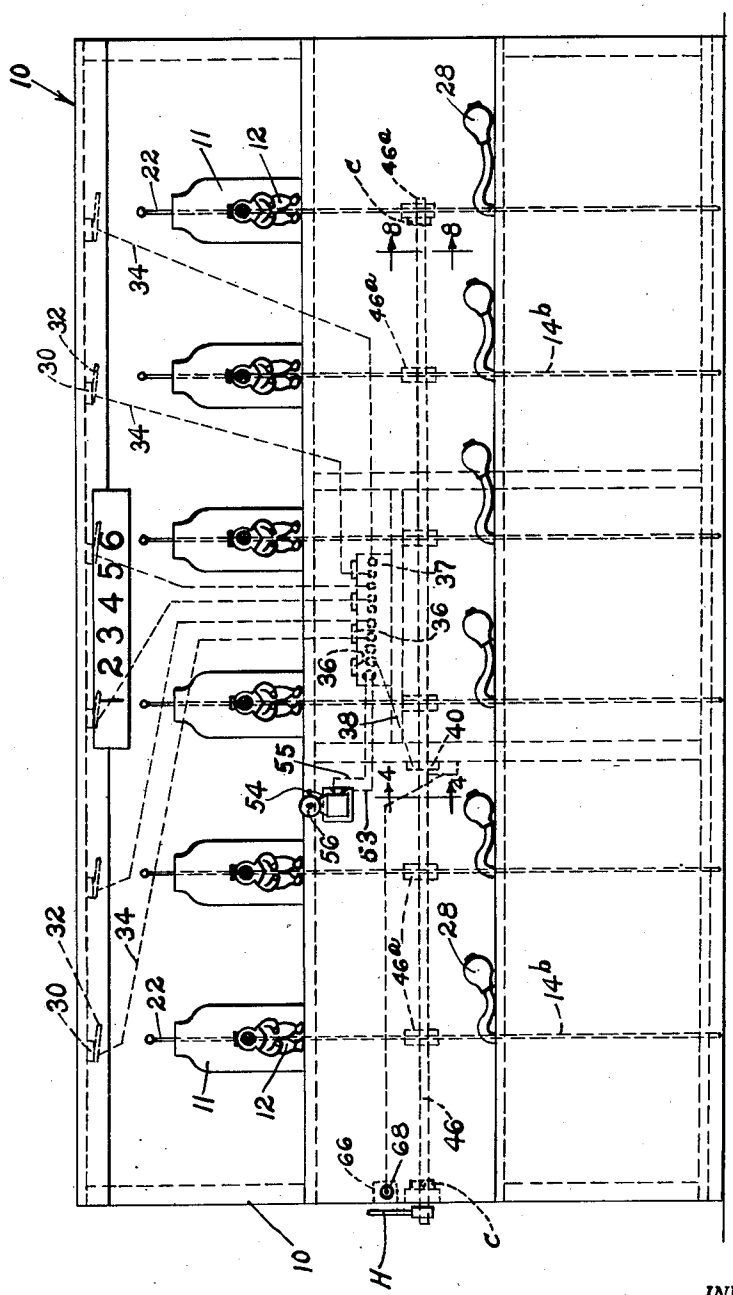
July 15, 1952 J. R. CHRISTIAN 2,603,488

AIR ACTUATED RACING GAME APPARATUS

Filed July 13, 1949 5 Sheets-Sheet 1

Fig. 1.



INVENTOR.
John R. Christian
BY Harold E. Cole
Attorney

July 15, 1952 J. R. CHRISTIAN 2,603,488

AIR ACTUATED RACING GAME APPARATUS

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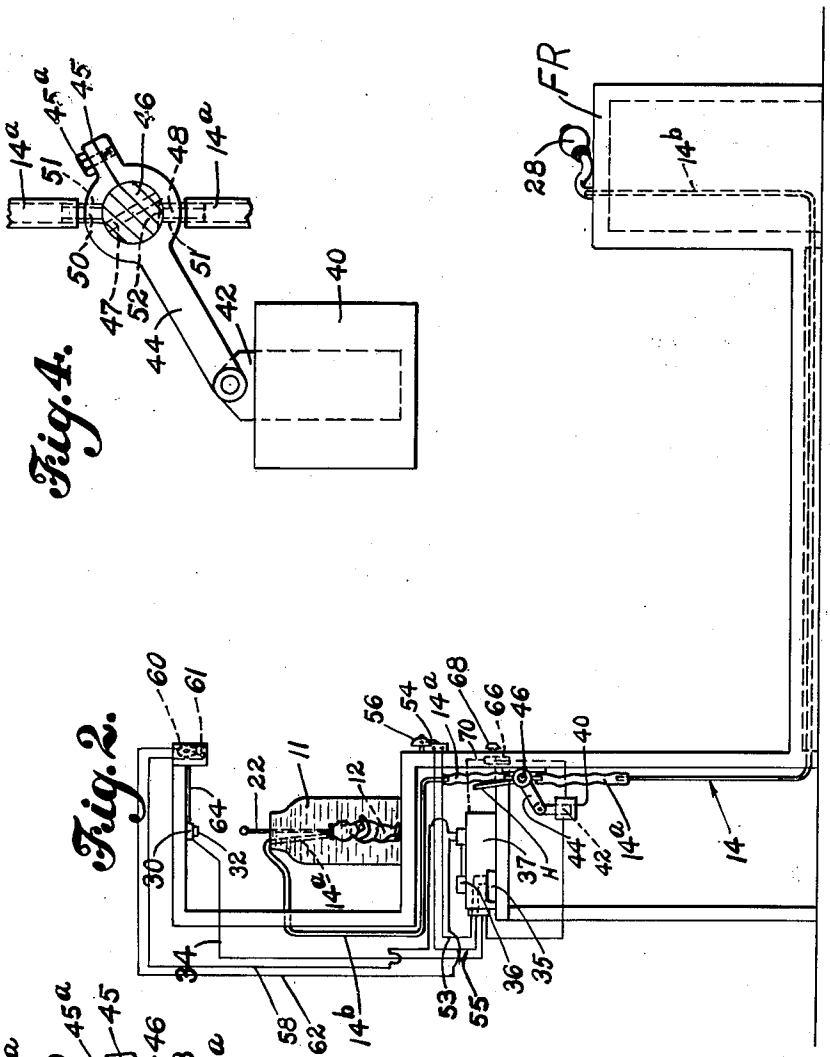


Fig. 4.

Fig. 2.

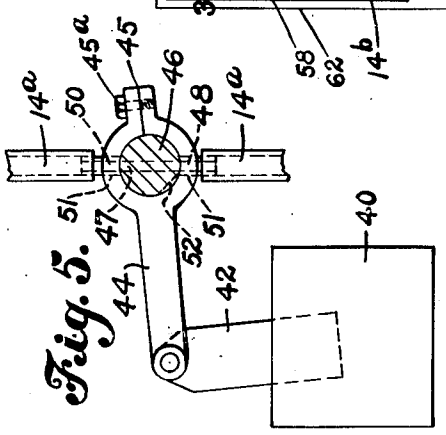


Fig. 5.

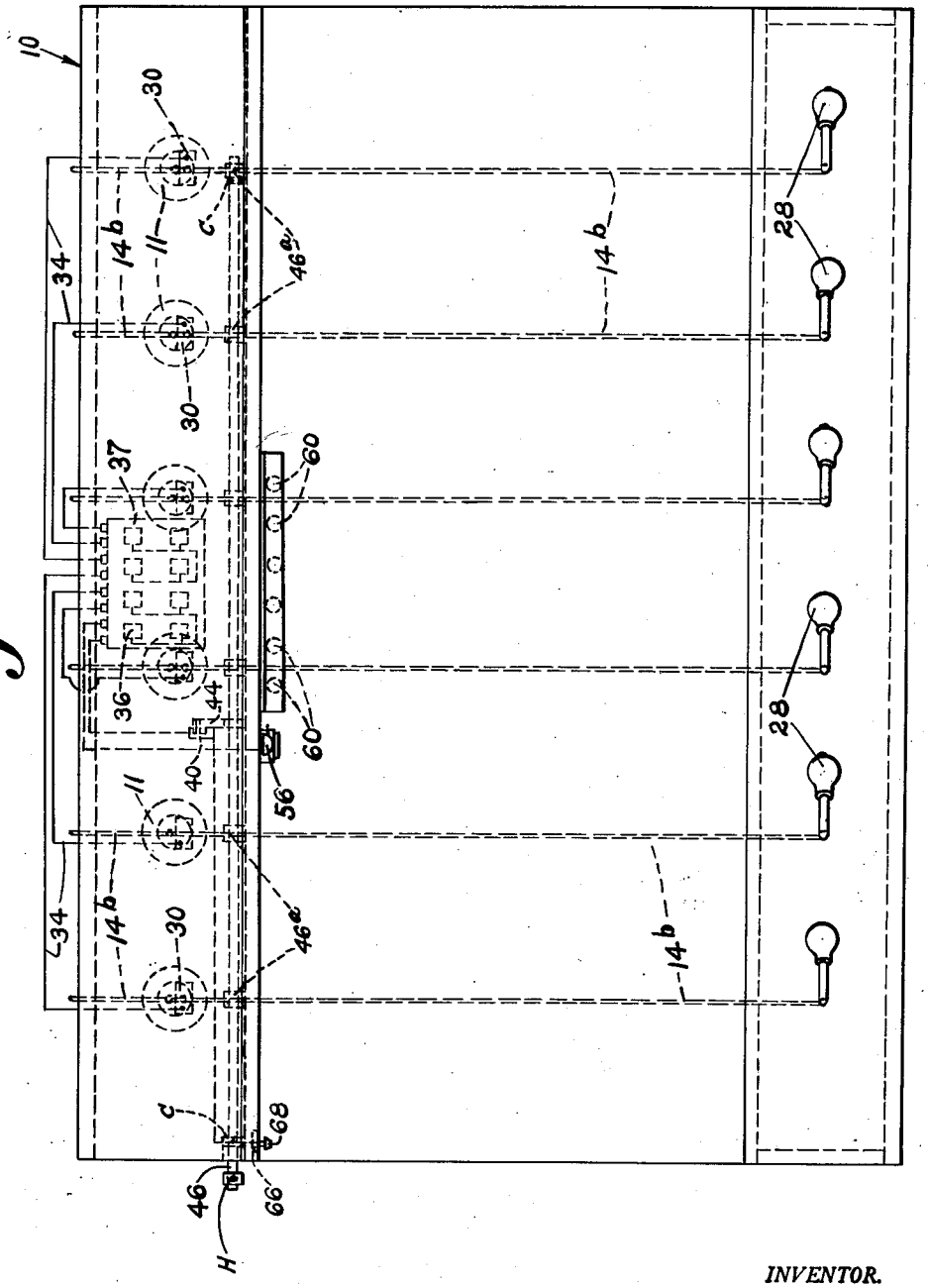
INVENTOR.
John R. Christian
BY Harold E. Cole
Attorney

July 15, 1952 J. R. CHRISTIAN 2,603,488

AIR ACTUATED RACING GAME APPARATUS

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Fig. 3.



INVENTOR.

John R. Christian

BY Harold E. Cole

Attorney

July 15, 1952 J. R. CHRISTIAN 2,603,488

AIR ACTUATED RACING GAME APPARATUS

Filed July 13, 1949 5 Sheets-Sheet 4

Fig. 6.

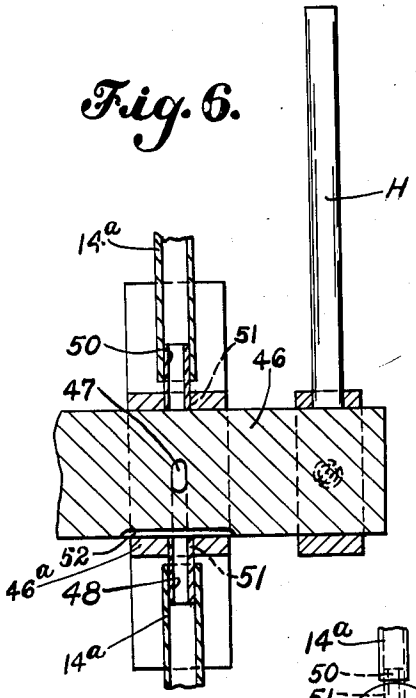


Fig. 8.

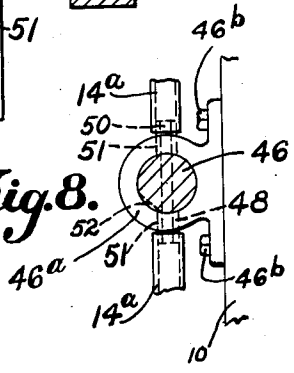
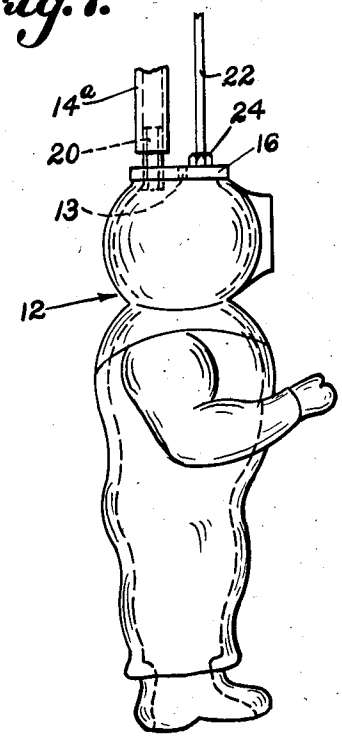


Fig. 7.



INVENTOR.
John R. Christian
BY Harold E. Cole
Attorney

July 15, 1952 J. R. CHRISTIAN 2,603,488

AIR ACTUATED RACING GAME APPARATUS

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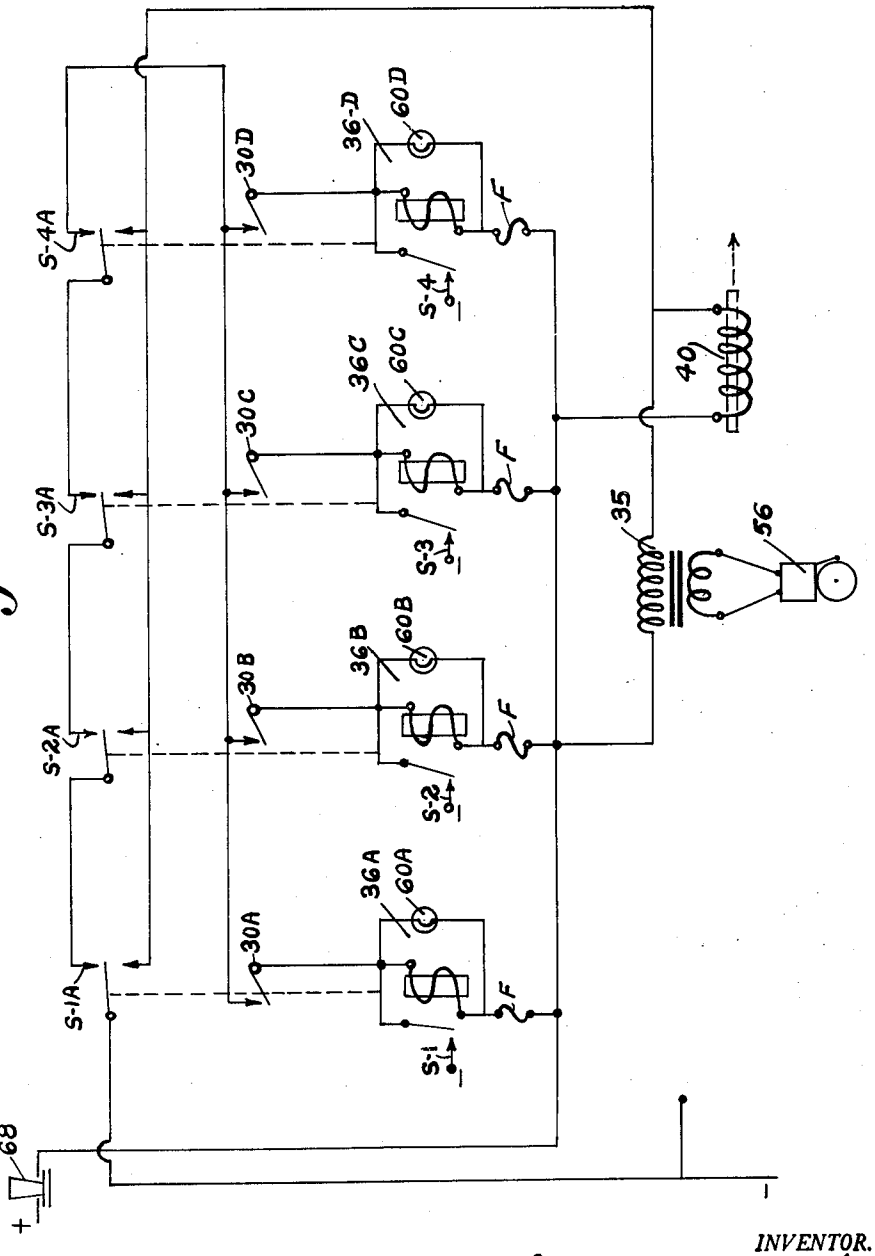


Fig. 9.

INVENTOR.
John R. Christian
BY Harold E. Cole
Attorney

Patented July 15, 1952 2,603,488

UNITED STATES PATENT OFFICE

2,603,488

AIR ACTUATED RACING GAME APPARATUS

John R. Christian, Boston, Mass.

Application July 13, 1949, Serial No. 104,415

9 Claims. (Cl. 273—86)

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This invention relates to game apparatus.

An important feature of my invention is to provide a game apparatus for a considerable number of players whereby when the goal or purpose of the game is achieved a signal is automatically given showing the winner and rendering the efforts of other players ineffective, thus immediately terminating the contest.

Another feature is to provide such apparatus of relatively simple construction to which toy figures can be added or subtracted, all of which can be controlled by a single valve member.

In the operation of competitive games of skill at carnivals, beaches, and similar places, in which each player pays to participate, it is important for the owner or operator to have instant control of the apparatus so another game can quickly be started when a player reaches the desired goal, hence it has been my object to provide control means for the apparatus that quickly and easily operates, and provides a game that is fairly played.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and arrangement of parts such as is disclosed by the drawings and specification. The nature of the invention is such as to render it susceptible to various changes and modifications, and, therefore, I am not to be limited to said disclosures; but am entitled to all such changes therefrom as fall within the scope of my claims.

In the drawings:

Figure 1 is a front elevational view of my game apparatus. Figure 2 is a side elevational view and Figure 3 is a top plan view thereof.

Figure 4 is a cross-sectional view taken through the rod valve and showing parts associated therewith, the valve being shown in closed or non-operating position. Figure 5 is a similar view; but showing the valve in open position or playing position. Figure 6 is a longitudinal-sectional view of said rod valve and associated parts.

Figure 7 is a side elevational view, broken away, showing the toy figure and associated parts.

Figure 8 is a cross-sectional view taken through the rod valve at a point beyond the air hole, showing the attachment of the said rod valve to the supporting frame of my apparatus.

Figure 9 is a diagrammatic view showing the wiring arrangement for the principal electrically actuated elements of my apparatus.

As illustrated, I provide a supporting frame 10 on which are set transparent containers 11 which

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are filled with water and in which toy figures 12 normally rest at the bottom. These figures may simulate undersea divers, as shown, and their bodies are hollow, and open at the bottom of their feet to admit water, which normally keeps them at the starting point, which is on the container bottom. They have an air vent 13 at the top to permit escape of air when the contest ends, permitting the toy figures 12 to sink to the bottom ready for the next game. The purpose of the game is to cause the toy figures 12 to rise until one reaches a predetermined point at the top, which wins the game, and this is done by forcing air into the toy figure 12 at the top thus forcing water out of it at the bottom and making it sufficiently buoyant to rise.

Air passes from each player through tubing 14 to an opening at the top or head of the toy figure through a flexible portion 14*a* of the tubing in communication therewith. This tubing 14 extends from the playing position at the front FR of the apparatus where the participating players stand. Said tubing 14 consists of lengths of flexible rubber tubing 14*a* and copper tubing 14*b*.

At the top of each toy figure 12 is a supporting washer 16, interiorly screw-threaded, held by a nipple 20 which is fixed to said toy figure 12 and communicates with the interior thereof. Said flexible tube 14*a* is attached to and communicates with said nipple 20. A vertically extending actuating rod 22 is attached to said washer 16 and its lower portion is threaded to receive a nut 24, that holds it to said washer 16, and to screw-threadedly connect with the interior of said washer.

At one end of said tubing 14, where the players stand, a copper tube portion 14*b* communicates with a rubber bulb 28, which may be the double ball-valve type in common use. The squeezing and releasing of this bulb 28 causes air to enter it and pass into said tube 14 and thence into said toy figures 12, thus making the latter buoyant and causing it to rise.

The player who forces the most air in a continuous stream into said toy figure will cause it to rise and reach a predetermined point or goal, later explained, ahead of the others, thus winning that game.

Attached above each said toy figure 12 and actuating rod 22 is a well known micro-switch 30 which has a blade 32 directly in the path of said actuating rod 22. When the latter rises and touches said blade 32, it closes a circuit from said switch 30 through a wire 34 to a transformer 35 on a chassis 37 which supports a number of

well known electrical relays 36, connected together, later explained, there being one said relay 36 connected to each said micro-switch, which are mounted on a chassis 37, and preferably there is a fuse F for each relay. The closing of said circuit also closes a circuit through a wire 38 from a said relay to a well known type of solenoid 40 which has a movable finger 42 that is actuated upon the closing of said circuit and which in turn is pivotally connected to a lever 44 that is split at one end as at 45 and firmly clamped by a bolt 45*a* to a rod valve 46, movement of which rod valve effects the direction of the air intended for all of the top figures, so that it serves as a single control for the whole game, later explained. Said rod valve is rotatably held by valve housings 46*a* which are bolted as at 46*b* to said frame 10.

Said rod valve 46 is ordinarily made of solid metal and there are holes 47 spaced apart (one for each toy figure) extending diametrically through it. In communication with the opposite ends of each said hole 47 is an inlet nipple 48 and an outlet nipple 50, which extend through holes 51 in each said valve housing 46*a*. Flexible tube portions 14*a* fit on said nipples 48 and 50 thus providing communication from said bulb 28 through a said rod valve hole 47 to each said toy figure 12.

On the peripheral surface of said rod valve 46, adjacent each said inlet nipple 48, there is provided therein a recess 52, later explained, to permit escape of air when one toy figure 12 reaches the goal, thus terminating the upward movement of all said toy figures 12 even though the players continue to squeeze said bulbs 28. A handle H on said rod valve 46 permits its movement by hand to move said rod valve 46 to open position. Locating collars C are fixed to said rod valve 46 at opposite ends thereof to keep said rod valve in predetermined position whereby said holes 47 communicate with said nipples when said rod valve is in open position.

In said Figure 4 said rod valve 46 is shown in closed position whereby it releases the air outside said tubing 14 since said recess 52 has been moved to closed position into communication with said inlet nipple 48 and out of communication with said hole 47. In said Figure 5, due to a movement of said handle H which moves solenoid finger 42 and lever 44, said rod valve 46 has been moved to open position whereby said hole 47 communicates with both said inlet nipple 48 and outlet nipple 50 so that air flowing from said bulb 28 passes through said hole 47 and said outlet nipple 50 on its way through said tubing 14 to the said toy figure 12 it communicates with Thus a short rotative movement of said single rod valve 46 controls the game, either allowing air to pass to all of the said figures 12 or preventing it from passing to any.

When said actuating rod 22 contacts said micro-switch blade 32 the aforesaid circuit established through said wire 34 to said transformer 35 on the relay chassis 37 in turn closes a circuit through a wire 53 to a well known type of electrical bell 56 with clapper 54. Thus said bell 56 is rung when any said toy figure reaches the goal. Another wire 55 extends from said bell to said transformer 35.

There is also another circuit simultaneously established from a said relay 36 through a wire 58 to one electric light bulb 60 in a socket 61 and through another wire 62 from said socket to a said relay 36. A jumper wire 64 extends from a said micro-switch 30 to a said socket 61 to complete the circuit from a said micro-switch to a said relay 36. There is a number opposite each said light bulb 60, that corresponds to the numbers given each player, and when the circuit to a said bulb is established the number is illuminated, thus showing which player's figure toy reached the goal.

A recycling switch 66 of a well known type is controlled by a push button 68, which is shown mounted on said frame 10. A wire 70 extends from said recycling switch 66 to the said relays 36. When said button 68 is pushed the switch breaks or opens the circuit to said relay chassis 37 and to said bell 56 and to a said light bulb 60. This terminates the ringing of the bell 56 and illumination of a said light bulb 60, while said rod valve 46 remains in closed position until rotated manually by said handle H to open position ready to start a new contest.

In Figure 9 is shown a wiring diagram that illustrates an electrical arrangement to operate my game apparatus when set up with four toy figures 12. I show four said relays which are given the numerals 36A, 36B, 36C, and 36D, and which are of the double pole, double throw type. Said relays have contact switches S–1*a*, S–2*a*, S–3*a* and S–4*a* and S–1, S–2, S–3 and S–4 which are each activated by its relay.

The lights 60–A, 60–B, 60–C and 60–D are connected across their respective relays, that is, 36–A 60–A, 36–B 60–B, 36–C 60–C, 36–D 60–D. The particular light that is illuminated identifies the winner. There are protective fuses F provided for each relay to individually protect the various units from short circuits.

Four micro-switches are shown, 30–A, 30–B, 30–C and 30–D any one of which is activated when the actuating rod 22 below it makes a contact. Each switch is instantaneous in action, allowing electrical current to flow into the various units that are electrically connected.

The transformer 35 is the step-down type, intended to lower the voltage, as from 110 A. C. to 13, and to operate the bell 56 to announce the winner when the actuating rod 22 on a said toy figure 12 reaches a predetermined point, it is connected to all the said relays. The solenoid 40 is activated by any one of the relays and through connecting means previously explained, and indicated by the dash lines, operates the rod valve 46.

Said push button 68 controls a switch and through which electrical current is supported. When it is pressed it interrupts the flow of electrical current to the entire game, thus making the apparatus ready for the next contest.

In operation the electrical current is supplied at the points marked plus and minus, and from the latter it flows to relay contact switches S–1*a*, S–2*a*, S–3*a* and S–4*a*. Any one of these latter switches that opens stops the flow of current to the rest of the circuit. From the S–4*a* switch we trace the current down to the micro-switches 30–A, 30–B, 30–C and 30–D.

If, for instance, the toy figure directly below said micro-switch 30–A rises until its actuating rod 32 closes said switch 30–A there is established a flow of current into said relay 36–A which illuminates said light 60–A, thus identifying the winner. Energizing of said relay 36–A closes contact switch S–1*a* which interrupts the flow of current to the other said contact switches S–2*a*, S–3*a* and S–4*a*, hence the lights connected to them cannot illuminate, and also it established a

current through contact switch S–1, keeping the light illuminated until the game is recycled by the control operator pushing said push button 68 and thus breaking the circuit.

It will be noted that operation of any one of the said relays automatically opens the circuit supplying electricity to the other relays, and also switches on its own electrical supply to hold it until manually released.

When my game apparatus is used commercially to conduct contests as at a carnival or beach, it is desirable to have electrical connections run to both the bell and the individual light bulbs; but for other uses, as in a home or a private club either could be dispensed with, or both, since the toy figure that is highest in the container is the winner, and the container is transparent. However, it is desirable to have a valve that automatically closes and shuts off the flow of air when a toy figure reaches the goal, so that the other toy figures cannot receive air and be raised, thus leading to questions as to who was the true winner.

My apparatus could also be used as a toy in the home, using only one toy figure in that event, and contests could be conducted by noting the time it takes to raise the toy figure to a predetermined point, the one using the least time being the winner. In that event the opening of the valve could be noted by the timer, or the bell could be rung, or a light bulb illuminated.

Said supporting frame 10 as shown is convenient for a game played on a commercial basis; but it is not necessary in all instances, since said container, relays and other parts could be placed on a floor, table or other supporting means.

What I claim is:

1. Game apparatus comprising tubing for the passage of air, an instrumentality in communication with and adapted to be actuated to force air into said tubing, a hollow toy figure supported in a liquid medium for moving bodily and in communication with said tubing and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to said toy figure, an electrical switch located in the path of movement of said actuating rod and adapted to be actuated thereby when said toy figure reaches a predetermined point in said path of movement, an electrical relay, electricity transmitting means connecting said switch and said relay, a solenoid embodying a movable finger, adapted to be actuated by electrical current, electricity transmitting means connecting said relay to said solenoid, a light bulb, electricity transmitting means connecting said relay to said bulb, a bell adapted to be electrically actuated, electricity transmitting means connecting said relay to said bell, a rod valve having a hole extending laterally therethrough and having a recess in an outer surface portion thereof, means rotatably supporting said rod valve, an inlet nipple and an outlet nipple in communication with opposite ends of said hole when said valve is in open position and in communication with said tubing between said instrumentality and said toy figure, said inlet nipple being in communication with said recess when said valve is in closed position and out of communication with said hole, supporting means for said nipples whereby said rod valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

2. Game apparatus comprising a plurality of lengths of tubing for the passage of air, a plurality of instrumentalities in communication with and adapted to be actuated to force air into said lengths of tubing, a plurality of hollow toy figures supported in a liquid medium for moving bodily and in communication with said tubing lengths and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to and for each said toy figure, an electrical switch for and located in the path of movement of each actuating rod and adapted to be actuated thereby when a said toy figure reaches a predetermined point in said path of movement, a plurality of electrical relays and a chassis therefor, a transformer on said chassis, electricity transmitting means connecting said switches and said relays, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting said relay chassis to said solenoid, a plurality of light bulbs, electricity transmitting means connecting said relays to said bulbs, a bell adapted to be electrically actuated, transmitting means connecting said transformer to said bell, an elongated valve having a plurality of holes extending laterally therethrough and having a plurality of recesses in outer surface portions thereof, means rotatably supporting said rod valve, an inlet nipple for and an outlet nipple for and in communication with opposite ends of each said hole when said valve is in open position and in communication with said tubing lengths between said instrumentalities and said toy figures, said inlet nipples being in communication with said recesses when said valve is in closed position and out of communication with said holes, supporting means for said nipples whereby said rod valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

3. Game apparatus comprising tubing for the passage of air, an instrumentality in communication with and adapted to be actuated to force air into said tubing, a hollow toy figure supported in a liquid medium for moving bodily and in communication with said tubing and adapted to receive air therefrom and admit liquid thereinto, a rod valve having a hole extending laterally therethrough, an inlet nipple and an outlet nipple in communication with opposite ends of said hole when said valve is in open position and in communication with said tubing between said instrumentality and said toy figure, and supporting means for said rod valve adapted to permit movement of said valve relative to said supporting means, said valve having a recess therein adapted to communicate with a said nipple when said valve is moved to closed position and said latter-mentioned nipple is out of communication with said tubing, said recess venting to the air when said valve is moved to closed position.

4. Game apparatus comprising a plurality of lengths of tubing for the passage of air, a plurality of instrumentalities in communication with and adapted to be actuated to force air individually into said lengths of tubing, a plurality of hollow toy figures supported in a liquid medium

for moving bodily and in communication with said tubing lengths and adapted to individually receive air therefrom and admit liquid thereinto, a rod valve having a plurality of holes therein, a plurality of inlet nipples and outlet nipples in communication with opposite ends of said holes and in communication with said tubing lengths between said instrumentalities and said toy figures, and supporting means for said rod valve adapted to permit movement of said rod valve relative to said supporting means.

5. Game apparatus comprising tubing for the passage of air, an instrumentality in communication with and adapted to be actuated to force air into said tubing, a hollow toy figure supported in a liquid medium for moving bodily and in communication with said tubing and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to said toy figure, an electrical switch located in the path of movement of said actuating rod and adapted to be actuated thereby when said toy figure reaches a predetermined point in said path of movement, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting said switch to said solenoid, a valve between said instrumentality and said toy figure having a hole therein in communication with said tubing when in open position, means movably supporting said valve, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said valve whereby movement of said finger can move said valve from open to closed position and from closed to open position.

6. Game apparatus comprising tubing for the passage of air, an instrumentality in communication with and adapted to be actuated to force air into said tubing, a hollow toy figure supported in a liquid medium for moving bodily and in communication with said tubing and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to said toy figure, an electrical switch located in the path of movement of said actuating rod and adapted to be actuated thereby when said toy figure reaches a predetermined point in said path of movement, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting said switch to said solenoid, a rod valve having a hole extending laterally therethrough and having a recess therein venting to the air when said valve is in closed position, means rotatably supporting said rod valve, an inlet nipple and an outlet nipple in communication with opposite ends of said hole when said valve is in open position and in communication with said tubing between said instrumentality and said toy figure, said inlet nipple being in communication with said recess when said valve is in closed position and out of communication with said hole, supporting means for said nipples whereby said rod valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

7. Game apparatus comprising tubing for the passage of air, an instrumentality in communication with and adapted to be actuated to force air into said tubing, a hollow toy figure supported in a liquid medium for moving bodily and in communication with said tubing and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to said toy figure, an electrical switch located in the path of movement of said actuating rod and adapted to be actuated thereby when said toy figure reaches a predetermined point in said path of movement, an electrical relay, electricity transmitting means connecting said switch and said relay, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting said relay to said solenoid, a signal member, electricity transmitting means connecting said relay to said signal member, a rod valve having a hole extending laterally therethrough, means rotatably supporting said rod valve, an inlet nipple and an outlet nipple in communication with opposite ends of said hole when said valve is in open position and in communication with said tubing between said instrumentality and said toy figure, supporting means for said nipples whereby said rod valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

8. Game apparatus comprising a plurality of lengths of tubing for the passage of air, a plurality if instrumentalities in communication with and adapted to be actuated to force air into said lengths of tubing, a plurality of hollow toy figures supported in a liquid medium for moving bodily and in communication with said tubing lengths and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached to and for each said toy figure, an electrical switch for and located in the path of movement of each said actuating rod and adapted to be actuated thereby when a said toy figure reaches a predetermined point in said path of movement, a plurality of electrical relays, electricity transmitting means connecting said switches and said relays, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting each said relay to said solenoid, a plurality of signal members, electricity transmitting means individually connecting said relays to said signal members, an elongate rod valve having a plurality of holes extending laterally therethrough, means rotatably supporting said rod valve, an inlet nipple for and an outlet nipple for and in communication with opposite ends of each said hole when said valve is in open position and in communication with said tubing lengths between said instrumentalities and said toy figures, supporting means for said nipples whereby said rod valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

9. Game apparatus comprising a plurality of lengths of tubing for the passage of air, a plurality of instrumentalities in communication with and adapted to be actuated to force air into said lengths of tubing, a plurality of hollow toy figures supported in a liquid medium for moving bodily and in communication with said tubing lengths and adapted to admit liquid and be actuated by air received therefrom, an actuating rod attached

to and for each said toy figure, an electrical switch for and located in the path of movement of each said actuating rod and adapted to be actuated thereby when a said toy figure reaches a predetermined point in said path of movement, a plurality of electrical relays, electricity transmitting means connecting said switches and said relays, a solenoid embodying a movable finger adapted to be actuated by electrical current, electricity transmitting means connecting each said relay to said solenoid, a plurality of signal members, electricity transmitting means individually connecting a said relay to said signal members, an elongate rod valve having a plurality of holes extending laterally therethrough and having a plurality of recesses in outer surface portions thereof, means rotatably supporting said rod valve, an inlet nipple for and an outlet nipple for and in communication with opposite ends of each said hole when said valve is in open position and in communication with said tubing lengths between said instrumentalities and said toy figures, one of said nipples being in communication with said recesses when said valve is in closed position and out of communication with said holes, supporting means for said nipples whereby said rod

valve may be rotatably moved independently of said nipples, a lever connected to and adapted to be actuated by movement of said finger and fixedly connected to said rod valve whereby movement of said finger can move said rod valve from open to closed position and from closed to open position.

JOHN R. CHRISTIAN.

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