Nov. 10, 1964 B. W. SORENSON ETAL 3,156,318

ROLLER STAND FOR TRAMPOLINES

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Fig. 1

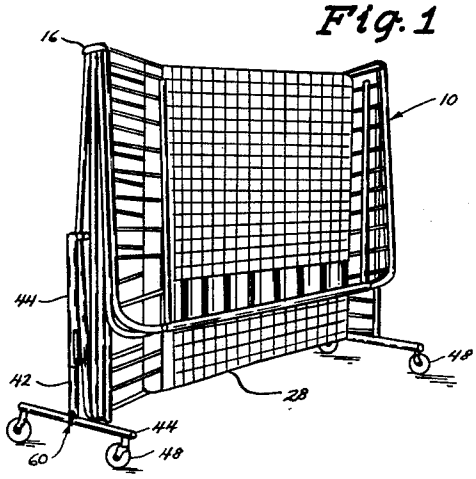


Fig. 2

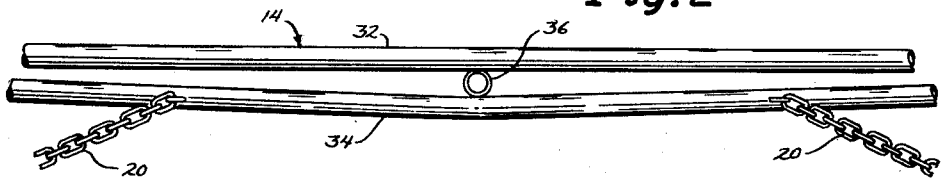
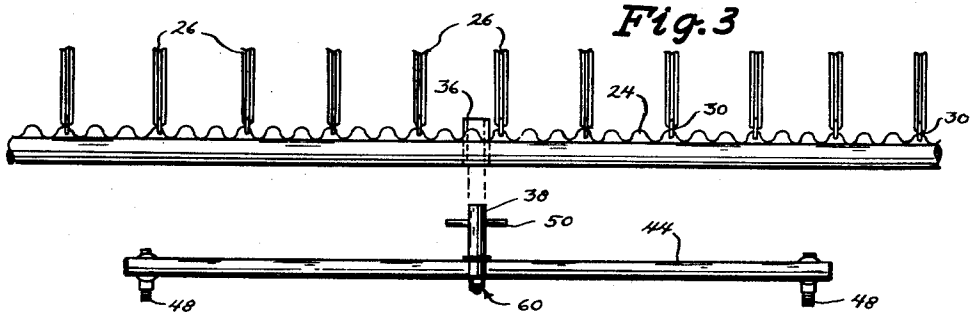


Fig. 3



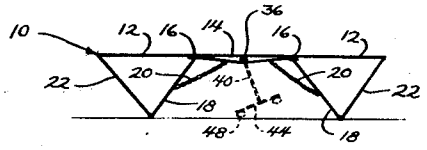


Fig. 10

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Fig. 4

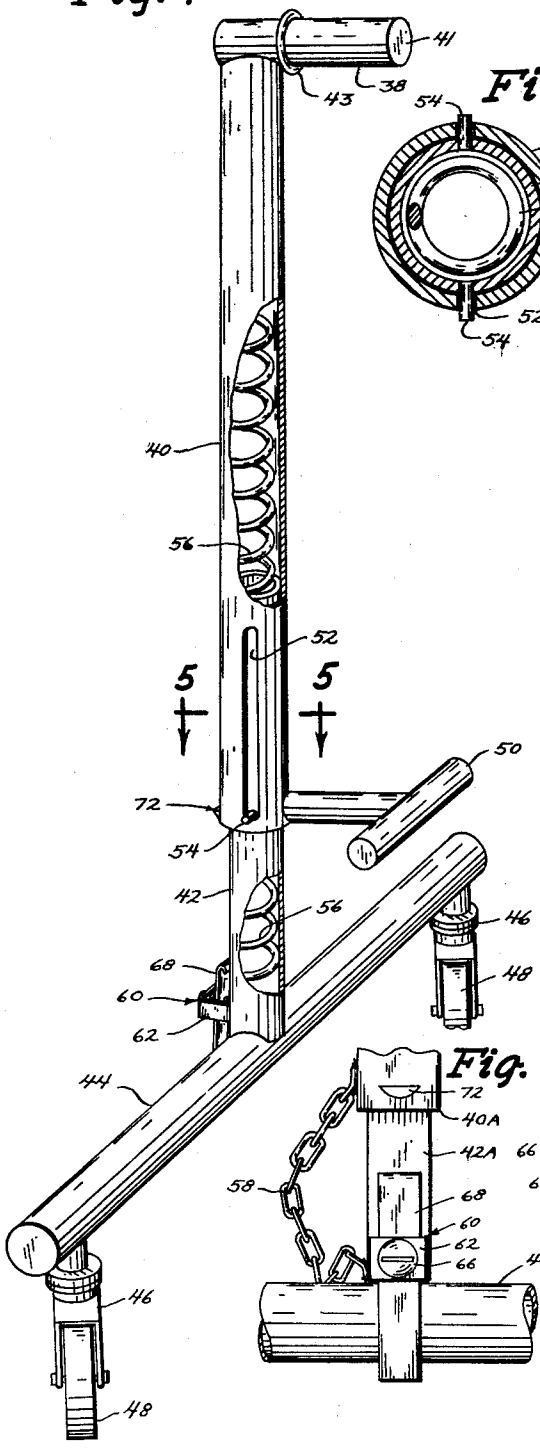


Fig. 5

Fig. 6

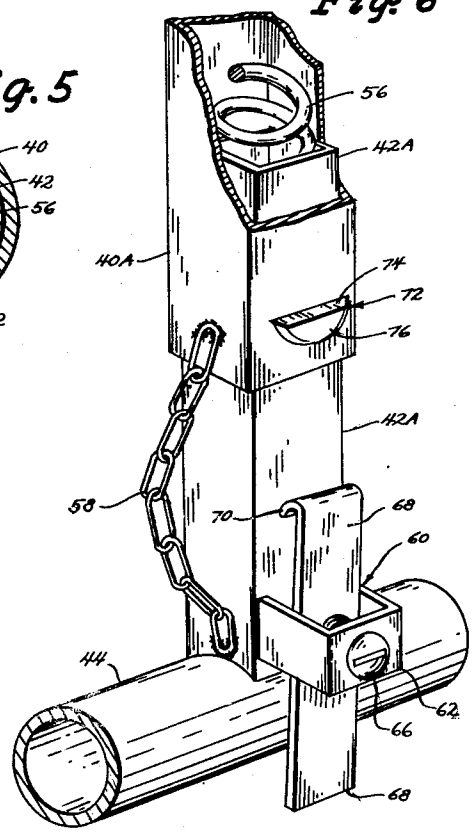


Fig. 7

Fig. 8

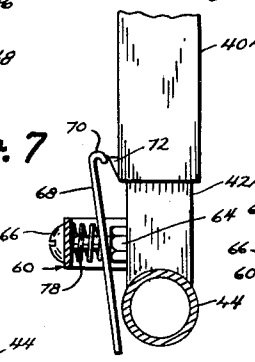
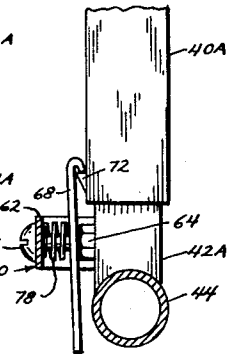


Fig. 9



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ROLLER STAND FOR TRAMPOLINES

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3 Claims. (Cl. 182—139)

The larger trampolines which are commonly used in competitive trampoline events normally have an erected horizontal frame which is rectangular in shape and which is supported on oppositely disposed U-shaped legs that are pivotally secured to the frame. Because of the large size of these erected trampoline frames, it is necessary to have them of foldable construction so that they can be collapsed for storage, shipment, or movement from one place to another in the gymnasium. Obviously, such a frame is pivoted at the third points on the lateral edges thereof so that the frame can be folded upon itself into three sections. A vertical roller stand of fixed dimensions is pivotally secured to the center of each side of the middle frame section whereupon the three folded frame sections can be pivoted into a vertical position and the entire trampoline can then be supported on the two roller stands.

The roller stands are normally supported on a floor surface by caster elements, and the overall height of the roller stands provides a sufficient degree of clearance between the floor and the folded trampoline frame to permit the frame to be unfolded and the legs thereof erected without the floor surface interfering in any of these operations. However, the height at which the roller stands must hold a folded trampoline in order to accomplish these operations often prevents the passage of the suspended trampoline through conventional door openings. When the vertical height of a folded trampoline suspended on conventional roller stands will not negotiate a door opening, it is necessary to completely remove the roller stands and then to laboriously slide the heavy trampoline over the floor surface and through the door opening. This burdensome task is time consuming and involves the efforts of several people. It also invites damage to the floor surface and door opening, and there is obviously some hazard involved in manually sliding a trampoline weighing many hundreds of pounds through a narrow passageway.

Therefore, the principal object of our invention is to provide a roller stand for trampolines that can have its vertical height adjusted.

A further object of our invention is to provide a roller stand for trampolines that is capable of lifting a folded trampoline back to its normal position after the height of the roller stand has been adjusted to a lower position.

A still further object of our invention is to provide a roller stand for trampolines that can be selectively actuated to hold a trampoline in a lower position for any desired period of time.

A still further object of our invention is to provide a roller stand for trampolines that will permit the selective manual lowering of a trampoline without utilizing manual forces corresponding to the weight of the trampoline.

A still further object of our invention is to provide a roller stand for trampolines that is economical of manufacture, durable in use, and refined in appearance.

These and other objects will be apparent to those skilled in the art.

Our invention consists in the construction, arrangements, and combination, of the various parts of the device,

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whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in our claims, and illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of a folded trampoline mounted on a pair of our roller stands;

FIG. 2 is a partial elevational view of a trampoline frame showing the socket into which our roller stand fits to support the frame;

FIG. 3 is a plan view of that portion of the trampoline frame shown in FIG. 2 with one of our roller stands positioned for immediate attachment to the frame;

FIG. 4 is a perspective view of one form of our device with portions thereof cut away to more fully illustrate its construction;

FIG. 5 is a sectional view of our device taken on line 5—5 of FIG. 4;

FIG. 6 is a partial perspective view of another form of our device showing the lock structure used on both forms of our device;

FIG. 7 is a partial front elevational view of the lock structure shown in FIG. 6 in an unlocked position;

FIG. 8 is a partial side elevational view of the lock structure shown in FIG. 7 as the trampoline frame is being lowered and is about to be locked;

FIG. 9 is a view similar to that of FIG. 8 except the lock structure is in its locked position; and

FIG. 10 is a side elevational view of an erected trampoline.

With reference to FIGS. 1 and 10, we have used the numeral 10 to generally designate a trampoline. End frame sections 12 are pivotally secured to center frame section 14 by hinges 16. U-shaped leg sections 18 are pivotally secured to the frame sections in any convenient manner and chains 20 extend between the leg sections and the center frame section 14 to limit the pivotal movement of the leg sections. End braces 22 detachably connect the lower portions of the leg sections 18 to the outer ends of end frame sections 12. As shown in FIG. 3, a hanger bar 24 can be welded to the inside periphery of each of the frame sections. Resilient loops 26 comprised of shock cord are disposed in elongated positions and are secured by one of their ends to bed 28 and are secured by their other ends to hanger bar 24 by means of clips 30.

As shown in FIG. 2, center frame section 14 is comprised of at least one top rail 32 with a lower V-shaped rail 34 secured thereunder so that the lowermost portion of rail 34 is in spaced relation to the rail 32. A horizontal sleeve or socket 36 is welded or otherwise secured to the center of frame section 14 at a point between the two rails 32 and 34. Our roller stands are normally inserted into these sleeves 36 on opposite sides of the trampoline frame.

We shall first describe the roller stand shown in FIG. 4. A horizontally disposed stud shaft 38 is welded or otherwise secured by one of its lower end portions to the top end of a hollow metal tube 40. The outer end 41 of shaft 38 is adapted for reception into sockets 36 on the trampoline 10. Ring 43 on shaft 38 limits the insertion of the shaft 38 into socket 36. Tube 40 is circular in cross section and slidably receives hollow tube 42 in its lower end. Tube 42 is welded by its lower end to horizontal cross bar 44. Caster elements 46 including wheels 48 are secured to and extend downwardly from the lower end portions of the cross bar 44 whereupon the wheels 48 are adapted to engage a supporting surface.

A horizontally disposed T-shaped bracket 50 is welded to the lower end of tube 40 to extend therefrom in the same direction as shaft 38. Bracket 50 serves to engage a folded trampoline frame supported on a pair of roller stands to prevent the inadvertent pivoting of the trampoline frame on the stud shafts 38. Bracket 50 is also sometimes used as a gripping point to exert leverage on the roller stand.

Vertical slots 52 appear in opposite sides of tube 40 near its lower end. Lugs 54 are rigidly secured to tube 42 and extend radially outwardly therefrom through each of the slots 52. A coil spring 56 extends from the bottom interior end of tube 42 to the upper interior end of tube 40. Spring 56 is in its expanded condition and supports tube 40 in an elevated position with respect to tube 42. This spring should have sufficient strength to completely resist a compressive force equal to only a few pounds more than half the weight of the trampoline to be supported so that a trampoline being supported by a pair of our roller stands will at least be held in the elevated position shown by tube 40 in FIG. 1. Lugs 54 and slots 52 serve to prevent tube 40 from turning on tubes 42, and these elements also prevent tube 40 from being removed from tube 42 when the unloaded roller stands are being handled.

The form of our invention shown in FIG. 6 is similar to that shown in FIG. 4 except that hollow square tubes 40A and 42A are used in place of tubes 40 and 42, respectively. A flexible chain 58 is welded by its ends to tubes 40A and 42A to prevent the inadvertent separation thereof. All other component parts of the form of our invention shown in FIG. 6 are identical to corresponding parts in the device shown in FIG. 4.

A locking means 60 includes a horizontally disposed U-shaped bracket 62 which is welded by the ends of its two legs to the lower portion of tubes 42 and 42A on the side of the roller stand opposite to the direction of extension of stud shaft 38. A conventional nut 64 is welded to tubes 42 or 42A within bracket 62 so that the threaded bore thereof (not shown) extends outwardly from the tube in a horizontal direction. A bolt 66 extends through a suitable aperture in bracket 62 and is threadedly received by its inner end in the threaded bore of nut 64. A vertically disposed finger 68 is loosely mounted on bolt 66 within bracket 62 by means of the bolt extending through a suitable enlarged aperture (not shown) therein near the center of the finger. An inwardly extending hook portion 70 appears on the upper end of finger 68. Hook portion 70 is adapted to catch on lug 72 which is mounted on the lower ends of both tubes 40 and 40A. Lugs 72 have a horizontal top surface 74 and a lower tapered cam surface 76. A spring 78 encompasses bolt 66 and normally urges hook portion 70 of finger 68 into engagement with tube 42 or 42A.

The normal operation of our device is as follows: As indicated above, the stud shafts 38 on a pair of roller stands are inserted into the sockets 36 on opposite sides of the trampoline frame. The vertical height of the roller stands is greater than the vertical height of the socket 36 on the erected trampoline in FIG. 10. Thus, the roller stands initially assume the inclined position shown by the dotted lines in FIG. 10. Usually, the erected trampoline is manually held against movement, and pressure is exerted by the foot on the roller stands to move them to a vertical position whereby the entire trampoline can be lifted by the stands and held in spaced relation to the supporting surface. The trampoline is then collapsed and folded into the position shown in FIG. 1. The manner in which the trampoline is actually mounted on the roller stands does not constitute a part of our invention and, obviously, this operation can vary considerably in its sequential steps.

With the trampoline in the suspended and elevated position shown in FIG. 1, the trampoline can be readily moved by merely pushing it in the desired direction on the four supporting wheels 48. Since the springs 56 in the two roller stands have a combined resistance to compression which is slightly greater than the total weight of the trampoline, the tube 40 (and 40A) will not move downwardly on tube 42 (and 42A) to lower the overall height of the folded trampoline. However, when a door opening is encountered that will not provide sufficient vertical clearance for the trampoline, a slight manual pressure can be applied downwardly on tubes 40 (or 40A) which will overcome the springs 56 and cause them to compress. The compression of springs 56 allows the tube 40 (and 40A) to slide downwardly on tubes 42 (and 42A) to lower the effective vertical height of the folded trampoline. As tube 40 (or 40A) moves downwardly, the lug 72 on the lower end thereof engages and catches the hook portion 70 on finger 68 of locking means 60. This sequential action is shown in FIGS. 8 and 9. The engagement and locking of finger 68 on lug 72 will hold the trampoline in this lowered position as it is moved through the low door opening. After the door opening has been negotiated, pressure can be applied to the lower end of finger 68, as viewed in FIG. 9, and finger 68 will pivot out of engagement with lug 72 whereupon the springs 56 will expand and lift the trampoline to its initial elevated position at which it must be maintained to be successfully unfolded.

Thus, from the foregoing, it is seen that our device will accomplish at least all of its stated objectives.

Some changes may be made in the construction and arrangement of our roller stand for trampolines without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

1. In a trampoline, comprising,
   a trampoline frame being substantially rectangular in size,
   support means at each end of said frame for supporting said frame when said trampoline is in an extended horizontal position,
   a roller stand on each side of said frame intermediate the ends thereof, said roller stand having a pair of telescoping members, a spring means interconnecting said members to normally extend them relative to each other, one of said members having means for pivotally engaging the frame of said trampoline, the other of said members having a cross bar on its lower end, and roller means on said cross bar at each end thereof for engagement with a supporting surface,
   means for limiting relative extension and rotation between said telescoping members,
   the combined strength of said spring means in each roller stand being sufficient to extend each pair of telescoping members to a length sufficient to support said trampoline above the supporting surface when each of said roller stands is in a vertical position extending between the trampoline frame and the supporting surface, and
   said roller stand adapted to pivot on said trampoline frame to a position extending at an acute angle to said trampoline frame with said spring means extending said pair of telescoping members to give said roller stand a length greater than the vertical distance between the trampoline frame when in its extended horizontal position and the supporting surface, said roller stand when in said last mentioned position having only one of said roller means on said cross bar in engagement with said supporting surface, said spring means being compressed to reduce the overall length of said roller stand as said roller stand is pivoted to a vertical position to return said roller means on the other end of said cross bar into engagement with said supporting surface.

2. The trampoline of claim 1 and means for locking

said telescoping members in a retracted position against the action of said spring means tending to extend them relative to each other.

3. The trampoline of claim 1 wherein said means for limiting relative extension and rotation between said telescoping members includes one of said pair of telescoping members having an elongated recess formed therein and disposed in a plane parallel to the longitudinal axis of said pair of telescoping members and the other telescoping member having a pin means secured thereto and received in said recess for movement between opposite ends of said recess as said telescoping members are moved longitudinally relative to each other.

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