



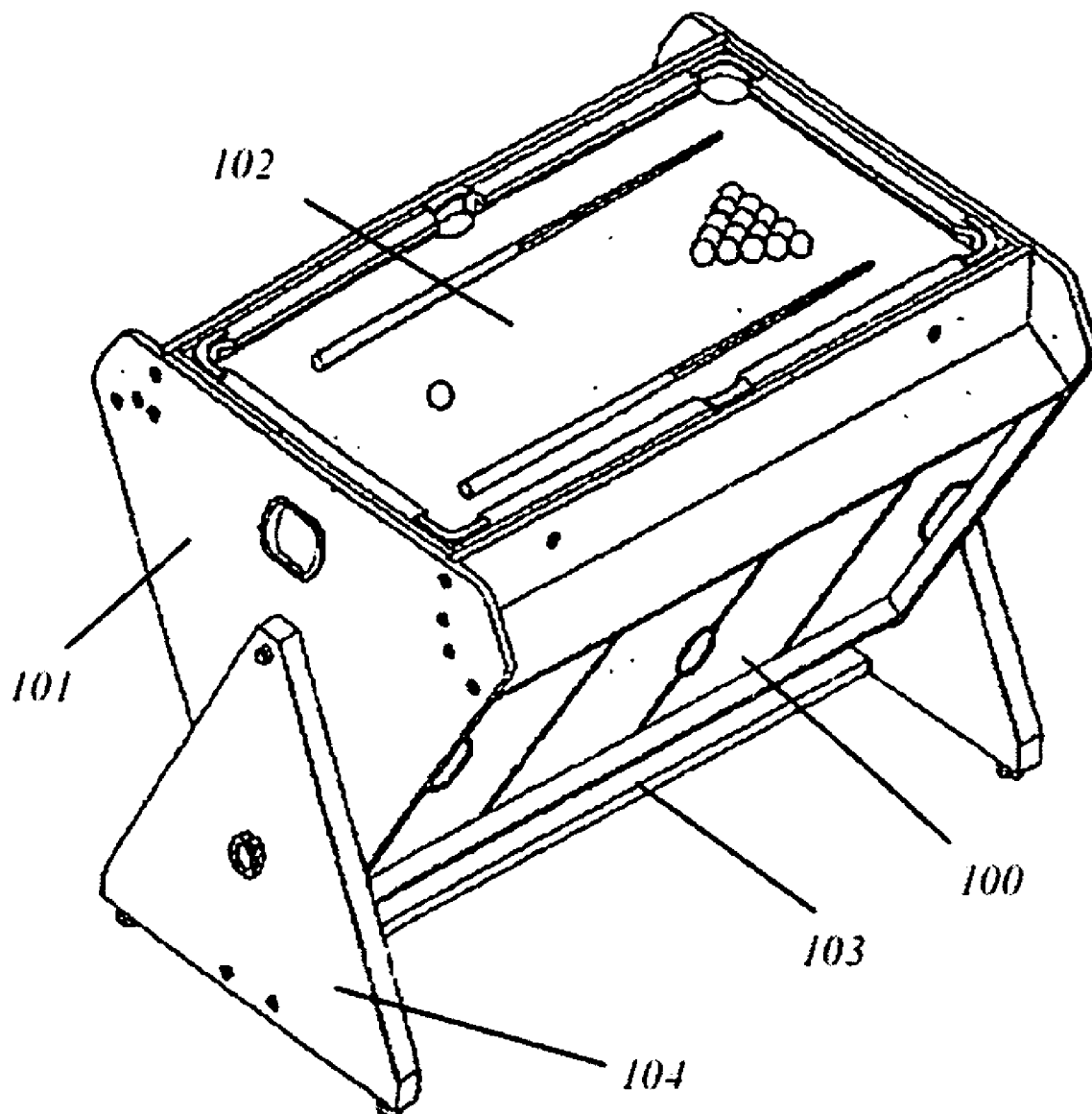
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(19) **United States**(12) **Patent Application Publication**
Chen(10) **Pub. No.: US 2005/0104294 A1**(43) **Pub. Date: May 19, 2005**(54) **MULTIPLE GAME TABLE**(52) **U.S. Cl. 273/309; 273/126 R; 473/10;
473/14; 473/496**(76) **Inventor: Samuel Chen, Hong Kong (CN)**

Correspondence Address:
LAW OFFICES OF CLEMENT CHENG
17220 NEWHOPE STREET #127
FOUNTAIN VALLEY, CA 92708 (US)

(57) **ABSTRACT**(21) **Appl. No.: 10/714,725**(22) **Filed: Nov. 17, 2003****Publication Classification**(51) **Int. Cl.⁷ A63D 15/04; A63B 67/04;
A63B 71/04**

The present invention allows use of three table surfaces. A billiard table, a table tennis table and an air hockey table can be combined into a single piece of furniture. Other table faces such as a dining table, a croquet table, or a poker table can be similarly integrated. The basic furniture geometry includes three rectangular playing surfaces joined at their periphery to form a hollow body having a triangular equilateral cross section supported by a frame.



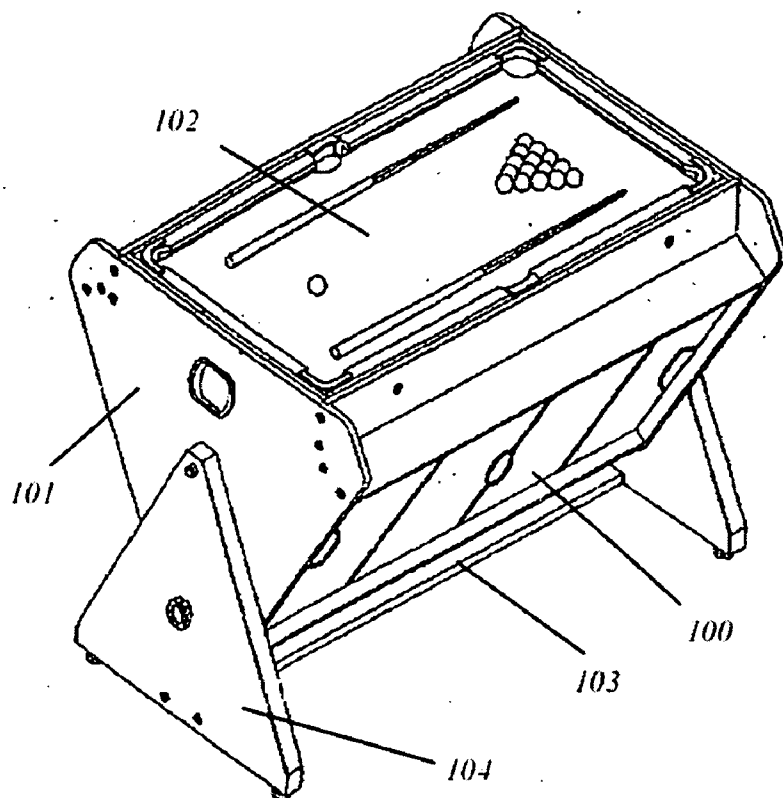


FIG. 1

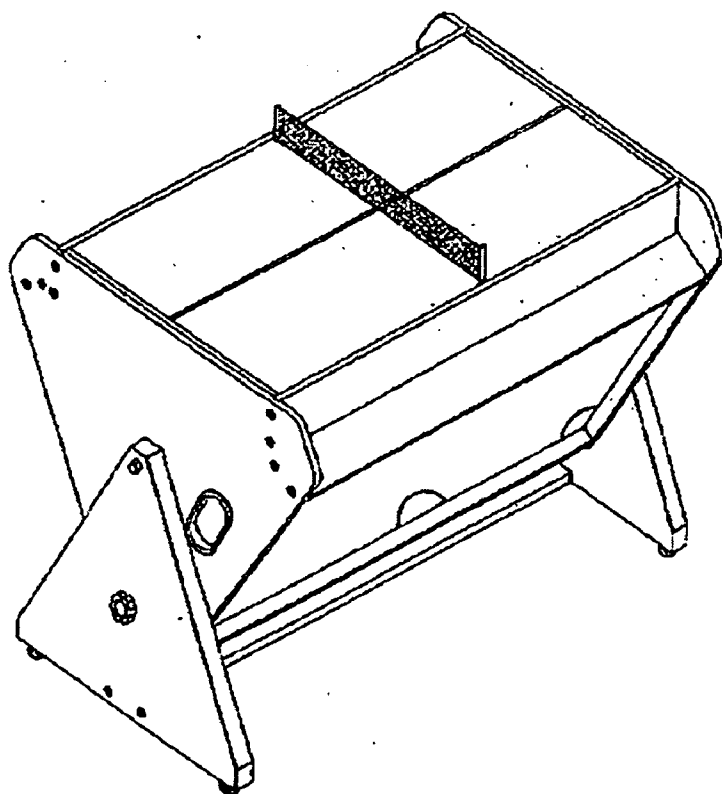


FIG. 2

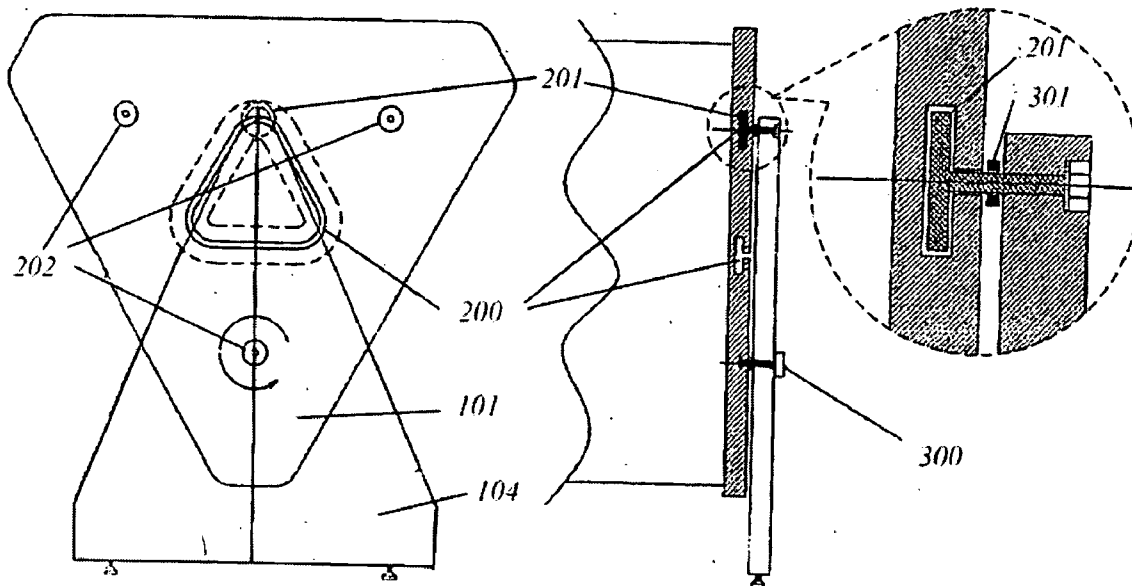


FIG. 3

FIG. 4

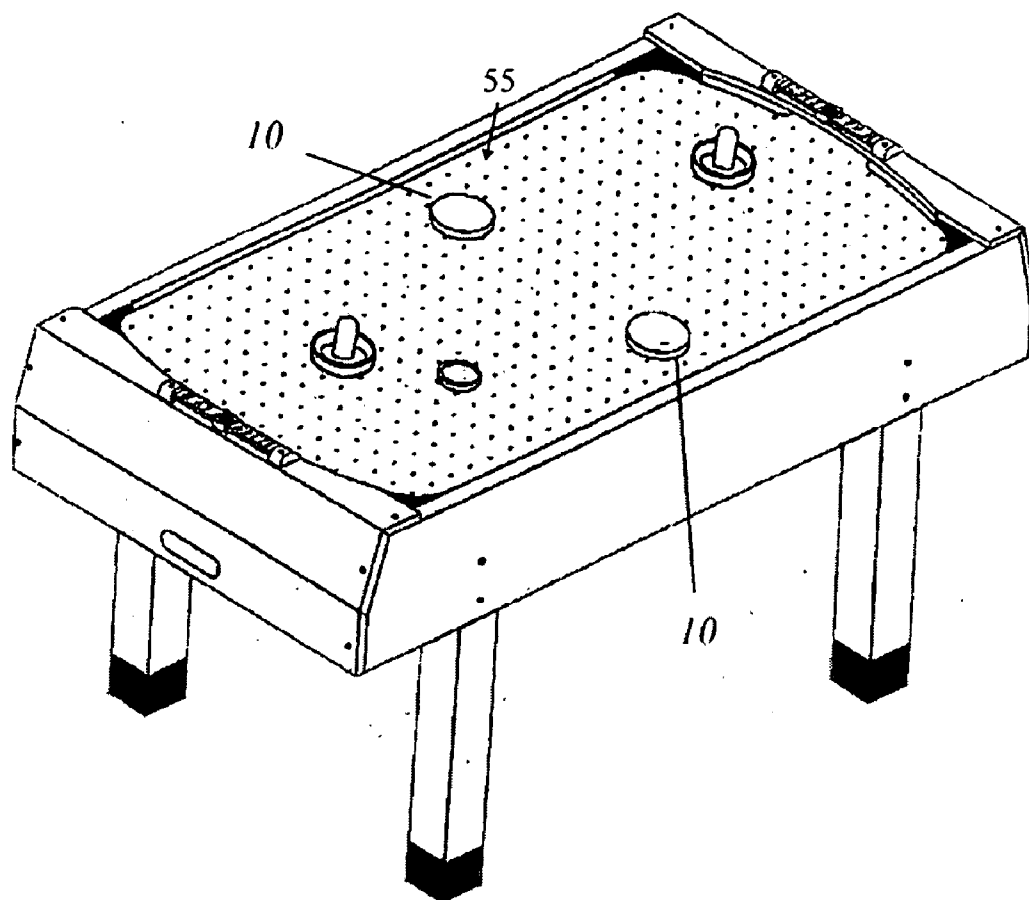


FIG. 5

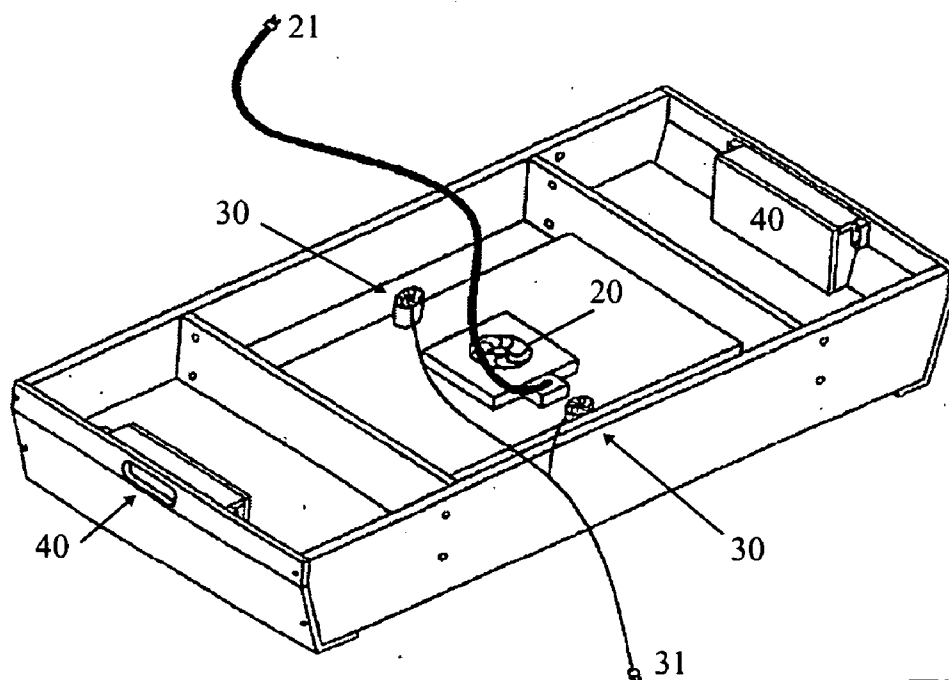


FIG. 6

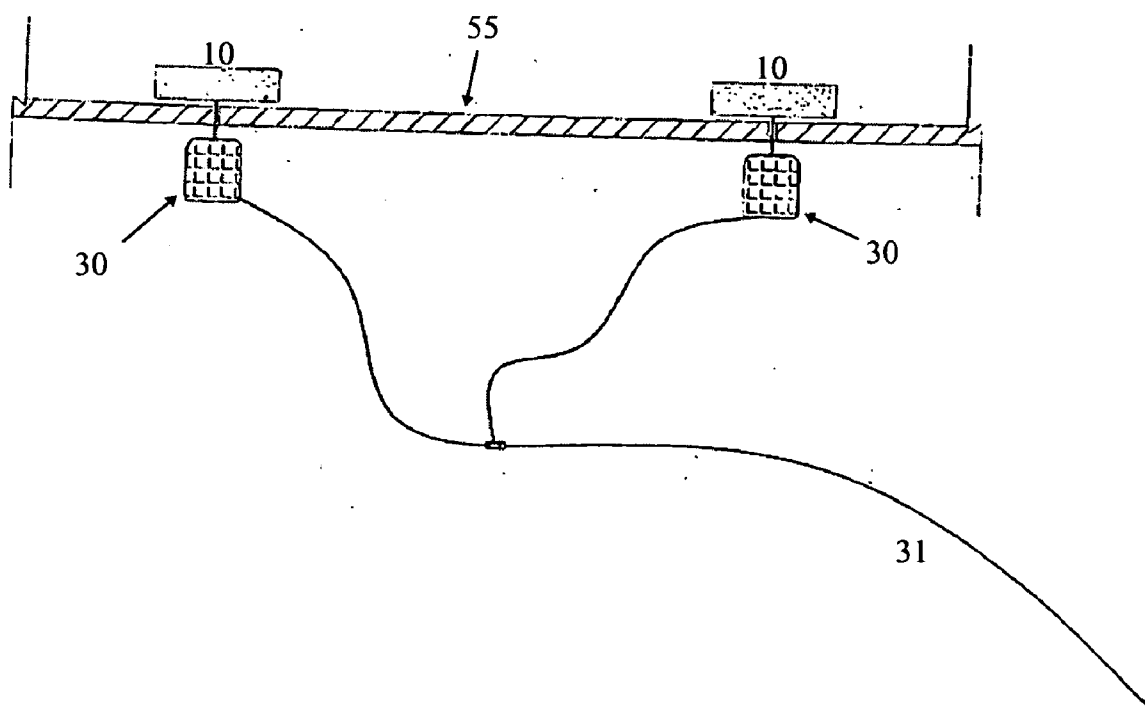


FIG. 7

MULTIPLE GAME TABLE

DISCUSSION OF RELATED ART

[0001] The family game room is a place where friends and family gather for playing games such as billiards, table tennis, and air hockey. Because many games require floor space, some family game rooms can only fit one or two of the games they like to play. Thus, it is desirable to have a variety of games in less floor space.

[0002] For space saving benefits, a variety of rotating tables have been invented to use both sides of a table surface. The billiard and dining table combination was invented as early as the 1800's. Heyl in U.S. Pat. No. 122,830 (Jan. 16, 1892) patented and described a reversible billiard and croquet table allowing different games to be played on different sides of the table. Bensinger in U.S. Pat. No. 211,083 (Jan. 7, 1879) table shows a rotating table surface mounted having a dining table surface with an opposite side that is a billiard table surface. Later, other inventors such as Zentner prepared further improvements to the rotating billiard table design as shown in U.S. Pat. No. 653,727.

[0003] Small board game tables also appear in rotating configurations. A small game table having four square playing surfaces is shown in U.S. Pat. No. 4,552,362 to Oake where four square playing surfaces form a cube that rotates on an axis. The small furniture piece allows various people to play chess, backgammon, and related board games. The small furniture piece also allows organization of the game pieces. Although desirable, full size game tables combining more than two faces have been difficult to implement.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 shows a perspective view of the game table in billiards mode.

[0005] FIG. 2 shows the game table in table tennis mode.

[0006] FIG. 3 shows the perspective side view of the game table.

[0007] FIG. 4 is the side view of the support showing the locking handle and the frame connection.

[0008] FIG. 5 shows a conventional air hockey table having spinning bumpers.

[0009] FIG. 6 shows the bottom side of the air hockey table.

[0010] FIG. 7 is a cross sectional view of the air hockey table.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] The present invention allows use of three table surfaces in a single furniture piece. A billiard table, a table tennis table with table tennis net and an air hockey table can be combined into a single piece of furniture. Other table faces such as a dining table, a croquet table, or a poker table can be similarly integrated. The basic furniture geometry includes three rectangular playing surfaces 102 joined at their periphery to form a hollow body 100 having a triangular equilateral cross section supported by a frame 103.

[0012] The playing surfaces 102 are generally rectangular having long sides and shorter ends. The playing surface is horizontal when in use. The playing surface 102 faces upward in displayed and deployed position, and in stowed position faces one hundred twenty degrees from upward which appears to face somewhat downward. The playing surfaces are joined together at their sides. At each end of the hollow body 101, an end planar member such as a triangular piece of plywood or plastic joins the three playing surface 100. These end members are mounted to the frame 103. The frame 103 can be formed of a pair of supports 104, each optionally connected to the other and supporting the hollow table body.

[0013] The frame including the supporting members may have height adjustable supports that level the table. The end members appear as triangular pieces in FIGS. 1, 2 and 3. The end members support the table game surfaces. Each game table surface can be formed as a tray having a depth. Games such as billiards and air hockey have moving pieces moving across the surface of a game table. Walls bound the game pieces. Thus, the game tables are recessed and form a tray. As seen in figure one, the interface between the billiards table game surface 102 and the stowed clockwise-rotated air hockey table occurs at their tray bottoms.

[0014] The frame 103 end members have a triangular rail 200 mounted on a bearing wheel 201 attached to the frame 103. The triangular rail 200 forms a groove that the bearing wheel 201 travels within. The center of gravity of the hollow body is below the wheel mounted on the frame 103. The frame 103 supports the wheel. The triangular rail 200 provides three equilibrium positions.

[0015] Before a user changes the position, the user disengages the locking handle 300. The locking handle 300 is mounted on the lower portion of the frame 103. The locking handle 300 can be mounted to secure one side of the hollow table body. The table body has three securing points for three positions, formed as holes for securing the locking handle 300 into the proper locking hole 202.

[0016] As the table is rotated from a first equilibrium position to a second equilibrium position, the locking hole changes from the first locking hole to the second locking hole. The locking holes on the table body sides rotate in a similar manner as the table. At each of the three equilibrium positions, the table has an axis of rotation collinear with the axis of rotation of the bearing wheel. The table is free to swing unless the locking handle is engaged. A user disengages the locking handle before rotating the table.

[0017] The locking handle 300 can be mounted for linear motion in and out of the cylindrical locking hole 202. A spring can bias the locking handle 300 into the cylindrical locking hole 202. The locking handle 300 is formed of a connected pin portion and a knob portion. A user may pull the pin out of the locking hole 202 to rotate the table. The knob portion is shaped so that a user may grasp the knob. The table rotation may require assistance of another user. One user can pull the pin so that it disengages from the locking hole 202, the other user may rotate the table to a different game face.

[0018] The locking handle 300 can also be mounted for helical thread motion so that it can be screwed in and out of the locking hole 202. Washers 301 can also be used in

between the two sides of the table body for spacing. The locking mechanism can also be implemented by installing a ball bearing catch or other mechanical means is that would allow two positions for the pin.

[0019] The bearing wheel **201** preferably rotates to reduce wear and friction. The bearing wheel rotates about an axis perpendicular to the frame support members. When the bearing wheel **201** rotates, the wheel travels inside of the rail that is formed to retain the wheel. The rail has an inside surface and an outside surface. The wheel rides on the outside surface of the rail. The outside surface surrounds the inside surface. The inside surface is approximately triangular shaped. The outside surface can also be approximately triangular shaped. The outside surface is optionally coated with a smooth Teflon wear reducing surface coating. The surface is perpendicular to the pair of supports **104**.

[0020] The locking holes **202** can be formed of reinforced inserts made of metal instead of bores in wood or plastic laminate material. An insert having a metal body and a locking hole sized to receive the locking pin **300** can be mounted on the sides **101** of the table body.

[0021] In figure one, the billiards table is displayed in the deployed position and the air hockey is displayed in rotated position. The billiards table includes a ball return opening mounted on the end members **101**. A user can sink a ball into a pocket and retrieve the ball from the ball return opening mounted on the end members **101**. The ball return opening is flush with the end member it is mounted upon.

[0022] In figure two, the table tennis is displayed in the deployed position. The billiards table is to the right of the table tennis in rotated position. Figure one and figure two shows a 120 degrees clockwise rotation from the equilibrium position allowing deployment of the billiard table, to the equilibrium position allowing deployment of the table tennis game table. A table tennis net protrudes from the surface of the table. The net can be set up by attaching the net to the table before use, and detaching the net from the table after use. Alternatively, the table tennis net can be folded into upright position before use, and folded into a stowed position after use. The stowed position is parallel to the surface of the table tennis game surface.

[0023] Users store air hockey pieces such as pucks, and felted bottom air hockey goalie mallets before disengaging the locking pin. Optionally, an air hockey table fabric elastic cover can be fitted over the air hockey table surface after use.

[0024] The air hockey table can additionally have a spinning bumper **10**. The bumper configuration can be formed on a stand-alone table as shown in **FIG. 5**. The opposite side of the stand-alone bumper configuration is shown in **FIG. 6**. A bumper shaped as a circular disk spins on an axle mounted through the perforated air hockey table surface **55**. An electrical motor **30** mounted to the axle powers the bumper **10** from below the air hockey table surface **55**. The bottom side shows the electrical connector **21** for the air fan **20**. The bottom side also shows the electrical connector **31** for the electrical bumper motors **30**. The side cross section shows the shaft between the bumpers **10** and the electrical motors **30**, leading to an electrical connector **31**.

[0025] The bumper deflects the puck when the puck strikes the bumper. The spinning bumper can receive a variety of surface coatings depending upon the coefficient of friction

desired between the puck and the bumper. The electrical motor is easily reversible and the direction of the spin can be alternated, or changed according to the game desired. The bumper can randomly remain motionless, and have fast or slow rotation. Optionally, a plurality of switches mounted in the surface of the bumper or the walls of the air hockey table or the surface of the air hockey table can create input for controlling, alternating and changing bumper spin. The bumper can have rubber surface coating at the side surface that receives contact with the puck for greater spin reaction when the puck hits the spinning bumper.

[0026] A user normally stands at the end of the table so that the user has a field of control including a left side and a right side. The user has a goal to guard while attempting to score on an opposing goal. The goals stand at opposite ends of the table formed as slots receiving a puck into the goal. A left and right side wall and a rear wall bound the table. Each of the left and right and rear walls can be surface coated depending upon the coefficient of friction desired between the puck and wall. The walls can contain contact switches similar to those used in pinball. The contact switches optionally produce an input to the reversible motors.

[0027] The spinning bumper assembly comprising of the bumper portion, the axle and the electrical motor can be mounted on an air hockey table. When more than one table surface is incorporated in a rotating table, the spinning bumper assembly is sized proportionally to the scale of the table. The puck return **40** is formed as a cavity formed under the air hockey table and having a slot dispensing a puck scored in a goal. The slot is formed into the end members.

[0028] As an alternate simple embodiment, the bearing wheel can be mounted to an axle mounted through the game table body such that the game table body can be rotated around a single axis.

[0029] This differs from the advanced three axis device. Three equilibrium positions provide three axis of rotation where each game table position includes an axis of rotation that can be used when the locking handle is disengaged. At each position, the three axis of rotation allow rotation of the table. A single axis does not require the triangular rail such that a simple single axis can be maintain the table position according to antique traditions. The three axis embodiment is preferable to the single axis.

[0030] The foregoing describes the preferred embodiments of the invention and modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

CALL OUT LIST OF ELEMENTS

- [0031] **10** Spinner Bumper
- [0032] **20** Fan Motor
- [0033] **21** Fan Motor Electrical Connector
- [0034] **30** Spinner Bumper Motor
- [0035] **31** Spinner Bumper Motor Electrical Connector
- [0036] **40** Puck Return
- [0037] **55** Table Surface
- [0038] **100** Table Body

[0039] 101 End of the Hollow Body

[0040] 102 Playing Surface

[0041] 103 Frame

[0042] 104 Support

[0043] 200 Triangular Rail

[0044] 201 Bearing Wheel

[0045] 202 Locking Holes

[0046] 300 Locking Handle

[0047] 301 Washer

1. A multiple surface game table comprising:

- a. three game surfaces, each game surface attached to the others at each side to form an equilateral triangular cross sectional table body;
- b. two end planar members supporting each end of the table body;
- c. a frame formed of a pair of support members, each support member supporting the end planar member portions of the table body at a bearing wheels mounted on the support member having free rotation;
- d. a locking handle engageable into and disengageable out of any one of the three locking holes positioned on the end planar member, wherein the engagement of the locking handle into a locking hole maintains a horizontal game surface and prevents the rotation of the table body.

2. The multiple surface game table of claim 1 further comprising: a triangular axle path on each end planar member having a rail outside surface; the bearing wheel riding on the rail outside surface that supports the table body, wherein the triangular axle path is configured to allow three equilibrium positions corresponding to the display of each of the three game surfaces.

3. The multiple surface game table of claim 1 wherein the game table surface includes a table tennis game surface and a table tennis net.

4. The multiple surface game table of claim 1 wherein the game table surface includes an air hockey table.

5. The multiple surface game table of claim 1 wherein the game table surface includes a billiard table.

6. The multiple surface game table of claim 1 wherein the game table surface includes a poker table.

7. A multiple surface game table comprising:

- a. three game surfaces attached to each other at each side to form an equilateral triangular cross sectional table body;
- b. two end planar members supporting each end of the table body;
- c. a frame formed of a pair of support members, each support member supporting the end planar member portions of the table body at bearing wheels mounted on the support member having free rotation;
- d. a locking handle engageable into and disengageable out of any one of the three locking holes positioned on the end support member, wherein the engagement of the locking handle into a locking hole maintains a level and stable horizontal game surface and prevents the rotation of the table body;

- e. a triangular axle path on each end planar member having a axle path outside surface, the bearing wheel riding on the axle path outside surface that supports the table body, wherein the triangular axle path is configured to allow three equilibrium positions corresponding to the display of each of the three game surfaces.

8. The multiple surface game table of claim 7 wherein the game table surface includes a table tennis game surface and a table tennis net.

9. The multiple surface game table of claim 7 wherein the game table surface includes a billiard table.

10. The multiple surface game table of claim 7 wherein the game table surface includes a poker table.

11. The multiple surface game table of claim 7 wherein the game table surface includes an air hockey table.

12. The multiple surface game table of claim 7 further comprising a spin bumper mounted on the air hockey game table.

13. An improved air hockey game table comprising: a spin bumper mounted on the table surface, an axle mounted between the spin bumper and bumper motor, the axle protruding beneath the surface of the table, the bumper spinning according to the rotation of the motor mounted underneath the table.

14. The improved air hockey game table of claim 13 wherein the bumper motor receives inputs controlling the speed and direction of the motor.

15. The improved air hockey game table of claim 13 wherein the bumper is disk shaped appearing circular from a top plan view.

16. The improved air hockey game table of claim 13 wherein bumper has rubber surface coating at the side surface that receives contact with the puck.

17. The improved air hockey game table of claim 13 further comprising:

- a. three game surfaces attached to each other at each side to form an equilateral triangular cross sectional table body;
- b. two end planar members supporting each end of the table body;
- c. a frame formed of a pair of support members, each support member supporting the end planar member portions of the table body at bearing wheels mounted on the support member having free rotation;
- d. a locking handle engageable into and disengageable out of any one of the three locking holes positioned on the end support member, wherein the engagement of the locking handle into a locking hole maintains a level and stable horizontal game surface and prevents the rotation of the table body;
- e. a triangular axle path on each end planar member having a axle path outside surface, the bearing wheel riding on the axle path outside surface that supports the table body, wherein the triangular axle path is configured to allow three equilibrium positions corresponding to the display of each of the three game surfaces, wherein the game table surface includes an air hockey table.