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ROLLER SKATE

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3 Claims. (Cl. 280—11.23)

The present invention relates to an improved roller skate, and particularly a roller skate simulating in action and skating technique the performance of ice skates, an object of the invention being to provide a roller skate of sturdy and light construction, and which approaches in simplicity the simple structure of a conventional ice skate.

A further object is to provide a roller skate which may be braked by a slight tilting of the skate, either forwardly or rearwardly depending upon the preference of the skater, to thus lend to the versatility of the skater in performing intricate maneuvers such as in figure skating.

Another object is to provide a roller skate in which the rollers may be in the form of a ball bearing unit of conventional commercial design, and further to provide mounting means for the rollers which will enable them to be readily replaced.

A still further object is to provide improved attaching means for securing the skate to the heel of a shoe, and whereby the skate may be quickly attached or removed, and will be reliably and firmly held upon the shoe heel when the skate is in use.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a side elevation of a roller skate according to one embodiment of the invention, the same being shown attached to a shoe;

Fig. 2 is a bottom plan view of the skate removed from the shoe;

Fig. 3 is a vertical section view, taken along the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary top plan view of the heel portion of the skate;

Fig. 5 is a horizontal sectional view, taken along the line 5—5 of Fig. 1, and showing the part of the heel attaching means secured to the underside of the shoe heel;

Fig. 6 is a side elevation of a modified form of the invention provided with a single roller;

Fig. 7 is a front elevation of the skate shown in Fig. 6.

Referring to the drawings, and more particularly to Figs. 1–5, the roller skate, according to the exemplary embodiment of the invention shown therein, comprises a skate frame 10 consisting of a straight bar portion 11 extending for the greater portion of the length of the skate and preferably of substantially square cross-section, the forward end of the bar portion 11 being continuous with an upwardly curved forward bar portion 12, the flat upper end of which is secured by a screw 13 to a toe sup-

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porting plate 14 adjacent its forward end. Rearwardly adjacent the curved bar portion 12, and forwardly adjacent the rearward end of the straight bar portion 11, there are provided roller housing and supporting portions 15 and 16, integrally formed with and extending upwardly from the bar portion 11, these portions being of substantially semi-circular shape in outline, and respectively provided centrally of their upper ends with integral upstanding lugs 17 and 18. The upper ends of these lugs are flat and in the same horizontal plane with the upper end of the forward curved bar portion 12, the lug 17 being secured to the toe plate 14 adjacent its rearward end by a screw 19, and the lug 18 being secured to a heel plate 20 by a screw 21.

The roller housing portions 15 and 16 are each provided with a recess 22 extending upwardly from the bottom of the bar portion 11 within which a roller 23 is rotatably supported upon a cross pin 24. As shown in Fig. 3, the roller is in the form of a ball bearing unit consisting of inner and outer ball races 25 and 26 and anti-friction balls 27 therebetween, the inner race being mounted upon a bushing 28 which projects slightly beyond the sides of the roller with its ends in engagement with the side walls of the recess 22. The cross pin 24 is engaged through holes 29 and 30 in the side walls of the recess and through the bushing, and is secured against axial movement by a head 31 at one end and by a horse-shoe shaped retainer washer 32 engaged in a groove 33 at the other end. The tread surface of the roller may consist of the metallic outer ball race 26, but preferably it is provided by a tire rim 34 engaged about the outer race and formed of suitable non-metallic yielding material, which may be any suitable synthetic plastic or fibre material having these properties.

The projection of the rollers relative to the underside of the bar portion 11 is of a relatively small order, so that the bar is in close proximity to the ground. The forward and rearward extension of the bar portion 11 with respect to the forward and rearward rollers is such that, by a slight tilting action of the skate, either the surface of the bar portion forwardly or rearwardly of the rollers may be brought in engagement with the ground, thus effecting a braking action. The degree of tilting of the skate for this purpose is indicated by the broken lines 35 and 36 in Fig. 1.

The toe plate 14 and the heel plate 20 may if desired be permanently screwed or riveted to the sole of the shoe and for this purpose are provided with suitably placed screw or rivet holes 37. In the case of the skate being removably attached to the shoe, improved means are provided for securing the heel plate to the shoe heel. This comprises a transversely disposed T-shaped lug 38 secured in the heel plate 20, as by staking the same as at 39, and which is adapted to be interlocked with a plate 40 secured by screws 41 in a recess 42 in the under-surface of the heel 43 of the shoe 44. A slot 45 is provided in the plate extending longitudinally of the shoe heel, its dimensions being such that the transverse cross-piece of the T-lug 38 may be engaged therewith with the shoe heel turned 90° with respect to the skate. A clearance pocket 46, preferably circular, is formed in the shoe heel in line with the slot 45 to receive the cross-piece of the T-lug and to permit the shoe heel to be turned 90° to bring the T-lug into right angular relation to the slot, as shown in Fig. 5, thus locking the shoe heel to the skate. The plate 40 is provided with inwardly projected bosses or lugs 47 and 48 which act as stops for engagement by the T-lug, so that with the shoe held against turning movement the stop lugs prevent forward or rearward movement.

The toe of the shoe may be secured to the toe plate

13 by any suitable conventional means, and in Fig. 1 the means shown is a toe strap 49 provided with a fastening buckle 50 and having its ends secured in slotted lugs 51 and 52 provided at the sides of the toe plate.

In Figs. 6 and 7 there is illustrated a modified form of the invention in which the skate is provided with a single centrally positioned roller. The skate frame 53 comprises a straight bar portion 54 extending for the greater portion of the length of the skate, its forward and rearward ends being continuous with upwardly curved forward and rearward bar portions 55 and 56, having their upper ends respectively secured by screws 57 and 58 to the shoe engaging top plate 59. This plate is preferably of one piece, and includes a forward toe plate portion 60, a rearward heel plate portion 61, and a constricted connecting neck portion 62, the general outline shape being that of the sole of a shoe.

Centrally of the bar portion 12 there is provided an integral roller housing and supporting portion 63 provided at its upper end with an integral upstanding lug 64a having its upper end in the same horizontal plane with the upper ends of the forward and rearward bar portions 55 and 56 and secured by a screw 65a to the top plate. The roller assembly is identical with the roller assemblies of the embodiment of the invention shown in Figs. 1-5, and for convenience the corresponding parts are given the same reference characters, the roller 23 being mounted upon a cross pin 24 in a recess 22 in the housing 63.

The top plate is provided at the sides of the toe plate portion 60 with slotted lugs 64 and 65 for attachment of a toe strap and the heel plate portion 61 is provided with a T-lug 66 similar to the T-lug 38 of the first embodiment for interlocking with the shoe heel.

As in the first embodiment, the projection of the roller below the bar portion 54 is of a relatively small order so that the bar portion is relatively close to the ground, and by a slight forward or rearward tilting of the skate, the forward or rearward ends of the bar portion may be brought into engagement with the ground to effect a braking action.

I claim:

1. In a skate, a single one piece elongated frame member comprising a horizontal bar portion straight for the greater part of the length of said frame, an upwardly curved forward bar portion continuous with said straight bar portion providing a forward ground engaging braking surface, a rearwardly extending bar portion continuous with said straight bar portion providing a rear ground-engaging braking surface, and a pair of longitudinally spaced roller housing portions integral with and extending upwardly from said horizontal bar portion, each hav-

ing a roller receiving recess extending upwardly from the lower side of the horizontal bar portion enclosed at the top and opposite sides by top and side walls, one of said roller housing portions being positioned rearwardly of and adjacent said forward bar portion and the other being positioned forwardly of and adjacent the rearward end of said horizontal bar portion, a pair of roller supporting pins positioned and supported in said side walls respectively extending transversely across said recess of each of said roller housing portions, a roller mounted on each of said pins and projecting a short distance only below the lower side of said horizontal bar portion, and shoe sole engaging top plate means secured to the upper ends of said forward bar portion and said roller housing portions.

2. The invention as defined in claim 1, further characterized by a T-lug carried by said top plate, and a plate member for securing to a shoe heel, said plate member having a slot engageable by said T-lug and adapted to be interlocked through turning of said plate to bring said slot into transverse relation to said T-lug and provided with stop lugs at opposite sides of said lug to prevent longitudinal sliding of the lug in the slot.

3. In a skate, a single one piece elongated frame member comprising a horizontal bar portion straight for the greater part of the length of said plate, upwardly curved forward and rearward bar portions continuous with said straight bar portion at the opposite ends thereof providing forward and rear ground engaging braking surfaces, and a roller housing portion centrally between said forward and rearward bar portions comprising top and side walls integral with and extending upwardly from said horizontal bar portion providing a roller recess extending upwards from the lower side of said horizontal bar portion, a roller supporting pin supported in said side walls and extending transversely across said recess, a roller mounted on said pin and projecting a short distance only below the lower side of said horizontal bar portion, and shoe sole engaging top plate means secured to the upper ends of said forward and rearward bar portions and said roller housing portion.

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