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Remarks:

- Amended claims in accordance with Rule 86 (2) EPC.
- A request for correction of claim 5 has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(54) **Roller skates with dual functions**

(57) A pair of roller skates (10) with dual functions comprises two shoe bodies with a bottom sole (11) respectively, four roller units (20) attaching on each of the two shoe bodies respectively, and two fixing shafts (30) for supporting said four roller units respectively. Two transverse hollow bars (13) are attached in the bottom sole at both end parts thereof respectively. Each roller

unit is provided with a bearing (23) at the center thereof and a journal (22) in the middle of the bearing. Each fixing shaft has a large head part (31) at one end thereof and a locking device (34) at the other end thereof. Each shaft passes through each hollow bar to locate a roller unit at the large head part and to be biased against a spring (40). Another one of the roller units is located at the locking device and secured by the locking device.

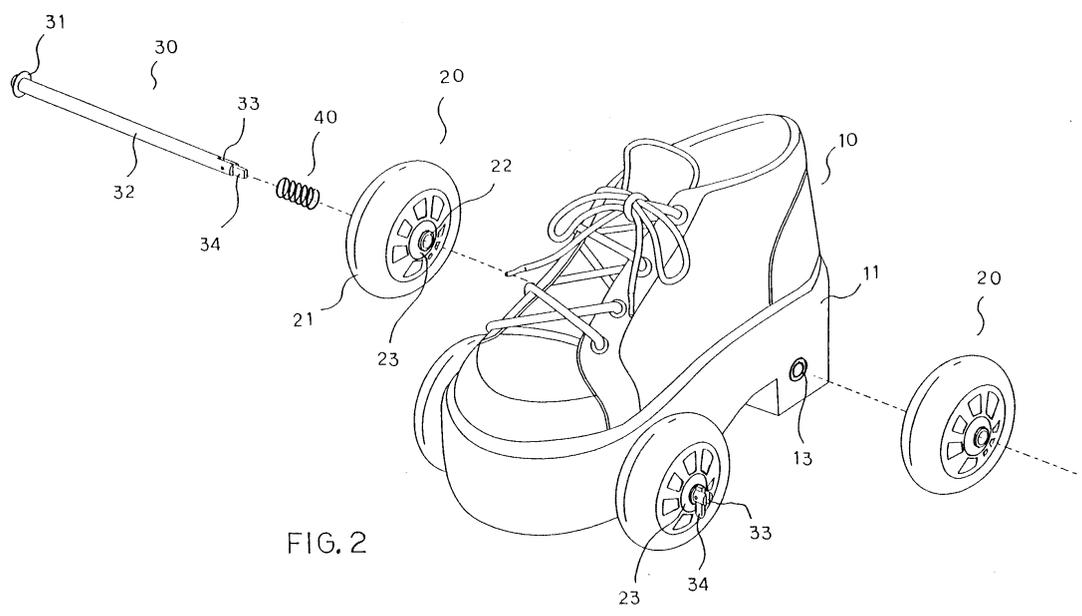


FIG. 2

EP 1 088 571 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to a pair of roller skates with dual functions, particularly to a pair of roller skates, having an easily assembled and disassembled structure so that it is possible to be used as a pair of normal shoes.

BACKGROUND ART

[0002] Conventionally, a pair of four-wheel roller skates can be one of two different types: one is integral with a shoe body and the other one is without a shoe body. For the skates without a shoe body, the skater has to wear suitable shoes before using the roller skates. Then, the roller skates have to be separately tied to the user's shoes in order to skate freely. As for skates with a shoe body, the feet of the skater can be inserted into the shoe bodies directly and then skating can be performed easily. Although these two types of roller skates can address the purchasing ability of different buyers, both of them have a common disadvantage, i.e., a pair of shoes for normal walking purposes is always needed while going roller-skating. It means that the skater has to bring both the normal shoes and the roller skates when he wishes to go roller-skating. It can be understood that this is very inconvenient for the skater.

SUMMARY OF THE INVENTION

[0003] The present invention discloses a pair of roller skates with dual functions, which is intended to overcome the inconvenience raised by the prior art.

[0004] The main objective of the present invention is to provide a pair of roller skates having dual functions which one can wear for normal walking and for skating.

[0005] Another objective of the present invention is to provide a pair of roller skates in which each skate has a shoe body which can be easily assembled and disassembled.

[0006] The invention provides a roller skate as claimed in claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The present invention can be more fully understood by referring to the following description and accompanying drawings, in which:

- Fig. 1 is a perspective view of a shoe body of a roller skate according to the present invention;
- Fig. 2 is a partly disassembled perspective view of a roller skate according to the present invention;
- Fig. 3 is a perspective view of the roller skate shown in Fig. 2 being assembled;
- Fig. 4A is a partly sectional elevation of the roller

skate shown in Fig. 3, illustrated during the process of assembly;

Fig. 4B is a partly sectional elevation similar to that of Fig. 4A illustrating the rollers after assembly;

Fig. 5 is a partly disassembled perspective view of a roller skate in another embodiment according to the present invention; and

Fig. 6 is a diagrammatic view illustrating an arrangement of annular bars within the shoe body.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0008] Referring to Figs. 1, 2, and 3, a left one of a pair of roller skates with dual functions according to the present invention comprises a shoe body 10, four roller units 20 and two fixed shafts 30. A corresponding right skate completes the pair, such that one skate is worn on either foot. There is a bottom sole 11 for the shoe body 10, and a front transverse hollow bar 12 (Fig. 1) and a rear transverse hollow bar 13 are provided at the front and back ends of this bottom sole 11 respectively.

[0009] Each roller unit 20 basically is a wheel-type roller 21 with a bearing 23 at the center thereof. The bearing 23 is fitted with a journal 22 in the middle and the journal 22 has a structure with two ends extending outwards from the bearing 23.

[0010] The two fixed shafts 30 are made up of long round bars 32 of suitable length. Each shaft 30 has a large head part 31 at one end. The other end of the round bar 32 has a groove 33 for pivotally connecting a lock tab 34.

[0011] The assembly procedure of the roller skate according to the present invention will be described hereinafter. Referring to Figs. 4A and Fig. 4B, and also to Fig. 2 again, an illustration of the roller units 20 and the fixing shaft 30 at the rear part of the bottom sole 11 is clearly shown.

[0012] Firstly, a compression spring 40 and then a roller unit 20 are fitted through the round bar part 32 of the fixed shaft 30 respectively. The compression spring 40 is thus closely contacted at either end by the large head part 31 of the fixing shaft 30 and the journal 22 of the roller unit 20 respectively. Following this, the round bar part 32 on the fixing shaft 30 is inserted into the annular bar 13 located in rear part of the bottom sole 11 of the shoe unit 10 as shown in Fig. 2. Meanwhile, the other end part of the journal 22 is in contact with the end part of the annular bar 13 as shown in Fig. 4A and Fig. 4B.

[0013] Following this, the round bar 32 is fitted with another roller unit 20. At this point, the user can press the large head part 31 of the fixing shaft 30 against the compression spring 40 and thereby compress the compression spring. Thus, the lock tab 34 on the other end of the fixing shaft 30 extends out of the journal 22 in the later roller unit 20. The lock tab 34 is then bent to an upright position with respect to the shaft 30 and the compression force on the large head part 31 is released si-

multaneously. By means of resilient force generated by the compression spring 40, the shoe body 10 and each roller unit 20 are able to fit together tightly in place. This completes the assembly procedure of a simple roller skate.

[0014] Fig. 5 shows another embodiment of the roller skate according to the present invention. A circular groove 35 on the fixing shaft 30 and a resilient C-type retainer 36 are provided on the fixing shaft 30 instead of the groove 33 and the lock tab 34. However, the compression spring 40 and the first roller unit 20 are fitted with the fixing shaft 30 in the same manner as described above. The fixing shaft is then inserted into the annular bar 13 of the shoe body unit 10. Then the second or outer roller unit 20 is fitted onto the fixing shaft 30. The C-type retainer 36 is then fixed into the circular groove 35 where it is resiliently retained in place, thereby locating the roller 20 tightly in place on the fixed shaft 30.

[0015] Fig. 6 shows the structure of the hollow bars 12,13 in the shoe body unit 10. It can be clearly seen that the two sides of the hollow bars 12,13 are attached to one or more curved plates 14. By means of these curved plates 14, the hollow bars 12,13 are securely held in the bottom sole 11 of the shoe body 10. These curved plates also absorb the shocks caused by walking and thus prevent discomfort.

Claims

1. A roller skate with dual functions comprising:

a shoe body, having a bottom sole, said bottom sole having a front part and a back part;
two pairs of roller units to attach on said shoe body respectively; and
a pair of fixing shafts, for supporting said four roller units respectively;

characterised in that

two transverse hollow bars are mounted in said bottom sole, one in the front part and one in the back part; each of said roller units being a wheel type roller with a bearing at the center thereof, said bearing being fitted with a journal in the middle thereof, and said journal having both ends thereof extending outwards; each of said fixing shafts having a large head part at one end thereof and a locking device at the other end thereof; each of said fixing shafts having a pair of roller units mounted thereon and passing through a respective one of said two hollow bars to locate one of said pair of roller units at said large head part and to be biased against a spring; and the other one of said pair of roller units being located at and secured by said locking device.

2. A roller skate with dual functions according to claim

1, wherein said locking device comprises an open groove and a lock tab pivotally attached in said groove.

5 **3.** A roller skate with dual functions according to claim 1, wherein said locking device comprises an annular groove located at said other end of said fixing shaft and a C-shaped push-type retainer fitting with said annular groove.

10 **4.** A roller skate with dual functions according to claim 1, wherein each of said hollow bars is attached to at least one curved plate.

15 **5.** A roller skate with dual functions according to claim 4, wherein said curved plate is upwardly concave upward.

20 **6.** A pair of roller skates comprising a left skate and a right skate, each being a skate as claimed in any one of claims 1-5.

Amended claims in accordance with Rule 86(2) EPC.

1. A roller skate with dual functions comprising:

a shoe body (10), having a bottom sole (11), said bottom sole having a front part and a back part;
two pairs of roller units (20) to attach on said shoe body respectively; and
a pair of fixing shafts (32), for supporting said four roller units respectively;

characterised in that

two transverse hollow bars (12,13) are mounted in said bottom sole, one in the front part and one in the back part; each of said roller units being a wheel type roller (21) with a bearing (23) at the center thereof, said bearing being fitted with a journal (22) in the middle thereof, and said journal having both ends thereof extending outwards; each of said fixing shafts having a large head part (31) at one end thereof and a locking device (33,34; 35,36) at the other end thereof; each of said fixing shafts having a pair of roller units mounted thereon and passing through a respective one of said two hollow bars to locate one of said pair of roller units at said large head part and to be biased against a spring (40); and the other one of said pair of roller units being located at and secured by said locking device.

2. A roller skate with dual functions according to claim 1, wherein said locking device comprises an open groove (33) and a lock tab (34) pivotally attached in said groove.

3. A roller skate with dual functions according to claim 1, wherein said locking device comprises an annular groove (35) located at said other end of said fixing shaft and a C-shaped push-type retainer (36) fitting with said annular groove.

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4. A roller skate with dual functions according to claim 1, wherein each of said hollow bars is attached to at least one curved plate (14).

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5. A roller skate with dual functions according to claim 4, wherein said curved plate is upwardly concave.

6. A pair of roller skates comprising a left skate and a right skate, each being a skate as claimed in any one of claims 1-5.

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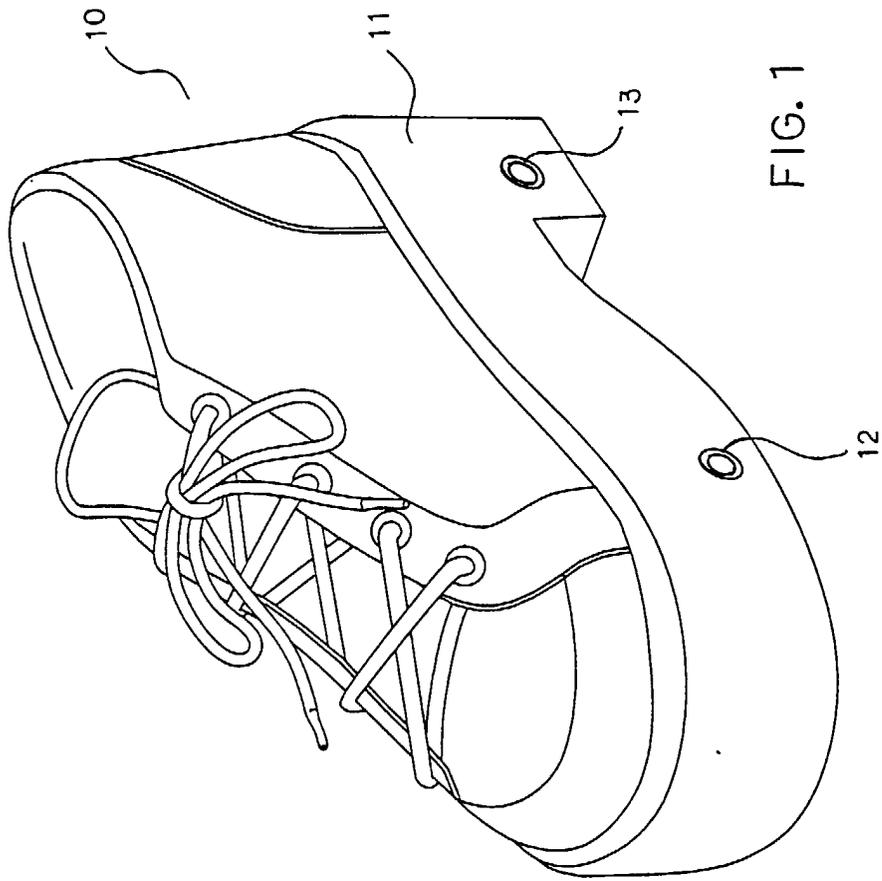


FIG. 1

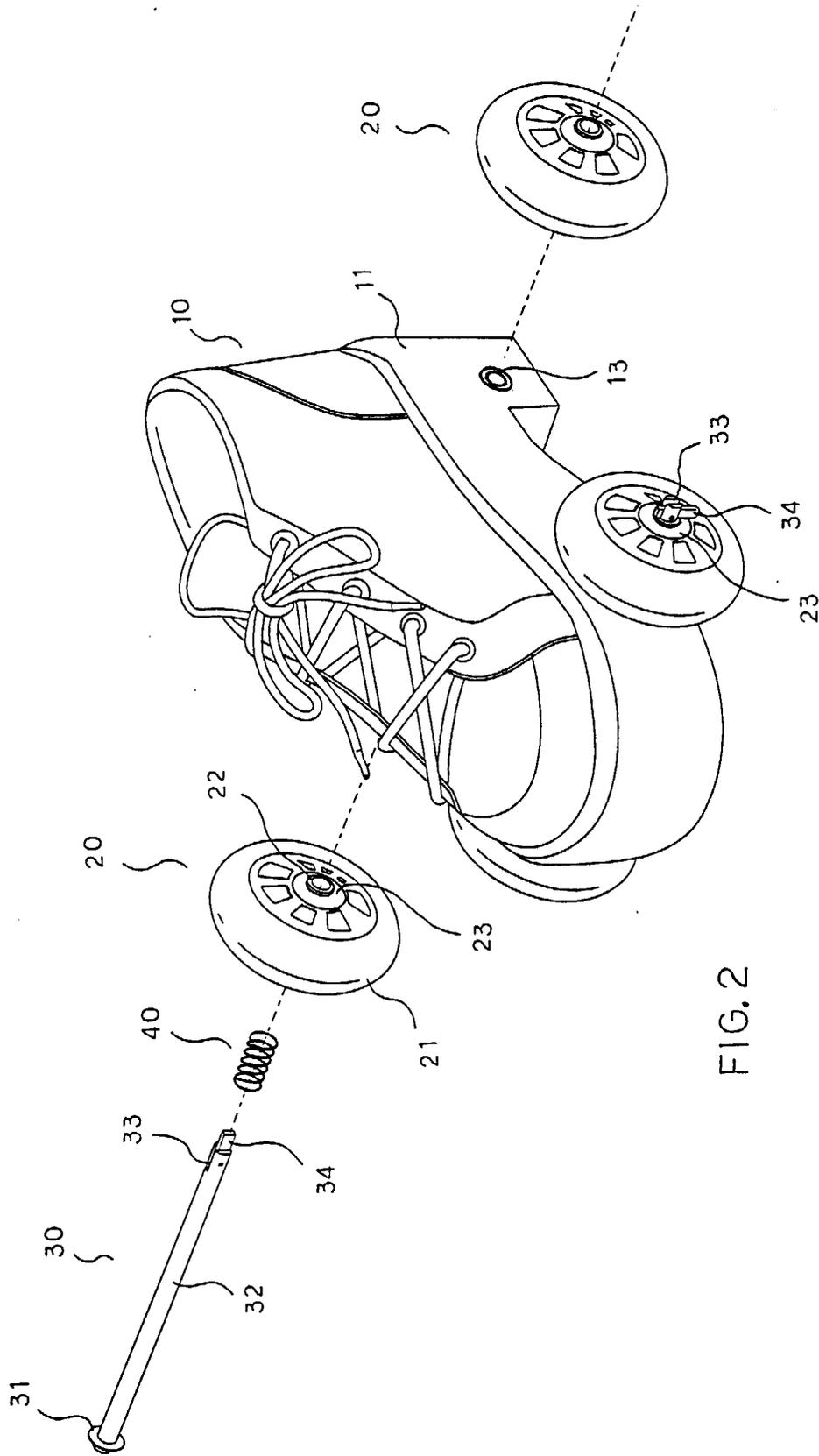
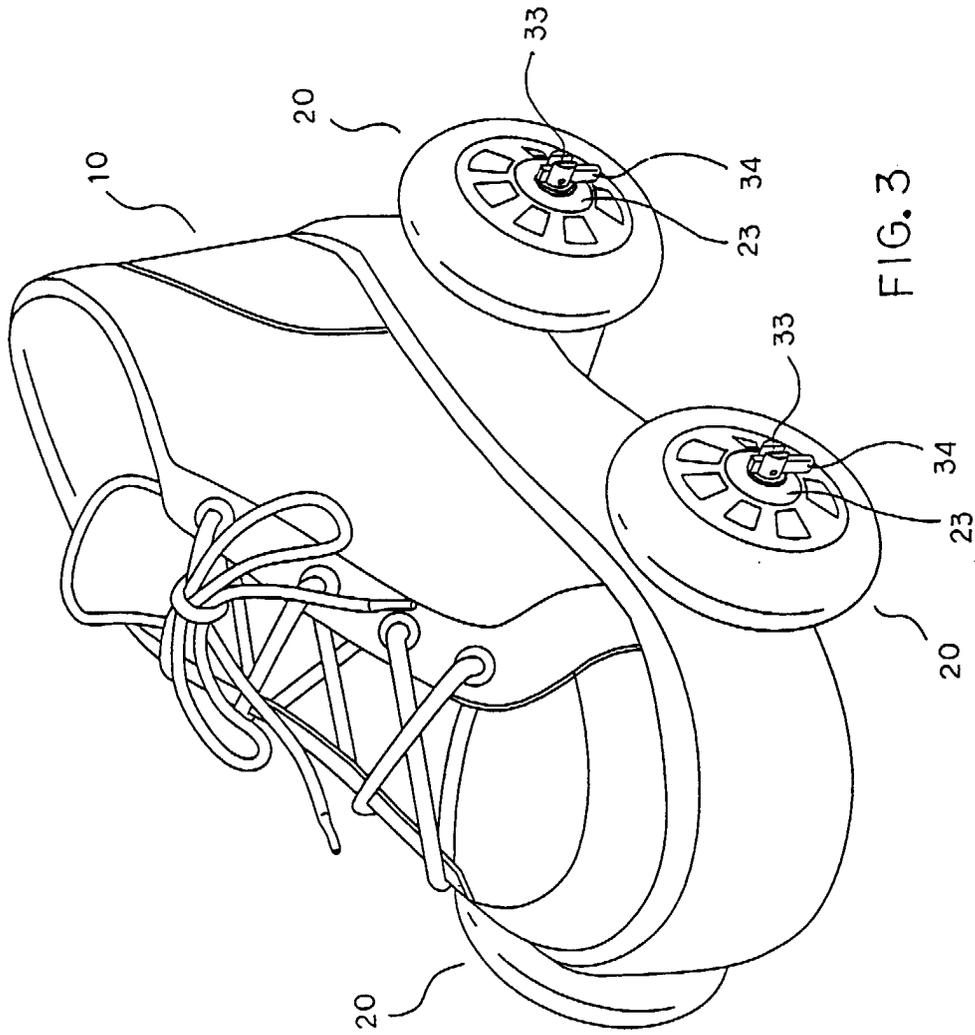


FIG. 2



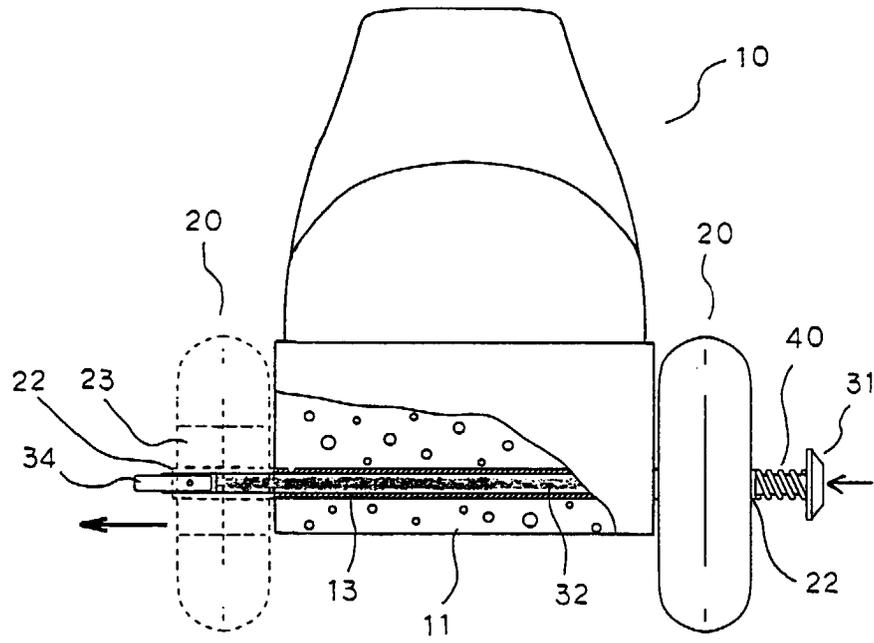


FIG. 4A

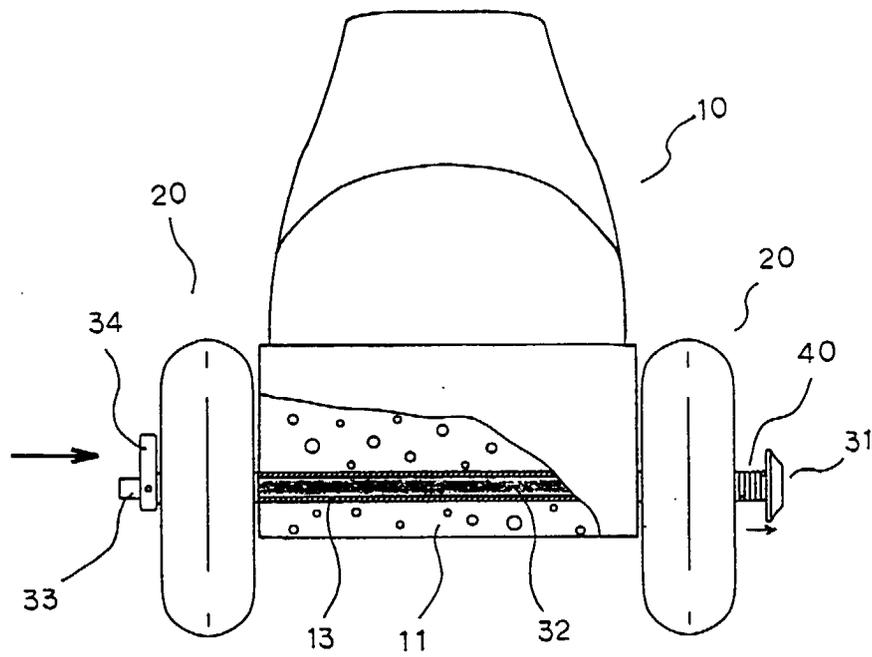
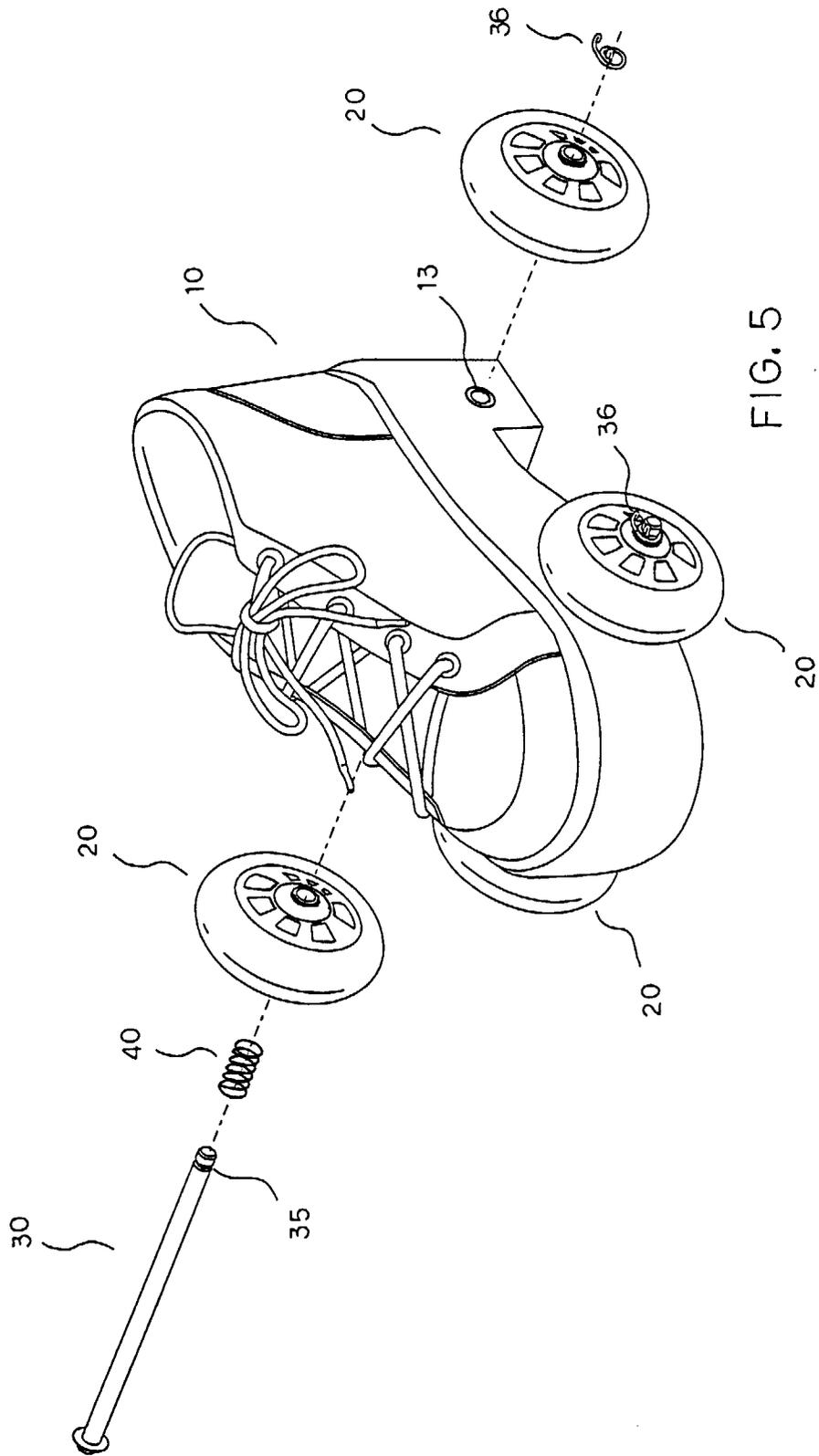


FIG. 4B



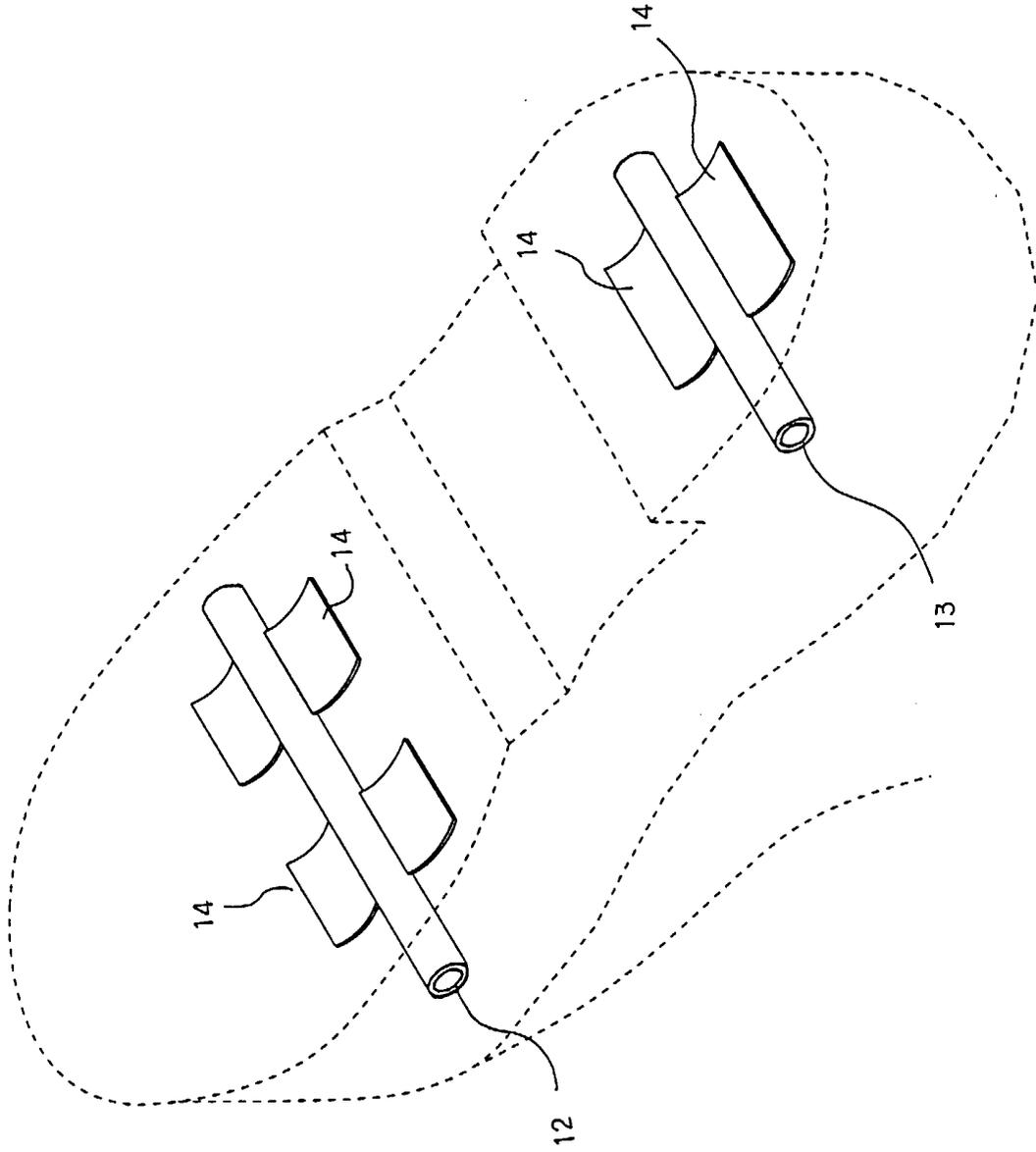


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 65 0084

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 5 511 824 A (KIM YONG E) 30 April 1996 (1996-04-30) * column 2, line 23 - column 4, line 4; figures 2-4 *	1-3,6	A63C17/20
A	US 3 306 623 A (WEITZNER D) 28 February 1967 (1967-02-28) * column 1, line 61 - column 2, line 8; figures 1,3,4 *	1,4,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A63C
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 19 November 1999	Examiner Feber, L
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 65 0084

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-11-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5511824	A	30-04-1996	NONE	
US 3306623	A	28-02-1967	NONE	

EPD FORM P0459

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