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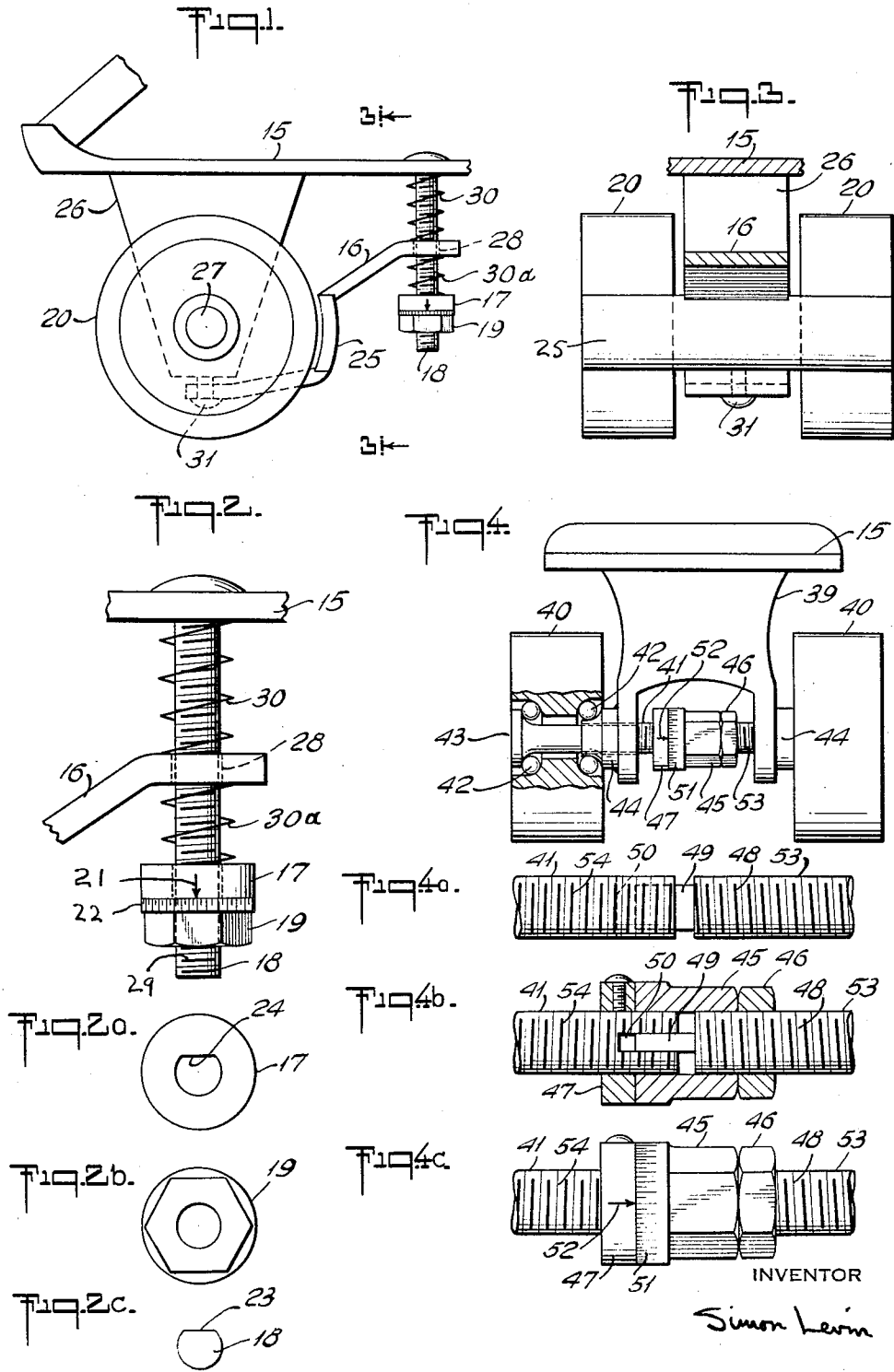
S. LEVIN

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CONTROLLABLE SKATE HAVING CONTINUOUSLY APPLIED BRAKE

Filed May 16, 1955

3 Sheets-Sheet 1



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Fig. 5.

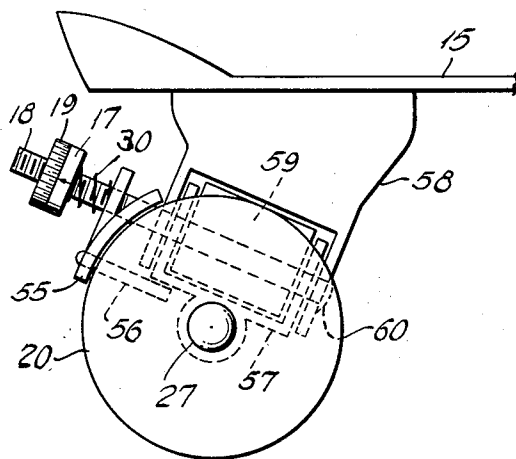
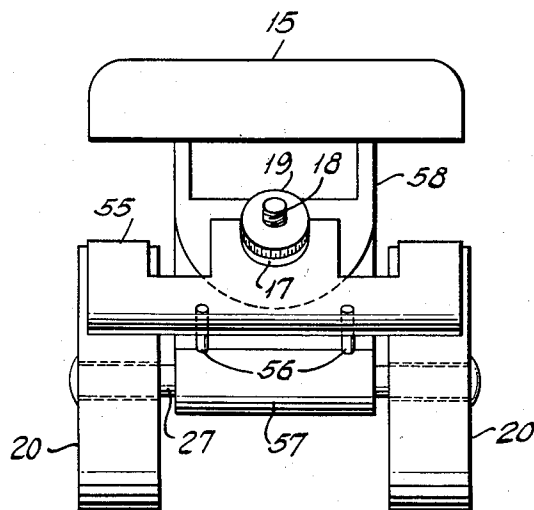


Fig. 6.



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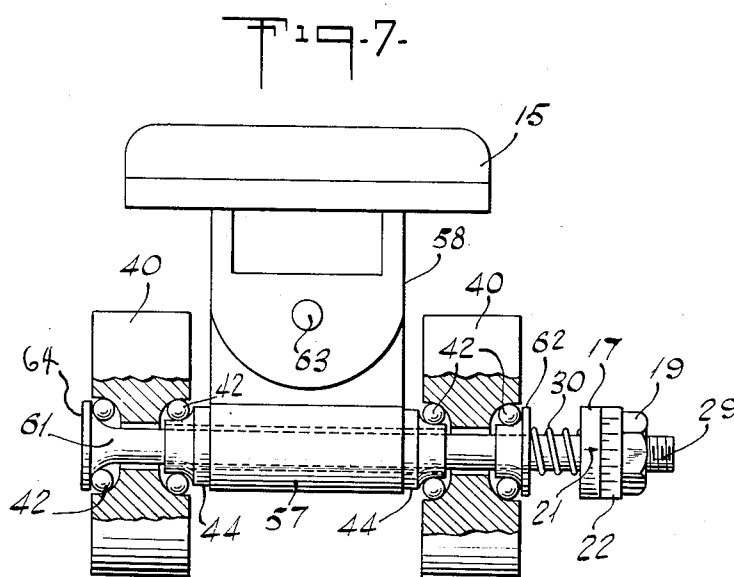
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3 Sheets-Sheet 3



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CONTROLLABLE SKATE HAVING CONTINUOUSLY APPLIED BRAKE

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8 Claims. (Cl. 280—11.2)

The invention relates generally to skates utilizing rotary means to provide motion and more specifically to skates that may be utilized, for example, for initiating beginners in the art of skating or for training purposes, although not limited thereto.

If a novice in the art of skating is carefully observed it will be seen that the usual freedom of motion of a skate prevents a maintenance of balance as the skate has a tendency to move more quickly than the rider. The obvious result is frequent falls, possible injury and usually discouragement. Until the ankles are strengthened and a sense of balance is developed the conventional skate remains a hazard, particularly for the young.

It is an object of the invention to provide a skate having means partially preventing or restricting the motion of the rotary means to enable said skates to be used by novices in the art of skating.

It is an object of the invention to provide a skate whereby the art of skating may be quickly and safely assimilated.

It is another object of the invention to provide a training skate which is simple in design and economical to construct.

With the above objects in view, together with such other objects and advantages as may subsequently appear, the invention resides in parts hereinafter described by way of example, in the following specification of certain modes of execution of the invention and illustrated in the accompanying drawings in which:

Fig. 1 illustrates a portion of a skate showing a side view of a wheel and the partially preventing means.

Fig. 2 is an enlarged fragment of the means for controlling said partially preventing means.

Fig. 2a, Fig. 2b and Fig. 2c show in detail several of the parts shown in Fig. 2.

Fig. 3 also shows a front view of a part shown in Fig. 1.

Fig. 4 illustrates the invention applied to other portions of a skate showing also in section a wheel with partially preventing means applied thereto and the controller of said means.

Fig. 4a shows the construction of the axle of the partial preventer.

Fig. 4b and Fig. 4c show the means for controlling the partial preventer.

Figure 5 shows how the invention may be readily applied as an attachment.

Figure 6 is another view of the construction shown in Figure 5.

Figure 7 shows a modification of Figure 4.

Referring to Figure 1 there is shown a platform 15 for attaching the skate to the foot of the user, a frame 26 attached to the platform 15, a pair of wheels 20 (only one is shown) mounted on the frame 26 by means of axle 27 and a flange 25 which is a part of the lever 16. For clarity flange 25 is not shown in contact with wheel 20. In Figure 3 may be seen another view of the lever 16 and the flange 25. One end of the lever

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16 is attached to the frame 26 at a point 31 in a manner which permits the lever 16 to have freedom of movement or the lever 16 may be constructed so as to be somewhat flexible and fastened firmly to the point 31. The other end of the lever 16 fits over a threaded shaft 18, said shaft 18 being fastened to the platform 15.

Referring now to Figure 2, which is an enlarged portion of Figure 1, it will be seen that the lever 16 fits over the shaft 18 by means of a hole 28 which is sufficiently large in diameter to permit movement of the lever 16 along the shaft 18. Constraining the lever 16 are the spring 30a and the spring 30. The spring 30 is utilized between the lever 16 and the platform 15 and the spring 30a is utilized between the lever 16 and a plate 17. The plate 17 rides upon an internally threaded nut 19 which may be raised or lowered on the thread 29 on the shaft 18. Referring to Figure 2a, the plate 17 is shown to have a hole 24 which has a flat on one side and is without threads and by which means the plate 17 fits over the shaft 18 being permitted to move along the shaft 18 but not to turn. Figure 2b shows an end view of the nut 19 and Figure 2c shows a flat side 23 on the shaft 18 whose diameter is such as to permit the flat sided hole 24 in plate 17 to readily fit over the shaft 18 and engage the flat side 23 as described above. Referring again to Figure 2, the nut 19 has on the periphery thereof a graduated scale 22. The plate 17 has on its periphery a marker 21 and since the plate 17 does not rotate relative to the shaft 18, the marker 21 serves as a point of reference. When the nut 19 is turned so as to move toward the plate 17 pressure is applied to the lever 16 by the spring 30a and the spring 30 thus causing the flange 25 to engage the wheels 20. Although the invention may be practised without the spring 30a and the spring 30 it has been found that one spring alone or both will prevent seizing of the flange 25 to the wheels 20.

The popular inexpensive type of skate, for which the invention is generally intended, is somewhat crude in construction so that uniformity of manufacturing tolerances cannot be relied upon. Either of the foregoing springs 30 and 30a, in particular 30a, permit the flange 25 to adjust readily to any eccentricity of the wheels 20 and maintain substantially uniform braking. In lieu of springs 30 and 30a, cylinders of rubber, flexible plastics or like materials may be utilized in accordance with the invention.

In accordance with the invention, the partially restricting means may be applied to any one or more of the wheels of a skate as has been shown in Figure 1 and as will be described hereinafter in Figure 4, or in a combination of the arrangements of Figure 1 and Figure 4 or the like.

Referring now to Figure 4 there is shown in section a wheel 40, the ball bearings 42 and a shaft 41 having a flared raceway 43 in which the ball bearings 42 support the wheel 40 in conjunction with the fixed raceway 44. The shaft 41 passes through the fixed raceway 44 which is part of the frame 39.

In Figure 4a and Figure 4b it can be seen that the shaft 41 has, on its end which is opposite the flared raceway 43, a slot 50 and an external thread 54. The slot 50 is engaged by a tongue part 49 of the shaft 53 which has an external thread 48 opposite in direction compared with the thread 54. The shaft 53 passes through another fixed raceway 44 (partly shown) which is part of the frame 39. The shaft 53 has on its end opposite the tongue 49 another flared raceway 43 (not shown) which with ball bearings 42 has mounted thereon another wheel 40. The shaft 53 and the shaft 41 are able to move in and out of the fixed raceways 44 and may or may not turn freely.

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An adjusting nut 45 engages the shaft 41 and the shaft 53 by internal threads which mate with the thread 54 and the thread 48. The nut 46 serves to lock the adjusting nut 45 by being screwed tightly against it. When the adjusting nut 45 is turned the tongue 49 slides in the slot 50 permitting an increase or decrease in the separation of the shaft 41 and the shaft 53 at the same time preventing rotation with respect to each other. The collar 47 is fastened to the shaft 41 and has engraved thereon a mark 52 which serves as a reference point. On the adjusting nut 45 is engraved a scale 51 which may be graduated in inches or centimeters and fractions thereof or the like.

With the nut 46 loosened, the adjusting nut 45 is rotated so that it pulls the shaft 41 and the shaft 48 together or separates them depending on the rotation. By bringing the said shafts 41 and 48 together, pressure is applied through the ball bearings 42 to the wheels 40. The rotation of the wheels 40 is thus prevented to a degree which may be predetermined by setting the adjusting nut 45 in accordance with the graduated scale 51.

In Figure 5 it is shown how the invention may be practiced with a skate that is constructed in a manner well known to the art and wherein it is seen how readily the invention may be utilized as a part of the skate or as an attachment to be applied thereto when preferred.

Referring to Figure 5 and to Figure 6, there is indicated the platform 15, the plate 17, the shaft 18, the graduated nut 19, the wheel 20, the axle 27 and the spring 30 all of which have been described above in the Figures 1, 2, 2a, 2b and 2c. The housing 57 is supported on the frame 58 by means of an elastic block 59 and the shaft 18, said shaft 18 being attached to the frame 58 in any well known manner as for example by swaging, threading, or the like at the area 60. The plate 55 has affixed thereto the pins 56 which engage the housing 57 so as to maintain the plate 55 in alignment with the wheels 20. The plate 55 engages the wheels 20 and is controllable by means of the graduated nut 19 in a like manner as described in Figure 1 and Figure 2 of the foregoing.

In well known commercial skates, a long grommet (not shown) is used to secure the housing 57 to the frame 58. In the practice of the invention with such a skate, the shaft 18 is merely inserted through the grommet hole and the other elements mounted thereon as previously described.

Referring to Figure 7 there is shown a modification of Figure 4 in which the principle of the invention is further set forth. The wheels 40, the ball bearings 42, the fixed raceways 44, the axle support 57 and the upper support 58 attached to footplate 15 have been previously described. The axle support 57 is joined to the support 58 by means of a shaft 63. The axle 61 has a thread 29 on one end, a flared portion 64 serving as a raceway on its opposite end and the threaded end having a flat portion 23 as shown in Figure 2c. The nut 19, the scale 22, and the collar 17 have been shown in Figure 2b and Figure 2a respectively as has the spring 30 in Figure 5. The spring 30 is applied to a raceway 62, said raceway 62 being able to ride freely on the shaft 61. When the spring 30 is compressed by turning the nut 19 the raceway 62 presses against the ball bearings 42 in contact with it. At the same time the raceway 64 is drawn toward the raceway 62 thus applying a force through the ball bearings 42 to the wheels 40 thereby inhibiting the motion of the wheels 40. The user may attach the skate to the foot in any well known manner.

At first enough pressure is applied to rather heavily restrict the motion of the wheels and skating is practiced. The skater will find that it is very easy to stand up and balance is quickly learned. As training progresses the pressure is gradually released in definite steps in accordance with the scale 51 or the scale 22 which-

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ever is used, the actual quantities being dependent on such factors as the age, previous skill, weight and the like of the user who quickly becomes an accomplished performer.

A more proficient skater, using a skate constructed with a rear assembly in accordance with Figure 1 and a front assembly in accordance with Figure 4 will find that two different adjustments of the movement of the skate are possible. By this means trick maneuvers may be performed by the manipulation of the rider's weight toward one set of the wheels or toward the other set.

It can also be seen that the young will find great safety in the invention in addition to the pleasures thereof.

It is to be understood that various equivalents of the embodiment disclosed may be used without departing from the spirit and scope of the invention.

What is claimed is:

1. In a roller skate, the combination which comprises a support connected with a footplate, rotary means attached to said support for providing motion to said skate, a constraining means in continuous engagement with said rotary means, self-adjustable force transmitting means in engagement with said constraining means whereby said self-adjustable force transmitting means enables said constraining means to accommodate to said rotary means and means for applying a controllable force to said self-adjustable force transmitting means.

2. In a roller skate, the combination as claimed in claim 1 wherein means are provided for gauging the force of said means for applying a controllable force.

3. In a roller skate, the combination which comprises a support connected with a footplate, rotary means attached to said support for providing motion to said skate, said support comprising a first portion attached to said footplate, a second portion serving as an axle frame having mounted thereon by means of an axle said rotary means, means for joining said first portion and said second portion of said support, said joining means including means for positioning respectively a constraining means in continuous engagement with said rotary means, self-adjustable force transmitting means in engagement with said constraining means whereby said self-adjustable force transmitting means enables said constraining means to accommodate to said rotary means and means for applying a controllable force to said self-adjustable force transmitting means.

4. In a roller skate, the combination as claimed in claim 3 wherein means are included for gauging the force of said means for applying a controllable force.

5. In a roller skate, the combination which comprises a support connected with a footplate, rotary means attached to said support for providing motion to said skate, a constraining means engaging said rotary means at all times, a shaft like means attached to said footplate, said constraining means having a first portion flexibly attached to said support and a second portion adapted to move freely on said shaft like means, a self-adjustable force transmitting means positioned on said shaft like means in engagement with said second portion of said constraining means whereby said self-adjustable force transmitting means enables said constraining means to accommodate to said rotary means and means for applying a controllable force positioned on said shaft like means in engagement with said self-adjustable force transmitting means.

6. In a roller skate the combination as claimed in claim 5 wherein means are included for gauging the force of said means for applying a controllable force.

7. In a roller skate, the combination as claimed in claim 5 wherein there is included a second self-adjustable force transmitting means positioned on said shaft like means in engagement with said second portion of said constraining means and said footplate whereby said second self-adjustable force transmitting means extends

the accommodation of said constraining means to said rotary means.

8. In a roller skate, the combination as claimed in claim 7 wherein means are included for gauging the force of said means for applying a controllable force. 5

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