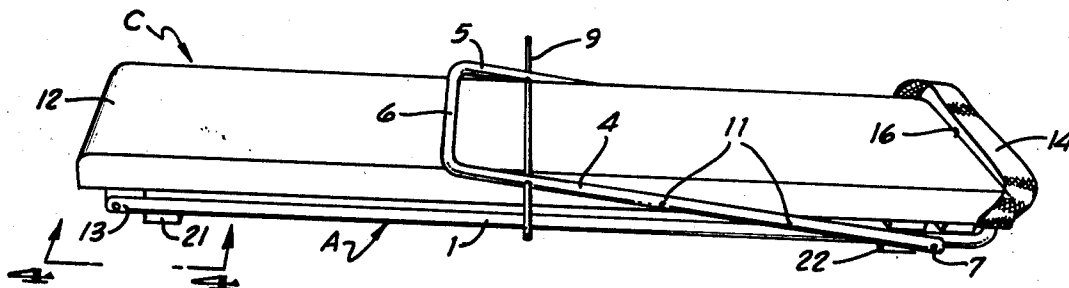


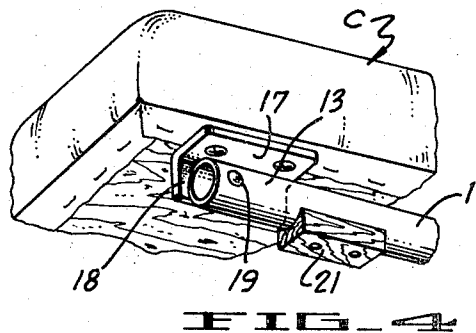
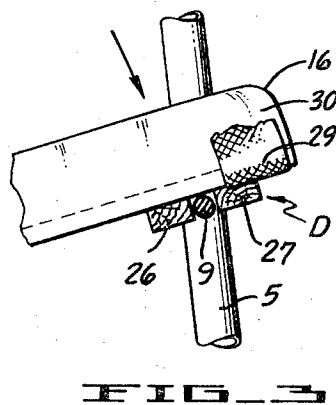
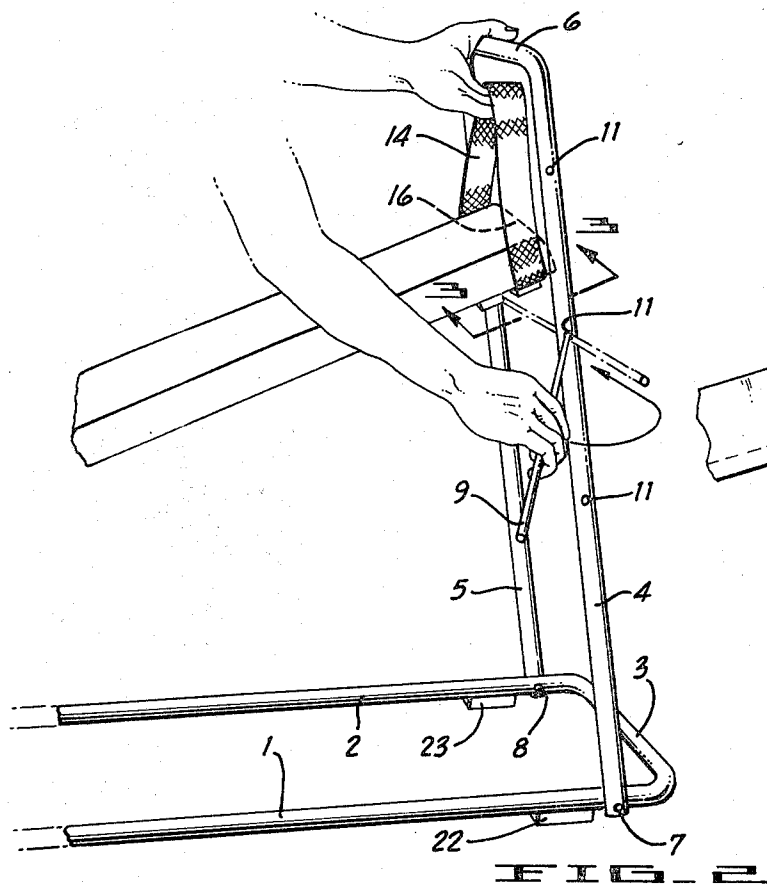
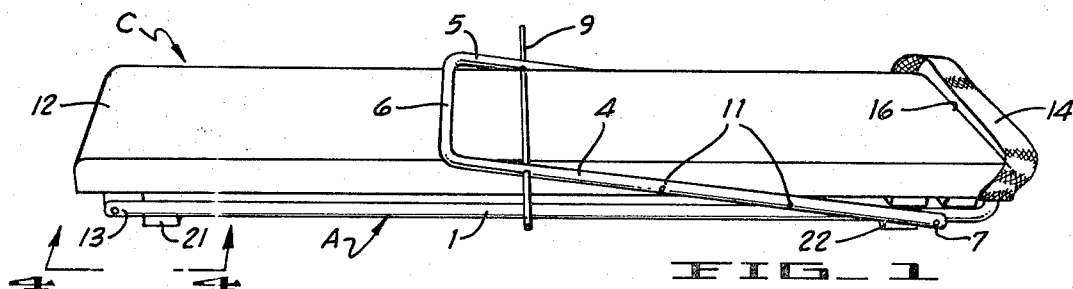
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 [21] Appl. No. **826,648**
 [22] Filed **May 21, 1969**
 Continuation-in-part of Ser. No. 597,492,
 Nov. 28, 1966, abandoned.
 [45] Patented **Dec. 8, 1970**

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Primary Examiner—Anton O. Oechsle
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[54] **ADJUSTABLE EXERCISE SLANT BOARD**
10 Claims, 10 Drawing Figs.
 [52] U.S. Cl..... 272/58,
 272/81
 [51] Int. Cl..... A63b 23/02,
 A63b 21/00
 [50] Field of Search..... 272/57, 58,
 60

ABSTRACT: An exercise board adjustable to varying degrees of slant having a base, a support frame and a top board member in which the board is fixedly hinged to the base at one end and releasably fixedly hinged at the other end and the support frame is fixedly hinged at the other end to the base for 180° rotation. The support frame is provided for selectively elevating the board at varying positions and weights may be attached to the support frame to increase the resistance to rotational movement.

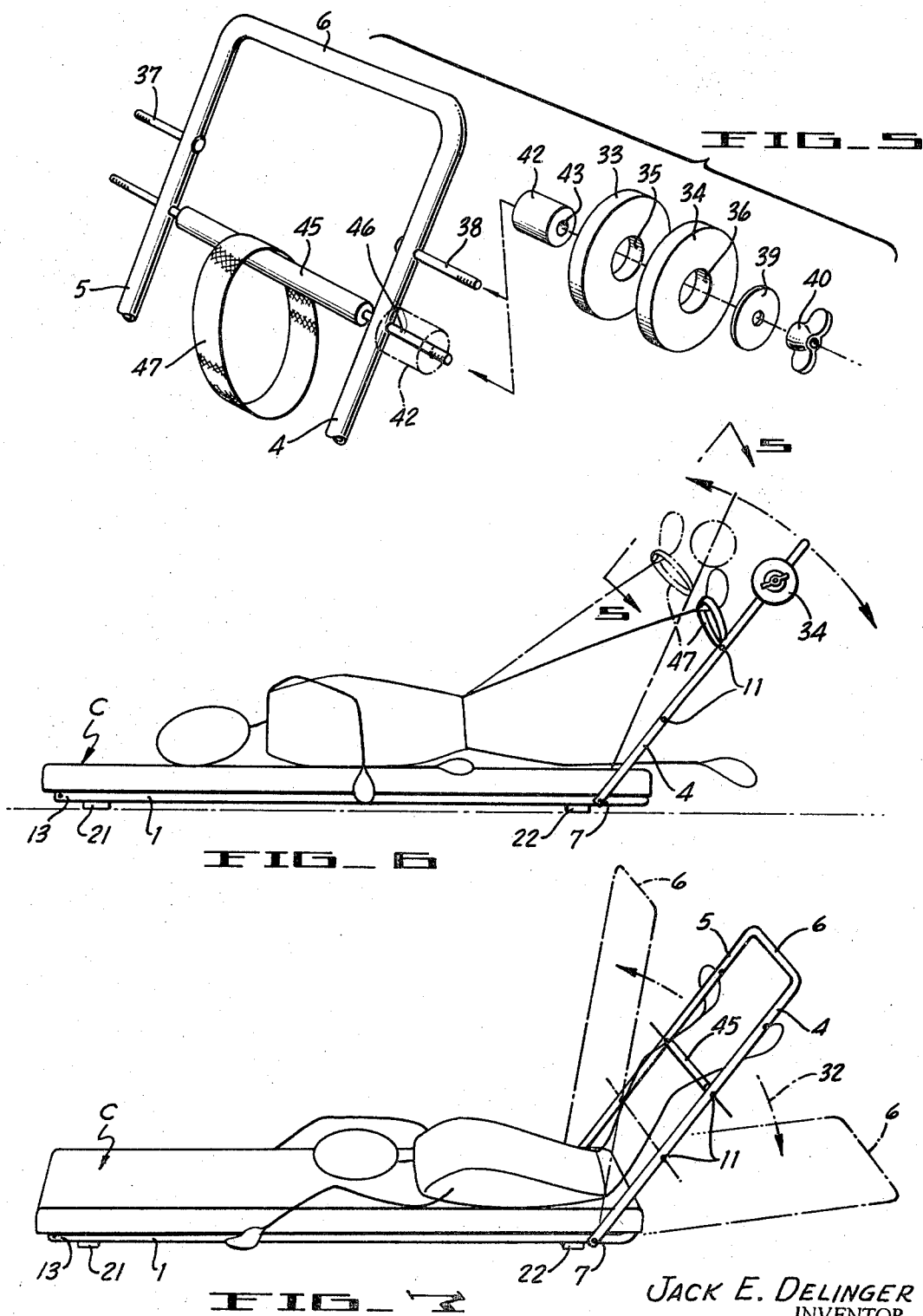




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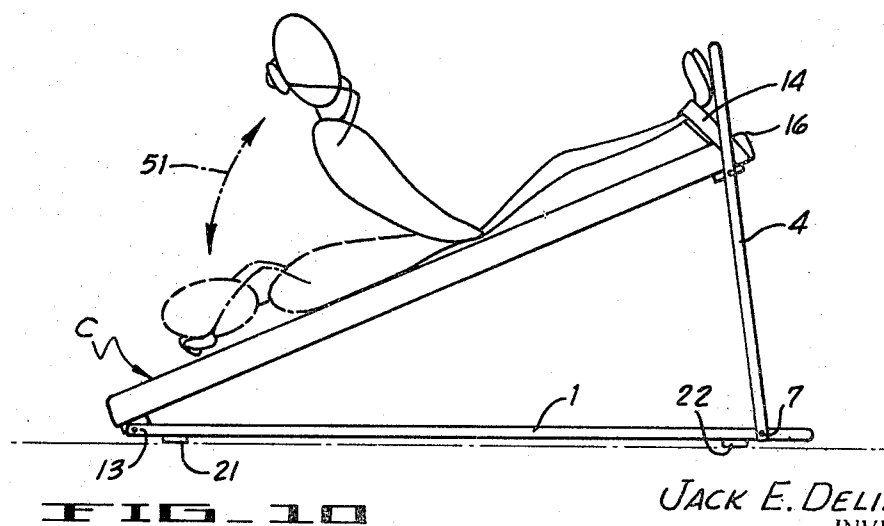
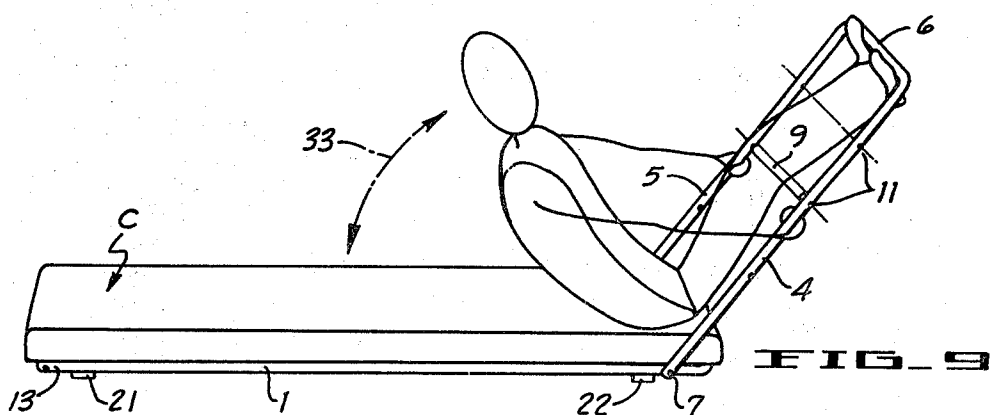
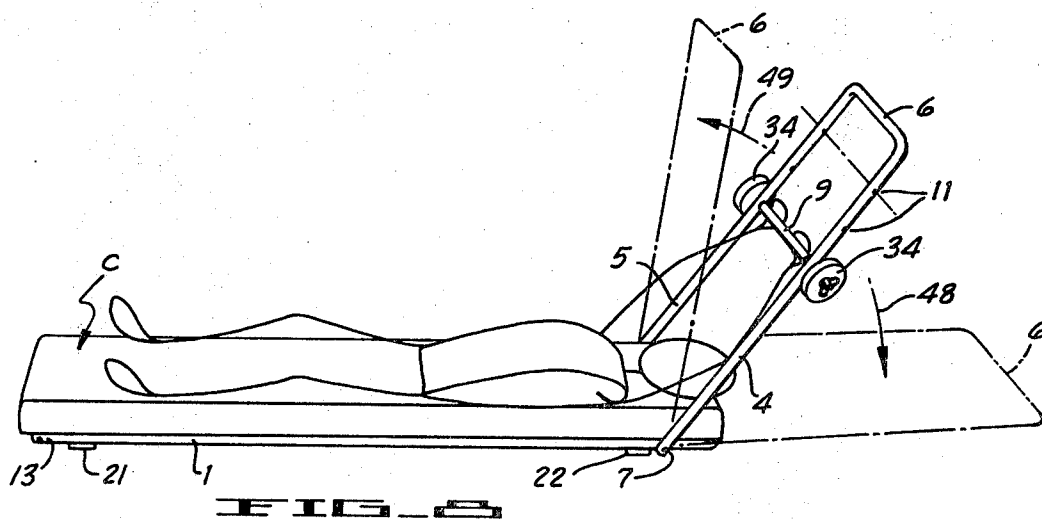
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ADJUSTABLE EXERCISE SLANT BOARD

BACKGROUND OF THE INVENTION

This application is a continuation-in-part of my application Ser. No. 597,492 filed Nov. 28, 1966, now abandoned.

There are at the present time several types of portable devices on the market which are variations on the well-known slant board. Such devices offer a limited number of exercises which may be done in connection with the basic apparatus and most are not adjustable in the degree of slant.

SUMMARY OF THE INVENTION

Essentially, the apparatus consists of a two part frame and board, or surface on which the user performs reclining or declining exercises commonly called situps, leg raises, leg kicks, and other physical conditioning movements. In addition, the board can be laid in a horizontal position and such exercises as pullovers and hip kicks can be done, with or without working against a resistance.

The gist of the invention is the multiple use of the three basic elements which are joined in a unique manner, permitting a wide variety of exercises to be accomplished on a lightweight portable apparatus. Further, by the use of detachable weights, the exercises can be done against resistance, thereby increasing the work which must be done by the person exercising. By combining the use of a plurality of weights operating on the lever principle, the resistance can be varied greatly for a number of different exercises by means of the addition of relatively little additional apparatus or actual overall weight.

An object of the invention is to provide a low cost, portable slant board for performing progressive physical conditioning exercises that can also be used for relaxation and to facilitate increased blood circulation to the upper and lower extremities of the body.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of the device constructed in accordance with the present invention in the folded or storage position.

FIG. 2 is an enlarged view of a portion of the device shown in FIG. 1 showing the manner in which the board is elevated to one of several selectable positions. A portion of the device is shown in phantom line to indicate its rest position.

FIG. 3 is an enlarged view of a portion of the device taken substantially along line 2-2 of FIG. 2 showing the parts in a rest position and with a portion in cross section to indicate details of construction.

FIG. 4 is an enlarged isometric view of a portion of the device taken substantially along the line 4-4 of FIG. 1.

FIG. 5 is an enlarged exploded view of a portion of an alternate form of the device taken generally along the line 5-5 of FIG. 6.

FIG. 6 is a side elevation view of an alternate form of the device with a stick representation of a person performing a hip kick exercise.

FIG. 7 is a side elevation view of the alternate form of the device showing a plurality of crossmembers permanently attached to the legs of the support frame with a stick representation of a person performing a leg raise exercise.

FIG. 8 is a side elevation view of the alternate form of the device with a stick representation of a person performing a pullover exercise.

FIG. 9 is a side elevation view of the alternate form of the device with a stick representation of a person performing a cramps exercise.

FIG. 10 is a side elevation view of the device with a stick representation of a person doing a situp exercise.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

The invention consists briefly of a base "A" having a pair of horizontally spaced members 1 and 2 joined at one end 3; a support frame "B" having spaced legs 4 and 5 joined by a crossarm 6 wherein the distal ends of said legs are fixedly and pivotally joined to said spaced members of said base 7 and 8 for at least 180° rotation; a crossmember 9 spanning the distance between said spaced members and separable from said support frame; a plurality of pairs of openings 11 disposed along said support frame for holding said crossmember at selectively varying positions along the support frame; an elongated top board "C" fixedly and pivotally mounted at a first end 12 to the distal ends 13 of the base spaced members; a cross strap 14 attached to the second end 16 of the top member; means "D" affixed to the second end of the top member for selectively releasably and pivotally holding the second end of the top board to the crossmember; and the base, support and top member acting as a three point hinged triangle when assembled and being foldable to a compact portable unit in a disassembled position.

As may be seen in the drawings, the top board is attached to one end of the base frame that rests on the floor and raises on the hinged joint to various degrees of slant. The support frame is attached to the base and acts as a support to elevate the other end of the top board. Crosspieces or rungs attached to the support frame, either removable or fixed, enable the top board to be set at various degrees of slant. The entire assembly folds flat when not in use.

At the elevated end of the top board is a strap that the user places his feet through, to keep in position, while performing declining exercises.

This apparatus can be manufactured by conventional machine shop, cabinet shop and upholstery shop facilities and procedures.

Applicant calls particular attention to the manner in which the assembly of the base and support frame are utilized to afford the hinging and adjustable degrees of slant for the top exercise surface board. This method provides self containment and stabilization of all parts and enables the entire unit to fold flat for use in other exercises to be described later in the specification. By pinning all three members together, Applicant forms one integral structural three-point triangle thereby obtaining a strong lightweight structure. By pinning both ends of the top board, it can be made of much thinner material.

The base frame which provides stabilization for the entire unit may be made of wood, solid metal, certain forms of plastic or metal tubing. High-test strength aluminum tubing is most satisfactory, as it provides lightness and ease of manufacture. The base frame is fabricated preferably by bending or constructing it in a U-shape. The width of the base frame should be about the same as the top board and approximately the same length.

The first or bottom end of the top board is attached to the base frame as shown in the detail in FIG. 1. A bracket having a leg 17 is attached to the board with a leg 18 offset from the board. Each of the base members are pivotally attached as by a pin 19 to the offset leg of the bracket. Thus the top board is fixedly attached to the base frame and yet may be pivoted to the desired angle to elevate the top board. The ends of the base frames could be fitted with rubber plugs to prevent injury to floors or rubber pads such as 21, 22, and 23 may be attached to the base members.

The support frame may be made of the same material as the base frame set forth above but it too is preferably made from high-test strength aluminum tubing. The support frame is fastened to the base frame with a bolt or rivet in such a way as to enable the support frame to fold down when not in use and to raise up to about a 90° angle to support the board or to pivot 180° so that other exercises may be accomplished.

The elevated end of the top board is attached to the support frame in a unique manner. On the underside of the board are

located two cleats 26 and 27 which may be a pair of elongated strips of wood placed in parallel relation and spaced to receive the cross member therebetween as shown in FIG. 3. When the body weight of the user is on the board, the entire unit is firmly locked together from the pressure of the user's weight.

While the cleat method of holding the elevated end of the top board to the support frame is very amply done, special metal adapters such as eyebolts, clips, and hooks can also be utilized for this purpose.

In connecting the top board to the support frame, the crosspieces could be permanently attached thereto as shown in FIG. 7 but preferably the crossmember is a rod which is removably inserted through a plurality of pairs of holes in the support frame. In FIG. 2 the manner of erecting the board or of changing from one elevation is shown. Note that the base, support and top board are dimensioned so that the crossarm and the cross strap are positioned within the width of a hand for holding while changing the position of the crossmember. A person's thumb can be hooked over the crossarm while the fingers hold the weight of the board by the strap. The free hand grasps the crossmember and inserts the end through the parallel pairs of holes.

The support frame is fabricated so that the inside width is the same as the outside width of the floor frame. When fabricated at this width, it is bolted to the outside of the floor frame. This also enables the top board to fit between the uprights of the support frame. While this system is most favorable, it can also be reversed, with the support frame fabricated to fit the inside of the floor frame with the necessary modifications made to the top board and attachments of it to the base frame.

The top board is preferably made of plywood of proper thickness to provide ample rigidity which is ascertained by the selected overall length. For example a board 5 to 7 feet long would require not less than 1-inch plywood in order to prevent excess sag when the user places his body weight on it. Other materials such as plastic, metal, masonite, any type composition board with sufficient rigidity and strength can be used for the top board.

Suitable padding is placed over the top board to eliminate hardness for the user. Paddings 29 such as foam rubber, cotton, hair or felt fillers can be used to provide the desired softness. Foam rubber material in new or remolded is the most practical type of padding to use. The padding is then covered over with a suitable covering 30 such as Naugahyde, plastic, coated materials, leather, canvas or cloth. Naugahyde, however, is the most practical covering.

At the end of that part of the top board that elevates on the support frame, a belt is provided to enable the user to place his feet through for the purpose of holding himself on the board while exercising or reclining with head in the down position. This belt while generally made of webbed belting and attached with suitable fasteners such as screws, staples, nails to the underside unpadded bottom of the top board, loops up and over the top in the appropriate spot to hold the user's feet as shown in FIG. 10. While webbed belting is most suitable material for this belt, other materials such as leather, plastic or rubber would also suffice.

The overall dimensions of the entire unit may vary. It could range from 4 to 8 feet long and from 10 to 36 inches in width. The most practical sizes for general use by most people would be from 5 to 6½ feet in length, and width from 16 to 24 inches.

The height of the support frame may vary from a minimum of 6 inches to a maximum of 5½ feet, depending upon the number of crosspieces required by the user or manufacturer to obtain as many different degrees of slant to the top board as may be required. The most usable and practical height of the support frame to accommodate the most practical recommended overall width and height dimensions of the unit previously mentioned, would be between 3 and 4 feet. The minimum number of permanent or removable crosspieces on the support frame could be one to any number necessary to obtain as many different degrees of slant as the user may

require. The most practical number of crosspieces on the support frame to obtain the most popular required number of adjustments would be between 3 and 6. In FIG. 7, crossmembers 45a, 45b and 45c are permanently attached to the legs of the support frame.

The fact that all the basic parts of the device are pivotally hinged, viz., the top board, base and support frame and specifically due to the fact that the top board can be placed in a horizontal position and the support frame rotated 180° degrees makes possible a great many different types of exercises.

FIGS. 5 through 10 show an alternate way to use the apparatus. In these figures, the top board is laid flat on the floor and the support frame with it ability to rotate 180° performs an entirely new function. In FIG. 7, the person is doing a leg raise. In this exercise the person lies on his back, places his legs over the crossmember 9, and places his feet under the support as shown. The person then repeats the exercise of raising and lowering the support member as indicated by the arrow 32.

FIG. 9 shows a person doing an exercise called cramps which tightens the stomach muscles. In this exercise, the person starts on his back, places his legs over the crossmember and his feet against the crossarm on the support frame. With the arms grasping the sides of the support frame, the person moves his trunk to a half sitting position and then to a position of rest on the board. surprisingly, this is an extremely difficult exercise and the motion indicated by the arrow 33 cannot be repeated very many times without a great deal of practice.

Other exercises which can be done with the board horizontal and with the support upright, to mention a few, are as follows: (1) Tummy tightener: the person lies on his back, hooks his heels over the crossarm and then proceeds to raise his body off the board with only the head and shoulders touching the board. (2) Leg thrust: The person lies on the board with his head at the strap end of the board. The toes are placed on the crossarm 6. The support is then thrust from about a 30 degree angle to a vertical position with the toes now of the person approximately over the person's head. (3) Torso stretch: In this exercise, the person stands on the board, holds the crossarm with one hand and leans away from the support as far as the support will permit. (4) Leg kick: The person stands on the board, balances himself with one hand on the crossarm and then raises the leg away from the support, as high as he can. (5) Leg scissors: the person lies on his back and grasps the sides of the support which is brought to a vertical position. The legs are raised to a nearly vertical position and spread apart and brought back together alternately. (6) Leg curl: The person lies on his stomach and hooks the backs of his heels over the crossmember. The support is then raised and lowered. (7) Shoulder raise: The person lies on his side, grasps the cross arm, and lowers and raises the support. (8) Stretch leg raise: The person lies on his back and places his arms over his head and grasps the crossarm. With the support resting nearly on the floor behind the person, the legs are raised and lowered to the board. (9) Pullover: The person lies on his back, places his arms over his head, grasps the sides of the support and raises and lowers the support.

All of the above exercises are done without and modification of the board except a different arrangement of the parts. Many of the above exercises can be made more difficult to increase body building if there is added a means for resisting pivotal rotation of the support frame between the horizontal and vertical positions. This may be done through a series of springs attached to the apparatus but is here done by attaching weights. In FIG. 5, two means for attaching weights 33 and 34 are shown. Preferably an equal number of weights is added to both sides of the support frame for balance. As shown, the weights are circular with an opening 35 and 36 in the center. If the opening in the center is small, the weights may be placed directly on the ends of the crossmember or on bolts 37 and 38. A washer 39 and a wing nut 40 threaded on the threaded ends of the crossmember or the bolts prevents loss of the weights

during the exercises. Where the opening in the weights is large, as here shown, a sleeve 42 with an opening 43 can be inserted on the crossmember or the bolts. Use of the sleeve avoids threading the entire end of the bolt or crossmember. The bolts with the weights attached can be placed in the openings normally used to hold the crossmember. By placing the weights close to the pivot point of the support, the work necessary to raise the support is relatively less than when the weights are placed further away from the pivot. A dowel 45 with a coaxial opening 46 therethrough is placed around the crossmember to give a better handhold. This dowel could be made of wood, plastic or rubber. The dowel is also referred to as a sleeve.

Another element which may be added to the apparatus is a leg strap 47 which is a circular band of material such as woven fabric, plastic or rubber. One of the exercises using the leg strap is shown in FIG. 6. In this exercise, called a Hip Kick, the person lies on his side on the horizontal top board, places his leg or foot through the strap which is attached to the crossmember. The leg then raises the support with the weights off or attached from a horizontal position to as high as the person can raise his leg.

In FIG. 8 a Pullover exercise is shown in which the person lies on his back, grasps the crossmember and raises and lowers the support from a horizontal to a vertical position and back down again. The motion of the support is shown by arrow 48, and 49.

FIG. 10 shows the basic exercise on the slant board which is the situp. Here the person lies on his back, hooks his feet through the strap and raises and lowers his body from the waist up in the manner shown by the arrows 51.

In many boards, only the basic situp can be done. Applicants' board provides the possibility of doing a great variety of exercises, some of which are listed below: (1) Hip kick: In this exercise, the person elevates the top board and then lies on his side with his head elevated. One hand grasps the side support and the other reaches over the head and grasps the crossarm. The upper leg is then raised and lowered. (2) Hip roll: The person lies on his back with the head elevated. The person reaches over his head and grasps the crossarm. The person then rolls from side to side on his hips with the knees in the tucked position. (3) Neck raise: The person lies on his back with the head elevated and hanging over the upper end of the board. A weight is then placed on the forehead and the head raised and lowered. (4) Back raise: With the board in the elevated position, the person lies on the board on his stomach with the body from the waist up, cantilevered over the upper edge of the board. The feet are hooked to the sides of the board for balance. With the hands under the chin and elbows out, the person bends from the waist, and raises and lowers the upper part of his body. (5) side lateral raise: Here the person lies on his back and with a small weight in both hands stretches the arms straight out to the sides. The arms, with the weights are then lowered and then brought back together above the person. (6) Leg kick: In this exercise, the person raises the board and sits with his feet dangling over the upper side. Weights are then placed on the feet and the feet are raised and lowered. (7) Alternate pullover: The board is raised so that it rests on the crossarm of the support. The person lies on his back and straddles the board so that his feet touch the floor. While holding weights in each hand, the arms alternately make full circles. (8) Supine chins: Here the person places the board in a slightly raised position, and then chins himself on the crossarm. (9) Cross leg raise: The board is raised, and the person lies on his side with his head to the elevated end. The lower arm grasps the crossarm and the upper arm grasps the side of the support. The upper leg is raised and then moved in an arch downwardly until the knee strikes the edge of the board. (10) Leg curls: The person lies on his stomach with the head to the lower end. The legs are cantilevered over the top edge and weights placed on the feet. The legs are bent at the knee and alternately raised and lowered. (11) Arm raise: The person lies on his stomach with his head to the elevated end of

the board. He then, with outstretched arms holding weights, raises and lowers the arms.

The above are but a few of the exercises which are done with applicant's device. When one is through exercising, the board is folded as shown in FIG. 1, stood in a corner or laid flat on the floor.

I Claim:

1. An exercise board adjustable to varying degrees of slant comprising:
 - a. a base having a pair of horizontally spaced members joined at one end;
 - b. a support frame having spaced legs joined by a crossarm wherein the distal ends of said legs are fixedly and pivotally joined to said spaced members of said base for at least 180° rotation;
 - c. a crossmember spanning the distance between said spaced members and separable from said support frame;
 - d. means for holding said crossmember at selectively varying positions along said support frame;
 - e. an elongated top board fixedly and pivotally mounted at a first end to the distal ends of said base spaced members;
 - f. a cross strap attached to the second end of said top member;
 - g. means affixed to said second end of said top member for selectively, releasably and pivotally holding said second end of said top board to said crossmember; and
 - h. said base, support and top member acting as a three point hinged triangle when assembled and being foldable to a compact portable unit in a disassembled position.
2. An exercise board as described in claim 1 wherein said first-named means comprises:
 - a. a plurality of pairs of openings disposed along said support frame; and
 - b. said crossmember being dimensioned for releasable receipt in said pairs of openings.
3. An exercise board as described in claim 1 including a pair of brackets offsetting said first end of said top board from said pivot points.
4. An exercise board as defined in claim 1 including means resisting pivotal rotation of said support frame between the horizontal and vertical positions in a controlled manner.
5. An exercise board as defined in claim 4 wherein said last named means consists of weights demountably attached to said support.
6. An exercise board as defined in claim 4 wherein said means includes members dimensioned for attachment to said support at selectable distances from the pivoted ends of said support frame and for receiving a plurality of weight members.
7. An exercise board as defined in claim 4 including a sleeve dimensioned for coaxial association with said crossmember and being separable therefrom.
8. An exercise board as defined in claim 1 including a leg strap demountably attached to said crossmember.
9. An exercise board as defined in claim 1 wherein said base, support and top board are dimensioned so that said cross arm and said cross strap are positioned within the width of a hand for holding while changing the position of said crossmember.
10. An exercise board adjustable to varying degrees of slant comprising:
 - a. a base having a pair of horizontally spaced members joined at one end;
 - b. a support frame having spaced legs joined by a crossarm wherein the distal ends of said legs are fixedly and pivotally joined to said spaced members of said base for at least 180° rotation;
 - c. a plurality of crossmembers spaced between said support frame and spanning the distance between and attached to said spaced legs;
 - d. an elongated top board fixedly and pivotally mounted at a first end to the distal ends of said base spaced members;
 - e. a cross strap attached to the second end of said top member;

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f. means affixed to said second end of said top member for selectively, releasably and pivotally holding said second end of said top board to said crossmembers; and

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g. said base, support and top member acting as a three point hinged triangle when assembled and being foldable to a compact portable unit in a disassembled position.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,545,748

Dated December 8, 1970

Inventor(s) Jack E. Delinger

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Figure 7, change numeral "45" to -- 45b --; delete the center line designations through openings 11; delete number and its lead lines; apply two crossmembers similar and parallel to crossmember 45b between spaced legs 4 and 5 in positions respectively corresponding to the positions of the lower and upper openings 11 in Figure 2, the lower crossmember being designated by numeral 45a and the upper crossmember being designated by numeral 45c. --.

Signed and sealed this 16th day of May 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents