

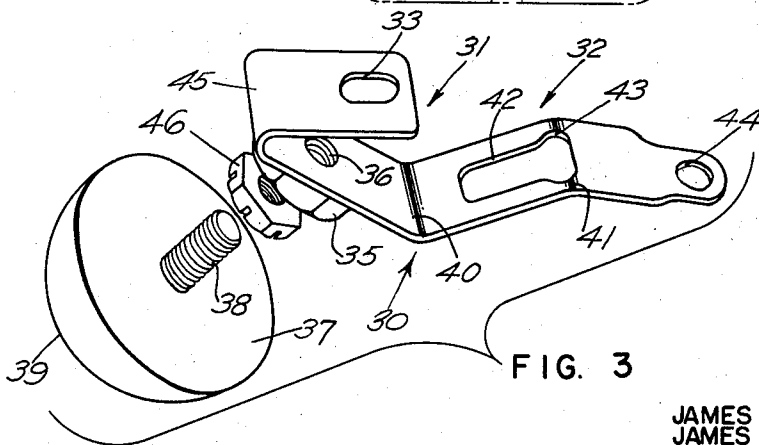
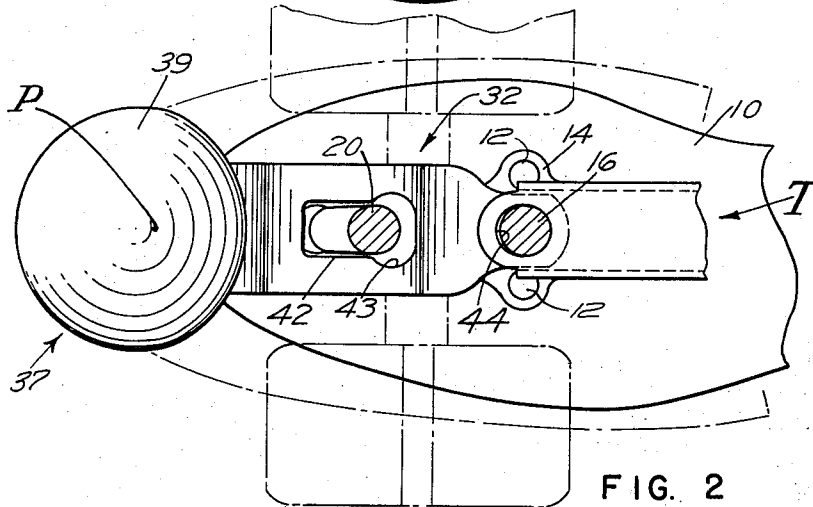
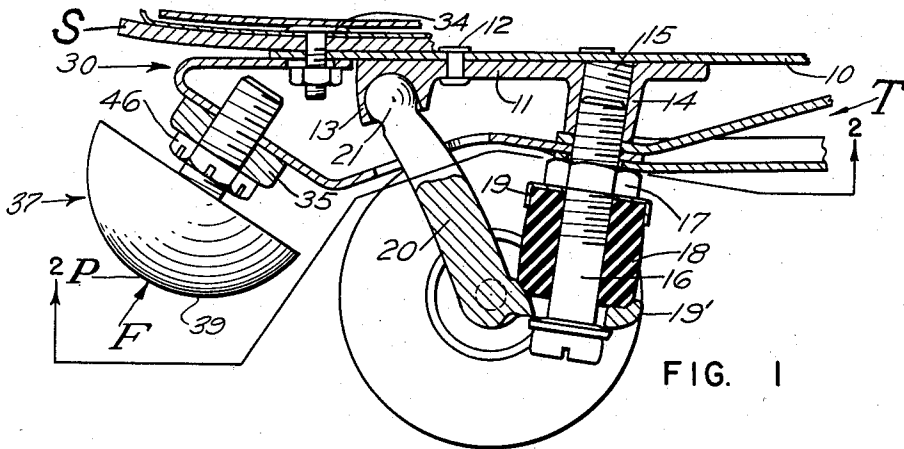
May 17, 1960

J. C. HARTLEY ET AL
ROLLER SKATE ATTACHMENT

2,937,031

Filed Nov. 13, 1957

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

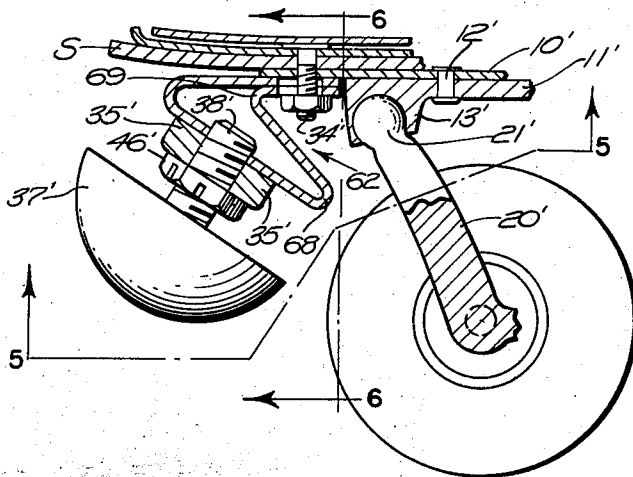


FIG. 4

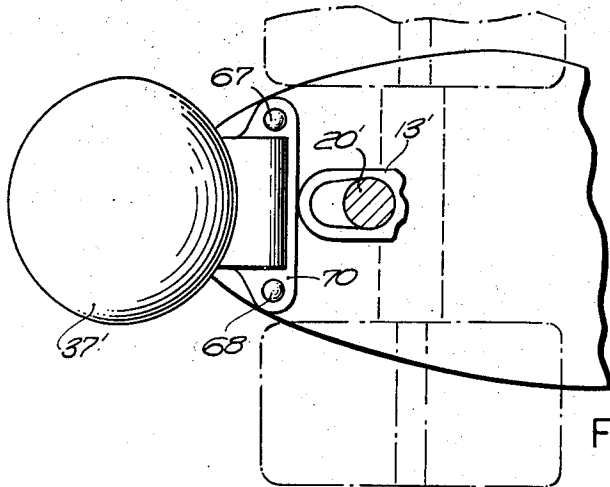


FIG. 5

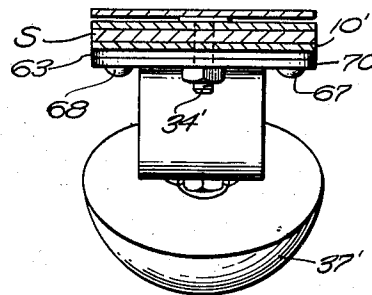


FIG. 6

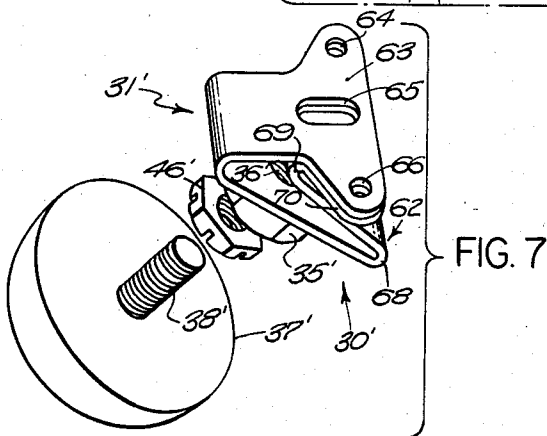


FIG. 7

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2,937,031

ROLLER SKATE ATTACHMENT

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3 Claims. (Cl. 280—11.2)

This invention relates to the roller skate art, and particularly to an attachment for a roller skate.

Figure skating on ice has been popular for over a century and has become the essence of certain modern competition. With rising popularity of figure skating on ice, there evolved a desire on the part of the roller skaters also to execute certain intricate figures. However, in order to execute certain types of extreme turns and certain other movements, a considerable amount of body contortion is necessary in order to perform that movement. It was apparent, therefore, that some type of attachment for the usual roller skate was necessary in order to assist in these movements and to execute proper interpretive footwork which is of utmost importance in competition where the manner of performance of certain figures is the point of judgment of the accomplishment of the particular skater involved. Accordingly, there has come into use of late an attachment for roller skates which generally consists of a resilient member, such as a piece of rubber, that is clamped in some manner adjacent one of the trucks of the roller skate. Some of the developments along this particular line of thinking have evolved a structure which establishes substantially a rigid connection between the roller skate shoe plate and the resilient member. With such a construction, it would be obvious that the only resiliency afforded to the user of such device was through the medium of the resilient member which was usually mounted adjacent the toe portion of the skate. Thus, when this resilient member was put into contact with the floor, a rather substantial force would be applied to the skate structure. In a structure including a shoe affixed to a skate, it would stand to reason that with forward body movement there is a certain inertia effect on the shoes relative to the sole plate of the skate which tends to shear the shoe plate rivets. Thus, while for some purposes it may be perfectly satisfactory to utilize merely a piece of resilient material effectively rigidly attached to the sole plate of a rink roller skate and use such a device to execute figures and novelty spins which are generally performed on one toe, it is desirable that the roller skate attachment have an ability to absorb the shock of impact. Additionally, when such an absorber is utilized, a greater degree of levitation will be achieved through the use of such an attachment so that the skater will be greatly aided in performing some of the interpretive footwork which is necessary in figure skating. Accordingly, if the attachment is in the form of a spring device, it will not only serve to absorb shock forces but will also return to some degree the force imparted to it which is useful in some figures and particularly in jumping actions.

It is, therefore, one of the main objects of this invention to provide a spring mounting for an impact member which makes a direct contact with the skating surface.

An additional object of the invention is to absorb the impact of shock that might be imparted to the impact member.

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A further object of the invention is to provide a device which when attached to a rink roller skate will allow the user thereof to achieve a greater degree of levitation than has heretofore been possible.

A more specific object of the invention is to provide a lightweight spring tempered mounting bracket for an impact member and which will be easily attached to existing roller skate constructions.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is an elevational view of a fragmental portion of the forward end of a roller skate showing a portion of the shoe which is attached to the roller skate and a toe attachment bracket of our invention.

Fig. 2 is a sectional view taken on lines 2—2 of Fig. 1 showing the rollers and shoe sole in broken line.

Figure 3 is a detached perspective view of the impact member and its mounting bracket.

Fig. 4 is an elevational view similar to Fig. 1, showing a modified attachment bracket.

Fig. 5 is a view taken on line 5—5 of Fig. 4.

Fig. 6 is a view taken on line 6—6 of Fig. 4; and

Fig. 7 is a detached perspective view similar to Fig. 3 showing the modified bracket.

In proceeding with this invention, a piece of sheet steel in strip form is suitably formed to provide a spring attachment bracket for a resilient floor contacting member. Additionally, at suitable locations, such as at the extreme ends of the strip of material, holes or slots are formed to facilitate attachment of the strip to an existing roller skate structure. The formed material is then hardened and drawn to a spring temper. A suitable finish may then be applied to the piece, such as by plating, so that it will resist oxidation.

Referring now to the drawings, a portion of a rink skate is illustrated, as by way of example, which comprises a sole plate 10 to which a shoe having a sole S may be secured by rivets (not shown). It will be understood by those familiar with the art that the sole plate is provided at opposite ends with front and rear wheel support units which, in some construction, are joined together by means of bracing devices and action assemblies which do not form a part of this invention. The wheel assemblies, which are sometimes referred to as wheel trucks, are usually secured to the sole plate of the skate by a means such as a hanger bracket 11. While the means of attachment of the wheel truck shown in the instant application is purely exemplary, it is at least illustrative of one of the types in common use by the roller skate manufacturers.

The hanger bracket 11 is usually riveted such as at 12 or otherwise secured to the sole plate 10 and is formed with a front boss 13 and a rear boss 14. The rear boss 14 has a threaded bore 15 to provide a support for a kingpin or action screw 16 which is threadedly received therein. This action screw is locked in adjusted position by a lock nut 17 which also serves to secure certain truss members T to the action screw and also the attachment bracket 30 of the instant invention.

It has become the practice to embrace the action screw by at least one cushion member 18 which extends between the flanged washers 19, 19' that are held between the head of the screw and the lock nut 17. In many instances, as in the present showing, the lower washer 19' is part of a casting which forms the pivot arm 20 having an enlarged lower end tapering into a spherical portion 21. Wheel axles are usually attached near the junction of washer 19' and arm 20 in a suitable manner and the

wheels associated therewith are therefore well supported by the action screw 16 and arm 20 whose ball 21 is received in the boss 13 to form the usual ball and socket connection.

As best seen in Fig. 3, the attachment bracket 30 comprises an elongated strip of material with a forward V-shaped portion generally designated 31 and an arch shaped portion generally designated 32. The V-shaped portion 31 has one leg thereof formed with a slot 33 which is adapted to adjustably receive a mounting bolt 34 that extends through the sole plate 10 and the sole of the shoe. The other leg of the V-shaped portion is provided with a boss 35 that has a threaded bore 36 therein. This bore is adapted to receive a resilient member 37 which is made from rubber or the like and which has mounted therein an attachment screw 38. A lock nut 46 is also provided to secure the screw 38 in adjusted position in bore 36. As will be noted from the drawings, the resilient member 37 is preferably shaped to provide a generally spherical floor engaging surface although the shape of this member is not critical and may be varied.

The arch shaped portion 32 of the bracket 30 is shown as being formed with two distinct bends, the first bend, of course, taking place at the point of departure 40 from the V-shaped portion and the second bend being made somewhat mid-way along the extent thereof as at 41. These bends, of course, may assume most any angle within the limits to form a suitable attachment for a particular roller skate structure and in the instant embodiment, as illustrated, are preferably on the order of from 10 to 30 degrees from a straight line.

It will be apparent particularly from examining Fig. 2 that the arch shaped portion 32 as it extends rearwardly from the forward V-shaped portion 31 must of necessity bypass in some manner the forward pivot arm 20 of the wheel truck assembly. For this purpose, therefore, a slot 42 having a widened section 43 is cut into this portion, the widened section 43 being necessary to allow sufficient lateral movement of larger pivot arms which are found in certain skate constructions.

It will be apparent also by reason of having to bypass the brace member that the stock is thinned around the location of the slot 42, 43 which thinning is beneficial in that it enhances the resiliency of the member at this point as will shortly appear.

The far end of the arched portion 32 is provided with a suitable means for attachment to the wheel truck of the roller skate, and, in the instant embodiment, is shown as consisting of an aperture 44 that is adapted to receive the action bolt 16. In Fig. 1 the far end of the arched portion 32 is shown as being received between two of the truss members T and, of course, this positioning is purely illustrative as other arrangements may be necessary in order to place the forward portion of the bracket flat against the underside of the sole plate 10.

It will be apparent, therefore, that when the bracket 30 is supported at its two ends by reason of the aperture receiving the action bolt 16 and a rigid attachment through the bolt 34, that the bracket 30 is substantially prevented from movement in either a longitudinal or lateral direction relative to the sole plate. The position of this bracket member when affixed to the roller skate is amply illustrated in Fig. 1. In referring to this figure, it will be seen and appreciated that when a jump or other acrobatic figure is wished to be performed by the artist that the toe portion of the shoe may be pressed downwardly thereby engaging the resilient toe member 37 with the floor. This will occur roughly on a tangential line drawn from the wheel to the toe block, and in the instant embodiment of the invention might be located somewhere in the vicinity of point P as shown in Fig. 1.

Now it will become apparent that the bracket member 30 is not formed so as to complete with the sole plate

a rigid support triangle, but rather has a portion thereof that is longer than necessary to span the distance between the points to which it is attached. Therefore, when a force is exerted in the direction shown by the line F, the longer portion or the arched shape portion 32 will distort within its elastic limit as primary bending occurs at 45 resisted by the arched portion 32 which bends at 41. As previously pointed out, the stock of the bracket member has been reduced adjacent location 41 and, therefore, there will be extreme resiliency which will allow the whole bracket to give with a definite spring action. The bracket, therefore, being free to flex will in effect move, in the arched portion, along the principal axis of the skate.

Referring now to Figures 4 to 7, I have shown a modified form of an attachment bracket for a roller skate in which like parts of the previous embodiment bear like reference numerals with a prime. As best seen in Figure 7, the attachment bracket 30' comprises a strip of material with a forward V-shaped portion generally designated 31' and a re-entrant section generally designated 62. The V-shaped portion 31' has one leg thereof formed with a flange 63 which has pierced therein three mounting holes 64, 65 and 66. Hole 65 is adapted to receive the mounting bolt 34' that extends through the sole plate 10' and the sole S of the shoe. This mounting bolt 34' replaces the existing rivet which attaches the sole of the shoe to the sole plate 10' as the skate is normally delivered to the user. It will be noted that the hole 65 is made elongated which allows for certain longitudinal adjustment of the attachment 30' relative to the sole plate 10' so that the edge of the flange may readily abut the boss 13' and provide a wide area of engagement between the flange 63 and the underside of the sole plate 10'. The holes 64 and 66 are adapted to cooperate with new holes that must be drilled through the sole S and the sole plate 10' to receive rivets such as 67, 68.

The other leg of the V-shaped portion 31' is provided with a boss 35' that has a threaded bore 36' therein. This bore is adapted to receive a resilient member 37' which is made from rubber or the like and which has mounted therein an attachment screw 38'. A lock nut 46' is also provided to secure the screw 38' in adjusted position in bore 36'. As in the previous embodiment, the resilient member is shaped with a generally spherical floor engaging surface, although the shape of this member is not critical and may be varied to suit particular use to which the device may be put.

The re-entrant portion 62 of the bracket 30' is shown as being bent, as at 68, toward the V-shaped portion 31'. A second bend is made as at 69 and from this point a flange portion 70 is formed which is of identical shape to the flange portion 63. This flange portion 70 has three holes pierced therein of identical shape and size to the holes 64, 65 and 66 in the flange 63 and are of course in registry therewith.

It will be apparent therefore that when the bracket 30' is secured to the sole plate 10' by reason of attachment of the flanges 63 and 70 to the underside of the sole plate 10' through the medium of the attachment bolt 34' and the rivets 67 and 68, that the entire attachment is restrained from a lateral twisting action by reason of the three point attachment. It will be appreciated that in this embodiment as in the other embodiments that when the force is applied to the member 37' for instance in a direction actually in axial alignment with the attachment screw 38' that there will be a tendency for the V-shaped section 31' to bend to a smaller angle and at the same time a force will be exerted on the re-entrant portion 62 causing a bending moment to occur at bends 68, 69. The effective result is that the entire attachment will bend in a manner so that the general counter-clockwise twisting is effected as viewed in Figure 4 in relation to the entire roller skate assembly. Accordingly, there is both primary and secondary bending occurring not only

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at the V-shaped section 31' but also at bends 68 and 69. It will be appreciated that the actual spring action or the modulus of elasticity of the attachment 30' can be varied by certain techniques as known to those skilled in the art such as by choice of materials, tempering of the stock and varying the thickness thereof.

It can, therefore, be appreciated that by providing brackets such as are shown and described in the instant application, that an added levitation can be secured that is in fact much greater than what can be secured by the use of a rigidly attached resilient member alone. This comes about because the bracket is capable of returning the energy delivered thereto, the combined elements not relying only on the resilient material for spring. It will be realized that the modulus of elasticity of the resilient member must be limited to a point where some elasticity is exhibited but yet not a sufficient elasticity so that extreme deformation will take place under extreme loads. Thus the bracket of the present invention compensates for the physical limitations imposed on similar devices of the prior art by providing a spring loaded member and allows the skater to execute with greater ease certain jumping and interpretative movements in rink roller skating. Of equal importance is the strengthening of the toe section afforded by the bracket 30 which also absorbs the shock loads imparted thereto by member 37.

We claim:

1. In a roller skate having a sole plate with a truck mounting bracket secured thereto and a truck secured to said bracket, a bracket comprising a spring member supported by said truck between the wheels thereof, said member extending forwardly from said truck in a first portion defining an upwardly arched curve and second and third portions being disposed at an acute angle to each other joining said first portion to the sole plate, said second and third portions extending a substantial distance ahead of said sole plate, said third portion being disposed substantially in the plane of the sole plate and

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having means to be secured thereto and a resilient impact member mounted on said second portion to extend therefrom forwardly of said sole plate.

2. An attachment for a roller skate having a sole plate comprising flat stock formed with a V-shaped portion and a re-entrant V-shaped portion each of said V-shaped portion enclosing acute angles, one end of each portion being in registry and having means for attachment to the said sole plate at the forward end thereof, said V-shaped portion having means forwardly from said attachment means for mounting an impact member.

3. In a roller skate having a sole plate and wheel assemblies affixed thereto, a bracket mounted at the forward end of said skate ahead of the forward wheel assembly, said bracket including a flat spring member having a first portion fastened to said sole plate, a second portion for mounting an impact member, said second portion extending downwardly and rearwardly at an acute angle from said first portion and a third portion including a resilient portion of appreciable length compared to the length of said second portion, said third portion extending upwardly from said second portion at an angle thereto and having the free end thereof supported by a portion of said skate whereby said bracket will exhibit flexure in a plane generally perpendicular to the flat face section thereof, and a resilient impact member mounted on said impact member mounting portion to extend forwardly of said sole plate.

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