United States Patent [19]

Zuber

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[45] **Nov. 26, 1974**

[54] **GYMNASTIC APPARATUS**

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[52] **U.S. Cl.** ..... **272/58,** 272/60 R, 272/61, 272/62

[51] **Int. Cl.** **A63b 9/00**

[58] **Field of Search** ..... 272/58, 60, 61, 62; 273/26 A; 182/152; 256/25; 5/161, 85

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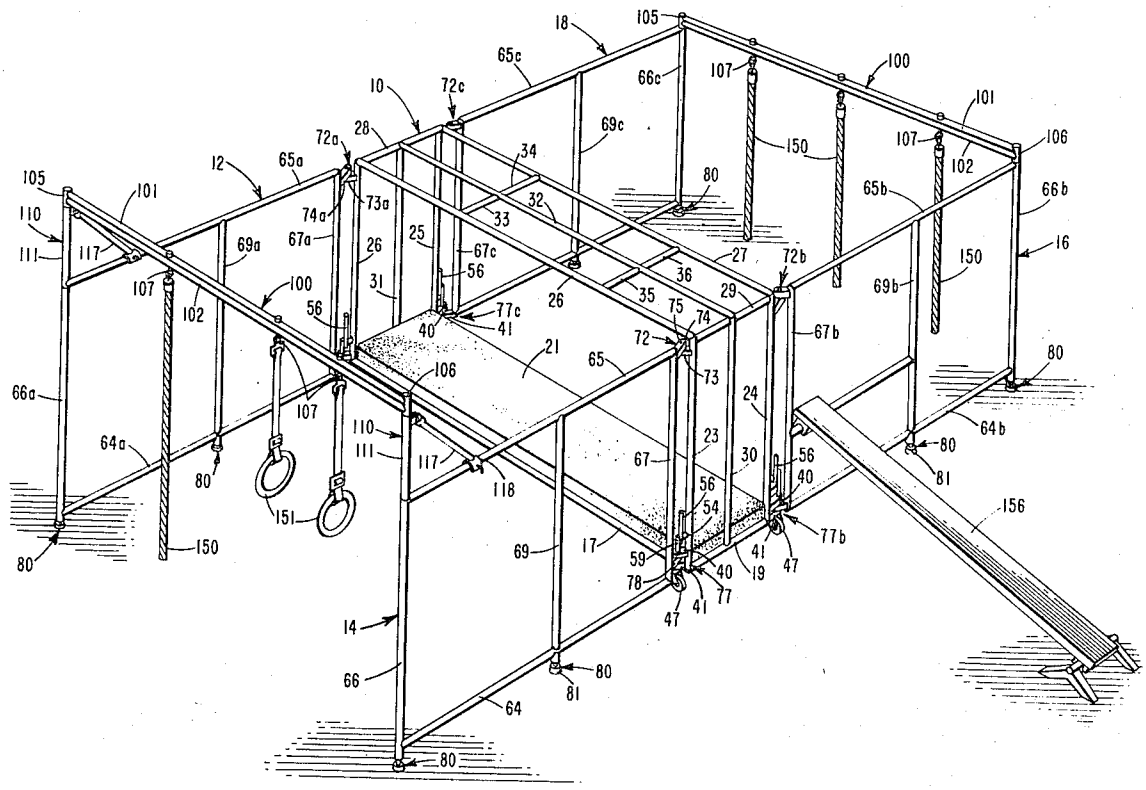
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Primary Examiner—Richard C. Pinkham
Assistant Examiner—Joseph R. Taylor

[57] **ABSTRACT**

A gymnastic apparatus comprising a main section and a plurality of wing sections. The main section has a padded base of rectangular configuration having four vertical upstanding corner posts connected by horizontal beams to form a quadratic frame. A number of vertical and horizontal exercise devices are supported by the quadratic frame. The base is mounted upon wheels to facilitate movement, and the wheels are retractable to allow the apparatus to rest upon a plurality of support legs. Pivotally mounted on each of the four vertical posts is a wing section of rectangular shape, each wing section also supporting a number of exercise devices. Each wing section is movable between a folded position nested alongside the sides of the main section, and a number of open positions extending outwardly from the main section. Adjacent wing sections are connected together by horizontal bars from which hanging type exercise devices are suspended. Additional exercise devices can be supported at one end by the main or wing sections with the other ends extending outwardly therefrom, and furthermore the unit is so designed that such additional exercise devices can be attached spanning the wing sections when the wing sections are in the parallel configuration.

12 Claims, 11 Drawing Figures



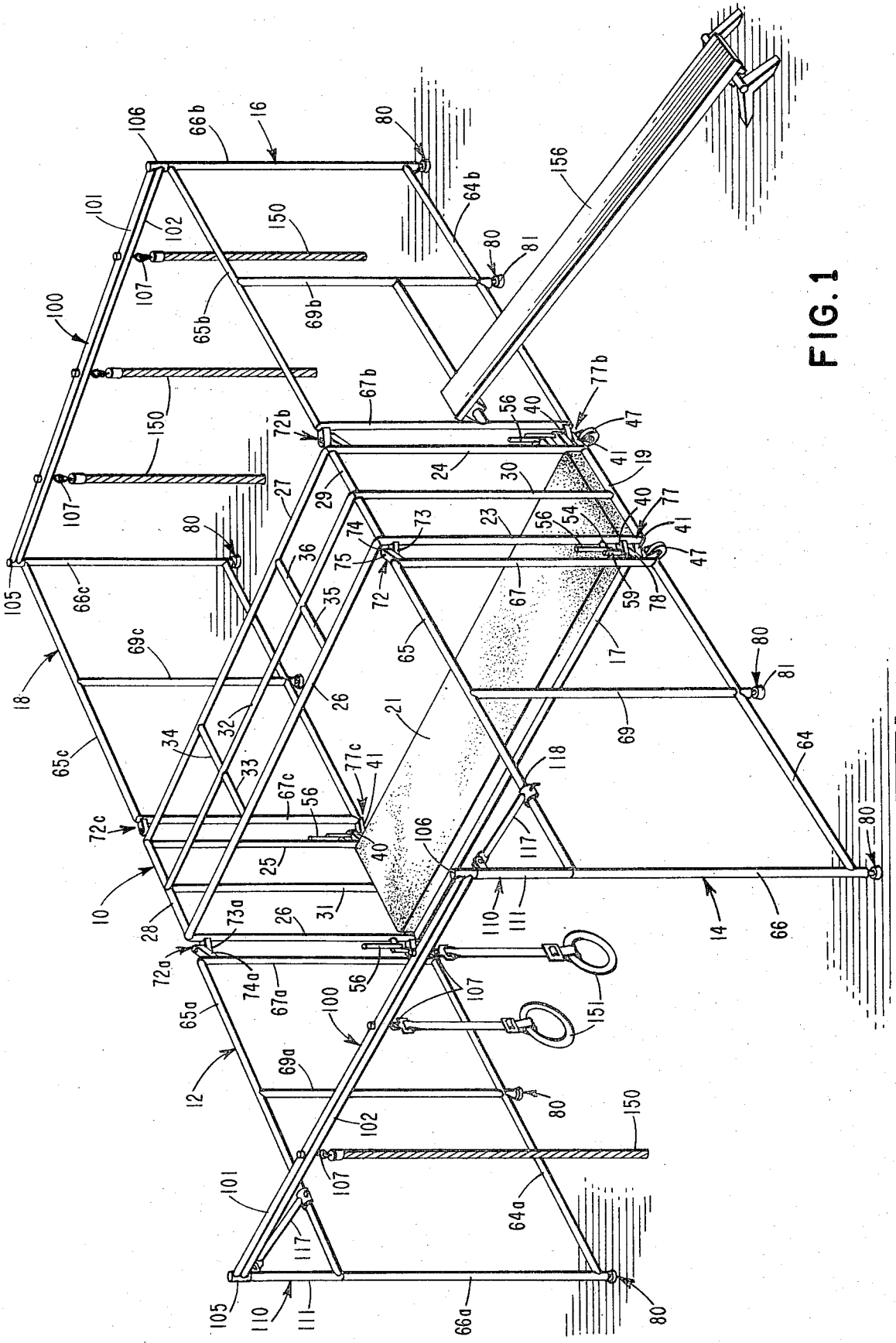


FIG. 1

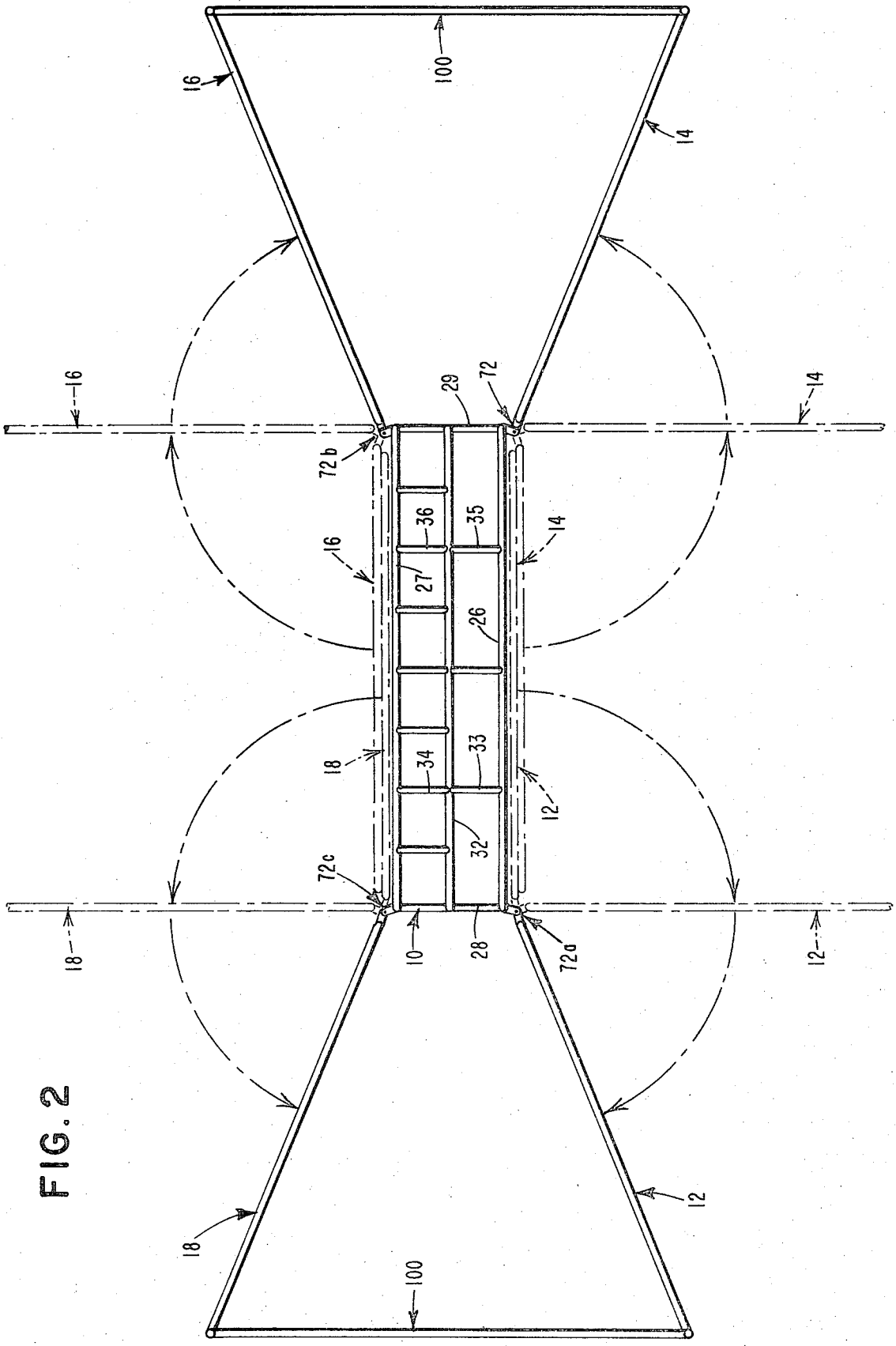

100
16
14
16
14
29
72
72b
36
35
16
14
27
26
18
34
33
12
72c
32
18
10
28
72a
12
18
12
100

FIG. 2

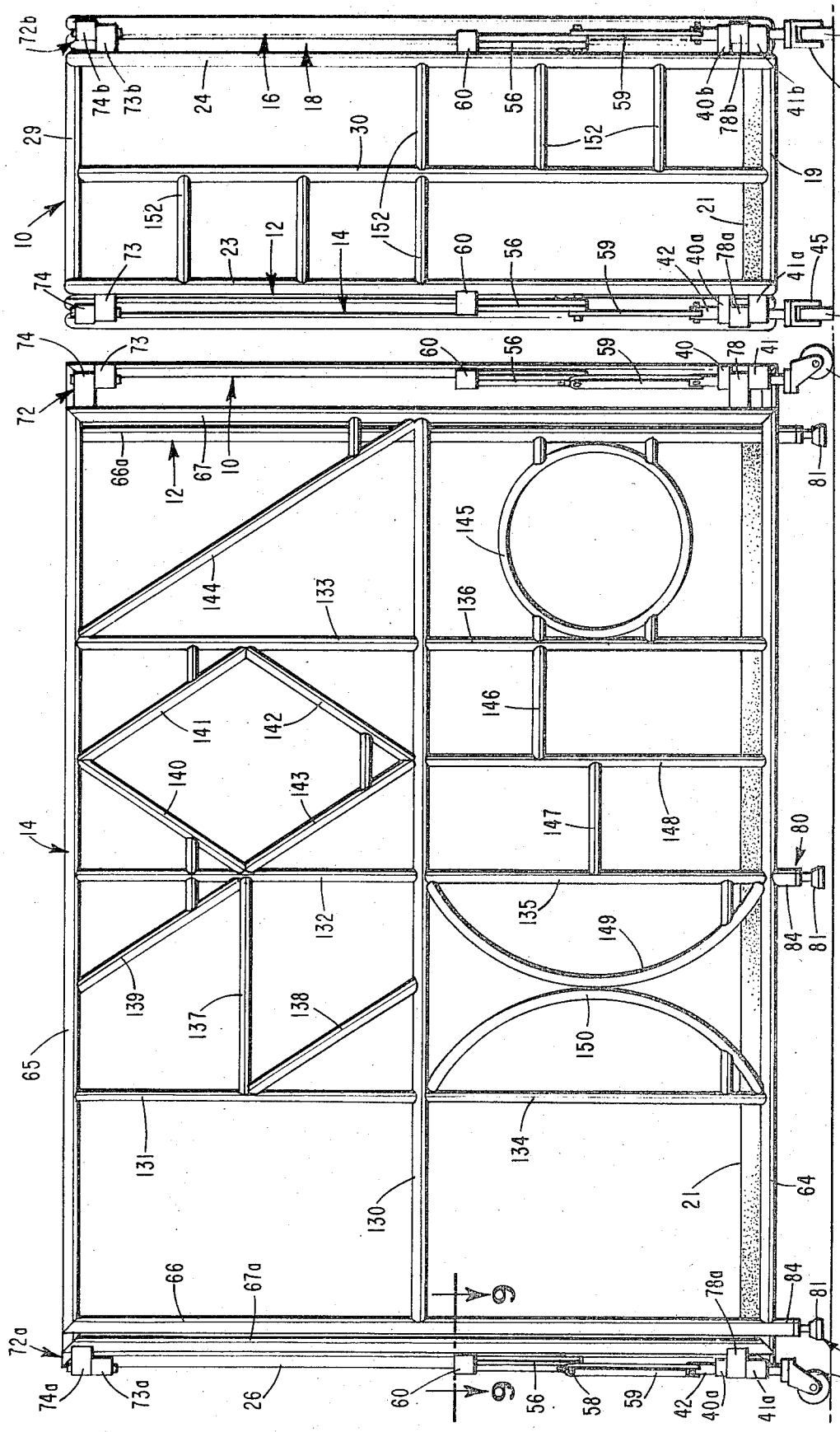

72b
74b
73b
24
16
18
60
56
59
40b
78b
41b
47
45
29
30
152
19
10
73
23
12
14
21
40a
78a
41a
74
72
66a
67
144
133
145
136
146
141
142
140
143
147
148
80
84
81
132
135
149
139
137
138
150
65
131
134
64
130
66
67a
72a
74a
73a
26
A
6
58
42

FIG. 3

FIG. 4

FIG. 5

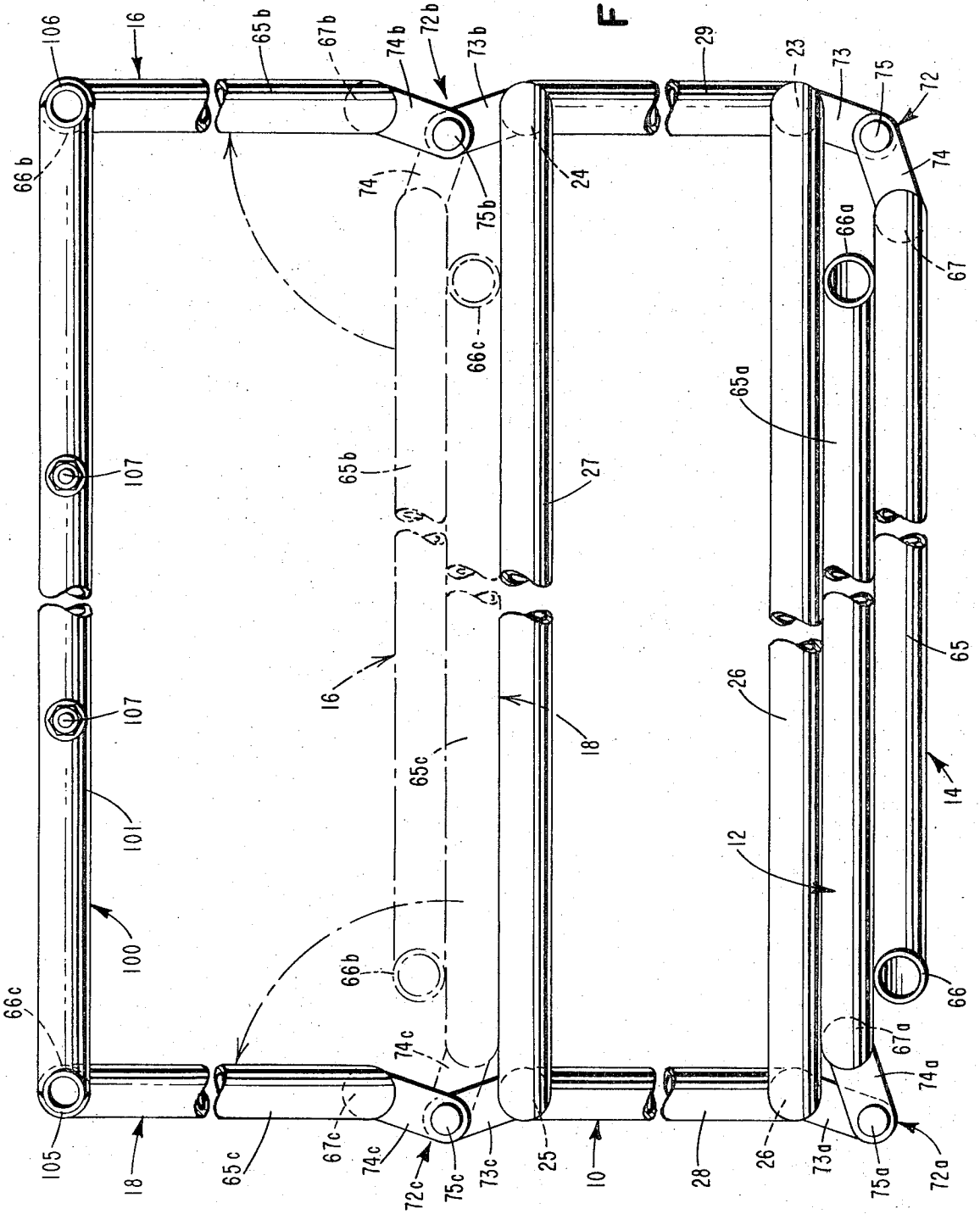

106
16
65b
67b
74b
72b
73b
29
23
73
75
72
74
66b
74
75b
24
66a
67
66c
65a
107
65b
27
107
16
18
65c
26
65
101
14
12
100
66b
66
66c
74c
67a
74a
105
18
65c
67c
74c
72c
75c
73c
25
10
28
26
73a
75a
72a

FIG. 6

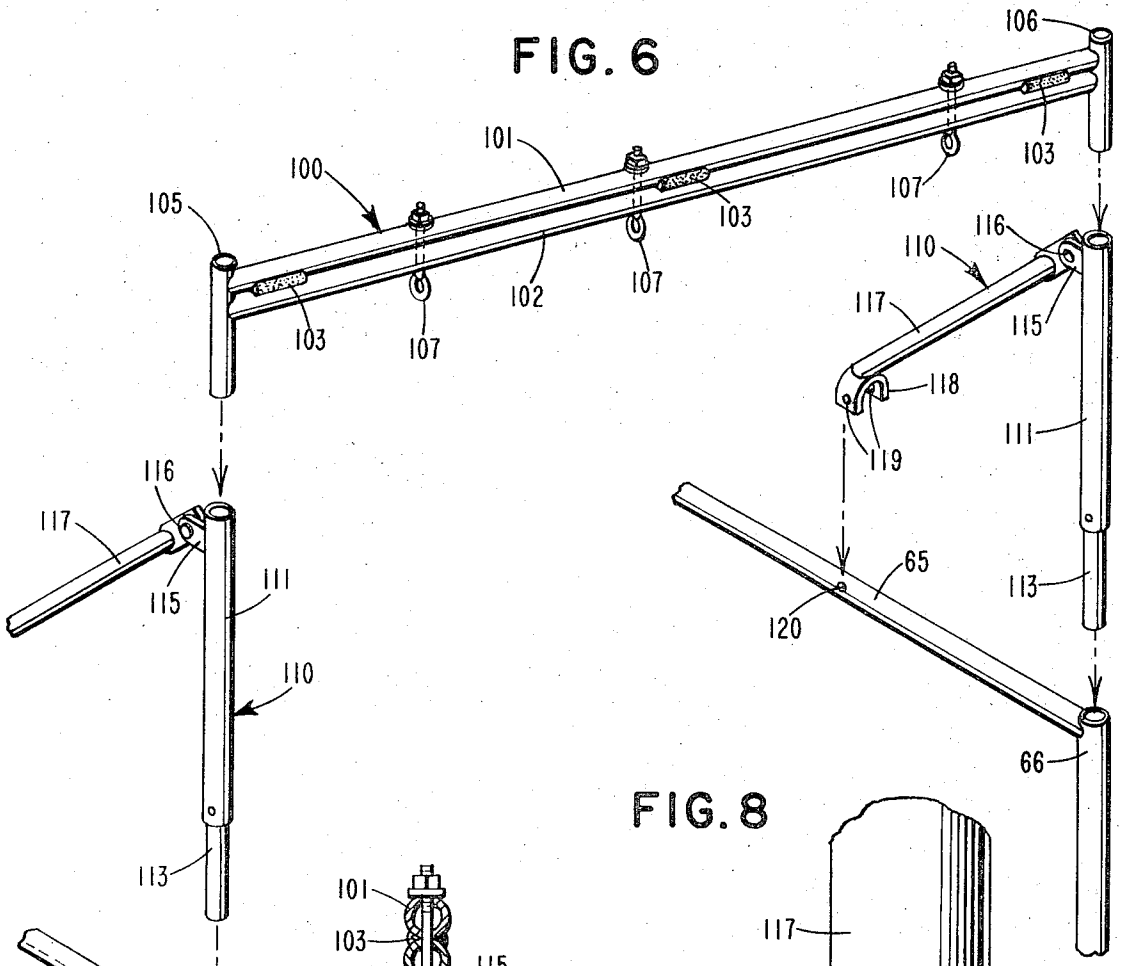


FIG. 8

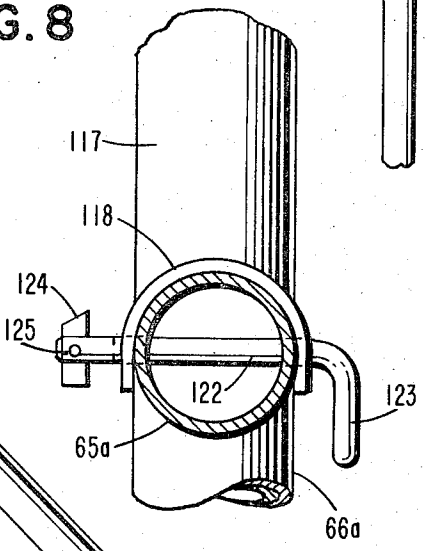
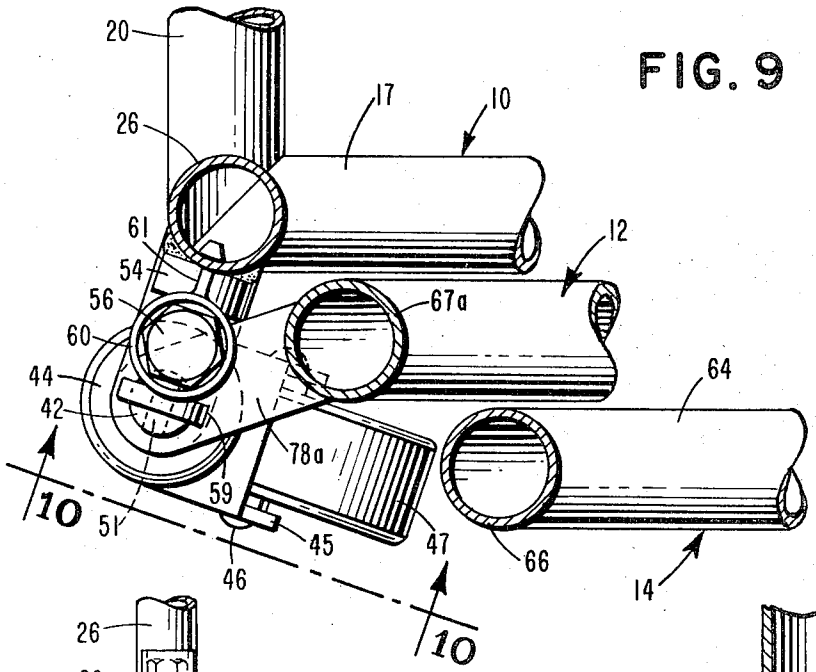


FIG. 7

FIG. 9



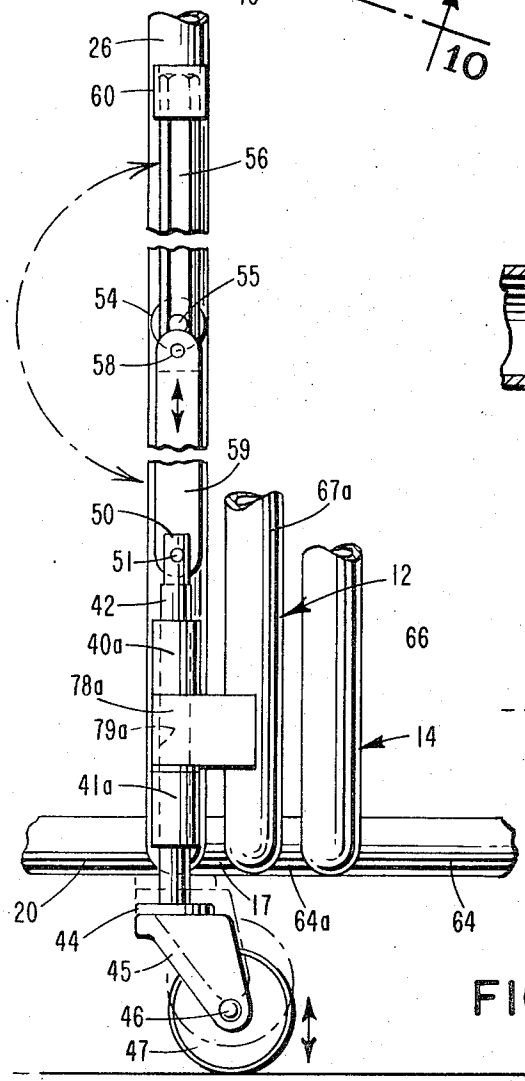


FIG. 10

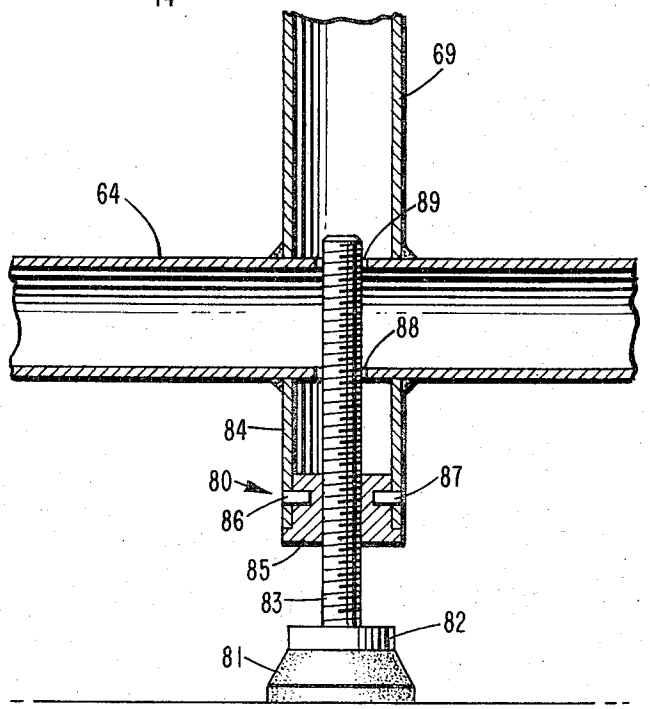


FIG. 11

GYMNASTIC APPARATUS

BACKGROUND OF THE INVENTION

This invention pertains generally to the field of exercise devices and particularly to exercise and play devices for pre-school and elementary school children.

There exist in the prior art great numbers of play and exercise apparatus for children which incorporate virtually every type of swinging, hanging, crawl-through balancing and climbing device known to be of interest to children. Usually, the apparatus are large and non-collapsible, and are fixed in place on a school playground. Those few that can be installed indoors are difficult to assemble and disassemble and cannot be considered portable. Some foldable or collapsible devices have been developed in recent years, but theyse have not been very versatile, and thus their attractiveness to children has quickly diminished.

SUMMARY OF THE INVENTION

This invention provides collapsible exercise and play apparatus that is easily assembled, disassembled, moved, transported, and stored. The apparatus is extremely versatile. It can be assembled in a number of configurations, and can accommodate a great number of exercise and play devices of all types. The inventive apparatus consists of a main section and a plurality of wing sections pivotally attached on the main section. The main section is a framework defining a quadratic shape having a frontal configuration of such size as to easily fit through doors. Each of the corner posts of the main section supports a generally vertically oriented pivotable wing section of rectangular shape. Various hanging, swinging and crawl-through exercise and play devices of known types are supported by the main section and the wing sections. The main section is mounted upon retractable wheels which are extended to allow the apparatus to be moved, and are retracted to allow the apparatus to rest firmly on fixed legs. The main section has a padded floor for safety and use in tumbling.

The four wing sections are pivotally attached to the vertical corner posts of the main section. Each wing section is movable between a folded position nested alongside the main section, and a number of open positions extending outwardly from the main section. Each wing section comprises a vertically oriented rectangular frame which supports hanging and crawl-through exercise devices. A number of legs having non-skid feet extend downwardly from the wing sections. Adjacent wing sections can be attached together at the top by means of horizontal connector bars from which hanging devices such as rings and ropes can be suspended. In addition, both the main section and the wing sections can support exercise devices internal or external apparatus such as balance bars, sliding boards, or the like.

All of the components of the apparatus, such as the removable exercise devices, the connector bars, and the appurtenant devices such as the balance beams, can be stored on the floor of the main section. Auxiliary equipment such as mats and balls can also be stored there. Therefore, when the apparatus is disassembled, the wing sections folded, it becomes a compact unit, easily stored and transported. Also, while it covers a rather large floor area when in operating configuration, when in its storage configuration it uses a minimal amount of floor area.

The gymnastic apparatus of this invention is easily moved into place and assembled by one individual. It is self-supporting and rigid, and can be used outside or inside, in gymnasiums or all purpose rooms, for example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the gymnastic apparatus of this invention showing the wing sections disposed in a first arrangement;

FIG. **2** is a top plan view of the apparatus of FIG. **1**, illustrating the various positions to which the wing sections can be moved;

FIG. **3** is a side view of the gymnastic apparatus of the invention showing a number of the exercise device forms that can be incorporated into the structure of the wing sections;

FIG. **4** is an end view of the device of FIG. **3** showing examples of the exercise devices that can be incorporated into the end structure of the main section;

FIG. **5** is a top view of the invention, illustrating in detail a preferred manner of pivotally mounting and folding the wing sections;

FIG. **6** is an exploded view of the connector beam structure for attaching together adjacent wing sections;

FIG. **7** is a side view of the connector beam structure of FIG. **6**;

FIG. **8** is an elevational view taken through the line **8—8** of FIG. **7**;

FIG. **9** is a top view, partially in section, of the wheel mounting and corner post structure of the inventive apparatus;

FIG. **10** is a side view taken along line **10—10** of FIG. **9**; and

FIG. **11** is a side view, partially in section, of the wing section support legs.

DESCRIPTION OF A PREFERRED EMBODIMENT

Looking now particularly to FIGS. **1** and **2**, the gymnastic apparatus of this invention comprises a main section **10** and a plurality of wing sections **12, 14, 16** and **18.** Each of these sections comprises a framework of preferably tubular construction suitably contoured and welded together at the joints. Main section **10** is a quadratic box-like framework, having a rectangular base comprising a pair of bottom side beams **17** and **18,** and a pair of bottom end beams **19** and **20.** A floor **21,** of vinyl covered foam or the like fastened to a plywood backing, is attached to beams **17, 18, 19** and **20.** Floor **21** provides an element of protection for a child falling from above, and can also be used for tumbling. In addition, floor **21** provides a place for storing the removable components of the apparatus, as well as auxiliary equipment, when the apparatus is in the collapsed configuration.

Four corner posts **23, 24, 25** and **26** are attached at the corners to members **17, 18, 19** and **20** to extend upwardly therefrom. To complete the quadratic box-like framework of main section **10,** a pair of top side beams **26** and **27,** and a pair of top end beams **28** and **29,** and attached to corner posts **23, 24, 25** and **26.** To add strength and rigidity to the structure, and to provide support for the vertical and horizontal exercise devices

to be described below, additional tubular members such as center posts **30** and **31**, center top beam **32**, and top rungs **33**, **34**, **35** and **36** are attached to the basic framework.

Main section **10** is provided with wheels at all four corners. The wheel structure of corner post **26** is shown in detail in FIGS. **9** and **10**, and the structure at posts **24**, **25**, and **23** is identical. A pair of wheel support brackets **40***a* and **41***a* are fixedly attached to each side of corner post **26**. Brackets **40***a* and **41***a* are of tubular construction and a wheel support rod **42** is slidably mounted therein. A pad **44** is attached to the lower end of wheel support rod **42**, and a U-shaped axle bracket **45** is attached to pad **44**. An axle **46** is mounted on bracket **45**, and a wheel **47** is rotatably carried by axle **46**. Wheel **47** is preferably of material that will not mar the surfaces of wooden floors such as those used in gymnasiums. Wheel support rod **42** terminates at its upper end in a clevis **50** having a pin **51**. Pivotally attached to corner post **26** by means of a bracket **54** and pin **55** is a wheel control handle **56**. Mounted on handle **56**, at a point spaced from pivot pin **55**, is another pivot pin **58**. A wheel lift beam **59** is pivotally attached at one end to wheel support rod **42** by means of pin **51** and at the other end to handle **56** by means of pin **58**. Rotative movement of handle **56** about pivot pin **55** thus causes compound movement of beam **59** and axial movement of wheel support rod **42**. When handle **56** is in its upper position, as shown in FIG. **10**, wheel **47** is in its extended position. The load carried by wheel **47** is passed to main section **10** through pin **55**. The extended position of wheel **47** is used when the apparatus is being moved. Rotation of handle **56** through the arc indicated in FIG. **10** to its lower position causes wheel **47** to move to a retracted position, and the main section **10** is lowered so that the apparatus rests upon feet mounted on the wing sections, as described below. Means are provided for securing handle **56** in its upper position in the form of a locking sleeve **60** having a flexible neck **61** attached to corner post **26**. Sleeve **60** is slipped over the top of handle **56** to hold handle **56** in the upper position, and is pulled upwardly to disengage from handle **56** to allow handle **56** to be moved to its lower position. Conventional wheel braking means, not shown, can be incorporated into the wheel structure, if desired.

A first group of exercise and play devices can be incorporated into the sides and ends of main section **10**. For clarity, these devices have not been illustrated, but they could be like those shown in FIGS. **3** and **4**. Similarly, devices such as ladder bars can be incorporated into the top of main section **10**. It is desirable to allow at least some open areas in the sides and the ends of the main section, however, to allow access to the interior to facilitate storage of parts of the apparatus and auxiliary devices therein.

Attached to main section **10** are four wing sections **12**, **14**, **16** and **18**. Wing section **14** will be described in detail, the other wing sections being identical except, perhaps, for the particular horizontal and vertical exercise devices or shapes that are incorporated therein. Like structure of the other wing sections **12**, **16** and **18** is designated with identical numbers having a letter suffix. Looking to FIG. **1**, wing section **14** comprises a wing base beam **64**, a wing top beam **65**, and a pair of wing end posts **66** and **67**. Wing beams **65** and wing posts **66** and **67** are contoured as necessary at their points of joinder and are rigidly attached together to form a rectangular framework in a vertical plane. The top of wing post **66**, however, is not closed, for reasons described below. A vertical center post **69** is attached between wing beams **64** and **65** to add strength and to support vertical exercises devices.

Each of the wing sections **12**, **14**, **16**, and **18** is attached to main section **10** by a pivot joint arranged in such a fashion as to allow the wing sections to be folded flush, or nested, against the side of the main section **10**. Again, only the pivot connection between wing section **14** and main section **10** will be described, it being understood that the other wing sections **12**, **16** and **18** are attached to the main section **10** in an identical manner. Like elements associated with wing sections **12**, **16** and **18** are designated with identical numerals having a letter suffix.

Wing section **14** is pivotally attached to main section **10** by two hinge connections. As best shown in FIGS. **1** and **5**, the upper hinge connection **72** comprises an upper main hinge **73** attached to the side of the corner post **23**, an upper wing hinge **74** attached to the side of wing post **67**, and an upper hinge pin **75**. Lower hinge connection **77** is integrated into the structure which supports the wheels **47**. Lower hinge connection **77** comprises a lower wing hinge **78** attached to the side of wing post **67** and so positioned along the length of the post **67** as to be interposed between wheel support rod brackets **40** and **41**, which also function as hinges. Lower wing hinge **78** has a center opening **79** through which wheel support rod **42** passes, wheel support rod **42** acting also as the lower hinge pin.

In order to facilitate nesting of two wing sections on each side of the main section when the wing sections are folded, the hinges of each wing section extend outwardly at an angle from the posts upon which they are mounted. For example, looking to wing sections **12** in FIG. **5**, main hinge **73***a* extends outwardly from post **26** at an angle outwardly to the plane of the end of main section **10**. Its cooperating wing hinge **74***a* extends outwardly from post **67***a* at an angle outwardly to the plane of wing section **12**. Thus, when wing section **12** is folded, it lies parallel to the side of main section **10**. Main hinge **73** of wing section **14** is at an angle inwardly of the plane of the end of main section **10**, and wing hinge **74** is at an angle inwardly to the plane of wing section **14**. Thus, when wing section **14** is folded parallel to the side of main section **10**, it is spaced therefrom. Lower hinges **78***a* (wing section **12**) and **78** (wing section **14**) are similarly oriented. The hinges of wing sections **16** and **18** are oriented in like manner so that these sections nest on the opposite side of main section **10**.

Each of the wing sections **12**, **14**, **16** and **18** is provided with a pair of support legs. As illustrated in detail in FIG. **11**, each leg **80** comprises a shoe **81** of non-marking, non-skid material, supported by a discs **82**, which is fixedly attached to a screw **83**. Attached to the underside of bottom wing beam **64**, in alignment with wing post **69**, is a leg member **84**, to which is fixed an internally threaded nut **85**, for example, by means of a pair of pins **86** and **87**. Bottom beam **64** is provided with a pair of aligned openings **88** and **89** to permit screw **83** to extend upwardly therethrough. Thereby, the length of leg **80** can be adjusted, to accommodate uneven floors, for example. The length of each leg **80** is adjusted so that the shoes **81** are spaced from the

floor when wheels **47** are extended, and firmly in contact with the floor when wheels **47** are retracted.

Adjacent pairs of wing sections are connected together by a connector beam **100.** As shown in FIG. **1,** the wing sections **12, 14, 16** and **18** are oriented parallel to the plane of the ends of main section **10,** with wing sections **12** and **14** being connected together by a first connector beam **100,** and wing sections **16** and **18** connected together by a second identical connector beam **100.** Connector beams **100** can be disposed at the same height as wing top beams **65,** or can be mounted at a height raised above wing top beams **65.**

The details of the connector beam **100** are illustrated in FIGS. **6–8.** Connector beam **100** comprises a pair of connector bars **101** and **102** which are welded together at points **103.** Connector mounting rods **105** and **106** are attached to bars **101** and **102** at the ends thereof. Bars **101** and **102** are suitably drilled to receive a plurality of suspension hooks **107** to which hanging type exercise and play devices such as rings and ropes can be attached. Rods **105** and **106** slide into the open ends of wing corner posts **66, 66***a*, **66***b*, and **66***c*. The most advantageous length for connector beams **100** is a length substantially equal to the length of main section **10.** This facilitates storage of the connector beams **100** within the framework of the main section **10,** and also allows several interesting relationships to be formed of the main section **10** and the wing sections **12, 14, 16** and **18.** For example, looking to FIG. **2,** the wing sections **12, 14, 16** and **18** positioned as shown in the solid lines, connector beams **100** connect together wing sections **14** and **16,** and **12** and **18,** respectively, providing a second configuration substantially different from the first. This novel feature maximizes the usefullness of the apparatus, as well as making it more interesting for the children.

It is advantageous to have at least one of the connector beams **100** at a greater height to accommodate certain climbing and hanging devices. This is accomplished by elevating one of the connector beams **100** on a pair of extension means **110.** Looking to FIGS. **6–8,** each extension means **110** comprises a vertical extension column **111** of tubular construction suitable for receiving in an open end one of the connector rods **105** and **106.** Attached to the lower end of extension column **111** is an extension rod **113.** A bracket **115** is attached to the side of extension rod **111,** and is connected by means of a pin **116** to one end of a brace **117.** The other end of brace **117** is provided with a U-shaped bracket **118** having aligned openings **119,** which seats on top beam **65** of one of the wing sections. Top beam **65** is provided with an opening **120,** and a locking pin **122** passes through openings **119** and **120** to allow attachment and removal of the brace **117.** A typical locking pin **122** has a curved handle portion **123** and a pivoted locking member **124** mounted on a pin **125** in a slot at the opposite end.

The basic structure of a preferred embodiment of the apparatus has been described above. The basic apparatus is quite versatile, and can be utilized to support a number of exercise and play devices of the horizontal, vertical, hanging and inclined types. In FIG. **3,** examples of typical exercise and play devices are shown installed on wing sectijon **14.** These are by no means the only forms that can be used. Wing section **14** has been provided with a middle horizontal bar **130,** to which have been attached a number of vertical bars **131, 132, 133, 134, 135,** and **136.** Arranged with the framework of bars **130–136** are a plurality of exercise devices such as for example, a horizontal bar **137** in combination with two diagonal bars **138** and **139;** a diamond arrangement of diagonal bars **140, 141, 142** and **143;** a single diagonal bar **144;** a circular bar **145;** staggered horizontal bars **146, 147** supported by a vertical bar **148;** and two arcuate bars **149** and **150.** Shown in FIG. **4** is a ladder arrangement of a number of horizontal bars **152.** In order to illustrate the basic apparatus clearly, the total number of exercise and play devices have not been shown. It should be realized, however, that such devices can be incorporated into all four wing sections, as well as the sides, ends, and top of the main section.

As noted in FIG. **1,** hanging devices such as climbing ropes **150** and flying rings **151** can be installed on connector beams **100.** Also, additional exercise devices, such as bars and beams, can internally be attached spanning the wing sections when the wing sections are in the parallel configuration. External devices, such as inclined trestle **156** (FIG. **1**), can be attached to the main section or the wing sections.

The apparatus is utilized in the following manner: In the storage configuration, wing sections **12, 14, 16** and **18** are folded into nested relationship with main section **10.** Alll detachable and auxiliary elements are stacked for storage upon floor **21.** If desired, wheels **47** can be retracted to engage shoes **81** with the floor, to prevent inadvertant movement of the device. With wheels **47** in the extended position, (wheel control handle **56** in the upper position) the apparatus is pushed to the operating location. The narrow frontal area allows it to pass through conventional doorways. When the apparatus is positioned in the desired location, wing sections **12, 14, 16** and **18** are pivoted to the desired position, and connector beams **100** are installed to attach adjacent pairs of wing sections together. The apparatus can be used without connecting adjacent wing sections together, however. Once the wing sections are extended, wheels **47** are retracted by disengaging locking sleeve **60** from handle **56,** and moving handle **56** to its lower position. This lowers the apparatus to rest upon the plurality of shoes **81.** Depending upon the amount of extension of legs **80,** some of the weight of the apparatus may be borne by the retracted wheels **47,** or the entire weight borne by shoes **81.** Screws **83** can be adjusted to compensate for an uneven floor, if necessary. The various demountable exercise devices can then be installed and the apparatus put into use.

Upon completion of use, the events take place in reverse cycle. The demountable devices and elements are removed and placed on floor **21.** Then handle **56** is moved to its upper position and engaged by locking sleeve **60,** so that wheels **47** are extended. Wing sections **12, 14, 16** and **18** are then folded alongside main section **10.** The apparatus is then ready to be moved.

Many variations and modifications to the apparatus described above may become apparent to those skilled in the art, and it should be understood that the invention is not limited to the embodiment described herein, but is limited only by the scope of the appended claims.

I claim:

1. A gymnastic apparatus for supporting exercise and play devices comprising:

a self-supporting main section having a base and first and second substantially vertical posts attached to said base and defining therebetween a first side of said main section,

first and second substantially vertically oriented wing sections pivotally attached respectively to said first and second posts, each of said wing sections being movable between a folded position alongside said main section and an extended position extending outwardly of said main section, and

connector means attachable to said wing sections at points spaced from said main section when said wing sections are in said extended position to connect said wing sections together, said connector means comprising a beam attached to the upper portions of said wing sections whereby hanging exercise and play devices may be suspended therefrom.

2. The gymnastic apparatus of claim 1 further comprising extension means attachable to each said wing section and to said beam for mounting said beam a distance above said wing sections.

3. The gymnastic apparatus of claim 1 wherein each said wing section terminates in a free end having an end post, and wherein said beam is attachable to said end posts.

4. The gymnastic apparatus of claim 1 wherein said beam is of length no greater than the length of said first side whereby said beam can be stored upon said base.

5. A gymnastic apparatus for supporting exercise and play devices comprising:

a self-supporting main section having a rectangular base and first, second, third and fourth substantially vertical posts attached to said base, said first and second posts and said third and fourth posts defining therebetween respectively first and second sides of said main section, said second and third posts and said fourth and first posts defining therebetween respectively first and second ends of said main section, said first and second ends being of lesser length than said first and second sides,

a first exercise or play device supported by said main section,

first and second substantially vertically oriented wing sections pivotally attached respectively to said first and second posts, each of said first and second wing sections being movable between a folded position alongside said main section and an extended position extending outwardly from said main section, the length of each of said first and second wing sections being greater than one half of the length of said first side, and not greater than the entire length of said first side, said first wing section being attached to said first post by first hinge means so oriented with respect to said first post as to allow said first wing section to fold flush against and substantially parallel to said first side, said second wing section being attached to said second post by second hinge means so oriented with respect to said second post as to allow said second wing section to fold into overlapping relationship with said first wing section and flush against and substantially parallel to said first wing section,

third and forth substantially vertically oriented wing section pivotally attached respectively to said third and fourth posts, each of said third and fourth wing sections being movable between a folded position alongside said main section, the length of each of said third and fourth wing sections being greater than one half of the length of said second side and not greater than the entire length of said second side, said third wing section being attached to said third post by said third hinge means so oriented with respect to said third post as to allow said third wing section to fold flush against and substantially parallel to said second side, said fourth wing section being attached to said fourth post by fourth hinge means so oriented with respect to said fourth post as to allow said fourth wing section to fold and to overlapping relationship and flush against and substantially parallel to said third wing section, and

a second exercise or play device supported by said wing sections.

6. The gymnastic apparatus of claim 5 further comprising retractable wheel means mounted on said main section and fixed leg means mounted on each of said wing sections, said wheel means being movable between an operating position extending downwardly a distance greater than said leg means and a retracted position extending downwardly a distance no greater than said leg means, and means for moving said wheel means between said operating and said retracted positions.

7. The gymnastic apparatus of claim 6 wherein said wheel means comprises four wheels, one said wheel being positioned at each of the four corners of said main section, each said wheel being mounted upon a wheel support rod axially slidably attached to a respective one of said posts and substantially parallel thereto, and said means for moving said wheel means comprises a plurality of handles, each said handle being pivotally attached to a respective said post and beding operatively connected to a respective said wheel support rod, whereby arcuate movement of said handle causes axial movement of said wheel support rod to retract or extend said wheel.

8. The gymnastic apparatus of claim 7 wherein each said hinge means comprises upper and lower pairs of hinges, each said lower pair of hinges pivotally engaging a respective said wheel support rod, whereby said wheel support rod also fuctions as a hinge pin.

9. The gymnastic apparatus of claim 5 further comprisding first connector means for connecting together a first adjacent pair of said wing sections, said first connector means being attachable to the upper portion of each of said first pair of adjacent wing sections at points spaced from said main section.

10. The gymnastic apparatus of claim 9 further comprising second connector means for attaching together a second pair of adjacent of said wing sections, said connector means being attachable to the upper portion of each of said second pair of adjacent wing sections at points spaced from said main section.

11. The gymnastic apparatus of claim 10 wherein the length of each of said connector means is no greater than the length of said sides, and further comprising a floor attached to said base, whereby said connector means can be stored upon said floor.

12. The gymnastic apparatus of claim 10 wherein each of said wing sections is of rectangular shape of dimensions substantially equal to the dimensions of said sides.

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