

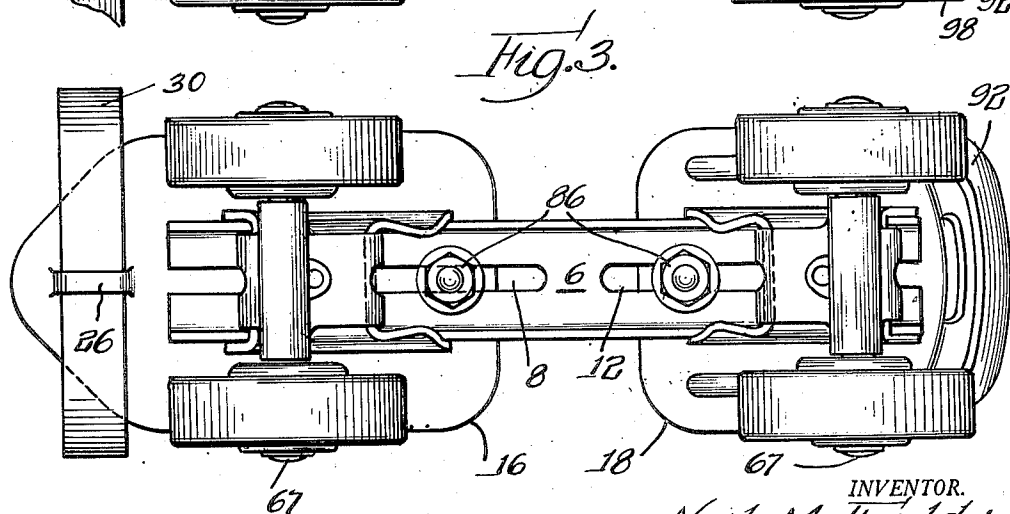
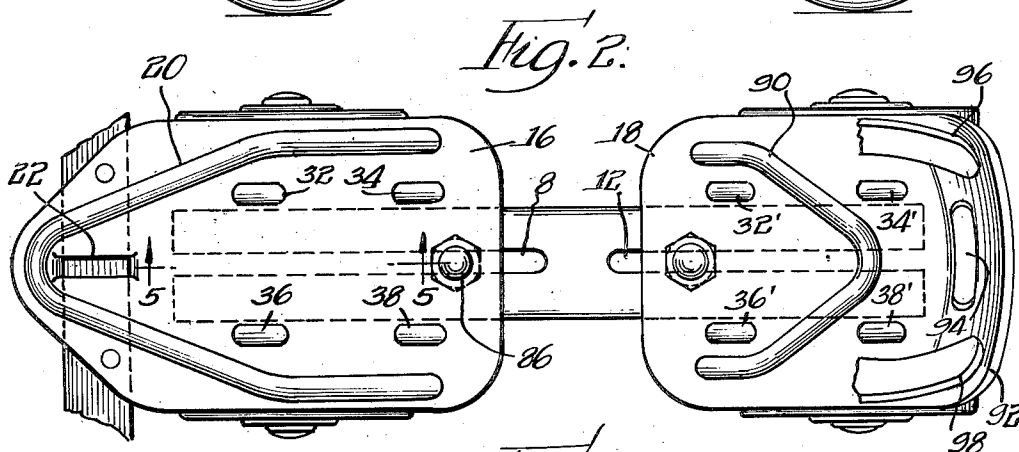
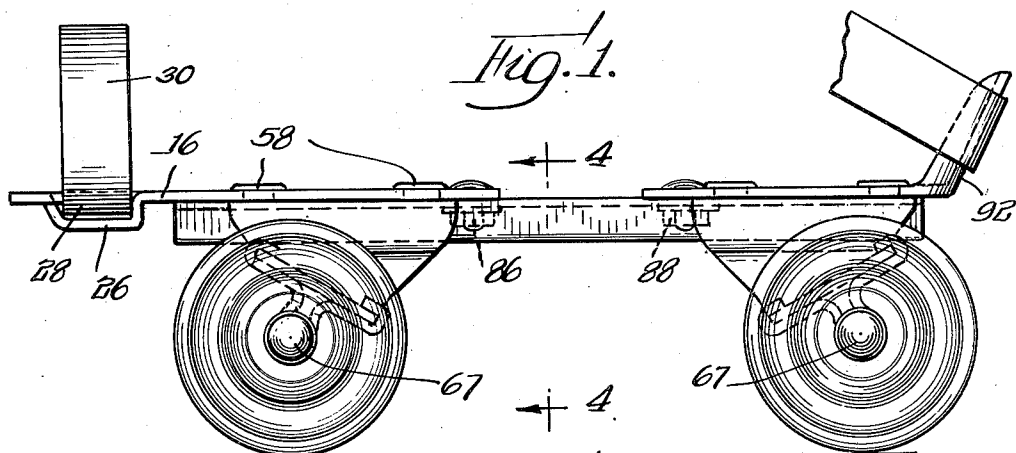
Nov. 21, 1950

N. M. FOULDS
ROLLER SKATE

2,531,357

Filed June 29, 1948

2 Sheets-Sheet 1



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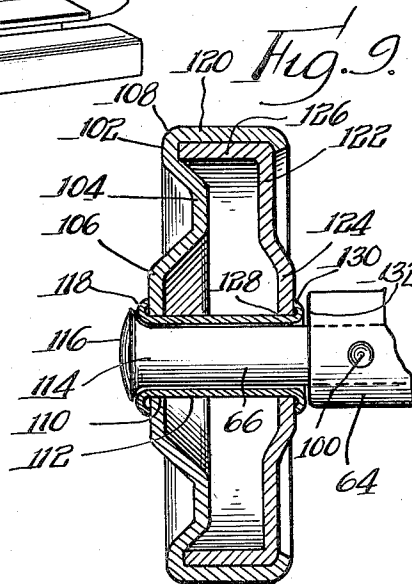
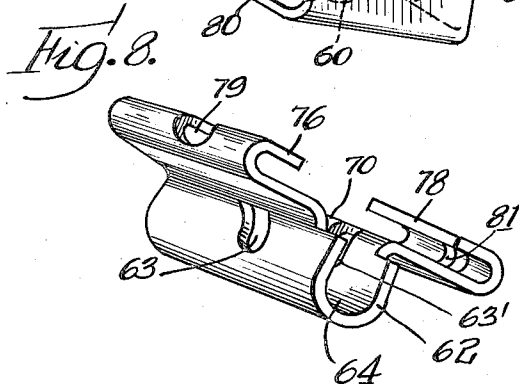
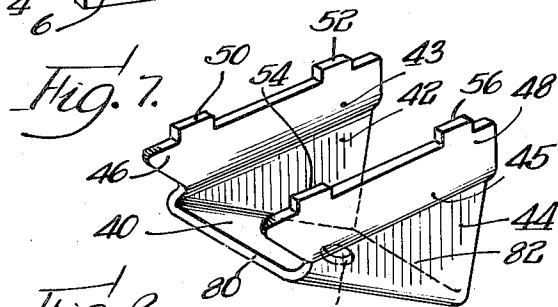
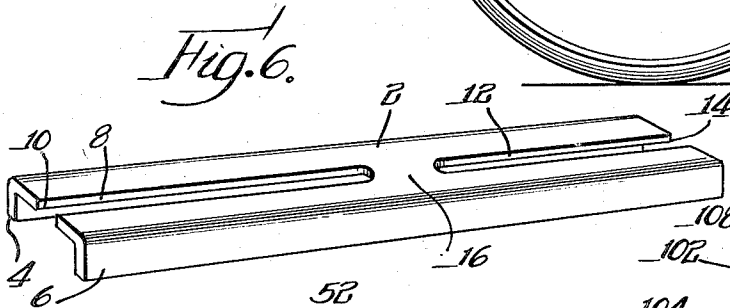
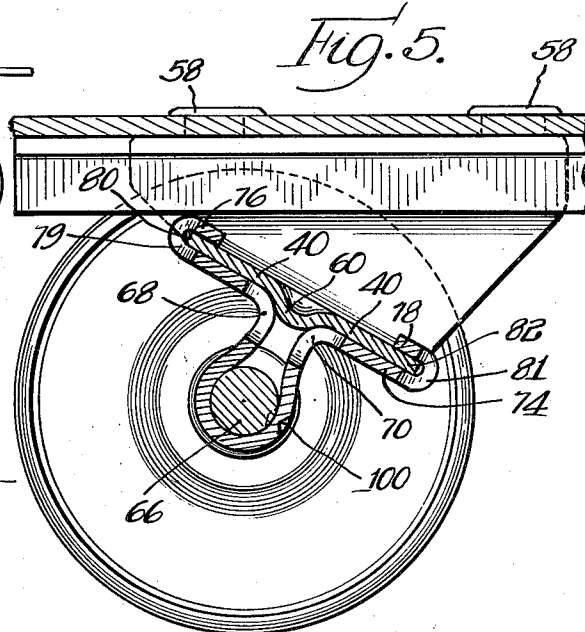
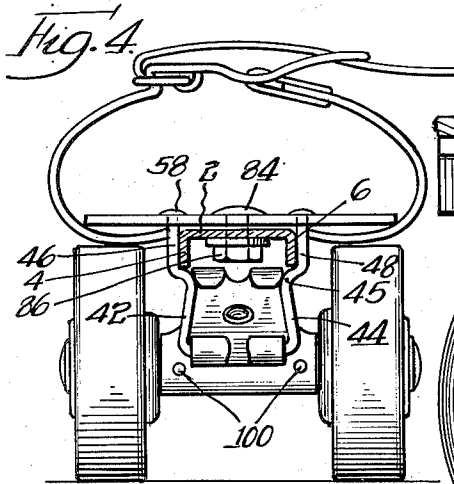
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UNITED STATES PATENT OFFICE

2,531,357

ROLLER SKATE

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6 Claims. (Cl. 280—11:19)

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This invention relates to roller skates.

Among the objects of the present invention is to provide an economically constructed roller skate involving a very simple structure for securing the front strap to the toe plate of the skate.

A further object of the invention is to provide a simple type of construction for fastening the hanger to the toe or heel plate of the skate.

Yet another object of the invention resides in providing a simple type of construction for securing the carrier to the hanger.

Yet another object of the invention resides in providing a simple construction for roller skates which will eliminate the necessity of rubber cushions and which provides a substantial resiliency to the body of the skate in the absence of the rubber cushions.

Yet another object of the invention resides in providing a new type of wheel for roller skates, which construction eliminates the necessity for ball bearings.

These and other objects of the invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein:

Figure 1 is a side view of the improved type of skate;

Figure 2 is a plan view of the skate;

Figure 3 is a bottom plan view of the skate;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a sectional view taken on the line 5—5 of Figure 2;

Figure 6 is a perspective view of the adjusting bar;

Figures 7 and 8 are perspective views of associated parts of the carrier and hanger supports; and

Figure 9 is a sectional view of one of the roller skate wheels.

Referring now to the drawings in detail, the skate comprises an elongated channel-shaped adjusting bar 2 having the depending parallel flanges 4 and 6 along its opposite sides. The body of the channel at right angles to the flanges 4 and 6 is provided with a slot 8 at the front thereof which is open as at 10 at the front, and a rear channel 12 open at the rear as at 14. The channel bar 2 is imperforate at the central portion 16 thereof. In addition the skate comprises the front or toe plate 18 and the heel plate 19. The front plate is of the general shape shown in Figure 2. It is preferably provided with an upstruck reinforcing bead or embossment 20 to rigidify the same. At the front the toe plate 16

is provided with parallel, spaced apart slits 22 and 24 to provide a downwardly struck, integral metal strap 26 providing a space 28 through which the toe strap 30 may pass. In this way a very simple type of integral strap construction formed unitarily with the plate 18 is provided.

In addition, each plate is formed with similarly placed slots 32, 34, 36 and 38. For convenience in reading, the slots for the rear plate are numbered 32', 34', 36' and 38'. These slots are placed exactly on the toe and heel plate, just outside of the vertical planes of the depending flanges 4 and 6 of the channel bar 2. These slots lie on opposite sides of the front to back center line of the toe and heel plates 18 and 19. These slots 32 to 38 inclusive are provided so that a metallic hanger may be secured to the underside of the plate. The hanger section of each wheel plate is shown in Figure 7 and it comprises a central, relatively flat sheet metal body portion 40 having upwardly bent parallel wings 42 and 44 which are substantially triangular in shape as viewed from the side of Figure 7. These wings 42 and 44 are at right angles to the body portion 40 and each includes at its upper end an upstanding elongated flange-like member 46 and 48. The wings 42 and 44, as shown in Figure 4, at their top portions curve inwardly as at 43 and 45 and thence extend vertically outwardly and upwardly and lie contiguously outside of the depending vertically extending flanges 4 and 6 of the channel bar 2. Each of the flange-like members 46 and 48 is provided with upwardly extending integral lugs 50 and 52. The opposite flange 48 is provided with lugs 54 and 56. These lugs are of the exact size to enter the slots 32 to 38 inclusive and when fitted therein the top ends of these lugs 50 to 56 inclusive are peened over in rivet-like fashion whereby securely, rigidly and integrally to fasten the hangers to the toe plates and also to the heel plates without the use of additional rivets. At the same time, due to the inward curvature of the portions 43 and 45 of these hangers and the upward extensions lying contiguously to the outer walls 4 and 6 of the channel bar, a very rigid structure and connection between the hangers and the toe plates is provided and at the same time this arrangement provides for a sliding adjustment of both the toe plates and the heel plates relatively longitudinally of the channel bar 2.

The bottom of the body portion 40 of each hanger is provided with a centrally located, substantially circular depressed button-like member

60 for centralizing the carrier member to the hangers, as hereinafter described.

The hanger section of each truck is adapted to receive and mount in the carrier for the axle. The carrier is shown in Figure 8. Each comprises a heavy gauge metal body portion 62 which is of substantially elongated channel U-shape in formation, as shown in Figure 8 and is provided at its upper portion with opposed slots 63 and 63' to lend resiliency to the same whereby it may clampingly engage and hold the axle as shown in Figures 5 and 9. The bottom 64 of the U-shaped portion is formed on a curve corresponding to the curve of the outer periphery of each axle 66 and 67. The two elongated flanges of this U-shaped portion 62 each extend upwardly and curve outwardly substantially at right angles thereto, as at 68 and 70, see Figure 5, to provide an elongated trough-like seat having internally curved walls conforming to the curvature of the centralized button-like depression 60 of the bottom wall 40 of each hanger. From the points 68 and 70 the sides of the carrier extend outwardly as at 72 and 74 and thence are provided at their free outer ends with U-shaped tongues 76 and 78 which are spaced apart to receive and clampingly engage the upper edge 80 and the bottom edge 82 of the body portion 40 of the hanger. These tongues 76 and 78 are pressed into tight clamping engagement with this upper edge 80 and lower edge 82 whereby permanently to unite the carrier to the hanger. In order to facilitate this clamping engagement each of these tongues 76 and 78 is centrally slotted as at 79 and 81 to provide increased resiliency thereat.

In this manner a hollow combined hanger and carrier construction for each truck is provided, which affords considerable resiliency and at the same time simplicity and ruggedness in construction and lightness in weight with economy in manufacture. By reason of the clamping effect and the resilient character of the U-shaped arm 64 the axle 66 is held in position by these carriers.

It will be noted that this construction permits a truck structure which does not require the use of a block of resilient material mounted in the hanger portion of the truck. This is because of the lightness in weight and the resilient inter-fitting of the hanger and carrier sections of each truck, together with the centralizing action of the centralized portions 60, 68 and 70 of the inter-fitting carrier and hanger portions, together with the clamping action of the flanges 76 and 78 about the plate-like body portion 40 of the hanger.

It will be understood that the front and rear plates are adjustably held to the channel bar 2 by means of the short bolts 84 which pass through bolt holes in the toe and heel plates and through the slots 8 and 12 in the channel bar and are held in position by the nuts 86 and 88.

Inasmuch as the rear carrier and hanger are connected in similar manner to the rear heel plate 18 no further description of the same is herein presented. The rear heel plate 18 is likewise provided with a rigidifying upstanding embossment 90 and with an integral upwardly outstanding heel plate 92 slotted as at 94 and 96 and 98. The slots 96 and 98 are adapted to receive the usual heel straps.

The front and rear axles 66 and 67 are both held in the similar carriers in the manner hereinbefore described. In addition, the axle is secured from turning in the carrier portion 64 by means of a punched indent 100.

The sheet metal wheels are constructed as

shown in Figure 9, without any ball bearings. In this construction each wheel section is formed of a pair of sheet metal disks, such as disk 102, which has the preferably laterally sunken peripheral portion 104 for rigidity and strength. Inwardly at its center the central portion 106 is formed outwardly laterally of the portion 104 or of the outer peripheral wall 108 of this wheel. The central circular portion 106 of this first disk 102 is provided with a circular central aperture 110 which is adapted to receive an elongated sleeve 112, which sleeve in turn receives the outer end 114 of the axle 66. The outer end of this axle is pinned as at 116 to hold it to the sleeve 114, and the sleeve in turn is pinned as at 118 to clamp over the central opening 110 of the outer wheel section 102. This wheel section 102 has the peripheral tread 120. The opposite section of the wheel is provided with a lateral wall portion 122 which at its inner central portion is provided with a central circular wall 124 lying outwardly of the wall 122. The outer periphery of the wall 122 is provided with the inwardly bent flange 126 which lies at right angles to the portion 122 and nests within the tread flange 120 of the opposite section. The central wall 124 of this section of the wheel is provided with a central opening 128 which surrounds the long sleeve 112 and the sleeve is peened over this hole 128 as at 130 whereby to clamp the two sections of the wheel together and likewise to clamp the wheel to the thimble or sleeve 112. The wheel in turn is held rotatably on the stationary axle 113 by the peened over end of the axle and also by the curved peened over portion 130 of the inner portion of the sleeve which cannot move inwardly further than the adjacent end 132 of the carrier 64 will permit.

Thus by means of this wheel construction I have provided a very light, sturdy, simple wheel without the need of a ball bearing. It will be understood that all the wheels are of the same construction.

It is apparent that many widely different embodiments of this invention may be made without departing from the spirit and scope thereof, and therefore it is not intended to be limited except as indicated in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A skate structure comprising toe and heel plates, an elongated channel-shaped bar adjustably connecting the toe and heel plates, a hanger connected to and depend from each of said plates, said hanger including opposed side walls and an elongated intermediate bottom plate disposed at a downwardly inclined angle with respect to said toe and heel plates, an axle carrier comprising a one-piece sheet metal member bent to provide an elongated, substantially U-shaped bottom portion having an inner wall curvature at its bottom corresponding to the peripheral curvature of the axle to be held therein, the opposed walls of said U-shaped bottom portion extending upwardly from the curved bottom portion thereof in inwardly curved formation and thence in outwardly curved opposite directions to provide plate-like extensions lying in a common plane, each of said extensions terminating in oppositely and inwardly curved upper clamping flanges disposed generally parallel to and spaced from said extensions, said clamping flanges clampingly engaging opposed edges of the intermediate plate-like member of the hanger.

2. A skate structure comprising a toe plate and

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a heel plate, an elongated channel-shaped bar adjustably connecting the toe and heel plates, a hanger connected to and depending from each of said plates, said hanger including opposed side walls and an elongated intermediate bottom plate disposed at a downwardly inclined angle with respect to said toe and heel plates, an axle carrier comprising a one-piece sheet metal member bent to provide an elongated, substantially U-shaped bottom portion having an inner wall curvature at its bottom corresponding to the peripheral curvature of the axle to be held therein, the opposed walls of said U-shaped bottom portion extending upwardly from the curved bottom portion thereof in inwardly curved formation and thence in outwardly curved opposite directions to provide plate-like extensions lying in a common plane, each of said extensions terminating in oppositely and inwardly curved upper clamping flanges disposed generally parallel to and spaced from said extensions, said clamping flanges clampingly engaging opposed edges of the intermediate plate-like member of the hanger, and a substantially circular depression adapted to lie between the outwardly curved upper walls of the U-shaped portion of the carrier to centralize the carrier with respect to said hanger, an axle mounted in each of said U-shaped portions of the hanger and wheels mounted on each of said axles.

3. A skate structure comprising toe and heel plates, an elongated bar adjustably connected to the toe and heel plates, a hanger connected to and depending from each of said plates, each hanger including opposed side walls and an intermediate bottom wall, an axle carrier of sheet metal bent to provide an elongated trough-shaped axle bearing portion having curved walls corresponding to the curve of the axle and forming a bearing to receive said axle, the upper opposed walls of said trough-shaped bearing being slotted to provide resilience, and said walls at their upper ends curving inwardly in spaced relation toward each other and thence curving outwardly away from each other to provide two oppositely extending plate-like extensions lying in a common plane, the outer end of each of said extensions being bent upon themselves to provide resilient clamping jaws clamping gripping opposed portions of the intermediate plate of said hanger.

4. A skate structure comprising toe and heel plates, an elongated bar adjustably connected to the toe and heel plates, a hanger connected to and depending from each of said plates, each hanger including opposed side walls and an intermediate bottom wall, an axle carrier of sheet metal bent to provide an elongated trough-shaped axle bearing portion having curved walls corresponding to the curve of the axle and forming a bearing to receive said axle, the upper opposed walls of said trough-shaped bearing being slotted to provide resilience, and said walls at their upper ends curving inwardly in spaced relation toward each other and thence curving outwardly away from each other to provide two oppositely extending plate-like extensions lying in a common plane, the outer end of each of said exten-

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sions being bent upon themselves to provide resilient clamping jaws clamping gripping opposed portions of the intermediate plate of said hanger, said intermediate plate of said hanger being formed with a depending centralizing embossment lying between the outwardly curving portions of the upper ends of said trough-like members whereby to centralize the carrier and the hanger in assembled relation.

5. A skate structure comprising toe and heel plates, an elongated bar adjustably connected to the toe and heel plates, a hanger connected to and depending from each of said plates, each hanger including opposed side walls and an intermediate bottom wall, an axle carrier of sheet metal bent to provide an elongated trough-shaped axle bearing portion having curved walls corresponding to the curve of the axle and forming a bearing to receive said axle, said opposed walls at their upper ends curving inwardly in spaced relation toward each other and thence curving outwardly away from each other to provide two oppositely extending plate-like extensions lying in a common plane, the outer end of each of said extensions being formed upon themselves to provide clamping jaws clamping gripping opposed portions of the intermediate plate of said hanger, said intermediate plate of said hanger being formed with a depending centralizing embossment lying between the outwardly curving portions of the upper ends of said trough-like members whereby to centralize the carrier and the hanger in assembled relation, the outer ends of said clamping members of said plate-like extension being slotted to impart resiliency thereto.

6. A skate structure comprising toe and heel plates, an elongated bar adjustably connecting the toe and heel plates and having downwardly extending parallel flanges, a hanger having an intermediate plate-like member and a pair of upstanding substantially triangular side walls, each of said side walls terminating in a pair of upstanding vertical extensions lying contiguous to and outside of said depending flanges of said elongated bar, said extensions being provided with spaced upstanding lugs, the lugs of each hanger passing through correspondingly shaped slots in a plate member with the upper ends of said lugs peened over whereby to attach said hanger to said plate member, and a sheet metal axle carrier having opposed clamping arms clamping to the intermediate plate-like member of said hanger and having a centralized elongated resilient axle-carrying portion and an axle in each of said axle-carrying portions, and wheels on said axle.

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