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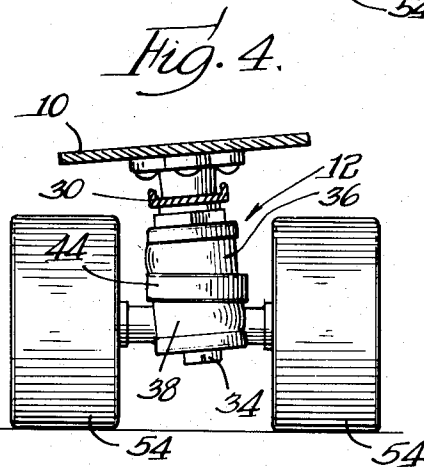
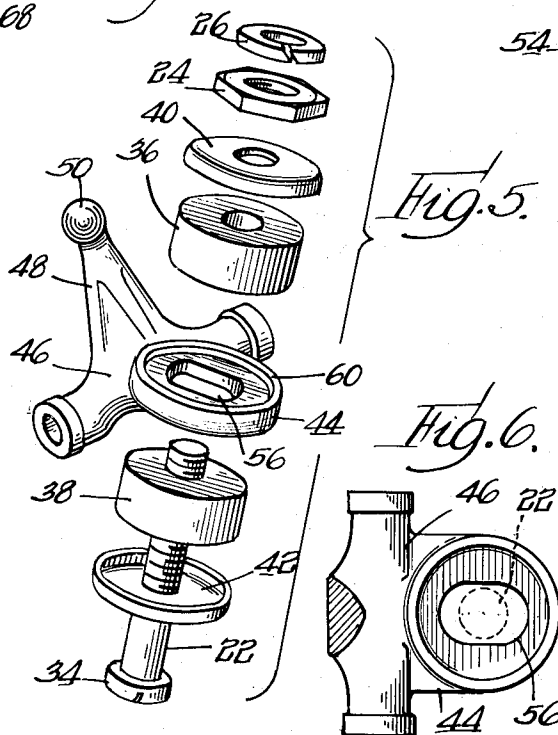
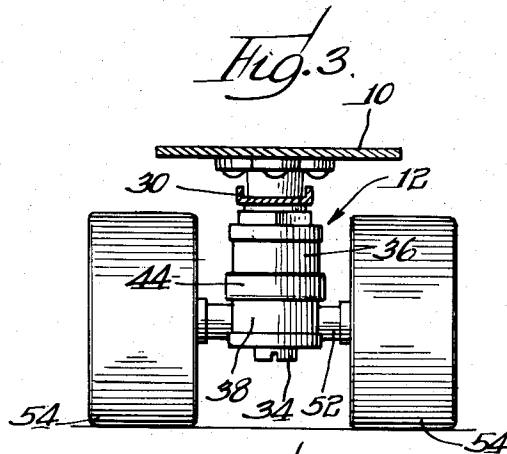
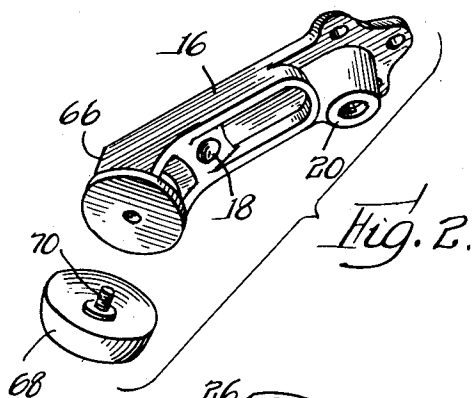
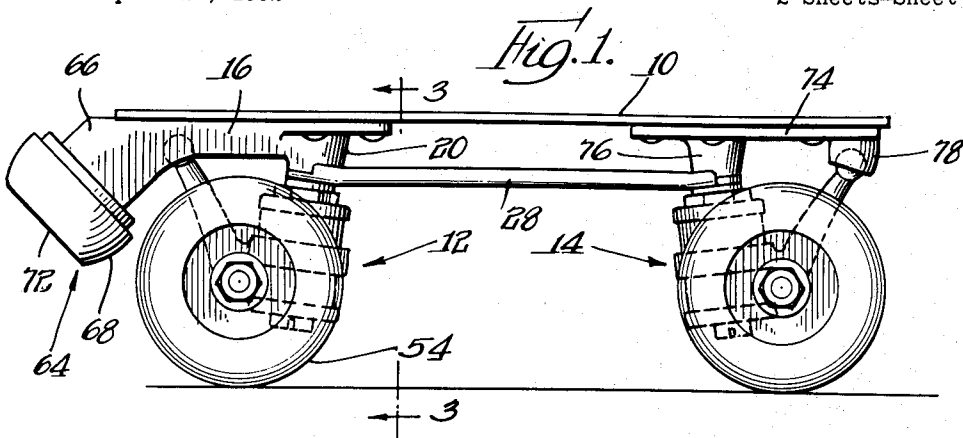
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2,719,723

ROLLER SKATE WITH TOE STOP SUPPORT

Filed April 28, 1952

2 Sheets-Sheet 1



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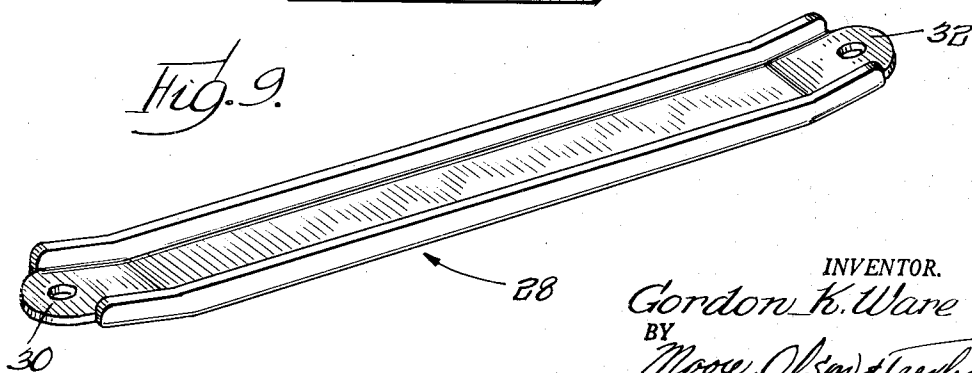
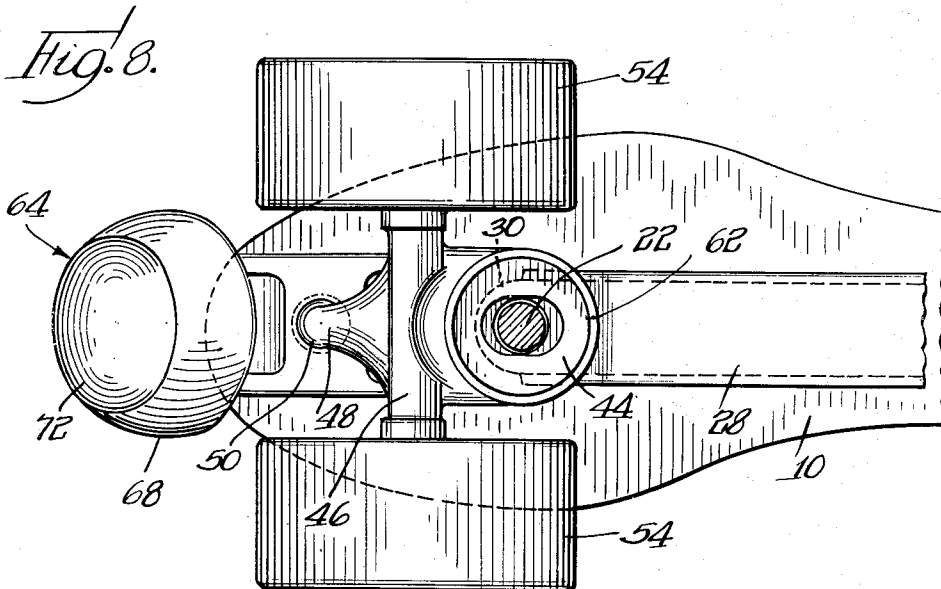
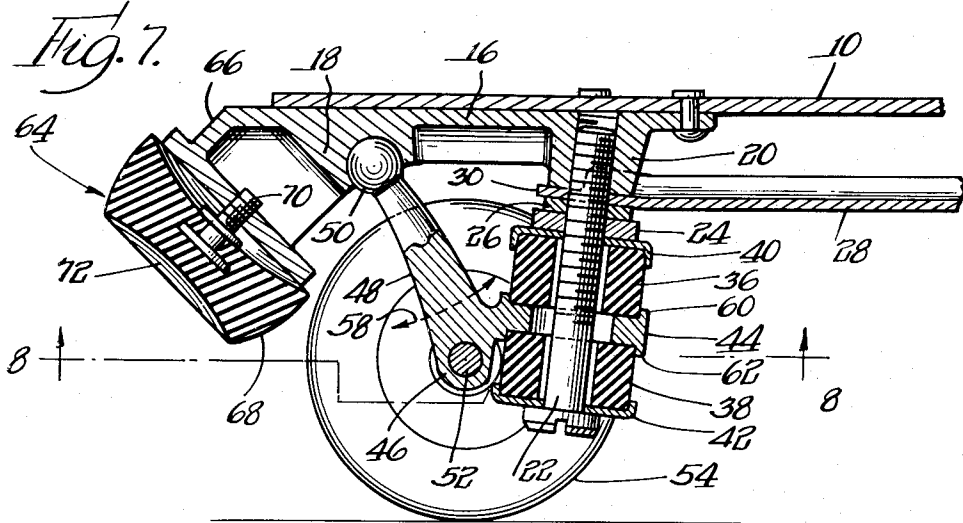
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ROLLER SKATE WITH TOE STOP SUPPORT

Filed April 28, 1952

2 Sheets-Sheet 2



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2,719,723

ROLLER SKATE WITH TOE STOP SUPPORT

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4 Claims. (Cl. 280—11.2)

This invention relates to roller skates, and concerns particularly skates of the rink type.

Rink type skates, commonly used for indoor and dance skating, conventionally are provided with wood or fiber wheels supported from the sole plate by means of a wheel support assembly which permits a limited degree of flexibility or "action" between the wheel axles and the sole plate or skate frame structure. While a limited degree of flexibility or action is necessary, it is desirable that this be achieved without a feeling of "looseness" in the support unit, or undue fragility of the parts. In other words, the desired "action" contemplates a controlled degree of motion, without a sense of looseness and without actual structural weakness or undue bulk in the parts.

Skates of this type are also frequently provided with toe stops or brake members, by means of which the user may advantageously perform various dance steps and like skating operations.

It is an object of the present invention to provide an improved skate structure, of the rink type, having an improved wheel support unit or assembly.

More specifically stated it is an object of the invention to provide a skate structure of the foregoing type, having an improved arrangement of wheel support unit parts so as to provide a proper controlled degree of action for the wheel truck, but without undue looseness, fragility, or bulk of the parts.

More specifically stated, it is an object of the invention to provide an improved wheel support unit, for rink skates of the type defined, wherein the wheel truck is supported essentially by means of rubber blocks, while at the same time providing a necessary and proper degree of action, with accompanying strength and rigidity to give a proper feel to the user in the operation of the skate.

A further object of the invention is to provide, in a skate structure of the foregoing type, an improved arrangement for a toe stop.

Various other objects, advantages, and more specific features of the structure will be apparent from the following specification, when taken in connection with the accompanying drawings, wherein one preferred embodiment of the invention is set forth for purposes of illustration.

In the drawings, wherein like reference numerals refer to like parts throughout:

Fig. 1 is a general assembly view of a skate structure constructed in accordance with and embodying the principles of the present invention, in accordance with the preferred embodiment illustrated;

Fig. 2 is a detail perspective view of the hanger bracket and toe stop assembly;

Fig. 3 is a vertical sectional view of the skate structure, taken as indicated by the line 3—3 of Fig. 1, more particularly showing the front wheel support unit or assembly;

Fig. 4 is a view similar to Fig. 3, but showing the parts in a different position;

Fig. 5 is an exploded perspective view more particularly illustrating the parts forming the wheel support unit;

Fig. 6 is a plan section of the wheel truck member;

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Fig. 7 is a longitudinal sectional view of the skate structure of Fig. 1, on an enlarged scale, and more particularly illustrating the front wheel support unit and associated toe stop structure;

Fig. 8 is a broken plan section of the structure of Fig. 7 on the line 8—8 thereof; and

Fig. 9 is a detail perspective view of the brace bar optionally but preferably forming a part of the skate structure.

Referring more particularly to the drawings, the rink skate illustrated comprises a sole plate 10 to which a shoe or the like (not shown) may be secured; the sole plate being provided at its opposite ends with front and rear wheel support units or assemblies, as respectively indicated by the reference numerals 12 and 14. Inasmuch as these wheel support units, apart from the toe stop structures, may be identical, a detailed description of the front wheel support unit will suffice for both in most particulars.

Referring more specifically to the front wheel support unit or assembly, it will be seen that there is provided a hanger bracket 16, riveted or otherwise secured to the sole plate, this hanger bracket having a forward boss 18 and a rear boss 20, as is best shown in Fig. 7.

The rear boss is threaded to provide support for a kingpin or action screw 22 threadedly received therein. This action screw is locked in adjusted position by means of a lock nut 24, a spring retaining washer 26 being provided to retain the lock nut from inadvertent loosening. The brace bar 28 is interposed between the washer 26 and the hanger boss 20, being thereby held firmly in position. As best shown in Fig. 9, this brace bar is preferably channel-shaped in cross section along its main body portion, and is provided at its opposite ends with slightly upturned platform portions 30 and 32 to receive the respective shanks of the action screws. The channel-like brace bar provides a maximum reinforcement to the sole plate, for rigidity in maintaining the alignment of the hangers, with a minimum of weight.

Referring further to Fig. 7, and to the exploded view, Fig. 5, it will be seen that the action screw is headed at its lower end, as indicated at 34, and is embraced by a pair of rubber washers or cushion members 36 and 38, of substantially equal size. The upper face of the cushion 36 and the lower face of the cushion 38 are confined by substantially identical metallic flanged washers 40 and 42, as shown.

Interposed between the cushions 36 and 38 is the platform portion 44 of the front wheel truck 46. As best shown in Fig. 5, the wheel truck is provided with oppositely projecting bosses to support the wheel axle, and in addition to the platform portion 44, with an upstanding strut arm 48, the upper end of which terminates in a ball or spherical portion 50. In Fig. 7 the manner in which the truck supports the wheels is indicated, the wheel axle being shown at 52, and one of the wheels being shown at 54. The ball 50 has universal ball and socket connection with the hanger boss 18, as also best shown in Fig. 7.

Particular attention is directed to the disposition and manner of cooperation between the platform portion 44 of the wheel truck, and the associated action screw and rubber cushion members.

As best shown in Fig. 6, it will be seen that the wheel truck platform 44 is provided with an oval or elongated opening 56 having a length of predetermined greater extent, and a width of predetermined lesser extent, in reference to the size of the shank of the action screw. As will be seen by a comparison of Figs. 3 and 4, in the use of the skate, the kingpin is tilted in respect to the maintained horizontal disposition of the wheel truck platform, as for example when turns and the like are being executed. However, this tilting is merely a pivoting action

between the action screw and the wheel truck, within the range of the clearance provided between the action screw shank and the lesser dimension of the truck platform opening 56.

As the wheels receive the weight of the skater, and particularly when executing jumps or the like, the wheel truck exhibits a turning motion about the ball 50, as indicated by the arrowed line 58 in Fig. 7. This turning movement, or pivotal shifting of the wheel truck in respect to the hanger, is accommodated in the structure provided by the clearance between the action screw shank and the platform opening 56, along the greater or major dimension thereof; thus permitting a degree of motion of the wheel truck about the ball 50.

Both the tilting of the kingpin, as illustrated in Figs. 3 and 4, and the bodily pivotal shifting thereof in respect to the hanger, as described in reference to Fig. 7, are under the control of the rubber cushion members 36 and 38, the compressibility of which is in turn controlled by the character of the rubber or like material used, and also by the threaded adjustment of the kingpin within the hanger boss 20. Thus a shortening of the effective length of the kingpin results in a corresponding compression of the rubber cushions, providing a more firm action control, to the requirements of the particular user of the skate.

As further indicated by Figs. 5 and 7, the adjacent faces of the rubber cushions 36 and 38 are confined by means of flanges 60 and 62 provided on the opposite faces of the wheel truck platform.

The toe stop, generally indicated by the reference numeral 64 is formed, in the construction illustrated, by an extension 66 of the hanger 16, to the downwardly and forwardly projecting end of which is secured a toe stop member 68, preferably of rubber or the like. As best shown in Fig. 7, the toe block is secured in position by means of a screw 70, the head of which is embedded into the rubber body, and the block is preferably shaped to provide a dished floor engagement face 72.

The provision of the toe stop support, as an integral part of the front hanger bracket 16, which hanger bracket is in turn rigidified and maintained in position by the sole plate 10 and the brace bar 28, ensures a firm and solid support for the toe stop, without undue bulk or weight of the parts, while at the same time permitting the toe stop support to be projected sufficiently forwardly and downwardly in respect to the sole plate and the shoe supported thereby, so as to facilitate proper use.

As previously stated, the rear and front wheel support units may be similarly formed, except that the rear hanger bracket, as shown at 74 in Fig. 1, does not support a toe stop, and is of plate-like construction, or reduced thickness, between its boss support parts 76 and 78.

It will be seen that the wheel support units provide an all rubber connection between the wheel truck and the kingpin, avoiding metal to metal contact in normal operation. This is accomplished while permitting proper action between the parts, due to the oval platform opening 56, both to accommodate tilting movements of the wheel truck and also pivotal shifting thereof about the ball 50. Such pivotal shifting is accommodated by the flexing of the cushion members 36 and 38, enabling the use of a rigid truck arm 48 for improved strength and simplicity in the parts. The upward disposition of the truck platform portion 44, in respect to the positioning of the axle 52, permits an equal sizing of the cushion members 36 and 38 to provide a balanced action; such upward disposition of the wheel truck platform also permitting longer use of the wheels 54 as they are reduced in size due to wear. The upward disposition of the platform also minimizes its twisting moment upon the kingpin, to minimize possibility of breakage. The faces of the cushion members 36 and 38 are confined by the washers 40 and 42, and by the flanges 60 and 62 of the wheel truck plat-

form, insuring proper action of the cushion members as the wheel truck shifts in the manner heretofore described.

The toe stop, constituting an integral extension of the hanger 16, to which the kingpin 22 is in turn rigidly secured, provides a firm support for the toe stop notwithstanding its disposition well forwardly and downwardly with respect to the front wheels. The arrangement thus provided for the toe stop, including the rigidly mounted kingpins, together with the brace bar 28, insures a rigid structure with a minimum of size and weight in the parts.

It is obvious that various changes may be made in the specific embodiment set forth without departing from the spirit of the invention. The invention is accordingly not to be limited to the specific embodiment shown and described, but only as indicated in the following claims.

The invention is hereby claimed as follows:

1. A roller skate comprising a sole plate, a hanger bracket secured thereto, said bracket being provided at one end thereof with a mounting portion extending beyond the forward end of the sole plate, a stop member of compressible material secured to said hanger bracket mounting portion, said stop member lying substantially entirely beyond the limits of the sole plate, an action screw anchored to the hanger bracket adjacent the end thereof remote from the stop member, a wheel truck carried by the action screw, and a support arm connected at one end of the wheel truck and connected at its other end with the hanger bracket at a position thereon between the action screw and said stop member.

2. A wheel support and stop unit as defined in claim 1, wherein said hanger bracket is of general channel shape, there being a pair of bosses formed on the bracket for connection, respectively, with the action screw and said truck support arm.

3. A wheel support and stop unit for roller skates comprising a hanger bracket, said bracket being provided at one end thereof with an extending mounting portion for projecting forwardly beyond a sole plate of a skate, a stop member of compressible material secured to said hanger bracket mounting portion, an action screw anchored to the hanger bracket adjacent the opposite end thereof, a wheel truck having a perforated platform through which the action screw projects, a pair of cushion members of compressible material embracing the action screw and engageable with the wheel truck platform portion on the opposite sides thereof, and a support arm connected at one end to the wheel truck and connected at its other end with the hanger bracket at a position thereon between the action screw and said stop member.

4. A wheel support and stop unit for roller skates, as defined in claim 3, wherein the opening in the wheel truck platform portion through which the action screw extends is oval in shape with its major dimension lying substantially in the plane of the major length of the hanger bracket, said opening having a minor dimension only slightly greater than the diameter of said action screw, and said opening having substantially uniform dimensions at opposite sides of the wheel truck platform.

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