Oct. 2, 1956 J. E. COOK 2,765,171

BALL RETURN AND THROWING DEVICE

Filed Oct. 1, 1953 2 Sheets-Sheet 1

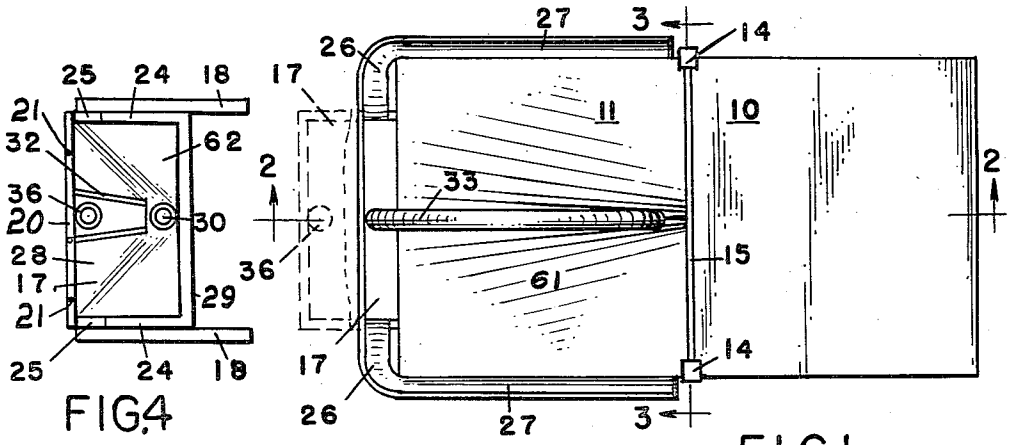


FIG.4

FIG.1

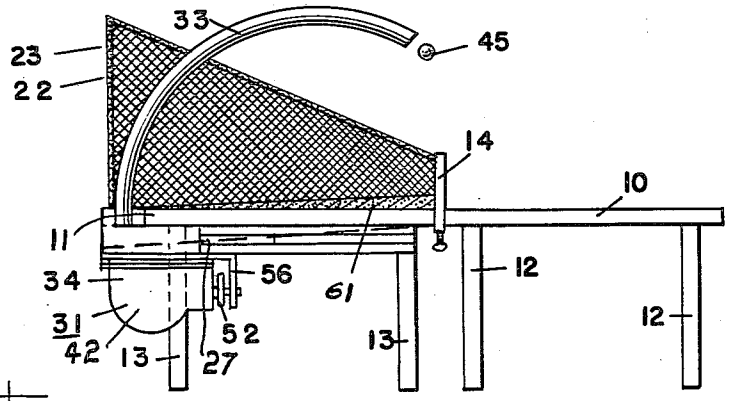


FIG.2

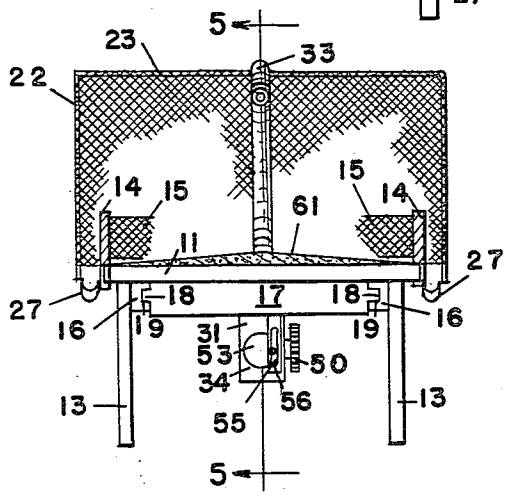


FIG.3

INVENTOR.

JAY E. COOK

BY Howard J. Whelan.

ATTORNEY

Oct. 2, 1956 J. E. COOK 2,765,171

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Filed Oct. 1, 1953 2 Sheets-Sheet 2

FIG.6.

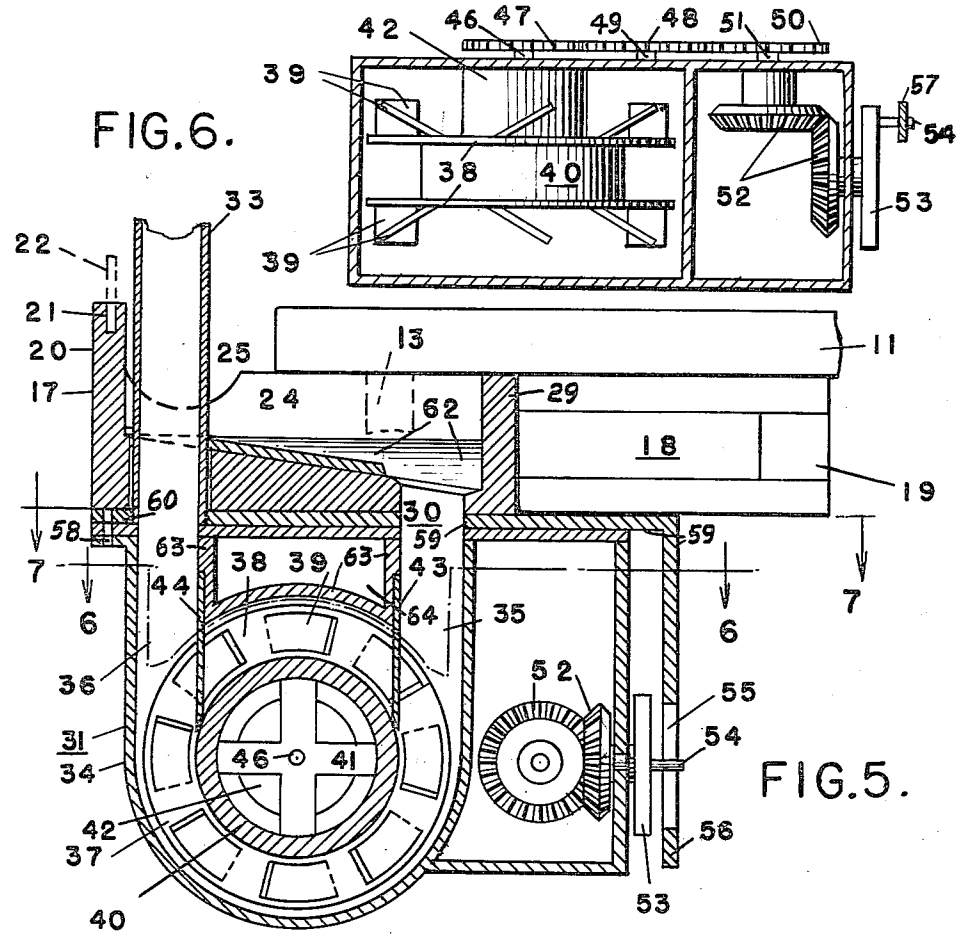


FIG.5.

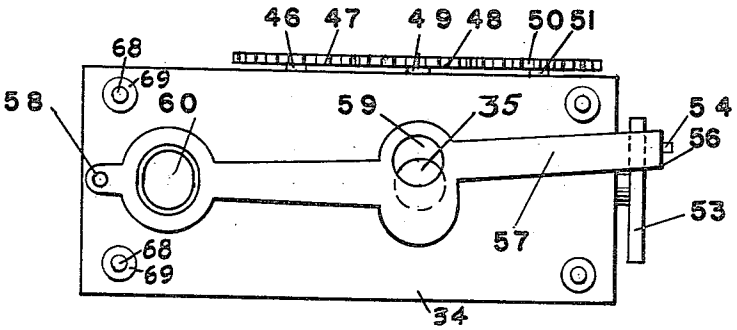


FIG.7.

INVENTOR.

JAY E. COOK

BY Howard J. Whelan.

ATTORNEY

United States Patent Office

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BALL RETURN AND THROWING DEVICE

Jay E. Cook, Cockeysville, Md.

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8 Claims. (Cl. 273—30)

This invention relates to games and more particularly to those included within the class of ping pong and similar ball games and is an improvement over the one shown in application Ser. No. 340,014.

The conventional ping pong table is fitted with a net stretched transversely across the table and is played by at least one player positioned at each end and the players hit the ball back and forth.

It is an object of this invention to provide a new and improved ball retrieving and throwing device that will avoid one or more of the disadvantages and limitations of the prior art.

Another object of the invention is to provide a portable ball retrieving and throwing device for attachment to a conventional ping pong table to return the balls under pressure to an individual player at intervals.

It is a further object of the invention to provide a new and improved practice machine for serving ping pong balls to a player to enable him to practice indefinitely without the help of other individuals and to have his skill improved by the variable directioning of the balls as they are forcibly delivered to him.

It is another object of this invention to provide a new and improved ping pong practicing machine that will be attractive in design, and effectively imitate the vagaries of the ball travel encountered in playing the game of ping pong with another player and will also be easily attached to a regular ping pong table and be removable therefrom.

Other objects will become apparent as the invention is more fully set forth.

For a better understanding of the invention and the objects thereof, reference is made to the accompanying drawings, wherein a form of the invention is shown, and in the following specification described.

In the drawings:

Figure 1 is a plan view of a ping pong table fitted with a ball retrieving and throwing device embodying this invention;

Figure 2 is a sectional view taken on line 2—2 of Figure 1;

Figure 3 is a sectional view taken on line 3—3 of Figure 1;

Figure 4 is a plan view of the drawer removed from the table;

Figure 5 is a partial sectional view taken on line 5—5 of Figure 3;

Figure 6 is a sectional view of the shifting device taken on line 6—6 of Figure 5; and

Figure 7 is a top plan view taken on line 7—7 of Figure 5.

Similar reference characters refer to similar parts throughout the drawings.

Referring to the drawings, table tops 10 and 11 are supported by legs 12 and 13 respectively and are joined together by clamps 14 that also act as supports for the net 15 and guide rails 16 are attached to the legs 13 of the table top 11 and support and guide the removable

drawer 17. The removable drawer is fitted with tongues 18 that slidably fit into slots 19 in the guide rails 16 to enable the drawer to be easily attached to or removed from the said table. The drawer 17 is fitted with a rear wall 20 and holes 21 to receive posts 22 of a barrier member 23, and the side walls 24 have cut-out portions 25 to receive the ends 26 of the return troughs 27. The bottom 28 of drawer 17 slopes from the rear and side walls towards the front wall 29 to direct the ping-pong balls towards the holes 30 and then through the latter into the ball returning or throwing device 31 to be described later. A tapered block 32, attached to the bottom 28 of the drawer 17, guides the balls into the hole 30 for passage through the inlet 35 to the ball retrieving and throwing machine. The end of the tapered block 32 adjacent to wall 20 is cut-out to allow the delivery tube 33 to project therethrough. The ball returning or throwing device 31 comprises a casing 34 attached to and movable with drawer 17 and has an inlet member 35 and outlet member 36 that interconnect with an impeller wheel 37. The impeller wheel 37 is formed with side plates 38 having ears 39 and said plates are connected to a ring 40 secured to and supported on a spider 41 and driven by a motor having a housing 42. This enables the impeller wheel to rotate around the motor housing and saves space. The motor is suitably supported between the side walls of the casing 34 of the throwing and returning device 31. The inlet member 35 and outlet member 36 of the throwing and returning device 31 are fitted with guide plates 43 and 44 respectively to guide the ping pong ball 45 from the inlet, around between the plates 38 and through the outlet 36 and delivery tube 33 towards the operator. The lower end of tube 33 is mounted in a deflector plate to be described later and said plate oscillates the tube as a whole. One method adopted to produce this result in this device, comprises the mounting of a gear 47 on the motor shaft 46 and said gear drives an idler gear 48 supported on a stub shaft 49 and gear 48 in turn rotates a gear 50 mounted on a shaft 51 to drive bevel gears 52 and disc 53. The disc 53 through its pin 54 operating in an elongated slot 55 of the arm 56 moves a deflector plate 57 pivoted at 58 to the top wall of the casing 34. The deflector plate 57 is provided with a hole 59 to allow the returned ping pong balls 45 to enter the inlet 35 and leave through the outlet 36 and elongated hole 60 in the plate 57. As disclosed in Fig. 5, the inlet or lower end of tube 33 is secured to the wall structure of the opening 60 and is oscillated by the deflector plate about pivot 58. The inlet end of the tube 33 swings through a short arc due to its proximity to said pivot, while the outlet end of the tube naturally describes an arc of a larger circle owing to its distance from said pivot. A tapered mat 61 is placed on the top of the table 11. In the operation of the device the motor is started and a ball is delivered by the tube 33 to the player who strikes it with a conventional paddle, and drives the ball over the net 15 against the barrier member 23 and the ball bounces back on the tapered mat 61 that guides the ball into one of the return troughs 27 carried by the barrier member 23. The ball passes into the drawer where it rolls along the angled face 62 into the hole 30 and rests on the deflector plate 57 until the hole 59 aligns with the inlet hole 35, allowing the ball to drop down and be carried along by a column of air pressurized by the vanes or ears 39 and carried through the outlet 36 and delivery tube 33. Since the outlet end of tube 33 swings through a relatively long arc and the ping pong balls are light and comparatively flimsy and not machined to close tolerances, when discharged from said tube, they will be ejected in an erratic manner to be struck by the paddle. The guide plates 43 and 44 are mounted on a support 63 attached

to the side walls 64 of the casing 34. The hole 59 in the plate 57 can be made elongated to enable the ball 45 to pass through into the inlet 35 regardless of the location of the deflector plate 57. When it is desired to use the ping pong table in the regular manner with a player at each end of the table, the drawer 17 is removed from the guide rails of table 11 and mat 61 and the game played in the regular manner.

The housing 34 of device 31 may be secured to drawer 17 by any suitable means, which would leave a space between the bottom of the drawer and the top of the casing. Such means might be threaded members 68 projecting from the top wall of the casing through the bottom of the drawer and having nuts threaded on to their top ends, and spacing washers 69, for instance, may surround the bolts and be interposed between the casing 34 and the drawer.

As disclosed on the drawing, troughs 27 are carried by barrier member 23 and, when the device is in use, said troughs extend along the side edges of table 11, below the top thereof. The barrier member is secured to the rear wall 20 of the drawer 17 by means of posts 22. Therefore, when the drawer is removed from the table, the barrier member 23 and the troughs 27 are carried along with it. The barrier member consists of an open meshwork, as shown in Figs. 2 and 3, and may be made up of any light reticulated material. Since ping pong balls are probably never of perfectly spherical form and momentarily are distorted after being struck, and, since no amount of skill could make the balls hit any particular parts of the reticulated barrier 23, the moment when any ball enters inlet 35, through opening 30, is merely a matter of chance, and therefore the position of the discharge end of tube 33, when the ping pong ball is discharged therefrom is also a matter of chance.

While but one general form of the invention is shown in the drawings and described in the specification, it is not desired to limit this application for patent to this particular form as it is appreciated that other forms of construction could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. An attachment for use in connection with one end of a ping pong table or the like; said attachment comprising the combination with a drawer-like structure having a base and a rear wall extending upwardly from the base, of a ball moving structure including a casing secured to said base, a barrier secured to said rear wall and an arcuate delivery tube, annular in cross section, curving upwardly and forwardly with respect to said rear wall; said base having an opening located substantially midway of the sides of said base and near the front end thereof, a second opening of larger cross section than the first opening and in line therewith and located adjacent said rear wall, and a guide block traversed by said second opening and having a formation to direct a ball into the first mentioned opening; said ball moving structure including means forming a conduit having a U-shaped wall, an impeller wheel including oppositely disposed side plates having vanes thereon for producing a current of air through said conduit, a motor connected to said wheel for rotating the same, tube supporting means pivoted adjacent one end thereof to said casing, and means operated by said motor for oscillating said tube supporting means; said arcuate tube having its lower end freely passing through the second mentioned opening and having its inlet end secured to said supporting means and said conduit having an inlet in register with the first mentioned opening in the base and an outlet positioned to have the inlet of said tube communicate therewith.

2. An attachment of the type set forth in claim 1 in which said tube supporting means comprises a strap like member, having a portion provided with an opening therein in position to be brought into register with the first mentioned opening and with the inlet of said conduit.

3. An attachment of the type set forth in claim 2 in which part of said strap-like member extends across said casing and the free end of said member is turned downwardly and has a slot therein and said means for oscillating the tube supporting means includes a gear member having a pin projecting therefrom into said slot.

4. An attachment of the type set forth in claim 1 in which said barrier includes oppositely disposed side members having trough-like elements at the lower ends thereof and means placing said elements in communication with the portion of the second mentioned opening which traverses said block.

5. The combination with a ping pong table structure of a device removably secured to one end thereof, said device including a tube, a drawer like structure, a barrier of open mesh work carried by said drawer-like structure, means for oscillating said tube, means for retrieving a ball striking said barrier, and means for forcibly propelling the retrieved ball through said tube, and a mat carried by said table structure and having a top portion formed to direct a ball striking the same toward said barrier, said tube being of arcuate form and having its lower end secured to said oscillating means and its upper end directed toward the end of the table structure opposite the first mentioned end of the latter.

6. A combination of the type set forth in claim 5 in which said device includes a casing secured to the bottom of said drawer-like structure, means forming a conduit located in said casing and having an outlet in communication with the inlet of said tube and an inlet, and means placing said ball retrieving means in communication with the inlet of said conduit.

7. A combination of the type set forth in claim 6, in which the ball propelling means includes a rotary structure provided with vanes for circulating air through said conduit, and a motor in said casing for driving said rotary structure.

8. A combination of the type set forth in claim 7, in which the tube oscillating means includes a strap-like member pivoted to said casing and having one end of the tube secured thereto, said strap-like member having one end thereof driven by said motor.

References Cited in the file of this patent

UNITED STATES PATENTS

1,201,626	Reynolds	Oct. 17, 1916
1,223,386	Handelan	Apr. 24, 1917
2,333,098	Forsyth	Nov. 2, 1943
2,470,318	Nadelson	May 17, 1949
2,508,461	Lemon	May 23, 1950
2,629,594	Forsyth	Feb. 24, 1953