

United States Patent

[11] **3,561,564**

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[54] TRAMPOLINE
3 Claims, 4 Drawing Figs.

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A63b 5/18

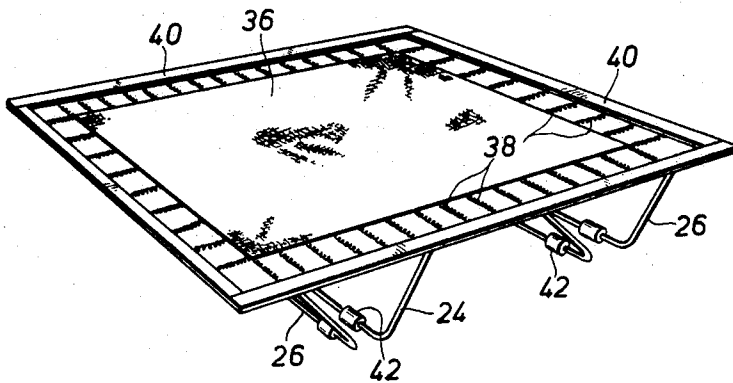
[50] **Field of Search**..... 182/139;
272/65; 5/110

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ABSTRACT: A trampoline, which is constructed to yieldingly resist the downward force exerted thereon by the user, and in which the rebounding action is controlled and directed to prevent accidental outward displacement of the user from the bed of the trampoline during rebound. The trampoline of the invention has a generally rectangular frame, constructed to contract by inward flexing of the sides of the frame in response to the downward force exerted by the user on the bed, and to expand by outward flexing of the sides to provide a rebounding action tending to cause the user's body to move inwardly of the frame during rebound, whereby accidental displacement of the user outwardly beyond the frame is prevented. The frame is supported on U-shaped legs or support members which are shaped to yieldingly resist the contracting movement of the frame and to allow sagging movement of the frame in response to downward force exerted on the bed, whereby the directed rebounding action of the frame is augmented.



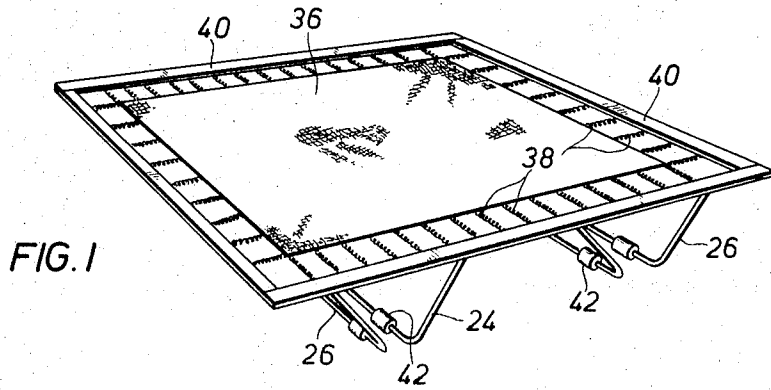


FIG. 1

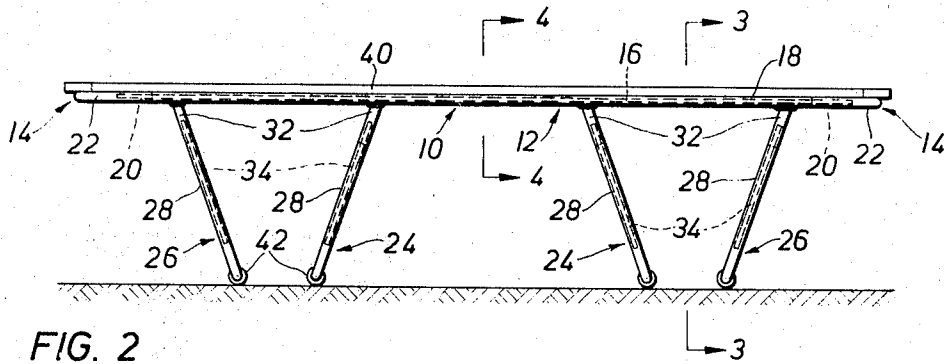


FIG. 2

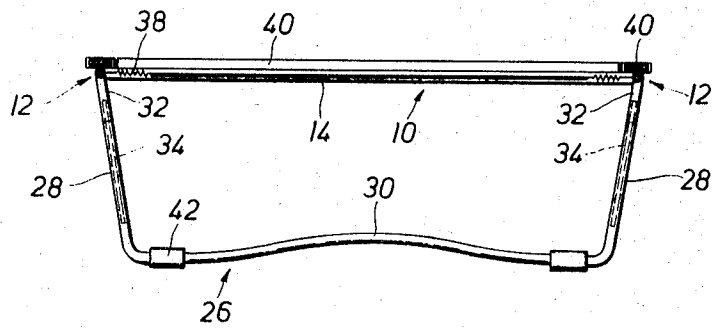
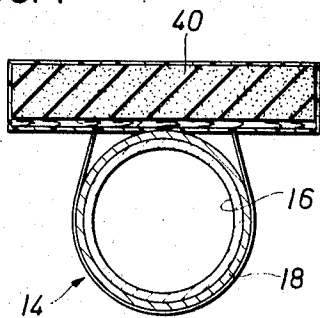


FIG. 3

FIG. 4



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TRAMPOLINE

BACKGROUND OF THE INVENTION

In the construction of trampolines, as heretofore commonly carried out, it has been customary to form the frame of the trampoline of relatively heavy and rigid material, such as heavy structural shapes of angular cross sectional configuration, to provide a frame having extreme rigidity and strength, upon which a bed formed of flexible fabric is tightly stretched by means of numerous coil springs, to render the bed resilient to the downward force exerted thereon by the user and to cause the bed to rebound to move the user's body upwardly therewith. Such frames are usually supported on legs of maximum strength and rigidity, which do not allow sagging or downward flexing of the frame in response to downward forces exerted on the bed.

In the use of trampolines constructed in this manner, the user often descends on the bed at a location away from the center of the frame toward one end or one side thereof, and at times is thrown off of the trampoline by the rebounding action of the same. It has been discovered that in trampolines which are rigidly supported, the rebounding action tends to direct the body of the user away from the center of the frame rather than toward the same, and more particularly, when the user descends at a location near one end of the frame where the end portion of the frame extends longitudinally beyond the legs of the same.

SUMMARY OF THE INVENTION

Briefly described, the trampoline of the present invention comprises a generally rectangular frame formed of tubular material and having rounded corners, within which a sheet fabric bed is resiliently supported by numerous coil springs, the frame being constructed to flex inwardly to yieldingly resist the inward pull transmitted thereto by the coil springs, resulting from the downward force exerted by the user on the bed, and to flex outwardly to augment the rebounding of the bed, whereby the trampoline has a tendency to direct the user's body upwardly away from the sides of the frame, thereby preventing outward displacement of the user from the trampoline.

The frame is supported on generally U-shaped legs whose arms diverge upwardly from the bottom of the U, and are attached at their upper ends to the opposite sides of the frame for inward and outward flexing movement therewith. The bottom of the U of each leg is also bowed upwardly mediate its end to further enhance the resiliency of the leg.

The legs are arranged in pairs spaced longitudinally from the middle of the sides of the frame and inwardly from the ends of the frame, the legs of each pair being spaced at the same distance apart, and the upright arms of each pair diverging downwardly. By this arrangement, the frame and its supporting means is constructed to provide ample strength to support the bed while allowing flexing of the frame and sagging movement of the ends of the frame beyond the legs, to yieldingly resist the downward force exerted on the bed by the user and to rebound in a manner tending to direct the user's body away from the sides or ends of the bed.

The frame of the trampoline is preferably formed of round tubular material, such as steel tubing, and the frame is formed with straight side pieces and with end pieces provided with curved end portions, and the sides and ends are connected together by sections of tubing of a size to fit tightly within the ends of the side and end pieces to securely hold the same assembled.

The legs are of tubular construction, and are attached to the side pieces of the frame by tubular sockets welded to the side pieces. The legs and sockets are secured together by sections of tubing of a size to tightly fit within the socket and the upper end portions of the legs.

By this arrangement, the trampoline may be readily packaged in a disassembled condition and easily assembled for use.

BRIEF DESCRIPTION OF THE VIEWS OF THE DRAWINGS

FIG. 1 is a perspective view on a somewhat reduced scale, illustrating a preferred embodiment of the invention;

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

FIG. 3 is a cross sectional view, taken along the line 3-3 of FIG. 2, looking in the direction indicated by the arrows; and

FIG. 4 is a cross sectional view, on an enlarged scale, taken along the line 4-4 of FIG. 2, looking in the direction indicated by the arrows.

DETAILED DESCRIPTION OF A PARTICULAR EMBODIMENT OF THE INVENTION

The trampoline of the invention, as illustrated herein, comprises a generally rectangular frame, generally designated 10, formed of suitable material, such as steel tubing, and having rounded corners. The frame is preferably formed of two elongated tubular side sections 12, which are connected together in spaced apart, parallel relation by two end sections 14.

The side sections are each formed with inner and outer tubular parts 16 and 18, of which the inner part 16 is somewhat longer than the outer part and is extended through the outer part with end portions 20 projecting substantially beyond the ends of the latter. The outside diameter of the inner part is preferably of a size to closely fit the inside of the outer part, so that the parts are securely held together by friction when assembled and need no additional fastening means.

The parts are preferably formed of relatively thin walled material, such as steel tubing, possessing great strength while at the same time being somewhat resilient, so that the side frame members are somewhat flexible but capable of resisting bending.

The end frame members 14 are also preferably formed of metal tubing of the same diameter as that of the outer side sections and are formed with curved end portions 22 forming the rounded corners of the frame and which are fitted onto the projecting end portions 20 of the inner parts of the side frame sections, when the frame is assembled.

The frame of the trampoline is supported on inner and outer legs 24 and 26, respectively, arranged in two sets, and of which the legs of each set converge downwardly. The legs are preferably of generally U-shape, formed of tubular material, such as that of the frame sections, and of the same size as the latter, each leg being formed in one piece with upwardly bent end portions 28 and having a ground engaging, horizontal portion 30 which is upwardly curved mediate its ends. The upright portions 28 of the legs preferably diverge upwardly as best shown in FIG. 3. The legs are connected to the frame by downwardly extending tubular sockets 32, preferably of the same diameter as the legs, and which are conveniently attached to the frame, as by means of welding at their upper ends. The sockets 32 extend downwardly at an angle to the vertical such that the upwardly bent portions of adjacent ones of the legs 24 and 26 converge downwardly, while the upwardly bent portions of the legs 24 are downwardly divergent, as shown in FIG. 2.

The upwardly extending portions 28 of the legs are secured to the sockets 32 by means of inner tubular elements 34 extending into the abutting ends of the sockets and legs and tightly fitted therein.

The sets or pairs of legs may be suitably spaced apart, depending upon the length of the frame, the legs of each set being spaced at the same distance apart.

The frame is provided with the usual rectangular bed 36 formed of suitable flexible sheet material, attached to the frame in the usual manner as by means of coil springs 38 along all sides, and the frame may be provided with the usual padded sides 40 overlying the sides and ends of the frame and attached thereto. Each of the legs may be provided with longitudinally spaced apart, annular ground engaging elements 42 positioned on the bottom of the U.

The ends of the frame extend beyond the outermost of the legs 26 to provide free end portions which are sometimes referred to as "soft" ends.

It will be apparent that the frame of the trampoline, thus constructed, is somewhat flexible, the side and end sections of the frame being capable of flexing inwardly in response to the downward force exerted by a user jumping on the bed 36, and of springing back outwardly to augment the rebounding of the bed. Moreover, due to the positioning of the legs 24 and 26, they may flex in response to the downward force exerted on the bed allowing the frame to sag somewhat and causing the frame to rebound in use.

In the use of the trampoline, the user may stand on the bed 36 and jump upwardly therefrom in the usual manner, whereupon as the user descends on the bed, the springs 38 will be stretched to allow sagging of the bed. The increased tension on the springs will then arrest the downward movement of the user and the subsequent rebound will throw the user upwardly.

The yielding resistance of the springs 38 against the downward movement of the user on the bed 40 is augmented by the inward flexing of the sides and ends of the frame and by the inward flexing movement of the upwardly extending portions 28 of the legs 24 and 26, so that the trampoline has a greatly improved sagging and rebounding action, as compared with a trampoline of usual construction having rigid frame and leg structure.

In the event that the user comes down offcenter on a portion of the bed near one end, or one side of the frame, the force exerted will be transmitted throughout the frame and legs more or less uniformly by the flexing and sagging action thereof, and the rebounding action will tend to throw the user inwardly toward the center of the bed rather than outwardly as often occurs in the use of a rigid frame and leg structure.

It will be evident that by selecting the size of the tubing employed in the sides and ends of the frame and in the construction of the legs, as well as the spacing and angling of the legs, and the extent of the inward, downward convergence of the upturned portions 28 thereof, the trampoline may be given predetermined flexing and sagging characteristics most desirable for the size of frame which is to be used.

Due to the tubular construction of the frame and legs, and the telescoping connection of the parts, the trampoline may be readily packaged in a knocked down condition and is easily assembled for use.

It will thus be seen that the invention, constructed as described above, provides a trampoline which is of simple design and rugged construction, having greatly improved features of safety to the user, while at the same time providing ample support and flexibility to cause an upward and inward movement of the user's body on rebound to prevent displacement of the user outwardly from the trampoline.

I claim:

1. In a trampoline:

a generally rectangular frame formed of tubular material

whose sides and ends are capable of inward and outward flexing movements;

a trampoline bed within and connected to the sides and ends of the frame by a plurality of spaced resilient connectors each under tension to cause the sides and ends to flex inwardly upon the exertion of a downward force on the bed by the downward movement of an acrobat thereon and outwardly upon upward movement of the acrobat with the bed; and

longitudinally spaced apart pairs of longitudinally spaced U-shaped legs extending laterally across the frame and whose arms are capable of flexing toward and away from each other and are connected at their upper ends to the sides of the frame at locations spaced longitudinally inwardly from the ends of an outwardly from the midpoints of the sides for flexing movement in response to flexing of the sides, the arms of adjacent ones of the legs of said pairs diverging downwardly and the arms of remote ones of the legs of said pairs converging downwardly and said legs being spaced apart at their lower ends longitudinally of the sides of the frame.

2. The trampoline as claimed in claim 1 wherein the sides of said frame are capable of flexing vertically and the arms of said legs are disposed at angles to the vertical in planes parallel to the sides of the frame to cause the arms to flex in said planes in response to vertical movements of the ends of the frame.

3. In a trampoline:

a generally rectangular frame formed of tubular material whose sides and ends are capable of inward and outward flexing movements;

said sides being each formed of inner and outer tubular part; the inner part extending through and beyond the ends of and being tightly fitted into the outer part;

said ends being each formed of tubular material of the same internal diameter as said outer part and having curved end portions positioned to form the corners of the frame and into which the end portions of said inner parts of the sides may be telescopically extended to connect the sides to said ends;

a trampoline bed within and connected to the sides and ends of the frame by a plurality of spaced resilient connectors each under tension to cause the sides and ends to flex inwardly upon the exertion of a downward force on the bed by the downward movement of an acrobat thereon and outwardly upon upward movement of the acrobat with the bed; and

longitudinally spaced apart tubular support means of generally U-shape extending laterally across the frame and whose arms are capable of flexing toward and away from each other and are connected at their upper ends to the sides of the frame at locations spaced longitudinally inwardly from the ends of and outwardly from the midpoints of the sides for flexing movement in response to flexing of the sides.