United States Patent

[11] 3,580,570

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[45] Patented **May 25, 1971**

[54] **FOLDABLE TRAMPOLINE**
8 Claims, 12 Drawing Figs.

[52] **U.S. Cl.** **272/65**
[51] **Int. Cl.** **A63b 5/00**
[50] **Field of Search** 272/65;
182/137—140; 5/111

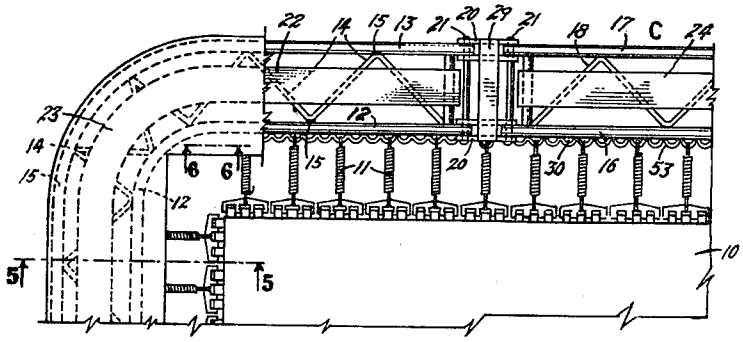
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Assistant Examiner—Richard Dror
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ABSTRACT: Two U-shpaed, trussed end frames hingedly connected together at their terminal extremities by straight, - trussed side frames so that the end frames may be folded over the side frames for storage or opened out into the plane of the side frames to form an open, rectangular, peripheral bed frame which tensionally supports a conventional trampoline bed. Foldable leg elements hingedly mounted below said side frames for supporting the latter from the floor and foldable leg-bracing elements hingedly mounted below said end frames for maintaining said leg elements in the proper supporting positions, said frames being covered by cushioned deck pads which form a deck-way completely about said trampoline bed.



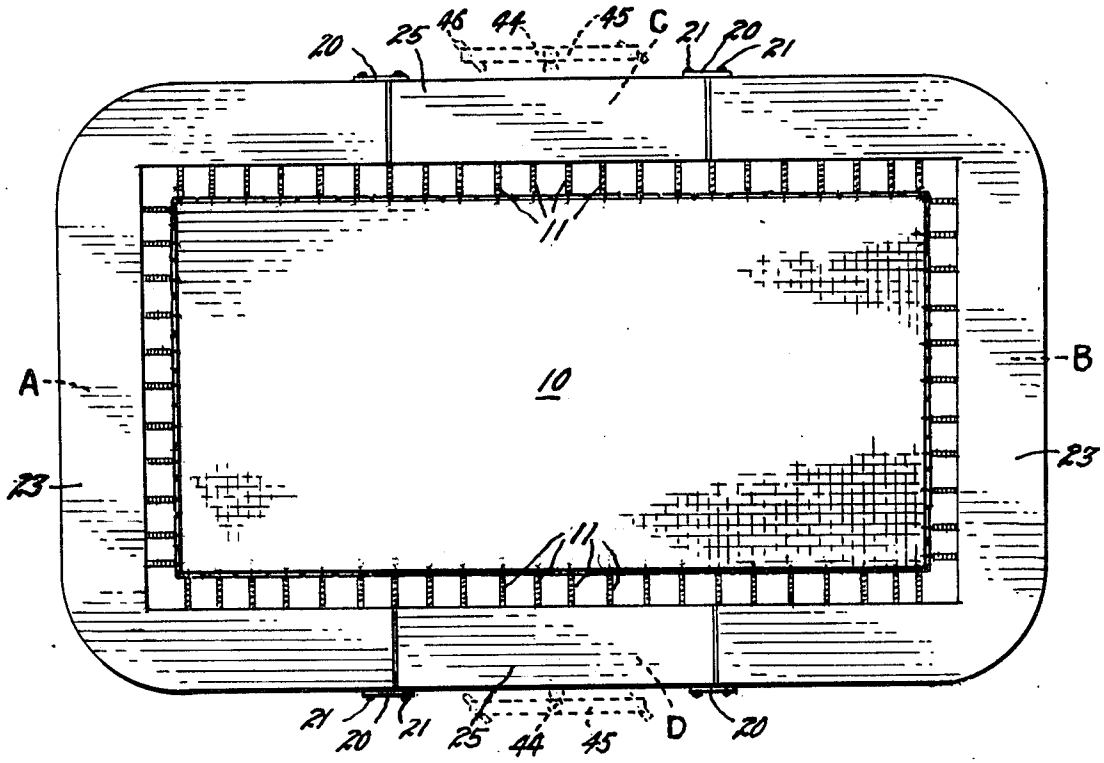


Fig. 1

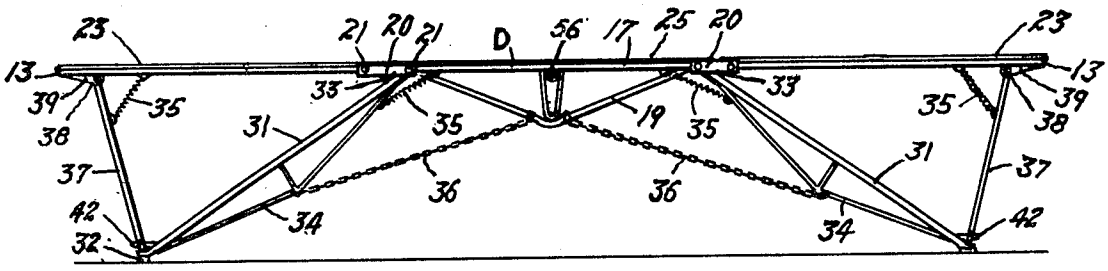


Fig. 2

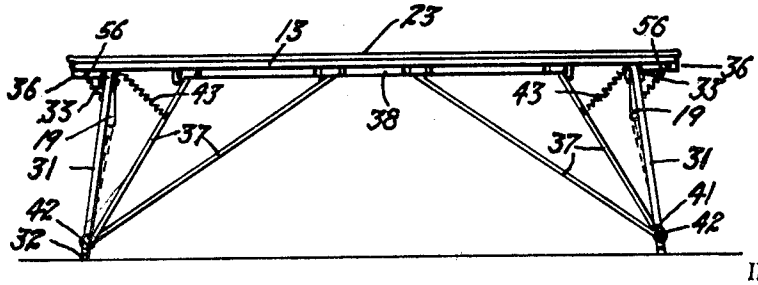


Fig. 3

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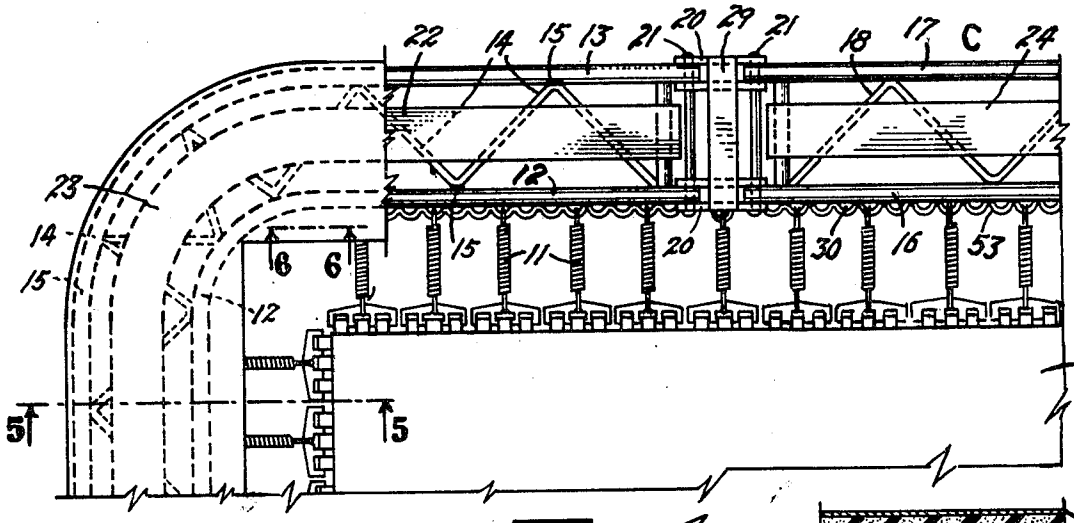


Fig. 4

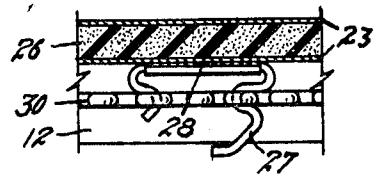


Fig. 6

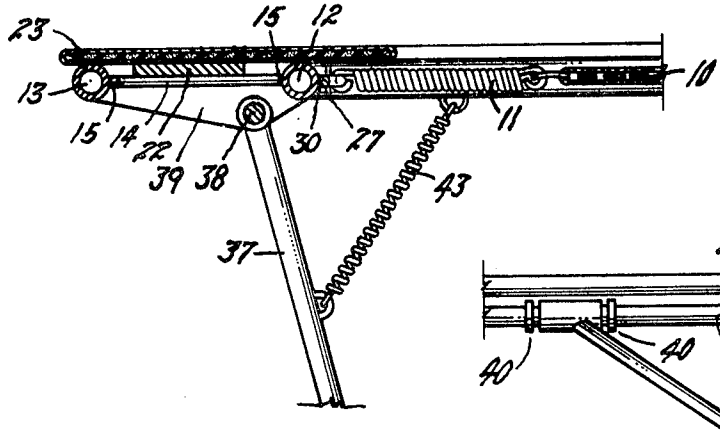


Fig. 5

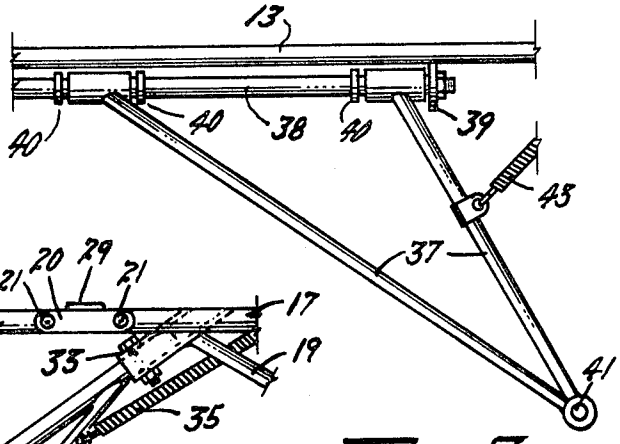


Fig. 7

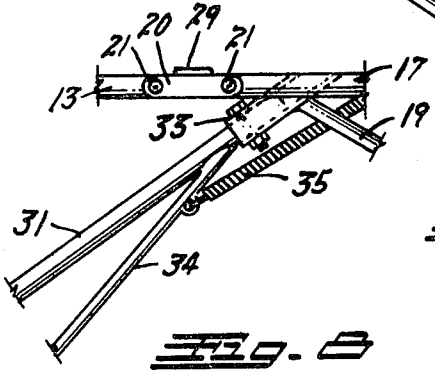


Fig. 8

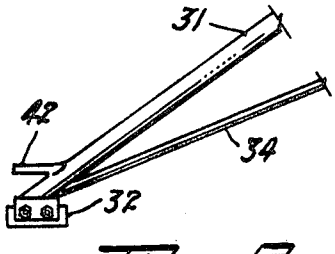


Fig. 9

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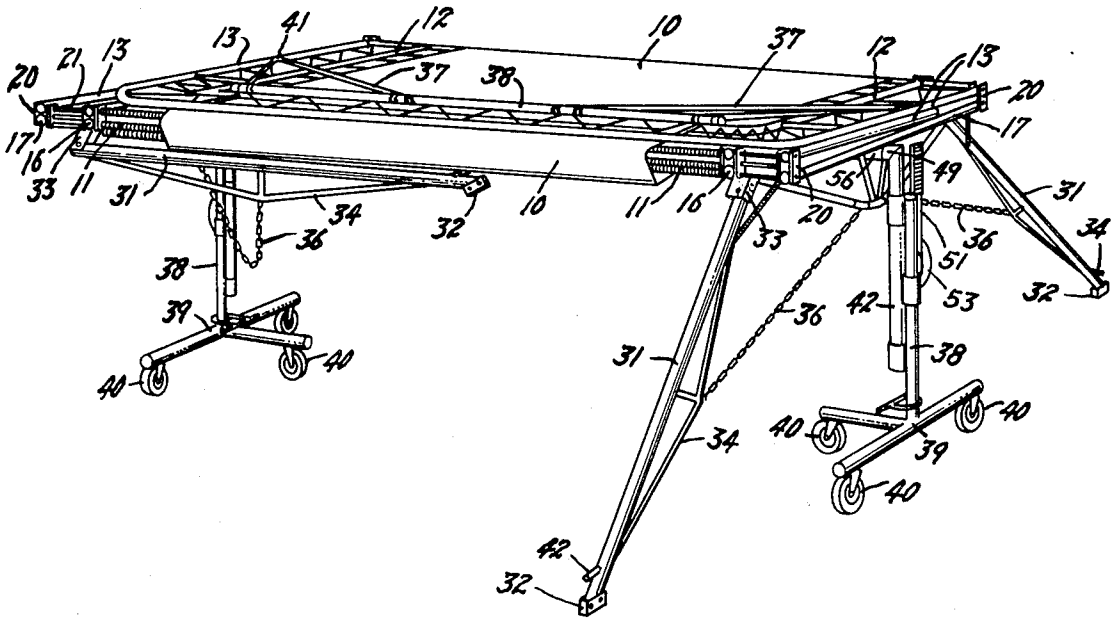


FIG. 10

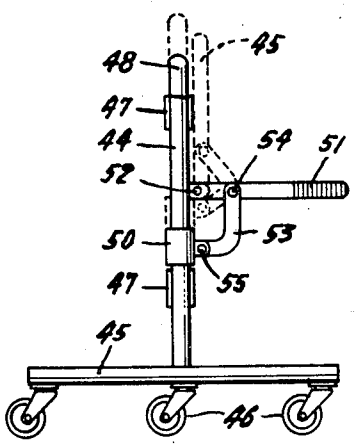


FIG. 11

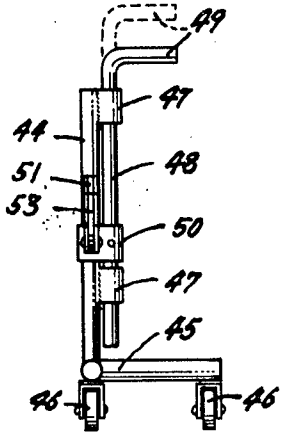


FIG. 12

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FOLDABLE TRAMPOLINE

This invention relates more particularly to the exceedingly large trampolines of the "jumbo" type that are used in school gymnasiums for the instruction of trampoline classes; in arenas for gymnastic competitions; and upon theatrical stages for display routines.

The principal object of this invention is to provide a trampoline which can be made in an exceedingly large size (for instance, 18'–6" long × 12'–0" wide) and which can be quickly and easily folded, with the performing bed tension undisturbed, so that it may be readily passed, as a complete unit, through a conventional doorway (such as a 6'–8" ×2'–6") and quickly erected for use.

Another object is to provide a foldable, peripheral, trampoline bed-supporting frame of sufficient inherent rigidity to absorb all of the tension stresses imparted by the bed and the performers thereon so as to eliminate braces and tension-resisting elements that are presently placed beneath trampoline bed frames so as to provide complete clearance for depressive movements of the bed.

A further object is to provide a safe, sturdy deckway above the bed springs which will completely surround the bed to provide a peripheral platform upon which instructors may stand within convenient reach of the student to provide immediate aid and assistance to the student performers while instructing them in new routines, and upon which students may stand and await their turns for instructions.

A still further object is to provide highly efficient, vertically extendable, wheeled jack stands which may be readily and detachably applied to a trampoline for selectively tilting the latter from a horizontal "in use" position to a vertical position for transportation and storage.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is made to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

FIG. 1 is a plan view of the improved trampoline in the extended and ready-for-use position;

FIG. 2 is a side elevational view of the trampoline of FIG. 1;

FIG. 3 is an end elevational view thereof;

FIG. 4 is an enlarged, fragmentary, partially broken away detail plan view of the upper left corner portion of FIG. 1;

FIG. 5 is a further enlarged, detail section taken on the line 5–5, FIG. 4;

FIG. 6 is a still further enlarged detail section taken on the line 6–6, FIG. 4;

FIG. 7 is a detail fragmentary view illustrating a triangular brace frame and its mounting, to be later described;

FIG. 8 is a similar fragmentary view illustrating the upper portion of a tubular leg employed in the invention, which will be later described;

FIG. 9 is a similar view showing the lower portion of the leg of FIG. 8;

FIG. 10 is a perspective view of the complete trampoline as it would appear in a partially folded position;

FIG. 11 is a side elevational view of a wheeled jack stand, to be later described, for use in folding and transporting the trampoline of this invention; and

FIG. 12 is an end elevational view of the wheeled jack stand of FIG. 11.

The bed of the trampoline, indicated at 10, and its surrounding bed springs, indicated at 11, are conventional. The springs 11 may be secured to the bed in any of the ways now employed in trampolines. This invention relates more particularly to a peripheral, trussed, foldable bed frame which completely surrounds the trampoline bed and maintains it under constant tension, both in the folded and unfolded positions.

The peripheral bed frame of this invention comprises two similar, U-shaped, trussed end frames "A" and "B" which are hingedly maintained in spaced-apart relation by means of two similar, straight, trussed side frames "C" and "D."

The end frames "A" and "B" each comprise a U-shaped steel inner end tube 12 and a U-shaped, steel outer end tube 13 maintained in flat, rigid, spaced-apart, and parallel relation by means of a continuous truss rod 14 which extends back and forth in zigzag, triangular relation between the tubes 12 and 13 and is welded to the latter at the spaced points of contact, as indicated at 15 in FIG. 4.

The side frames "C" and "D" each comprise a straight, steel, inner, side tube 16 and a straight, steel, outer side tube 17 which are maintained in rigid, spaced-apart, parallel relation by means of a zigzag truss rod 18 welded thereto similarly to the truss rods 14 previously described. The side frames are stiffened against vertical bending by means of longitudinally and downwardly extending truss structures 19. A relatively short, tubular jack socket 56 is welded transversally beneath the midpoint of each of the side frames to pivotally receive a wheeled jack stand to be later described.

The terminal extremities of the end tubes 12 and 13 are hingedly and respectively secured to the terminal extremities of the side tubes 16 and 17 by means of pairs of elongated hinge links 20 which are pivoted adjacent their extremities to the adjacent tubes by means of elongated hinge pins 21.

An elongated, U-shaped walk plate 22 is positioned between the tubes 12 and 13 of each end frame and lies upon and is welded to the zigzag truss rod 14 so as to support a U-shaped, end deck pad 23 thereover. Similar straight walk plates 24 are similarly mounted between the tubes 16 and 17 of each of the side frames "C" and "D" to support straight, side deck pads 25 thereover.

The deck pads 23 and 25 may be formed of any suitable pad material and have sufficient width to cover the outside tubes 13 and 17 and extend inwardly partially over the bed springs 11 about the entire periphery of the bed 10. The pads preferably comprise flat, vinyl-coated fabric envelopes enclosing flat, relatively stiff, plastic-foam-cushioned fillers 26 and are provided with suitable spring steel wire clips 27, secured to their undersurfaces by means of stitched retaining tapes 28. The clips are designed to be pushed into frictional engagement with elements of the trussed frames so as to allow the trampoline to be completely folded without removal of the pads.

It is preferred to weld the pairs of hinge links 20 beneath a laterally extending connecting strap 29 to facilitate assembly and to provide support for the deck pads between the hinge pins 21, as shown in FIG. 4.

A customary method of attaching the bed springs 11 to a surrounding frame is to weld an elongated, corrugated rod 30 to the frame, as shown in FIGS. 4 and 6. The bed springs 11 are then hooked into the spaced corrugations of the rod 30, as shown in FIG. 4. The corrugations in the rod provide convenient means for receiving the resilient pad-retaining clips 27 for holding the deck pads in place, as shown in FIG. 6.

When in use, the above described 4-part peripheral trussed bed frame is horizontally supported above the floor by means of four tubular, inclined legs 31 which terminate, at their lower extremities, in cushioned, floor-engaging feet 32. The legs 31 are hingedly mounted at their upper extremities in elongated, angularly positioned hinge housings 33 of inverted-U-shaped cross section, there being one of the hinge housings welded beneath each extremity of each of the inner side tubes 16 of each of the end frames. The hinge housings 33 are angularly directed so that the tubular legs may be swung inwardly and upwardly beneath the bed, as shown on the left of FIG. 10, or outwardly and downwardly to place the feet 32 in contact with the floor, as shown at the right in FIG. 10. Each leg is stiffened by means of a stiffening truss 34 to resist bending thereof and is constantly urged upwardly by means of a tension spring 35.

To prevent the opposite legs 31 from longitudinally spreading outwardly from each other under the weight of the bed,

flexible tension chains 36, of a predetermined length, are attached between the stiffening trusses 34 of the legs and the truss structures 19 of the inner side tubes 16, as shown in FIGS. 2 and 10.

The legs are braced against lateral pivotal movement when in use by means of four triangular brace frames 37, there being a pair of the brace frames hingedly mounted at their open upper extremities upon a hinge shaft 38 beneath each end frame. The hinge shafts are supported between bracket plates 39, beneath the inner tube 12 of each end frame. To prevent longitudinal movement of the triangular brace frames 37 along the hinge shaft 38, the latter is provided with annular spacers 40 which are welded or otherwise fixedly mounted on the shafts 38, as shown in FIG. 7. The lower or apex extremity of each triangular base frame is provided with a stud receiving socket 41 into which a projecting locking stud 42, carried by the lower extremity of the adjacent leg 31, may be inserted to lock both the triangular base frames 37 and the tubular legs 31 against folding movement. A tension spring 43, tensioned between each triangular frame and the adjacent inner tube 12, resiliently draws the triangular frame inwardly and upwardly against the bottom of the bed when the stud 42 is released from its receiving socket 41.

Two wheeled-jack stands are provided for use in folding and lifting the trampoline. The jack stands are illustrated in detail in FIGS. 11 and 12 and each comprises a tubular guide post 44 which is vertically supported from a T-shaped, tubular base frame 45 mounted upon three caster wheels 46. The post 44 carries two vertically aligned guide sleeve 47 in which a vertical tubular jack shaft 48 is slidably mounted. The upper extremity of the jack shaft extends horizontally at right angles to provide a pivot axle 49.

A double sleeve 50 surrounds both the guide post 44 and the tubular jack shaft 48 intermediate the guide sleeves 47. The double sleeve 50 is fixedly welded to the jack shaft 48 and is vertically slidable on the guide post 44. An actuating lever 51 is pivotally mounted, as shown at 52, on the post 44 above the double sleeve 50, and a connecting link 53 is pivotally mounted on the lever 51, as indicated at 54, in spaced relation to the pivot 52, and extends downwardly to a pivot 55 on the double sleeve 50. It can be seen that, when the lever 51 is swung upwardly, the jack shaft 48 will be urged upwardly to elevate the pivot axle 49. When the lever is in its fully-up position, as shown in dotted line in FIGS. 11 and 12, the pivots 55 and 52 will be in a "past-dead-center" position to retain the pivot axle 49 elevated until the lever 51 is again pulled downwardly.

To fold the trampoline from the erected position of FIGS. 1, 2 and 3, one of the jack stands is positioned at each side of the midportion of the trampoline, as indicated in broken line in FIG. 1, with their pivot axles 49 extending into the jack sockets 56 of the two side frames.

The triangular brace frames 37 are disconnected from the tubular legs 31, by withdrawing their terminal sockets 41 from the locking studs 42 of the legs, so as to allow the springs 43 to snap the triangular brace frames 37 upwardly against the bottoms of the end frames "A" and "B." The end frames, with their triangular frames folded against their bottom surfaces, are now successively folded upwardly and inwardly over the side frames "C" and "D," as shown in FIG. 10. The levers 51 of the jack stands are now actuated to raise the trampoline legs 31 from the floor and support the partially folded assembly in a balanced, tiltable, elevated position. The four tubular legs 31 are now successively folded upwardly and inwardly against the bottom of the tiltably supported, medial portion of the trampoline, as shown at the left in FIG. 10, where they will be resiliently retained in place by the tensioned leg springs 35.

The entire folded and laminated bed structure can now be tilted, about the axes of the pivot axles 49 of the jack stands, to a substantially vertical position between the two, wheeled-jack stands for easy passage through a conventional doorway for transportation or storage. To again erect the trampoline for use, the above procedure is simply reversed, and the jack stands are lowered and removed.

While a specific form of the invention has been described and illustrated herein, it is to be understood that the same may be varied within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. Means for supporting a foldable, elongated trampoline bed in a tensed position for use comprising:
   a. two U-shaped end frames positioned with their open sides facing each other;
   b. two straight side frames positioned between and hingedly connected to the terminals of the two end frames and spacing the latter apart to form a closed, elongated, foldable, peripheral bed frame;
   c. tension springs connected to and extending inwardly from said bed frame to said bed and maintaining the latter under constant tension, said end frames and said side frames each comprising;
   d. an inner tube and an outer tube fixedly positioned side-by-side in a horizontal plane in fixed parallel, spaced-apart relation and conforming to the contour of their respective frames, said tension springs being connected to said inner tube; and
   e. a truss element fixedly positioned between and in the plane of said parallel tubes and being permanently and fixedly attached to both at spaced intervals.

2. Means for supporting a trampoline bed as described in claim 1 in which the truss element comprises:
   a. a continuous rod having an elongated zigzag contour positioned in a flat plane between said tubes, the apexes of the zigs and zags contacting and being welded to both said tubes.

3. Means for supporting a trampoline bed as described in claim 2 having:
   a. an elongated pad-supporting plate supported by said truss element between said tubes.

4. Means for supporting a trampoline bed as described in claim 2 having:
   a. a flat, elongated pad supported on the inner and outer tubes in fixed horizontal relation with both said tubes.

5. Means for supporting an elongated trampoline bed in a tensed position for use comprising:
   a. two U-shaped end frames positioned with their open sides facing each other;
   b. two straight side frames positioned between and hingedly connected to the terminals of the two end frames and spacing the latter apart to form a closed, elongated, foldable, peripheral bed frame;
   c. tension springs connected to and extending inwardly from said bed frame to said bed and maintaining the latter under constant tension;
   d. foldable supporting means hingedly mounted at the opposite extremities of each of said side straight frames and supporting the latter and the inner hingedly connected terminals of the U-shaped end frames from the floor;
   e. a supporting element suspended from each of said U-shaped end frames and supporting the outer portion of the latter from the floor;
   f. said U-shaped end frames and said straight side frames comprising an inner tube and an outer tube fixedly positioned side-by-side in a fixed horizontal plane in parallel, spaced-apart relation and conforming to the contour of their respective frames; and
   g. a truss element positioned between and in the plane of said parallel tubes and being permanently and fixedly attached to both tubes at spaced intervals.

6. Means for supporting a trampoline bed as described in claim 5 in which the truss element comprises:
   a. a continuous rod having an elongated zigzig contour positioned between said tubes, the apexes of the zigs and zags contacting and being welded to said tubes.

7. Means for supporting a trampoline bed as described in claim 5 having:

a. an elongated pad-supporting plate supported by said truss element between said tubes.

8. Means for supporting a trampoline bed as described in claim 7 having:

a. a flat, elongated pad supported on and covering each frame and substantially contacting each other at their extremities to form a continuous, peripheral walkway about said bed.