April 3, 1962 W. F. DAVIS 3,028,171

TOE STOP

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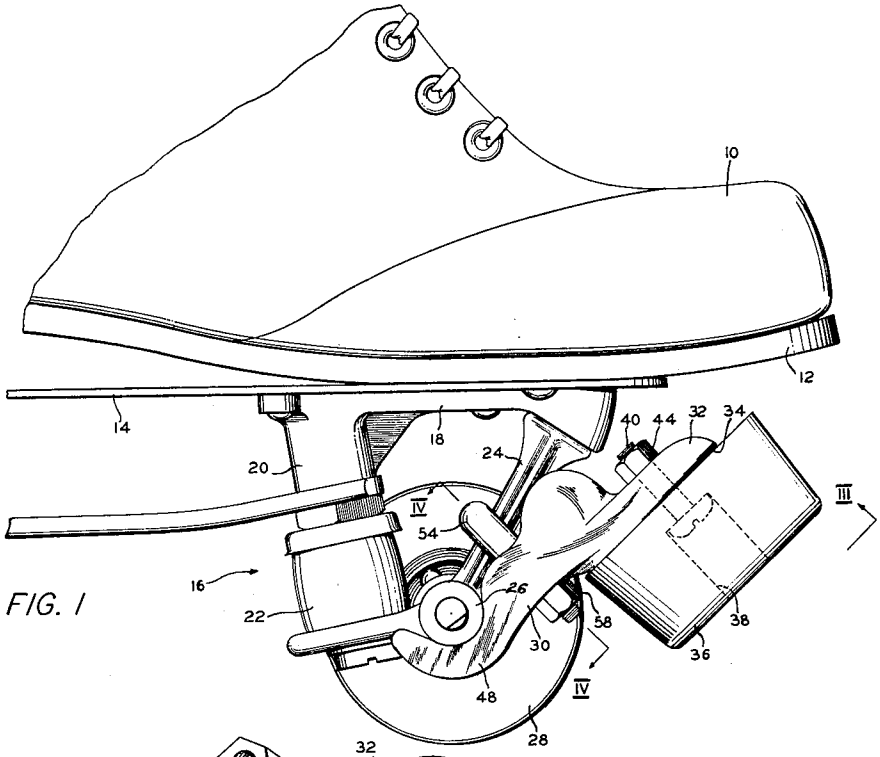


FIG. 1

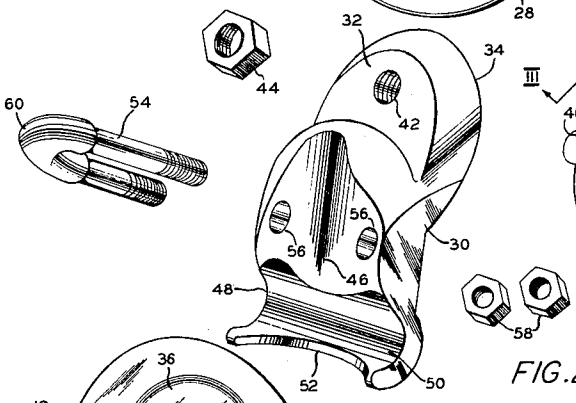


FIG. 2

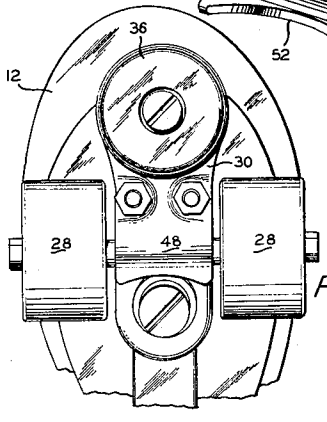


FIG. 3

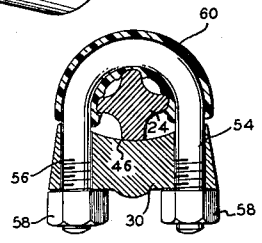


FIG. 4

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TOE STOP

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The invention pertains to a toe stop for roller skates and particularly relates to a toe stop which may be very quickly affixed to conventional roller skate structure without modification of any nature to the skate.

Roller skate toe stops are usually available as an accessory which is affixed to the roller skate after the skate has been sold. Such accessory toe stops have been attached to the skate in many different forms and usually the attachment of the toe stop requires a partial disassembly of the skate truck and shoe or other modification to the skate which must necessarily be accomplished with special tools and equipment. In that the means of mounting conventional toe stops is relatively complex, the cost of the stops is prohibitive to many skaters.

The purpose of the invention is to provide a toe stop which may be very quickly attached to a wide variety of roller skate truck configurations wherein no modification to the truck or shoe is necessary and no partial disassembly or rework is required upon the roller skate.

A further object of the invention is to provide a toe stop of pleasing appearance which is economical to manufacture, does not interfere with the normal operation of the skate, and may be assembled or disassembled from the associated skate as desired.

Yet another object of the invention is to provide a toe stop for rapid assembly to a roller skate truck wherein the assembly is such as to effectively resist the forces and pressures imposed upon the toe stop without accidentally shifting or moving the stop structure upon the skate truck.

These and other objects of the invention arising from the structural details and relationships of an embodiment thereof will be apparent from the following description and accompanying drawings wherein:

FIG. 1 is an elevational side view of a conventional roller skate having the toe stop of the invention assembled thereto, one of the roller skate wheels being removed for purposes of illustration,

FIG. 2 is an exploded rear perspective view of the toe stop components,

FIG. 3 is a front view of the toe stop and skate structure as viewed from III—III of FIG. 1, and

FIG. 4 is a sectional view of the roller skate stop and truck brace element taken along section IV—IV of FIG. 1.

Conventional roller skate structure is illustrated in FIG. 1 and consists of a shoe **10** having a sole **12** to which a rigid sole plate **14** is affixed by means of rivets. A front wheel truck **16** is attached to the sole plate by a hanger **18** and suitable fasteners and consists of a primary supporting boss **20** having a resilient shock absorbing element **22** and a front brace member **24** which is pivotally supported at the upper region in the truck hanger **18** and terminates in the lower region in an axle housing **26** supporting an axle upon which the wheels **28** are rotatably supported. The brace element **24** is normally of an elongated configuration and in the illustrated embodiment has a star-shaped cross-section. The axle housing **26** is generally cylindrical in shape and is usually at right angles to the longitudinal axis of the brace element. In FIG. 1 the wheel nearest the observer has been removed for purposes of illustration.

The toe stop in accord with the invention consists of a body member **30** of machined or cast material. Aluminum is desirable for this purpose. The body member

is provided with a stop engaging portion **32** having a planar surface **34** formed thereon against which a resilient stop element **36** abuts. The stop element **36** is preferably of rubber or a similar material and is provided with a central shouldered bore **38** to receive a screw **40** which cooperates with a threaded hole **42** within the body portion **32** such that upon threading the screw into the hole the stop element **36** may be firmly affixed to the body member and a lock nut **44** may be threaded upon the exposed end of the screw.

The body member **30** is provided with a brace element engaging recessed portion **46** on the opposite side of the body relative to the stop element engaging surface **34**. The recessed body portion **46** is provided with a configuration as shown in FIG. 4 such that the axis of the recess extends in a linear longitudinal direction relative to the body member and is of a configuration which will receive all of the well known brace member configurations. The lower portion **48**, FIG. 2, of the body member **30** is provided with a yoke-like configuration defining an arcuate recess **50** extending at right angles to the recess **46**. The axle housing engaging recess **50** is somewhat of a semicylindrical shape and the body portion **48** is relieved at **52** to provide clearance for the screw structure usually employed to affix the axle and brace element to the primary support structure **20**. In practically all conventional skate truck constructions the axis of the brace element intersects the axis of the front axle and, hence, by locating the stop body member **30** upon the truck such that the brace element **24** is received within the recess **46** and the body portion **48** partially circumscribes the axle housing **26** the axle housing acts as an abutment to engage the portion **48** of the body member to prevent the body member from shifting toward or away from the axle as long as the recess **46** is maintained in firm engagement with the brace element **24**.

To insure that the brace element **24** is maintained within the body member recess **46** a U-bolt **54** is employed to encompass the brace element and the legs thereof extend through holes **56** formed in the body member on opposite sides of the recess. Nuts **58** associate with the threaded ends of the U-bolt to draw the U-bolt toward the body member **30**. To insure an efficient engagement of the U-bolt with the brace element, the base or arcuate portion of the U-bolt is preferably encompassed within a tough, synthetic, resilient material **60** which will be deformed by the brace element upon tightening of the nuts **58**. The resilient material **60** prevents the U-bolt from shifting relative to the brace element and conforms to the configuration of the brace element to provide a high friction connection.

Assembly of the toe stop to the skate truck is very quick and simple in that it is only necessary to place the body member **30** upon the truck such that the brace element **24** is received within recess **46** such that the recess **50** engages the front portion of the axle housing. The U-bolt **54** is then slipped around the brace element and the legs thereof are inserted through the body member holes **56**. Tightening of the nuts **58** draws body member **30** into firm engagement with brace **24** and housing **26** and completes the assembly. A skilled operator may attach a pair of toe stops in accord with the invention to a pair of skates in two or three minutes and if desired, a toe stop may be attached to the skate without the wearer removing the same.

When the toe stop is employed in acrobatics, dancing and spinning, the complete weight of the skater may be upon the toe stop itself. However, in that the U-bolt maintains the body member in firm engagement with the axle housing and the body portion **48** is an effective abutment shoulder to prevent the body member from shifting

relative to the skate truck components the stop of the invention is fully capable of withstanding all of the forces normally imposed upon such stops. In use, that portion of the stop element which engages the floor, will become worn and the stop construction is such that the stop element **36** may be rotated 90° or so to present a new stop portion for engagement with the skating surface and, hence, a long life may be expected from each resilient stop member **36**.

It is appreciated that other embodiments of the invention may be apparent to those skilled in the art without departing from the spirit and scope thereof and it is intended that the invention be defined only by the following claims.

I claim:

1. In combination with a roller skate truck having an axle housing and an inclined brace element extending from said housing toward the adjacent end portion of the skate, an elongated cast body member of substantial thickness and cross section having a longitudinally extending depression defined therein adapted to receive said brace element, an axle housing abutment shoulder defined directly on said body member within the lateral edges thereof and perpendicularly disposed to said depression and having a portion transversely disposed to the body member length adapted to abut said housing, a stop member mounted on said body member, holes extending through said body located on opposite sides of said depression, a U-bolt having a base portion encircling said brace element and threaded leg portions extending through said holes and nuts associated with said leg portions adapted to maintain said brace element in firm engagement with said depression.

2. In combination with a roller skate truck having an axle housing and an inclined brace element extending from said housing toward the adjacent end portion of the skate, an elongated cast body member of substantial thickness and cross section having a longitudinally extending depression defined therein adapted to receive said brace element, an axle housing abutment shoulder defined directly on said body member within the lateral edges thereof and perpendicularly disposed to said depression and having a portion transversely disposed to the body member length adapted to abut said housing, a stop member mounted on said body member, holes extending through said body located on opposite sides of said depression, a U-bolt having a base portion encircling said brace element and threaded leg portions extending through said holes, a resilient, deformable material interposed between said base portion and brace element and nuts associated with said leg portions adapted to maintain said brace element in firm engagement with said depression.

3. In a combination with a roller skate truck as in claim 2 wherein said resilient, deformable material comprises a synthetic coating adhering to said base portion.

4. In combination with a roller skate truck having an axle housing and an inclined brace element extending from said housing toward the adjacent end portion of the skate, an elongated cast body member of substantial thickness and cross section having a longitudinally extending depression defined therein adapted to receive said brace element, an axle housing abutment shoulder defined directly on said body member perpendicularly disposed to said depression and having a portion transversely disposed to the body member length adapted to abut said housing, said shoulder being defined within the lateral edges of said body member and said depression being related to said shoulder such that the extension of said depression intersects said shoulder and said axle housing, a stop member mounted on said body member, holes extending through said body located on opposite sides of said depression, a U-bolt having a base portion encircling said brace element and threaded leg portions extending through said holes and nuts associated with said leg portions adapted to maintain said brace element in firm engagement with said depression and the axle abutment shoulder in engagement with the axle housing.

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