 itself can serve both structural purposes or act as a simple covering, depending on the construction technique selected for the ski.

[0016] Within the covering member 6 and/or the filler member 5 there are incorporated mounting means for appropriate footwear fastening means (not shown in the Figures); these mounting means comprise at least one pair of inserts 7a, 7b, preferably in the form of profiled-section bars arranged to extend along the edges of the top surface of the body 2; advantageously, the ski 1 may be provided with two pairs of inserts 7a, 7b and 8a, 8b, respectively, to be arranged at those portions of the ski which are adapted to accommodate a heel-piece and a toe-piece constituting the above-cited footwear fastening means. The inserts 7a, 7b, 8a, 8b are advantageously made of either a moulded, preferably reinforced, plastic material or a suitably formed metal material.

[0017] The method according to the inventive concept of the present invention comprises the following steps:

- positioning the pairs of inserts 7a, 7b, 8a, 8b in a cavity of an injection mould having an essentially three-dimensional shape;

- injecting into the mould cavity a low-density plastic material at a low injection pressure, so that the material fill the cavity and incorporates the pairs of inserts 7a, 7b, 8a, 8b placed therein; as a result, when the mould is eventually opened, the filler member 5 incorporating the pairs of inserts 7a, 7b, 8a, 8b is obtained;

- separately forming the covering member 6 to an essentially three-dimensional, internally hollow, shape;

- firmly joining the filler member 5 incorporating the pairs of inserts 7a, 7b, 8a, 8b to the body 2 by pressing in a pressing die, so as to obtain the finished ski assembly (Figure 2a);

- then forming in each insert of the pairs of inserts 7a, 7b, 8a, 8b respective guide grooves 9a, 9b allowing the footwear fastening means to be slidably mounted thereto (Figure 3a); in an advantageous manner, the guide grooves 9a, 9b are made by material-removing machining, e.g. milling.

[0018] Once the ski - or in general a sports article of a similar kind - has been so completed in accordance with the method described above, the footwear fastening means can be coupled to the related mounting means by first slidably inserting them in the guide grooves 9a, 9b and then locking them in position with the help of appropriate retaining means, possibly in an adjustable manner so as to allow the footwear fastening means to be given the most correct setting in view of the actual needs of the wearer. The footwear fastening means themselves shall of course include a slide-like portion provided with appropriate runners for them to be slidably coupled with the guide grooves 9a, 9b.

[0019] Illustrated in Figure 4 is an exemplary manner in which the footwear fastening means may be mounted to a ski 1 produced with a method according to the present invention; the footwear fastening means include one or more support plates 10, 11 for a heel-piece and/or a toe-piece (not shown), which are made in a slide-like form, so that each plate 10, 11 therefore comprises a pair of runners with a cross-section in the shape of a L or an overturned T adapted to slidably engage the guide grooves 9a, 9b of the ski 1. Upon having so been inserted in the grooves 9a, 9b, the plates 10, 11 can be can be interconnected with each other via a metal strip 12, as illustrated in Figure 5, in view of improving the drivability of the ski. Illustrated in Figure 6 is a different form in which said plates 10, 11 can be connected with each other, wherein a first strip 12a is connected, at an end portion thereof, to the plate 10 and, at the other end portion 13a thereof, to the ski 1; similarly, a second strip 12b is connected at an end portion thereof to the other plate 11 and, at the other end portion 13b thereof, to the ski 1.

[0020] Fully apparent from the considerations set forth above is therefore the ability of the method for producing a sports article according to the present invention to reach the afore-stated aims and advantages; the method, in fact, enables to incorporate in the structure of the same sports article mounting means 9a, 9b capable of allowing a quick mounting of corresponding footwear fastening means, or support means 10, 11 for such footwear fastening means.

[0021] In addition, the inserts 7a, 7b, 8a, 8b forming the above-cited mounting means 9a, 9b are made of high-strength materials, while their extension is limited to the zone where the footwear fastening means are due to be coupled; as a result, the mounting of the fastening means is safe and reliable during the use of the sports article, since the load-bearing section of the inserts is fully adequate in view of its capability of withstanding both the static and dynamic mechanical stresses applied during the use of the sports article, thereby significantly reducing the possibility for the same inserts to suffer distortions under such stresses; at the same time, the size of the inserts is adequately small so as to avoid affecting the overall weight and the final cost of the sports article to any excessive extent.

[0022] The high strength of the material with which the inserts are made of, and the direct contact of the same inserts with the slide-like runners of the footwear fastening means, as ensured by the milling process which the inserts are subjected to in order to provide the grooves 9a, 9b, further enable an adequate resistance to abrasion and/or wear of the mounting means to be ensured, thereby maintaining the coupling accuracy between the sports article and the footwear fastening means unaltered in the course of time, which again translates into a greater accuracy in the way in which the pushing or driving force of the wearer is transmitted to the sports article.

[0023] It will anyhow be appreciated that the method according to the present invention, so as described and illustrated above, may be subject to a number of modifications and be embodied in a number of different manners without departing from the scope of the present invention. Furthermore, the materials used for the various component parts of the sports article produced with the inventive method, as well as the shapes and the sizing thereof, may of course be each time so selected as to more appropriately fit the particular applications and requirements.

Claims

1. Method for producing a sports article comprising a body (2) having an essentially two-dimensional shape, and at least a covering member (6) adapted to be positioned upon at least a portion of said body (2), a filler member (5) being placed between the body (2) and the covering member (6), said sports article (1) further incorporating mounting means for fastening means provided to fasten a sports footwear thereto, such mounting means comprising at least one pair of inserts (7a, 7b; 8a, 8b) provided in a parallel arrangement along at least a portion of said body (2), said method comprising the steps of:

- incorporating said at least one pair of inserts (7a, 7b; 8a, 8b) within said filler member (5);
- firmly joining said covering member (6) and said filler member (5) to said body (2);

- providing respective guide grooves (9a, 9b) in each insert of said at least one pair of inserts (7a, 7b; 8a, 8b) adapted for slidably mounting said fastening means, **characterized in that :**

  - said at least one pair of inserts (7a, 7b; 8a, 8b) is positioned in a cavity of an injection mould having an essentially three-dimensional shape;
  - a low-density plastic material is injected at a low injection pressure into said mould cavity, so that the material fill the cavity and incorporates said at least one pair of inserts (7a, 7b; 8a, 8b), thereby obtaining said filler member (5) incorporating said at least one pair of inserts (7a, 7b; 8a, 8b);
  - said covering member (6) is formed separately to an essentially three-dimensional, internally hollow, shape;
  - said filler member (5) incorporating said at least one pair of inserts (7a, 7b; 8a, 8b) is firmly joined to said body (2) by pressing in a pressing die, so as to obtain said sports article;
  - said guide grooves (9a, 9b) are formed by material-removing machining, such as milling, performed on said at least one pair of inserts (7a, 7b; 8a, 8b).

2. Sports article produced by means of a method according to claim 1.

3. Sports article according to claim 2, constituted by a ski or a snowboard.

Patentansprüche

1. Verfahren zur Herstellung eines Sportartikels, aufweisend: einen Körper (2) von im Wesentlichen zweidimensionaler Gestalt, und zumindest ein Abdeckungselement (6), das ausgebildet ist, um auf zumindest einem Abschnitt des Körpers (2) positioniert zu sein, ein Füllelement (5), das zwischen dem Körper (2) und dem Abdeckungselement (6) angeordnet ist, wobei der Sportartikel (1) weiter eine Montiereinrichtung für eine Befestigungseinrichtung beinhaltet, die vorgesehen ist, um ein Sportschuhwerk an dieser zu befestigen, wobei eine derartige Montiereinrichtung mindestens ein Paar von Einsatzstücken (7a, 7b; 8a, 8b) aufweist, die in paralleler Anordnung entlang zumindest einem Abschnitt des Körpers (2) vorgesehen sind, wobei das Verfahren folgende Schritte umfasst:

  - das mindestens eine Paar von Einsatzstücken (7a, 7b; 8a, 8b) wird in das Füllelement (5) integriert;
  - das Abdeckungselement (6) und das Füllelement (5) werden mit dem Körper (2) fest verbunden;
  - es werden jeweils Führungsnuten (9a, 9b) in jedem Einsatzstück des mindestens einen Paares von Einsatzstücken (7a, 7b; 8a, 8b) vorgesehen, die ausgebildet sind, um die Befestigungseinrichtungen gleitend verschieblich anzubringen, **dadurch gekennzeichnet, dass:**

    - das mindestens eine Paar von Einsatzstücken (7a, 7b; 8a, 8b) in einem Hohlraum einer Einspritzform von im Wesentlichen dreidimensionaler Gestalt positioniert wird;
    - ein geringe Dichte aufweisendes Kunststoffmaterial bei niedrigem Einspritzdruck in den Hohlraum der Form eingespritzt wird, so dass das Material den Hohlraum anfüllt und das mindestens eine Paar von Einsatzstücken (7a, 7b; 8a, 8b) integriert, wodurch das Füllelement (5) erzielt wird, welches das mindestens eine Paar von Einsatzstükken (7a, 7b; 8a, 8b) integriert;
    - das Abdeckungselement (6) separat zu einer im Wesentlichen dreidimensionalen, innen hohlen Gestalt ausgebildet wird;
    - das Füllelement (5), welches das mindestens eine Paar von Einsatzstücken (7a, 7b; 8a, 8b) integriert, durch Pressen in einem Pressformwerkzeug mit dem Körper (2) fest verbunden wird, so dass der Sportartikel erzielt wird;
    - die Führungsnuten (9a, 9b) durch materialabtragende Bearbeitung, beispielsweise Fräsen, das bei mindestens einem Paar von Einsatzstücken (7a, 7b; 8a, 8b) durchgeführt wird, ausgebildet werden.

2. Sportartikel, der mittels eines Verfahrens gemäß Anspruch 1 hergestellt wird.

3. Sportartikel nach Anspruch 2, der durch einen Ski oder ein Snowboard gebildet ist.

Revendications

1. Procédé pour produire un article de sport comprenant un corps (2) ayant une forme essentiellement bidimensionnelle, et au moins un élément de couverture (6) adapté pour être positionné sur au moins une portion dudit corps (2), un élément de remplissage (5) étant placé entre le corps (2) et l'élément de couverture (6), ledit article de sport (1) incorporant en outre des moyens de montage pour des moyens de fixation fournis pour fixer une chaussure de sport à celui-ci, de tels moyens de montage comprenant au moins une paire d'inserts (7a,7b ; 8a,8b) fournis

dans un agencement parallèle le long d'au moins une portion dudit corps (2), ledit procédé comprenant les étapes consistant à :

- incorpore ladite au moins une paire d'inserts (7a,7b ; 8a,8b) à l'intérieur dudit élément de remplissage (5) ;
- relier fermement ledit élément de couverture (6) et ledit élément de remplissage (5) audit corps (2) ;
- fournir des rainures (9a,9b) de guidage respectives dans chaque insert de ladite au moins une paire d'inserts (7a,7b ; 8a,8b) adaptées pour monter par coulissement lesdits moyens de fixation, **caractérisé en ce que :**

  - ladite au moins une paire d'inserts (7a,7b ; 8a,3b) est positionnée dans une cavité d'un moule d'injection ayant une forme essentiellement tridimensionnelle ;
  - un matériau plastique de basse densité est injecte à une basse pression d'injection dans ladite cavité de moule, de sorte que le matériau remplisse la cavité et incorpore ladite au moins une paire d'inserts (7a,7b ; 8a,8b), obtenant ainsi ledit élément de remplissage (5) incorporant ladite au moins une paire d'inserts (7a,7b ; 8a,8b) ;
  - ledit élément de couverture (6) est formé séparément en une forme essentiellement tridimensionnelle, creuse à l'intérieure ;
  - ledit élément de remplissage (5) incorporant ladite au moins une paire d'inserts (7a, 7b ; 8a,8b) est relié fermement audit corps (2) par pressage dans une matrice de pressage, de sorte à obtenir ledit article de sport ;
  - lesdites rainures (9a,9b) de guidage sont formées par un usinage retirant du matériau, comme un fraisage, réalisé sur ladite au moins une paire d'inserts (7a,7b ; 8a,8b).

2. Article de sport produit au moyen d'un procédé selon la revendication 1.

3. Article de sport selon la revendication 2, constitué par un ski ou un surf des neiges.

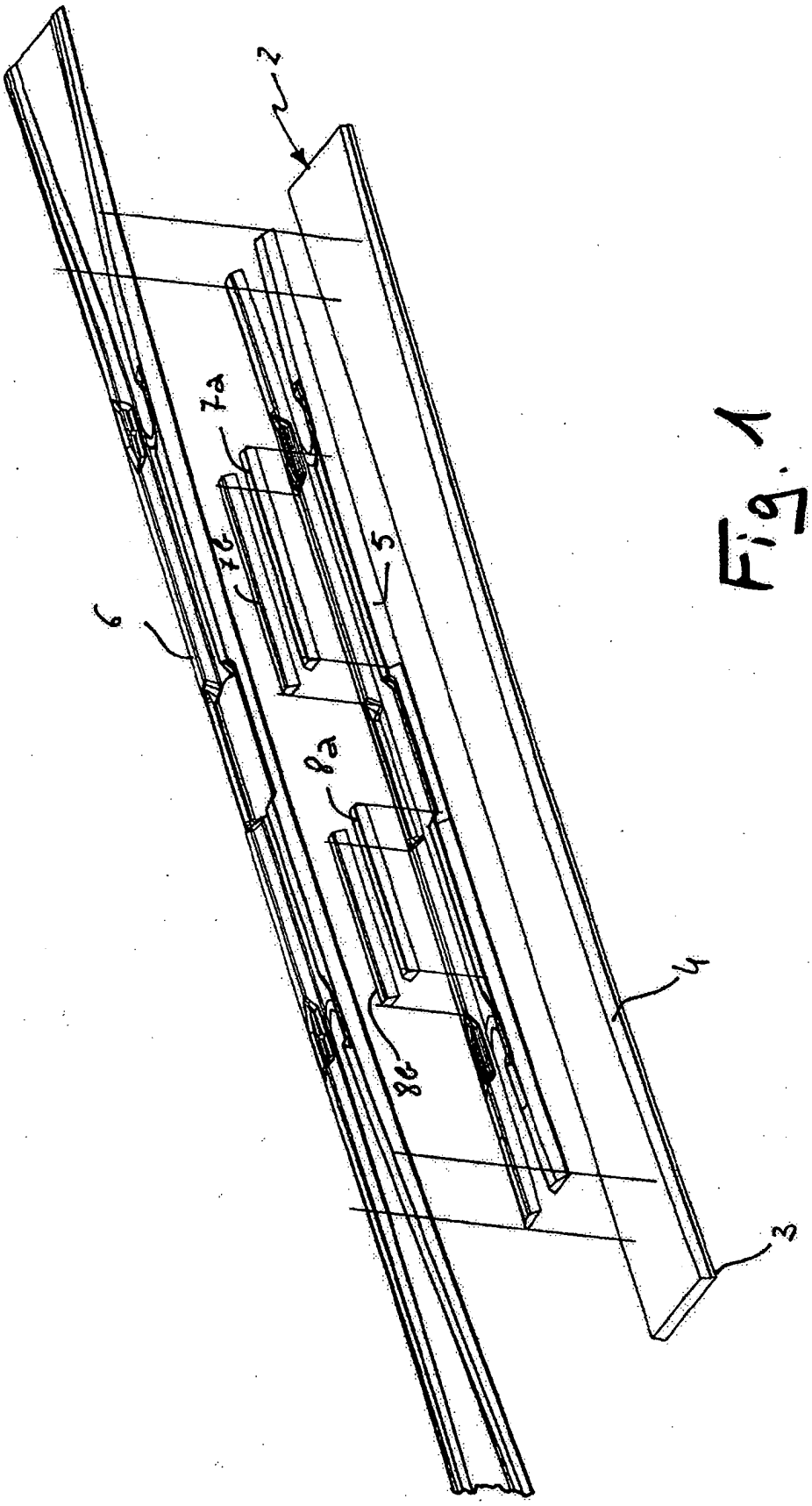

Fig. 1

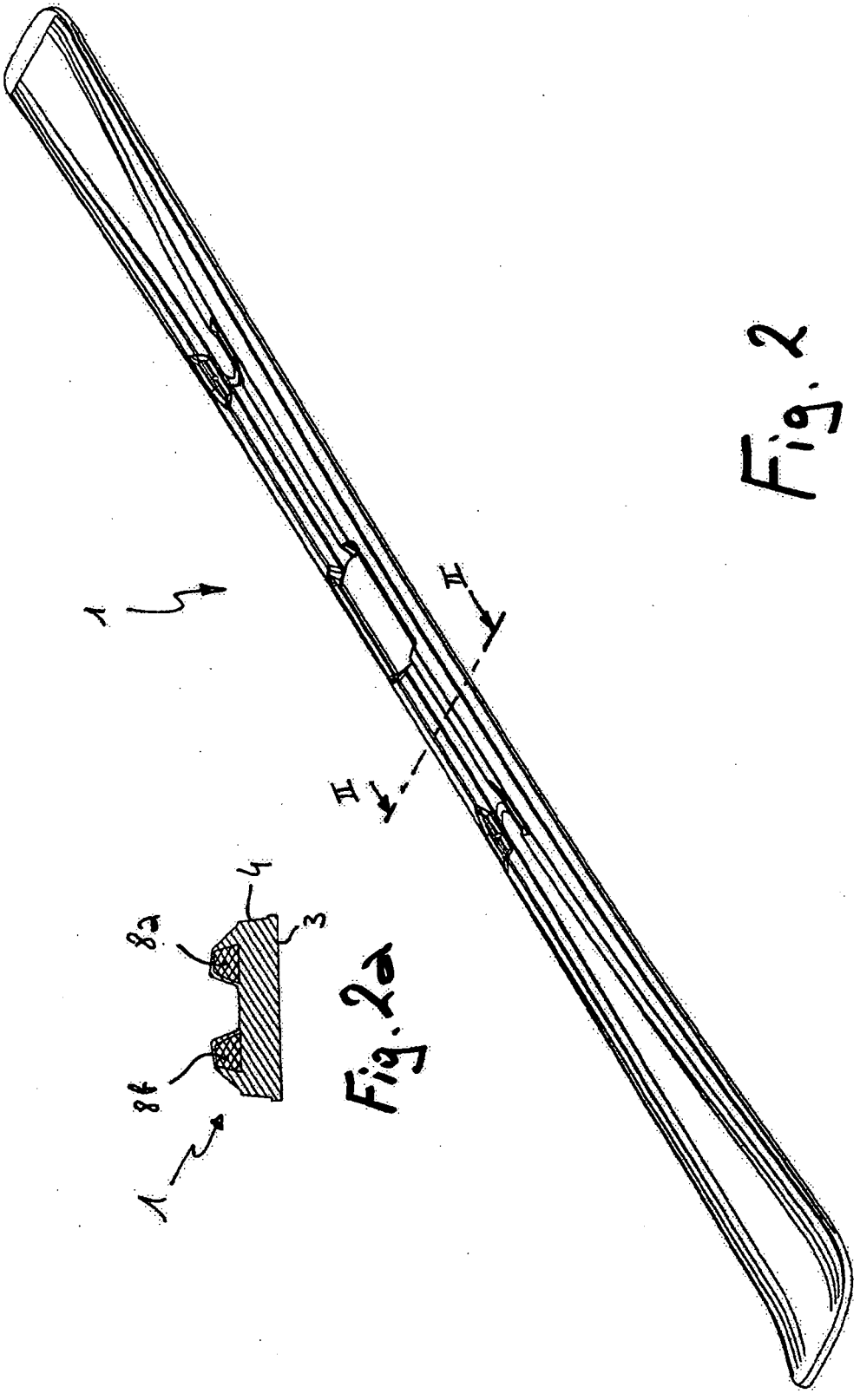

Fig. 2

Fig. 2a

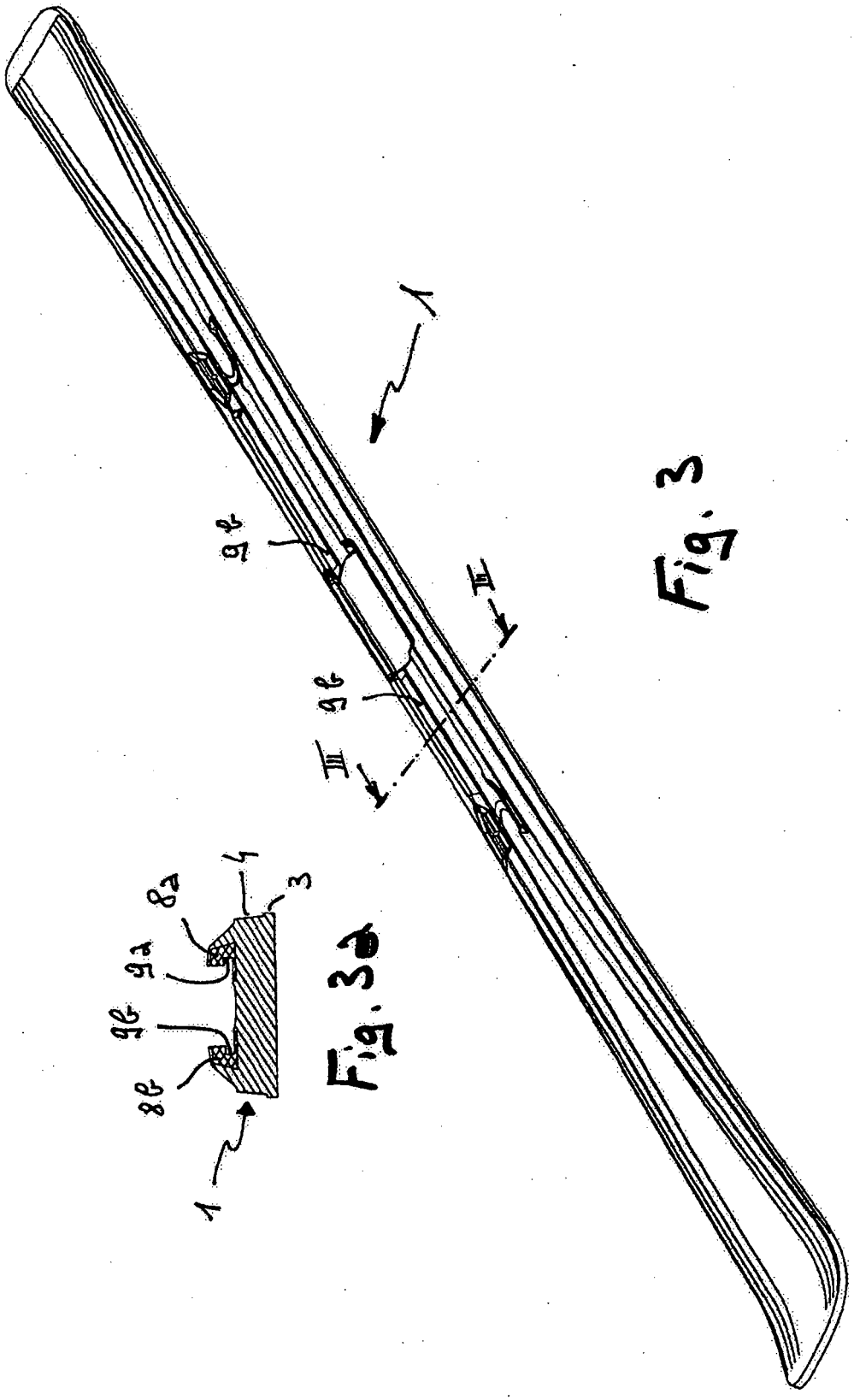

Fig. 3

Fig. 3a

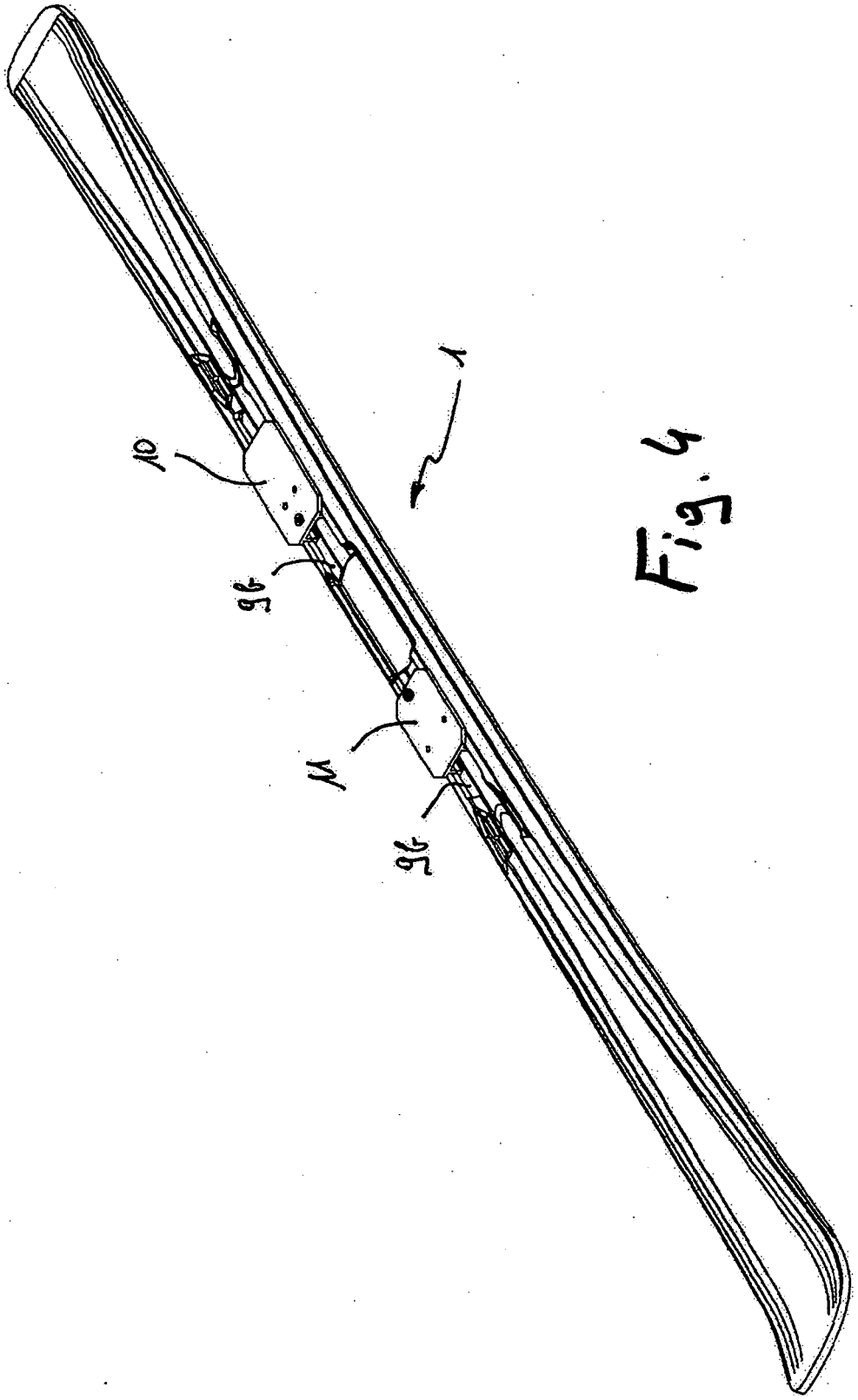

Fig. 4

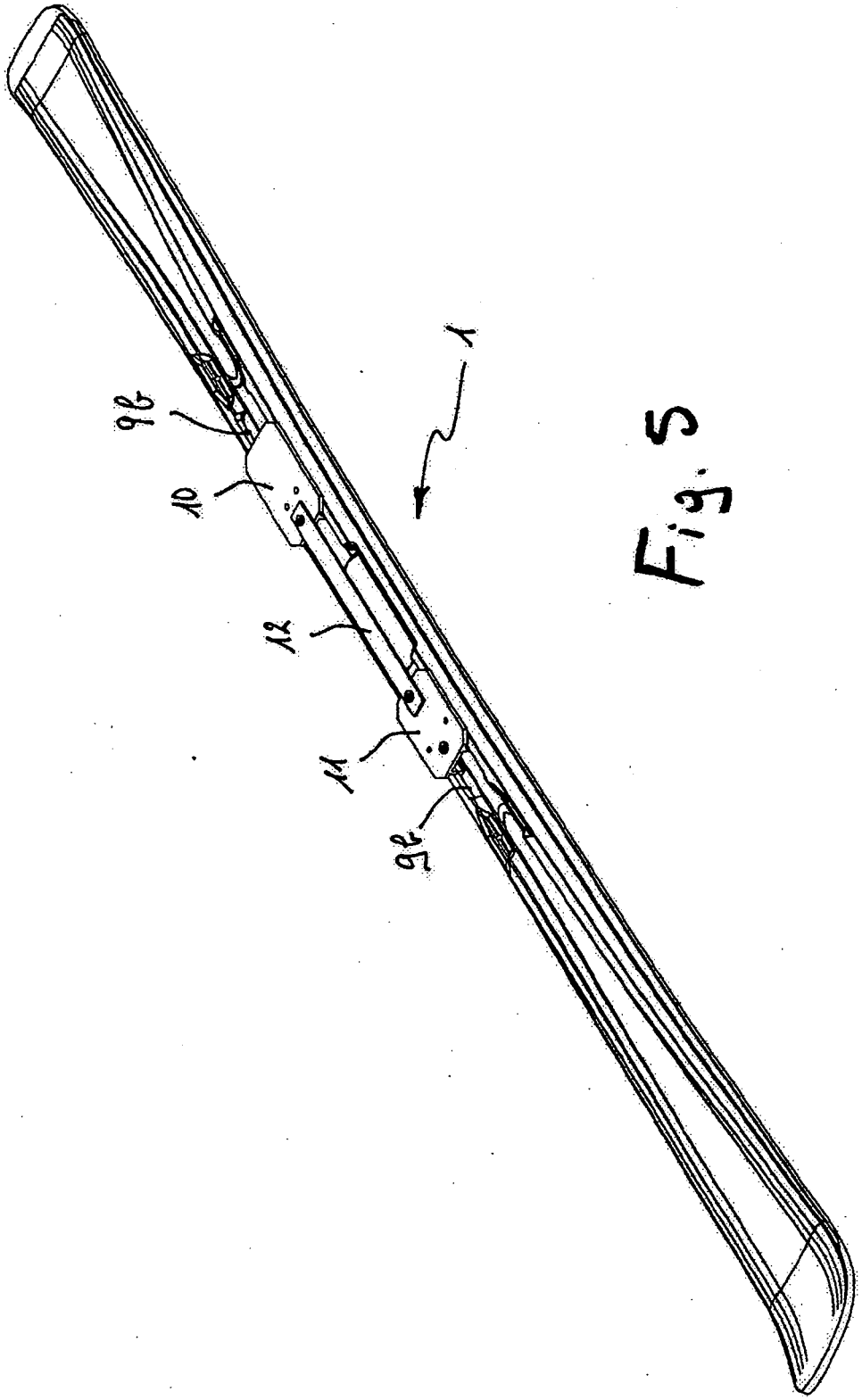

Fig. 5

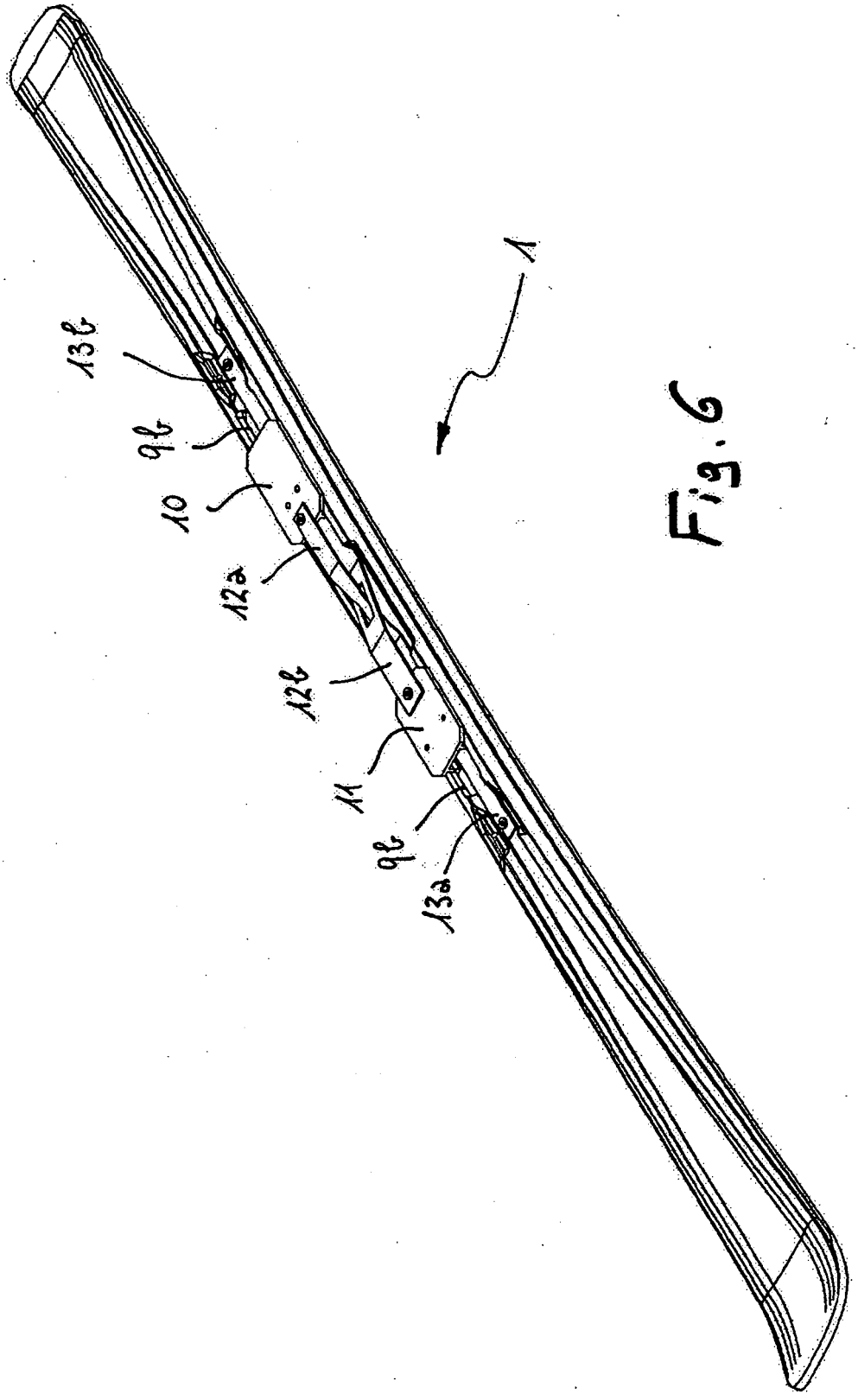

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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