

July 13, 1937.

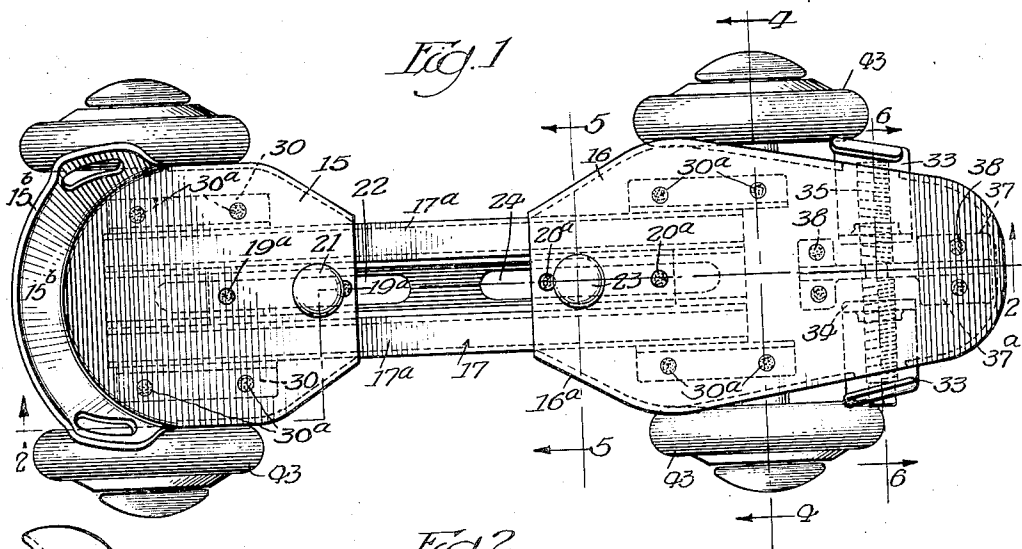
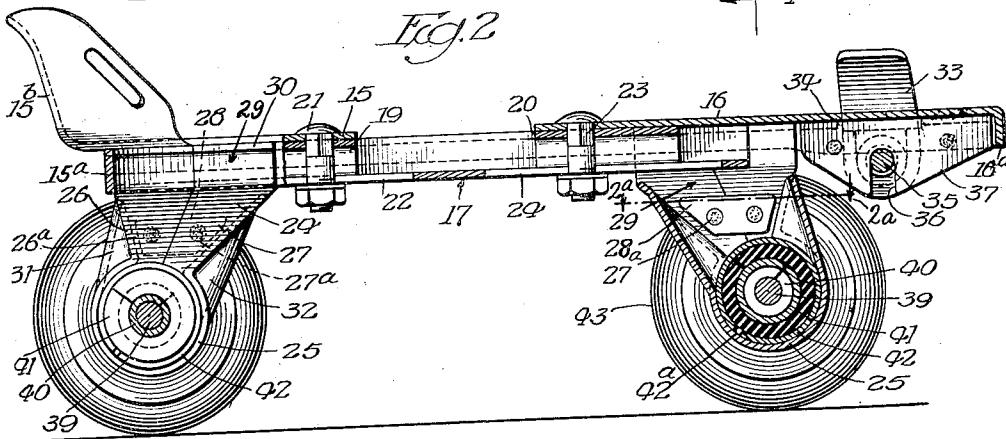
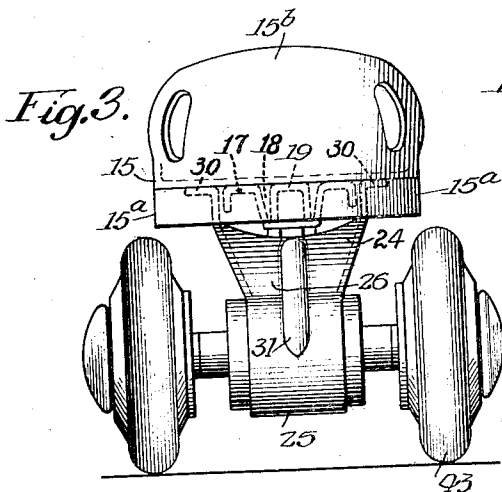
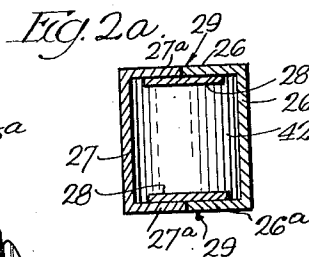
A. F. KAPTULLER

2,086,557

ROLLER SKATE

Filed Oct. 24, 1934

2 Sheets-Sheet 1



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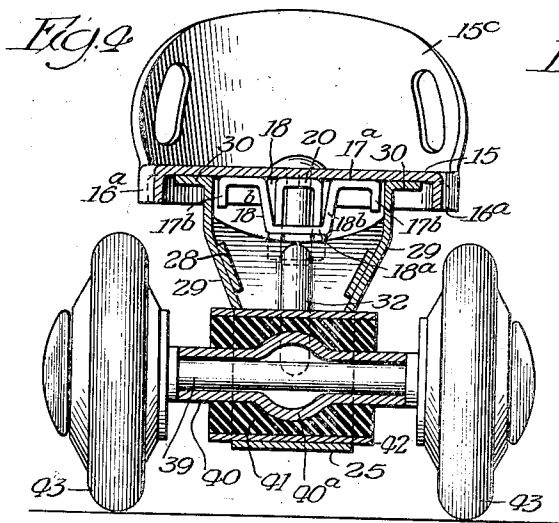
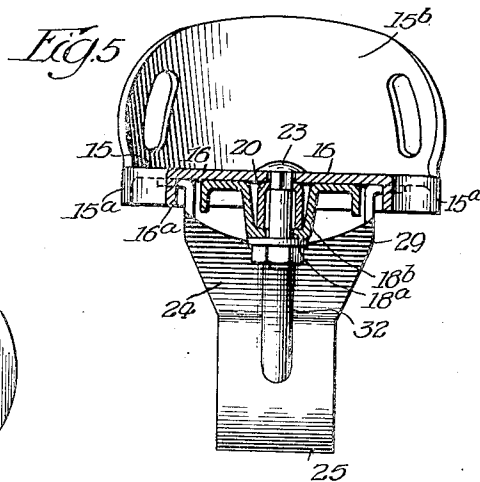
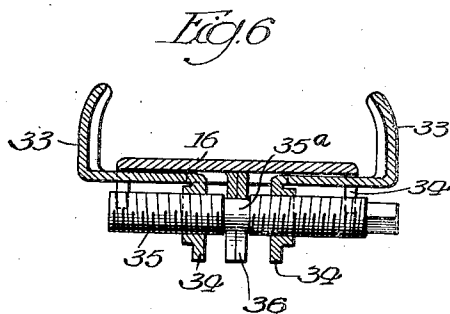
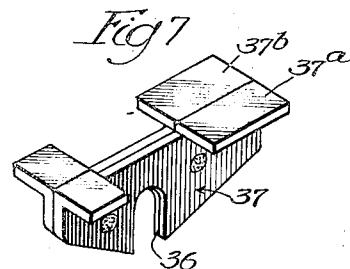
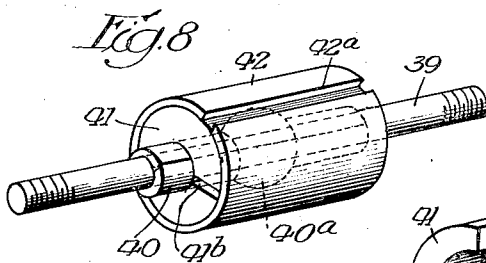
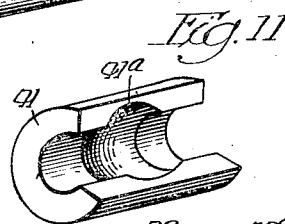
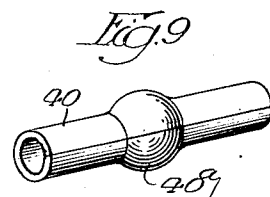
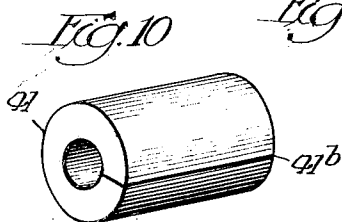
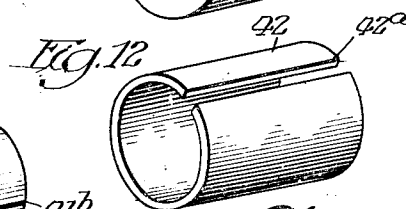
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ROLLER SKATE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,086,557

ROLLER SKATE

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Application October 24, 1934, Serial No. 749,800

13 Claims. (Cl. 208—173)

My invention relates to improvements in roller skates.

One of the objects of my invention is the provision of an improved girder member for connecting the toe and heel plates of a roller skate and so constructed or shaped that maximum strength and rigidity will be provided with a minimum of weight.

It is another object of my invention to provide improved connections between the respective toe and heel plates and the girder member and so arranged that the plates may be readily adjusted longitudinally with respect to the girder member but securely held against any twisting or lateral movement with respect thereto.

Another object of my invention is to provide improved hangers for mounting the axles on the skate which shall be strong, rugged and of light weight.

A further object of my invention is the provision of improved flexible mountings for the axles whereby the axles may assume angular positions with respect to their hangers which is desirable in skating when the weight is shifted from one skate to the other and when skating on a curve or turning corners.

I contemplate providing sleeves of wear-resisting material around the respective axles, which are provided with centrally disposed ball-like projections, in combination with outer sleeves of rubber recessed so as to receive said respective projections. A further object of my invention is to provide improved means for mounting the rubber sleeves and their associated parts in transverse bearings provided in the respective hangers.

The invention consists in the novel constructions, arrangements and devices to be hereinafter described and claimed for carrying out the above stated objects and such other objects as will appear from the following description of certain preferred embodiments illustrated in the accompanying drawings wherein,—

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

Fig. 2 is a sectional view of the skate taken on the line 2—2 of Fig. 1;

Fig. 2a is a sectional view taken on line 2a—2a of Fig. 2;

Fig. 3 is a rear end elevational view of the skate;

Figs. 4, 5, and 6 are sectional views taken on the lines 4—4, 5—5, and 6—6, respectively, of Fig. 1;

Fig. 7 is a perspective view of the means I preferably employ for holding against axial movement the screw which operates the toe clamps;

Fig. 8 is a perspective view of one of the axles and my improved mounting means therefor ready to be positioned in one of the hangers;

Fig. 9 is a perspective view of the sleeve preferably provided on the axle;

Fig. 10 is a perspective view of my improved rubber sleeve;

Fig. 11 is a perspective view of the rubber sleeve with the sides thereof expanded or forced apart so that the sleeve shown in Fig. 9 may be inserted thereinto; and

Fig. 12 is a perspective view of the metallic sleeve I provide around the rubber sleeve before the axle assembly is inserted into one of the hangers.

Like characters of reference designate like parts in the several views.

The framework of my skate comprises a heel plate 15 and a toe plate 16 connected by a girder 17. The heel plate is reinforced and strengthened by marginal down-turned flanges 15a and an up-turned heel flange 15b. The flange 15b serves also as a back stop for the heel of the shoe and is provided with suitable openings to receive the usual instep or fastening strap. The toe plate is also reinforced and strengthened by a marginal down-turned flange 16a. The girder member 17 is in the form of an inverted channel comprising web portions 17a and down-turned marginal flanges 17b. The girder member is formed so as to provide a longitudinally extending trough 18 between the web portions 17a, said trough being open at the top and having a bottom portion 18a and slanting side portions 18b. The girder member, therefore, possesses great strength and rigidity even when made of metal much thinner than would ordinarily be used.

A guide member in the form of an inverted channel 19 is positioned against the under side of the heel plate, its web portion being securely fastened to the plate by spot-welding at the points 19a. A similar guide member in the form of an inverted channel 20 is placed against the under side of the toe plate 16 and its web portion is secured thereto by spot-welding at the points 20a. A square shouldered bolt 21 passes down through square holes in the heel plate 15 and the web of the channel 19, and projects through a longitudinally extending slot 22 provided in the bottom 18a of the trough formed in the girder member, a lock washer and nut being provided on the bolt to secure the heel plate in any adjusted position with respect to the girder member. In a

similar manner, a square-shouldered bolt 23 passes down through square holes in the toe plate 16 and the web of the channel 20, and projects through a longitudinally extending slot 24 provided in the bottom 18a of the trough formed in the girder member, a lock washer and nut being provided thereon to secure the toe plate in any position of adjustment with respect to the girder member.

As clearly shown in Figs. 4 and 5, the sides 18b of the trough formed in the girder member diverge upwardly, being considerably closer at the bottom than at the top, while the side flanges of the channel members 19 and 20 are positioned at right angles to the bottom of the trough, their bottom outside edges bearing against the adjacent faces of the flanges 18b. By this arrangement, the heel and toe plates may be easily moved on the girder member and securely anchored in the desired positions. The channel members 19 and 20 effectively cooperate with the sides 18b and the bottom of the longitudinally extending trough formed in the girder member, and when the nuts are tightened on the bolts 21 and 23 the heel and toe plates are securely held against any twisting or sidewise movement with respect to the girder.

The means for mounting the axles under the skate frame include sturdy, light weight hangers 24 of box-like construction. The hangers are of identical construction but are reversely positioned on the skate with respect to each other as best shown in Fig. 2. Each hanger is formed from a single blank and so as to provide a transverse tubular housing 25, a transverse outer wall 26 and a transverse inner wall 27. The wall 26 is provided with side flanges 26a and the wall 27 is also provided with side flanges 27a. At each side, the flanges 26a and 27a are formed so as to be in the same longitudinal plane and in edge to edge contact, and they are held in that relation by being spot-welded to a strip 28 placed against their inner sides, see Fig. 2a. The flanges 26a and 27a, therefore, constitute a unitary side wall 29. The aforesaid side walls are provided with out-turned flanges 30 which are adapted to bear against the under side of the heel and toe plates and are secured thereto by spot-welding at the points 30a, as shown in Fig. 1. Vertically extending ribs 31 and 32 may also be formed in the hanger between the tubular housing 25 and the respective walls 26 and 27 to strengthen further the hanger. My improved hangers are very strong and rigid, even when made of light weight material, and are well adapted to stand the strains to which roller skates are subjected.

My improved skate is provided with the usual clamps 33 for clamping the toe portion of the shoe against the face of the toe plate 16. The down-turned flange 16a of the toe plate is cut out at 34 to receive the clamp members 33. The clamp members are provided on their inner ends with downwardly extending screw-receiving portions 34 through which a member 35 having right and left screw threads extends. The member 35 is provided with a bearing portion 35a of reduced diameter and adapted to be slipped into a slot 36 formed in the screw-holding member 37. The member 37 is of T-shape and is preferably formed of two angle members 37a and 37b, the vertical webs of which are placed back to back and are preferably secured together by spot-welding. The horizontal webs of the screw-holding member are secured against the under side of the toe plate 16 by spot-welding at the points 38.

The means for mounting the axles in the transverse housings of the hangers will now be described. Each axle 39 carries a sleeve 40 of some suitable wear-resisting material such as cold rolled steel. The sleeves 40 are preferably rolled out of a piece of flat stock, an open seam along one side, as shown, being unobjectionable. A sleeve 41 of a good grade of commercial shock-absorbing soft rubber is provided around each metallic sleeve 40. In order to prevent any axial or longitudinal shifting of the sleeves 40 and 41 with respect to each other, I preferably provide a ball-like projection 40a on the sleeve 40 and form the rubber sleeve 41 with a recess 41a adapted to receive the projection 40a, the rubber sleeve being split longitudinally at 41b so that its sides may be forced or spread apart, as shown in Fig. 11, thereby permitting the inner sleeve 40 to be inserted thereinto. A third sleeve 42 preferably of metal and rolled from flat stock surrounds the rubber sleeve 41, the sleeve 42 being split longitudinally along one side at 42a. The sleeve 42 is formed so that it may be easily expanded and slipped over the rubber sleeve 41. When it is sufficiently compressed about the rubber sleeve, the sleeve 42 may be worked or forced into the housing 25 of the hanger. In other words, the rubber sleeve 41 is compressed about the sleeve 40 and within the sleeve 42 when the parts are assembled, or in the position shown in Fig. 4. When so positioned, the rubber is sufficiently compressed to place the sleeve 42 under sufficient expansive stress to prevent any shifting of the sleeve 42 within the tubular housing 25. The rubber interposed between the sleeves 40 and 42 provides a flexible mounting for the axle as it will be obvious that the axle may assume, in the normal operation of the skate, many different angular positions with respect to the housing 25 of the hanger. My improved axle mounting also insulates the skater's foot against road shocks or jars since there is no metal to metal contact between the axle and its hanger.

Wheels 43 of any preferred form may be mounted on the axles and the wheels may be equipped with any preferred form of ball bearing. I shall not describe the wheels or their bearings in any detail as they form no part of the present invention.

I do not intend to limit my invention to the details of construction shown and described herein, except only insofar as certain of the appended claims are specifically so limited, as it will be obvious that various modifications may be made by those skilled in the art without departing from the principles of the invention.

I claim:—

1. In a roller skate, a one-piece, sheet metal, box-like hanger comprising upwardly divergent front and rear walls, the front wall having backwardly disposed side flanges, the rear wall having forwardly disposed side flanges, the flanges at each side being secured together to form a unitary side wall, and a transverse loop at the lower edges of the front and rear walls and integrally formed therewith and adapted to receive an axle mounting.

2. In a roller skate, a one-piece, sheet metal, box-like hanger comprising upwardly divergent front and rear walls, the front wall having backwardly disposed side flanges, the rear wall having forwardly disposed side flanges, the flanges at each side being secured together to form a unitary side wall, said side walls having laterally disposed flanges at their upper ends for attachment to a

foot plate of a skate, and a transverse loop at the lower edges of the front and rear walls and integrally formed therewith and adapted to receive an axle mounting.

3. In a roller skate, a one-piece, sheet metal, box-like hanger comprising upwardly diverging front and rear walls, the front wall having backwardly disposed side flanges, the rear wall having forwardly disposed side flanges, the flanges at each side being in edge to edge contact and secured together by spot-welding to form a unitary side wall, said side walls having laterally disposed flanges at their upper ends for attachment to a foot plate of a skate, and a transverse loop at the lower edges of the front and rear walls and integrally formed therewith and adapted to receive an axle mounting.

4. In a roller skate, the combination of hanger means having a transverse housing, an axle member, and a sleeve member of yieldable material on said axle member and within said housing, one of said members having an annular recess and the other of said members carrying means extending into said recess for preventing axial movement of the axle member within said sleeve member.

5. In a roller skate, the combination of hanger means having a transverse housing, an axle member, and a sleeve of rubber on said axle member and within said housing, said axle member carrying a ball-like projection and said sleeve being recessed to receive said projection thereby preventing axial movement of the axle member within said sleeve.

6. In a roller skate, the combination of hanger means having a transverse housing, an axle, a sleeve of yieldable material within said housing, and a second sleeve of wear-resisting material on said axle and within said first sleeve, said second sleeve having a ball-like projection and said first sleeve being recessed to receive said projection thereby holding the second sleeve against axial movement within said first sleeve.

7. In a roller skate, the combination of hanger means having a transverse housing, an axle member, a sleeve member of yieldable material on said axle member, one of said members being recessed and the other of said members carrying means extending into said recess for preventing axial movement of the axle member within said sleeve member, and a sleeve split longitudinally at one side and adapted when expanded to slip over said sleeve member and when compressed about said sleeve member to be positioned within said housing.

8. In a roller skate, the combination of hanger means having a transverse housing, an axle, a sleeve of wear-resisting material on said axle, a sleeve of yieldable material on said first sleeve, said first sleeve having a ball-like projection and said second sleeve being recessed to receive said projection thereby holding the first sleeve against axial movement within said second sleeve, and a third sleeve split longitudinally at one side and adapted when expanded to slip over said second

sleeve and when compressed about said second sleeve to be positioned within said housing.

9. In a roller skate, the combination of hanger means having a transverse housing, an axle member, and a unitary sleeve member of yieldable material split longitudinally at one side and adapted when its sides are forced apart to be slipped over said axle member and then to be positioned within said housing, one of said members having an annular recess and the other of said members carrying means extending into said recess for preventing axial movement of the axle member within said sleeve member.

10. In a roller skate, the combination of hanger means having a transverse housing, an axle, a sleeve of wear-resisting material on said axle, and a second and unitary sleeve of yieldable material split longitudinally at one side and adapted when its sides are forced apart to be slipped over said first sleeve and then to be positioned within said housing, said first sleeve having a ball-like projection and said second sleeve being recessed to receive said projection thereby holding the first sleeve against axial movement within said second sleeve.

11. In a roller skate, the combination of hanger means having a transverse housing, an axle, a sleeve of wear-resisting material on said axle, a second and unitary sleeve of yieldable material split longitudinally at one side and adapted when its sides are forced apart to be slipped over said first sleeve, said first sleeve having a ball-like projection and said second sleeve being recessed to receive said projection thereby holding the first sleeve against axial movement within said second sleeve, and a third sleeve split longitudinally at one side and adapted to slip over said second sleeve and when compressed about said second sleeve to be positioned within said housing.

12. In a roller skate, the combination of hanger means, an axle member, a yieldable sleeve around said axle member, and a metallic sleeve surrounding said yieldable sleeve and carried by said hanger means, said axle member having a ball-like projection thereon and the walls of said yieldable sleeve being of reduced thickness adjacent to said ball-like projection whereby in the assembled construction axial movement is prevented and pivotal movement is permitted of the axle member with respect to the yieldable sleeve.

13. In a roller skate, the combination of hanger means, an axle, a sleeve of wear-resisting material on said axle, a sleeve of yieldable material around said first sleeve, and a third sleeve surrounding said second sleeve and carried by said hanger means, said first sleeve having a ball-like projection thereon and the walls of said second sleeve being of reduced thickness adjacent said ball-like projection whereby in the assembled construction axial movement is prevented and pivotal movement is permitted of the first sleeve with respect to the second sleeve.

ALEXANDER F. KAPTULLER.