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(54) In-line roller skate with shock-absorbing means

(57) An in-line roller skate (1) with shock-absorbing means, comprising a frame (2) to which a shoe (3) is connected and which supports a plurality of in-line wheels (10), the skate further comprising shock-absorbing means (20) which are interposed between said frame (2) and said plurality of wheels (10).

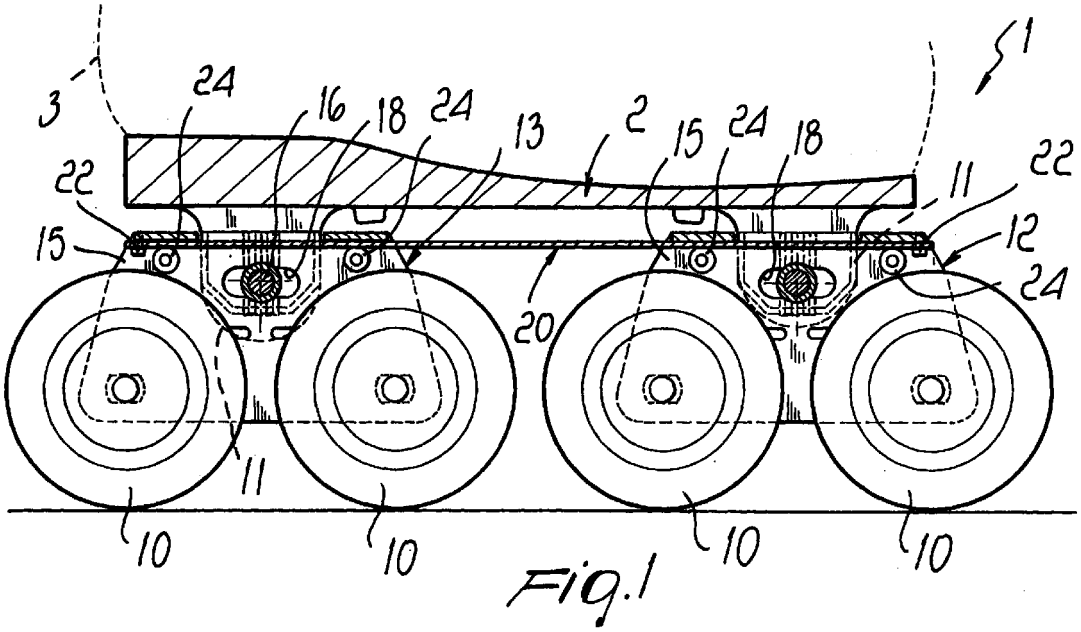

Fig.1

EP 1 018 351 A1

Description

[0001] The present invention relates to an in-line roller skate with shock-absorbing means.

[0002] It is known that in-line rollers skates are often provided with shock-absorbing means which are designed to cushion any impact with obstacles in the ground and to eliminate the vibrations that may be transmitted to the user's leg.

[0003] The solutions of the prior art interpose the shock-absorbing elements between the frame and the shoe, with solutions usually provided by elastic pads made of plastics, which however provide a damping action which does not occur predominantly in the longitudinal direction, i.e., in the direction in which the skate travels, but also occurs in the transverse direction, thus producing undue oscillations.

[0004] Other solutions which interpose piston means or similar elements are structurally very complicated and in any case do not allow to achieve optimum damping of the oscillations, especially in a longitudinal direction.

[0005] The aim of the present invention is to eliminate the above-mentioned drawbacks by providing an in-line roller skate with shock-absorbing means which allows to "absorb" any oscillations or stresses possibly transmitted by using a structure which is extremely simple from a constructive point of view but very valid from a functional point of view.

[0006] Within the scope of this aim, a particular object of the invention is to provide in-line roller skates in which it is possible to keep all the wheels of the skate perfectly in contact with the ground, thus increasing stability also on uneven or variously shaped terrains.

[0007] Another object of the present invention is to provide an in-line roller skate with shock-absorbing means which by virtue of its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use.

[0008] Another object of the present invention is to provide an in-line roller skate which can be easily obtained starting from commonly commercially available elements and materials and is also competitive from a purely economical point of view.

[0009] This aim, these objects and others which will become apparent hereinafter are achieved by an in-line roller skate with shock-absorbing means, according to the invention, which comprises a frame to which a shoe is connected and supports a plurality of in-line wheels, characterized in that it comprises shock-absorbing means which are interposed between said frame and said plurality of wheels.

[0010] Further characteristics and advantages will become apparent from the description of a preferred but not exclusive embodiment of an in-line roller skate with shock-absorbing means, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a sectional lateral elevation view of the frame of an in-line roller skate with the corresponding wheels;

Figure 2 is a bottom view of the skate;

Figure 3 is a lateral elevation view of the skate, illustrating the way in which the wheels can move freely with respect to each other;

Figure 4 is a sectional view, taken along the plane IV-IV of Figure 3.

[0011] With reference to the above figures, the in-line roller skate with shock-absorbing means, according to the invention, generally designated by the reference numeral 1, comprises a frame 2 which is advantageously constituted by a contoured plate to the top of which a shoe 3 is connected; said shoe can be shaped in any manner.

[0012] A plurality of in-line wheels, generally designated by the reference numeral 10, are connected to the frame 2.

[0013] An important particularity of the invention resides in the fact that the wheels 10 are connected to the frame by interposing shock-absorbing means which are constituted by a lamina, generally designated by the reference numeral 20.

[0014] As regards constructive detail, the frame 2 is provided, in a front region and to the rear, with lugs 11 which protrude downward and support a front truck 12 and a rear truck 13, which are substantially provided with a stirrup-like element shaped like an inverted U and designated by the reference numeral 15 for both trucks; said stirrup-like element is connected to the lugs 11 by means of a central pivot 16 which allows each truck to oscillate about an axis which is substantially perpendicular to the longitudinal extension of the frame and is substantially perpendicular to the vertical plane of arrangement of said skate.

[0015] In this manner, the truck 12 and the truck 13 can oscillate freely and thus allow to move the front wheels and the rear wheels independently; said wheels can therefore remain in contact with the ground also in case of rough terrain or of terrain with variable inclinations, differently from what occurs in the prior art, in which the wheels have a substantially rigid arrangement and therefore some wheels might not touch the ground if the terrain is uneven.

[0016] The shock-absorbing means are provided by an elastic lamina 20, which is connected at its ends, by means of locking screws 22, to the front truck and to the rear truck respectively. The lamina is further supported by transverse pivots 24 which join the two sides of the stirrups 15, acting in practice as a support for the lamina and as an element for delimiting the free-flexing portion of the elastic lamina.

[0017] In particular, the supporting pivots 24, arranged in the other internal part, might be provided with means allowing translatory motion, so as to vary the free internal portion of the lamina, thus varying the

elastic response of said lamina.

[0018] Likewise, in the region that connects the trucks 12 and 13 to the pivot it is possible to provide, on the stirrups 15, an elongated slot designated by the reference numeral 18, which allows to vary the arrangement of the individual trucks with respect to the frame in a longitudinal direction with respect to the frame.

[0019] The adoption of the shock-absorber between the wheels and the frame allows to have a damping action which occurs predominantly in the longitudinal plane, accordingly obtaining excellent absorption of any stress or vibration while keeping the wheels firmly in contact with the ground at all times also thanks to the mutual independence of the front and rear wheels.

[0020] This aspect is particularly important, since shock-absorbers are provided which are extremely effective and capable of absorbing any stress without inducing stresses in abnormal directions.

[0021] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0022] All the details may further be replaced with other technically equivalent elements.

[0023] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0024] 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. An in-line roller skate with shock-absorbing means, comprising a frame to which a shoe is connected and which supports a plurality of in-line wheels, characterized in that it comprises shock-absorbing means which are interposed between said frame and said plurality of wheels.

2. The in-line roller skate according to claim 1, characterized in that said plurality of wheels is supported by a front truck and by a rear truck, which are connected to said frame so as to be able to oscillate about an axis which is substantially perpendicular to the longitudinal extension of the frame and substantially perpendicular to the vertical plane of arrangement of the skate.

3. The in-line roller skate according to one or more of the preceding claims, characterized in that said front and rear trucks comprise a stirrup-like element which is shaped like an inverted U and can be associated, by means of a central pivot, to front and rear lugs formed correspondingly by said frame.

4. The in-line roller skate, characterized in that said stirrups form an elongated slot for engagement with said central pivot, said elongated slot allowing to vary the position of the individual trucks with respect to said frame.

5. The in-line roller skate according to one or more of the preceding claims, characterized in that said shock-absorbing means are constituted by an elastic lamina which is connected, at its ends, to said front truck and to said rear truck, respectively.

6. The in-line roller skate according to one or more of the preceding claims, characterized in that it comprises, on said stirrups of said trucks, transverse pivots which can engage and support said lamina and delimit the free-flexing portion of said elastic lamina.

7. The in-line roller skate according to one or more of the preceding claims, characterized in that said supporting pivots located in the internal part of said trucks have means allowing translatory motion to vary the free-flexing portion of said lamina.

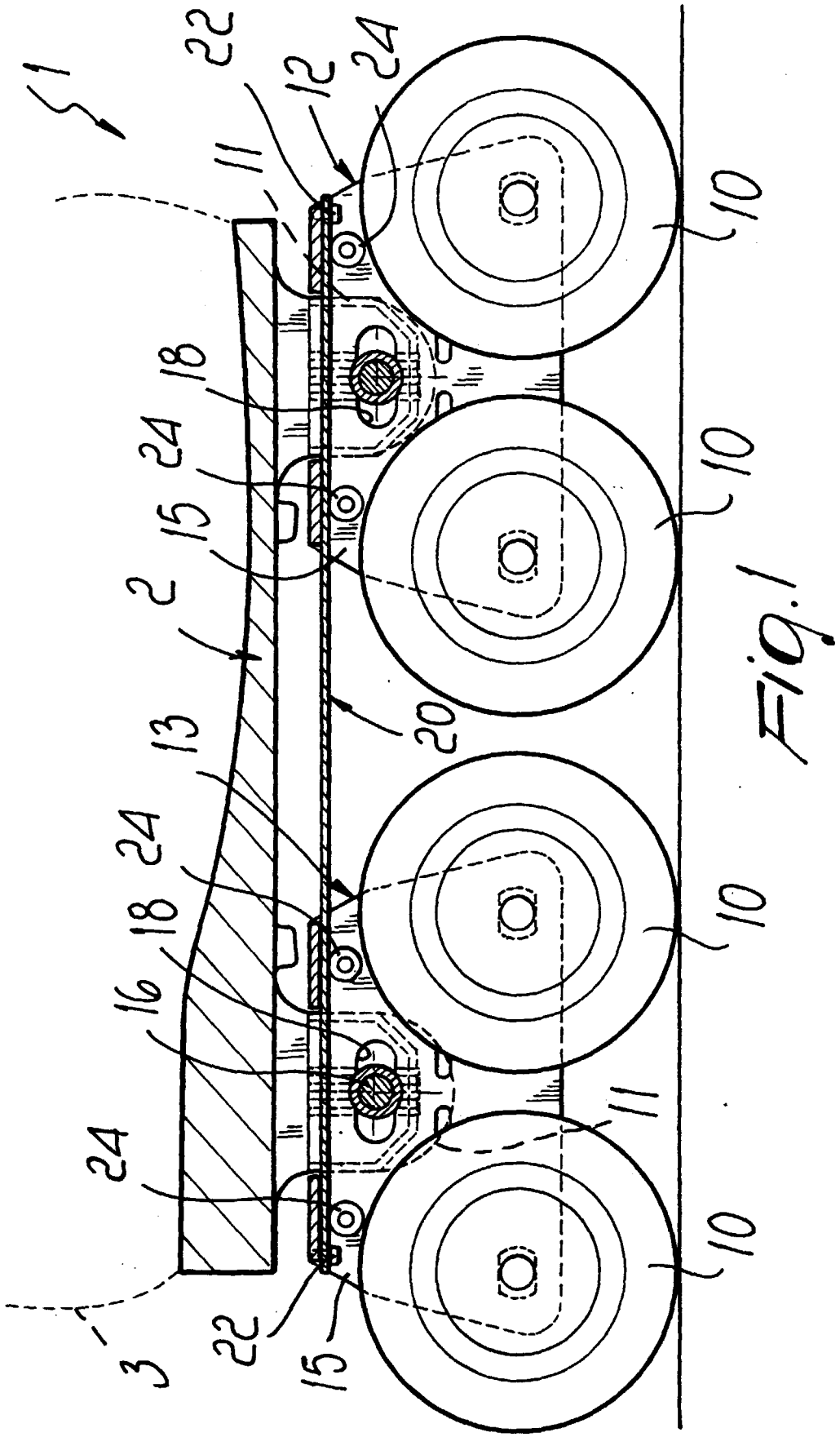

Fig. 1

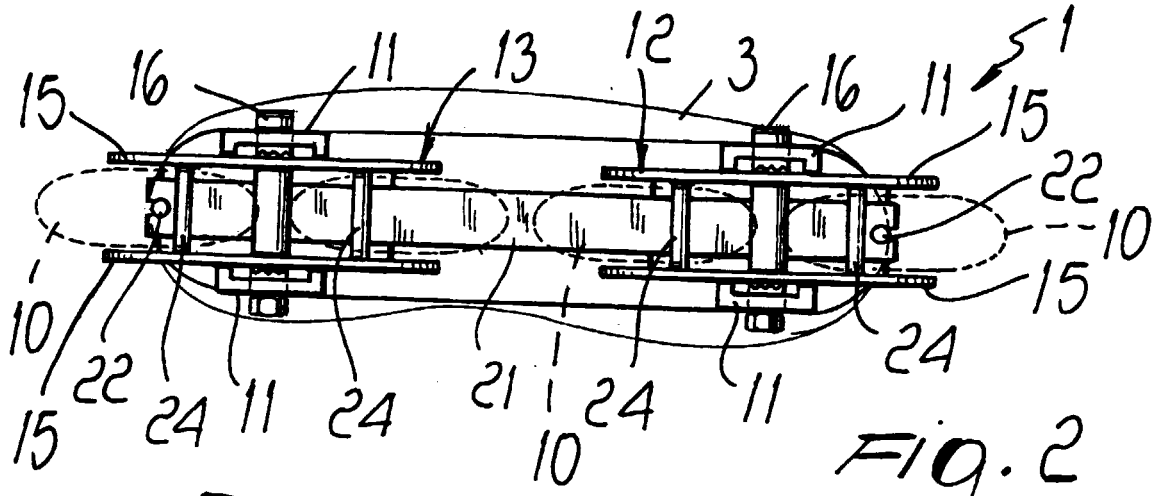

Fig. 2

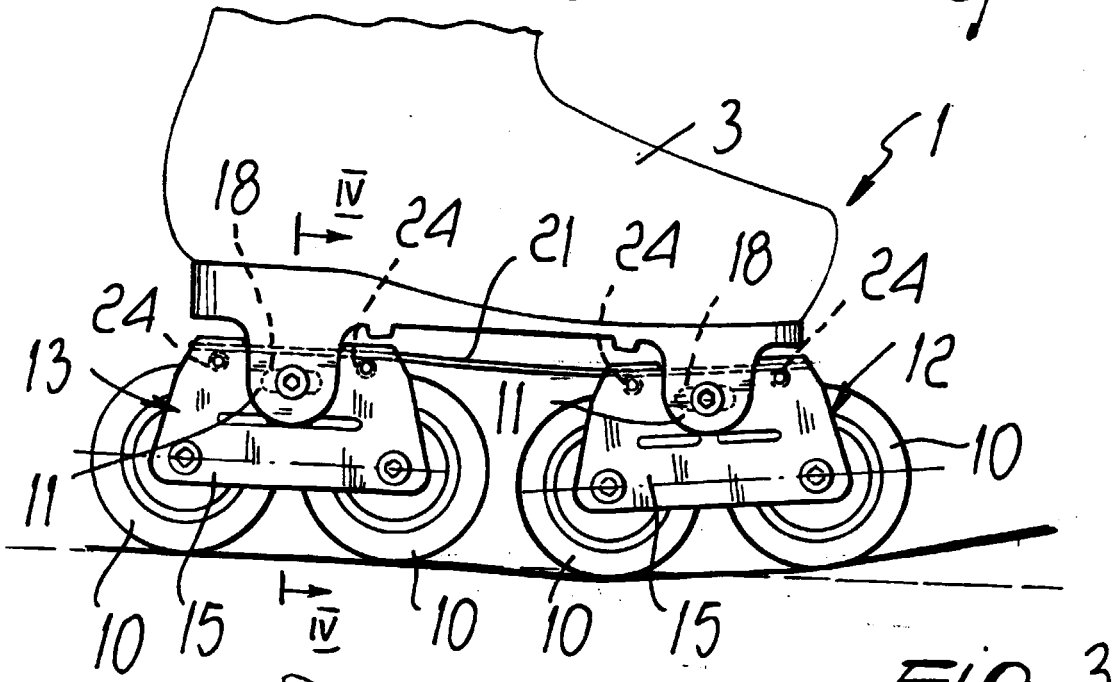

Fig. 3

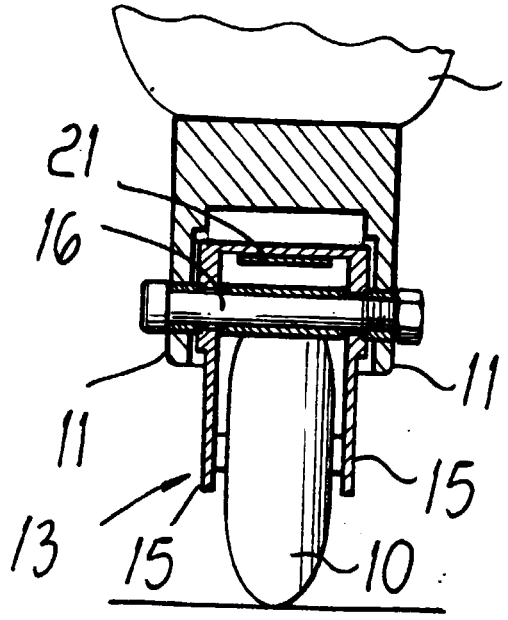

Fig. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 83 0790

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.5)
X	DE 197 15 706 A (HANSEN REINHARD ;HEINZ BERNHARD (DE)) 22 October 1998 * column 7, line 11 - column 7, line 30; figures 7-9 *	1-5	A63C17/06
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TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A63C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	18 May 1999	Feber, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 83 0790

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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18-05-1999

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