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(54) **Roller skate frame**

(57) The present invention relates to a roller skate frame, namely to a frame for an in-line roller skate, which has high mechanical strength so as to effectively and reliably support the user's weight; at the same time, it is light and comfortable and avoids unnecessary efforts. The frame according to the invention is obtained from a sheet of light metal, e.g. aluminium; in order to guarantee satisfactory mechanical strength where the user's weight

concentrates during skating, according to the invention the portion (3a) of the frame (1) supporting the toe portion of the skate boot has a thickness greater than the rest of said frame. According to a preferred embodiment of the invention, said greater thickness is obtained by providing at the toe portion a pair of bridging plates (11a,11b) integral to respective side wings (5a,5b) of the frame (1), projecting inwardly toward the longitudinal axis (L) of said frame (1) and overlapping each other.

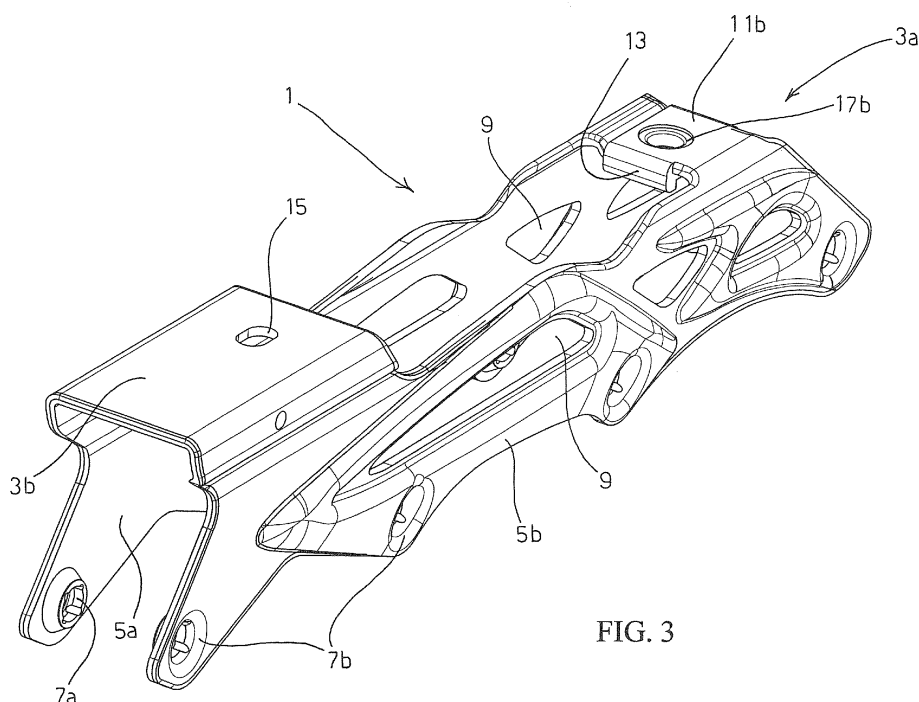


FIG. 3

Description

Field of the Invention

[0001] The present invention relates to a roller skate frame, namely to a frame for an in-line roller skate.

[0002] More particularly, the present invention relates to a roller skate frame made of light metal, e.g. aluminium, obtained by press moulding from a single metal sheet.

Prior art

[0003] As a rule, an in-line roller skate frame comprises a supporting surface intended to receive and support the skate boot and a pair of side wings, between which a plurality of aligned wheels are mounted.

[0004] Said frame should have a high mechanical strength so as to effectively and reliably support the user's weight; at the same time, it should be as light as possible, so as to improve the user's comfort and avoid unnecessary efforts.

[0005] Moreover, manufacturing of said frame should be simple and cheap and it should allow to obtain a wide variety of different frame patterns, even complicated ones, so as to satisfy the aesthetical requirements of the users.

[0006] Frames made of plastic or metallic material by casting molten material in a mould are known in the art.

[0007] Nevertheless, the costs for manufacturing such frames are very high, due to the expensiveness of the moulds as well as the need for successive finishing steps by mechanical machining.

[0008] Moreover, the mechanical strength of these frames is poor.

[0009] Frames comprising a plastic material supporting base and a pair of metallic side wings fastened to said supporting base by means of screws, rivets or the like are known.

[0010] However, also the costs for manufacturing such frames are very high, due to the large number of different pieces to be assembled together and to the large number of steps in the manufacturing process.

[0011] Moreover, said frames are subject to the risk of losing their mechanical stiffness, for instance when the screws used for fastening the side wings to the supporting base become loose.

[0012] In order to obtain frames with a simpler structure and lower manufacturing costs, frames obtained from a metallic sheet bent into a "U" -shaped structure have been developed.

[0013] Nevertheless, such frames do not have satisfactory mechanical strength, unless very thick metallic sheet is used. In this case, however, the frames turn out to be too heavy.

[0014] The main object of the present invention is to provide a roller skate frame that has a satisfactory mechanical strength while being light and comfortable, so as to allow to overcome the drawbacks of known frames.

[0015] A further object of the present invention is to provide a roller skate frame that can be obtained by a simple and cheap manufacturing process.

[0016] These and other objects are achieved by the roller skate frame according to the invention, as claimed in the appended claims.

Disclosure of the invention

[0017] The Applicant has noticed that a high mechanical strength is not required throughout the whole length of the skate frame, but only at some portions thereof, where the user's weight concentrates while skating, and more particularly at the toe-supporting portion thereof.

[0018] According to the present invention, the roller skate frame is obtained from a thin metallic sheet and a portion of greater thickness is provided at the toe-supporting portion thereof.

[0019] Thanks to this arrangement, a satisfactory mechanical strength can be provided where needed, i.e. at the toe-supporting portion of the frame.

[0020] At the same time, the frame according to the invention can be made from a light metal sheet, e.g. an aluminium sheet, so as to have limited weight.

[0021] According to a preferred embodiment of the invention, the greater thickness at the toe-supporting portion of the frame is obtained by providing at the toe-supporting portion of the frame a first and second bridging plates, each integral to a respective side wing and projecting inwardly therefrom, said bridging plate being sized so as to overlap each other and being fastened to each other at the longitudinal axis of said toe-supporting portion.

[0022] According to an alternative embodiment of the invention, the greater thickness at the toe-supporting portion of the frame is obtained by providing at the toe-supporting portion of the frame a single bridging plate of greater thickness, integral to a side wing, projecting inwardly therefrom and fastened to the other side wing.

[0023] Advantageously, in the skate frame according to the invention, a toe-supporting portion and a heel-supporting portion having different height can be obtained.

[0024] More particularly, a heel-supporting portion having a height higher than the toe-supporting portion can be obtained, so that the skate frame is more ergonomic and comfortable for the user's foot.

Brief description of the drawings

[0025] Further features and advantages of the present invention will become evident from the following detailed description of some preferred embodiments thereof, given by way of non-limiting example, with reference to the accompanying drawings, wherein:

- Figure 1 shows a roller skate frame according to a first embodiment of the invention, in a flat configuration;

- Figure 2 shows the roller skate frame of Figure 1, in a U-shaped configuration, with the bridging plates raised;
- Figure 3 shows the roller skate frame of Figure 1, in a U-shaped configuration, with the bridging plates lowered and overlapped with each other;
- Figures 4 and 4a show a roller skate frame according to a second embodiment of the invention.

Detailed description of some preferred embodiments of the invention

[0026] With reference to Figures 1 to 3, a roller skate frame according to a preferred embodiment of the present invention is indicated by numeral 1.

[0027] Said frame 1 is preferably manufactured from a metallic sheet, appropriately press-moulded. More particularly, said frame 1 is preferably made from a metallic sheet of a light metal such as aluminium.

[0028] Said frame 1 comprises a supporting base 3 intended to support the skate boot and a pair of side wings 5a,5b, suitable for receiving therebetween a plurality of aligned wheels. To this aim, said side wings 5a, 5b are provided with aligned through-holes, 7a,7b respectively, that can house the opposite ends of the axles carrying said wheels.

[0029] Side wings 5a,5b can be shaped in a wide variety of different patterns, so as to satisfy the aesthetical sense of the users. More particularly, said wings can advantageously have openings 9 that contribute to reduce the frame weight, while conferring to the frame itself a distinctive aesthetical appearance.

[0030] In order to further reduce the frame weight, the supporting base 3 does not extend throughout the whole length of the frame. On the contrary, it consists of a first supporting portion 3a for the toe portion of the skate boot (toe-supporting portion 3a) and of a second supporting portion 3b for the heel of the skate boot (heel-supporting portion 3b), separated by a central window 4.

[0031] According to the invention, in order to confer satisfactory mechanical strength to frame 1, the toe-supporting portion 3a of the supporting base 3 is configured so as to have a thickness considerably greater than the rest of frame 1. According to the preferred embodiment shown in Figures 1 - 3, the supporting base 3a is obtained by providing a pair of separate bridging plates 11a,11b, each integral to a respective side wing 5a,5b and projecting inwardly towards the longitudinal axis L of the frame 1.

[0032] As can be seen in Figure 3, when the metallic sheet is bent into a "U"-shaped configuration, with the side wings 5a,5b substantially perpendicular to the supporting base 3, and the bridging plates 11a,11b are lowered towards the longitudinal axis L of the frame 1, said bridging plates 11a, 11b completely overlap each other.

[0033] Thanks to this arrangement, the toe-supporting portion 3a turns out to have a thickness that is twice the thickness of the rest of frame 1, so that the mechanical

strength of the frame 1 at this portion is considerably increased.

[0034] Preferably, in order to maintain the bridging plates 11a, 11b in the correct position and to hold them axially, one of these plates - namely the bridging plates indicated with numeral 11b in Figures 1 - 3 - is provided with a pair of tabs 13, extending in a transverse direction with respect to said plate, which can be wrapped around the overlapping bridging plates 11a,11b and clinched thereto.

[0035] The tabs 13, while assuring the correct alignment of the bridging plates 11a,11b even when skating, further provide an important contribution to the stiffness and mechanical strength of the toe-supporting portion 3a.

[0036] As can be seen in Figures 1 - 3, the heel-supporting portion 3b is provided with a through-hole 15 for fastening means (e.g. a screw) for fastening the frame 1 to a skate boot.

[0037] Analogously, each bridging plate 11a, 11b is provided with a through-hole 17a,17b, said through-holes 17a,17b being aligned when the plates are overlapped, so that fastening means for fastening the frame 1 to the skate boot can be inserted therethrough. Advantageously, said through-holes 17a,17b can also be used as reference points for correctly overlapping the bridging plates.

[0038] It is to be noted that in conventional frames obtained from a metallic sheet bent into a 'U'-shaped structure, the heel-supporting portion and the toe-supporting portion necessarily have the same height.

[0039] This reduces the comfort of the roller skate, since it does not match the human foot anatomy.

[0040] On the contrary, according to the present invention, the provision of separate, overlapping bridging plates 11a,11b forming the toe-supporting portion 3a allows to obtain supporting portions having different heights.

[0041] More particularly, the heel-supporting portion 3b can be higher than the toe-supporting portion 3a, thus allowing to obtain a roller skate which is considerably more ergonomic and comfortable.

[0042] Turning now to Figures 4a and 4a, an alternative embodiment of the roller skate frame according to the invention is shown.

[0043] According to this alternative embodiment, the toe-supporting portion 3a is obtained by providing a single bridging plate 11a, integral to a first side wing 5a and projecting inwardly towards the longitudinal axis L of the frame 1 and the second side wing 5b.

[0044] The end of the bridging plate 11 is bent downwards so as to be wrapped around the outer face of said second side wing 5b and fastened thereto by means of a pin 19. Alternatively, the end of the bridging plate 11 can be bent downward so as to lean against the inner face of said second side wing 5b and be fastened thereto by means of a pin.

[0045] According to this embodiment, in order to obtain a toe-supporting portion 3a having an appropriate me-

chanical strength, the bridging plate 11 has a thickness s_2 that is noticeably greater than the thickness s_1 of the rest of the frame 1.

[0046] For instance, as shown in Figures 4a and 4b, the bridging plate 11 has a thickness s_2 that is twice the thickness s_1 of the rest of frame 1.

[0047] The thicker bridging plate 11 can be obtained by providing a zone of greater thickness in the metallic sheet during the press-moulding. Otherwise, it can be obtained by providing a longer metallic strip and then folding it on itself for obtaining the thicker plate. Alternatively, the greater thickness of this plate can be obtained by any other conventional technique known in the art.

[0048] Advantageously, also in case of a frame made in accordance with this alternative embodiment of the invention, supporting portions having different heights can be obtained. More particularly, the heel-supporting portion 3b can be higher than the toe-supporting portion 3a, allowing to obtain a roller skate which is considerably more ergonomic and comfortable.

[0049] It is evident from the above description that the present invention allows to achieve the above-mentioned objects, by providing a roller skate frame that guarantees the necessary mechanical strength for supporting the user's weight, while being light and comfortable.

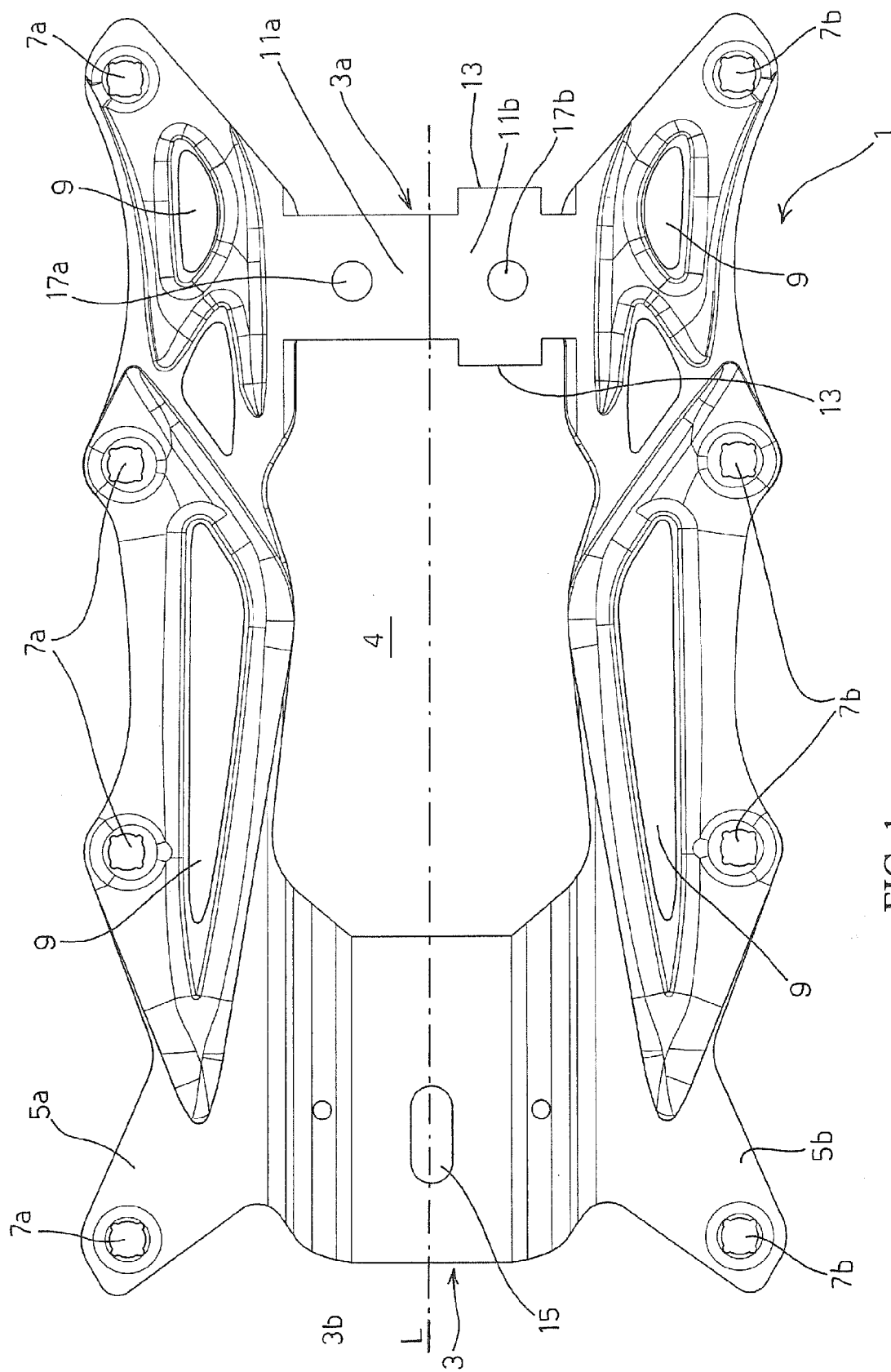
[0050] It is also evident that the above description of preferred embodiments of the invention has been given as a non-limiting example and several modifications and changes can be made without departing from the scope of the invention as defined by the appended claims.

Claims

1. Roller skate frame (1) made from a metallic sheet and comprising a supporting base (3) intended to support a skate boot and a pair of side wings (5a, 5b) suitable for receiving therebetween a plurality of aligned wheels, said supporting base (3) comprising a toe-supporting portion (3a) and a heel-supporting portion (3b), **characterised in that** said toe-supporting portion (3a) is configured so as to have a considerably greater thickness than the rest of said frame (1).
2. Roller skate frame (1) according to claim 1, wherein said toe-supporting portion (3a) is configured so as to have a thickness that is twice the thickness of the rest of said frame (1).
3. Roller skate frame (1) according to claim 1, wherein said toe-supporting portion (3a) is obtained by providing a pair of separate bridging plates (11a, 11b), each integral to a respective side wing (5a, 5b), projecting inwardly toward the longitudinal axis (L) of said frame (1) and overlapping each other.
4. Roller skate frame (1) according to claim 3, wherein

one of said bridging plates (11b) is provided with a pair of tabs (13), extending in a transverse direction with respect to said plate, which are wrapped around the overlapping bridging plates (11a, 11b).

5. Roller skate frame (1) according to claim 3, wherein each of said bridging plates (11a, 11b) is provided with a through-hole (17a, 17b), said through-holes (17a, 17b) being aligned when the plates are overlapped, so that fastening means for fastening said frame (1) to said skate boot can be inserted there-through.
6. Roller skate frame (1) according to claim 1, wherein said toe-supporting portion (3a) is obtained by providing a bridging plate (11), integral to a first side wing (5a) and projecting inwardly toward the longitudinal axis (L) of said frame (1) and the second side wing (5b), the end of said bridging plate (11) being bent downwards so as to be wrapped around the outer face of said second side wing (5b) and fastened thereto.
7. Roller skate frame (1) according to claim 1, wherein said toe-supporting portion (3a) is obtained by providing a bridging plate (11), integral to a first side wing (5a) and projecting inwardly toward the longitudinal axis (L) of said frame (1) and the second side wing (5b), the end of said bridging plate (11) being bent downwards so as to lean against the inner face of said second side wing (5b) and be fastened thereto.
8. Roller skate frame (1) according to claim 6 or 7, wherein said bridging plate has a thickness (s_2) that is considerably greater than the thickness (s_1) of the rest of said frame (1).
9. Roller skate frame (1) according to claim 8, wherein said bridging plate has a thickness (s_2) that is twice the thickness (s_1) of the rest of said frame (1).
10. Roller skate (1) according to any of the preceding claims, wherein said toe-supporting portion (3a) and said heel-supporting portion (3b) have different heights.
11. Roller skate (1) according to claim 10, wherein said heel-supporting portion (3b) is higher than said toe-supporting portion (3a).
12. Roller skate (1) according to any of the preceding claims, wherein said frame is made of a light metal, for instance aluminium.



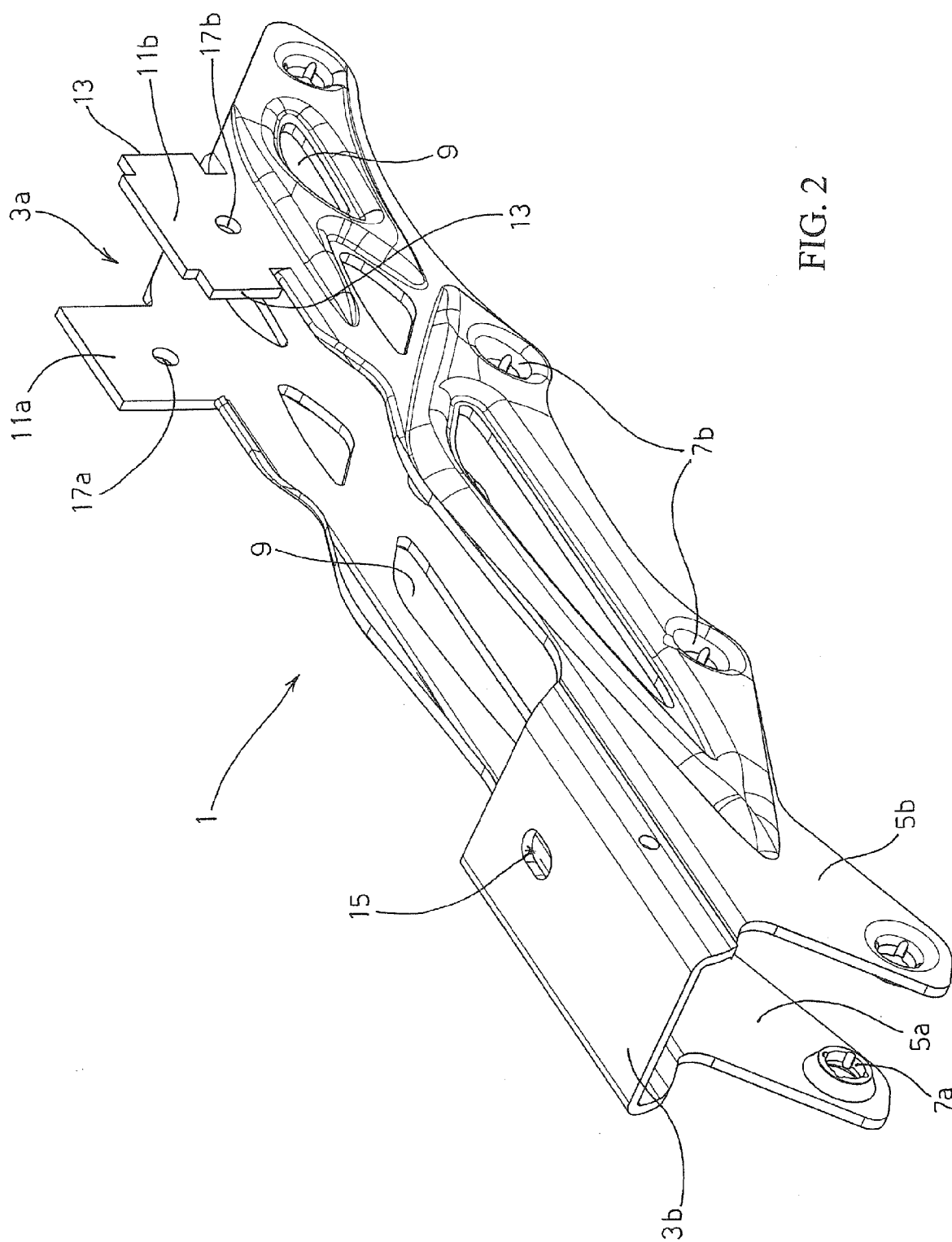


FIG. 2

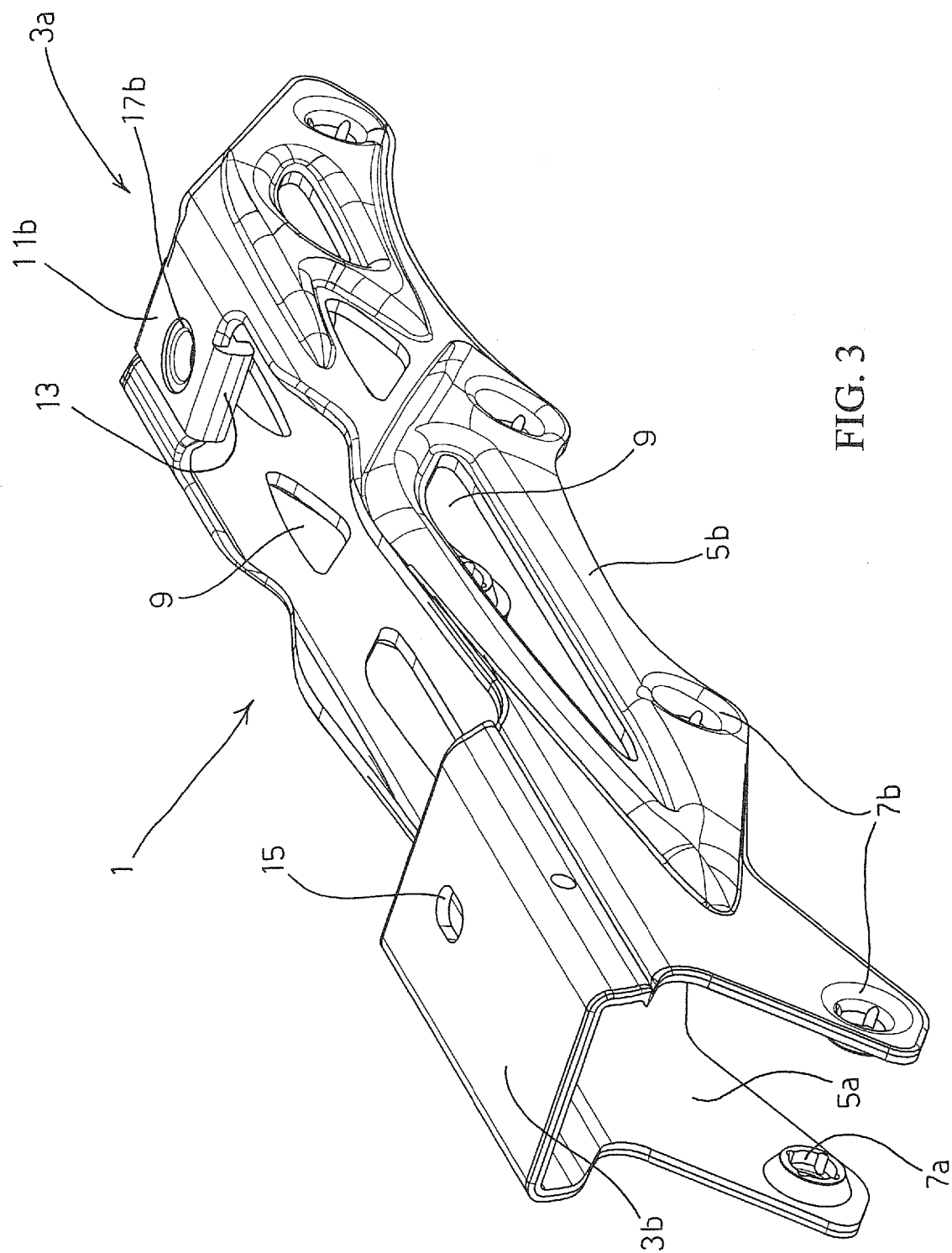
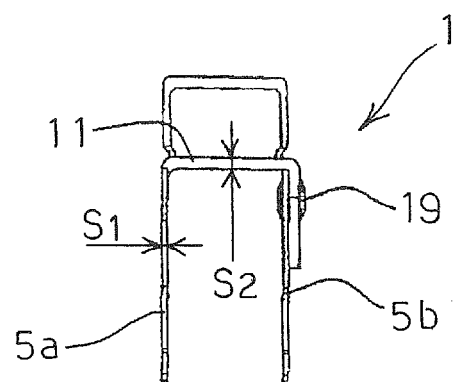
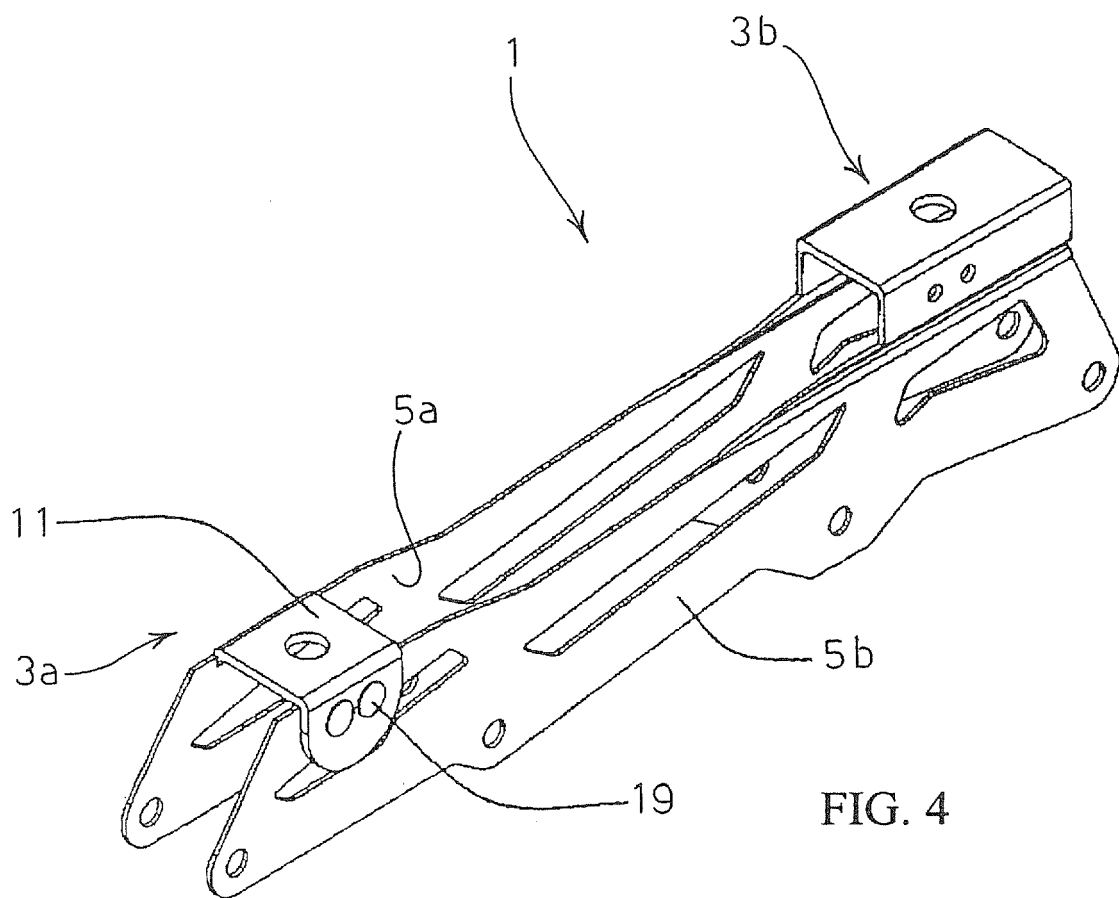


FIG. 3





EUROPEAN SEARCH REPORT

Application Number
EP 09 15 6208

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 102 35 223 A1 (ROSSIGNOL SA [FR]) 19 February 2004 (2004-02-19) * paragraphs [0010], [0023] - [0026]; figures 4-9 *	1-12	INV. A63C17/06
X	FR 2 768 064 A (SALOMON SA [FR]) 12 March 1999 (1999-03-12) * the whole document *	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 June 2009	Examiner Haller, E
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 15 6208

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23-06-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10235223	A1	19-02-2004	NONE
FR 2768064	A	12-03-1999	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82