

June 13, 1939.

A. H. SHOEMAKER

2,162,128

ROLLER SKATE

Filed March 10, 1937

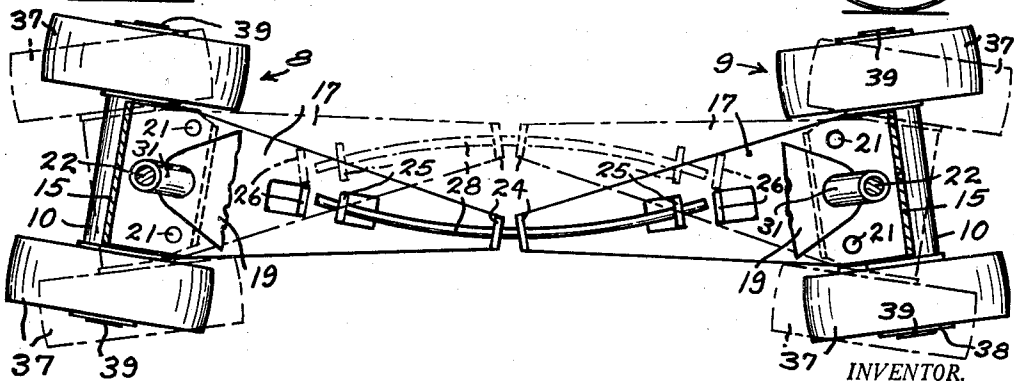
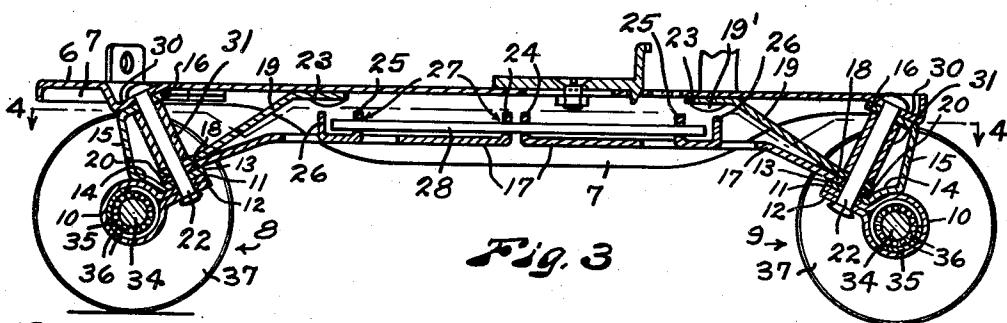
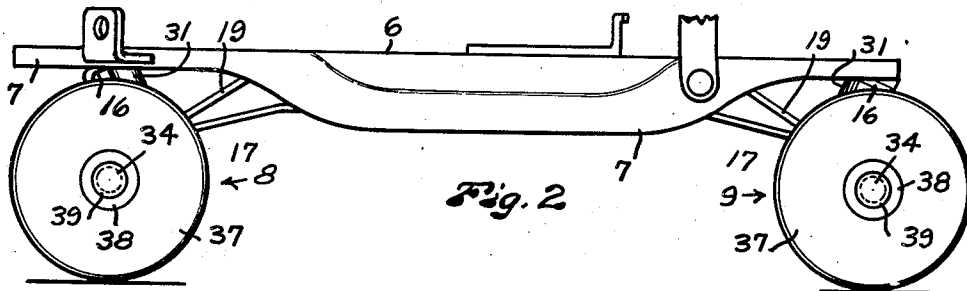
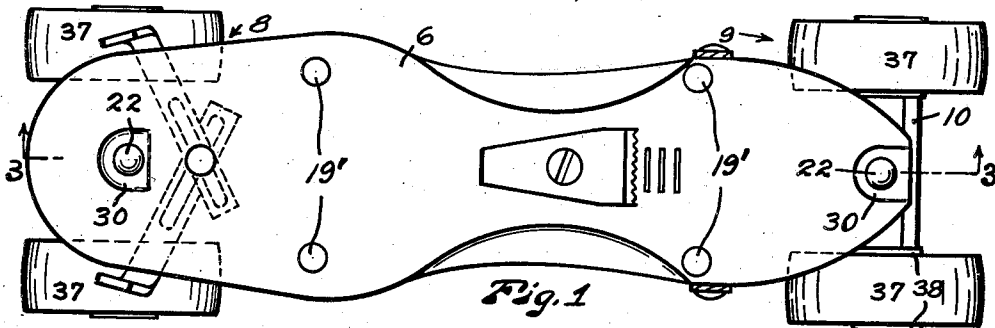


Fig. 4

Alvin H. Shoemaker

BY
Fred C. Matheny
ATTORNEY

UNITED STATES PATENT OFFICE

2,162,128

ROLLER SKATE

Alvin H. Shoemaker, Seattle, Wash., assignor of
one-half to Jacob George Smith, Seattle,
Wash.

Application March 10, 1937, Serial No. 130,017

8 Claims. (Cl. 280—11.19)

This invention relates to roller skates and the primary object of this invention is to provide simple and efficient means for resiliently connecting together the front and rear trucks of a roller skate in such a manner as to provide for maximum efficiency in the operation of said trucks as respects steering and turning of the skate.

Another object of this invention is to provide a roller skate of simple, efficient and inexpensive construction which is equipped with rubber wheels, rendering it substantially noiseless in operation, eliminating vibration to a large extent and making the skate especially advantageous for the use of children in skating on sidewalks, pavements, floors of houses and like surfaces.

Another important object of the invention is to provide a roller skate having at each end a truck in the form of a pair of wheels mounted for caster like swinging movement about an axis which is inclined relative to the vertical when the skate is resting on a horizontal support and to further provide means connecting together the two pairs of wheels or trucks at the respective ends of each skate in such a manner as to equalize and coordinate the endwise swinging movement of the two pairs of wheels and thus greatly facilitate turning with the skates.

Another object is to provide a roller skate which is very light in weight, the main frame parts of said skate being constructed of light material and all excess parts being eliminated.

Other and more specific objects of the invention will be apparent from the following description taken in connection with the accompanying drawing.

In the drawing, Fig. 1 is a plan view of a roller skate constructed in accordance with this invention parts being broken away.

Fig. 2 is a side elevation of the same.

Fig. 3 is a sectional view substantially on broken line 3—3 of Fig. 1.

Fig. 4 is a sectional view substantially on broken line 4—4 of Fig. 3, showing certain operative positions by dot and dash lines.

Like reference numerals designate like parts throughout the several views.

Referring to the drawing, I show a skate embodying a sheet metal foot plate 6, provided with a down-turned edge 7, for the purpose of strengthening the same. Any suitable binding means may be provided for securing the foot plate 6 to a shoe, as this fastening or binding means does not form any part of the present invention, only a fragment of the same is shown and it is not herein described.

Two skate trucks, designated generally by numerals 8 and 9, are provided adjacent the respective end portions of the foot plate 6. These two trucks are of substantially duplicate construction

and the following specific description will apply to either of the same.

Each of the trucks comprise a bearing member, preferably formed of a piece of sheet metal bent to provide a bearing tube or tubular housing portion 10. This bearing tube 10 has two outwardly extending edge portions 11 and 12 which project substantially radially therefrom and are positioned in face to face contacting relation, and are secured together as hereinafter described. A channel shaped bracket member comprising a base portion 13, a curved portion 14, an upright portion 15 and an upper foot plate engaging portion 16 is positioned on the bearing tube 10 with the base portion 13 resting on the outwardly projecting parts 11 and 12 and the curved portion 14 resting on the tubular part 10 of said bearing tube. The foot plate 6 is provided with a depressed inclined portion 30 which rests on the foot plate engaging portion 16 of the channel shaped bracket. A coupling member 17 of flat metal has one end portion 18 positioned on the base portion 13 of the channel shaped bracket. The overlapped parts 11, 12, 13 and 18, are all rigidly secured together preferably either by spot welding or riveting as indicated by circles 21 in Fig. 4. A truss bracket 19 has one end portion 20, positioned on the overlapped parts 11, 12, 13 and 18. An inclined pivot member 22 extends downwardly through the depressed portion 30 of the foot plate 6 and through the overlapped parts 11, 12, 13 and 18 and pivotally connects the truck member with the foot plate 6 and with the bracket 19. A spacer sleeve 31 is provided on the pivot member 22. The pivot member 22 is positioned substantially mid way between the two ends of the bearing tube 10 and substantially in the vertical plane which bisects the footplate longitudinally. The length of the bearing tube 10 is preferably slightly less than the width of the footplate. Each truss bracket 19 extends upwardly and outwardly from the bearing tube 10 at an incline and in a direction as shown in Figs. 2 and 3 and has an end portion 23 which is fixedly secured to the foot plate 6 by rivets 19'. The coupling member 17 of the rear truck 9 extends forwardly of the skate underneath the footplate 6 and the coupling member 17 of the front truck 8 extends rearwardly of the skate underneath the footplate 6. These two coupling members do not overlap but terminate a short distance from each other and substantially mid way between the two trucks. Each coupling member 17 has an upwardly extending lug 24 at the end thereof remote from the truck and has two other upwardly extending lugs 25 and 26 positioned a substantial distance back from the lug 24. The lugs 24, 25 and 26 are all aligned with each other and are in alignment longitudinally of the coupling member, the two lugs 25 and 26 are spaced a short distance

apart and are preferably positioned about half way between the two ends of the coupling member 17. The lugs 24 and 25 have aligned perforations 27 therein for the reception of a straight spring member 28, preferably of cylindrical cross section. The lugs 26 are not perforated and said lugs 26 serve as stop means preventing endwise displacement of the spring member 28. The spring member 28 exerts a yielding force tending to hold the two coupling members in alignment with each other but may be freely bent, like a bow, in either direction to permit such pivotal movement of the trucks 8 and 9 as will be required in turning the skate. This spring member 28 also helps to prevent the coupling members 17 from dropping down and keeps them in the same vertical plane.

The axis of the pivot member 22 of each truck 8 and 9 is positioned in a plane which is perpendicular to the foot plate 6 and bisects the foot plate 6 longitudinally and is preferably inclined at an angle of about twenty five degrees relative to planes perpendicular to, and extending crosswise of, the foot plate 6. The pivot member 22 which extends from the foot plate downwardly through the bracket means of the front truck 8 is inclined rearwardly and the corresponding pivot member 22 which extends from the foot plate downwardly through the bracket means of the rear truck 9 is inclined forwardly.

Each bearing tube 10 is adapted to receive an axle 34 which is of substantially smaller diameter than the bearing tube. A helical race member 35 in the form of a helix of spring wire is disposed within the bearing tube 10 and rollers 36 are disposed within the helical race member 35 and around the axle 34 to provide a roller bearing extending throughout the length of the bearing tube. Wheels 37 are provided on each end of each axle 34. These wheels are preferably made of rubber which is built up and cured and vulcanized in such a manner as to form relatively hard hub portions and peripheral portions which are durable and wear resistant but are not so hard, whereby the peripheral portion will yield to small obstructions, as to sand and small pebbles and will run with substantially no noise when in use. One of the wheels 37 is preferably pressed tightly onto each axle 34 so that the axle will always be caused to turn with said wheel. The other wheel fits snugly on the axle but will turn on the axle sufficiently to provide a differential action between the two wheels on an axle when the skate is making a turn in use. Obviously when the skate is moving in a straight line the axle will turn with the wheels, and said axle will rotate very freely within the roller bearings 36. A washer 38 is preferably provided on the axle 34 in engagement with the hub portion of the wheel on each side of each wheel 37 and the axle may be upset to form a head 39 at each end.

When the user throws more weight on one side of the skate than on the other the torque thereby exerted on the inclined pivots will tend to turn both sets of wheels in the proper direction to turn the skate in the direction toward which the weight is exerted. For instance, referring to Fig. 4, if excess weight is thrown onto the right hand side of the skate frame, that is, the side which is toward the top of the sheet in Fig. 4, then the front wheels will be inclined angularly in one direction and the rear wheels inclined angularly in an opposite direction, as shown by full lines, while if excess weight is placed on the left hand side of the skate frame the angular movement

of the wheels will be toward the positions shown by dot and dash lines. As soon as the weight is again centralized on the skate the torque on the inclined pivots and the resilience of the spring 28 will both tend to cause the wheels to become aligned parallel to the length of the skate. The coupling between the front pair of skate wheels and the rear pair of skate wheels always tends to keep the front and rear skate wheels in corresponding positions. If the weight on the skate is centralized this coupling tends to hold both sets of wheels parallel with the longitudinal plane of the skate. If either set of wheels is turned sidewise this coupling tends to turn the other set of wheels sidewise the same amount in the opposite direction.

These skates are non-extensible as to length thus simplifying the frame structure and making it possible to reduce the weight of the skate to a minimum.

The several features hereinbefore described combine to produce a roller skate which is strong and durable in construction, light in weight, inexpensive to manufacture, free running, free from noise and vibration, very easily manipulated and especially sensitive to a shifting of weight for the purpose of guiding or turning.

The foregoing description and accompanying drawing clearly disclose what I now regard as a preferred embodiment of my invention, but it will be understood that this disclosure is merely illustrative and that such changes may be made as are fairly within the scope and spirit of the following claims.

I claim:

1. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members rigidly connected with the respective skate trucks and otherwise free from connection with the foot plate and extending toward each other beneath the foot plate and terminating with their end portions closely adjacent each other; a spring member paralleling adjacent portions of said two coupling members; and means operatively connecting said spring member with each of said coupling members at a plurality of spaced apart points, whereby said spring member will compel substantially equal transverse movement in the same direction of the adjacent end portions of said coupling members and resistance of said spring member to flexure will yieldingly resist sidewise deflection of said coupling members.

2. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members rigidly connected with the respective skate trucks and otherwise free from connection with the foot plate and extending toward each other beneath the foot plate and terminating with their end portions closely adjacent each other; a spring member disposed parallel with and adjacent to said two coupling members and extending across the ends of both of said coupling members; means on the adjacent end portions of the coupling members engaging said spring member; and means on each of said coupling members positioned at a substantial distance from the ends thereof engaging said spring member whereby said spring member will compel substantially equal transverse movement in the same direction of the adjacent end portions of said coupling members and sidewise deflection of said coupling members will be yieldingly

resisted by flexure of said spring member.

3. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members rigidly connected with the respective skate trucks and otherwise free from connection with the foot plate and extending toward each other beneath the foot plate and terminating with their end portions closely adjacent each other; two perforated lugs on the adjacent end portions of the respective coupling members; two other perforated lugs on the respective coupling members spaced from said first mentioned lugs; and a spring member extending through the perforations in all of said lugs yieldingly urging said coupling members into positions aligning the wheels of said skate trucks longitudinally of said foot plate and compelling substantially equal transverse movement in the same direction of the adjacent end portions of said coupling members.

4. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members rigidly connected with the respective skate trucks and otherwise free from connection with the foot plate and extending toward each other beneath the foot plate and terminating with their end portions adjacent each other; two perforated lugs on the adjacent end portions of the respective coupling members two other perforated lugs on the respective coupling members spaced substantially mid way between said first mentioned lugs and said skate trucks; and a spring member extending through all of said lugs yieldingly urging said coupling members into positions aligning the wheels of said skate trucks with the longitudinal axis of said foot plate and providing a bow member resisting side deflection of the adjacent end portions of said coupling members.

5. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members fixedly connected with the respective skate trucks and extending toward each other beneath the foot plate and terminating with their end portions adjacent each other; two perforated lugs on the adjacent end portions of the respective coupling members; two other perforated lugs on the respective coupling members spaced from said first mentioned lugs; a spring member extending through all of said perforated lugs yieldingly urging said coupling member into positions aligning the wheels of said trucks longitudinally of the foot plate; and stop lugs on said coupling members positioned to engage the end portions of said spring member.

6. In a roller skate, a foot plate; two roller skate trucks pivotally mounted on said foot plate adjacent the respective ends thereof; two coupling members rigidly connected with the respective skate trucks and otherwise free from connection with the foot plate and extending toward each other beneath the foot plate and terminating with their end portions closely adjacent each other; two perforated lugs on the respective end portions of the respective coupling members; two other perforated lugs on the respective coupling members spaced from said first mentioned lugs; all of said lugs being in longitudinal alignment when the wheels of the skate

truck are aligned longitudinally of the foot plate; and a substantially straight piece of spring wire extending through the perforations in all of said lugs, said spring wire yieldingly resisting angular movement of said coupling members and compelling substantially equal transverse movement in the same direction of the adjacent end portions of said coupling members.

7. In a roller skate, a foot plate; two roller skate trucks comprising bearing brackets provided adjacent the respective ends of said foot plate, two pivot devices connecting the respective bearing brackets with the foot plate, said pivot devices being positioned in the vertical plane which bisects said foot plate longitudinally and being inclined toward the center of the foot plate from top to bottom, a transverse bearing tube connected with each of said bearing brackets, an axle extending through each bearing tube, roller bearing means supporting each of said axles and a skate wheel provided on each end of each of said axles; two coupling members secured to the respective bearing brackets and extending toward each other and terminating approximately mid way between the two bearing brackets; a spring member disposed parallel with and adjacent to said two coupling members and extending across the ends of said two coupling members; means on the adjacent ends of the coupling members engaging said spring member; and means on each of said coupling members positioned in spaced relation from the ends thereof engaging said spring member whereby sidewise deflection of said coupling members will be yieldingly resisted by the resistance of said spring to flexing.

8. In a roller skate, a foot plate; two bearing brackets positioned beneath said foot plate adjacent the respective ends thereof, each of said bearing brackets comprising a transverse bearing tube, flange means extending radially outward from said bearing tube, a generally upright trough shaped bracket positioned on said bearing tube and said flange means and fixedly secured thereto, an inclined truss bracket, and a pivot member pivotally connecting one end portion of the inclined truss bracket and said foot plate with said bearing tube and said channel shaped bracket, said truss bracket extending upwardly and toward the center of the foot plate and being rigidly secured to the foot plate and said pivot member being positioned in the vertical plane which bisects said foot plate longitudinally and being inclined toward the center of the foot plate from top to bottom; an axle extending through the bearing of each bearing bracket; roller bearing means supporting each of said axles; a skate wheel provided on each end of each of said axles; two coupling members secured to the respective bearing brackets and extending toward each other and terminating approximately mid way between the two bearing brackets; a spring member disposed parallel with and adjacent to said two coupling members and extending across the ends of said two coupling members; means on the adjacent ends of the coupling members engaging said spring member; and means on each of said coupling members positioned in spaced relation from the ends thereof engaging said spring member whereby sidewise deflection of said coupling members will be yieldingly resisted.

ALVIN H. SHOEMAKER.