May 15, 1951 G. L. FULLER 2,553,450

ROLLER SKATE

Filed May 21, 1946

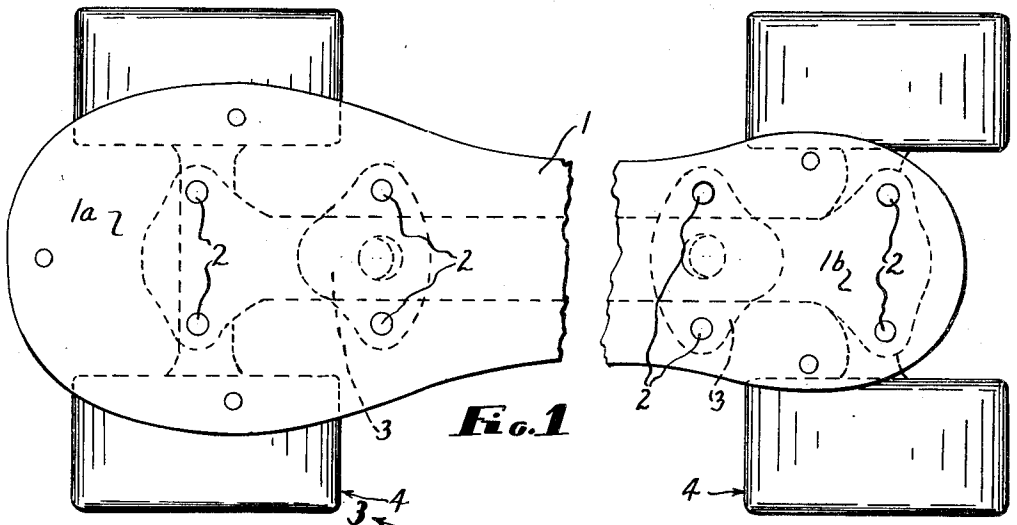

Fig. 1

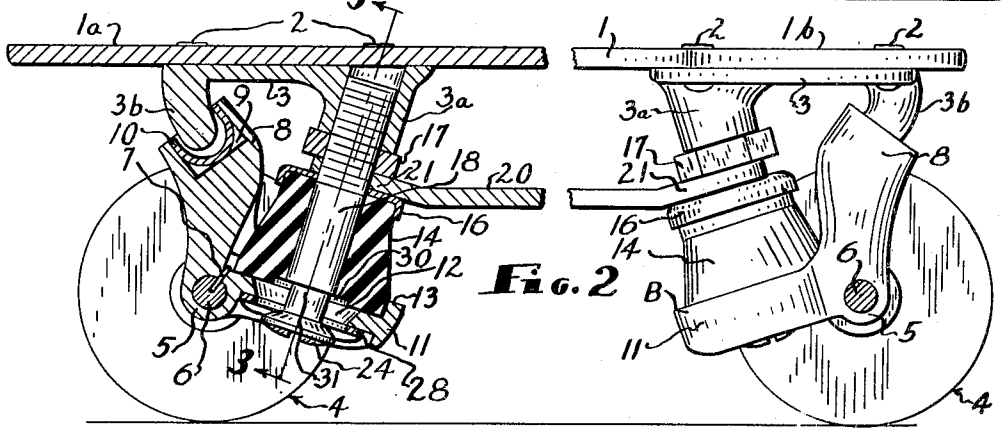

Fig. 2

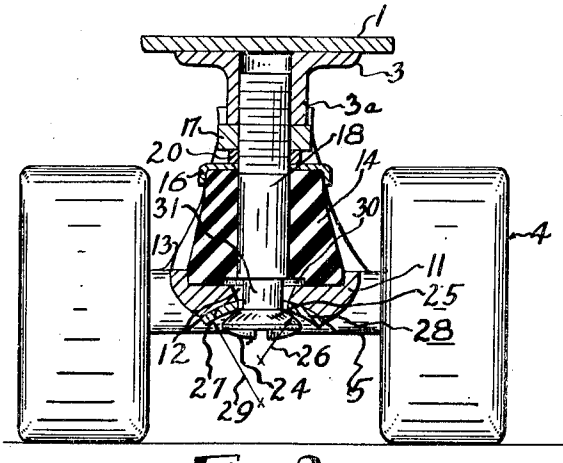

Fig. 3

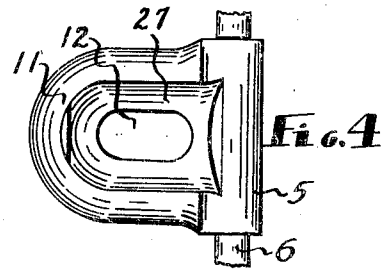

Fig. 4

INVENTOR.
GRANT L. FULLER.
BY Fay, Golrick & Fay
Attorneys.

Patented May 15, 1951 2,553,450

UNITED STATES PATENT OFFICE

2,553,450

ROLLER SKATE

Grant L. Fuller, Cleveland Heights, Ohio

Application May 21, 1946, Serial No. 671,156

1 Claim. (Cl. 280—11.28)

1

The present invention relates to an improvement in roller skates, and it is particularly directed to the structure by which the foot plate is supported by the trucks.

An object of the invention is to provide a structure by which the foot plate may be yieldingly tilted relative to the trucks supporting the foot plate and which structure offers a minimum of friction and resistance between parts interconnecting the trucks and the foot plate so that a consistently smooth tilting action will result.

Another object of the invention is to provide a structure for mounting a skate truck to the foot plate of the skate so that the truck will be returned to exact straight ahead position when the foot plate is returned to horizontal after being tilted for turning the truck one direction or the other.

Other objects and advantages of the invention will be apparent from the following description of a preferred form of the embodiment of the invention, reference being made to the accompanying drawings wherein;

Fig. 1 is a top plan view of a roller skate embodying my invention;

Fig. 2 is a longitudinal view, partly in section, of the skate;

Fig. 3 is a view taken substantially on line 3—3 of Fig. 2; and,

Fig. 4 is a fragmentary bottom plan view of one of the trucks of the skate.

In a certain type of skate heretofore in common use, the skate consisted of a foot plate supported by two trucks in such a way that by tilting the foot plate relative to the trucks, the trucks would turn, according to the direction of tilt of the plate, whereby the skate could be steered by the skater. To provide accurate control of the skate, resilient blocks were mounted between the foot plate and each of the trucks so that the blocks would provide resiliency in the tilting of the foot plate from its normal plane. In connecting the block to the skate, a rod, generally in the form of a bolt, was rigidly secured to the foot plate and extended through the resilient block and the portion of the truck supporting the block, and a head on the rod would engage the under side of the block supporting portion to position the latter. When the foot plate was tilted, the rod would be swung relative to the non-tilting truck. I have discovered that in the conventional type of skate, there is binding and uneven turning moments developed between the rod and the truck when the rod is swung and this tends to make tilting of the skate erratic and, therefore, control of the skate uneven.

2

By my invention, I provide a substantially resistant free connection between the rod and truck, whereby the uneven and erratic tilting of the foot plate, formerly caused by the connection between the rod and truck, is eliminated.

Referring now to the drawings, I have shown one form of the invention embodied in a skate which will be seen to comprise a foot plate 1 having a toe plate portion 1*a* and a heel plate portion 1*b*.

Secured to the aforesaid toe and heel plate portions, as by means of rivets 2, are hangers 3, each of which is formed to provide a downwardly extending inclined socket portion 3*a* and a downwardly extending inclined pivot or thrust member 3*b*, the lower end of which is smoothly rounded. The member 3*b* of each hanger is inclined in an opposite direction to the socket 3*a* of that hanger, but the sockets and thrust members of each hanger are inclined oppositely to the corresponding socket and element of the other member.

The skate further includes trucks 4, each of which comprises an axle portion 5 in the form of a transversely extending tubular structure in which an axle or spindle 6 is mounted and secured against rotation as by means of a pin 7 (Fig. 2). Extending vertically upward from the axle portion 5 of each truck is an arm 8, which is formed integrally with such axle portion, and the upper end of which is recessed as at 9 for the reception of a socket element 10, the element 10 being preferably made of a wear-resisting steel and being secured in such recess by a pressed fit. The socket element 10 is recessed to provide a smoothly rounded seat or thrust surface for the pivot member 3*b*. The lower end of the member 3*b* is preferably of hemispherical form, and the thrust surface of the socket element 10 is likewise of hemispherical form, so as to provide, in effect, a ball and socket joint between these parts, permitting substantially universal movement of the truck relatively to the hanger. The upper portion of the wall of the recess in the socket element 10 is flared to permit such universal movement.

Each of the trucks further includes, as an integral part thereof, a base plate 11, the plane of which is substantially normal to the axis of the socket portion 3*a* of the hanger 3. The plate 11 is provided with an elongated opening or slot 12 extending generally longitudinally relative to the skate and at right angles to the

axle, and the walls of which slot are flared for a purpose to be presently described. The plate 11 is further provided with a peripheral flange 13. The plate 11 forms a seat for a resilient element, such as a body of rubber 14, the base of which is confined by the flange 13. The rubber body 14 is preferably, but not necessarily, of conical form and the upper end thereof is confined within an inverted metallic retaining cap or cup 16, between which and the lower end of the socket 3a a nut 17 is interposed. The body 14 has an axially extending opening therethrough that is in alignment with the slot 12 in plate 11 and also in alignment with an opening in the cup 16.

A rod 18, threaded at one end, extends through the slot 12 of base plate 11, through the openings through the body 14 and cap 16, through an opening through a frame bar 20 and is threaded into the socket 3a and extends at right angles relative to the base plate. The lock nut 17 is threaded on the rod intermediate the socket 3a and the frame bar 20 for locking the rod 18 against unintentional rotation. The lower end of the rod 18 is provided with a slotted head 24 and the under side 25 of the head is in the form of a spherical section, the radius of which is indicated at 26, as is illustrated in Fig. 3. The central portion of the undersurface of the plate 11 is in the form of a cylindrical section 27 with the slot 12 extending parallel with the axis of the section. In the present form of the invention I prefer to use a steel washer 28 which is oval shaped and has an opening corresponding to the slot 12. The washer 28 is cylindriform so that it nests in the concave section 27 and presents a hard cylindrical sectional surface for engagement by the head 24 of the rod 18. The radius of the cylindrical surface of the washer is indicated at 29 and it is longer than that of the spherical section of surface 25 so that a pivotal connection is formed between the rod 18 and base plate 11. It will be seen that when the rod 18 is swung out of normal with the plate 11, due to tilting of the foot plate 1 relative to the trucks, the contact between the surface 25 of the head 24 and the surface of the washer being tangential or a pivoting contact, resistance to tilting of the foot plate 1 by the engagement between the head 24 of rod 18 and the base plate 11 is at a minimum and what resistance that does exist will be constant. This cylindrical sectional surface 27 also causes the truck to center itself with respect to rod 18 when the foot plate is horizontal, the curved surfaces exerting components of force on the rod head until equilibrium is achieved. Thus, the skate may be accurately steered and greater control is afforded.

In order to eliminate friction between the rod 18 and the rubber body 14, the body 14 is undercut at 30 to form a circular recess about the opening therethrough, and the rod 18 is undercut at 31 to avoid contact with rubber which may bulge inwardly. The undercut portion 31, together with the flared walls of slot 12, also enables considerable swinging of the rod without abutting the base plate 11. Also, by undercutting the rubber body at 30, when the body 14 is compressed, the rubber thereof may press downwardly but will not enter the slot 12. Otherwise, a rigid washer would be required to prevent entrance of the rubber into the slot.

It will be seen that compression of the body 14 may be adjusted by threading the rod into or out of the socket 3a. This changes the position of the head 24 of the rod relative to the foot plate and the base plate is also moved accordingly.

The skate further includes the frame bar 20 having upturned ends 21 which are interposed between the nuts 17 and the retainer caps 16.

Due to the aforesaid pivotal connections, the foot plate and other portions of the skate which are rigidly connected to the foot plate may tilt in all directions relatively to the trucks, this tilting movement being resisted and controlled by the rubber body 14.

It will be apparent, that by my invention, smoother and more easily controlled steering of the skate can be effected, thereby offering the skater more accurate maneuverability and stability than can be had with previously known skates.

Although I have described but one form of my invention, it will be understood that other forms might be adopted, all falling within the scope of the claim which follow.

I claim:

In a roller skate having a foot plate tiltably supported by trucks; a base plate on one of said trucks, said base plate having a slotted opening therethrough, the under surface of the base plate adjacent to the slotted opening being concave and cylindriform; a resilient body intermediate the base plate and the foot plate for yieldingly resisting tilting of the foot plate, said body having an opening therethrough in registration with the opening in said base plate; and a rod having one end connected to the foot plate and extending through said opening through the body and the base plate, said rod being in frictional contact with the walls of the opening through said body substantially throughout the length of the opening, said rod also having a head at the other end thereof engageable with the base plate for positioning the base plate relative to the foot plate, the surface of said head engaging the base plate being spheriform and having a radius less than that of said cylindriform base plate surface whereby a pivotal contact is established between the engaging surfaces of the head and base plate when the rod is tilted relative to the base plate, the resilient body having a recess therein about the opening therein and in the face of the body resting on said base plate, and said rod having an undercut portion extending from the head thereof substantially into the recess into said resilient body.

GRANT L. FULLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
215,752	Jackson, Jr.	May 27, 1879
241,270	Akin	May 10, 1881
280,821	Higgins	July 10, 1883
305,644	Vandercook	Sept. 23, 1884
2,232,195	Allred	Feb. 18, 1941
2,233,355	Ware	Feb. 25, 1941
2,341,576	Shye	Feb. 15, 1944
2,373,220	Blaes	Apr. 10, 1945
2,430,533	Reich	Nov. 11, 1947