United States Patent [19]

Balstad

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[54] **ROLLER SKATE CONSTRUCTION**

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[52] **U.S. Cl.** **280/11.28,** 280/11.2

[51] **Int. Cl.** **A63 17/02**

[58] **Field of Search** ..... 280/11.28, 11.2, 11.27, 280/11.19, 11.26, 11.22, 11.21, 7.13, 11.1 R; 151/3, 2, 70, 68

[56] **References Cited**

UNITED STATES PATENTS

990,681	4/1911	Strepey	151/68
1,207,859	12/1916	Carpenter	151/2 R
2,466,070	4/1949	Balstad	280/11.28
2,595,751	5/1952	Balstad	280/11.28
2,920,899	1/1960	Crone	280/11.28
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Assistant Examiner—Milton L. Smith
Attorney, Agent, or Firm—Andrus, Sceales, Starke & Sawall

[57] **ABSTRACT**

A skate structure including a foot plate having downwardly depending sockets, with the latter receiving a resilient cushion blocks therein. An axle housing is nested in the lower end portion of each block, and these elements are secured together by a bolt. The lower threaded bolt end passes through a washer; and the construction is such that neither the bolt nor washer can turn due to the stresses caused during use of the skate. The wheel axle is press fitted in the housing and positioned generally normal to the above-mentioned securing bolt. To prevent interference between the axle and bolt, the axle is offset from the center housing axis, and is also provided with a cut-away portion through which the bolt passes. When a braking member is mounted at the skate toe, the front socket cooperates with the braking member to prevent the latter from turning about its axis.

5 Claims, 6 Drawing Figures

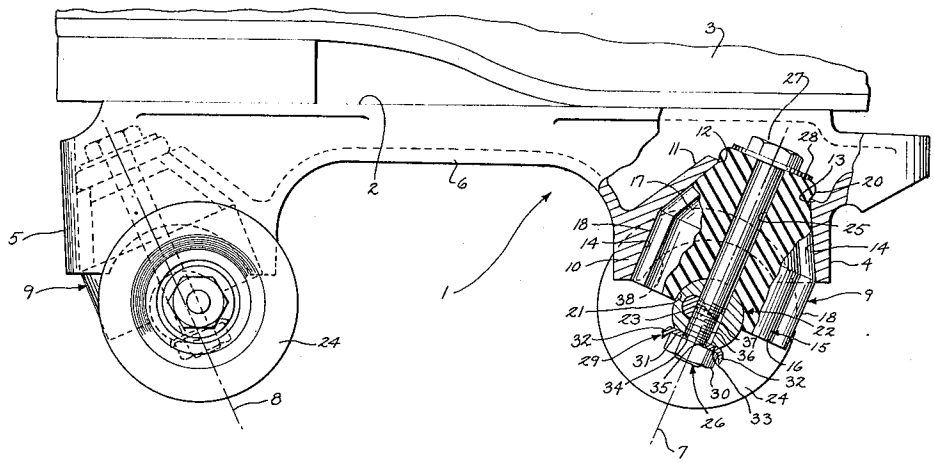


Fig. 1

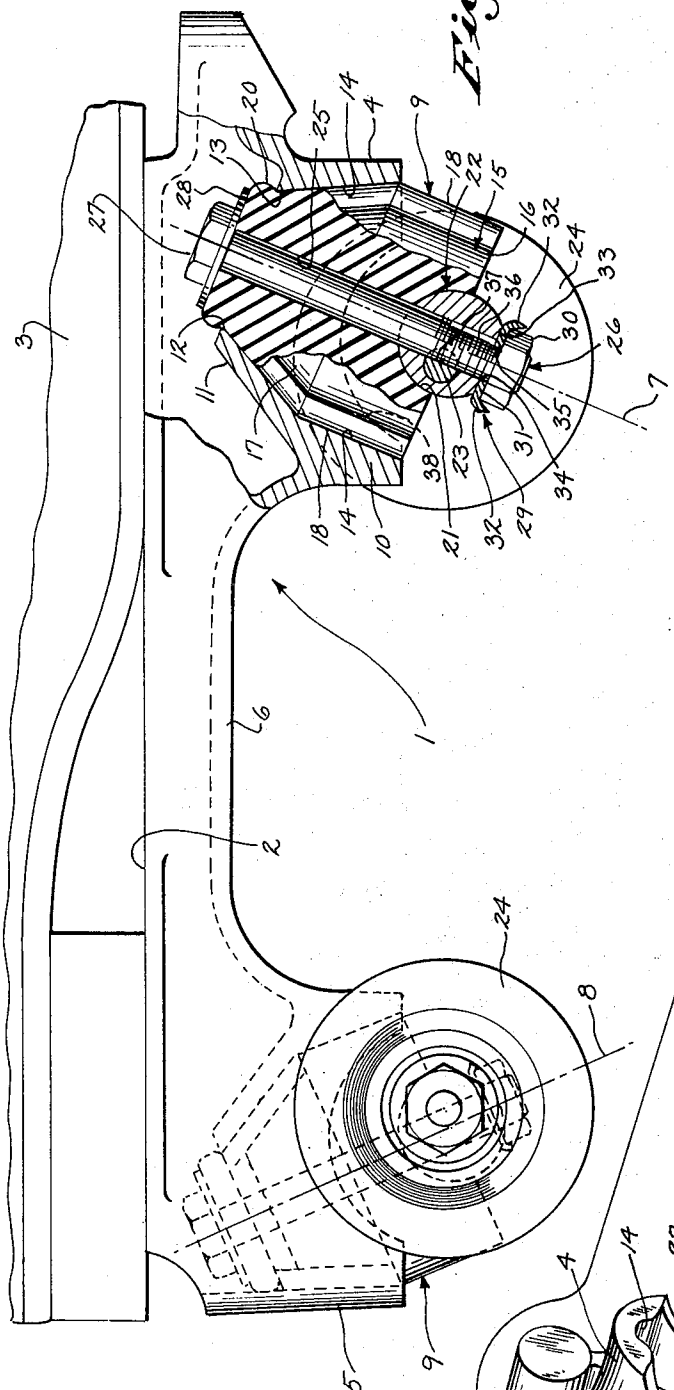
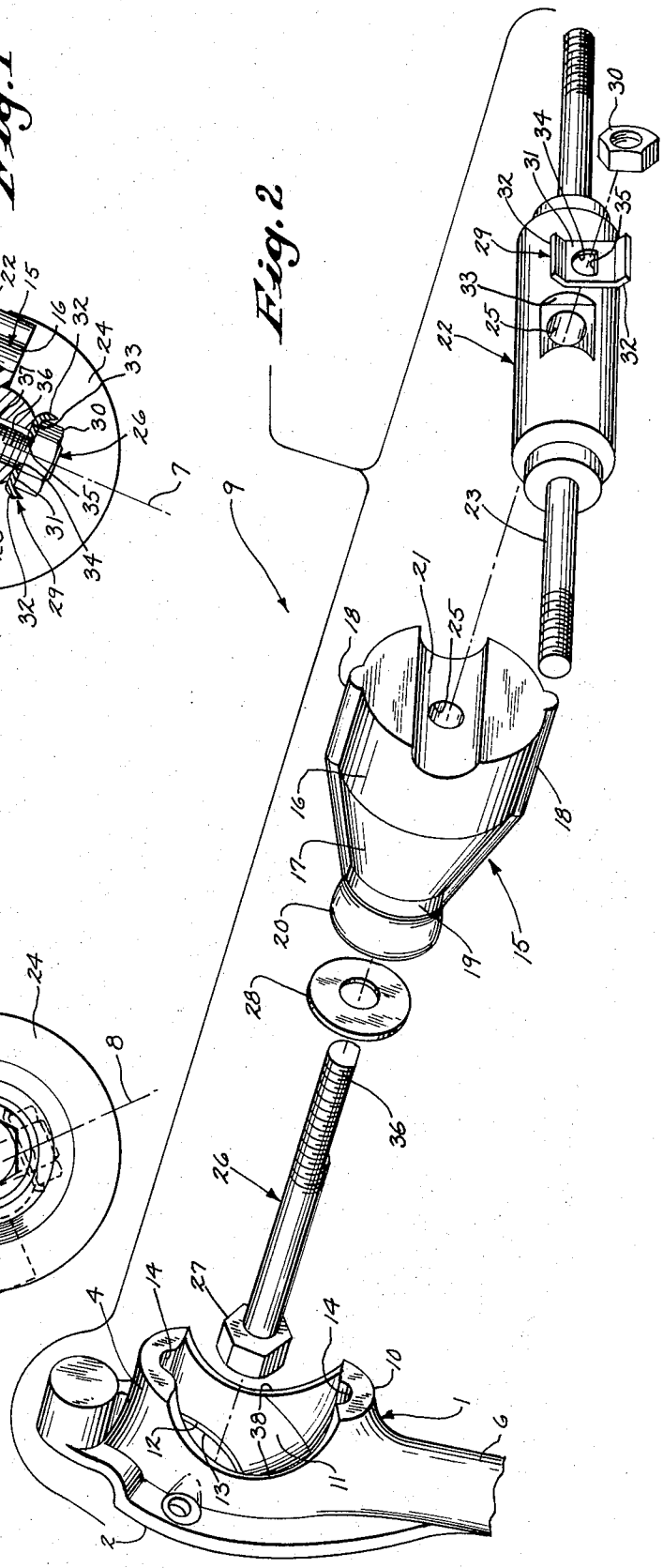


Fig. 2



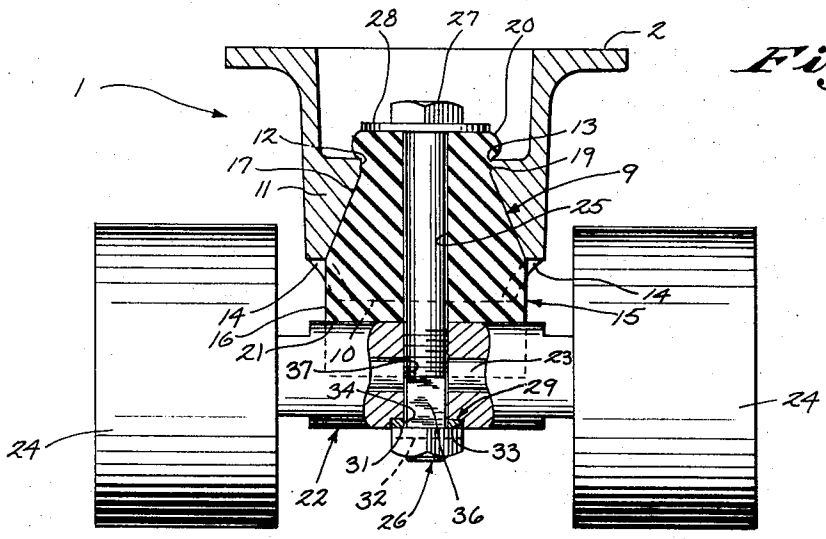


Fig.3

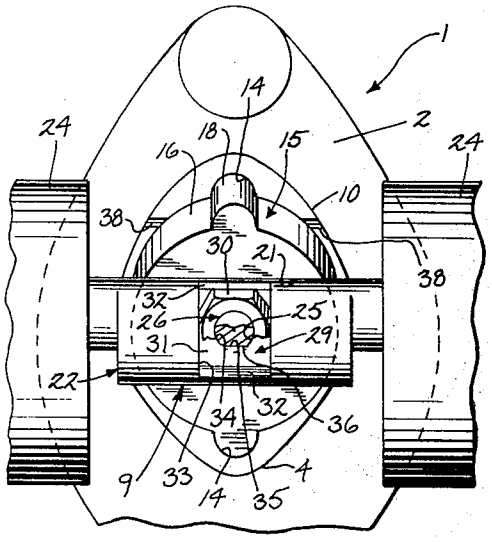


Fig.4

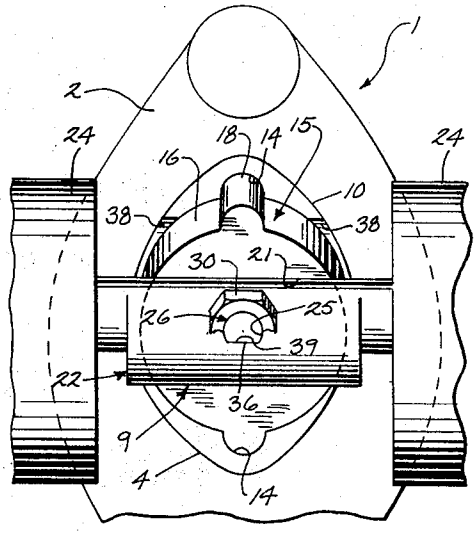


Fig.5

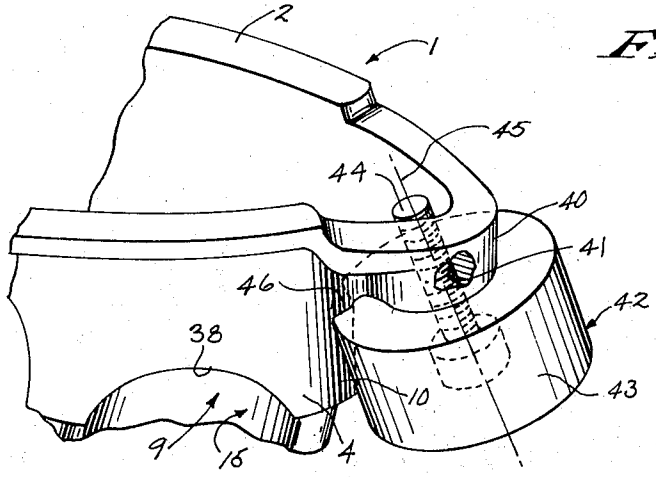


Fig.6

ROLLER SKATE CONSTRUCTION

U.S. PRIOR ART OF INTEREST

Balstad	Patent 2,466,070	Issued April 5, 1949
Balstad	Patent 2,595,751	Issued May 6, 1952

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to a roller skate construction and more particularly to a wheel mounting arrangement therefore which is an improvement over my two above-identified prior patents, and which provides a simplification of the structure disclosed particularly in my U.S. Pat. No. 2,595,751.

The mounting arrangement for each skate wheel assembly provides a maximum cushioning support, and the assembly can be put together and also disassembled very easily and quickly.

The invention contemplates a skate structure including a foot plate having downwardly depending sockets, with the latter receiving a resilient cushion block therein. An axle housing is nested in the lower end portion of each block, and these elements are secured together by a bolt. The lower threaded bolt end passes through a washer; and the construction is such that neither the bolt nor washer can turn due to the stresses caused during use of the skate. The wheel axle is press fitted in the housing and positioned generally normal to the above-mentioned securing bolt. To prevent interference between the axle and bolt, the axle is offset from the center housing axis, and is also provided with a cut-away portion through which the bolt passes. When a braking member is mounted at the skate toe, the front socket cooperates with the braking member to prevent the latter from turning about its axis.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the best mode presently contemplated by the inventor for carrying out the invention.

In the drawings:

FIG. 1 is a side elevation of a roller skate constructed in accordance with the invention, with parts broken away and in section;

FIG. 2 is an exploded perspective view of the wheel mounting assembly;

FIG. 3 is a front elevation of the skate with parts broken away and in section;

FIG. 4 is a fragmentary bottom plan view of the skate with parts broken away and in section;

FIG. 5 is a view similar to FIG. 4 and showing a slightly different embodiment of bolt locking means; and

FIG. 6 is a fragmentary perspective view of a skate including a braking member, and with parts broken away.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings, the invention is embodied in a roller skate 1 having the usual foot plate 2 to which a shoe 3 (shown fragmentarily) is either permanently or removably attached in the usual manner. Plate 2 is provided with front and rear downwardly depending

sockets 4 and 5 respectively; which are preferably joined at their bases by an arcuate reinforcing rib 6 extending along plate 2. As shown, sockets 4 and 5 are disposed with their longitudinal axes 7, 8 extending generally vertically but inclinded slightly toward each other in a downward direction.

The aforementioned sockets are adapted to receive wheel mounting assemblies 9, with both contemplated as being generally similar or identical. For this reason, only the front skate structure will be described in detail. Front socket 4 is shown as having a generally cylindrical lower wall portion 10 which merges upwardly into a generally conical wall portion 11 with the latter terminating in an upper socket opening 12 having an annular shoulder 13 disposed about its upper periphery. A pair of spaced diametrically opposed longitudinally extending ways 14 are disposed in the inner socket walls, for purposes to be described.

Wheel mounting assembly 9 includes a resilient cushion block 15 of rubber or other suitable material. Block 15 is generally solid and is formed so that its outer surface generally compliments the inner socket walls. That is, it includes a lower generally cylindrical straight wall portion 16 which merges upwardly into a generally conical wall portion 17, with both wall portions having spaced diametrically opposed longitudinally extending rubs 18. A cylindrical neck 19 extends upwardly from wall portion 17, with the upper neck portion enlarged as at 20, for purposes to be described.

To position block 15 within socket 4, it is merely necessary to align ribs 18 with ways 14 and push and squeeze enlarged portion 20 through upper socket opening 12 so that the block is wedgingly held in its proper place.

A generally horizontal transversely extending arcuate recess or seat 21 is formed in the lower outer end of block 15. Seat 21 receives an elongated transversely extending solid cylindrical axle support member 22, through which an axle member 23 passes. Axle 23 is preferably press fitted into support 22 and extends outwardly from each end thereof for receiving a pair of skate wheels 24. Wheels 24 may be of any suitable construction and bearing means, not shown, permit rotation of the wheels relative to axle 23.

Support 22 is fixedly secured within seat 21. For this purpose, an axial bore 25 extends through cushion block 15 and support 22, and a bolt 26 is disposed therein. The bolt head 27 is disposed at the top of block 15 and a washer 28 is disposed between head 27 and enlarged portion 20.

Although block 15 can twist in response to torque forces on axle 23 during skating, it has been found desirable to prevent bolt 26 from turning on its axis. Therefore, the invention contemplates means to lock the bolt against turning. In the embodiment shown, a washer 29 is confined between a multi-sided tightening nut 30 and support 22. Washer 29 is generally rectangular and is provided with a generally flat base portion 31 and end flanges 32 which are inclined downwardly therefrom. Base portion 31 is received in a complimentary recess 33 formed in the outer wall of support 22 on the side remote from block 15 and through which bore 25 extends. The side edges of washer base 31 are in close proximity to the opposed recess side walls so that washer 29 cannot turn in the recess. In addition, in the embodiment of FIGS. 1–4, the washer opening 34 is provided with a flat 35, and compliments and en-

gages a flat **36** on the threaded lower end of bolt **26.** Thus, when the wheel mounting is assembled, bolt **26** can't turn in washer **29** and the washer can't turn on support **22.** A double lock is thereby provided for the bolt.

In addition, means are provided to lcok nut **30** against any substantial turning on bolt **26** in response to the relatively low torque forces occuring during skating, said locking means being overcomable by substantially higher torque forces applied by a wrench or the like. This locking or stop means comprises the flanges **32** which are disposed in close proximity to the multisided edge of nut **30** and which are engaged thereby if the nut turns slightly under low torque. See FIG. **4.** Flanges **32** are constructed so as to be slightly flexible so that, given high torque forces such as by manual nut turning with a wrench, the flanges will flex to permit 360° turning of the nut for application or removal purposes.

Nut **30** is thicker than the vertical extent of flanges **32** so that there will be a wrench gripping surface available which is free of interference by the flanges.

It is also contemplated that axle **23** is offset from the central axis of support **22,** which intersects bore **25,** so the axle and bolt **26** do not interfere to any substantial extent. In the embodiment shown, axle **23** is provided with a cut-out or recess **37** through which one side of bolt **26** passes. The depth of recess **37** is preferably less than the axle radius. The described construction serves to lock axle **23** against possible turning in its support **22.**

When assembly **9** is mounted in socket **4,** the lower end portion of block **15** will extend beyond the socket. In addition, a portion of the socket wall may be cut back, as at **38,** to accommodate support **22.**

In some instances it may be desirable to replace washer flat **35** with a flat **39** in the bore portion **25** of support **22.** See FIG. **5.** In this case, flat **39** will compliment and be engaged by bolt flat **36** to keep the latter from turning.

Some roller skates, especially those of professionals, utilize a braking member at the toe to permit quick stops or abrupt and complicated turns. In the embodiment shown in FIG. **6,** the front toe end of skate **1** is provided with a downwardly depending and slightly inclined boss **40** disposed forwardly of socket **4.** Boss **40** includes a threaded bore **41.** A generally cylindrical braking member **42** having an outer wall **43** is secured to boss **40** by a bolt **44** threaded into bore **41,** and is also inclined on its axis **45.**

In accordance with this aspect of the invention, cooperative interengaging means between front socket **4** and member **42** are provided to keep the latter from turning on bolt **44.** For this purpose, the curved outer front wall of socket **4** extends generally vertically, and the inclined inner portion of braking member wall **43** is notched, as at **46,** with the socket wall received within the notch to prevent rotation of the braking member.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A roller skate comprising:

a. a foot plate,

b. a plurality of sockets extending downwardly from said foot plate,

c. a resilient cushion block disposed in each said socket,

d, a horizontally extending axle support member disposed at the lower end of said block,

e. an axle extending through said support member,

f. skate wheels mounted on the ends of said axle,

g. means to secure said support member to said block, said means comprising:

1. a bore extending downwardly through said block and said support member,

2. a bolt disposed in said bore,

3. a nut on the lower end of said bolt,

4. and a washer member disposed between said nut and said support,

h. complimentary engaging flats on said bolt and said washer to lock said bolt against rotation due to torque forces occurring during shating,

i. and a recess disposed in the outer wall of said support member remote from said cushion block and with said recess having opposed side walls,

j. said washer being generally rectangular and disposed within said recess and locked against rotation by said side walls.

2. The skate of claim **1:**

a. wherein said rectangular washer includes a generally flat base which is disposed in said support member recess as well as downwardly extending flanges disposed on the ends of said washer,

b. said flanges being disposed in close proximity to said nut to provide stop means preventing substantial turning of said nut in response to relatively low torque forces occurring during skating.

3. The skate of claim **2** in which said flanges are slightly flexible so tht the said stop means are overcome and said nut can rotate through 360° when relatively high torque is applied thereto.

4. The skate of claim **3** in which said nut is thicker than the downward extent of said flanges to provide a wrench gripping surface free of interference by said flanges.

5. A roller skate comprising:

a. a foot plate,

b. a plurality of sockets extending downwardly from said foot plate,

c. a resilient cushion block disposed in each said socket,

d. a horizontally extending axle support member disposed at the lower end of said block,

e. an axle extending through said support member,

f. skate wheels mounted on the ends of said axle,

g. means to secure said support member to said block, said means comprising:

1. a bore extending downwardly through said block and said support member,

2. a bolt disposed in said bore,

3. a nut on the lower end of said bolt,

4. and a washer member disposed between said nut and said support,

h. and a recess disposed in the outer wall of said support member remote from said cushion block and with said recess having opposed side walls,

i. said washer being generally rectangular and disposed within said recess and locked against rotation by said side walls.

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