May 22, 1962 S. C. ASAD 3,035,846

ROLLER SKATE AND TOE STOP ASSEMBLY THEREFOR

Filed Oct. 14, 1958 2 Sheets-Sheet 1

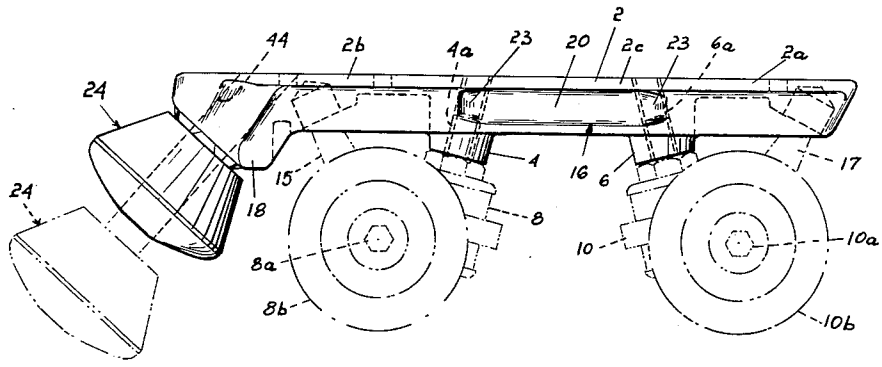


Fig. 1

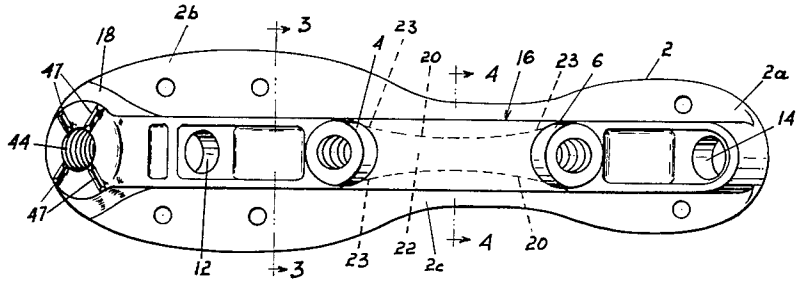


Fig. 2

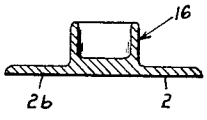
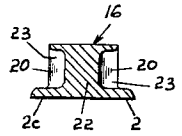


Fig 3

Fig. 4



INVENTOR.
SAMUEL C. ASAD
BY
Bates, Teare & McBeau
ATTORNEYS

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ROLLER SKATE AND TOE STOP ASSEMBLY THEREFOR

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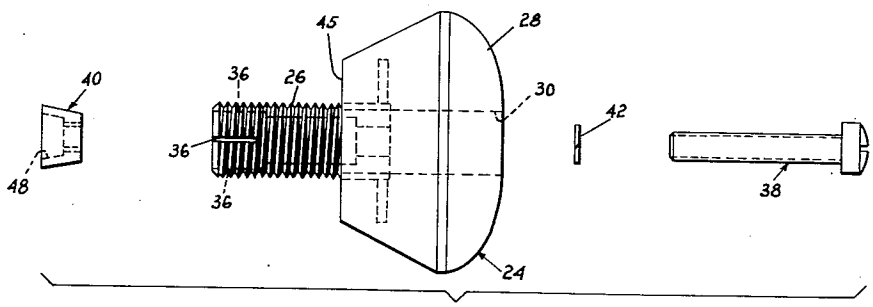

Fig. 5

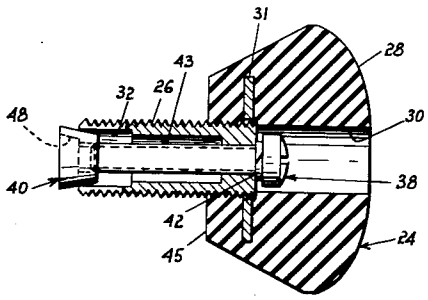

Fig. 6

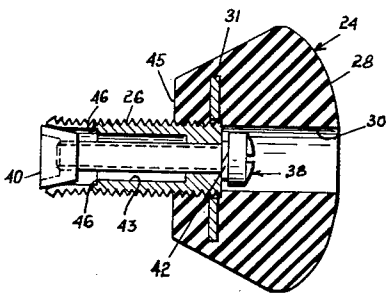

Fig. 7

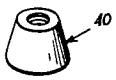

Fig. 8

INVENTOR.
SAMUEL C. ASAD
BY
Bates, Teare & McBeau
ATTORNEYS

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3,035,846 ROLLER SKATE AND TOE STOP ASSEMBLY THEREFOR

Samuel Charles Asad, 22825 Mastick Road, Parkview, Ohio

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2 Claims. (Cl. 280—11.2)

The present invention relates in general to roller skates, and more particularly to an improved sole plate construction therefor, and also to an improved toe stop or toe brake attachment for roller skates.

In general, the present invention provides a sole plate construction for roller skates which is much stronger than those heretofore known, and which is more economical to manufacture. The invention also provides a toe brake for roller skates embodying novel means for securely fastening in readily detachable relation the toe brake device to the sole plate of the skate.

Accordingly, an object of the invention is to provide an improved skate structure having high strength characteristics.

Another object of the invention is to provide an improved sole plate construction for a skate wherein the central portion of the sole plate structure intermediate the trucks of the skate is of generally I-beam configuration in vertical cross section.

A further object of the invention is to provide a roller skate of the latter mentioned type including an improved toe brake attachment therefor.

A still further object of the invention is to provide novel attaching means for detachably securing a toe brake device to a skate structure.

Other features and advantages of the invention will be apparent from a consideration of the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a side elevation of a skate embodying the principles of the present invention.

FIG. 2 is a bottom plan view of the sole plate of the skate structure illustrated in FIG. 1.

FIG. 3 is a vertical sectional view taken substantially along line 3—3 of FIG. 2, looking in the direction of the arrows.

FIG. 4 is a vertical sectional view taken substantially along line 4—4 of FIG. 2, looking in the direction of the arrows.

FIG. 5 is a generally exploded view of the toe brake sub-assembly illustrated in FIG. 1.

FIG. 6 is a vertical sectional view of the toe brake sub-assembly being shown in an initially assembled position.

FIG. 7 is a vertical sectional view generally similar to FIG. 6 but illustrating the wedging coaction between the expansible stud element of the toe brake sub-assembly and the wedge nut element, for positively securing the toe brake device to the skate proper.

FIG. 8 is a generally perspective view of the aforementioned wedge nut element.

Referring again to the drawings, the skate herein illustrated included a sole plate **2** comprising a rear or heel section **2***a*, a front or toe section **2***b*, and a central or bridge section **2***c* connecting the toe and heel sections. Hanger portions **4** and **6** are attached to the underside of sole plate **2** in spaced relation to the forward and rearward ends thereof, and are internally threaded as at **4***a* and **6***a* respectively for securing front and rear wheel trucks **8** and **10** thereto. Truck members **8** and **10** comprise conventional axle structure **8***a* and **10***a*, and pairs of wheels **8***b* and **10***b* carried by such axles. Openings **12** and **14** are also provided in the underside of the sole plate in outwardly spaced relation to the associated

hanger portion for receiving projecting portions **15** and **17** of the trucks **8** and **10**, for expeditiously mounting the trucks on the underside of the sole plate. Sole plate **2** also comprises generally lengthwise extending rib or beam structure **16** which serves to strengthen and rigidify the sole plate and which extends forwardly to merge with a thickened head portion **18** of the skate.

Rib structure **16** is of generally inverted U-shaped configuration in vertical section, in the forward and rearward sections **2***b* and **2***a* of the sole plate, when the skate is in the upright position illustrated in FIG. 1. The central portion of rib or beam structure **16** is of generally inverted T-shaped configuration in vertical section, and in conjunction with the sole plate provides an I-beam construction in vertical section, as may best be seen in FIG. 4 of the drawings. Such an I-shaped configuration intermediate the truck hanger portions **4** and **6** provides a much stronger sole plate construction as compared with those heretofore known, thereby preventing bending and distortion of the sole plate. The sole plate construction illustrated is most conveniently formed from a casting, and with the central section of the sole plate being of I-beam configuration, the molding and casting process is facilitated, resulting in a relatively lighter weight and more economical skate structure.

It will also be seen that the I-beam configuration of the central section **2***c* of the sole plate and associated rib structure is formed or defined by the horizontally dished recesses **20** in the sides of rib structure **16**, thereby resulting in a vertical flange portion **22** which widens progressively, commencing at the center of the flange portion **22** and extending outwardly toward the ends thereof (FIG. 2), whereat mergence as at **23** with hanger portions **4** and **6** occurs. If so desired, it will be understood that the I-beam configuration in vertical cross-section of the skate could be extended throughout the longitudinal length of the skate, rather than having the end portions of the rib structure **16** be of the inverted U-shaped configuration illustrated.

Referring now in particular to FIGS. 1 and 5 to 8 of the drawings, in accordance with the present invention, a toe brake sub-assembly **24** is adapted to be detachably connected to head portion **18** of the sole plate **2**. Toe brake sub-assembly **24** comprises an externally threaded stud element **26** onto which is preferably molded a brake or toe block **28** preferably comprised of hard rubber or other similar material. Block **28** has an axially extending passageway **30** extending completely therethrough, such passageway being of a sufficiently lesser diameter than the external or pitch diameter of the threaded stud element **26** to insure secure, threaded, and generally non-movable coaction, between the block and the threaded stud, when the latter are in the assembled condition shown. A laterally extending washer-like element **31** may be provided on the inner end of stud **26**, and secured thereto such as by peening, or by internal threading as shown in FIG. 6, to aid in retaining the block **28** in non-movable relation on stud **26**. Stud **26** is of open ended, hollow construction with one end thereof being counter bored as at **32** to provide the stud with flexible or expansible defining walls in this location. The counter bored section **32** is also provided with a plurality of slots **36** extending generally lengthwise of the stud and in circumferentially spaced relationship thereabout to add to the expansibility of portion **32** of the stud.

A fastening element such as bolt **38**, comprising a head and a threaded shank, is adapted to be inserted from the front end of the toe block **28**, extend into the hollow interior of stud **26** and threadingly engage a frusto-conical shaped wedge nut **40**. The head portion of bolt **38** is adapted to be disposed in counter-sunk relation with respect to block **28** when in assembled relation, as shown.

A lock washer 42 is preferably provided intermediate the head of bolt 38 and the confronting end of stud 26 for positively locking the bolt 38 and associated nut 40 in predetermined position. Stud 26 is further counter bored, as at 43, to provide for some radial adjustment of the bolt 38 with respect to the stud 26.

In assembling the toe brake sub-assembly 24 to the sole plate 2, the device, preferably assembled in the condition illustrated in FIG. 6, is threaded into threaded opening 44 (FIGS. 1 and 2) in head portion 18 of the sole plate, preferably until abutment surface 45 on the block 28 engages depending ridges 47 on the confronting face of portion 18 on the skate body, and then a suitable tool such as a screwdriver is inserted through the front open end of passageway 30 in the toe block 28 to engage the slotted head of bolt 38. Ridges 47 are adapted to embed into the confronting surface 45 of block 28 and aid in preventing relative movement between the block and head portion 18. Upon turning of bolt 38, the wedge nut 40 is drawn inwardly into the hollow interior of stud 26, thereby expanding the defining walls of counter-sunk portion 32 thereof outwardly into locking wedging relation with the coacting threaded portions of opening 44. In the embodiment illustrated, nut 40 is axially apertured completely therethrough and thus ridge 46 in the interior of stud 26 positively limits inward movement of wedge nut 40 with respect to the stud. Nut 40 is also, in the embodiment illustrated, counter bored as at 48. Toe brake sub-assembly 24 may be readily detached from the skate proper, by merely slackening up on bolt 38 and then unscrewing sub-assembly 24 from head portion 18. It will also be seen that the latter arrangement may be utilized for providing for the effective securing or adjustment of the block element 28 at various distances from the head portion 18 of the skate proper.

From the foregoing discussion and accompanying drawings, it will be seen that there is provided an improved sole plate construction for a skate device for greatly enhancing the strength of the sole plate and for expediting and economizing the manufacture thereof. The invention also provide an improved toe brake arrangement, and one which may be positively and securely fastened in readily detachable relation to the skate proper.

The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding any equivalents of any of the features described or shown, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. In combination, a roller skate sole plate having an internally threaded aperture at one extremity surrounded by a surface substantially normal to the aperture axis forming a confronting face, a toe stop attachment therefor including a resilient stop member having spaced substantially co-planar surfaces respectively adapted to coact in frictional engagement with the confronting face of said sole plate and a skating surface, said stop member having a through aperture intersecting said spaced frictional surfaces, an abutment member having an internally threaded aperture and anchored in said stop member with its aperture coincident with the stop member aperture, an externally threaded tubular member having one end in threaded engagement in the abutment aperture and having the other end projecting from the stop member aperture in threaded engagement with the sole plate aperture, an externally threaded shank extending through said tubular member and said abutment and having a tool engaging head at one end in abutting engagement with said one end of said tubular member, said other end of said tubular member having circumferentially spaced axial slots forming an expandible portion for said tubular member, wedge means having an internally threaded aperture engaging the other end of said externally threaded shank, said wedge means having an internal end and an external end of lesser and greater dimension respectively than the internal diameter of said tubular member for expanding coaction in the expandible portion thereof, and means on one of the confronting faces of the sole plate and stop member coacting with said wedge means in response to frictional engagement between the confronting faces of the sole plate and stop member to restrict relative rotation therebetween.

2. A toe stop attachment for a roller skate sole plate comprising, a resilient stop member having spaced substantially co-planar surfaces respectively adapted to coact in frictional engagement with the sole plate and a skating surface, said stop member having a through aperture intersecting said spaced frictional surfaces, an abutment member having an internally threaded aperture secured in said stop member with its apertures coincident with the stop member aperture, an externally threaded tubular member having one end in threaded engagement in the abutment aperture and the other end projecting from the stop member aperture for attachment to a sole plate, an externally threaded shank extending through said tubular member and said abutment and having a tool engaging head at one end in abutting engagement with said one end of said tubular member, said other end of said tubular member having circumferentially spaced axial slots forming an expandible portion for said tubular member, and wedge means having an internally threaded aperture engaging the other end of said externally threaded shank, said wedge means having an internal end and an external end of lesser and greater dimension respectively than the internal diameter of said tubular member for expanding coaction in the expandible portion thereof.

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