

Sept. 21, 1971

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3,606,987

TABLE TENNIS TRAINING DEVICE

Filed Aug. 10, 1970

4 Sheets-Sheet 1

Fig. 1

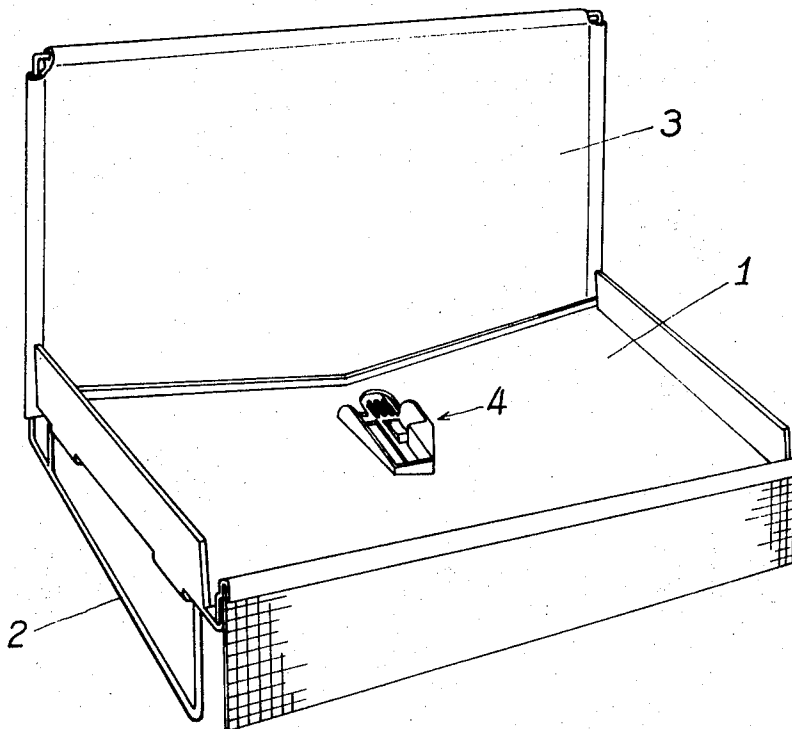
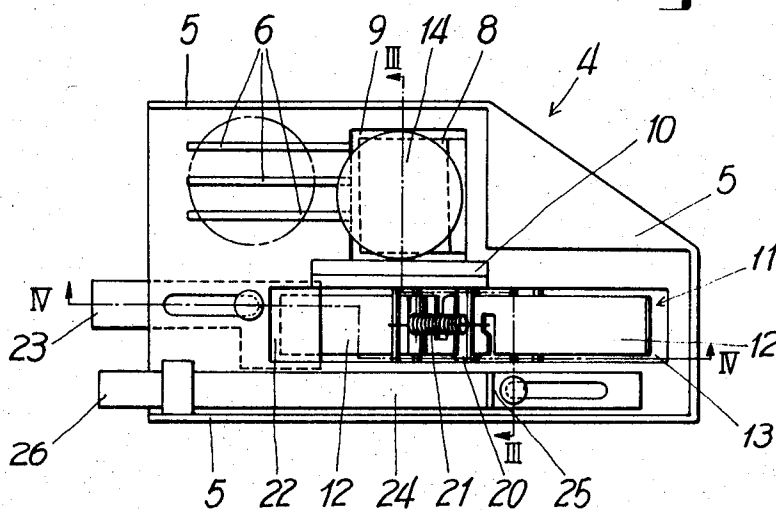


Fig. 2



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4 Sheets-Sheet 2

Fig. 3

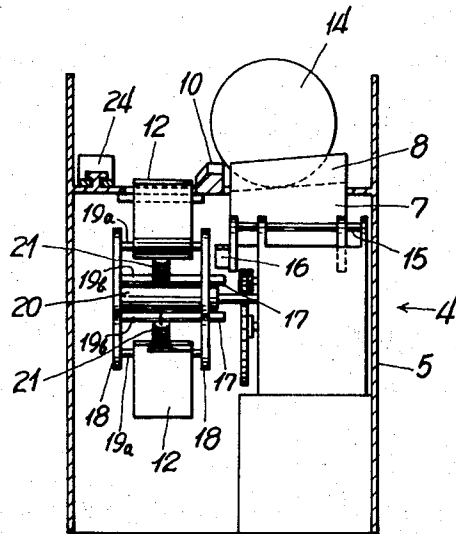
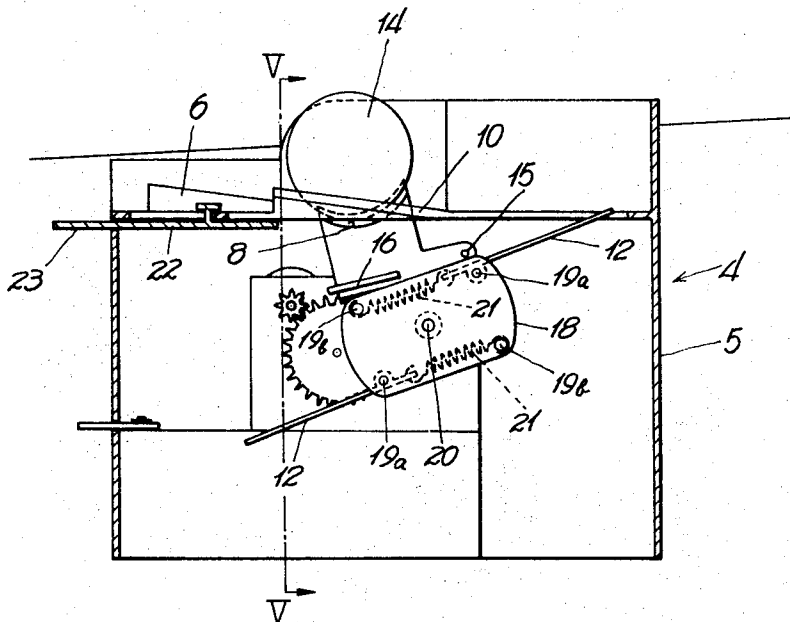


Fig. 4



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4 Sheets-Sheet 3

Fig. 5

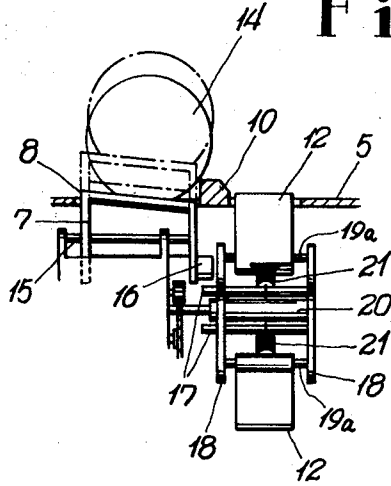


Fig. 6

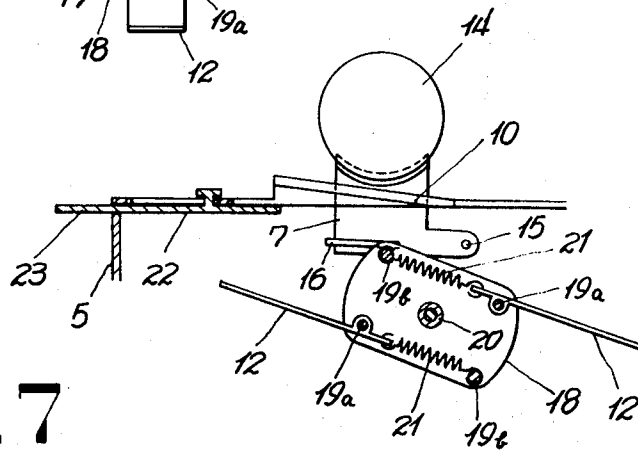
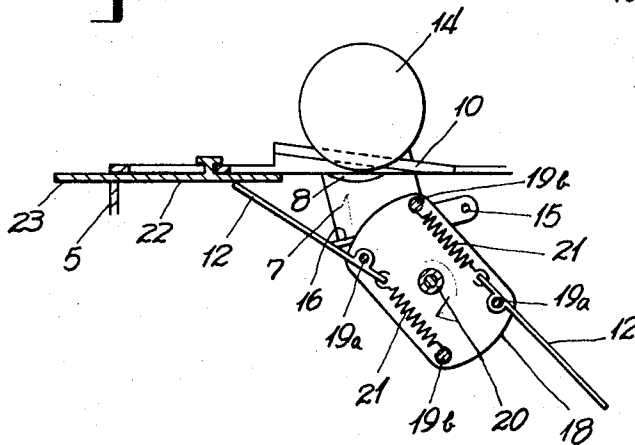


Fig. 7



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4 Sheets-Sheet 4

Fig. 8

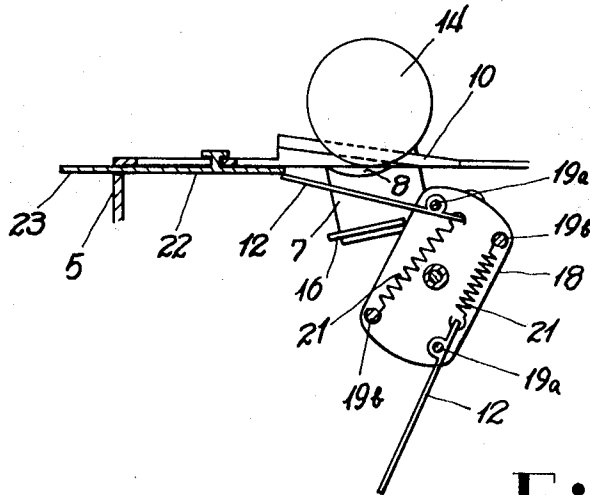
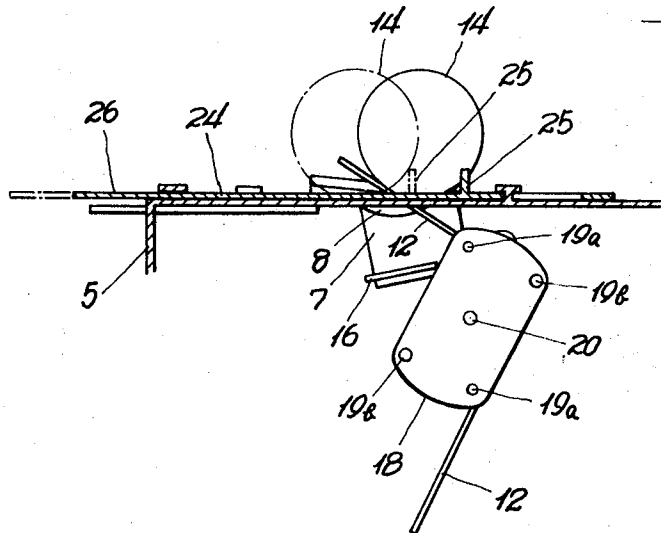


Fig. 9



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1

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TABLE TENNIS TRAINING DEVICE
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45/34,529

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U.S. Cl. 273—30

5 Claims

ABSTRACT OF THE DISCLOSURE

A table tennis training device comprises a table tennis board which inclines moderately down toward the place behind the center of said board, a shooting means installed at the center of said board so as to shoot intermittently table tennis balls one by one to the front of said board, and a backnet or a backsheet standing up on the rear brim of said board so as to ward balls which are struck back by a racket of a trainee. Said balls fall on said board, roll down toward the place behind the center of said board and are led into the shooting means. The shooting means comprises a motor-driven rotatable member which pivotally supports a pair of 180°-spaced and spring-biased ball striking plates. As the member rotates, the tip of a plate will be temporarily restrained to tension its spring and then released to strike a ball. The balls are automatically lifted one at a time from a supply source into position to be struck by a released plate. Therefore, the trainee may alone train on the table tennis without an opponent by employing this device.

This invention relates to a device for alone training on the table tennis without an opponent.

Therefore, one object of this invention is to provide a table tennis training device for a trainee who has not an opponent.

Another object of this invention is to provide a table tennis training device to shoot automatically and intermittently balls one by one for training on the table tennis.

Still another object of this invention is to provide a table tennis training device to collect automatically back struck balls for training on the table tennis.

Briefly stated in accordance with one aspect of this invention, there is provided a table tennis training device comprising a table tennis board, a shooting means installed at the center of said board and a backnet or a backsheet standing on the rear brim of said board. Said table tennis board has an appropriately wide area and is inclined down toward the place behind the center of said board. Said shooting means comprises a shooting frame, an inclined guide rail, a ball supplier having an inclined guide channel, an obstructing bar and a rotating means having a pair of ball hitting plates. Some table tennis balls are charged on the board, then the balls collect on the place behind the center of said board. When the table tennis training device is driven by a motor, said balls are led one by one orderly onto said ball supplier and said rotating means through said inclined guide rail. Said balls are hit one by one by a pair of ball hitting plates of said rotating means and are flied up on the front of said board and bound on said board. Said bounding balls are struck back by a racket of a trainee and are warded on the backnet or the backsheet. Said warded balls fall on

2

said board and collect on the place behind the center of said board again. The mechanism of the table tennis device is driven by the motor and acts as an opponent to the trainee.

This invention will be better understood and other objects and additional advantages of the invention will become apparent upon perusal of the following description taken in accordance with drawings, in which:

FIG. 1 is a perspective view of a table tennis training device thereof;

FIG. 2 is a plan view of a shooting means thereof;

FIG. 3 is a sectional view taken along the line III—III of FIG. 2;

FIG. 4 is a sectional view taken along the line IV—IV of FIG. 2;

FIG. 5 is a sectional view taken along the line V—V of FIG. 4;

FIGS. 6-8 are illustrating side views showing the movements of a pair of ball hitting plates in a rotating means; and

FIG. 9 is an illustrating view showing a position adjusting bar for adjusting the position of the table tennis ball laid on the rotating means and the movement of the ball hitting plates.

Referring more particularly to the drawings, the preferred embodiment of this invention will now be described as follows.

A table tennis board 1 supported by legs 2 has an appropriately wide and rectangular surface which inclines down toward the place behind the center of said surface. A backnet or backsheet 3 is spread up at the rear brim of the table tennis board 1. The low place of the center of said board 1 is cut out and provided with a shooting means 4 which comprises a shooting frame 5, an inclined guide rail 6, a ball supplier 7 having an inclined guide channel 8, an obstructing bar 10, a rotating means 11 having a pair of ball hitting plates 12 and 12. Said inclined guide rail 6 is fixed to the upper portion of the shooting frame 5 so as to lead spontaneously the balls onto said guide channel 8.

Said ball supplier 7 is inserted in a square hollow 9 of the shooting frame 5 and the upper portion of the ball supplier 7 become said inclined guide channel 8 which inclines down toward the rear opening of a long rectangular hollow 13. Said ball supplier 7 is pivoted with a supporting axis 15, which is fixed at the bottom edge of said supplier 7, inside said square hollow 9 so as to turn up and down said ball supplier 7. A contact member 16 attached to the side of said ball supplier 7 adjacent to the rectangular hollow 13 engages with a pair of bosses 17 and 17 of said rotating means 11. Said obstructing bar 10 is fixed on the upper surface of said shooting frame 5 between said square hollow 9 and said rectangular hollow 13 so as to obstruct dropping the ball 14 on the hollow 13. Said rotating means 11 comprises a pair of side rotating plates 18 and 18, two pairs of supports 19a, 19a, 19b and 19b and a pair of said ball hitting plates 12 and 12, and is pivoted with a rotating axis 20 inside said rectangular hollow 13. Each said ball hitting plate 12 are pivoted with each one of the first pair of said supports 19a, respectively, between a pair of said side rotating plates 18 and 18. A pair of tensile spiral springs 21 and 21 are hung between a base edge of each said ball hitting plate 12 and each one of the second pair of said supports 19b, respectively, so as to pull said ball hitting plates 12 and 12. Said

3

bosses 17 and 17 are protruded outside one of said side rotating plates 18 as the extension of the supports 19b and 19b so as to engage with said contact member. Each of said bosses 17 touches to and separates from said contact member 16 once during one revolution of said rotating means 11, therefore the ball supplier 7 is turned above by touch and is turned below by separation twice during one revolution of said rotating means 11. Namely, the guide channel 8 is raised above the obstructing bar 10 upper surface of the shooting frame 5 and the rear opening of the rectangular hollow 13 so as to adjust the upper surface of the shooting frame 5 and the rear opening of the rectangular hollow 13 so as to adjust the opening of said rectangular hollow 13 and to control the repulsion of the ball hitting plates 12 by contact with said repulsion adjusting plate 2, and a stem 23 of the repulsion adjusting plate 22 is protruded from the rear side of the shooting frame 5. A position adjusting bar 24 having a stopper 25 at the front portion of said bar 24 is slidably attached along the longitudinal brim of the rectangular hollow 13 opposite to the obstructing bar 10 and a stem 26 of said bar 24 is protruded from the rear side of the shooting frame 5.

As this invention comprises the above construction, some table tennis balls, which are charged on the table tennis board 1, collect around the shooting frame 5. Said balls 14 are led one by one onto said inclined guide channel 8 of said ball supplier 7 through said inclined guide rail 6 by inclination of said rail 6. When a motor is driven to rotate the rotating axis 20, the rotating means 11 rotates as shown by the arrow mark in FIGS. 4 and 6-8. The repulsion adjusting plate 22 may be protruded at will on the opening of said rectangular hollow 13 by the stem 23 and the extremities of the ball hitting plates 12 and 12 are made to engage with the front portion of said adjusting plate 22. Therefore, the tensile spiral spring 21 and 21 are stretched and reserves the repulsion as shown in FIGS. 6 and 7. When the protrusion of the adjusting plate 22 on the opening of said rectangular hollow 13 is longer, the repulsion is stronger. When the ball hitting plate 12 is disconnected from the adjusting plate 22 as shown in FIG. 8, the ball 14 mounted on the opening of the rectangular hollow 13 is hit by said ball hitting plate 12 and fled toward the front of the board 1. The ball 14 falls on said board 1 and bounds toward a trainee. Then said ball 14 is struck back by a racket, fled toward the backnet 3, warded on said backnet 3, falls on the board 1 and rolls down the lower place of said board 1.

Each said boss 17 pushes up slightly the ball supplier 7 by contact with the contact member 16 while the ball hitting plate 12 separates from the repulsion adjusting plate 22. Therefore the inclined guide channel 8 is raised above the obstructing bar 10 and the ball 14 laid on said inclined guide channel crosses over said obstructing bar 10 and falls on the empty opening of said rectangular hollow 13. Thus the balls 14 are alternately supplied and shot by the shooting means 4.

The repulsion of the ball hitting plates 12 and 12 may be controlled by adjusting the length of protrusion of the repulsion adjusting plate 22 on the opening of the rectangular hollow 13, namely when the protrusion of the repulsion adjusting plate 22 is longer, the tensile spiral spring 21 is made to stretch longer and reserves the stronger repulsion. Accordingly, when the protrusion of the repulsion adjusting plate 22 is shorter, the repulsion of the ball hitting plate 12 is weaker. Therefore, the strength hitting the ball 4 is controlled according to the skill of the trainee. Said position adjusting bar 24 is provided so as to slide on the longitudinal brim of said rectangular hollow 13 and said stopper 25 is attached to the front portion of said position adjusting bar 24 in order to adjust the position of the ball 14 to ride on the opening of the rectangular hollow 13. The direction hitting the ball 14 is different according to the position of the ball

4

14 riding on the opening of the rectangular hollow 13, namely when the position adjusting bar 24 is pushed forward, the ball 14 is hit at the relatively high surface of the ball 14 so as to fly low said ball 14 and when the position adjusting bar 24 is pulled rearward, the ball 14 is hit at the relatively low surface of the ball 14 so as to fly highly said ball 14.

As described above, this invention may control not only the shooting strength but the flying height in accordance with the skill of the trainee, therefore he may alone train the table tennis in various ways. Also, the trainee need not pick up the back struck balls, therefore he may absorbedly train only hitting. Thus this invention is the table tennis training device which is very available for physical training and table tennis technique.

While a particular embodiment of this invention has been illustrated and described, modification thereof will readily occur to those skilled in the art. It should be understood therefore that the invention is not limited to the particular arrangement disclosed but that the appended claims are intended to occur all modifications which do not depart from the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A table tennis training device, comprising a support having a circumferential margin and an upper surface provided with a cutout and sloping inwardly and downwardly from said margin toward said cutout; a backstop extending along a portion of said margin and also upwardly thereof; ball serving means in said cutout and comprising a frame having an upwardly directed opening adapted to receive and retain a ball, guide means for guiding balls into said opening, rotary means mounted for rotation about an axis and comprising a carrier element and two elongated plate elements extending transversely of said axis and each having an inner end portion pivoted to said carrier element and a remote outer end portion adapted to enter into said opening upon rotation of said carrier element, a pair of springs each connected with said carrier element and with one of said end portions and permanently urging the respectively associated plate element to a predetermined orientation relative to said carrier element, and drive means for rotating said carrier element about said axis; deflecting means positioned for engagement with the respective outer end portion for thereby pivotally deflecting the associated plate element and stressing the respective spring during rotation of said carrier element through a portion of arc, and for subsequent release of said outer end portion upon rotation of said carrier element beyond said portion of arc so that during the resultant abrupt return of the plate element to said predetermined orientation by the associated spring the thus released outer end portion enters into said opening and ejects a ball located therein; retaining means for retaining balls on said guide means against entry into said opening; and lifting means actuated by said carrier element and operative for periodically lifting a ball on said guide means to a level at which the ball clears said retaining means and enters said opening.

2. A device as defined in claim 1, said carrier element comprising two plate portions spaced from one another longitudinally of said axis, and connecting portions extending between and connecting said plate portions with one another.

3. A device as defined in claim 1, said deflecting means comprising a deflecting member mounted for movement between a plurality of positions in which it engages said outer end portions during rotation of said carrier element through different portions of arc with concomitant stressing of the respective spring to different extents dependent upon the position of said deflecting member for thereby modulating the force with which a ball located in said opening is ejected therefrom.

4. A device as defined in claim 3, said opening being elongated in direction normal to said axis and having a

5

first edge and a second edge respectively located at opposite lateral sides of said axis; and wherein said deflecting member is mounted for movement longitudinally of said opening from said first towards said second edge thereof.

5. A device as defined in claim 1; and further comprising a position adjusting element movable along said opening and operative for adjusting the position which a ball can assume on entry into said opening.

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U.S. Cl. X.R.

124—16, 36, 51