

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

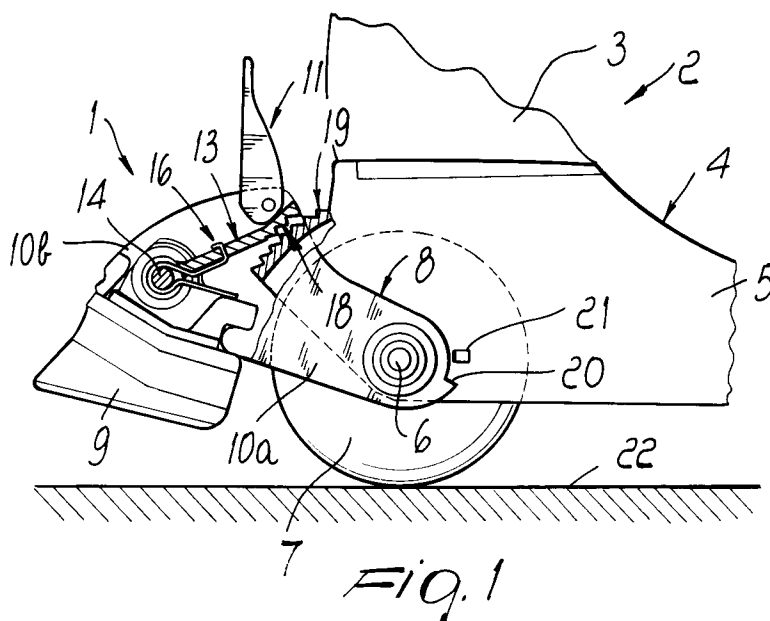
0 687 487 A2

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **95108634.7**(51) Int. Cl.⁶: **A63C 17/14**(22) Date of filing: **06.06.95**(30) Priority: **13.06.94 IT TV940068**(43) Date of publication of application:
20.12.95 Bulletin 95/51(84) Designated Contracting States:
AT CH DE ES FR IT LI(71) Applicant: **NORDICA S.p.A.**
Via Montebelluna 5/7
I-31040 Trevignano (Treviso) (IT)(72) Inventor: **Marconato, Luca**
Via Ortigara 74
I-31030 Padernello di Paese (Treviso) (IT)(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati S.r.l.
Via Meravigli, 16
I-20123 Milano (IT)(54) **Braking device, particularly for roller skates**

(57) A braking device, particularly for skates which includes a shoe (3) associated with a frame (4) having a plurality of wheels (7) and a support (8) for a brake pad (9) in a rear region to the frame. The

device comprises a ratchet member (18,19) for selectively positioning the support with respect to the frame.

**EP 0 687 487 A2**

The present invention relates to a braking device, particularly for skates.

The problem of braking the wheels in order to stop or to adjust the speed of the skate is currently felt in conventional roller skates, whether constituted by a shoe associated with a support for two pairs of mutually parallel wheels or by a shoe associated with a supporting frame for in-line wheels.

Conventional skates have adapted pads or blocks, usually made of rubber and associated with supports that are fixed at the tip or heel region of the shoe. When the user tilts the shoe backwards or forwards, the pad interacts with the ground and therefore braking is achieved.

A drawback of these brakes is that as the pad wears down, the user must tilt the skate more and more with consequent difficulty in keeping balance.

U.S. Patent No. 5,197,572 discloses a skate including a shoe associated with a frame having a plurality of aligned wheels pivoted between the wings of said frame. A support for a brake is pivoted at the rear of the frame. The brake is substantially constituted by a T-shaped bar that comprises a threaded rod engaging a complementarily threaded pad. The pad can be set at a given angle with respect to the frame.

Other embodiments of this brake show threaded elements that interact with adapted nuts and are adapted to vary the angle of the support, and therefore of the brake, with respect to the frame.

However, even these solutions have drawbacks; indeed, it is neither easy nor quick for the user to vary the angular position of the support with respect to the frame, because it is necessary to remove the skate and have particular tools available or in any case intervene directly and manually at the appropriate means associated with the support.

The aim of the present invention is to eliminate the drawbacks described above in conventional types by providing a braking device that allows to achieve uniform or consistent braking despite brake wear and is structurally simple, easy to activate, and easy to industrialize.

Within the scope of the above aim, an important object is to provide a braking device wherein said activation can be defined by the user even while wearing the skate.

Another important object is to provide a braking device in which the user can easily and quickly compensate for any wear of the brake, so as to avoid changing the inclination that he must apply to the shoe in order to achieve braking.

Another object is to provide a device that combines with the above characteristics that of being reliable and safe in use, has low manufacturing costs, and can also be applied to conventional

skates.

This aim, these objects, and others which will become apparent hereafter are achieved by a braking device, particularly for skates comprising a frame having a plurality of wheels pivoted at said frame, a support for a brake being pivoted in a rear region to said frame, characterized in that it comprises means for selectively positioning said support with respect to said frame.

Further characteristics and advantages of the invention will become apparent from the detailed description of a particular but not exclusive embodiment, illustrated by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a partially sectional side view of the braking device in the condition for selecting the position of the support with respect to the frame; figure 2 is a view, similar to figure 1, of the condition for selecting the position of the support with respect to the frame; figure 3 is an exploded view of the components of the device; figure 4 is a view, similar to figure 2, of a different position of the brake; figure 5 is a view, similar to figure 4, of another position of the support with respect to the frame in the condition in which the brake is worn; figures 6 and 7 are partially sectional side views of respectively two different embodiments; figure 8 is a sectional view, taken along the plane VIII-VIII of figure 7; figure 9 is a view, similar to figure 8, in the condition for adjusting the position of the support with respect to the frame; figure 10 is a rear perspective view of the embodiment of figure 7, in the condition shown in figure 8; figure 11 is a view, similar to figure 10, of the shape of the frame; figure 12 is a view, similar to figure 10, of the embodiment of figure 7 in the condition shown in figure 9.

With reference to the above figures, the reference numeral 1 generally designates a braking device that is particularly usable for skates 2 which comprise a shoe 3 associated with a substantially U-shaped frame 4.

A plurality of wheels 7 are associated, by means of adapted first pivots 6, between the wings 5 of the frame 4 and are accordingly mutually aligned.

A support 8 for a brake pad 9, made of plastics, is pivoted to the rear of the frame 4 at the first pivot 6 of the rear wheel 7 or by means of studs that are pivoted to the wings 5 of the frame.

The support 8 is also provided with two shoulders 10a and 10b, one end whereof is pivoted to the frame 4; the brake pad 9 is associated below

the support.

The braking device comprises means for selectively positioning the support 8 with respect to the frame 4. This means is constituted by a lever 11 that has an eccentric head pivoted, by means of a second pivot 12, between the two shoulders 10a and 10b of the support 8, in a region that is intermediate between the ends that are pivoted to the frame 4 and are provided with the brake 9.

The eccentric head of the lever 11 interacts in contrast with the free end of a bar 13, which is freely and transversely pivoted, at one end, between the two shoulders 10a and 10b of the support 8 by means of an adapted screw 14, which cooperates with a lock nut 15.

The bar 13 can oscillate with respect to the screw 14 in contrast with a flexible element such as a spring 16 constituted by a metal wire. One end of the spring abuts against a projection 17 that protrudes transversely with respect to the two shoulders 10a and 10b, in the region that lies above the brake 9, and then surrounds the stem of the screw 14 and engages, at its other end, at the bar 13, so as to force its positioning in the direction of said projection 17.

On the opposite side with respect to the head of the lever 11, the free end of the bar 13 is provided with a toothed region 18 that faces a complementarily shaped set of teeth 19 that is formed to the rear of the frame 4.

The use of the braking device is as follows: after rotatably associating the support 8 with the frame 4, and after positioning the lever 11 in the open condition, as shown in figure 1, the user can position in the desired position the end of the bar 13 that is provided with the toothed region 18 at the desired teeth of the complementarily shaped set of teeth 19 formed on the frame 4.

This operation can be performed by the user while he is wearing the skate.

Advantageously, in order to prevent the brake 9 from falling to the ground when the lever 11 opens, owing to the articulation of the support 8 to the frame 4, a tab 20 is provided at at least one end of the two shoulders 10a and 10b. Said tab protrudes perimetrically and abuts at an adapted lug 21 that protrudes laterally with respect to a wing 5 of the frame 4.

The arrangements of the lug 21 and of the tab 20 are such as to allow, for example, to position the brake 9 so that it is slightly raised from the ground 22 when the lever 11 is open and when the support is not being supported by the user.

The user can therefore vary, according to the wear of the brake 9, the angular position of the support with respect to the frame simply by gripping the lever and can tighten it again, after opening it by, producing one or more ratcheting actions

between the toothed region 18 and the complementarily shaped set of teeth 19.

Should the user forget to tighten the lever 11, the projection 17 protrudes towards the frame 4, so that the end of the complementarily shaped set of teeth 19 that faces the ground 22 interacts with it by abutment beyond a given degree of backward rotation imparted to the shoe.

As shown in figure 5, for example, it is possible to achieve a distance between a ground 22 and the surface of the brake 9 that is always constant even when brake wear varies.

Furthermore, as shown in figure 4, the user can deactivate the brake 9, locking the support 8 in the position in which the complementarily shaped set of teeth 19 is furthest from the ground.

It has thus been observed that the invention has achieved the intended aim and objects, a braking device having been provided in which, even while wearing the skate, it is possible to easily and quickly vary the position of the brake with respect to the ground, accordingly compensating for the wear of the brake pad or allowing to deactivate it.

The device is also structurally simple and allows the user to brake, despite variation in skate wear, by imparting the same inclination to the shoe.

The device is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

Accordingly, figure 6 illustrates a second embodiment of the invention, in which a U-shaped element 123 is likewise pivoted inside the two shoulders at the second pivot 112 for pivoting of the lever 111 to said two shoulders 110. At the surface that faces the lever 111, said element 123 is provided with a toothed region 118 with which a complementarily shaped set of teeth 119 selectively interacts. Said set of teeth 119 is formed on the inside lateral surface of the facing frame 104.

Advantageously, the second pivot 112 is located at adapted slots formed on the two shoulders 110, so as to allow, when the lever 111 provided with the eccentric head opens and closes, to raise, or in any case move, the element 123 and therefore mutually engage or disengage the toothed region 118 and the complementarily shaped set of teeth 119.

Figures 7 to 12 illustrate a third embodiment for a skate 202 that comprises a shoe 203 associated with a substantially U-shaped frame 204, and between the wings 205a and 205b of which a plurality of wheels 207 are transversely and rotatably associated by means of adapted first pivots 206 and are therefore mutually aligned.

A support 208 for a brake 209, made of plastics, is pivoted to the rear of the frame 204 at the first pivot 206 of the rear wheel 207 or by means of

studs pivoted to the wings 205 of the frame.

The support 208 is also provided with two shoulders 210a and 210b, one end whereof is pivoted to the frame 204; the brake 209 is associated with the other end of said shoulders, which are arranged outside the wings 205a and 205b of the frame 204.

Advantageously, a U-shaped spacer 225 is interposed inside the wings 205a and 205b of the frame 204; the ends of said spacer are pivoted at the same first pivot 206 of said support 208.

The braking device comprises a means for selectively positioning the support 208 with respect to the frame 204. Said means is constituted by a lever 211 that is constituted by a substantially C-shaped metal wire, the base 224 whereof is arranged above the support 208 so as to externally surround it in the opposite direction with respect to the frame 204; the tips 226a and 226b of said wire are flexible by divarication and are folded towards the pair of shoulders 210a and 210b.

Said tips 226a and 226b can be selectively positioned at a first pair of holes 229a and 229b formed on the two shoulders 210a and 210b of the support 208 and at one of two or more pairs of second holes 227a and 227b formed on said wings 205a and 205b and on said spacer 225.

The tips 226a and 226b of the lever 211 can be divaricated by means of two raised portions 228a and 228b at the outside lateral surface of the two shoulders 210a and 210b of the support 208; said raised portions have inclined surfaces with which said tips interact when the lever 211 is raised or lowered.

In this way, the tips 226a and 226b disengage the second holes 227a or 227b that affect the spacer 225 and the wings 205a and 205b of the frame 204: this allows to reposition said tips in the other pair of second holes after rotating the support 208.

The dimensions and the materials that constitute the individual components of the device may of course also be the most pertinent according to the specific requirements.

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 scope of each element identified by way of example by such reference signs.

Claims

1. Braking device, particularly for skates comprising a frame (4,104,204) having a plurality of wheels pivoted at said frame, a support

(8,108,208) for a brake (9,109,209) being pivoted in a rear region to said frame, characterized in that it comprises means (11,111,211) for selectively positioning said support with respect to said frame.

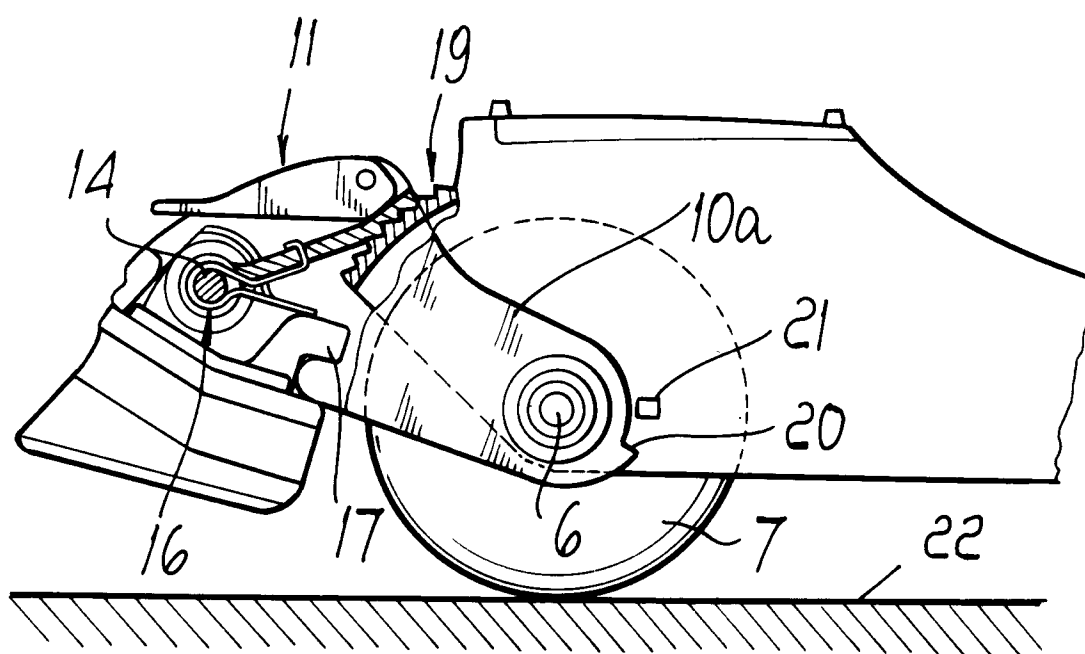
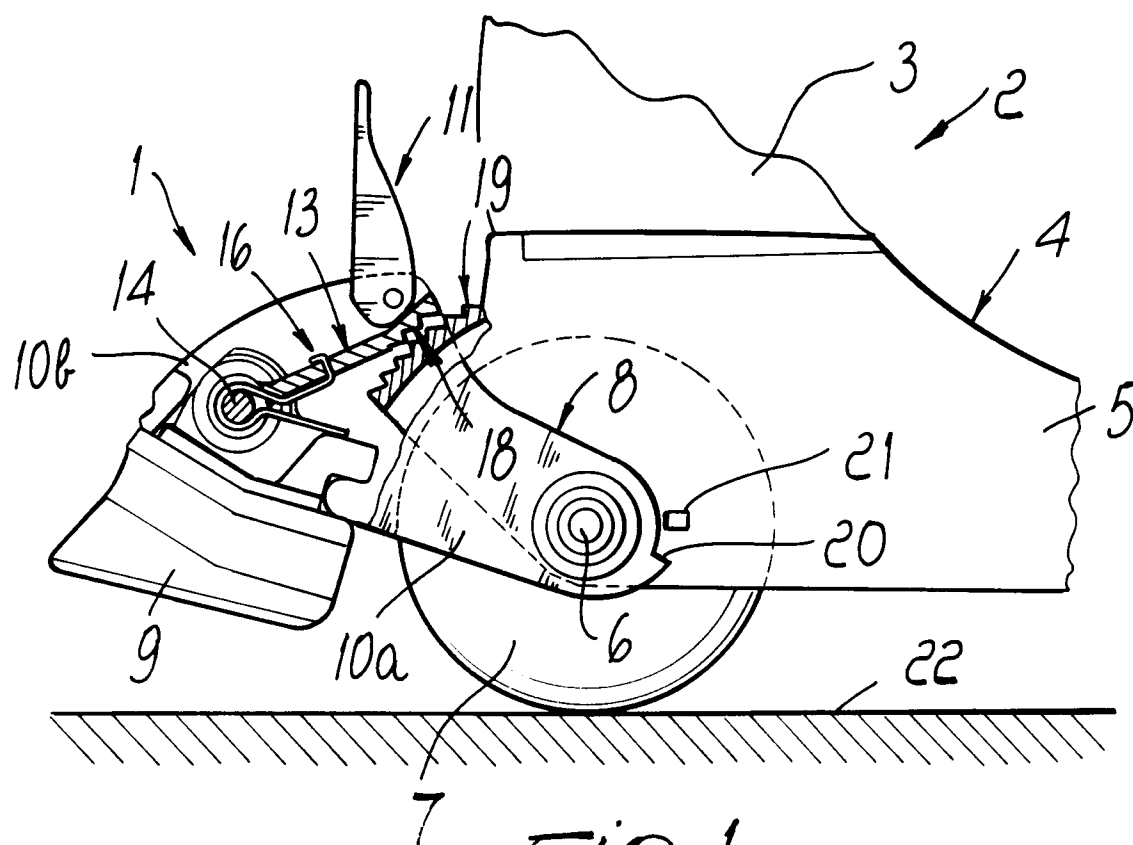
2. Braking device according to claim 1, wherein said support (8) is provided with two shoulders (10a,10b), one end whereof is pivoted to said frame (4), said brake (9) being associated with the other end of said support, characterized in that said means for selectively positioning said support with respect to said frame are constituted by a lever (11) provided with an eccentric head that is transversely pivoted, by means of a second pivot (12), between said two shoulders (10a,10b) of said support in a region that is intermediate between the ends that are pivoted to said frame and are provided with said brake.
3. Braking device according to claim 2, characterized in that said eccentric head of said lever (11) interacts by contrast with the free end of a bar (13) that is freely transversely pivoted, at one end, between said two shoulders (10a,10b) of said support (8) by means of an adapted screw (14) that cooperates with a lock nut (15).
4. Braking device according to claim 3, characterized in that said bar (13) can oscillate with respect to said screw (14) in contrast with a flexible element such as a spring (16), one end whereof abuts against a projection (17) that protrudes transversely with respect to said two shoulders (10a,10b) in the region that lies above said brake (9) and then surrounds the stem of said screw (14) and engages at said bar (13) at the other end so as to force its positioning towards said projection.
5. Braking device according to claim 4, characterized in that the free end of said bar (13) is provided, on the opposite side with respect to said head of said lever, with a toothed region (18) that faces a complementarily shaped set of teeth (19) that is formed to the rear of said frame (4).
6. Braking device according to one or more of the preceding claims, characterized in that it comprises means that are adapted to prevent said brake from falling to the ground if said lever opens, said means being arranged at at least one end of said two shoulders and being constituted by a tab (20) that protrudes perimetrically and acts as abutment at an appropriate lug (21) that protrudes laterally with respect to

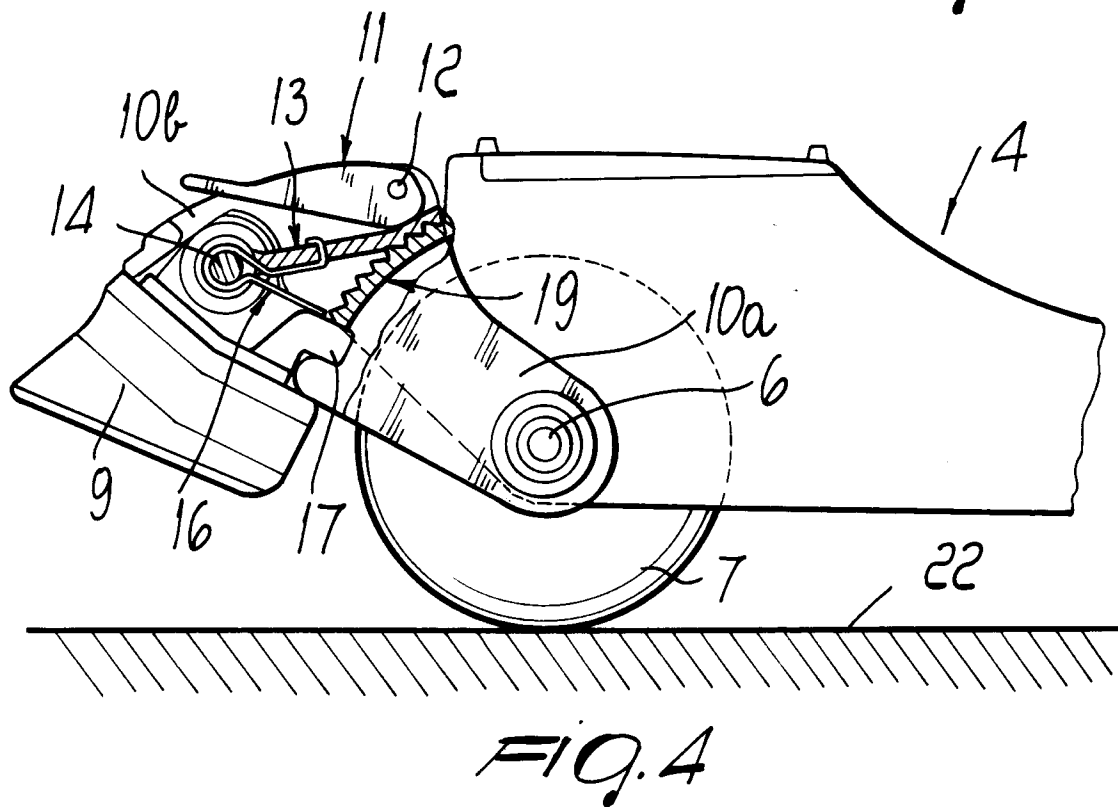
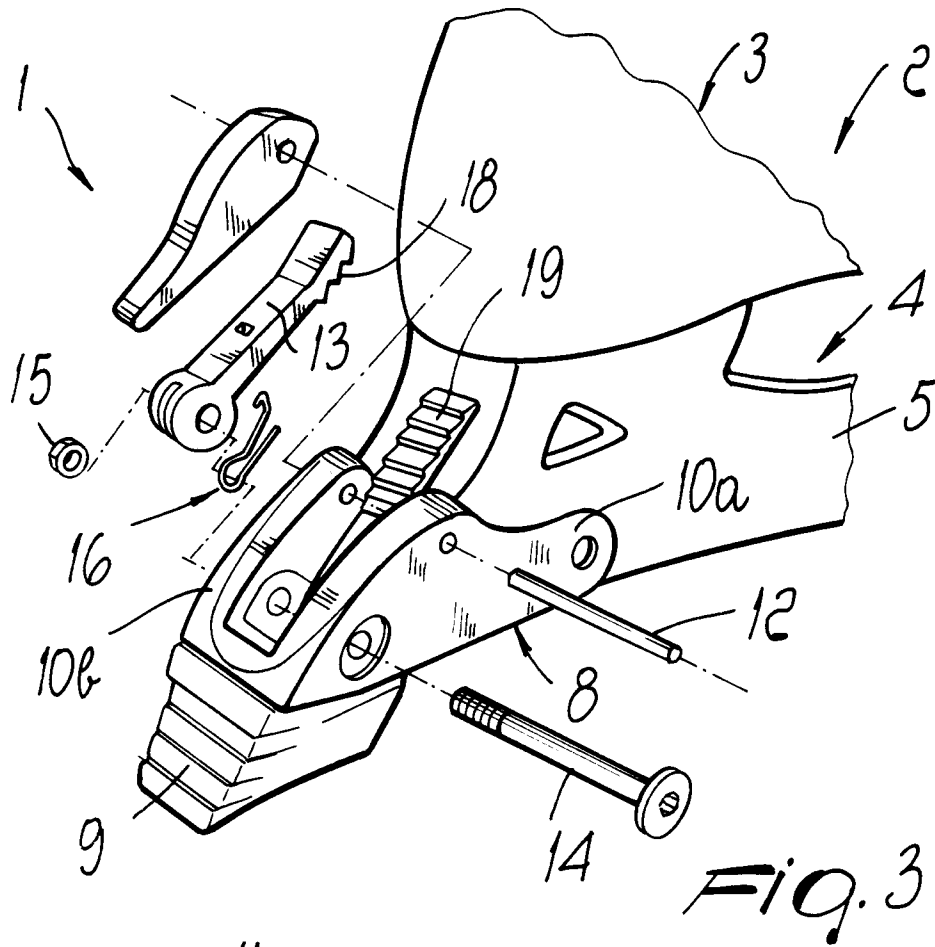
one of said wings of said frame.

7. Braking device according to one or more of the preceding claims, characterized in that said projection (17) protrudes towards said frame, and in that the end of said complementarily shaped set of teeth (19) that faces the ground interacts by abutment with said projection beyond a given degree of backward rotation applied to said shoe. 5 10
8. Braking device according to one or more of the preceding claims, characterized in that a U-shaped element (123) is pivoted, inside the two shoulders (110), at a second pivot (112) for the pivoting of a lever (111) to said two shoulders, and has, at the surface that faces said lever, a toothed region (118), with which a complementarily shaped set of teeth (119) selectively interacts, said complementarily shaped set of teeth being formed on the inside lateral surface of said facing frame (104). 15 20
9. Braking device according to claim 8, characterized in that said second pivot (112) is located at adapted slots formed on said two shoulders (110), so as to allow, when said lever (111) provided with the eccentric head is opened and closed, to raise or in any case move said element (123) and therefore mutually engage or disengage said toothed region and said complementarily shaped set of teeth. 25 30
10. Braking device according to one or more of the preceding claims, characterized in that said support (208) is provided with two shoulders (210a,210b), one end whereof is pivoted to said frame (204), said brake (209) being associated with the other end of said support, said two shoulders being arranged outside said wings of said frame. 35 40
11. Braking device according to claim 10, characterized in that a U-shaped spacer (225) is interposed inside said wings of said frame (204), the ends of said spacer being pivoted at a first pivot (206) of said support (208). 45
12. Braking device according to one or more of the preceding claims, characterized in that said means for selectively positioning said support (208) with respect to said frame (204) are constituted by a lever (211), which in turn is constituted by a substantially C-shaped metal wire, the base (224) whereof lies above said support, so as to externally surrounds it in the opposite direction with respect to said frame, the tips (226a,226b) of said metal wire being 50 55

flexible by divarication and being folded towards said two shoulders (210a,210b).

13. Braking device according to claim 12, characterized in that said tips (226a,226b) can be selectively positioned at a first pair of holes (229a,229b) formed on said two shoulders (210a,210b) of said support (208) and at one of two or more pairs of second holes (227a,227b) formed on said wings and on said spacer.
14. Braking device according to claim 13, characterized in that said tips (226a,226b) of said lever (211) can be divaricated by means of two raised portions (228a,228b) that protrude at the lateral outside surface of said two shoulders of said support, said two raised portions being provided with inclined surfaces, with which said tips interact when said lever is raised or lowered.
15. Braking device according to claim 14, characterized in that when said tips (226a,226b) interact with said two raised portions (228a,228b), said tips disengage from said second holes (227a,227b) that affect said spacer (225) and wings of said frame (204), in order to allow said tips to be repositioned in the other pair of second holes after rotating said support (208).





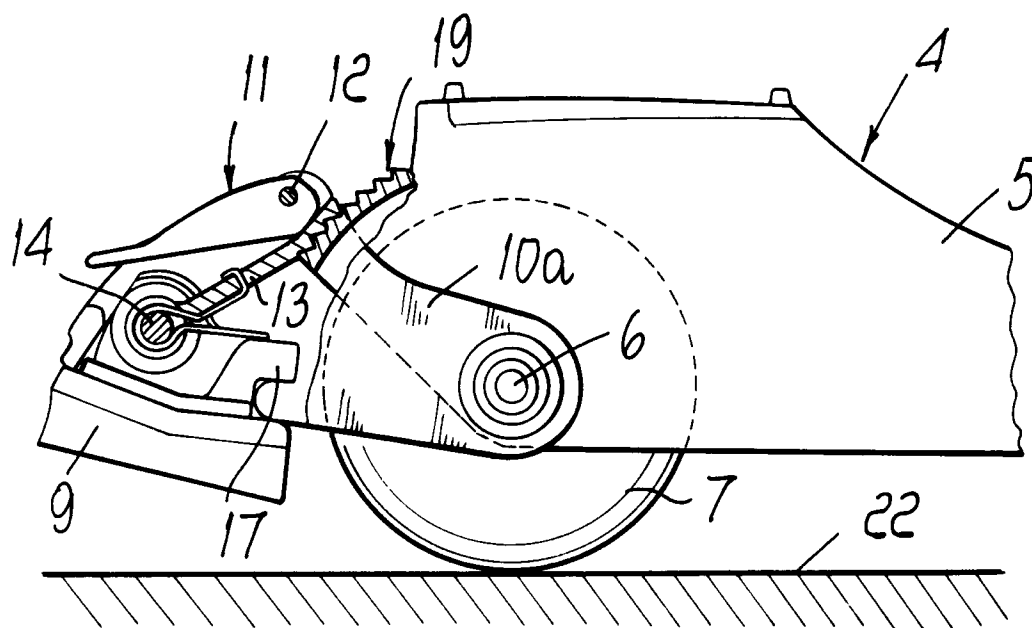


Fig. 5

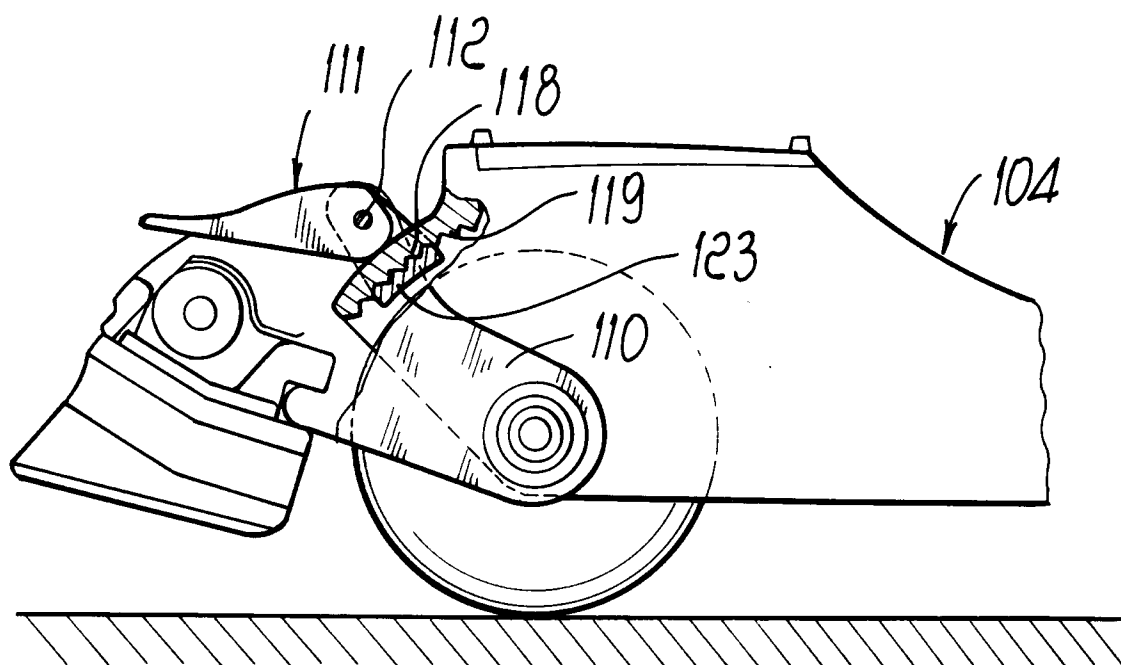


Fig. 6

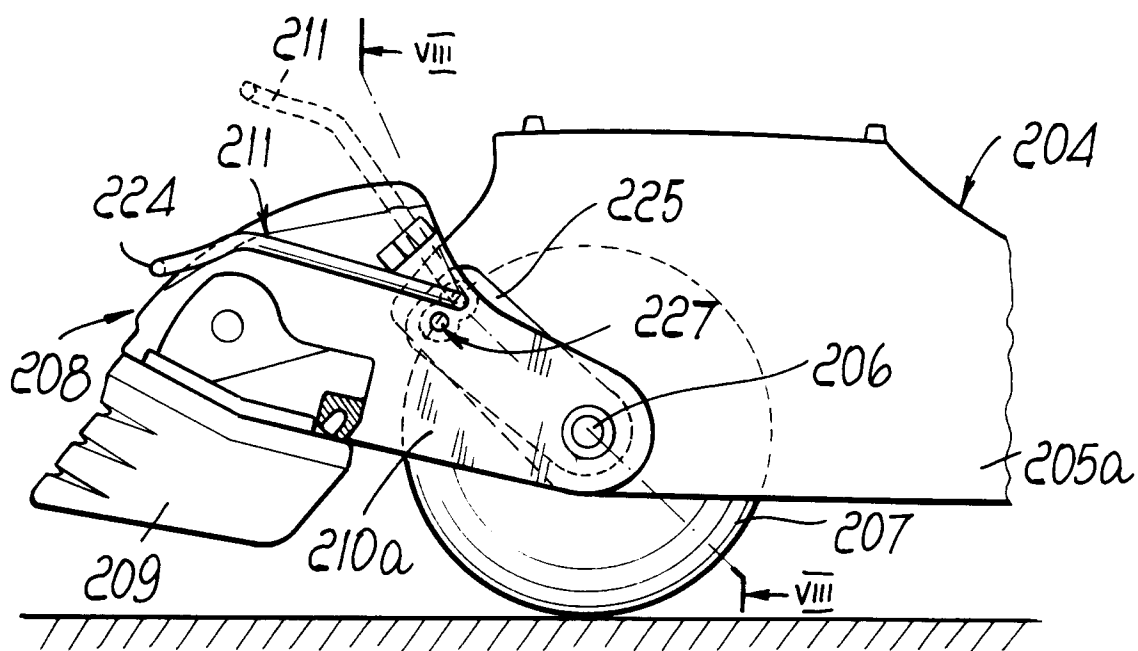


Fig. 7

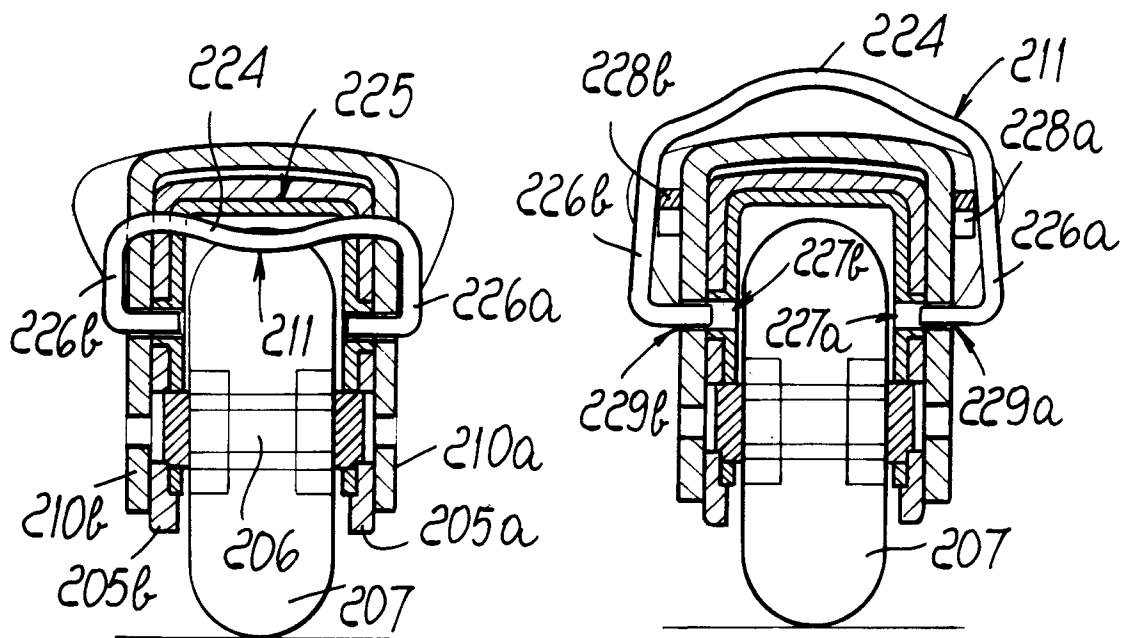


Fig. 8

Fig. 9

