Oct. 17, 1967 N. R. ABBERLY 3,347,546

TRAYLIKE REBOUND UNIT

Filed Oct. 1, 1965 3 Sheets-Sheet 1

FIG. 13

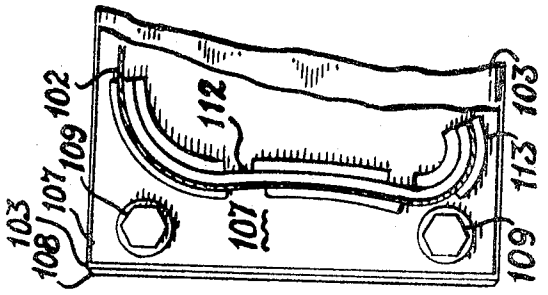


FIG. 12

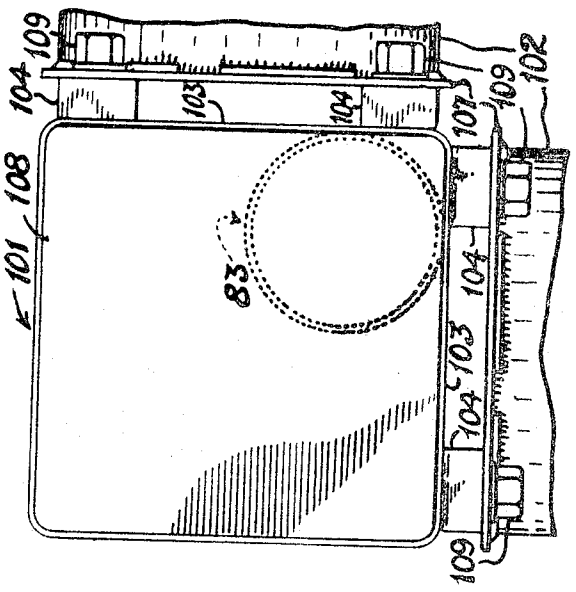


FIG. 1

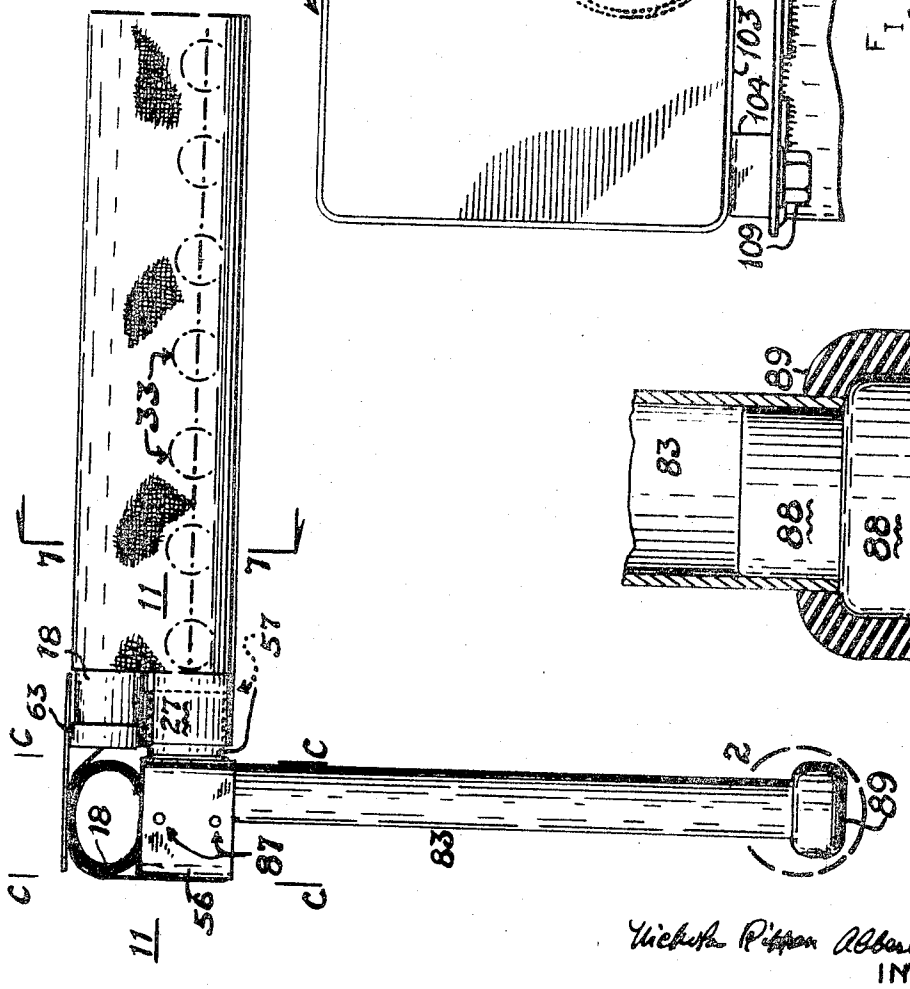


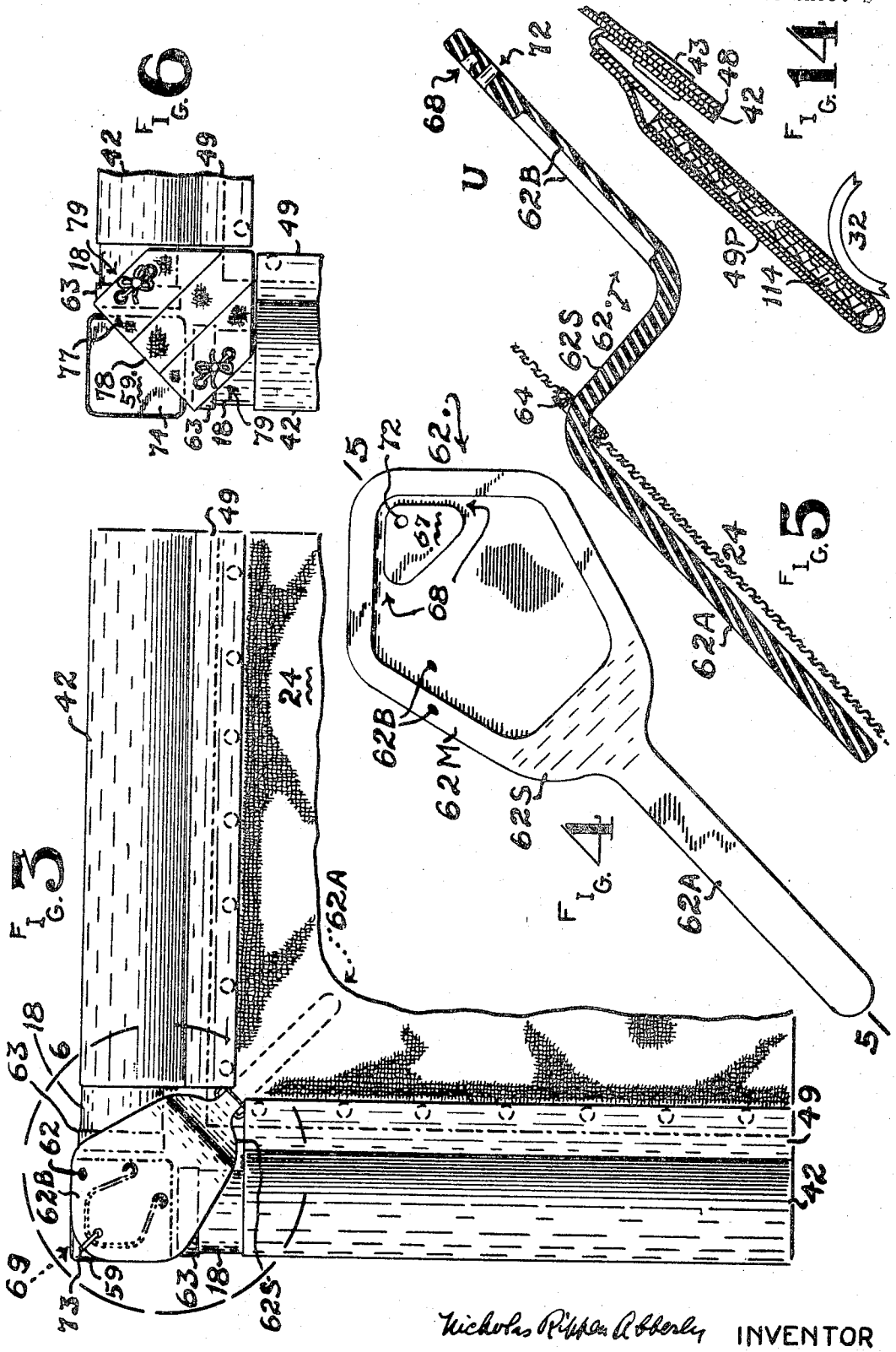
FIG. 2

Nicholas Pitman Abberly
INVENTOR

Oct. 17, 1967 N. R. ABBERLY 3,347,546

TRAYLIKE REBOUND UNIT

Filed Oct. 1, 1965 3 Sheets-Sheet 2



Oct. 17, 1967 N. R. ABBERLY 3,347,546

TRAYLIKE REBOUND UNIT

Filed Oct. 1, 1965 3 Sheets-Sheet 3

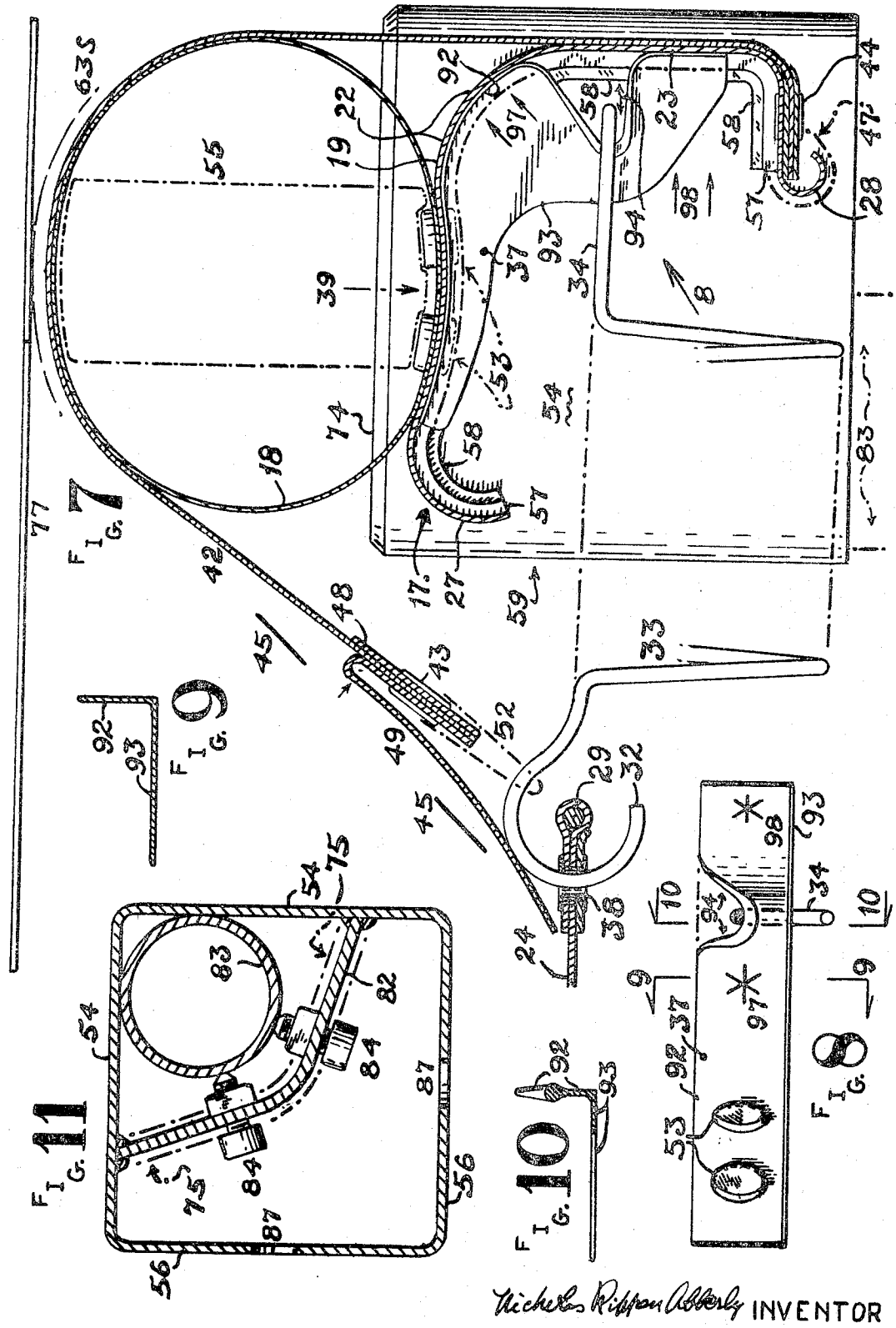


FIG. 7

FIG. 9

FIG. 11

FIG. 10

FIG. 8

Nicholas Rippon Abberly INVENTOR

United States Patent Office 3,347,546 Patented Oct. 17, 1967

3,347,546

TRAYLIKE REBOUND UNIT

Nicholas Rippen Abberly, 501 4th Ave. SE., Cedar Rapids, Iowa 52401

Filed Oct. 1, 1965, Ser. No. 491,915
12 Claims. (Cl. 272—65)

This invention relates to recreational and physical fitness apparatus of the rebound bed type and having frames which, in plan view, are substantially polygonal, recommendedly rectangular.

There are padless, transversely resiliently yieldable raised margins along the borders of the rebound-surface-providing panel, alternatively termed, flat, and "tray floor." To point up the similitude to a tray, collective alternative herein terms for the margins are "tray rim" and "rim." The quotation marks, as used herein, are essential. As used herein, the terms, bed, rebound bed, are exclusive references to a complete invention-incorporating apparatus, while all those that do not incorporate the invention are referred to herein as trampolins.

Each frame side is, in the main, constituted by a rigid angle/rail and, parallel-wise adjoiningly affixed to it, by a said raised margin, which is an elongated, strip spring transversely curved to bring the two long edges thereof into a mutually substantially parallel and adjacent state and, lengthwise dimensionally stable, the affixment being effected by fasteners. In certain to-be-identified elements are spacedly, more than coextensively overhead of certain undesirable spaces which edgewise define the rebound mat and present, to the thereon impacting anatomy of a user, oblique surfaces which deflect the user into an inward and approximately horizontal rebound onto the surface (into the safe haven) of the rebound panel or mat or flat. Thus is provided the third factor for safety. The other two are respectively the padless resiliently yieldable strip spring and the considerable enlargement of the usable rebound area. The aims and advantages additionally include a further simplifying directed at a further reduction of materials and labor costs and at augmented durability, hence, reduced maintenance.

In the main, the rebound bed consists of a general flexible assembly and a mount for it, the assembly consisting, besides certain small components: of a said panel, which may be a canvas sheet or a net woven from webbings or tapes successively spaced in both the warp and the weft; of four elongated, two-way-stretch elastic aprons; of four elongated canvas flaps, each affixed to a respective said apron's long edge and serving as one of said oblique-surface-providing covering elements; and, for holding the flat to the frame, of a resiliently stretchable supporting means, which may be, in the case of each side, a group of coil springs or shockcords. The frame may constitute the whole mount or only a major part of it, in which case the mount remainder is a plurality of quick-detachable legs, respective to the corner zones. Herein, the unaccompanied term, corner, is not a zonal expression; it is a substantive which identifies one of a corresponding plurality of short and shallow structures, alternating with and in mutual rigid affixment with the angle/rails. They are alternatively referred to as "stub posts." The frame, prostrate and endless, horizontally spacedly surrounds the flat or "tray floor." Each corner stub-post rigidly holds the two angle/rail ends.

In Patent Office printed copies, where lineal dimensions are reduced a third, the 1/1 scale in FIGURES 7 and 8 in the original drawings becomes a ⅔ scale; it is the herein mentioned reference scale. Refer to the herewith accompanying drawings of a single species but illustrated in two rebound beds of different size.

FIGURE 1 is a 1/9-reference-scale, one-half-symmetrical elevational view of the smaller rebound bed.

FIGURE 2 is a ⅓-reference-scale, fragmental, radial sectional view of the circumscribed part **2** in FIGURE 1.

FIGURE 3 is a 1/9-reference-scale, ¼-symmetrical top plan view of the FIGURE 1 embodiment.

FIGURE 4 is a ⅓-reference-scale, bottom plan view of a corner covering panel, the safety plate **62**, seen in FIGURE 3.

FIGURE 5 is a ⅓-reference-scale, sectional view of the same, seen in the plane of symmetry **5—5** in FIGURE 4.

FIGURE 6 is a 1/6-reference-scale, top plan, fragmental view of parts in the circumscribed zone **6** in FIGURE 3, showing a canvas covering panel which optionally replaces plate **14**.

FIGURE 7 is a ⅔-reference-scale, fragmental, cross-sectional view, with incomplete perspective, taken in plane **7—7** in FIGURE 1.

FIGURE 8 is a ⅔-reference-scale elevational view of a certain bracket in FIGURE 7, seen as per arrow **8** therein.

FIGURE 9 is a ⅔-reference-scale sectional view in the plane **9—9** in FIGURE 8.

FIGURE 10 is a ⅔-reference-scale sectional view in the plane **10—10** in FIGURE 8.

FIGURE 11 is a ⅓-reference-scale sectional view in the plane **11—11** in FIGURE 1 and within the two planes C, C.

FIGURE 12 is a fragmental top plan view of a corner in the larger said rebound bed.

FIGURE 13 is a fragmental elevational view of a top portion of the FIGURE 12 corner.

FIGURE 14 is a fragmental cross-sectional view of a pocket-type flap alternative to the FIGURE 7 included flap **49**.

Referring especially to FIGURES 1, 3 and 7, there are reference characters, not for the inclusive frame, but for the various components thereof, the frame, in this smaller embodiment, including the corners or stub posts as well as the sides. In the main, the frame consists of four angle/rails **17**, to which the four strip springs **18** are respectively affixed. Each set of an angle/rail and a said strip spring is a set of two straight lengths, the angle/rail being the slightly longer length and therefore describable as being, in its length, at least coextensive with the strip spring. Above, each one has an inwardly arcuated or first or spring or upper leg **19**, so termed because of mutual affixment with spring **18**. This is an elongated strip which has been transversely curved, in at least the greater part of the strip width, in a wise whereby the two mutually parallel long edges or margins neighbor one another. Because the mean plane of leg **19** is actually or nearly horizontal, it is a prostrate leg. The heel/root portion **22** of the angle/rail is circularly curved; the root side of said portion confronts the flat or "tray floor" **24**; hence the heel side is one of the bed's outside surfaces. Depending from leg **19** is second or up/down or outer leg **23**. Legs **19** and **23** are respectively extended to constitute the circularly curved flange **27** and the bead-edged flat flange **28**. The root radius exceeds the flange-**27** inside radius. The rail could be termed, a boxed angle, because each relatively wide leg ends, cross-sectionally, in an integral, inwardly directed, relatively narrow extension, the two extensions being flanges **27**, **28**, both curving away on relatively small radii. The relatively large heel radius and the depicted and recommended concave top surface of leg **19** and the terminal bead (not designated with a per se character) of flange **28**, are all characteristics which set rail **17** off markedly from a conventional angle, whether of the square heel or rounded-heel type; rail **17** can be ap-

propriately called, a quasi-angle or a quasi-angle/rail. A flat-leg angle, whether hotrolled or extruded, could substitute for it in an invention-incorporating structure, but not advantageously. "Tray floor" or flat **24** is a canvas sheet, hemmed along each of the four margins, each hem embracing a single core or group of cores **29**, successively end-adjoining, each being a metal wire or attenuated rod of plastic or other suitable material. Said cores' function is to disperse the tensile load on the flat, imposed by coil springs **33**, also termed, resiliently stretchable supporting means, via their inner hook ends **32**, also termed inner edge holding means or, inner holding ends of springs **33**, hooked into the core-**29**-adjacent panel grommets **38**, the outer hook ends **34** of springs **33**, also termed, outer holding ends, being anchored on rail brackets or anchoring means **37**. Spring **18** is, for long life, hotformed, but, when installed, as will be explained, is cross-sectionally slightly elliptical. The two long edges thereof are brought into a mutually confronting state of proximity, if not contiguity, in the arrow-**39**-indicated locus. Disposed partly around each spring **18** is the elongated, transversely elastic, relatively wide apron **42**, provided with the relatively narrow flaps **49** affixed thereto. Flap grommets **43** hold together the "tray floor"-adjacent margin of the apron, the flap **49** and the doubling/webbing **48**, said grommets accommodating dot-and-dashline-indicated lacing **52**, which affixes the three elements held by grommets **43**, to the hook or inner holding ends **32** of springs **33**. Instead of being affixed to the "tray floor" or mat **24** indirectly when affixed to the inner hook ends or holding ends **32**, apron **42** can be affixed directly to mat **24** by being laced to additionally installed extra grommets, conceivably alternating with grommets **38**. The apron other long margin mounts the grommets **44**, adjoining the angle/rail flat flange **28**. Grommets **44** are special in that they have upwardly directed, hole-defining annular flanges engaged by flange-**28** holes, lacing being threaded through grommets **44** to hold apron **42** to flange **28**. Said lacing is represented by dot-and-dash line **47**. Spring **18** and angle/rail **17** are mutually affixed by rivets **53**. The apron's affixment (indirect, thru inner hook end **32**) to flat or panel **24**, and affixment at grommets **44** to rail **17** are referred to, respectively, as being "panel-proximal" and "panel-distal." A temporarily installed dolly **55**, an elongated steel bar, bucks rivets **53** during the hammering thereof. The dolly is represented by dot-and-dash lines.

FIGURE 7 is a cross-sectional view of a side of a rebound bed small enough for a frame having corners **59** and, alternating with them, angle/rails **17** which are welded to them. The juncture wall or affixment wall **54** of corner **59** has, affixed to it by filletwelds **58**, the angle/rail stub **57**, with a length of two inches or a little more. Previously to said affixment, angle/rail **17** was resistance-welded to stub **57**. Strip spring **18**'s thinness and hardness are such as to necessitate the protecting of the corner-overhead plastic safety plate **62** against abrasion by spring **18**'s end edge. Protection is had by sheathing the spring end portions with end jackets **63**, which are soft very thick plastic coatings. See FIGURES 1, 3, 4 and 5 to identify plate **62** and end jackets **63**. If the coating be applied by dipping each spring end in a container holding the liquid plastic, there would be also an inside coating. In FIGURE 7, the surface of the outside portion of the coating is fragmentally represented by dashline **63S**.

Refer to FIGURES 3, 4 and 5. Plate **62** consists of a relatively extensive body portion or body, **62B**, in an elevated plane, of a relatively narrow, elongated arm portion or arm, **62A**, in a depressed plane, and of an intervening shoulder portion or shoulder, **62S**, plate **62** having therefore a Z-shaped longitudinal section, each of the three portions being relatively thin, although the margin of the body portion and the arm are thicker than the greater part of the body portion. A boss, **67**, substantially as thick as the margin, is narrowly spaced from it to constitute the bent groove **68**, which lodges the wire spring **69**. It is

omitted from the FIGURE 4 view; see FIGURE 3. Arm **62A** is threaded through elliptical grommet **64** in the canvas panel which is the flat or "tray floor" **24**, to adjoiningly underlie the latter. Threaded through the through hole **72** in boss **67** and passed around plate **62**'s outer corner, is the cord **73** (see FIGURES 3, 4 and 5), which is knotted below plate **62**, the underneath side being indicated in FIGURE 5 by the letter U; cord **73** thereby holds spring **69** in groove **68**. In FIGURE 3 the spring **69** can be identified by a partly dotted, partly dot-and-dash line. Two screws, not depicted, can be envisaged holding spring **69**'s looped ends to roof **74**, whereby displacement of plate **62**, from the corner-overhead position seen in FIGURE 3, is prevented.

In FIGURE 6, the function of plate **62** is assumed by the much less costly but adequate corner cover **77**, a canvass component. It is laced to the respective two spring ends on which it rests partly directly and partly indirectly because of the intervention of a said plastic jacket on each. To preclude excessive flapping, cover **77** can be stiffened by a midway doubling strip or by one or two coextensive canvas laminations or by a narrow plastic or plywood stiffener plate lodged in an elongated canvas pocket like the one indicated by **78**; appropriate stitching, stapling and/or cementing effects the assembling. The lacing is indicated by **79**. In these arrangements, springs like **69** or otherwise are unnecessary.

Refer to FIGURES 1, 2, 7, 11 and 12. Each corner or stub post is fashioned from a short length of preferably standard steel pipe of square cross-sectional form, the bottom left open, the top closed with a roof **74**, filletwelded to the two juncture (inside or affixed) walls **54** and to the two outside walls **56**. A partition **82** is filletwelded to walls **54** and roof **74**, all filletwelds being either continuous or intermittent, depending on various considerations, with which persons skilled in the art are familiar. The welding to roof **74** is represented by dot-and-dash lines **75**. Wedged into the angle zone formed by walls **54** is the upper portion of a respective one of the four quick-detachable legs **83**, of circular cross-sectional form. The wedging is effected by a plurality of setscrews **84**, based on partition **82**. Access for the axially effected tightening of them is had through holes **87** in walls **56**. Leg **83**'s top end bears against roof **74** and the bottom end holds the tightly fitted shoulder-type plug **88**, onto which is snapped a respective one of the four soft rubber feet **89**. A mechanical equivalent to the described relation between the stub post and the quick-detachable leg would consist in providing the leg with a truncated-conical top end, and the stub post with a therewithin welded, correspondingly tapered and appropriately dimensioned truncated-conical shell for receiving said top end, and screwing means for drawing the top end and the shell into tight mutual engagement.

Refer to FIGURES 7, 8, 9 and 10 for views of the bracket or anchoring means **37**, which can be a steel dropforging or a ductile iron casting. When broadsidewise viewed in FIGURE 7, the bracket form is that of a quasi-angle, notched in one leg, each leg being a compound leg in that at least most of the cross-sectional views of it would disclose two simple legs constituting it, a first one, **92**, faying with the angle/rail, a second, **93**, extending rectangularly to leg **92**. Two such cross-sectional views are the subjects of FIGURES 9 and 10, taken in planes **9—9** and **10—10** respectively in FIGURE 8. They show the notching of leg **93** and the therewith transversely alined bending and considerable thickening of leg **92**, to constitute, between legs **92** and **93** on the one hand and the angle/rail on the other, the hole **94** for engagement by outer hook end **34** of coil spring **33**; see also FIGURE 8.

In FIGURE 7 the two pairs of arrows, **97** and **98**, and, in FIGURE 8, the two asterisks, **97** and **98**, respectively represent two spotwelds contributorily affixing bracket **37** to angle/rail **17**. Brackets **37** are alternatively referred to

as "rail brackets" and as "angle/rail brackets" and as anchoring means.

Various considerations, among them, insufficiently high gymnasium doorways, dimensional limits for freighting, a dearth or even total absence of adequately long plating tanks for certain metals, dictate, in the larger rebound beds, separability of sides and corners. This accounts for the arrangement in FIGURES 12 and 13, where there is no weld-affixing of angle/rails **102** to corners **101**. Instead, weldnuts **104** are welded to the juncture or affixment walls **103** of corner **101**. The angle/rails include thereto welded end walls **107**. Holding them and respective walls **103** in mutual rigid affixment are the screws **109**, of which there are, in the case of each wall **103**, the two top screws seen in FIGURES 12 and 13 and two bottom screws which do not appear in the views. Underlyingly bearing against corner roof **108**, is a quick-detachable leg **83**. Within corner **101** are a partition and setscrews like those in the described small embodiment, for the rigid holding of the leg top portion. However, FIGURE 13 does disclose a taller corner. This is dictated by the spaces needed for screws **109**. Angle/rail stub **112** is affixed to end wall **107** by an appropriate number of intermittent filletwelds, one whereof being indicated by **113**.

Flap **49** in FIGURE 7 could be regarded as undesirably thin and flexible in some cases of a user impacting on it in a locus in direct alinement with hook end **32**, with a narrow part of his anatomy and suffering a bruise. Refer to FIGURE 14, where the counterpart or flap **49** in FIGURE 7 is a canvas pocket-type flap **49P**. It encloses a length or a group of successively end-adjoining lengths of plywood **114**. Flap **49P** is stitched or otherwise affixed to apron **42**'s margin. In the three laminations which are the pocket-type flap, the apron margin and the doubling strip **48**, there is an appropriate succession of grommets **43** which serve for the lacing of apron **42** and the holding of the apron and the flap to inner hook end **32**. Such a plywood stiffened pocket constitutes a broad, stiff flap for preventing bruising when impacted.

The herein coined term, ellipticize, concisely describes, when lacing the aprons, the transforming of the cross-sectionally nearly circular strip springs when relaxed into the cross-sectionally somewhat elliptical springs when compressed by tensed said aprons, the apron tension being commensurate with a supporting-means axial angle that measures maximally ten degrees to the horizontal, but recommendedly approximately two degrees.

Refer to FIGURE 7. Horizontality of roof **74** is not essential. However, assuming it is horizontal and adopting it as a reference for horizontality, the spring-**33**-representing dot-and-dash lines indicate an upward tilting of spring **33** by an angle measuring one-and-two-thirds degrees. This is occasioned by the tight-enough lacing of the apron to the coil springs for a reasonable degree of resistance on the part of apron **42** to any impacting on the limited areas of the flap and the flap-adjoining portion of the apron, to cause a nearly horizontal rebounding of the impacting body inwardly and into the safe haven of the "tray floor." So little ellipticizing of the spring-**18** circular cross-section is needed that the by far greater part of apron tension must continue to be provided by the coil springs in quite moderate tilting, as above described. In FIGURE 7, a plane intersecting grommet-**38** holes and the apron line of tangency on spring **18** is angled, as can be seen, from horizontality by about 48 degrees. It relates to said 1⅔ degrees per the ratio 144:5, which approximately describes, respectively, the tension distribution between mat and spring **33** and between mat and apron. A ratio smaller (less spring-**33** tension and more apron tension) would accelerate apron abrasion, without any compensating gain. In FIGURE 7 and especially in FIGURE 1, to point up the compressing of the strip spring, it is depicted schematically with exaggeration. Rubber strands in apron **42** and frictional engagement by it of spring **18** make for less life than even in

the flat, let alone the metal components, and therefore make for occasional needed replacement of the aprons. Lacing is one simple way of effecting replacements. There are other ways; one way is the replacing of the single row of grommets **43** with a plurality of parallel rows of grommets therealong in the apron; hooking ends **32** would then engage one of the rows, selected for a desired degree of tension in the apron.

Refer to FIGURES 7 and 14. The width of flap **49** adapts it to completely cover, in plan view, the hooking ends **32**. The housed strip of stiff material, **114**, has a width that nearly coextends with the flap-contributory pocket **49P**. The yield distance of flap **49** from flange **27** could, for still safer impacting on the flap, be increased by adopting a bigger spring **18** or by installing the same angle/rail with spring leg **19** tilted inwardly downwardly a little, thereby causing a steeper attitude of the flap and the flap-adjoining apron portion. A steeper attitude would involve neither a longer coil spring nor any counteracting of the desired inward, horizontal rebounding to any important degree.

The mat-supporting means consists, in the main, of groups of resiliently stretchable elements or holders, namely, said springs **33** or equivalent elements, e.g., shock cords. These groups are of course in a plurality that corresponds to the plurality of the frame's said straight sides.

The lacing which affixes the panel-adjacent margin of the apron, as well as other means of effecting affixment thereof, are alternatively referred to with the expession, an apron-affixing inner (also apron-engaging inner) means that is adapted to selectively establishing a desired degree of apron tension. Hooking ends **32** and **34** are alternatively referred to with the expressions, inner engaging portions, and, outer engaging portions, also inner holding portions, and, outer holding portions, respectively.

The two distinguishing advantages which make possible the enlargement of the usuable rebound area in rebound beds of the present invention, consist in the quasi-angle character of the rail and the anchoring of the outer holding ends of the resiliently stretchable supporting means to portions of the rail that are closer to the outermost than to the innermost rail surfaces.

In the case of trampolines whose resiliently stretchable supporting means consists of a plurality of groups of coil springs or shockcords, the groups being respective to the straight sides, the trampolines with a rebound surface of five by ten feet, have minimal over-all dimensions of seven by twelve feet, and those with a rebound surface of seven by fourteen feet, have minimal over-all dimensions of ten by seventeen feet. The respective rebound surface areas are 7200 and 14,112 square inches. Rebound beds incorporating the present invention and of identical over-all dimensions have usable rebound areas of 8704 square inches and 19,136 square inches, respectively 21.0 percent and 35.6 percent more.

Contrary to conventional trampolines, the long sides are neither hinged (for "flash folding") nor telescopic. Where the gymnasium doorways are insufficiently high, the rebound bed of large size would be introduced knocked down and assembled in the gymnasium. When not in use, a set of block-and-tackle units on the ceiling alongside of one of the gymnasium walls, could be installed for stowing the rebound bed, thereby eliminating assembling labor.

For interpretation of claims, it is hereby assumed that said brackets are regardable, when installed, as parts of the angle/rails and, since the angle/rails are parts of the frame. said brackets are parts of the frame. The adjective, prostrate, is applied in the case of the quasi-angle, to that leg whose mean plane is actually or nearly horizontal.

I claim:

1. A rebound bed including: a rebound mat; an endless frame which predominantly extends horizontally and spacedly surrounds the mat and has a plurality of elongated, straight sides and, alternating therewith, a cor-

responding plurality of stub posts; each straight side including an elongated transversely resiliently yieldable strip spring and an approximately as long angle/rail having an upper leg which is substantially prostrate and inwardly directed, and, descending from it, an outer leg, the angle/rail root confronting the mat, the angle/rail two ends, which are ends of said legs, being rigidly, at least indirectly, affixed to two said stub posts respectively, each strip spring being curved to bring the two long margins thereof into adjacency, thereby forming a "tube," said margins being rigidly held by the angle/rail upper leg; rigidly held by each angle/rail, at the mutually angularly confronting or inner sufaces of the two legs, a plurality of elongated anchoring means disposed transversely to the angle/rail axis and successively parallelwise spaced, whereby each of the two legs is stiffened and both are mutually braced; a mat-supporting means interveningly connecting the mat margins and said anchoring means, and mainly consisting of resiliently stretchable holders in a plurality of groups corresponding to the plurality of said sides of the frame; a plurality of elastic aprons, at least one for each said side, the total apron length in each side approximating that of the respective strip spring, each apron having a mat-distal or outer edge and a mat-proximal or inner edge; an apron outer edge holding means engaging a respective angle/rail outer leg, and an apron inner edge holding means holding the inner edge against substantial movement relative to, while neighboring, the mat; each apron obliquely extending, upwardly and outwardly from the bat, to contiguously traverse, and extend downwardly from, the respective strip spring and terminate in the respective apron outer edge holding means.

2. A rebound bed as in claim **1**, said anchoring means comprising rail brackets.

3. A rebound bed as described in claim **1** and including, along each of said sides, an elongated flap which extends, in the width thereof, inwardly, downwardly from affixment to the mat-adjacent long margin of a respective said apron and having a width sufficient for completely covering, in plan view, the apron respective inner edge holding means.

4. A rebound bed as in claim **3**, said flap being a woven fabric and including an elongated stiffening strip of any suitable material, held by the flap and being, in the width of said strip, coextensive with the greater part of the flap.

5. A rebound bed as in claim **4**, said flap being an elongated pocket, said stiffening strip being held inside it.

6. A rebound bed as in claim **1**, the common plane of the lines of tensile force in each said mat-supporting means being pitched upwardly inwardly at an angle to the horizontal that measures maximally ten degrees, whereby the mat-proximal affixment of the respective said apron is effected selectively for an adopted degree of apron transverse tension.

7. A rebound bed as in claim **1**, the common plane of the lines of tensile force in each said mat-supporting means being pitched upwardly inwardly at an angle to the horizontal that measures maximally five degrees, whereby the mat-proximal affixment of the respective said apron is effected selectively for an adopted degree of apron transverse tension.

8. A rebound bed as in claim **1**, said mat-supporting means, with respect to each said side, consisting in the main of a group of coiled tension springs, each anchored, by an outer engaging portion thereof, to a respective said anchoring means in a zone thereof that neighbors the root of the respective said angle/rail, said supporting means holding, by inner engaging portions thereof, the mat, a respective said apron being detachably affixed thereto at least indirectly.

9. A rebound bed as in claim **1**, said mat-supporting means, with respect to each said side, being anchored to a respective said anchoring means in a zone thereof that neighbors the root of the respective said angle/rail, said supporting means holding, by inner engaging portions thereof, the mat, a respective said apron being detachably affixed thereto at least indirectly.

10. A rebound bed as in claim **1** and including, in each of at least half of the corner zones seen in plan view, a safety plate contiguously overlying the thereat two ends respectively of the thereat adjacent two said strip springs.

11. A rebound bed as in claim **1**, each of at least half of the strip spring ends being provided with a thereto tightly adhering thick plastic end sheath.

12. A rebound bed as in claim **1** and including, in each of at least half of the corner zones seen in plan view, a safety plate contiguously overlying the thereat two ends respectively of the thereat adjacent two said strip springs, each of at least half of the strip spring ends being provided with a thereto tightly adhering thick plastic end sheath.

References Cited

UNITED STATES PATENTS

428,603	5/1890	Harley	182—137
1,270,780	7/1918	Bugg	5—110 X
1,409,746	3/1922	McCord.	
3,233,895	2/1966	Grelle et al.	182—139 X

FOREIGN PATENTS

102,905	5/1899	Germany.
334,258	3/1921	Germany.

RICHARD C. PINKHAM, *Primary Examiner.*

A. W. KRAMER, *Assistant Examiner.*