

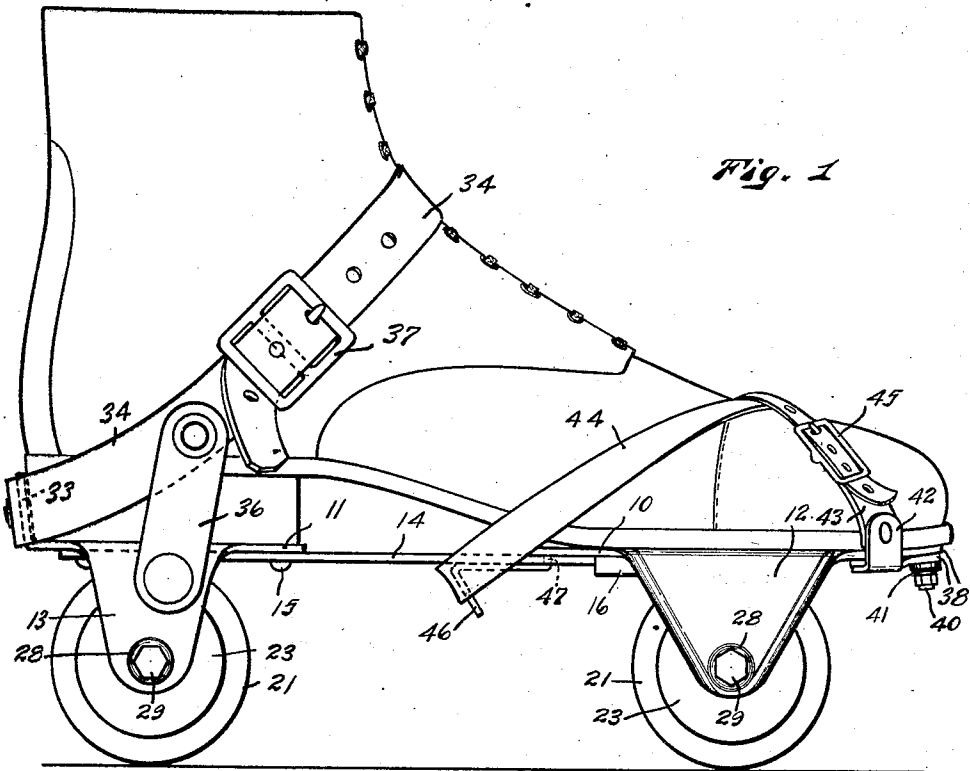
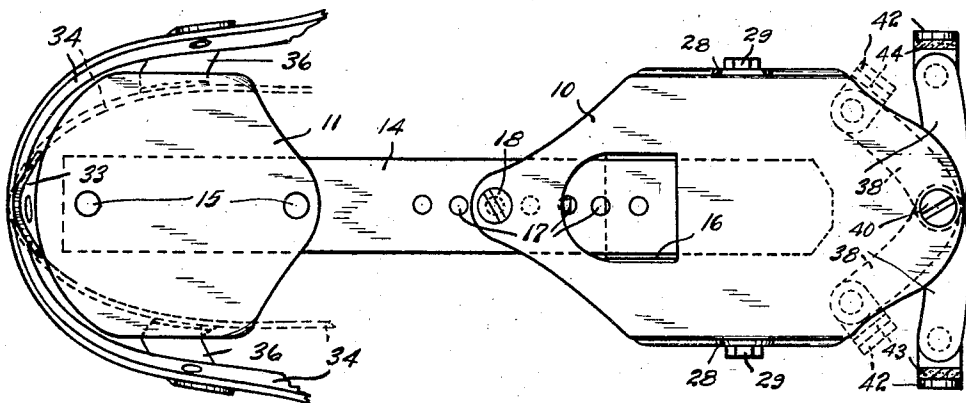
Nov. 16, 1926.

A. H. SHOEMAKER

1,606,902

ROLLER SKATE

Filed August 21, 1922 2 Sheets-Sheet 1



INVENTOR
Alvin H. Shoemaker
BY
Fred C. Matheny
ATTORNEY

Nov. 16, 1926.

A. H. SHOEMAKER

1,606,902

ROLLER SKATE

Filed August 21, 1922 2 Sheets-Sheet 2

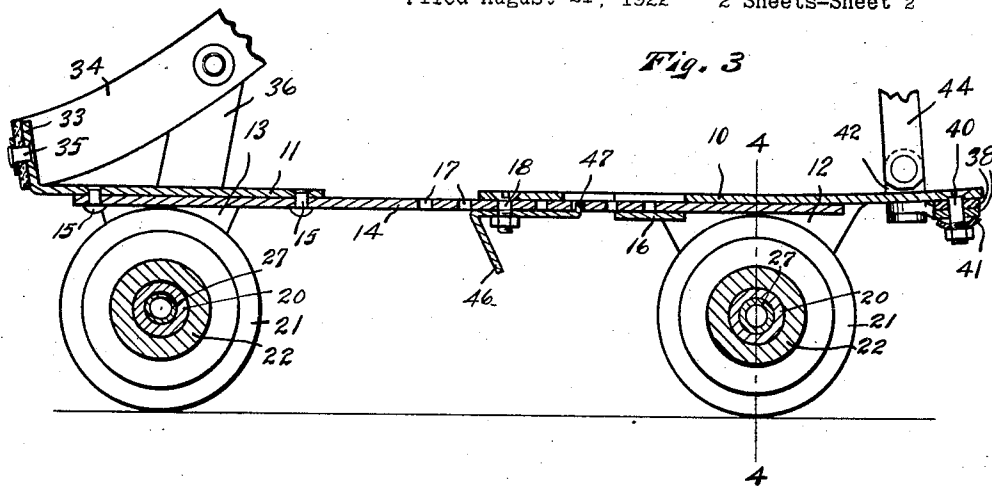
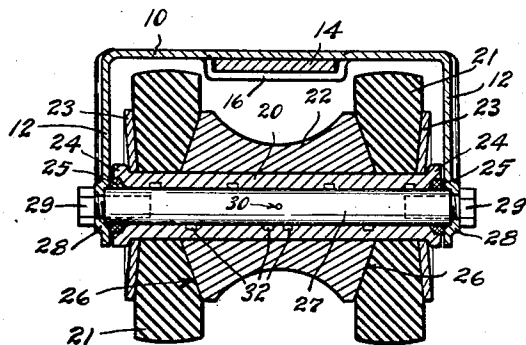


Fig. 4

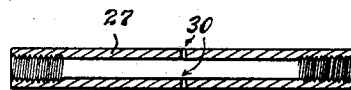


Fig. 5

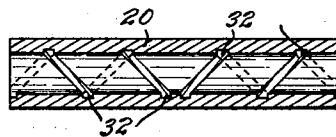


Fig. 6



Fig. 7

INVENTOR
Alvin H. Shoemaker
 BY
Fred C. Matheny
 ATTORNEY

UNITED STATES PATENT OFFICE.

ALVIN H. SHOEMAKER, OF SEATTLE, WASHINGTON.

ROLLER SKATE.

Application filed August 21, 1922. Serial No. 583,151.

My invention relates to improvements in roller skates and the object of my improvement is to provide a roller skate of strong and durable construction that is especially adapted for utilizing the elastic tread skate wheels shown and described in my co-pending application, Serial Number 556,414.

More specific objects are to provide a skate having a wheel bearing that is self-lubricating and self-cleaning; the lubricant being contained within a tubular axle pin and the wheel bearing having one or more spiral grooves that work any dirt or cuttings outwardly at the end of the bearing thereby obviating any danger of the wheel binding or locking in case it is allowed to run dry.

Another object is to provide a skate wheel of this class having a relatively long spiral bearing tube that is flared at both ends in such a manner as to securely lock the assembled wheel parts together on the tube under compression and to form at the same time a recess at each end of the tube for the reception of a packing washer or member that will tend to prevent the leakage of lubricant from the bearing and will also tend to prevent the entrance of dust and dirt into the bearing.

Another object is to provide a skate that is extensible to fit shoes of different length and that is provided with adjustable toe and heel fastening means of novel construction that are automatically adjustable to shoes of different width and that will hold the skate securely on the shoe after they are fastened, said toe and heel fastening means both being constructed in such a manner as to permit them to be folded into very compact form when not in use.

Another object is to provide a skate in which the toe plate and the heel plate are each provided on both sides with downwardly projecting integral lugs that are rigidly connected with each other by transverse bearing pins in such a manner as to form at both ends of the skate a rigid rectangular truss-like structure within which the skate wheel is operatively mounted.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings Figure 1 is a view in side elevation of a skate constructed in accordance with my invention as it may appear when secured on a shoe.

Figure 2 is a plan view of the same removed from the shoe, parts of the straps for fastening the same to the shoe being omitted.

Figure 3 is view in vertical mid-section of the skate.

Figure 4 is a sectional view on broken line 4-4 of Fig. 3.

Figures 5, 6 and 7 are sectional views showing details of the bearing structure for the skate wheel.

Like reference numerals designate like parts throughout the several views.

In the drawings I have shown a skate comprising a toe plate 10 and a heel plate 11 that are respectively provided on opposite sides with downwardly protruding integral lugs 12 and 13. The toe plate 10 and heel plate 11 are adjustably connected together by a flat coupling member 14 preferably of spring steel that is rigidly secured as by rivets 15 to the heel plate 11 and that is slidable through a guideway in the toe plate said guideway being formed by stamping a portion 16 of the toe plate downwardly. The coupling member 14 is provided at intervals with perforations 17 through which a bolt or screw may be inserted to secure the toe plate and the coupling member, together, in different adjusted positions.

The skate wheels at the front and rear end of the skate are of duplicate construction and each comprise a tubular hub 20 upon which are disposed two discs 21 of elastic material, as rubber, that are separated from each other by a medially arranged spacing block 22 and that are securely clamped against the ends of the spacing block 22 by end plates or washers 23. The ends of the hub 20 are flared as at 24 to hold the washers 23 and tightly compress the discs 21, to form recesses for the reception of packing rings 25 and to form end thrust bearings for the skate wheels. The ends of the spacing block 22 are preferably of conical shape as shown at 26 in Fig. 4 and the discs 21 are securely compressed between the ends of such spacing block and the washers 23 so that there will be no possibility of relative movement between the discs and the members that hold the same when the wheel is in use.

The skate wheels are mounted for rotation on tubular axle members 27 whose ends are adapted to seat within recesses 28 that are formed, preferably by stamping, in the lugs 12 and 13 on the sides of the toe and heel plate. Screws, 29 are arranged to pro-

ject through suitable perforations in the fugs 12 and 13 and screw into the ends of the tubular axles to secure the axles to the toe and heel pieces of the skate and to form a rigid and substantial frame structure on which the wheel is mounted.

The tubular axle 27 is adapted to be filled with lubricant and is provided with one or more small perforations 30, through which the lubricant may work out to lubricate the bearing formed between the hub 20 and axle 27. The axle 27 will hold enough lubricant to last for a long time and such axle may be quickly and easily refilled by removing one of the screws 29.

For the purpose of precluding the entrance of dirt and grit into the bearing and keeping such bearing free from any foreign matter in the nature of metal that has been cut or worn away, I provide in the wall of the bearing tube 20 a spiral groove that will tend to work all loose material toward the end of said tube as the wheel rotates. This groove may be either in the nature of one or more continuous spiral grooves 31 extending from end to end of the bearing tube 20 as shown in Fig. 7 or it may be in the nature of right and left hand spiral grooves 32 extending in opposite directions from the center of the tube to the ends thereof as shown in Fig. 6. When two grooves 32 are used they must of necessity be in the proper direction so that they will tend to work foreign matter towards the ends of the tube when the wheel rotates in the direction in which it is intended to rotate the greater portion of the time.

In a bearing where the axle rotates and the tube is stationary the spiral groove or grooves will preferably be cut in the axle instead of in the tube, it being preferable to have the grooves in the rotating member.

The self cleaning means for the bearing prevent the same from binding or locking in case it is allowed to run without lubrication and begins to cut or wear and such self cleaning means will tend to prevent wear for the reason that it will remove all fine cuttings as soon as they become loose in the bearing thereby preventing abrasive action from this source.

The heel plate 11 is provided at its rear extremity with an upwardly protruding lug 33 that is preferably inclined rearward slightly and that has leather strap 34 secured thereto as by a rivet 35. The strap 34 is connected at the sides with other straps 36 that are secured to the downwardly protruding lugs or flanges 13 of the heel plate and such strap 34 is provided with a buckle 37 or similar fastening means of well known form. In practice the side straps 36 may be leather or they may be of spring metal.

The strap 34 is anchored at the rear to the heelplate but is clear of and free from the

heelplate around the sides except for its connection with the straps 36 so that it is free to open out as shown by full lines in Fig. 2 for the reception of a large heel and to close in as indicated by dotted lines in Fig. 2 onto a small heel thus making said heel fastening means automatically self adjusting to the size and width of the heel.

The toe fastening comprises two arms 38 having their inner ends pivoted by a common rivet or bolt 40 to the extreme forward end of the toe plate 10, a spring washer 41 being used on the bolt 40 to frictionally hold the arms 38 so that they will not flop around but may be easily moved to adjust them to shoes of different size. The outer ends of the arms 38 have small L shaped toe holding clips 42 pivotally secured thereto said toe holding clips having leather toe straps 43 and 44 secured to the upwardly projecting ends thereof the strap 43 being short and having a buckle 45 secured thereto and the strap 44 being long enough to permit it to be drawn rearwardly and over the foot thence passed under the skate at the location of the rear end of the toe plate and thence drawn forwardly over the foot and made fast in the buckle 45.

A strap holding bracket 46 is secured to the coupling member 14 and projects downwardly therefrom and is inclined forwardly so that the toe strap 44 may be drawn around the rear side of such bracket and will lie in a substantially flat position against the same. The bracket 46 may be placed on and held by the bolt 18 and may have a prong 47 on its forward end that is arranged to project into one of the perforations 17 in the coupling member 14.

When the toe holding arms 38 are at right angles to the longitudinal axis of the skate and the toe engaging clips are straightened out, see full lines in Fig. 2; they will permit a shoe of any ordinary width to be placed on the toe plate 10. If after the shoe toe is placed in the proper position on the toe plate 10 the toe straps are drawn around the foot in the manner shown, and are tightened, the arms 38 will be drawn rearwardly, see dotted line position in Fig. 2, and the clips 42 will be drawn in tightly against the sole of the shoe thus holding the shoe firmly and securely against movement on the toe plate. The L shaped clips 42 being pivotally secured to the arms 38 will automatically assume such a position as to cause them to press squarely against the shoe sole.

In the operation of the skate each wheel with its two tread discs 21 constitutes in effect a double wheel with a relatively long axle bearing that runs easily and without noise and enables the usual ball or roller bearings to be dispensed with. The hollow axle 27 insures constant lubrication as long as there is any lubricant in such axle. The

spiral groove in the bearing hub 20 prevents the bearing from binding or locking and tends to lessen wear if the bearing is allowed to run without lubricant. The toe plate and heel plate together with their downwardly bent side flanges and rigidly secured transverse axles 27 constitute rigid and substantial truss like frame structures within which the wheels are operatively mounted. The toe and heel fastenings adjust themselves automatically to shoe toes and heels of different size and the coupling member 14 admits of adjustment to shoes of different length.

The foregoing description together with the accompanying drawing clearly discloses the plan of construction and method of operation of my invention, but while I have shown and described what I now consider to be the preferred embodiment of the invention it will be understood that the disclosure is merely illustrative and that such changes in the same may be resorted to as are within the scope of the following claims.

What I claim is:

1. A roller skate embodying a foot piece having rigid downwardly protruding side flanges, said flanges having oppositely disposed perforations and having on their inner surfaces circular recesses surrounding said perforations, a bearing axle arranged to extend crosswise between said side flanges and having its ends seated in said circular recesses and screws adapted to extend through said perforations and screw into the ends of said bearing axle to rigidly secure the bearing axle to the side flanges.

2. A roller skate embodying a foot piece having downwardly protruding integral side flanges that are provided with oppositely arranged perforations and that have circular recesses in their inner surfaces surrounding said perforations, a tubular axle extending between said side flanges and having its ends

seated in said circular recesses, screws for securing said side flanges to the ends of said axle, a wheel having a relatively long bearing tube rotatable on said tubular axle, said bearing tube being flared at the ends to form recesses for the reception of packing and the ends of said bearing tube forming thrust bearings that abut against said flanges.

3. A skate embodying a heel plate, wheels for supporting said heel plate, a toe plate, wheels for supporting said toe plate, a guide member integral with said toe plate and depressed below the bottom surface of the same, a spring steel coupling member secured to said heel plate and arranged to slide in the guide in said toe plate, said coupling member having a plurality of perforations arranged at intervals throughout the length thereof and means for engaging within said perforations to adjustably secure said coupling member to said toe plate.

4. A skate embodying a heel plate, wheels for supporting said heel plate, a toe plate, wheels for supporting said toe plate, a resilient steel coupling member rigidly secured to said heel plate and extending forwardly therefrom beneath the center of the toe plate and means for adjustably securing said resilient steel coupling member to said toe plate.

5. In a roller skate a foot piece having integral downwardly protruding side flanges, a relatively long tubular bearing axle rigidly secured between said side flanges, said bearing axle being arranged to receive lubricant and having perforations for the outlet of said lubricant, means for closing the ends of said tubular bearing axle and securing the same to said side flanges and a double tread skate wheel having a relatively long bearing tube mounted for rotation on said tubular bearing axle.

ALVIN H. SHOEMAKER.