

Jan. 8, 1952

A. E. MURRAY

2,581,809

ROLLER SKATING SUSPENSION SKATES

Filed March 5, 1947

4 Sheets-Sheet 1

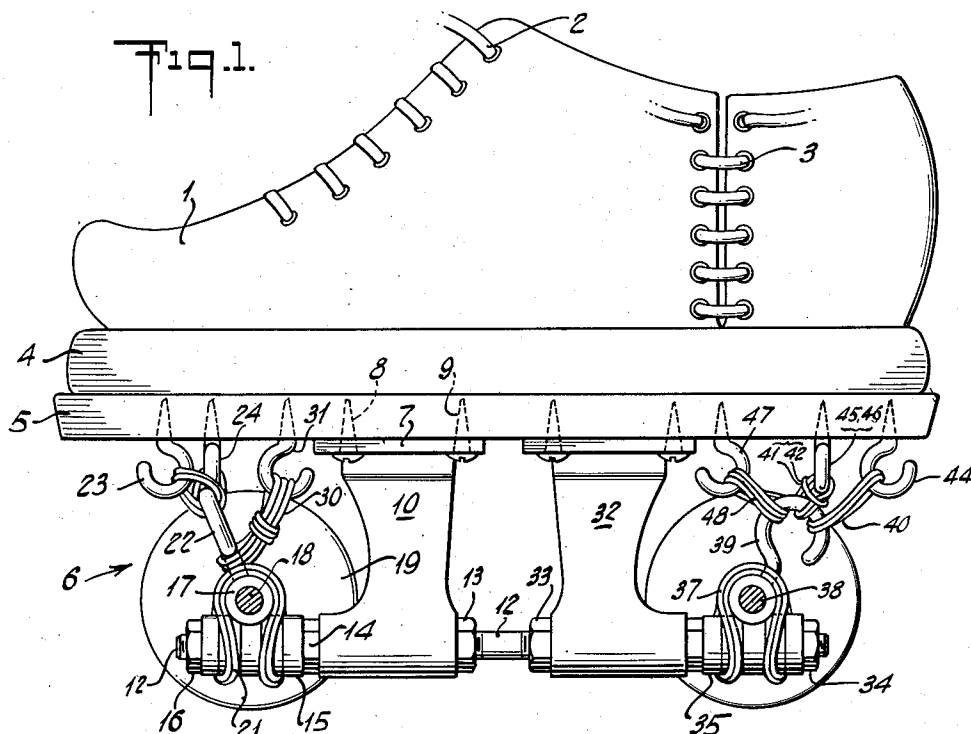


Fig. 2.

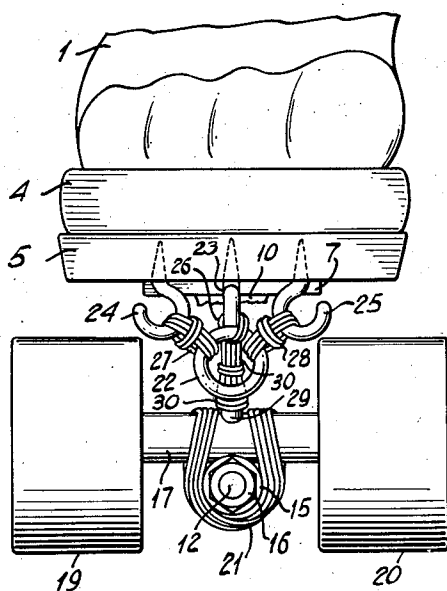
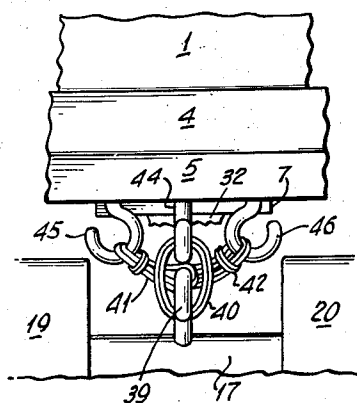


Fig. 3.



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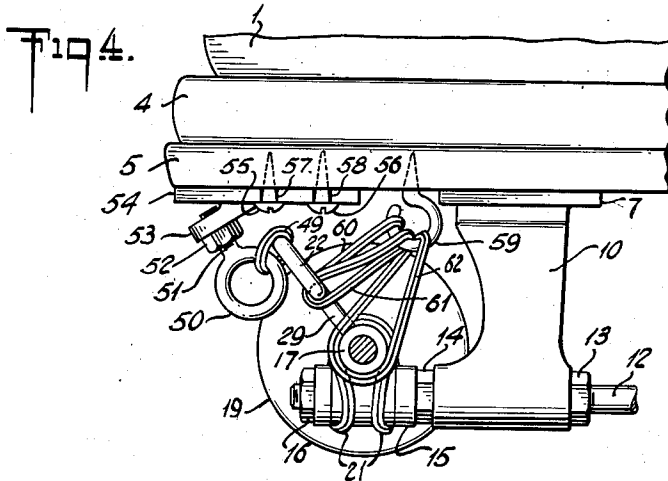
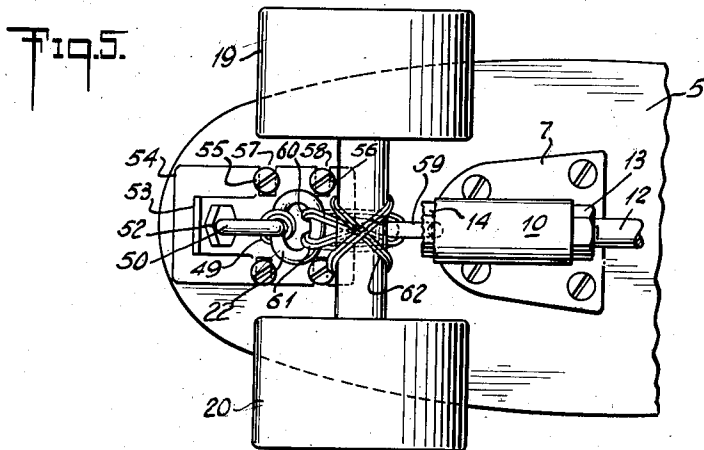
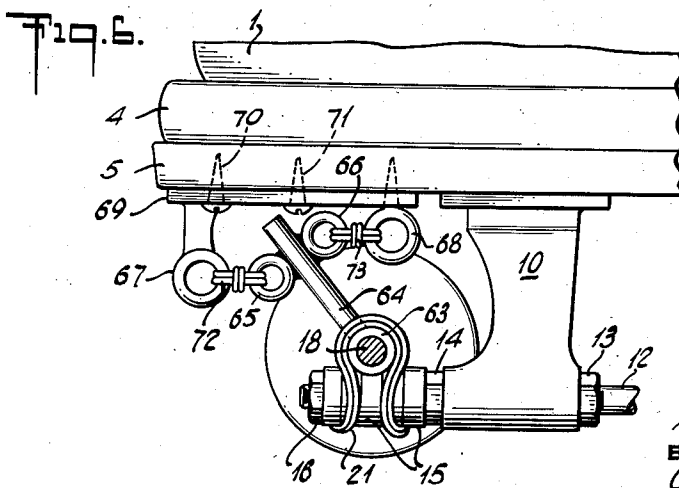
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4 Sheets-Sheet 2



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Fig. 7.

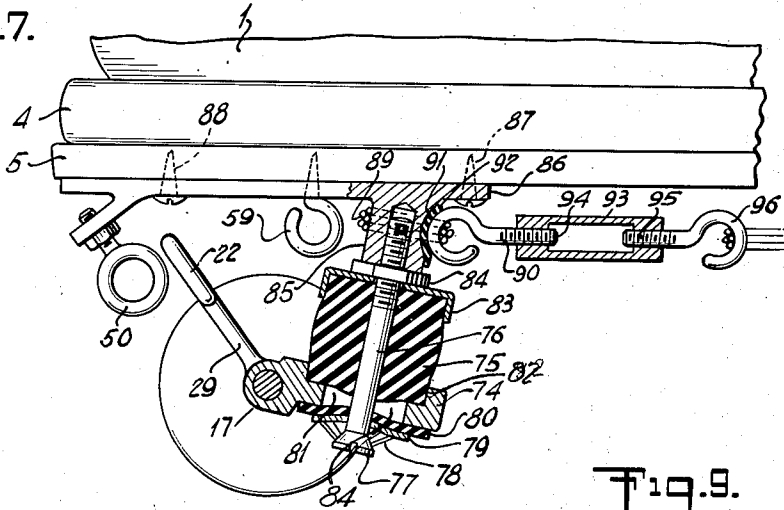


Fig. 8.

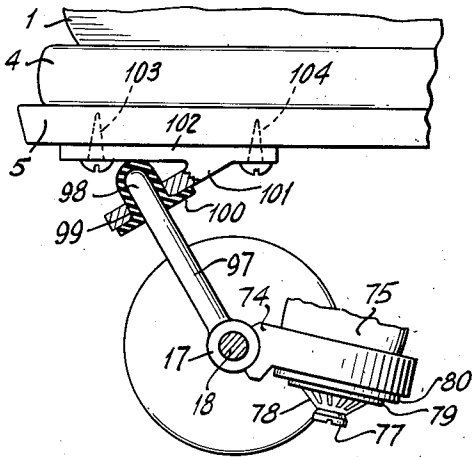


Fig. 9.

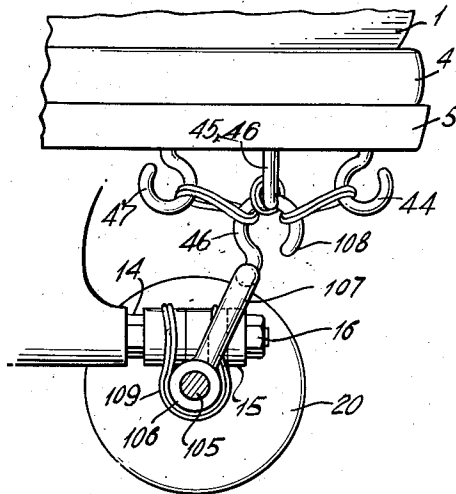
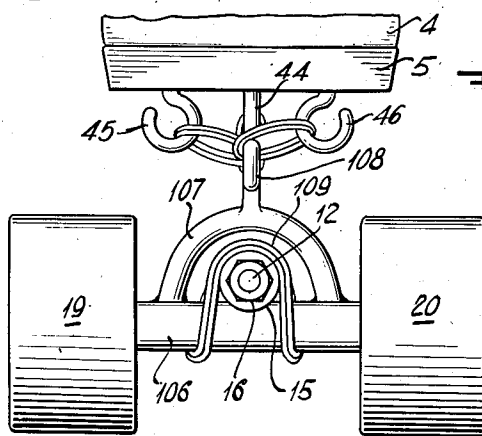


Fig. 10.



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Fig. 11.

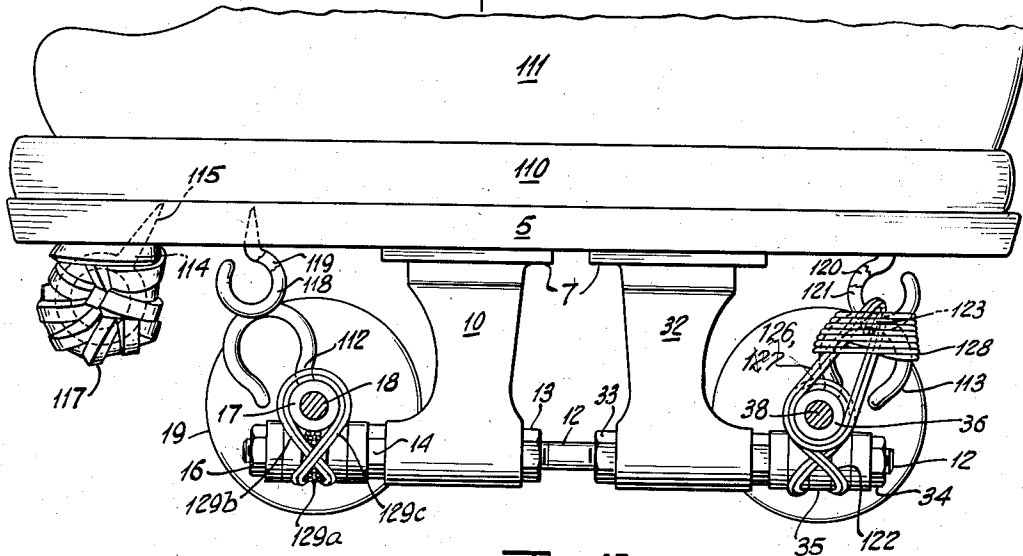


Fig. 12.

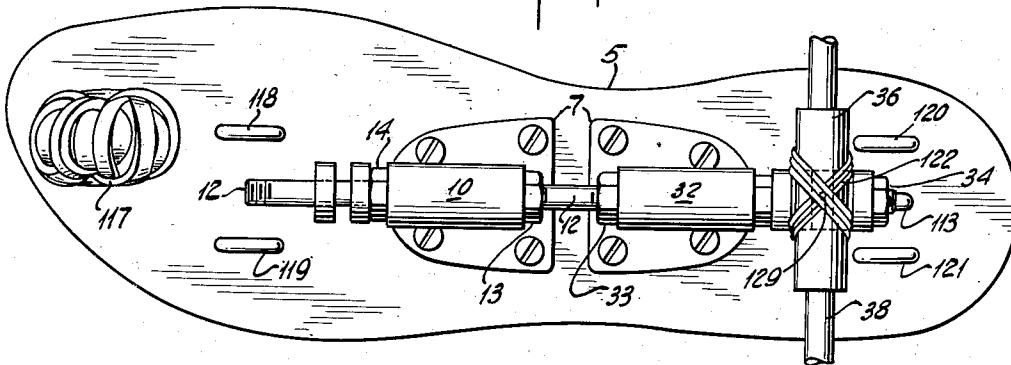
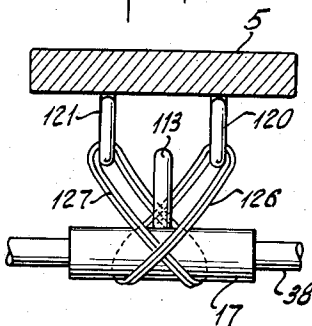


Fig. 14.



UNITED STATES PATENT OFFICE

2,581,809

ROLLER SKATING SUSPENSION SKATES

Alan E. Murray, New York, N. Y.

Application March 5, 1947, Serial No. 732,595

17 Claims. (Cl. 280—11.28)

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My invention relates particularly to an improved type of roller skates.

The object of my invention is to provide roller skates with which roller skating may be carried out more effectively and with a greater smoothness due to the further elimination of the effect of unevenness of the skating floor upon the skater. My invention is an improvement upon the subject matter of my copending applications Ser. No. 572,867, upon Skates, filed January 15, 1945, now Patent No. 2,542,829, granted February 20, 1951, Ser. No. 634,238, upon Roller Skates, filed December 11, 1945, now Patent No. 2,533,740, granted December 12, 1950, and Ser. No. 690,050, upon Skates for Roller Skating, filed August 12, 1946. A further object is to provide an elastic suspension for the skater from the chassis while at the same time, however, introducing sufficient rigidity into the suspending means so as to maintain effectively the assumed relative positions of the parts of the skates while at the same time preserving the necessary elasticity of the suspensions. A further object is to provide skates of this character in which metal contacts are eliminated between the chassis and the parts of the skate attached to the foot of the wearer. Further objects of my invention will appear from the detailed description of the same hereinafter. While my invention is capable of being carried out in many different ways, for the purpose of illustration I have shown only certain embodiments thereof in the accompanying drawings, in which—

Fig. 1 is a side elevation of a skate partly in section, made in accordance with my invention, showing the same attached to a skating shoe and showing, also, thereon two alternative forms of elastic suspension on the front and rear of the skate, respectively, it being understood, of course, that both of these forms as shown can be on the same skate or either one of these forms of suspension may be adopted on both the front and the rear of the skate if desired;

Fig. 2 is a front elevation of the form of suspension shown on the front of the skate in Fig. 1;

Fig. 3 is a similar rear elevation showing the form of elastic suspension shown on the rear of the skate in Fig. 1;

Fig. 4 is a fragmental side elevation, partly in section, of an alternative form of elastic suspension of the chassis of the skate;

Fig. 5 is an underneath view of the front of the skate shown in Fig. 4;

Fig. 6 is a fragmental side elevation of a modified form of the elastic suspension similar to that shown in Fig. 4;

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Fig. 7 is a fragmental side elevation, partly in section, of a modification of the suspension shown at the front of Fig. 4, showing an elastic rigidity-producing means combined with the elastic suspension at the front portion of Fig. 4;

Fig. 8 is a fragmental side elevation, partly in section, of a modification of a part of the form of suspension shown in Fig. 7;

Fig. 9 is a side elevation, partly in section, of the rear of a skate chassis showing another form of an elastic rigidity-producing means which may be used on any of the elastic suspensions herein;

Fig. 10 is a rear elevation of the elastic suspension shown in Fig. 9;

Fig. 11 is a fragmental side elevation showing a modification of my invention, the same including a modification of the chassis of the skate shown at the rear end of Fig. 1;

Fig. 12 is an underneath view of a rear chassis of the same;

Fig. 13 is a rear fragmental elevation of the same rear portion thereof; and

Fig. 14 is a vertical cross-section looking towards the end of the rear skate chassis shown in Fig. 13.

In the drawings, referring first to the suspensions shown in Figs. 1, 2 and 3, I have shown a skate shoe 1 of any desired character, but which may be similar to the shoe shown in my copending application Ser. No. 690,050 referred to above, or which may be a shoe made to conform to the contours of the foot of the wearer, preferably as shown in my U. S. Patent No. 2,332,000, granted October 19, 1943, upon Method of Manufacturing Shoes. This shoe, if desired, may have a front lacing 2 and a side lacing 3, and may have at the base of the shoe a pad 4 of any desired character, forming the sole of the shoe, which may be attached to a skate plate 5 of wood or of any other material in any desired manner, by screws or otherwise, not shown. Attached to the shoe plate 5 there is provided a front chassis 6 comprised of an aluminum alloy chassis plate 7 secured by screws 8 and 9 to the plate 5. The plate 7 may have depending therefrom, a front standard 10 provided with a centrally located longitudinal cylindrical screw-threaded rod 12 held within the standard 10 by nuts 13 and 14. In front of the nut 14 there are five compressed rubber discs 15 through which the rod 12 passes, and which are held in place by an end nut 16 screw-threaded on the end of the rod 12. The discs 15 provide a relatively rigid means to supplement, elastically, an elastic rubber suspension of the chassis referred to more in detail here-

inafter. These rubber discs 15 rest against the underside of an axle housing 17 through which an axle 18 passes, carrying a pair of rollers 19 and 20 thereon which may have any desired ball-bearing support from the axle 18, not shown, but which may, if desired, be as shown in detail in my copending application Ser. No. 690,050, referred to hereinabove. These rubber discs 15, furthermore, are elastically suspended from the axle housing 17 by means of a plurality of windings 21 of an elastic rubber cord approximately $\frac{1}{16}$ " in diameter, or of any other desired size, and which pass, alternately, upwardly over the axle housing 17 adjacent the roller 19, then downwardly beneath the discs 15 and upwardly over the axle housing 17 adjacent the other roller 20 until a number of such windings are provided on either side of a ring 22 formed on the upper side of the axle housing 17. The said ring 22 is inclined towards the front of the skate and its upper end is then connected by a plurality of windings of a rubber cord 21, respectively passing through the ring 22 and over the front of a screw-threaded hook 23 which is screw-threaded into the wooden plate 5, as well as, similarly, over two lateral hooks 24 and 25, also screw-threaded into the plate 5, so as to provide a plurality of such windings 26, 27 and 28. The said ring 22, furthermore, has a neck 29 around which a series of similar windings 30 of rubber cord pass upwardly over a rearwardly directed hook 31, screw-threaded into the wooden plate 5. All of these windings, furthermore, are applied with some degree of tension and in such a manner as to provide the correct desired alignment of the rollers 19 and 20 with regard to the skate plate 5.

At the rear of Fig. 1 I have shown the rear end of the rod 12 passing through a rear chassis standard 32 constructed and supported like the standard 10. Also, said rod 12 has nuts 33 and 34 holding between them five compressed rubber discs 35, as on the front of the rod 12, which rest against the underside of a rear axle housing 36 with the aid of rubber cord suspension windings 37, as in the case of the front axle 18. In this instance, however, the housing 36, which is located on a rear axle 38, has a rearwardly directed hook 39. This hook 39 has three sets of windings 40, 41 and 42, as shown in Fig. 3, connecting it, respectively, to a rear hook 44 and side hooks 45 and 46, as in the case of the ring 22 on the front of the skate. In this instance there is also provided a fourth hook 47 facing towards the front of the skate, which is connected by a series of rubber cord windings 48 to the hook 39 itself instead of to the neck of the hook.

In the modified form of elastic suspension shown in Figs. 4 and 5, I have provided a chassis suspension which may be used at the front or rear of the skate, or both, as desired, the same being shown, however, in these figures as used on the front chassis of the skate. Accordingly, this comprises the standard 10, as shown in Fig. 1, having the nuts 13 and 14 as well as the nut 16 holding in place the five rubber discs 15 and the rubber cord windings 21 for supporting, as shown in the front portion of Fig. 1, the axle housing 17 provided with the ring 22. In this instance, however, the ring 22, which may be made as large as desired, is connected by a series of windings 49 to a ring 50 having a screw-threaded stem 51, with a lock nut 52, screw-threaded into an angle bracket 53, said bracket 53 being formed on a chassis plate 54 connected

by screws 55 and 56 to the wooden plate 5, passing through adjusting slots 57 and 58 in the chassis plate 54. In this instance there is provided, furthermore, a hook 59 screw-threaded into the wooden plate 5 over which there are two forwardly directed sets of rubber cord windings 60 and 61 and a set of windings 62 passing from the hook 59 downwardly over the axle housing 17, alternately, on either side of the neck 29. It will be understood, of course, that in this instance the ring 22 may be of any desired size, so as to give sufficient lateral breadth to provide lateral stability for the suspension and support of the axle housing 17 from the skate plate 5 by means of the ring 50 and the screw 59.

In Fig. 6 I have shown a slightly modified form of the suspension illustrated in Fig. 4. In this instance, however, the axle 18 has an axle housing 63 provided with an upwardly and forwardly inclined rod 64 having welded thereto rings 65 and 66 which cooperate, respectively, with a forward ring 67 and a rearwardly located ring 68, both of which are welded on a chassis plate 69 connected by screws 70 and 71, as previously described, to the wooden skate plate 5. In this instance, furthermore, there are a plurality of rubber cord windings 72 and 73 between the ring 65 and the ring 67 and between the ring 66 and the ring 68, respectively; the suspension in this instance being otherwise the same as in Fig. 4.

In Fig. 7 there is shown an alternative form of rigidity-producing means instead of the compressed rubber discs 15, it being understood, however, that in this Fig. 7 the axle housing 17 has the ring 22, and parts attached thereto, as shown at the front of Fig. 4. In this instance, instead of the discs 15 of Fig. 1 I have provided as a part of the axle housing 17 a metal ring 74 for supporting therein a cylindrical elastic rubber plug 75, the same as shown in Fig. 6 of my application Ser. No. 634,238 hereinabove referred to. For this purpose, the rubber cylinder 75 is held in place by means of a rearwardly inclined screw 76 passing therethrough, having a head 77 carrying thereon a spring disc 78 and a washer 79 supporting a rubber plate 80 beneath an opening 81 in the ring 74 adjacent to which there is an annular recess 82 in which the rubber cylinder 75 rests. On the top of the rubber cylinder 75 there is a retainer ring 83 to compress the rubber cylinder 75 with the aid of a nut 84 on the screw 76, the upper end of the screw 76 being screw-threaded into an inclined socket 85 on a chassis plate 86 connected by screws 87 and 88 to the skate plate 5. The inclined socket 85 carries around the outside thereof a plurality of windings of rubber cord 89 which pass through a hook 90 resting in a recess 91 carrying a sheet of rubber 92 to prevent metal-to-metal contact. The forward end of the skate plate 86 may be formed like the plate 54 in Fig. 4, having the ring 50 attached thereto, which has the elastic suspension windings 49 from the ring 22. It will be understood that the screw hook 90 on the front chassis plate 86 may have a screw sleeve coupling 93, with reverse screw-threads 94 and 95 therein, so as to adjustably couple the hook 90 with a similar screw hook 96 connected to a rear skate chassis (not shown), constructed in the same manner as the front skate chassis shown in this figure.

The modified form of chassis bracket shown in Fig. 8 is somewhat similar to that shown in Fig. 4, but can be used to advantage, for instance, on

the foremost portion of the axle housing shown in Fig. 7. That is to say, in this instance, instead of the neck 29 and ring 22 being connected to the axle housing 17, there is an upwardly and forwardly inclined rod 97 having its upper end 98 extending through a hole 99 over a rubber sheet or disc 100, which projects through the hole 99, located in an inclined plate 101 brazed to the face of a chassis plate 102 and connected by screws 103 and 104 to the skate plate 5 so that the upper end 98 of the rod 97 rests against, and is supported from the face of the chassis plate 102 by the rubber sheet or disc 100.

In the modification of my invention shown in Figs. 9 and 10, I have provided the same type of rollers 19 and 20 on an axle 105 having thereon an axle housing 106, the two ends of which are connected together by an arched support 107 provided with an upwardly directed hook 108. The arched support 107 is provided in order to bridge over the rod 12 in the standard 10, as previously described, said rod 12 carrying thereon the compressed rubber discs 15 as well as the nuts 14 and 16. In this instance, however, it will be noted that the rubber discs 15 rest on the axle housing 106 beneath the arched support 107, a plurality of windings 109 of rubber cord being provided, extending beneath the housing 106 alternately to the front and rear thereof over the rubber discs 15. The hook 108 is supported from the plate 5 by means of the four hooks 45, 46, 44 and 47 with rubber cord windings the same as shown at the rear of Fig. 1.

The modification of my invention shown in Figs. 11 to 14 is a modified form of the skate chassis shown at the rear of the skate in Fig. 1, having the same rod 12 and standards 10 and 32 carrying the same, said rod 12 having the same nuts 16, 14, 13, 33 and 34 as well as the compressed "Neoprene" or natural rubber rings 15 and 35, all of which are mounted on the wooden plate 5, preferably made of plywood. On the plate 5 there is fastened in any desired manner a leather sole 110 forming a part of a skate shoe 111 made in any desired manner. The rubber rings 15 and 35 are located, respectively, below the axle housings 17 and 36 for the axles 18 and 38, said axle housings having, respectively, thereon upwardly-directed inclined hooks 112 and 113, providing for the steering or turning movement in skating. Projecting from the latter portion of the wooden plate 5, at the front thereof, there is a large screw-eye 114 inclined forwardly near the front of the plate 5, in which it is carried, by a screw-threaded shank 115 extending through the plate 5. This screw-eye 114 acts as a stop, when brought into contact with the floor, by tipping the skate forwardly. It can also act as a brake, and for this purpose increased friction can be obtained by means of windings 117 of a rawhide strip wound through the middle of the eye 114 and around the periphery thereof. The front hook 112 is elastically suspended from a pair of front hooks 118 and 119 having their shanks screw-threaded into the wooden plate 5 of the leather sole 110. Similarly, the rear hook 113 is elastically fastened in the same manner to a pair of rear hooks 120 and 121, also having their shanks screw-threaded through the wooden plate 5. Inasmuch as the elastic suspension of the hook 113 from the hooks 120 and 121 is substantially the same as the suspension of the hook 112 from the hook 118 and 119, only the elastic suspension of the hook 113 will be here described in detail. For

this purpose, at the rear of the skate, a first set of about 20 windings 122, forming a suspension, of rubber cord of the kind hereinabove referred to is provided, passing downwardly over one side of the axle housing 36 beneath the rubber discs 35 and over the other side of the housing 36, as shown for instance in Fig. 13, these windings being made so as to repeatedly cross one another, as shown in Fig. 11, owing to the fact that the windings pass downwardly from the front of one side of the housing 36 upwardly over the rear portion of the other side of the housing 36. It will be understood, of course, that all the windings of rubber cord applied in these Figs. 11 to 14 are all the same, except as herein specifically otherwise provided, are applied under a distinct tension, and are of "Neoprene" or some other artificial rubber, though they may be of natural rubber. Then there is applied a second set 123 of windings of said cord which extend around the hook 120 through the hook 113, then around the hook 121, through the hook 113, again around the hook 23 until there are about 10 of these windings. Thereafter, there is applied a third set of about 10 windings 124, going around the hook 120 and through the hook 113. Thereafter, there is applied a fourth set of about 10 windings 125, going around the hook 121 and through the hook 113. The second, third and fourth sets of windings form, in fact, an inclined pivot for the chassis. Next, there is applied a fifth set of about 10 windings 126 of said rubber cord, which may be denominated opposition windings to the suspension windings above referred to, going around the hook 120 beneath the axle housing 36. Then I apply a sixth set of about 10 windings 127 of said cord, which may be called, also, opposition windings, going around the hook 121 and around the axle housing 36. As will be seen in Fig. 14, these two sets of opposition windings 126 and 127 cross over each other at the rear of the axle housing 36. Thereupon, I apply from 10 to 30 choke windings 128, forming a seventh set thereof, which are wrapped approximately horizontally around the opposition windings 126 and 127 and around the outside of the hook 113 between the latter and the two hooks 120 and 121. These choke windings take out any remaining free play or uncontrolled defective movement between the axle housing 36 and the axle 38 therein as well as the rollers mounted on the said axle 38. The elastic suspension is such as to normally retain an approximately fixed normal position for the axle housing 36 on the skate plate 35 while permitting elastic deflection of said housing 36 on an axis 129 which, of course, is inclined upwardly in the direction of the angularity of the hook 113. At the front of Fig. 11 there is shown a variation of the modification just described, in that instead of the central rubber rings 35 I substitute a series of about 20 windings 129a of natural rubber cord which, of course, because of its great resiliency, does not become permanently deformed, and instead of the 20 windings 122 I may provide 10 inner suspension windings 129b of natural rubber and 10 outer suspension windings 129c of a rubber substitute, as for instance "Neoprene," which are each applied as in the case of the windings 122.

In the operation of my invention, referring first to Figs. 1 and 2, on account of the elastic suspension from the tightly wound rubber cord windings 21, 26, 27, 28 and 30 the skater will be suspended between the respective windings

due to his weight while skating, thus eliminating any transmission of the minute uneven movements of the chassis, due to the floor, to the body of the skater. Thus, the velocity and speed of the skater will not be impeded thereby, so as to give, accordingly, a sensation of smoothness while skating, substantially like or even superior to the effect in ice-skating. At the same time adequate rigidity and resistance to shock is attained by the rubber discs 15 which are elastic but cause the position to which the skate returns to be the normal initial position. This normal position is retained after turning movements, etc., while skating. At the same time there is an entire absence of any metal-to-metal contact in the parts of the skate, thus eliminating the transmission of vibrations to the skater from the skate. It will be noted, of course, that the inclination of the neck 29 of the ring 22 attached thereto, permits the usual turning movement of the skater to the right or left, as desired, according to whether or not the plate 5 is inclined to the horizontal in the direction towards which the turning movement is to be effected.

The modified form of suspension shown at the rear of Fig. 1 and Fig. 3 operates in a similar manner to provide the elastic suspension with adequate relative rigidity components for returning the skate to normal.

The same is substantially true in connection with the modification shown in Figs. 4 and 5, a screw-threaded adjustment of the elastic suspension being possible in this instance by reason of the screw stem 51 in the screw-threaded bracket 53.

In Fig. 6, a similar modified form of elastic suspension is shown. However, in this instance a greater retention of the initial or normal position is attained by reason of the comparatively small rings 65 and 66 which are welded closely onto the inclined rod 64, and which are closely coupled elastically so as to be suspended by the cords 72 and 73 from the rings 67 and 68.

In Fig. 7 the elastic suspension, with adequate rigidity incorporated into the same, for returning the skate to normal position, is also attained in a similar manner. For this purpose, while the elastic suspension is attained by cords in the same manner as shown in Fig. 4, the relative rigidity-producing means in this instance is the rubber compression cylinder 75 which, here, takes the place of the rubber compression discs 15. This has the advantage of maintaining the normal position more effectively than the discs 15 on the rod 12. It will be understood, furthermore, that the inclination of the rubber cylinder 75, together with the inclined neck 29 and ring 22 attached thereto, enable the usual turning movements of the skater to be effected when the skater leans to the right or left.

In the form of my invention as shown in Fig. 8, the operation is similar to that shown at the front of Fig. 4, while at the same time metal-to-metal contacts, which would produce chattering, are avoided by the rubber sheet or disc 100, it being understood that the rigidity-producing components may be present by reason of the rubber cylinder 75, in the same manner as described in connection with Fig. 7.

In the modification of my invention shown in Figs. 9 and 10, the operation is similar to that of the skate chassis shown at the rear of Fig. 1. However, in this instance, instead, the rubber discs 15 rest on top of the axle housing

100 to provide a still more effective relative rigidity in the skating operation. Nevertheless, it will be understood that in this instance the weight of the skater is positioned laterally very largely from the elastic cords passing over the hooks 45, 46, 44 and 47 without permitting the entire weight, normally, to be carried by contact between the rubber discs 15 and the axle housing 106.

The operation of the form of the modification of my invention as shown in Figs. 11 to 14 is similar to that already referred to in connection with the rear end of the skate in Fig. 1. However, in this instance there is an important difference by reason of the long free or unconfined portions of the opposition windings 126 and 127, as shown in Figs. 11, 13 and 14, which gives more life or elasticity to the deflective movements applied by the movements of the skater and, in addition, the choke windings 128 eliminate substantially entirely any tendency to form a dead uncontrolled deflection or turning displacement at or near the normal or middle position of the axle housing 36. Further, the outer less resilient rubber substitute such as "Neoprene" windings 129c serve to strongly compress the inner very resilient natural rubber windings 129a and 129b, giving more life to the structure, and in effect introducing a fluidity and instantaneousness of action in the bound stretched suspension windings of natural rubber which has a similarity to hydraulic action. Also, it will be noted that this is accomplished in Figs. 11 to 14, with only three hooks for each rear or front chassis of the skate, instead of 5 hooks, as shown at the rear of Fig. 1. Also, there is shown the effective stop or brake 114, which, it will be understood, can be utilized in connection with any of the other forms of my invention described herein, but which is especially applicable to the modifications of my invention shown in Figs. 11 to 14 because of utilizing only a pair of hooks 118, 119 or 120, 121, thus eliminating the need of any central hooks at the extreme forward portion of the plate 5.

While I have described my invention above in detail I wish it to be understood that many changes may be made therein without departing from the spirit of the same.

I claim:

1. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means for elastically suspending the plate and its associated chassis parts from said axle so as to be stretched by the force of the skater, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis.

2. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means for elastically suspending the plate and its associated chassis parts from said axle so as to be stretched by the force of the skater, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein.

3. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means for elas-

tically suspending the plate and its associated chassis parts from said axle so as to be stretched by the force of the skater, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod supported from said plate.

4. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means for elastically suspending the plate and its associated chassis parts from said axle so as to be stretched by the force of the skater, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod located on a standard mounted on said plate.

5. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod below the axle, supported from said plate.

6. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means for elastically supporting the plate and its associated chassis parts on said axle so as to be stretched by the force of the skater, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod above the axle, supported from said plate.

7. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod below the axle, supported from said plate, the rod and axle being bound together with elastic rubber cord windings.

8. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically supporting the plate and its associated chassis parts on said axle, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a body of compressible rubber therein located on the rod above the axle, supported from said plate, the rod and axle being bound together with elastic rubber cord windings.

9. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an

axle for the rollers, means for elastically suspending the plate and its associated chassis parts from the axle, including an axle housing having a ring-like extension and a series of hooks on said plate connected to the same by elastic cord windings, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis.

10. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle, including an axle housing having a hook and a series of hooks on said plate connected to the same by elastic cord windings, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis.

11. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle, including an axle housing having a ring-like extension and an adjustable ring on said plate connected to the same by elastic cord windings, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis.

12. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically supporting the plate and its associated chassis parts on said axle, including an axle housing having an arch-supported ring-like extension and a series of hooks on said plate connected to the same by elastic cord windings, and an elastic compression-resisting member located on a rod forming a part of the chassis adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis and having a circular body of compressible rubber therein located on the rod located above the axle, said rod passing through said arch.

13. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle comprising opposition rubber cord windings as well as choke windings located across the first mentioned windings, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis.

14. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle comprising opposition rubber cord windings as well as choke windings across the first mentioned windings, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the axle to resist shock between the axle and said chassis, said skate having hooks on the plate and the chassis for receiving said windings.

15. A roller skate suspension comprising a skate plate and a chassis having rollers thereon,

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an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle comprising rubber cord windings, and a body of compressible elastic natural rubber on the chassis within said cord windings. 5

16. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, means for elastically suspending the plate and its associated chassis parts from said axle comprising natural rubber cord windings overlaid with other less elastic artificial rubber windings, and a body of compressible elastic natural rubber on the chassis within said cord windings.

17. A roller skate suspension comprising a skate plate and a chassis having rollers thereon, an axle for the rollers, stretchable means elastically supporting the plate and its associated chassis parts from said axle so as to be stretched by the force of the skater entirely without the presence of any relatively movable rigid contacting parts, and an elastic compression-resisting member located on a chassis part adjacent to and normally in a position delimited by the

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axle to resist shock between the axle and said chassis.

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