



US005897472A

United States Patent [19]
Thulasingham

[11] **Patent Number:** **5,897,472**
[45] **Date of Patent:** **Apr. 27, 1999**

[54] **ABDOMINAL EXERCISE APPARATUS
FEATURING PRESTRETCHING AND
WEIGHT TRAINING FACILITIES**

5,542,898 8/1996 Wilkinson .
5,573,485 11/1996 Geschwender 482/142

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Primary Examiner—John Mulcahy
Attorney, Agent, or Firm—Michael I. Kroll

[57] **ABSTRACT**

[21] Appl. No.: **08/925,154**

[22] Filed: **Sep. 8, 1997**

[51] **Int. Cl.⁶** **A63B 23/02**; A47C 7/42

[52] **U.S. Cl.** **482/133**; 482/103; 482/140;
482/142; 482/907; 297/284.4; 297/452.3

[58] **Field of Search** 482/99, 102, 103,
482/130, 133-140, 142, 907; D21/673,
675, 687, 690, 695; 297/284.4, 284.5, 452.3,
452.31, 452.32; 601/24

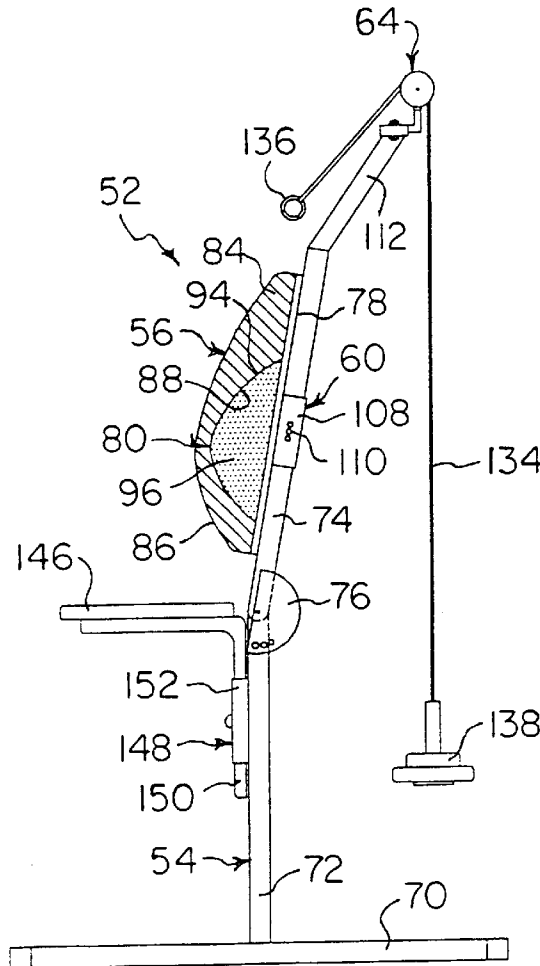
An abdominal exercise apparatus (52) comprising an adjustable upright stand (54). A multi-contoured back pad base structure (56) is for positioning, preparing and isolating various muscles of the abdomen of a person (58) during exercise. A component (60) is for mounting the multi-contoured back pad base structure (56) to the adjustable upright stand (54), so that a back (62) of the person (58) can be placed against the multi-contoured back pad base structure (56). A force resistance assembly (64) is affixed onto a top end of the adjustable upright stand (54). A facility (66) is for connecting an upper body (68) of the person (58) to the force resistance assembly (64). When the person (58) moves forwardly away from the multi-contoured back pad base structure (56), the force resistance assembly (64) will apply a force resistance to the upper body (68) of the person (58), to exercise the abdominal muscles of the person (58).

[56] **References Cited**

U.S. PATENT DOCUMENTS

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5,470,291 11/1995 Pekkanen .

16 Claims, 12 Drawing Sheets



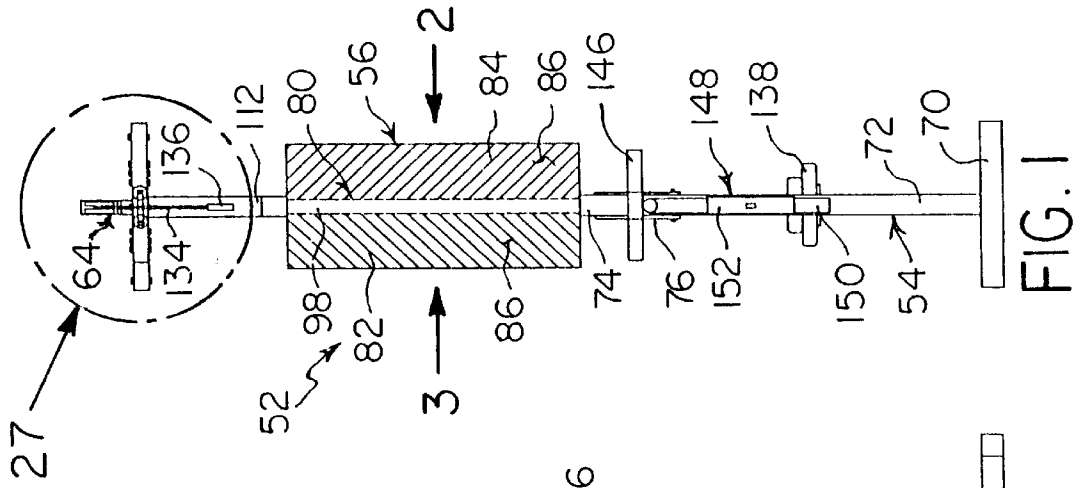


FIG. 1

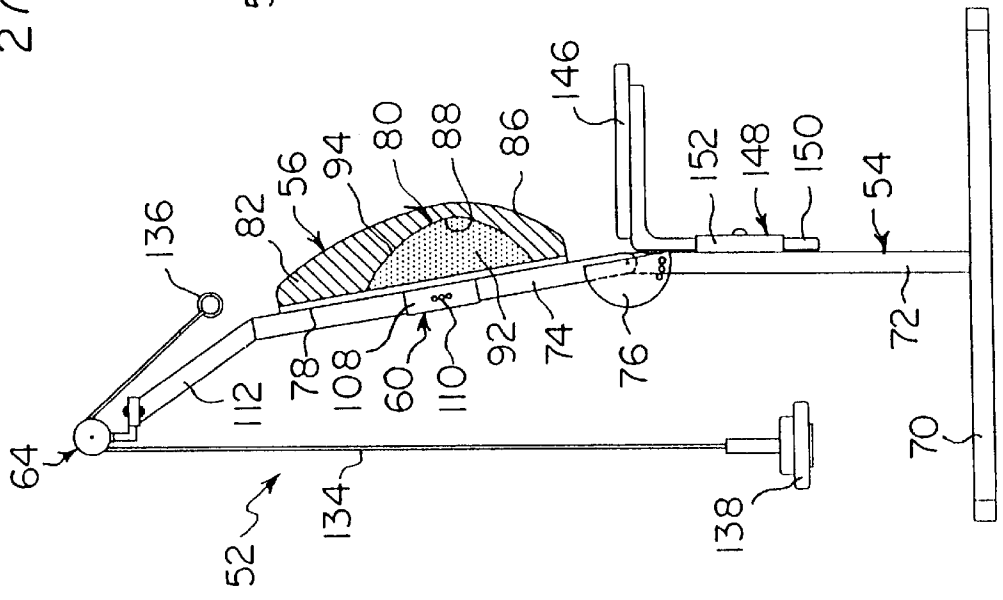


FIG. 2

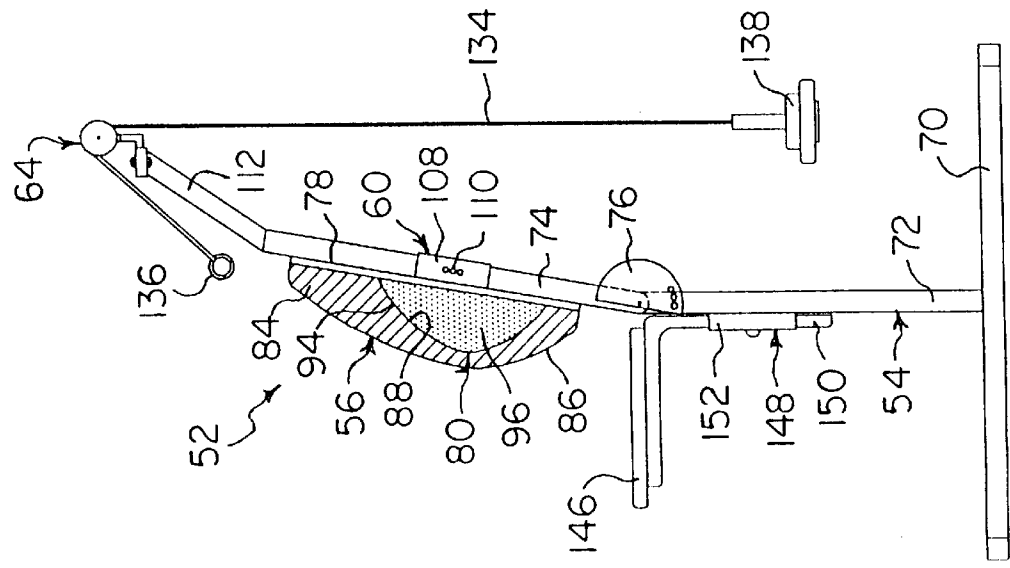


FIG. 3

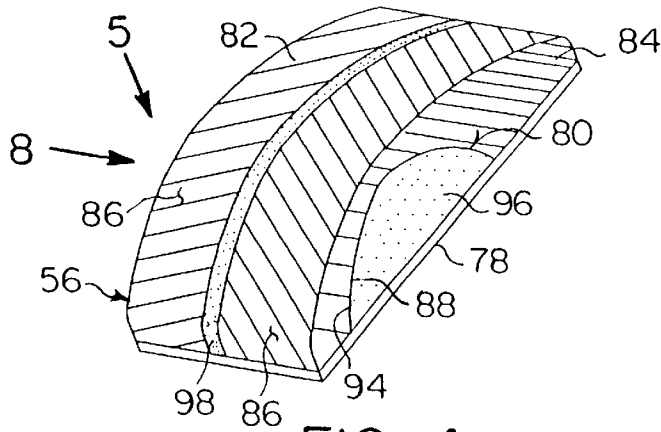


FIG. 4

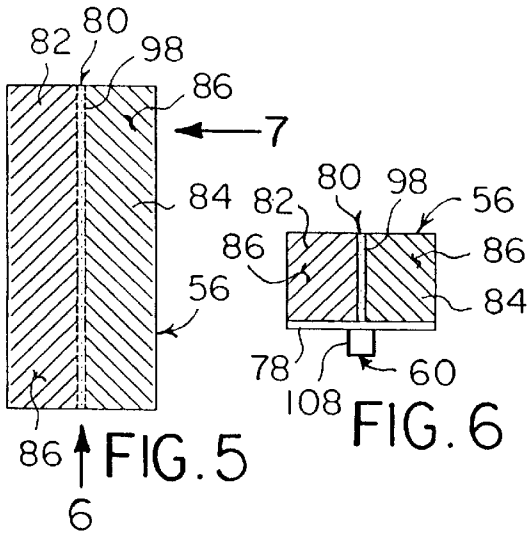


FIG. 5

FIG. 6

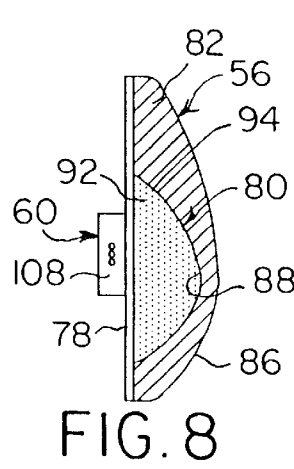


FIG. 8

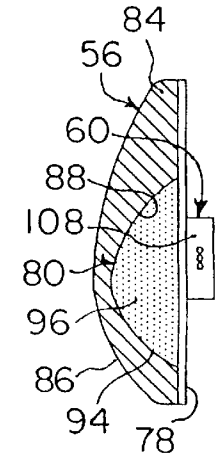


FIG. 7

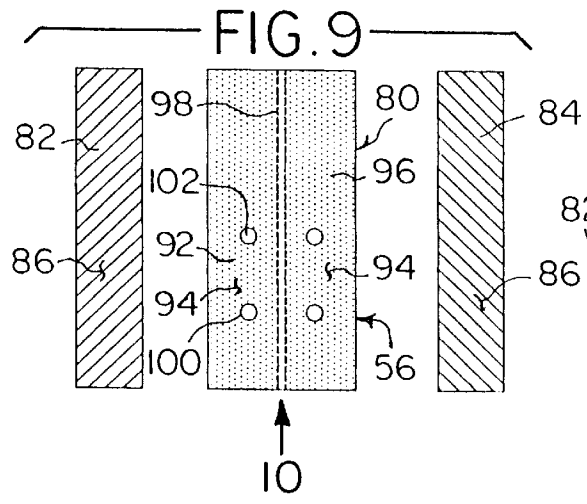


FIG. 9

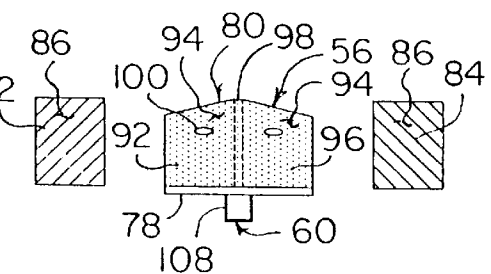


FIG. 10

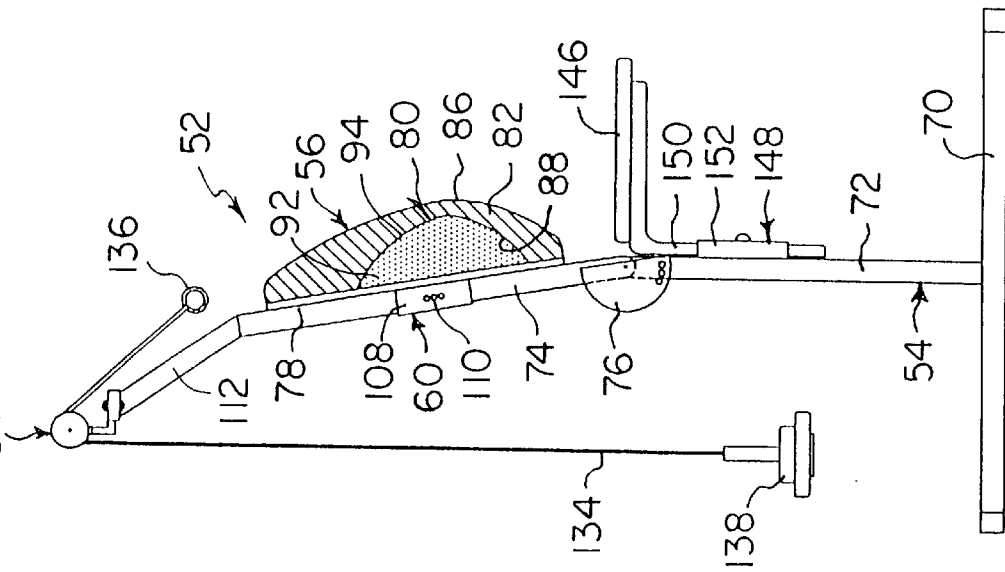


FIG. 11

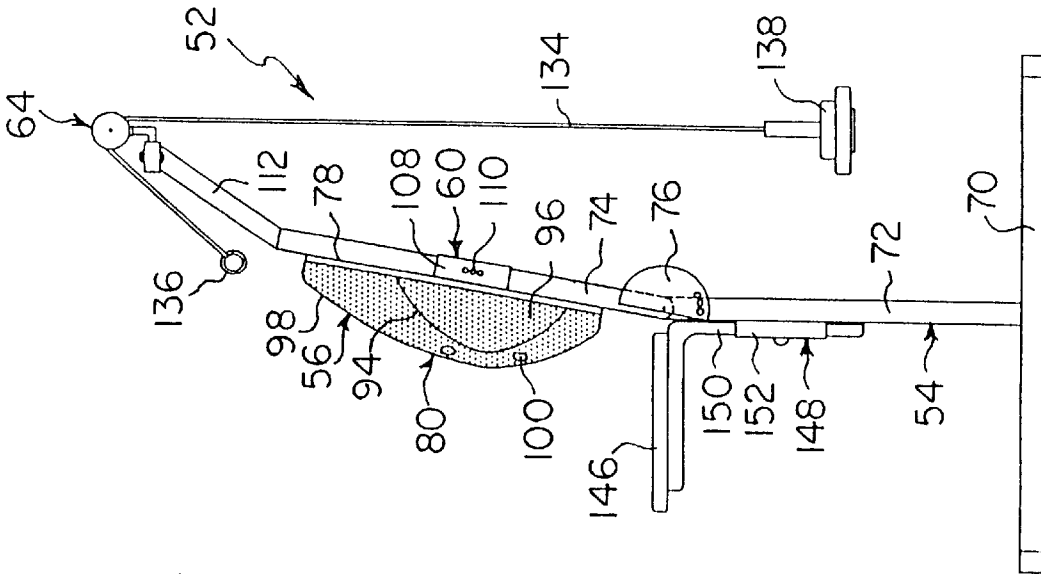


FIG. 12

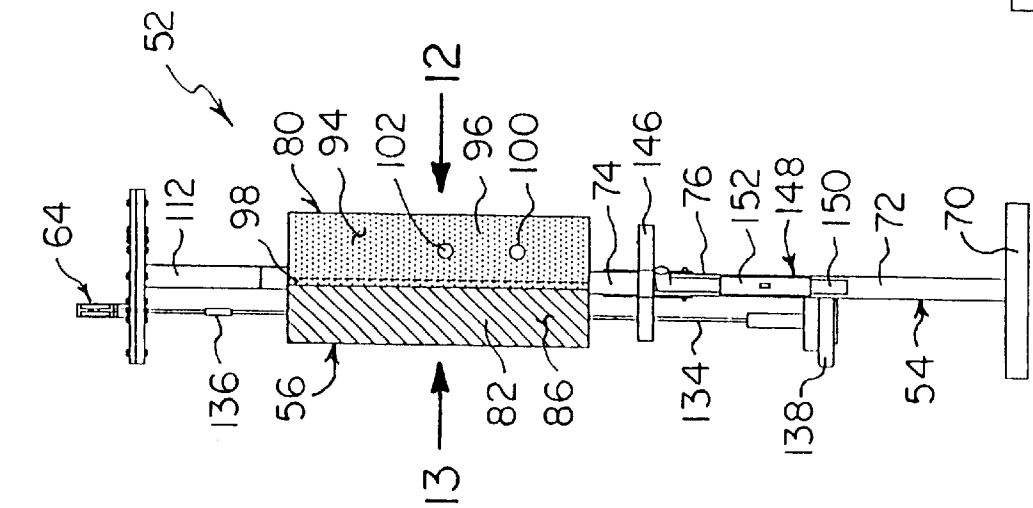
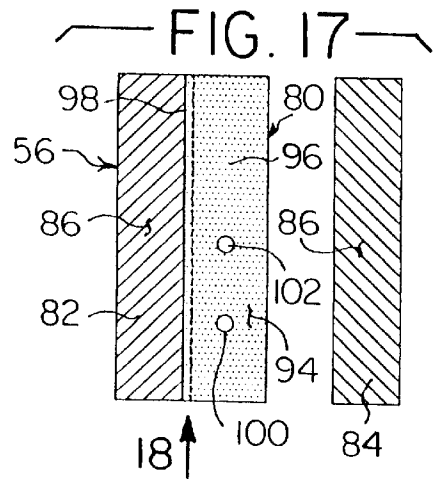
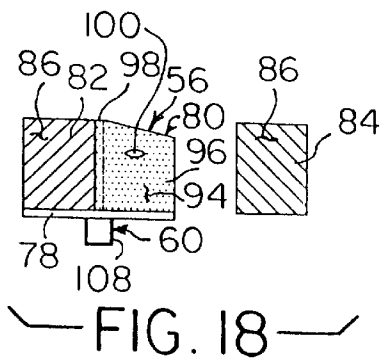
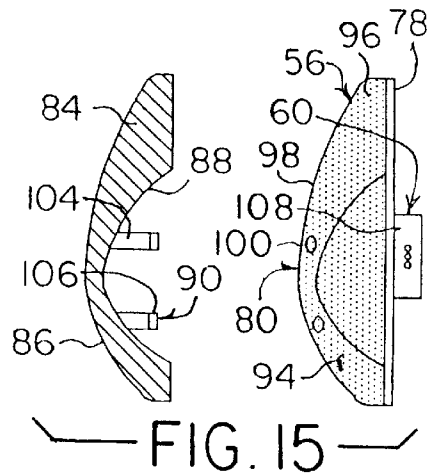
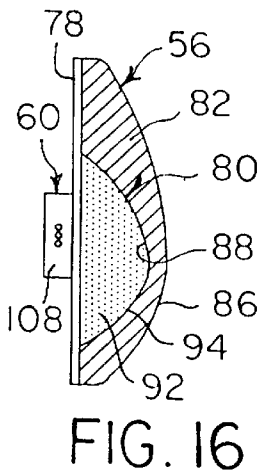
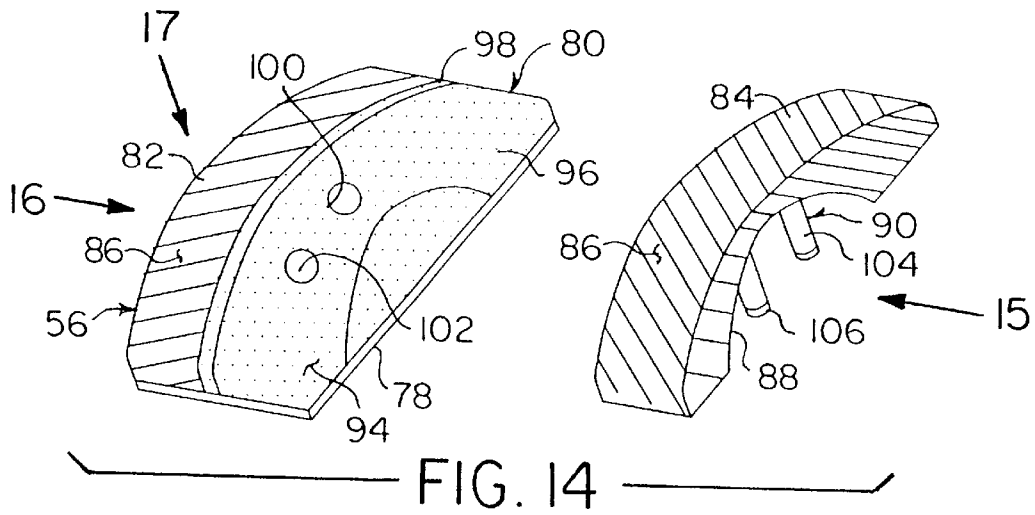


FIG. 13



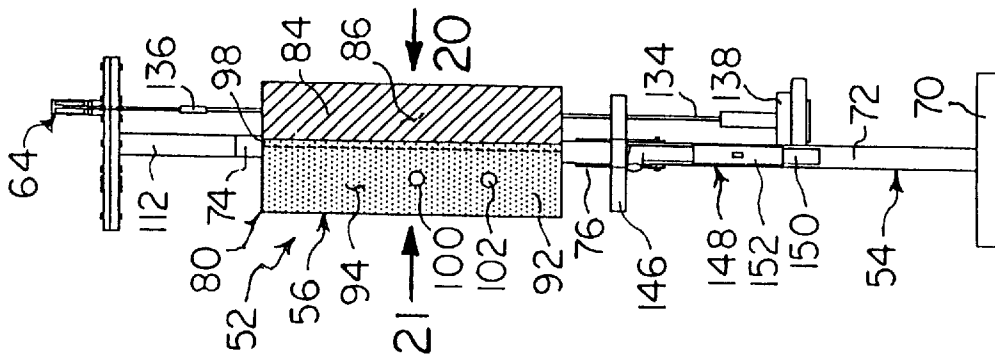


FIG. 19

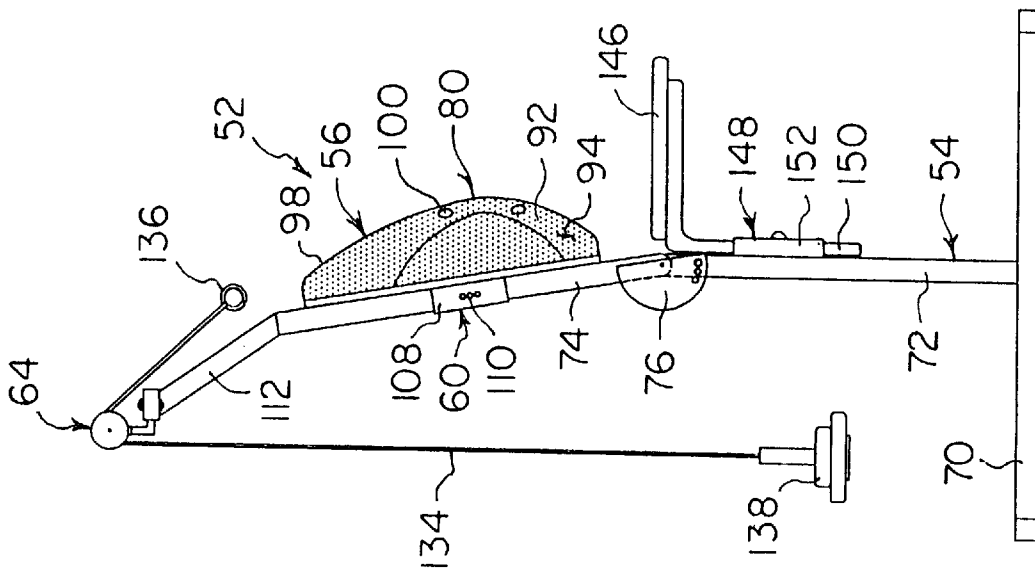


FIG. 21

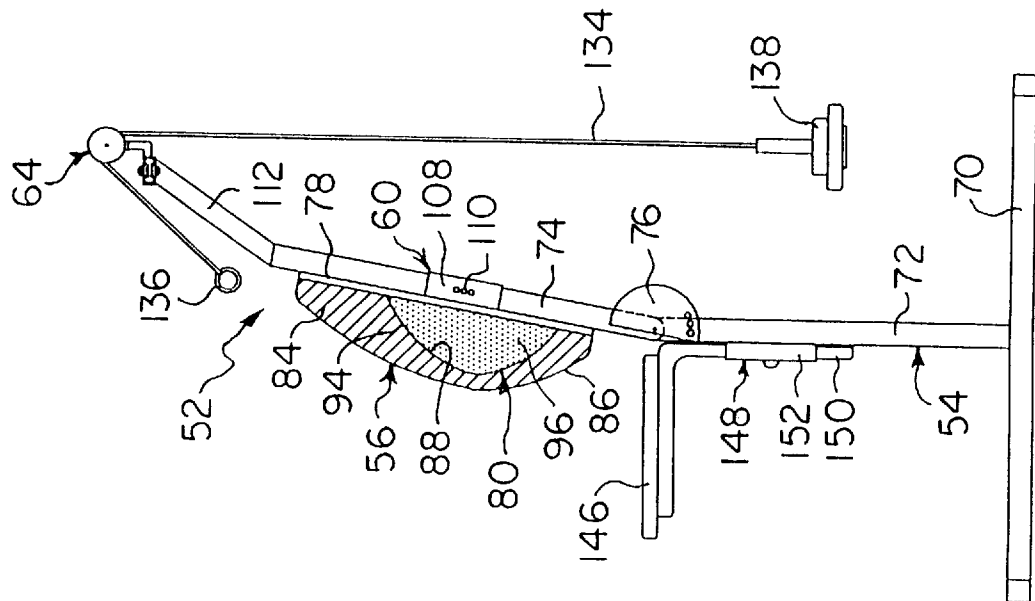
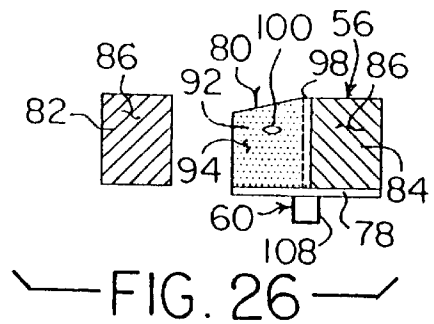
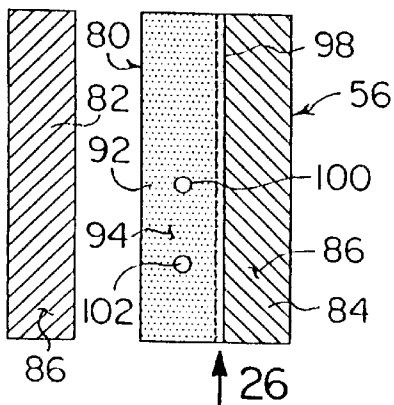
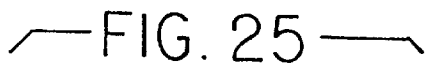
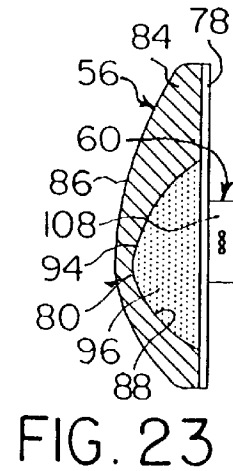
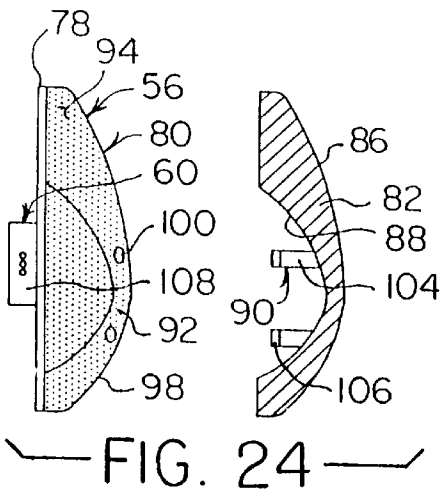
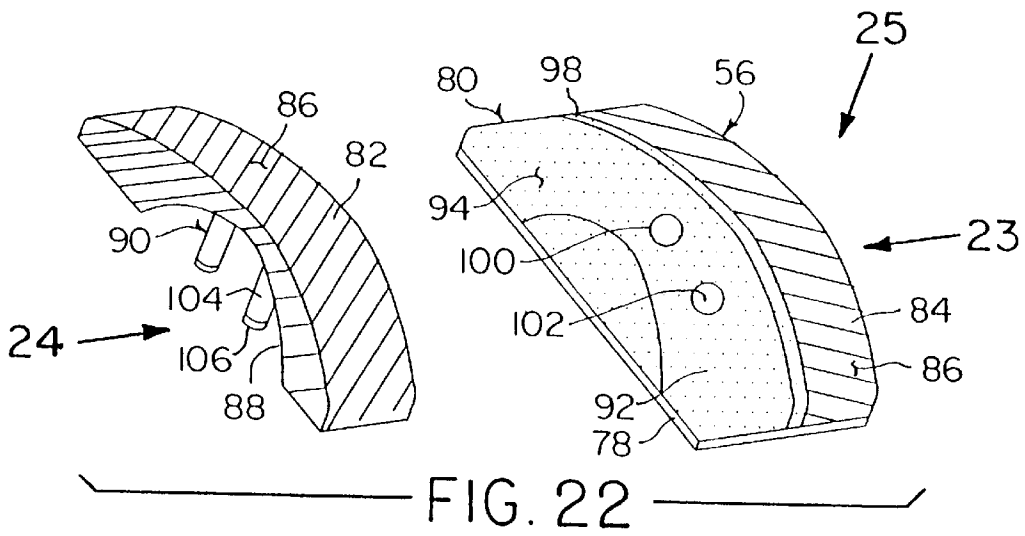
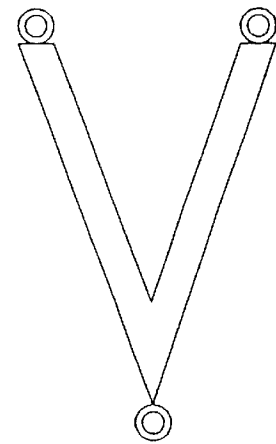
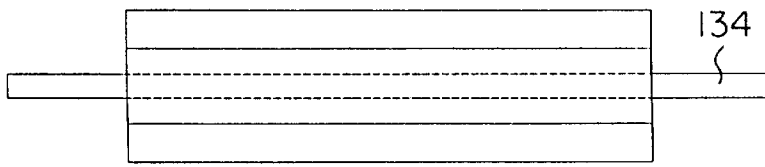
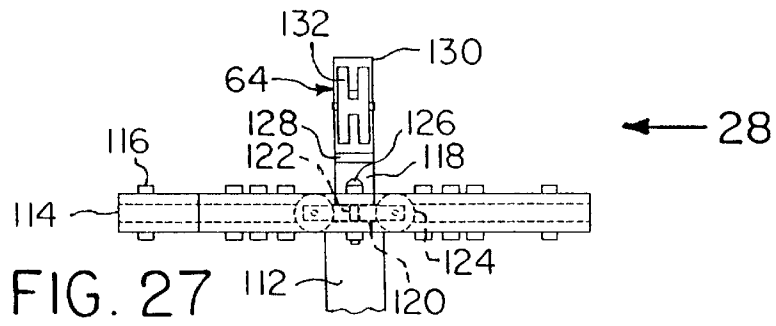
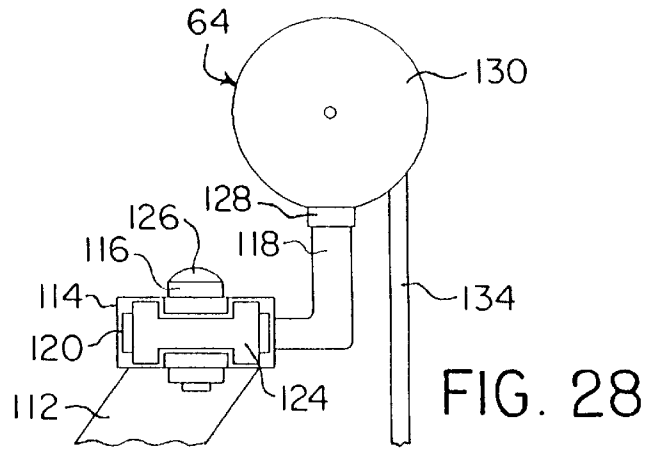


FIG. 20





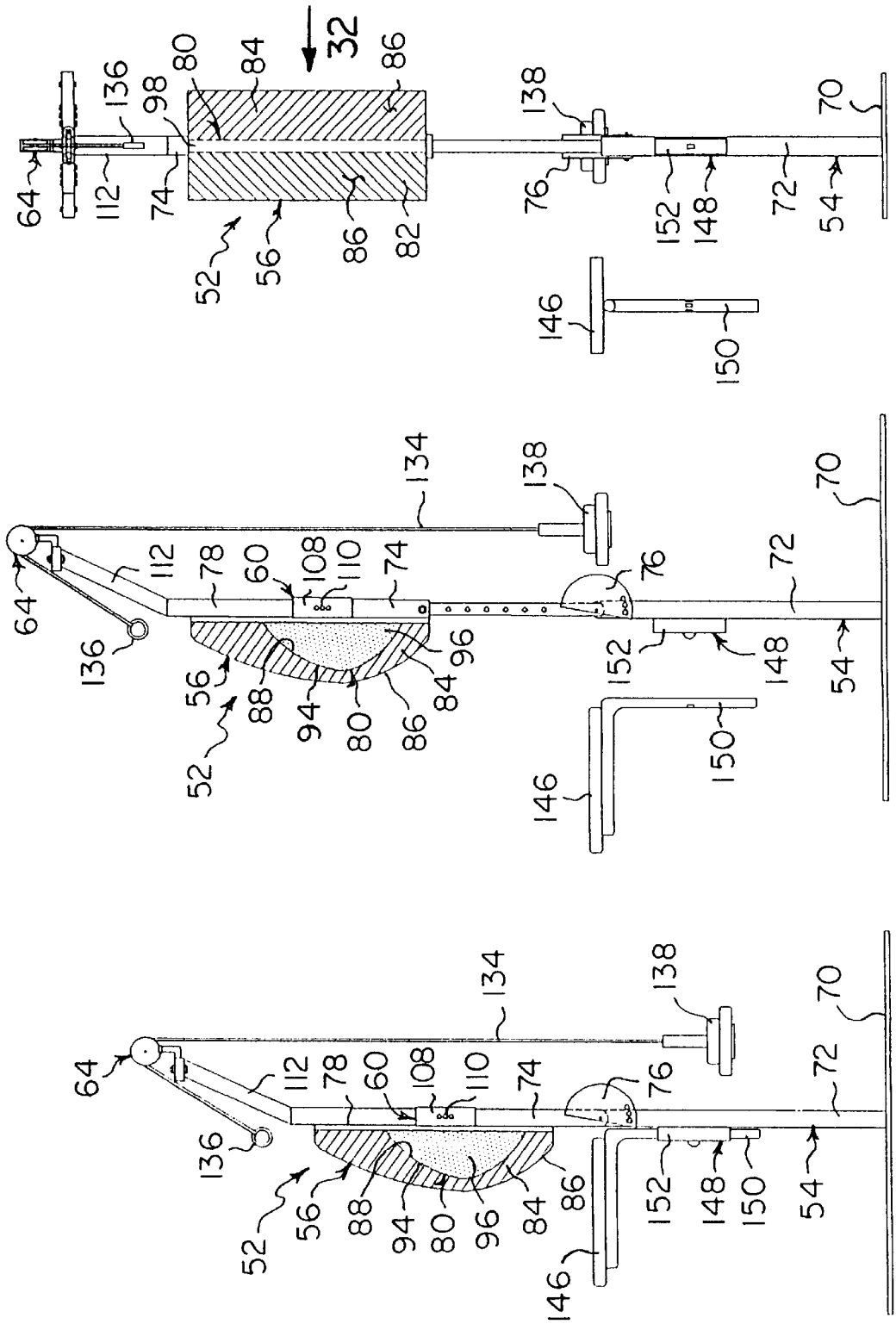
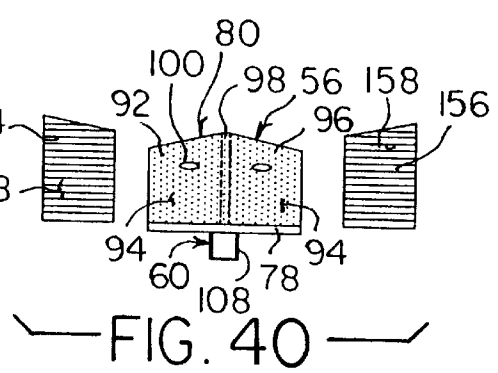
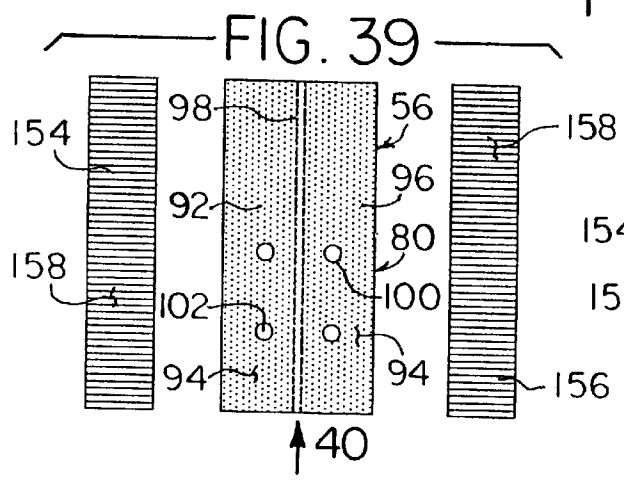
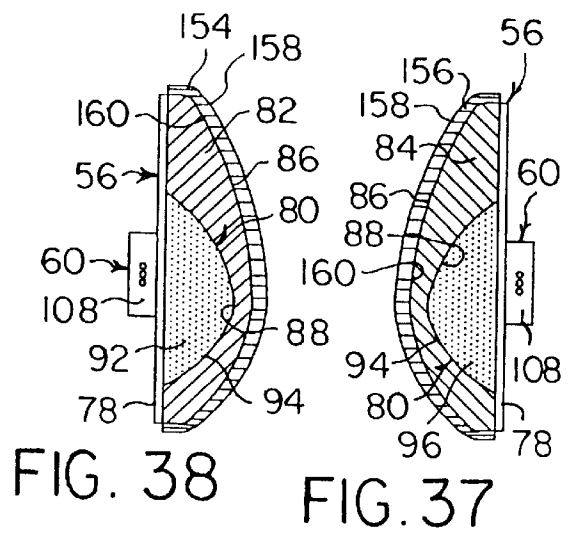
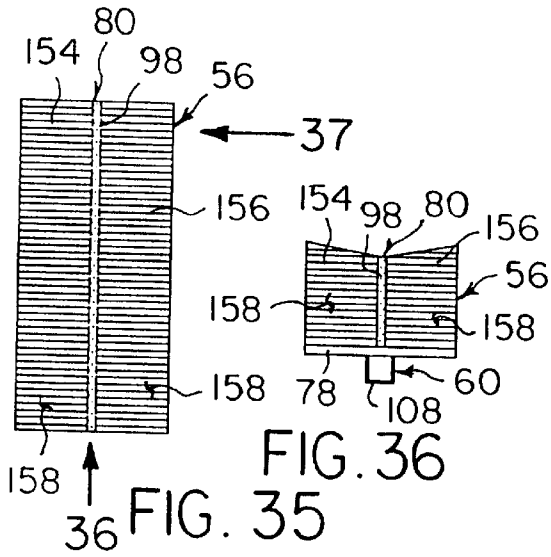
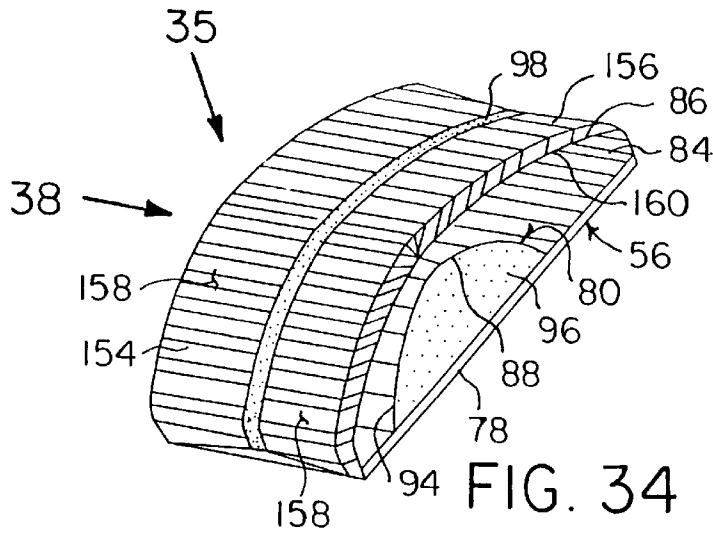
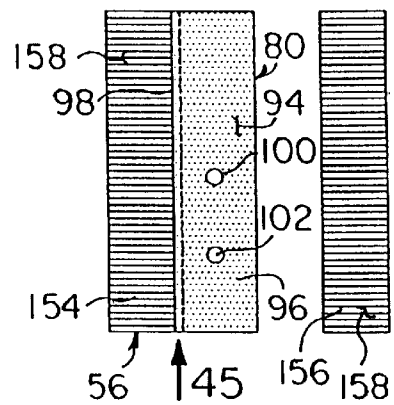
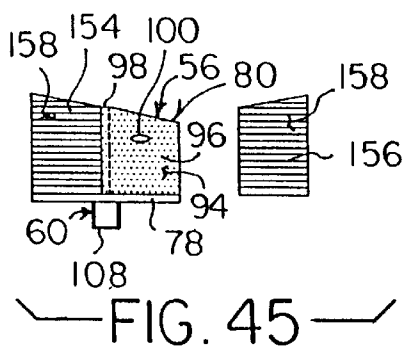
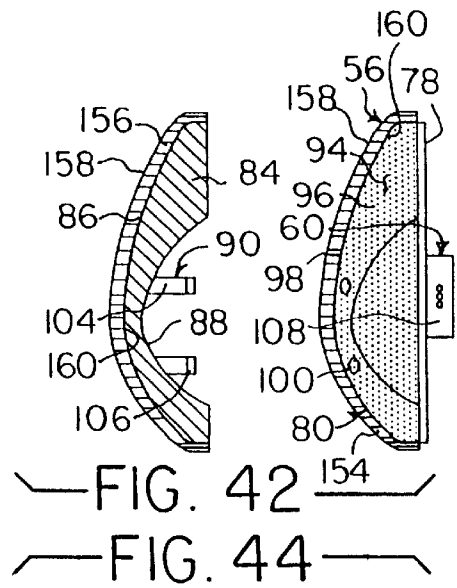
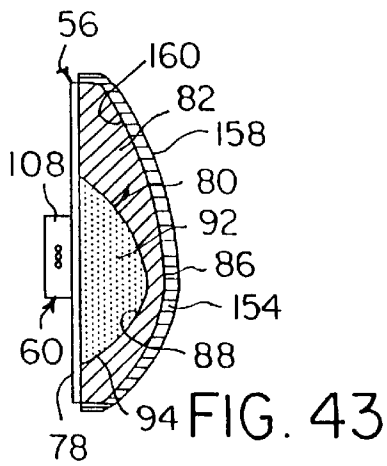
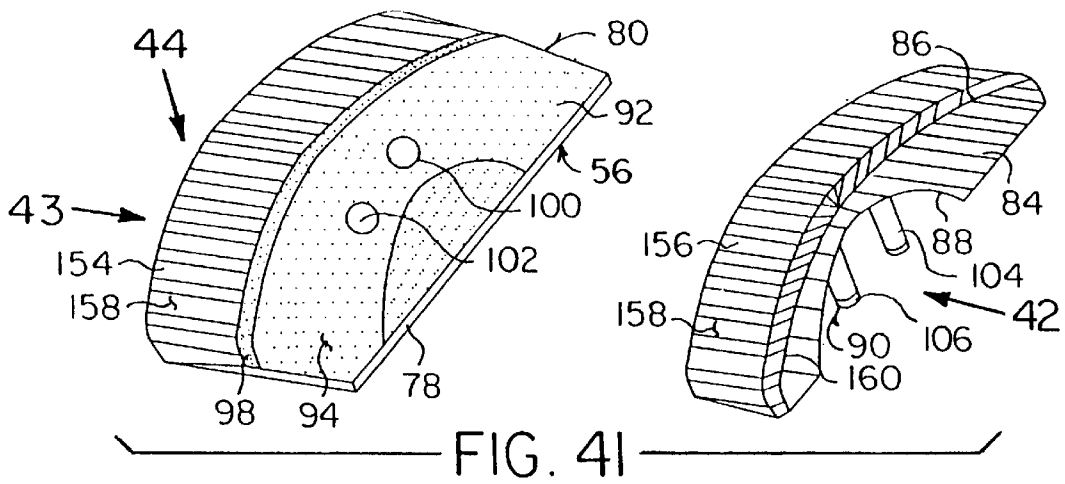


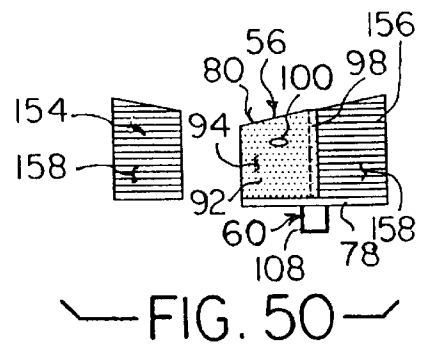
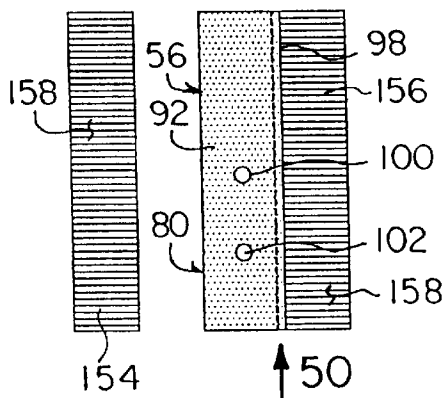
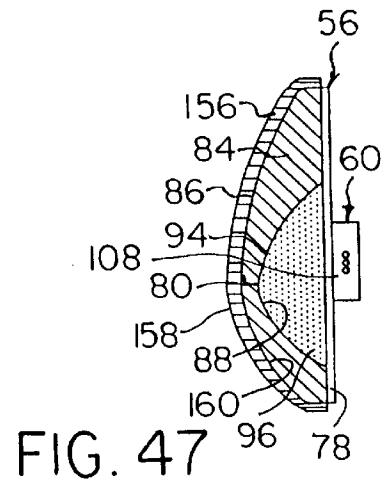
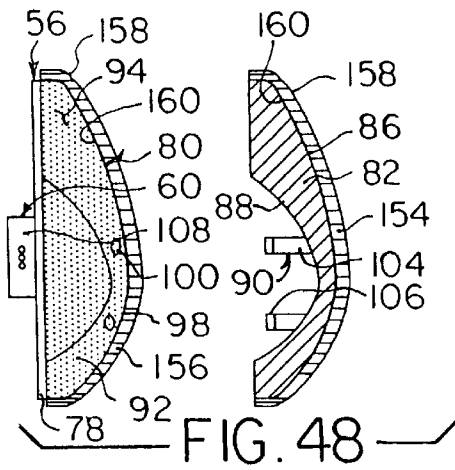
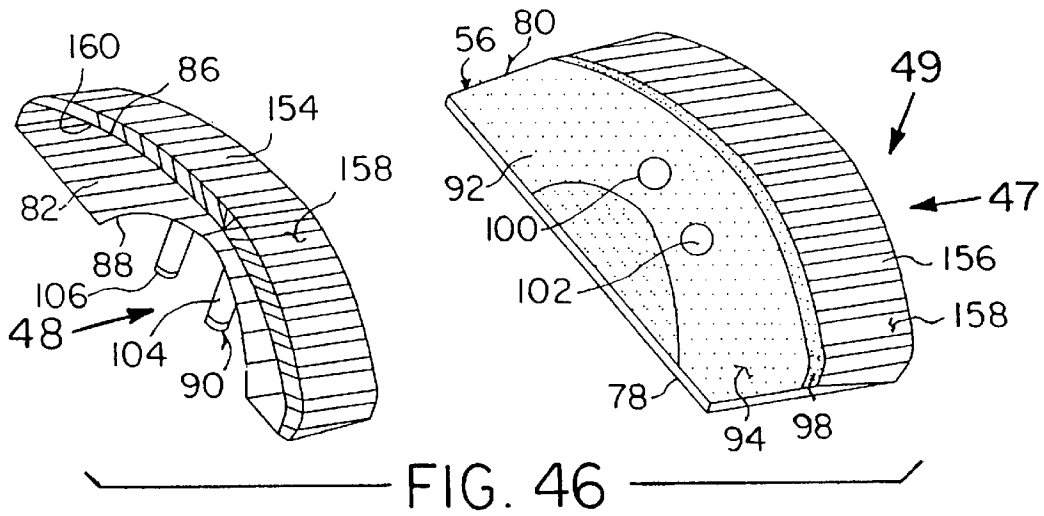
FIG. 31

FIG. 32

FIG. 33







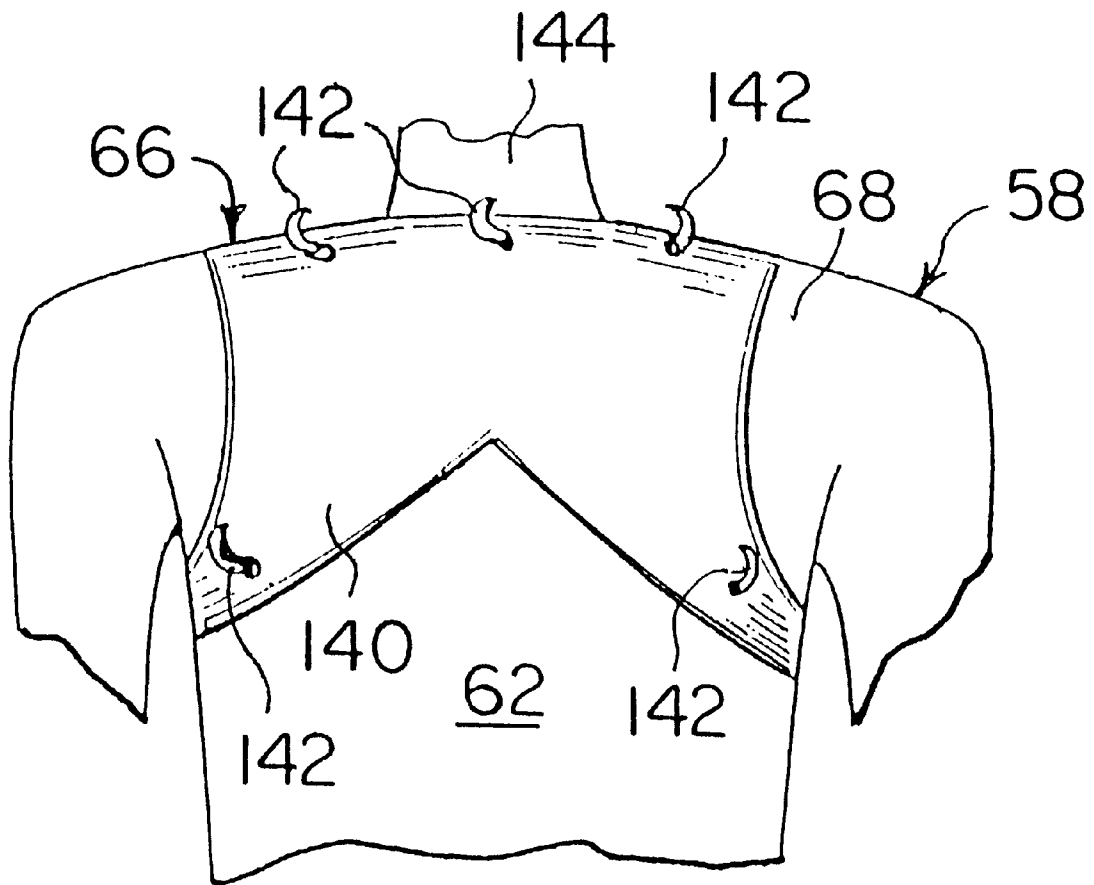


FIG. 51

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**ABDOMINAL EXERCISE APPARATUS
FEATURING PRESTRETCHING AND
WEIGHT TRAINING FACILITIES**

BACKGROUND OF THE INVENTION

1. Field of the Invention

The instant invention relates generally to exercise devices and more specifically it relates to an abdominal exercise apparatus. The abdominal exercise apparatus will efficiently exercise all the muscles of the midsection of the body.

2. Description of the Prior Art

Numerous exercise devices have been provided in prior art. For example, U.S. Pat. No. 4,372,553 to Hatfield; U.S. Pat. No. 5,120,052 to Evans; U.S. Pat. No. 5,470,291 to Pekkanen and U.S. Pat. No. 5,542,898 to Wilkinson all are illustrative of such prior art. While these units may be suitable for the particular purpose to which they address, they would not be as suitable for the purposes of the present invention as heretofore described.

HATFIELD, FREDERICK C.

**WEIGHT LIFTING DEVICE AND METHOD OF
EXERCISING**

U.S. Pat. No. 4,372,553

An exercising system for exercising the abdominal muscles in which the abdominal muscles are isolated and placed "on stretch" prior to contracture comprising an exercising device having a seat with a posteriorly curved, firm back in which the user sits and secures himself and bends forward working against a progressive force resistance system using weights supported on a pulley system or using a resilient, stretch material connected by means of shoulder harness with straps to the upper shoulder portions of the user, with the user strapped into place with a seat belt. In use, the exerciser simply straps himself into the seat, puts the shoulder harness on and lies back against the posteriorly curved back which puts the abdominals in stretch. Then, by "crunching" the entire upper torso forward (as though an attempt were being made to put the face on the knees), the resisting weights are moved or the material stretched and the abdominals are exercised in isolation, with the exercise repeated as long as desired.

EVANS, LAYNE

**ABDOMINAL EXERCISE APPARATUS THAT
PROVIDES FOR INCREASED ELONGATION
OF THE ABDOMINAL MUSCLES**

U.S. Pat. No. 5,129,052

This apparatus is for the development of the abdominal muscles through their ranges of motion including that known as elongation. The objective of the apparatus is to build muscle power and endurance, not only when the abdominal muscles are mostly contracted, but also when the abdominal muscles are mostly elongated. The apparatus includes an outward arch which fits under the upper lumbar and lower thoracic spine. One slope of the arch provides the user's pelvis and lumbar spin with consistent support. The rest of the arch provides the user's remaining spine to be supported when resting, but to be free to arch beyond the amount of arch that occurs in normal standing posture. This exercise is made functional by a knee retainer that holds down on the knees which, in turn, holds down on the pelvis,

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thereby creating maintainable contact between the pelvis/low-lumbar area and the slope of the arch.

PEKKANEN, OLLI

DEVICE IN A TRAINING APPARATUS

U.S. Pat. No. 5,470,291

A device in an exercising apparatus, comprising a belt or rope in the grip section which the operator grasps. The position is freely adjustable and can be locked in for the duration of the exercise. The mechanism to actuate locking can either be located in the grip section or be installed at the opposite end of the belt. The device is suitable for application in any type of exercising apparatus and is easily adaptable to existing apparatuses.

WILKINSON, WILLIAM T.

**MULTIFUNCTION EXERCISE AND AEROBIC
BENCH**

U.S. Pat. No. 5,542,898

A multifunction exercise and aerobic bench includes an elongated support member having a head end and a foot end. Legs extend below each of the head end and foot ends to elevate the support member. Handles are secured to the support member at the head end and extend upwardly above the support member. The legs at the foot end are movably mounted so that the elevation of the foot end can be lower than the head end to selectively incline the support member. A bar is pivotally mounted at the foot end for moving in an arc.

SUMMARY OF THE INVENTION

A primary object of the present invention is to provide an abdominal exercise apparatus that will overcome the shortcomings of the prior art devices.

Another object is to provide an abdominal exercise apparatus that will make easier weight training for all the muscles of the midsection of the body, which will speed up fat loss, enhance forming of the muscles, increase muscle mass and strengthens the muscles.

An additional object is to provide an abdominal exercise apparatus that will sufficiently prepare, correctly position and isolate the various muscles of the midsection of the body.

A further object is to provide an abdominal exercise apparatus that is simple and easy to use.

A still further object is to provide an abdominal exercise apparatus that is economical in cost to manufacture.

Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

**BRIEF DESCRIPTION OF THE DRAWING
FIGURES**

Various other objects, features and attendant advantages of the present invention will become more fully appreciated as the same becomes better understood when considered in

conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views, and wherein;

FIG. 1 is a front view of the instant invention positioned for working the rectus abdominus.

FIG. 2 is a right side view taken in the direction of arrow 2 in FIG. 1.

FIG. 3 is a left side view taken in the direction of arrow 3 in FIG. 1.

FIG. 4 is a front perspective view of the pad base structure of FIG. 1.

FIG. 5 is a front view taken in the direction of arrow 5 in FIG. 4.

FIG. 6 is a bottom view taken in the direction of arrow 6 in FIG. 5.

FIG. 7 is a right side view taken in the direction of arrow 7 in FIG. 5.

FIG. 8 is a left side view taken in the direction of arrow 8 in FIG. 4.

FIG. 9 is an exploded front view similar to FIG. 5.

FIG. 10 is an exploded bottom view taken in the direction of arrow 10 in FIG. 9.

FIG. 11 is a front view of the instant invention positioned for working the right obliques.

FIG. 12 is a right side view taken in the direction of arrow 12 in FIG. 11.

FIG. 13 is a left side view taken in the direction of arrow 13 in FIG. 11.

FIG. 14 is an exploded front perspective view of the pad base structure of FIG. 11.

FIG. 15 is an exploded right side view taken in the direction of arrow 15 in FIG. 14.

FIG. 16 is a left side view taken in the direction of arrow 16 in FIG. 14.

FIG. 17 is an exploded front view taken in the direction of arrow 17 in FIG. 14.

FIG. 18 is an exploded bottom view taken in the direction of arrow 18 in FIG. 17.

FIG. 19 is a front view of the instant invention positioned for working the left obliques.

FIG. 20 is a right side view taken in the direction of arrow 20 in FIG. 19.

FIG. 21 is a left side view taken in the direction of arrow 21 in FIG. 19.

FIG. 22 is an exploded front perspective view of the pad base structure of FIG. 19.

FIG. 23 is a right side view taken in the direction of arrow 23 in FIG. 22.

FIG. 24 is an exploded left side view taken in the direction of arrow 24 in FIG. 22.

FIG. 25 is an exploded front view taken in the direction of arrow 25 in FIG. 22.

FIG. 26 is an exploded bottom view taken in the direction of arrow 26 in FIG. 25.

FIG. 27 is an enlarged front view of an area in FIG. 1 indicated by arrow 27, showing the sliding pulley in the grooved column in greater detail.

FIG. 28 is a further enlarged right side view taken in the direction of arrow 28 in FIG. 27.

FIG. 29 is a top view of the padding attached to the cable with VELCRO.

FIG. 30 is an elevational view of the V-shaped strap with rings at its ends.

FIG. 31 is a front view of the instant invention, showing the seat removed therefrom and positioned for working from a standing posture.

FIG. 32 is a right side view taken in the direction of arrow 32 in FIG. 31.

FIG. 33 is a right side view similar to FIG. 32 with the seat installed and height adjusted to a lower position.

FIG. 34 is a front perspective view of the pad base structure with both the additional detachable pads and the original detachable pads attached thereto.

FIG. 35 is a front view taken in the direction of arrow 35 in FIG. 34.

FIG. 36 is a bottom view taken in the direction of arrow 36 in FIG. 35.

FIG. 37 is a right side view taken in the direction of arrow 37 in FIG. 35.

FIG. 38 is a left side view taken in the direction of arrow 38 in FIG. 34.

FIG. 39 is an exploded front view similar to FIG. 35.

FIG. 40 is an exploded bottom view taken in the direction of arrow 40 in FIG. 39.

FIG. 41 is an exploded front perspective view of the pad base structure similar to FIG. 14, with the additional right detachable pad attached thereto.

FIG. 42 is an exploded right side view taken in the direction of arrow 42 in FIG. 41.

FIG. 43 is a left side view taken in the direction of arrow 43 in FIG. 41.

FIG. 44 is an exploded front view taken in the direction of arrow 44 in FIG. 41.

FIG. 45 is an exploded bottom view taken in the direction of arrow 45 in FIG. 44.

FIG. 46 is an exploded front perspective view of the pad base structure similar to FIG. 22, with the additional left detachable pad attached thereto.

FIG. 47 is a right side view taken in the direction of arrow 47 in FIG. 46.

FIG. 48 is an exploded left side view taken in the direction of arrow 48 in FIG. 46.

FIG. 49 is an exploded front view taken in the direction of arrow 49 in FIG. 46.

FIG. 50 is an exploded bottom view taken in the direction of arrow 50 in FIG. 49.

FIG. 51 is a rear perspective view of a person with parts broken away, wearing the hook strap.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, the Figures illustrate an abdominal exercise apparatus 52 of the present invention. With regard to the reference numerals used, the following numbering is used throughout the various drawing figures.

52 abdominal exercise apparatus

54 adjustable upright stand of 52

56 multi-contoured back pad base structure of 52

58 person

60 component of 52

62 back of 58

64 force resistance assembly of 52

66 connecting facility of **52**
68 upper body of **58**
70 foot plate of **54**
72 vertical leg of **54**
74 understructure bar of **54**
76 lock connector of **54**
78 platform of **56**
80 pad base of **56**
82 left contoured pad of **56**
84 right contoured pad of **56**
86 convex top surface on **82, 84**
88 concave bottom surface on **82, 84**
90 attaching elements
92 left side end of **80**
94 convex surface of **92, 96**
96 right side end of **80**
98 middle segment of **80**
100 hole in **92, 96**
102 magnetic pad in **100**
104 cylindrical pin of **90**
106 magnetic tip on **104**
108 hollow tube of **60**
110 fastener of **60**
112 arm of **64**
114 grooved bar of **64**
116 hole in **114**
118 L-shaped extension of **64**
120 T-formation end of **118**
122 aperture in **120**
124 wheel of **64**
126 pin of **64**
128 swivel member of **64**
130 casing of **64**
132 pulley of **64**
134 elongate cable of **64**
136 ring on **134** of **64**
138 weight on **134** of **64**
140 hook strap vest of **66**
142 hook on **140** of **66**
144 neck of **58**
146 seat of **52**
148 attaching assemblage of **52**
150 post of **146** of **148**
152 sleeve of **148**
154 additional left contoured pad
156 additional right contoured pad
158 convex top surface on **154, 156**
160 concave bottom surface on **154, 156**

The abdominal exercise apparatus **52** comprises an adjustable upright stand **54**. A multi-contoured back pad base structure **56** is for positioning, preparing and isolating various muscles of the abdomen of a person **58** during exercise. A component **60** is for mounting the multi-contoured back pad base structure **56** to the adjustable upright stand **54**, so that a back **62** of the person **58** can be placed against the multi-contoured back pad base structure **56**. A force resistance assembly **64** is affixed onto a top end of the adjustable upright stand **54**. A facility **66** is for connecting an upper body **68** of the person **58** to the force resistance assembly **64**. When the person **58** moves forwardly away from the multi-contoured back pad base structure **56**, the force resistance assembly **64** will apply a force resistance to the upper body **68** of the person **58**, to exercise the abdominal muscles of the person **58**.

The adjustable upright stand **54** includes an elongated horizontal foot plate **70** which sits upon a floor. A vertical leg **72** is attached to the foot plates **70**. An understructure bar **74**

is provided. A lock connector **76** is between a top end of the vertical leg **72** and a bottom end of the understructure bar **74**, so as to maintain the understructure bar **74** at any desired angle with respect to the floor for an exercise requirement for the person **58**.

The multi-contoured back pad base structure **56** consists of a platform **78**, with a pad base **80** on the platform **78**. Left and right contoured pads **82, 84** are provided, with each having a convex top surface **86** and a concave bottom surface **88**. Elements **90** are for attaching the left and right contoured pads **82, 84** to the pad base **80** in a detachable manner, in three different combinations, so as to prestretch the rectus abdominus, the left obliques and the right obliques, as per exercise requirement.

The pad base **80** comprises a left side end **92** having a convex surface **94**, with a right side end **96** having a convex surface **94**. A middle segment **98** is between the left side end **92** and the right side end **96** with the respective convex surfaces **94** sloping away from the middle segment **98**, so as to allow one half of the back **62** of the person **58** to decline onto either of the respective convex surfaces **94**.

The attaching elements **90** include the left side end **92** of the pad base **80** having a pair of holes **100** therein. The right side end **96** of the pad base **80** has a pair of holes **100** therein.

Four magnetic pads **102** are provided. The magnetic pads **102** are inserted into the bottom of the holes **100** in the left side end **92** and into bottom of the holes **100** in the right side end **96** of the pad base **80**. Four cylindrical pins **104** are also provided, with each cylindrical pin **104** having a magnetic tip **106**. Two cylindrical pins **104** extend from the concave bottom surface **88** of the left contoured pad **82** to be received in the holes **100** in the left side end **92** of the pad base **80**, so that the two respective magnetic tips **106** will make contact with the two magnetic pads **102**. The other two cylindrical pins **104** extend from the concave bottom surface **88** of the right contoured pad **84** to be received in the holes **100** in the right side end **96** of the pad base **80**, so that the two respective magnetic tips **106** will make contact with the two magnetic pads **102**.

The mounting component **60** consists of a hollow tube **108** mounted to a rear surface of the platform **78**. The hollow tube **108** slides on the understructure bar **74** of the adjustable upright stand **54**. A fastener **110** is for retaining the hollow tube **108** on the understructure bar **74** in a stationary position.

The force resistance assembly **64**, as best seen in FIGS. **27** and **28**, comprises an arm **112** angularly affixed to a top end of the understructure bar **74** of the adjustable upright stand **54**. A grooved bar **114** is transversely mounted across a top end of the arm **112**. The grooved bar **114** has a plurality of spaced apart holes **116** therethrough. An L-shaped extension **118** with a T-formation end **120** has an aperture **122** therethrough. A plurality of wheels **124** are carried on the T-formation end **120** of the L-shaped extension **118**, which ride within the grooved bar **114**. A pin **126** extends through any one of the holes **116** in the grooved bar **114** and the aperture **122** in the T-formation end **120** of the L-shaped extension **118**, as per exercise requirement. A swivel member **128** is on a top end of the L-shaped extension **118**, with a casing **130** on the swivel member **128**. A pulley **132** is rotatively carried within the casing **130**. An elongate cable **134** extends over the pulley **132**. A ring **136** is affixed to an upper end of the elongate cable **134**, while a weight **138** is affixed to a lower end of the elongate cable **134**.

The connecting facility **66**, as shown in FIG. **51**, includes a hook strap vest **140** worn on the upper body **68** of the person **58**. Five hooks **142** are affixed to the hook strap vest

140. Each of the hooks 142 engages the ring 136 on the upper end of the elongate cable 134, when performing the various exercises. Two of the hooks 142 located on the upper left and upper right on the hook strap vest 40 can be used for the oblique abdominal exercises. Two of the hooks 142 located at a lower portion of the hook strap vest 140 can be used for the transverse abdominal exercises. The hook 142 located directly behind the neck 144 of the person 58 can be used for the rectus abdominal exercise.

The abdominal exercise apparatus 52 further contains a seat 146 and an assemblage 148 for attaching the seat 146 to the vertical leg 72 of the adjustable upright stand 54 in a horizontal swivel locking manner below the multi-contoured back pad base structure 56, so that the person 58 can sit upon the seat 146 to exercise the abdominal muscles.

The attaching assemblage 148 includes the seat 146 having a post 150 which is parallel to the vertical leg 72 of the adjustable upright stand 54. A sleeve 152 is affixed at one side to the vertical leg 72, to receive the post 150 of the seat 146. The post 150 can swivel within the sleeve 152, so as to position the seat 146 with respect to the vertical leg 72 as per exercise requirement.

The abdominal exercise apparatus 52, as shown in FIGS. 34 to 50, can further contain additional left and right contoured pads 154, 156, with each having a convex top surface 158 and a concave bottom surface 160. The additional left and right contoured pads 154, 156 can be connected in a detachable manner to the respective left and right contoured pads 84, 86 to increase the arching of the back 62 of the person 58 when exercising.

The multi-contoured back pad base structure 56 can be partially substituted by two hollow metal arches having the same curvature dimensions as the detachable pads 82, 84 with each arch, two and a half inches wide and merely a half inch apart from one another when kept upright. These arches can be based on a conventional abdominal "situp" board with curved niches to accommodate the arches and the lower end of the board can be made to provided seating adjustability. The understructure of the board accommodates a detachable tubular bar which extends to centrally meet the grooved bar 14 containing the sliding pulley 132. The leg-support of the board can be made to fold back to the understructure, to provide for cable and weight space. The leg of the board can be made to provide an upright stance, the seat at the lower end of the board is positioned upright and the sliding pulley 132 in grooved bar 114 facility can be slid into the understructure to make for weight resisted crunches. When both arches are kept upright together they exercise the rectus abdominus and when kept upright singularly, they facilitate obliques exercises.

It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

While certain novel features of this invention have been shown and described are pointed out in the annexed claims, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed is new and desired to be protected by Letters Patent is set forth in the appended claims:

1. An abdominal exercise apparatus comprising:

- a) an upright stand;
- b) a multi-contoured back pad base structure for positioning, preparing and isolating various muscles of a person's abdomen during exercise; said multi-contoured back pad base structure including: a platform; a pad base on said platform; left and right contoured pads, each having a convex top surface and a concave bottom surface; means for attaching said left and right contoured pads to said pad base in a detachable manner, in three different combinations, so as to prestretch a person's rectus abdominus, left obliques and right obliques, as per exercise requirement; said pad base including; a left side end having a convex surface; a right side end having a convex surface; and a middle segment between said left side end and said right side end, with said respective convex surfaces sloping away from said middle segment, so as to allow one half of a person's back to recline onto either of said respective convex surfaces;
- c) means for mounting said multi-contoured back pad base structure to said upright stand, so that a person's back can be placed against said multi-contoured back pad base structure;
- d) a force resistance assembly affixed onto a top end of said upright stand; and
- e) means for connecting a person's upper body to said force resistance assembly so that when the person moves forwardly away from said multi-contoured back pad base structure, said force resistance assembly will apply a force resistance to the upper body of the person, to exercise the person's abdominal muscles.

2. An abdominal exercise apparatus as recited in claim 1, wherein said attaching means includes:

- a) said left side end of said pad base having a pair of holes therein;
- b) said right side end of said pad base having a pair of holes therein;
- c) four magnetic pads, wherein said magnetic pads are inserted respectively into bottoms of said holes in said left side end and in said right side end of said pad base;
- d) four cylindrical pins, with each said cylindrical pin having a magnetic tip, whereby two said cylindrical pins extend from said concave bottom surface of said left contoured pad to be received in said holes in said left side end of said pad base, so that said two respective magnetic tips will make contact with said two magnetic pads, while the other two said cylindrical pins extend from said concave bottom surface of said right contoured pad to be received in said holes in said right side end of said pad base, so that said two respective magnetic tips will make contact with said two magnetic pads.

3. An abdominal exercise apparatus as recited in claim 1, further including additional left and right contoured pads, each having a convex top surface and a concave bottom surface, said additional left and right contoured pads being connected in a detachable manner to said respective left and right contoured pads to increase arching of a person's back when exercising.

4. An abdominal exercise apparatus as recited in claim 1, wherein said upright stand includes:

- a) an elongated horizontal foot plate which sits upon a floor;

- b) a vertical leg attached to said foot plate;
 - c) an understructure bar; and
 - d) a lock connector between a top end of said vertical leg and a bottom end of said understructure bar, so as to maintain said understructure bar at any desired angle with respect to the floor as per exercise requirement.
5. An abdominal exercise apparatus as recited in claim 2, wherein said mounting means includes:
- a) a hollow tube mounted to a rear surface of said platform, said hollow tube sliding on said understructure bar of said upright stand; and
 - b) a fastener for retaining said hollow tube on said understructure bar in a stationary position.
6. An abdominal exercise apparatus as recited in claim 4, wherein said force resistance assembly includes:
- a) an arm angularly affixed to a top end of said understructure bar of said upright stand;
 - b) a grooved bar transversely mounted across a top end of said arm, said grooved bar having a plurality of spaced apart holes therethrough;
 - c) an L-shaped extension with a T-formation end having an aperture therethrough;
 - d) a plurality of wheels carried on said T-formation end of said L-shaped extension which ride within said grooved bar;
 - e) a pin to extend through one of said holes in said grooved bar and said aperture in said T-formation end of said L-shaped extension, as per exercise requirement;
 - f) a swivel member on a top end of said L-shaped extension;
 - g) a casing on said swivel member;
 - h) a pulley rotatively carried within said casing;
 - i) an elongate cable extending over said pulley;
 - j) a ring affixed to an upper end of said elongate cable; and
 - k) a weight affixed to a lower end of said elongate cable.
7. An abdominal exercise apparatus as recited in claim 6, wherein said connecting means includes:
- a) a hook strap vest to be worn on a person's upper body; and
 - b) five hooks affixed to said hook strap vest for engaging said ring on the upper end of said elongate cable, two of said hooks being located respectively on upper left and upper right portions on said hook strap vest for oblique abdominal exercises, two of said hooks being located at a lower portion of said hook strap vest for transverse abdominal exercises, and one said hook being located centrally on said hook strap vest for rectus abdominal exercise.
8. An abdominal exercise apparatus as recited in claim 4, further including:
- a) a seat; and
 - b) means for attaching said seat to said vertical leg of said upright stand in a horizontal swivel locking manner below said multi-contoured back pad base structure, so that a person can sit upon said seat to exercise their abdominal muscles.
9. An abdominal exercise apparatus as recited in claim 8, wherein said seat attaching means includes:
- a) said seat having a post which is parallel to said vertical leg of said upright stand; and
 - b) a sleeve affixed at one side to said vertical leg to receive said post of said seat, whereby said post can swivel

- within said sleeve, so as to position said seat with respect to said vertical leg as per exercise requirement.
10. An abdominal exercise apparatus as recited in claim 4, wherein said attaching means includes:
- a) said left side end of said pad base having a pair of holes therein;
 - b) said right side end of said pad base having a pair of holes therein;
 - c) four magnetic pads, wherein said magnetic pads are inserted respectively into bottoms of said holes in said left side end and in said right side end of said pad base;
 - d) four cylindrical pins, with each said cylindrical pin having a magnetic tip, whereby two said cylindrical pins extend from said concave bottom surface of said left contoured pad to be received in said holes in said left side end of said pad base, so that said two respective magnetic tips will make contact with said two magnetic pads, while the other two said cylindrical pins extend from said concave bottom surface of said right contoured pad to be received in said holes in said right side end of said pad base, so that said two respective magnetic tips will make contact with said two magnetic pads.
11. An abdominal exercise apparatus as recited in claim 10, wherein said mounting means includes:
- a) a hollow tube mounted to a rear surface of said platform, said hollow tube sliding on said understructure bar of said upright stand; and
 - b) a fastener for retaining said hollow tube on said understructure bar in a stationary position.
12. An abdominal exercise apparatus as recited in claim 11, wherein said force resistance assembly includes:
- a) an arm angularly affixed to a top end of said understructure bar of said upright stand;
 - b) a grooved bar transversely mounted across a top end of said arm, said grooved bar having a plurality of spaced apart holes therethrough;
 - c) an L-shaped extension with a T-formation end having an aperture therethrough;
 - d) a plurality of wheels carried on said T-formation end of said L-shaped extension which ride within said grooved bar;
 - e) a pin to extend through one of said holes in said grooved bar and said aperture in said T-formation end of said L-shaped extension, as per exercise requirement;
 - f) a swivel member on a top end of said L-shaped extension;
 - g) a casing on said swivel member;
 - h) a pulley rotatively carried within said casing;
 - i) an elongate cable extending over said pulley;
 - j) a ring affixed to an upper end of said elongate cable; and
 - k) a weight affixed to a lower end of said elongate cable.
13. An abdominal exercise apparatus as recited in claim 12, wherein said connecting means includes:
- a) a hook strap vest to be worn on a person's upper body; and
 - b) five hooks affixed to said hook strap vest for engaging said ring on the upper end of said elongate cable, two of said hooks being located respectively on upper left and upper right portions on said hook strap vest for oblique abdominal exercises, two of said hooks being located at a lower portion of said hook strap vest for transverse abdominal exercises, and one said hook

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being located centrally on said hook strap vest for rectus abdominal exercise.

14. An abdominal exercise apparatus as recited in claim **13**, further including:

- a) a seat; and
- b) means for attaching said seat to said vertical leg of said upright stand in a horizontal swivel locking manner below said multi-contoured back pad base structure, so that a person can sit upon said seat to exercise their abdominal muscles.

15. An abdominal exercise apparatus as recited in claim **14**, wherein said seat attaching seat means includes:

- a) said seat having a post which is parallel to said vertical leg of said upright stand; and

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b) a sleeve affixed at one side to said vertical leg to receive said post of said seat, whereby said post can swivel within said sleeve, so as to position said seat with respect to said vertical leg as per exercise requirement.

⁵ **16.** An abdominal exercise apparatus as recited in claim **15**, further including additional left and right contoured pads, each having a convex top surface and a concave bottom surface, said additional left and right contoured pads ¹⁰ being connected in a detachable manner to said respective left and right contoured pads to increase arching of the a person's back when exercising.

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