Dec. 10, 1963 E. ROMEI 3,113,776

PNEUMATICALLY OPERATED TABLE GAME

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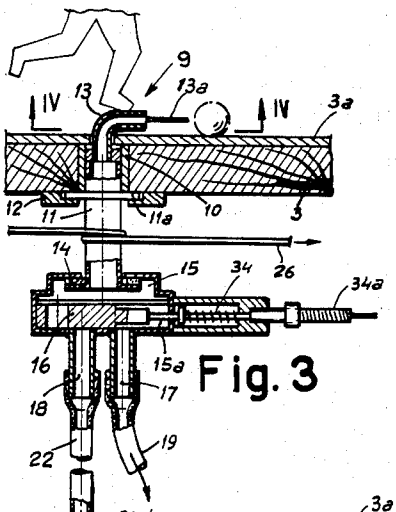


Fig. 3

Fig. 4

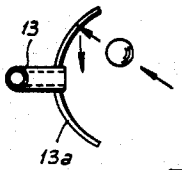


Fig. 5

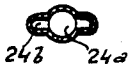


Fig. 1

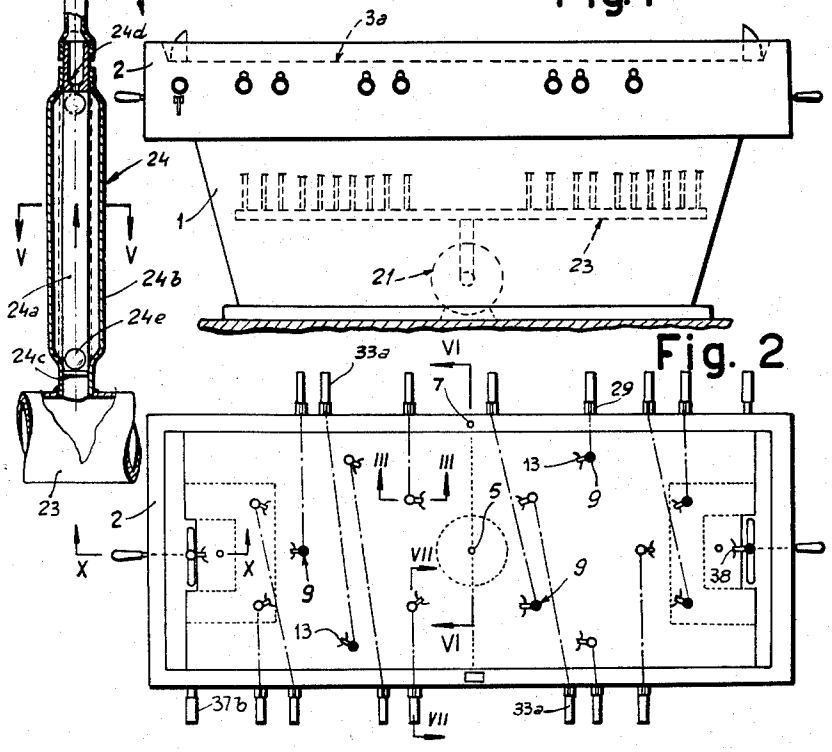


Fig. 2

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Fig. 6

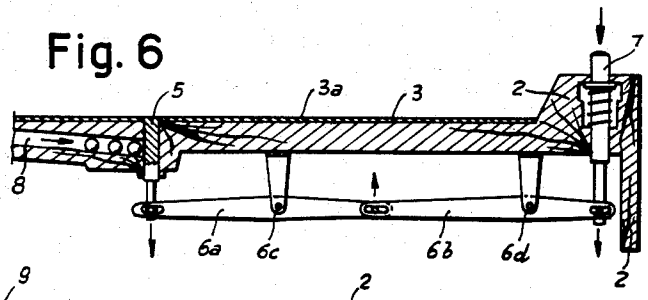


Fig. 7

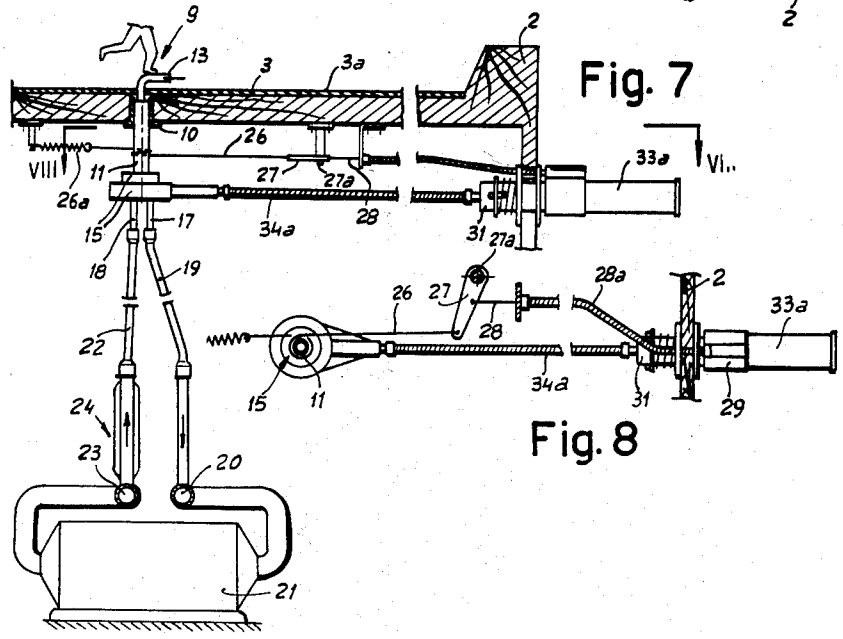
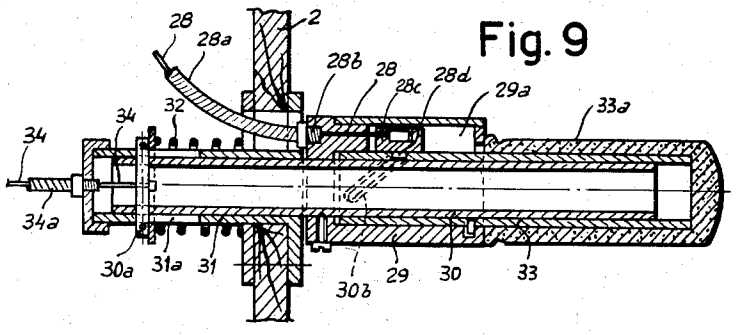


Fig. 8

Fig. 9



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Fig. 10

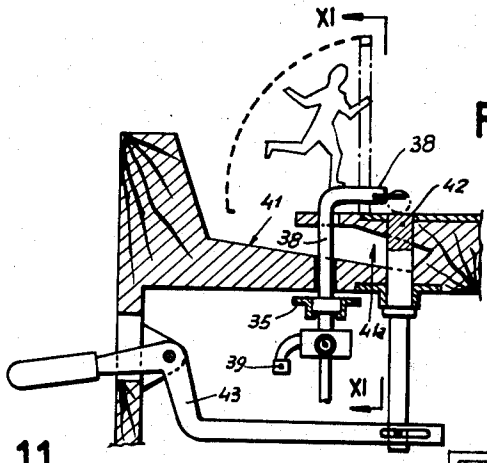


Fig. 11

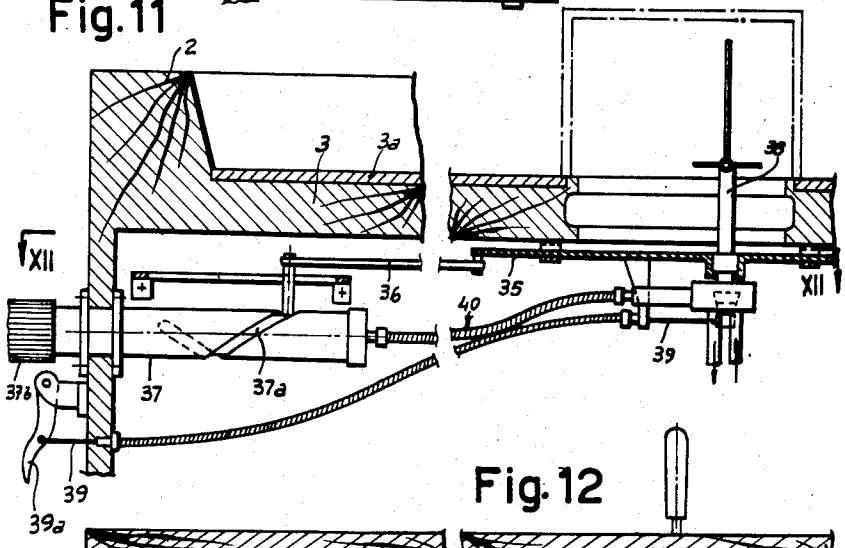
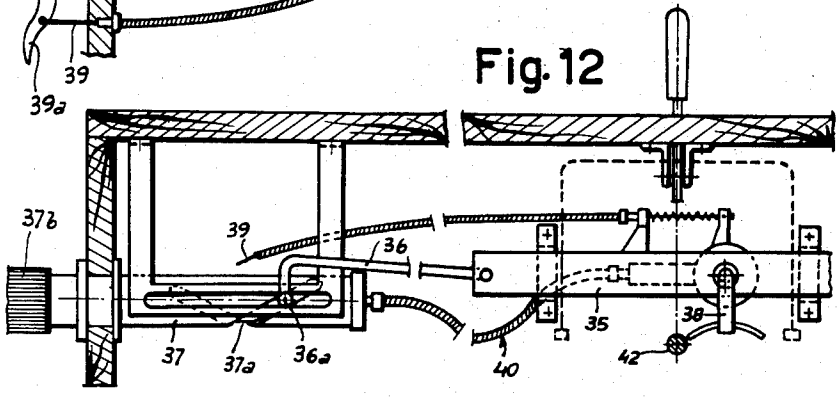


Fig. 12



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PNEUMATICALLY OPERATED TABLE GAME

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5 Claims. (Cl. 273—85)

The present invention relates to a pneumatic table game. The game simulates a football or soccer game. When using this device, the skill or ability of the player prevails completely over the effects of chance.

The table game device, according to the invention, comprises, in positions pre-established on the game or playing surface upon which the ball is to be played, a plurality of orientable air blast units, each of which is provided with a nozzle operatively associated with remote player-controlled means to provide a slight suction or, alternatively, an air blast or jet of short duration to propel the ball, each unit being capable of being oriented in the desired direction by means of the same player-operated controls.

According to a preferred embodiment of the invention, the device includes a compressor unit with an air intake or suction manifold, the suction being operative simultaneously at all of the orientable jets or nozzles of the game device, while at the outlet or delivery side of the pneumatic unit, the air blast is given each time to one or more nozzles which are selectively operated by the players, the air blast being automatically timed to be of short duration.

In order to obtain the controlled air flow, there is inserted in a pressurized conduit or passage designed to feed or supply each nozzle, a slide valve individually controlled by the player to interrupt the suction connection and open the pressurized passage, and a timing valve including a ball which is movable through a predetermined stroke from a lower open position to an upper closed position. The ball of the timing valve moves vertically along a passage which is provided with channel means or the like to by-pass a portion of the pressurized air flowing towards the nozzle, during the short interval while the valve ball is entrained by the air stream urging the ball to the valve closing position.

The invention will be more clearly understood from the following specification, reference being had to the accompanying drawings wherein an embodiment is disclosed which simulates a game of soccer or football with the associated goals and goal-keepers.

Referring to the drawings:

FIG. 1 is a side elevational view of a table embodying the game.

FIG. 2 is a plan view of the table of FIG. 1.

FIG. 3 is an enlarged sectional view in elevation taken along the line III—III of FIG. 2.

FIG. 4 is a fragmentary bottom view taken along the line IV—IV of FIG. 3.

FIG. 5 is a transverse sectional view of the timing valve taken along the line V—V of FIG. 3.

FIG. 6 is an enlarged sectional view in elevation taken along the line VI—VI of FIG. 2.

FIG. 7 is an enlarged sectional view taken along the line VII—VII of FIG. 2.

FIG. 8 illustrates a fragmentary plan sectional view taken along the line VIII—VIII of FIG. 7.

FIG. 9 illustrates, in axial section, an enlarged detail of a control knob for the air nozzle shown in FIG. 7.

FIG. 10 is an enlarged sectional view in elevation taken along the line X—X of FIG. 2 showing one of the goal positions.

FIG. 11 is a sectional view in elevation taken along the line XI—XI of FIG. 10.

FIG. 12 is a plan sectional view taken along the line XII—XII of FIG. 11.

A base 1 (FIG. 1) is provided with an upper structure 2 which provides the boundaries or upstanding side members for a game or playing area 3. The playing area 3 is covered by a smooth plate 3*a* forming the playing surface. In the central portion of the playing surface plate 3*a* there is a hole for a vertically reciprocable plunger 5 (FIGS. 2 and 6) of a ball feeding mechanism controlled through a pair of levers 6*a*, 6*b* each pivoted intermediate its ends at 6*c*, 6*d* under the playing area 3. The lever 6*b* is actuated by a spring-pressed push button 7 which is located in one side of the upper structure 2. By pressing the button 7, the plunger 5 is lowered permitting it to receive a playing ball gravitationally fed by an inclined channel 8. When the push button 7 is released, the plunger 5 is raised to the level of the playing surface 3*a*, bringing a ball along therewith.

In various positions distributed over the playing surface 3*a*, there are provided rotational seats for a plurality of player's positions, as indicated generally by 9 in FIG. 2. The player's positions are divided into two groups, one for each team, and a manual control is coordinated with each player's position. Each player's position includes a rotatable air nozzle unit. Each player's position 9 includes a bushing 10 for a rotatable tubular air duct member 11, which is provided with a flange 11*a*, rotatably retained by a ring 12 in engagement with the lower end of bushing 10. The tubular member 11 terminates at its upper end in a nozzle 13, bent to direct an air blast horizontally and substantially parallel to the playing surface 3*a*. The nozzle 13 is provided with a pair of curved guide members 13*a*, which extend horizontally (FIG. 4). At its lower end, the tubular member 11 is engaged through a rotary seal joint 14 with a valve housing 15, which includes a seat 15*a* (FIG. 3) for a slide valve plunger 16; the cooperation between the seat 15*a* and the plunger 16, with the displacement thereof, allows the selective connection of the passage of the tubular member 11 either normally with suction connection 17 (in the arrangement illustrated in FIG. 3), or with an air pressure connection 18 in the displaced position of plunger 16. In the arrangement of FIG. 3, there is normally communication between the nozzle 13 and a suction hose 19 which extends to a common suction manifold 20 (FIG. 7), connected to a compressor unit 21. An air pressure hose 22 is connected to the valve connection 18 and extends to a pressure manifold 23 of the compressor unit 21, through a common timing valve 24 designed to limit the duration of the air jet issuing from the nozzle 13 when the plunger 16 has been moved from its normal position shown in FIG. 3, to its actuated position regardless of how long the plunger 16 may remain in the actuated position. For this purpose, the valve 24 includes a vertical passage 24*a* provided with side grooves 24*b* or equivalent by-passages, between a lower zone where there is a stop member 24*c* and an upper zone having a valve seat 24*d*; a relatively light ball 24*e* serves as a valve body and the ball 24*e* may move vertically along the passage 24*a* between the stop member 24*c* and the valve seat 24*d*, which may be effectively closed by engagement with the valve ball 24*e*. In the arrangement of FIG. 3 there is normally a slight suction at each nozzle 13, the suction being distributed simultaneously among all the nozzles of the several player's positions. Upon displacement of the plunger 16 of a particular player's position, the air pressure in the manifold 23 provides a relatively strong air stream in the circuit formed by the passage 24*a* with the associated grooves 24*b*, the hose 22, the valve connection 18, valve passages at 15*a*, 15, the rotatable tubular member 11 and the nozzle 13. This relatively powerful air stream

also causes upward movement of the valve ball 24e to the seat 24d, with an appropriate delay determined by the weight of the ball and the cross-section of the passage 24a, in addition to the free by-pass area in the zone of the side channels 24b. When the valve ball 24e has reached the upper position, the air jet is shut off. Upon restoration to the normal condition of FIG. 3, the upward air flow is stopped and the valve ball 24e drops to rest on the stop member 24e. Therefore, it is necessary to actuate the plunger 16 each time a short air jet is desired. The blast from any one jet must be spaced in the time from the blast from any preceding jet or jets. It is to be noted that as the air streams issuing from the several nozzles are of only short duration and intermittent, these jets are very powerful and the arrangement of the play positions on the play surface 3a is such that any zone of the playing surface 3a may be reached by the air jet of at least one nozzle. On the other hand, the suction is distributed throughout all of the players' positions, and the suction is comparatively weak. Each unit, of which a nozzle 13 is a part, may be provided with a figure or shape of a player, designed to also indicate in an easily visible manner the direction of orientation of the nozzle 13 which may be varied as described below.

In order to direct a nozzle at a player's position, a flexible cable 26 is wound around the tubular member 11 thereof. Cable 26 has one of its ends secured to a tension spring 26a and the other end connected to an amplifying lever 27 pivoted at 27a under the area 3. A second cable 28 is connected to the lever 27 at a position closer to the pivot 27a than the cable 26. The cable 28 is enclosed in a sheath 28a, one end of which is connected at 28b (FIG. 9) to a sleeve 29. The cable 28 is fixed to a slider 28c slidably in a longitudinally extending seat 29a of the sleeve 29. A tube 30 is fixedly connected to the sleeve 29 (FIG. 9) and tube 30 is axially slidable in a bushing 31 but is held against rotation by a plug 30a, sliding in slots 31a. By means of the plug 30a, a compression spring 32 urges the tube 30 towards the left as viewed in FIG. 9. A small tube 33 fixed to a knob 33a is axially linked but is rotatable in the unit 29, 30; the slider 28c is engaged with a pin 28d in a helical groove 30b of the tube 30. By turning the knob 33a, the slider 28c is moved and through this, one controls, through the cables 28 and 26, the orientation of the associated nozzle 13. By moving the knob 33a with the members 29, 30 in the axial direction, one controls a cable 34 located in the sheath 34a, and said cable is arranged to actuate the air valve plunger 16.

At each end of the playing area, there is provided a laterally movable and orientable nozzle which is designed for the protection and guard of one of the goals. For this purpose, there is provided a laterally slidable unit including a movable slide 35, controlled by a link 36, and a pin 36a guided in a helical channel 37a of a sleeve 37, actuable by rotation of a knob 37b similar to the knobs 33a. The slide 35 carries a nozzle 38. The nozzle 38 may be shifted laterally but is not completely rotatable. The nozzle 38 is moved laterally by the slide 35. The limited rotation is controlled by a sheathed cable 39, which, against the action of a compression spring, is actuated by a control lever 39a. A cable 40, controlled by the knob 37b, in a manner similar to the cables 34, serves to control an air valve with which each goal nozzle 38 is provided like the nozzles 13. Therefore, the nozzle 38, which serves for protection of the goal, may be moved laterally along the front of the goal and may be angularly oriented through a restricted angle instead of 360°. Suitable centering springs (not shown) serve to reset the nozzle 38 at the middle of the goal when the knob 37b is released by the layer.

Beyond the ends of the field defined by the playing surface 3a, there is provided an inclined ramp 41 which receives and conveys the balls which roll beyond the field limits towards a recess 41a from which they may be collected and returned to the playing surface by actuation of a plunger 42, vertically movable in a passage extending downwardly from the surface 3 and operated at the outside of the upper structure 2 by a lever 43; in this manner, each ball which has rolled beyond the field limits may be brought back into the game at a position in which the goal nozzle 38 may hold it by suction and, by an appropriate action by the player, propel the ball into play. The upper end of the plunger 42 is flush with the playing surface 3a like the ball feeding plunger 5.

The several knobs 33a and 37b are appropriately spaced in such a manner as to permit play either by a single player for each team or by several players for each team.

The above described game device permits, by skillful operation for the manual controls, the ball to be directed into the goal of the opposing team. To do this, however, the ball must escape disturbing air blasts produced by the player or players controlling the air blast units of the other team. The short duration of each air blast makes the game particularly attractive. The game requires a precise timing in addition to accurate directional control of the particular nozzle. The suction effect at each nozzle 13 or 38 provides a return or stop action of the ball permitting it to be directed in the desired direction and propelled in the selected direction at the appropriate moment. The curved guide members 13a, form lateral deflecting arms which direct a ball which bounces against them towards the mouth of the nozzle.

The apparatus has been illustratively shown and described in connection with a soccer or football game. It may be adapted for other games in which a ball is propelled over a playing surface.

While I have shown and described what I believe to be the best embodiments of my invention, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A table football game device, comprising: means defining a horizontally disposed game surface; a plurality of upstanding side members peripherally surrounding said game surface; a plurality of symmetrically spaced playing assemblies mounted on said device and extending upwardly above said game surface, each playing assembly being rotatable about a substantially vertical axis and including a player's figure, a substantially horizontal nozzle, a pair of laterally and forwardly extending guide members symmetrically flanking said nozzle, and a nozzle fitting coupled to and extending axially downwardly from said nozzle through said game surface; operating means for individually rotating each of said assemblies; control means connected to each of said operating means and accessibly projecting from said side members; an air compressor; a suction manifold and a pressure manifold having a valve ball coupled to said compressor; an air distributor coupled to each assembly; operating means for said air distributor including control means accessibly projecting from said side members; a suction duct and a pressure duct connecting each of said assemblies to said suction and pressure manifolds, respectively; an elongated vertically disposed chamber member interposed between said pressure duct and said pressure manifold valve ball; a shutter movable in said chamber member by air flowing upwardly therethrough, said chamber having a restricted outlet at its upper end closable by said valve ball to provide an air pressure blast of limited quantity and duration; each air distributor having a normal rest position providing a constant suction through its connected nozzle; a goalkeeper nozzle assembly mounted at each end of said game surface and rotatable about a vertically disposed axis; means mounting said goalkeeper assembly for lateral sliding

movement across a goal area of said game surface; and externally operable means for raising a playing ball upwardly through said game surface.

2. A game device according to claim 1, wherein said operating and control means for said assemblies and said air distributors include a plurality of slidable and rotatable knobs, a flexible drive from each knob to each distributor, said distributor including a slidably movable valve element, said flexible drive transmitting axial movement to said valve element; a wire drive rotatably coupling said knob to each rotatable assembly; and a helical coupling means between said knob and said wire drive to rotate said assembly through rotation of said knob.

3. A table football game device, comprising; means defining a horizontally disposed game surface; upstanding side members peripherally surrounding said game surface; a plurality of symmetrically spaced player assemblies mounted on said device and extending upwardly above said game surface, each player assembly being rotatable about a substantially vertical axis and including a player's figure, a substantially horizontal nozzle, a pair of guide members symmetrically flanking said nozzle, and a rotatable nozzle fitting coupled to and extending axially downwardly from said nozzle through said game surface; rotation control means for each assembly having operating portions externally projecting from said side members; an air compressor; a suction manifold and a pressure manifold coupled to said compressor; an air distributor coupled to each player assembly; control means having operating portions accessibly projecting from said side members; a suction duct and a pressure duct connecting each air distributor to said suction and pressure manifolds, respectively; an elongated vertically disposed chamber member of non-circular cross-section interposed between said pressure duct and said pressure manifold, said chamber member having a restricted outlet at its upper end and a closure member movable by air flowing upwardly through said chamber member so as to close said outlet and thereby limit each air blast to a predetermined quantity and duration; a separate player assembly at each end of said game surface corresponding in appearance to a goalkeeper, means mounting said goalkeeper assembly for lateral movement in addition to its rotational movement; and means accessible from the exterior of said game device for laterally moving said goalkeeper assembly.

4. A table football game device, comprising: means defining a horizontally disposed game surface; upstanding side members peripherally surrounding said game surface; a plurality of symmetrically spaced playing assemblies mounted on said device and extending upwardly above said game surface, each playing assembly being rotatable about a substantially vertical axis and including a player's figure, a substantially horizontal nozzle, deflecting profiles carried by and symmetrically flanking said nozzle, and an air distributor operable to produce an air blast; manual control means for each assembly and its associated air distributor; an air compressor; a suction manifold and a pressure manifold coupled to said compressor; a suction duct and a pressure duct extending from each air distributor to said respective manifold; an elongated vertically disposed chamber member interposed between each pressure duct and said pressure manifold, said chamber member having a restricted outlet at its upper end and a closure member movable by air flowing upwardly through said chamber member so as to close said outlet and thereby restrict the air blasts each to a predetermined quantity and duration; a separate player assembly at each end of said game surface corresponding in appearance to a goalkeeper; means mounting said goalkeeper assembly for lateral movement in addition to its rotational movement; and control means for laterally moving said goalkeeper assembly.

5. A game device according to claim 4, wherein said manual control means for each playing assembly and each associated air distributor includes a slidable and rotatable knob, a flexible drive connecting said knob to a movable part of said air distributor to transmit axial movement of the former to the latter, a wire drive for rotating said assembly, and a helical coupling between said knob and said wire drive for rotating said assembly through rotation of said knob.

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