Nov. 8, 1960 E. DORNSEIF 2,959,423

ADJUSTING MEANS FOR RESILIENTLY MOUNTED ROLLER SKATE TRUCKS

Filed June 19, 1957

Fig. 1

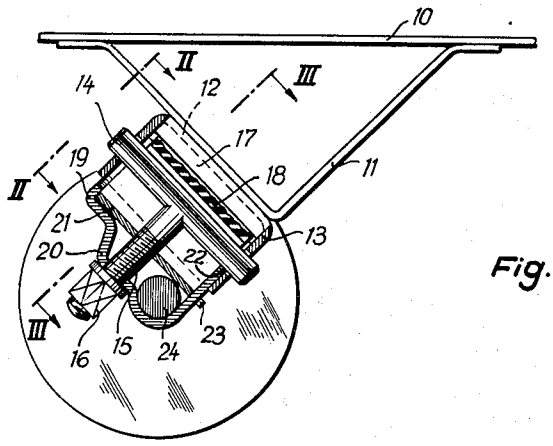


Fig. 2

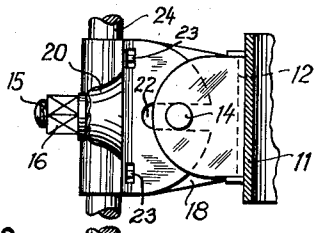


Fig. 3

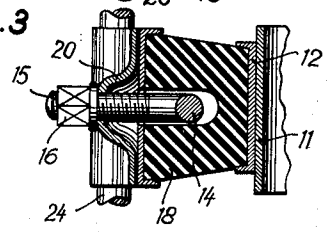


Fig. 4

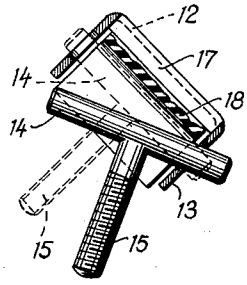


Fig. 5

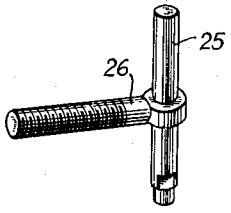


Fig. 6

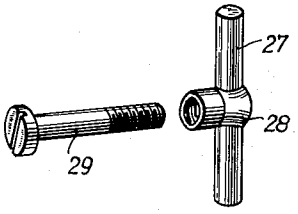
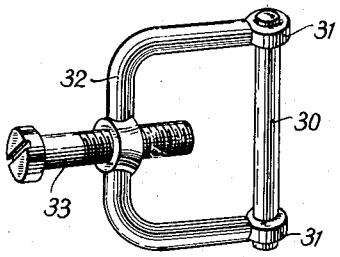


Fig. 7



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ADJUSTING MEANS FOR RESILIENTLY MOUNTED ROLLER SKATE TRUCKS

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11 Claims. (Cl. 280—11.28)

This invention relates to steerable double-track roller skates of the kind having rocking axles for the carriers of the axles of the skate rollers and resilient cushions between said carriers and the frame, the initial tension of said cushions being variable by screw means.

Steerable roller skates of this type are already known. The use of adjusting means is, however, frequently disregarded in the steering mountings in the interest of a simple construction. The cushions providing the steerability must then be fitted with a certain amount of initial tension. This necessitates the use of devices which are not, as a rule, available to the skater so that he cannot change the cushions himself. In the steering mountings of this kind equipped with adjusting means, the adjusting means are frequently disposed outside the cushions and usually act on the latter after the fashion of tongs. This entails uneven tensions in the cushions, which cause the latter to age prematurely and, in addition, makes it difficult to maintain predetermined steering characteristics. It is true that uniform or central variations of the initial tension of the cushion may be obtained with such arrangements, but a plurality of adjusting means then have to be operated side by side and in mutual dependence. It is also known to adjust the initial tension of the cushions from the top, that is to say, from the side facing the frame of the roller skate. The screw means used here are, however, usually accessible only with difficulty, In addition, there is a risk that the cushion is not secured sufficiently against tilting. This also has an unfavourable effect on the steering characteristics. The same effect occurs when wedges or the like are used to adjust the cushion, instead of screw members.

It is an object of the present invention to provide a steerable double-track roller skate of the kind described, in which the steering mounting contains only a few parts which are easy to produce, which can be assembled in a simple manner, and which permit convenient and reliable adjustment of the initial tension of the cushion determining the steering properties.

According to the present invention, this is achieved by arranging the leg portions of a U-shaped support member rigid with the frame to accommodate a rocking axle at an angle to the frame in a vertical longitudinal plane. The rocking axle is retained in apertures of the support member and carries the steering core, that is to say the steering axle, which is a transversely extending screw member operable from the underside of the roller skate acting on said rocking axle for tensioning the axle carrier against the cushion arrangement, while leg portions of the U-shaped axle carrier arranged parallel to the leg portions of the support member embrace the rocking axle so that the latter is slidable in a vertical longitudinal plane and guided laterally. With this arrangement, the cushion, which preferably consists of a block of rubber or the like, can be uniformly tensioned over its entire length in a simple manner, because the deformation producing the initial tension can be produced uniformly even when use is made of only one

tensioning screw member. The fact that the screw member determining the initial tension acts directly on the rocking axle has a favourable effect on the steerability of the roller skate. No lateral shifting of the screw member or of its mounting occurs on deflections of the axle and the frictional forces remain low. It is an additional advantage of the invention that it is possible both to tension the cushion and connect the axle carrier to the frame of the roller skate by means of a single screw member. This results in a particularly compact structure which enables even skaters having no technical knowledge to change the cushions in case of need. At the same time, the arrangement causes the screw member to act on the longitudinal centre of the rocking axle in order to achieve uniform stress in the cushion or cushions.

According to a particularly simple embodiment of the invention, the rocking axle is a T-shaped member in one piece with threads on the end of the stem portion. It is of course also possible to make these parts separately. For example, the rocking axle may have a transversely extending threaded bore adapted to receive a screw member. Moreover, an eyebolt may for example be associated as a screw member with an independent rocking axle. In a further advantageous embodiment of the invention, the connection of the screw member to the rocking axle is produced by means of a stirrup, the ends of which are mounted on the ends of the rocking axle and which centrally carries a screw member the arrangement being such that the pressure capable of being exerted by means of the screw member is directed towards the centre part of the rocking axle.

The present invention can be applied to arrangements having two cushions disposed side by side for each of the two axle carriers of the roller skate. It is particularly simple, however, to use a resilient cushion having a U-shaped cross-section for each axle carrier, the rocking axle being accommodated in the interior of said cushion.

It has already been emphasized that in the arrangement according to the invention it is possible to adjust the initial tension of the cushion and to fix the axle carrier on the roller skate frame by means of a single screw. According to a further feature of the invention, the screw member may simultaneously be used in order to secure the axle detachably on the axle carrier. This is advantageous in many respects, because it is then possible without difficulty to use axles with rollers having different running surfaces in order to adapt them to the particular ground conditions. This can be simply achieved with the arrangement according to the invention, by constructing the carrier associated with the skate roller axle in two parts. For example, a pressure plate inserted between the axle carrier and the cushion may be provided for pressing the axle of the roller against the inside of an axle carrier bridge connecting the leg portions. It is at the same time advisable to provide the axle carrier with a bent-out portion which embraces the axle to a large extent in order to form a well-defined mounting for the axle of the skate roller.

Since in such arrangements only the pressure furnished by the axle carrier and the cushion is available for clamping the axle, and since this pressure is not always sufficient for dependable mounting, it is advisable according to a further feature of the invention to mount the pressure plate so as to be capable of tilting on one side at the base of a leg portion of the axle carrier. A lever transmission, which provides dependable mounting, can then be used for securing the axle. For this purpose, the pressure plate may, for example, engage recesses of a leg portion of the axle carrier by means of edge lugs lying parallel to its wide sides. High clamping pressures can thus be obtained. A similar effect is obtained

by providing inwardly directed projections on a leg portion of the axle carrier, said projections forming stops for an edge part of a pressure plate. With such arrangements there is hardly any risk of unintentional turning of the axle. To increase dependability, the roller axle may, however, be provided with non-circular regions which engage corresponding parts of the axle carrier or of the pressure plate for the purposes of securing them against turning.

In order that the invention may be more readily understood, reference is made to the accompanying drawings which illustrate diagrammatically and by way of example, several embodiments thereof, and in which:

Figure 1 is a side view partly in section of the front part of a double-track steerable roller skate;

Figure 2 is a section on the line II—II of Figure 1;

Figure 3 is a section on the line III—III of Figure 1;

Figure 4 shows the insertion of the rocking axle in the truck support rigid with the frame; and

Figures 5, 6 and 7 illustrate modified embodiments of the screw member arrangement in perspective.

The foot plate **10** of the roller skate carries a U-shaped truck support member **12** by means of a carrier **11**. The member **12** is fixedly fastened to the foot plate and has an angular U-shape, the center portion or bridge of said U-shaped member being at an angle to the horizontal. The free ends of the leg portions **13** of the U-shaped member **12** have apertures holding a rocking axle **14**. A transversely extending pin **15** is connected non-detachably in the longitudinal centre of rocking axle **14** and its free end carries a screw thread receiving an adjusting nut **16**. The U-shaped member **12** has edge parts **17** which are bent off from the bridge and which retain an inserted rubber-elastic cushion **18**. The cushion **18** has an approximately U-shaped cross-section and accommodates the rocking axle **14** in its interior. The length of the cushion **18** is less than the inside width of the U-shaped member **12**. The legs **19** of an axle carrier consisting substantially of a U-shaped part **20** and a pressure plate **21** associated with it, engage between the inner surfaces of the leg portions **13** of the member **12** and the outer ends of the cushion **18**. The free ends of the legs **19** are provided with slots **22** open towards the end and having a width corresponding to the thickness of the rocking axle **14**. The slots **22** permit displacement of the U-shaped axle carrier **20** towards and away from the bridge of member **12** but laterally guide the axle carrier. At one end, the pressure plate **21** has lugs **23** which engage apertures in the U-shaped axle carrier **20** as best seen in Fig. 2. This arrangement permits the axle **24** for the skate rollers to be detachably mounted. In order to precisely position the axle **24**, the axle carrier **20** is bent out at its lower end in order to embrace the axle **24** over a substantial length. The axle is held by the pressure plate **21** in the position illustrated, a high clamping pressure being achieved by lever action, since the pressure plate **21** is firmly mounted on the axle carrier **20** but is capable of tilting at one end by means of the lugs **23**. The pressure plate **21** bears against the divided end of the cushion **18** after assembly and is thereby held in the desired position. The initial tension of the cushion **18** and hence the steering properties of the roller skate are controlled by adjusting the nut **16** on the threaded pin **15**. The screw connection **15**, **16** further serves to mount the axle carrier on the roller skate frame and simultaneously holds the detachable axle **24** in the axle carrier. Radial notches or knurls may be provided on one end face of the nut **16** for securing the latter against unintentional loosening or displacement, and engage a correspondingly shaped part of the axle carrier **20** as shown in Figure 2.

The installation of the rocking axle **14** is made without difficulty as seen in Figure 4. One end of the axle **14** is first inserted in the corresponding aperture of the leg portion **13**. The axle **14** is then pivoted until the other end can be pushed from the inside into the aperture of the other leg portion of the truck support member.

Instead of the integral T-shaped member used in the embodiment illustrated in Figures 1 to 3 and serving as the rocking axle and the screw member, a multi-part structure as shown in Figures 5, 6 and 7 may be used.

In the device illustrated in Figure 5, a separate axle **25** is provided and is associated with a screw member having the form of an eyebolt **26**. With this device the axle can be inserted after the parts have been assembled for the greater part. The lower end of the axle is illustrated as having a shoulder and a flattened portion. The object of the flattening is to simplify the assembly of the steering truck since it permits the required longitudinal position of the axle to be conveniently maintained. The structural parts coming into engagement with this end of the axle are shaped to correspond to the shouldered cross-section, so that incorrect assembly is dependably prevented. Such a feature can, of course, be embodied in other axle structures as well.

According to Figure 6 the axle **27** has in its longitudinal centre a transversely extending internally threaded stub **28**, which is intended to receive the thread of an adjusting screw **29**. In this case too, at least one end of the axle could be shouldered in order to determine the desired longitudinal position.

The device illustrated in Figure 7 combines an axle **30** with a U-shaped stirrup **32**. The stirrup terminates in two eyes **31** secured to the axle **30** at its ends and carries centrally a compression screw **33**, which is directed towards the centre of the axle and is intended to press against the outer surface of the axle carrier in order to hold the parts of the steering mounting together and to adjust the initial tension of the cushion. The eyes **31** may be disposed on the outer or inner sides of the leg portions **13** as desired.

The embodiments illustrated and described relate only to preferred examples of the invention, as already stated. The invention is not restricted to them. On the contrary, many other arrangements are possible within the scope of the invention. When the rocking axle arrangements of the type shown in Figures 5 to 7 are used, the slots in the free ends of the legs of the axle carrier may be replaced by apertures in the form of elongated holes. The axle carrier may engage the leg portions **13** of the U-shaped member **12** from the outside. Instead of the cushion **18** of approximately U-shaped cross-section, two cushions could be provided disposed one against the other. The support for the axle mounting on the foot plate of the roller skate or the roller skate frame can be constructed in a different manner from that illustrated. It is also possible to construct the parts of the steering assembly in such a manner that the cushion or cushions are substantially enclosed. In the region of the bent out portion of the axle carrier **20** partially embracing the skate roller axle, lugs or pressed-in projections can be provided on the axle carrier or on the pressure plate **21**, said lugs or projections cooperating with corresponding non-cylindrical portions of the axle positively to prevent turning.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; and adjusting means centrally fastened to a central portion of said pivot means intermediate said truck support portions and centrally abutting against

said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

2. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; and adjusting means integrally fastened to a central portion of said pivot means intermediate said truck support portions and abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

3. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; and adjusting means threadedly engaging a central portion of said pivot means intermediate said truck support portions and abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

4. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; an adjusting pin having one end fastened to a central portion of said pivot means intermediate said truck support portions, and being threaded at the other end; and nut means threadedly engageable with said other end for adjustably abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

5. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; a stirrup member rotatably fastened by the ends of the legs thereof to said pivot means and enveloping said truck means; and an adjusting screw threadedly mounted in a central portion of said stirrup member substantially equidistant from said support portions and abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

6. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means urging said truck means to slide radially outward from said pivot means; an adjusting pin having at one end an integral ring member fastened to a central portion of said pivot means intermediate said truck support portions, and being threaded at the other end; and nut means threadedly engageable with said other end for adjustably abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

7. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means restrained between said truck support means and said truck means urging said truck means to slide radially outward from said pivot means; and adjusting means centrally fastened to a central portion of said pivot means intermediate said truck support portions and centrally abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

8. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means restrained between said truck support means and said truck means urging said truck means to slide radially outward from said pivot means; movable pressure plate means arranged on said truck means for abutting contact with said resilient means; an axle fastened in said truck by said pressure plate being urged against said axle by said resilient means; and adjusting means centrally fastened to a central portion of said pivot means intermediate said truck support portions and centrally abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

9. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means restrained between said truck support means and said truck means urging said truck means to slide radially outward from said pivot means; movable pressure plate means hingedly arranged on said truck means for abutting contact with said resilient means; an axle fastened in said truck by said pressure plate being urged against said axle by said resilient means; and adjusting means centrally fastened to a central portion of said pivot means intermediate said truck support portions and centrally abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

10. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate and having two spaced truck support portions; truck-rocking pivot means

mounted on said truck support portions turnably about an axis inclined relative to said foot plate; truck means fastened to said pivot means for radially slidable movement relative to said pivot means and for joint turning movement therewith; resilient means restrained between said truck support means and said truck means urging said truck means to slide radially outward from said pivot means; guidedly movable pressure plate means arranged on said truck means for abutting contact with said resilient means; an axle fastened in said truck by said pressure plate being urged against said axle by said resilient means; and adjusting means centrally fastened to a central portion of said pivot means intermediate said truck support portions and centrally abutting against said truck means for adjusting the tension of said resilient means and limiting the radially outward movement of said truck means.

11. In a roller skate having wheels mounted on a truck, in combination, an elongated foot plate; truck support means fixedly mounted on said foot plate; a substantially U-shaped support member fixedly fastened to said truck support means, the leg portions of said U-shaped member being free and formed with apertures aligned at an angle to said foot plate; a rocking axle rotatable in said apertures; a pin fastened to said axle and extending perpendicularly from the center thereof; a substantially U-shaped

axle carrier, the leg portions of said U-shaped carrier being formed with longitudinal notches engaging said rocking axle, the center of said carrier being formed with an opening, said pin passing through said opening; longitudinally adjustable fastening means on said pin for abutment against said carrier and slidably fastening the latter to said rocking axle; and resilient means restrained between said support member and said axle carrier for urging said axle carrier away from said rocking axle and into abutment with said fastening means.

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