Nov. 11, 1947. G. A. REICH 2,430,533

ROLLER SKATE

Filed Dec. 28, 1944

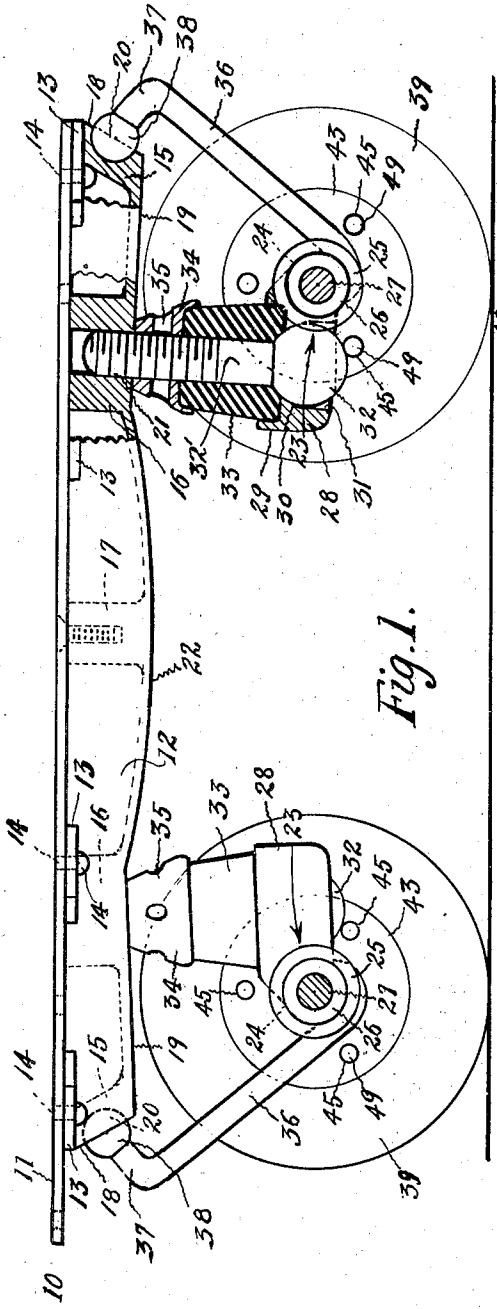

Fig. 1.

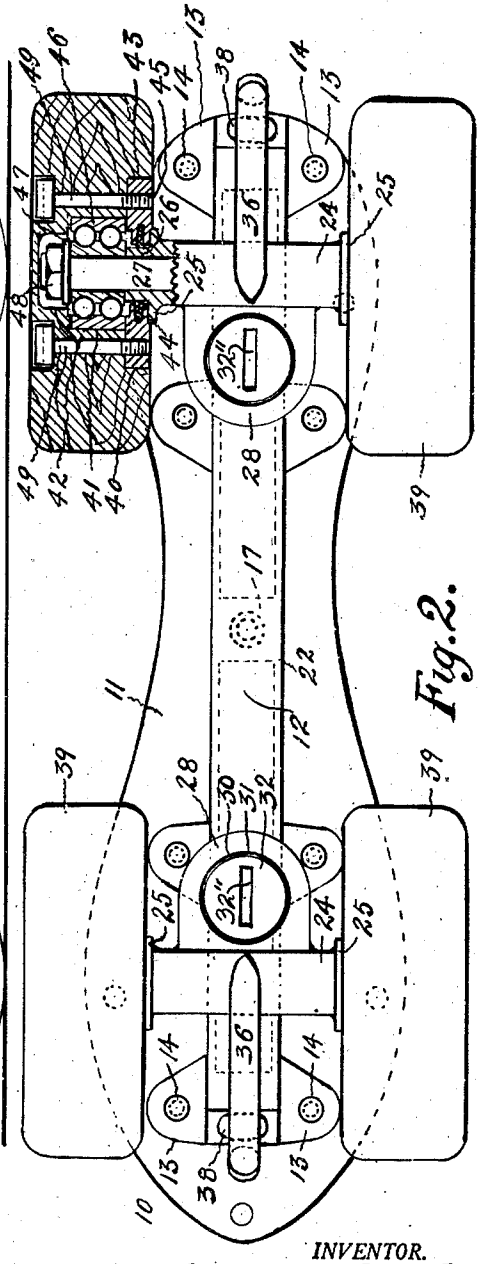

Fig. 2.

INVENTOR.
George A. Reich.
BY
Lawler & Lawler
attys.

Patented Nov. 11, 1947

2,430,533

UNITED STATES PATENT OFFICE

2,430,533

ROLLER SKATE

George A. Reich, Cleveland, Ohio

Application December 28, 1944, Serial No. 570,499

4 Claims. (Cl. 280—11.28)

1

This invention relates to roller skates and has for one of its objects the provision of improved means for permitting more flexibility of movement of the trucks in skating.

Another object is to provide improved means in the construction and arrangement pertaining to the details of the roller bearing structure for the rollers and the means of mounting the same on the trucks.

Other objects and advantages reside in certain novel features of construction, arrangement and combination of parts, which will hereinafter be more fully described and pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a view, in side elevation, of a roller skate comprising the elements embodying my invention, portions being broken away.

Figure 2 is a bottom plan view of the roller skate shown in Figure 1, one of the rollers being shown in longitudinal cross-section to clearly display the roller assembly and the means of mounting the same on the axle, and also showing a portion of the axle housing broken away in which the axle is mounted.

In the views such parts as are alike or have the same function as similar parts are numbered with the same numbers for easy identification.

Referring to the drawing, the roller skate 10 comprises a metallic shoe plate 11 of conventional configuration and is adapted to be fastened to the shoe of the user by means of screws, rivets or other suitable fastening means.

Fastened rigidly to the underside of the shoe plate, medially thereof and lengthwise extending there is a metallic beam 12 provided with laterally extending spaced lugs 13 with holes therethrough to receive connecting rivets 14 by means of which the beam is riveted to the shoe plate. However, the lugs may be spot welded to the shoe plate to secure the beam thereto if desired. The beam is of channel cross-section and is provided with reinforcing sections 15, 15, 16, 16 and 17 of ample dimensions to accommodate the elements mounted therein and cooperating therewith. A side view of the outline or contour of the beam is as follows: It comprises a downwardly and inwardly extending inclined plane 18 and intersecting therewith an upwardly and inwardly extending plane 19. In the plane 18 there is provided a ball socket 20, and in the plane 19 there is provided a threaded bore 21 at right angles thereto for the reception of the stud hereinafter referred to. As the end portions of the beam are identical in structure and configuration, it is thought that the above description of one of its ends will suffice for both, in view of the fact that similar parts are numbered with the same numbers for easy identification. The ends of the aforesaid planes 19 are connected with a curved intervening portion 22. Obviously the curved section 22 may be eliminated, leaving the end portions of the beam as separate units to be mounted on the shoe plate if desired. The beam may be turned end for end in mounting it on the shoe plate because of its symmetry about a vertical center line.

2

The trucks 23 are duplicates of each other and comprises a tubular axle housing 24 having adjacent each end an integrally formed flange 25, and therebeyond and integral therewith a laterally projecting portion 26. See the sectional view of the roller in Figure 2, where the flange 25 and the portion 26 are shown in section. The axle 27 extends through the axle housing and projects laterally beyond the portion 26. See also in Figure 2 in the sectional view of the roller.

Connected to the axle housing there is provided a platform 28 having an upstanding flange 29, and a ball socket 30 formed therein. In continuity with the ball socket 30 there is provided a downwardly and outwardly extending wall 31 having at its lower extremity a diameter somewhat larger than the diameter of the ball 32 forming the head of the stud 32' that is mounted in the platform and extends upwardly through the resilient frusto-conical cushion element 33 which may be made of rubber or other resilient material, to threadedly engage the flanged truncated lock nut 34 mounted on the cushion element to be finally screwed into the threaded bore 21 in the beam. The ball forming the head of the stud is provided with a slot 32'' to take a screw driver bit in adjusting the stud. When the roller skate is finally assembled, the stud is held in locked position by the lock nut. The lock nut is provided with spaced bores 35 adapted to receive a rod or pin, to loosen and tighten it. Also connected to the tubular axle housing is a control arm 36 extending obliquely upward and outward therefrom and having an inwardly bent portion 37 terminating in a ball 38 adapted to engage in the socket 20 provided therefor in the end of the beam. It will be noted that the studs are inclined from the vertical plane so that they extend from the beam obliquely downward and inward toward the transverse vertical plane. The conical circumferential wall in continuity with the socket in the platform cooperates with the ball head of the stud and assists in preventing

dissymmetry of wear of the socket and at the same time minimizes the friction due to the active tangential stress of the platform on the stud head, for instance in jumping in acrobatic skating, when the platform is forced upward off the seat, the conicity of the wall also prevents the truck from side slipping on the stud, and also centralizes the truck on the stud without cramping its movements.

The resilient cushion and lock nut are made frusto-conical shaped because it has been found that being so shaped, the inside surface of the roller adjacent its periphery will not grind on the members in making a very sharp turn in skating.

The roller 39 is made of hard maple wood. However, it may be made of other materials such as phenolic condensation product or other suitable plastic materials. The roller is provided with three concentric bores namely: an outer bore 40, a middle bore 41, and inner bore 42. In the outer bore 40 there is mounted a plate 43 which may be provided with a felt washer 44 adapted to exclude moisture and foreign matter from the radial thrust ball bearing. The plate is also provided with through threaded bores 45. The plate is mounted on the laterally projecting portion 26 of the axle housing but not in frictional contact therewith. In the middle bore 41 there is mounted a radial thrust bearing 46, the outer ring of which fits in the bore with a piston fit, the inner ring of which is a light tapping fit on the axle 27. The inner face of the inner ring of the bearing abuts against the end portion of the axle housing 26 and is held on the axle by means of a washer 47 and a nut 48. It will be noted that the wall is left intact at the bottom of inner bore 42, hence the bearing when mounted is enclosed in the roller. The roller is held on the axle by means of threaded screws 49, the heads of which are in counter bores in the roller, and which extend through bores provided in the roller to engage in the threaded bores 45 provided therefor in the plate, clamping the outer ring of the radial thrust bearing between the inner surface of the plate and the bottom wall of the bore 41.

It will be noted that the outer surface of the roller is free from nuts, cotter pins and the like.

The ball and socket joints of the trucks and the assembled members acting in cooperation with the control arms, permit the trucks to operate in a manner of precision, as hereinafter described.

To illustrate, as the skater shifts his weight from side to side on the longitudinal axis of the shoe supporting member, the resilient cushioning members are compressed, and the trucks pivot around the ball heads 32 of the studs and position themselves so that if their axles were extended they would converge in a point upon the side of the shoe supporting member upon which the skater shifted his weight. This imaginary point would be the center of the arc the skate would trace.

In roller skating, this arc is defined as skating an edge, and the edge depends upon the amount of body lean applied upon the shoe supporting member. An edge is defined as any curved stroke which is traced with the skate. The lean is the lean of the body toward the inside of the curve which is being skated. In skating an edge the ball of the control member pivots in the socket in the end of the beam and permits angular displacement of the shoe supporting member while the rollers remain in contact with the floor.

The movement of the trucks are very extensive and hence the cushions are sufficiently resilient and yielding to permit it.

While I have illustrated a particular embodiment of the roller skate effective to operate as hereinbefore described, I do not wish to be limited thereto, as many modifications may be made without departing from the spirit and scope of my invention and I desire therefore, that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

I claim as my invention:

1. In a roller skate, comprising, in combination, a shoe supporting member, a medially situated lengthwise extending beam connected to the shoe supporting member and on the underside thereof, the aforesaid beam being provided at each end with a downwardly and inwardly extending plane having a ball receiving socket provided therein, and intersecting with each of the aforesaid planes an upwardly and inwardly extending plane each having a threaded bore provided therein and at right angles to the plane, front and rear trucks, axles, rollers mounted on the axle of the trucks, a platform connected to each of the aforementioned trucks and having a ball socket provided therein, a control member connected to each of the trucks comprising an upwardly and outwardly extending portion and an upwardly and inwardly extending bent portion terminating in a ball adapted to engage in the ball socket provided therefor in the end of the beam, a resilient frusto-conical member of rubberlike material mounted on the platform, a threaded stud having a ball shaped head recessed to receive a tool, mounted in the ball socket in the platform and extending axially through the aforementioned resilient member mounted on the platform, a flanged frusto-conical lock nut threaded on the stud and interposed between the resilient member and the beam hereinbefore mentioned and adapted to secure the stud in locked position in the beam, the control member adapted to provide a pivotal connection between the beam and the truck to permit angular tilting movement of the shoe supporting member while the rollers of the skate remain in contact with the floor.

2. In a roller skate, comprising, in combination, a shoe supporting member, two medially situated lengthwise extending sections, one of the sections affixed to the anterior underside portion of the shoe supporting member, the other section affixed to the underside of the posterior portion of the shoe supporting member, each of the aforementioned sections being provided with a downwardly and inwardly extending end plane having a ball receiving socket provided therein and intersecting with each of the said planes an upwardly and inwardly extending plane, the inwardly and upwardly extending plane being provided with a threaded bore therein and at right angles thereto, front and rear trucks, axles, rollers mounted on the axle of the trucks, a platform connected to each of the aforementioned trucks and having a ball socket provided therein, a control member connected to each of the trucks comprising an upwardly and outwardly extending portion and integrally formed therewith an upwardly and inwardly extending bent portion terminating in a ball adapted to engage in the ball socket provided therefor in the end plane of the anterior and posterior sections, a resilient frusto-conical member of rubberlike material

mounted on the platform, a threaded stud having a ball shaped head recessed to receive a tool mounted in the ball socket in the platform and extending axially through the aforementioned resilient member mounted on the platform, a flanged truncated lock nut threaded onto the stud and positioned between the resilient frusto-conical member and the section and adapted to secure the stud in locked position in the section, the control member adapted to provide a pivotal connection between the section and the truck to permit angular tilting movement of the shoe supporting member while the rollers of the skate remain in contact with the floor.

3. In a roller skate, comprising, in combination, a shoe supporting member, a medially situated lengthwise extending beam of channel cross-section having reinforcing portions incorporated therein connected to the shoe supporting member on the underside thereof, the aforesaid beam being provided at each end with a downwardly and inwardly extending plane having a ball receiving socket formed therein, and intersecting with each of the aforesaid planes an upwardly and inwardly extending plane having a threaded bore therein and at right angles to the plane, curved portions integrally formed with the upwardly and inwardly extending plane portions and interposed therebetween, front and rear trucks, rollers mounted on the trucks, a platform connected to each of the aforesaid trucks and having a ball socket therein, a control member connected to each of the aforementioned trucks comprising an upwardly and outwardly extending oblique portion and an upwardly and inwardly bent portion terminating in a ball adapted to engage in the ball socket provided therefor in the inclined end plane of the beam, a resilient frusto-conical cushion member of rubberlike material mounted on the platform, a threaded stud having a ball shaped head with a screw slot provided therein mounted in the ball socket in the platform and extending axially through the frusto-conical cushion member mounted thereon, a flanged frusto-conical lock nut threaded onto the stud and interposed between the resilient frusto-conical member and the beam and adapted to secure the stud in locked position in the beam, the control member adapted to provide a pivotal connection with the beam in order to permit angular change of position of the shoe supporting member while the rollers of the skate remain in contact with the floor in skating.

4. In a roller skate, comprising, in combination, a shoe supporting member, a medially situated lengthwise extending beam connected to the shoe supporting member on the underside thereof, the beam being provided at each end with a downwardly and inwardly extending plane having a ball receiving socket formed therein, and intersecting with each of the aforesaid planes an upwardly and inwardly extending plane having a threaded bore therein and at right angles to the plane, front and rear trucks, rollers mounted on the trucks, a platform connected to each of the trucks having a ball socket formed therein, an integral upstanding flange on each platform, a control member connected to each truck comprising an upwardly and outwardly obliquely extending portion and having a portion bent upwardly and inwardly and terminating in a ball adapted to engage in the ball socket provided therefor in the end of the beam, a resilient frusto-conical member of rubberlike material mounted on the platform and having a lower portion thereof surrounded by the flange on the platform, a threaded stud having a ball shaped head with a tool receiving recess formed therein mounted in the ball socket in the platform and extending axially through the frusto-conical member of rubberlike material mounted thereon, a frusto-conical lock nut threaded on the stud and interposed between the resilient member of rubberlike material and the beam and adapted to secure the stud in predetermined position relative to the beam, the control member adapted to provide a pivotal connection with the beam in order to permit angular change of position of the shoe supporting member in a horizontal plane while the rollers of the skate remain in contact with the floor in skating.

GEORGE A. REICH.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,603,529	Faust	Oct. 19, 1926
2,233,355	Ware	Feb. 25, 1941
2,275,035	Pardon	Mar. 3, 1942
2,300,477	Whitcomb, Jr., et al.	Nov. 3, 1942
2,310,683	Enley	Feb. 9, 1943
2,330,338	Dekome et al.	Sept. 28, 1943
2,373,220	Blaes	Apr. 10, 1945