FIG. 10.

FIG. 11.

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This invention consists of improvements in game apparatus including two goal assemblies each of which is preferably a swimming bath so that the apparatus floats in the water. Each goal assembly consists of a goal supported on a plastic or other support and held in the middle of the assembly by three, four or more flexible rays which connect the goal to an outer circular tube. The rays are shorter than the normal distance between the goal and the circular tube so that the goal is properly disposed at the centre of the circle. Instead of using two goals a simple game may be played using one assembly.

This invention is concerned with the provision of improved apparatus for playing a ball game on land or in water. My ball game is preferably played by two teams who endeavour to score goals by propelling the ball into the goal at the opposite end of the field of play which may in fact be land or water and my improved apparatus is especially concerned with the goal assembly which may be provided at each end of the field of play or which may be used as a single goal.

According to the present invention I provide a goal assembly comprising an outer substantially circular tube by means of which the assembly is caused to float when in the water, and which may be looked upon rather as the rim of a wheel, a central goal member adapted to receive and to retain the ball when a goal is scored which may be looked upon rather as the hub of a wheel and a plurality of flexible or partly flexible rays connecting the tube to the central goal in the manner of spokes, the arrangement being such that the radial length of the rays is less than the true distance from the goal to the natural circular shape of the tube so that the tube is pulled inwardly at the places where the rays join the member and the rays are under constant tension whereby the goal member is effectively centralised and stabilised.

The circular tube may be a relatively large bore circular of tubing made of a suitable plastics material for example standard polyethylene water pipe of 1" bore with plugged ends to form the main flotation for the goal.

The central goal may conveniently be in the form of a standard household bowl of plastics material which is inverted and has the centre bottom of the bowl removed which makes a central opening to form an aperture for the ball, the edges of the opening preferably being bent inwardly to receive the ball. In addition a number of holes are provided in the side through which the inner ends of the rays may be extended and two extra holes in the outer bottom to receive the head of an arch member which stands up above the bowl to act as the goal posts. The central opening in the bowl may have a 10" diameter approximately and this novel adaptation of the bowl is an important feature of the invention as the cost of the bowl in quantity may be well under four shillings or 50 cents each and the colours may be brilliant which is also important as an attraction. The arch member may be of metal or of a firm plastics material e.g. a strong plastics tube and a suitable net may be provided.

There may be four separate rays set at 90° apart at N., S., E. and W. and these flexible rays are preferably made of plastics material and are connected to the bowl and to the outer tube so as to be under tension. However preferably I provide two ray members each of which extend from one side of the tubular member through the bowl to the other side of the tubular member so that each ray member forms a complete diameter of the substantially circular tube.

I prefer to provide a special or suitable form of quick release coupling between the rays and the tube and/or between the rays and the bowl.

The outer circular tube is preferably a single length of flexible plastics tube bent around into a circle with the free ends interconnected for example by a plug e.g. a short rustless pipe plug fixed in one end of the tube, the projecting end of which is an easy fit inside the other end, see FIGURE 2. Disconnection of the two ends during play is prevented by providing a sleeve or link to embrace the joint and to hold it in place. This sleeve or link may also serve for connection of one of the rays to the tube. Four sleeves may be provided on the tube to receive the ends of the four rays but the sleeve which embraces the joint in the tube is larger than the other three or made of wider material. Alternatively and preferably a quick release slot is provided in the end of each ray to engage with a T-shaped or other stud on a sleeve on the circular tube so that a quick release link is provided.

To hold the goal assembly in a required position I may provide an anchor in the form of a weight and to retain the anchor in position I connect it to a flexible and resilient, e.g. elastic, cable which is wound and unwound as required from a suitable form of reel connected to the underside of the goal e.g. to one of the ray members as it passes under the bowl.

Some advantages of my game are that it is:
1. Efficient both in water (the main requirement) and on land;
2. (2) Cheap to buy;
3. Long lasting;
4. Easy to manufacture;
5. Easy to repair;
6. Interesting from the player aspect;
7. Interesting from the spectator aspect;
8. Shows up well on television—both black and white, and colour.
9. Caters for the very young children or invalids on land or in shallow water;
10. Caters for schools (both sexes for land and water use);
11. Suitable for swimming club use in pool, lake or sea;
12. Easy to pack up and compact for storage and transit, and is light in weight. For example in packing up a goal assembly the circular tube may simply be disconnected at the join and from the rays and may then be coiled up e.g. with three coils.
13. Quick to bring into use both on water and on land, since it is easy to assemble and marking out of the field of play is not required.
14. Generally safe in use—a difficult point in water games. The materials used were chosen always with this in mind.

A preferred embodiment of the invention together with some suggested rules for play and some modifications will now be described by way of example, in connection with the accompanying drawings in which:

FIGURE 1 is a perspective view of one form of the game apparatus using four separate rays and FIGURE 2 is a plan view of an embodiment illustrating diametrical rays.
FIGURE 3 is a detail view showing the means for connecting the two ends of the tube. FIGURE 4 is a detail view showing how the rays are connected to the tube and correctly positioned thereon. FIGURE 5 is detail view showing the engagement of the arch member with one of the rays. FIGURE 6 is a view similar to FIGURE 2 illustrating the use of four separate rays each consisting of one length of material. FIGURE 7 is a detail view of the goal showing how the edges may be bent down inwardly to receive the ball. FIGURE 8 is a detail view illustrating the screw on which which is wound a cord supporting an anchor. FIGURE 9 is a detail sectional plan of one form of the invention showing the goal and the centre part of the rays. FIGURE 10 is a detail view showing one way of connecting the net to the arch and FIGURE 11 is a detail view of a modification showing the connection of a ray to the tube for quick release and connection. The game, which I call Ringball, is mainly a water game which will test the skill, speed, and endurance of swimmers—and with slight modifications in the rules it makes a fast land game.

Two goal assemblies including their circular tubes are the only markings required, therefore the game can be played in the water and play can be commenced within 30 seconds. Also the goals can be removed and the area made free again for general swimming etc.

The goal assemblies are especially designed to make the equipment safe in use and the assemblies have no sharp projections or hard surfaces.

Each goal 1 is surrounded by a 9 foot diameter protective and substantially circular tube 2. The diameter of each goal is 8 inches, with an 8 inch high arch 3. The goals may be set 25 yards apart and are anchored by an adjustable elastic cord 4 ending with a lead weight 5. The adjustable elastic cord 4 should be only long enough to avoid pulling down the floating goal 1. The ball 6 is preferably 7½ inches in diameter and is a reduced pressure standard size 4 plastic lightweight football.

A stop net 7 is fitted to the arch 3 over the goal 1 so that it is possible to score a goal with a really hard shot. Flexible rays 8 centralizing the goal 1 within the substantially circular tube 2 are placed under tension by deforming the tube 2 by making the flexible rays 8 shorter than the true radial distance from the goal 1 to the natural circle formed by the tube 2. The effect of this is to force an approximately flat section to form on the tube 2 at each of the four connecting points between the four rays 8 and the tube 2. Connection of the rays 8 to the tube 2 may be effected by the provision of a loop 9 at the outer end of each ray 8 as will be hereinafter more fully described. This results in the four flexible rays 8 being under constant tension and this tension device holds the central goal 1 steady. Naturally if desired I may provide an assembly with three rays instead of four or with more than four rays. As a goal 1 I use a standard preferably coloured plastic household bowl 10 which is inverted and a hole 11 is provided for each ray and 2 holes 12 are provided for the legs of the arch. A hole 13 to receive the ball is formed in the inverted base of the bowl 10 at the centre thereof. When inverted this provides a firm arch 3 which is required and a convenient centre anchorage for the 4 rays. When in use the goal is not obviously an inverted household bowl and appears as just a part of the manufactured goal design.

The use of a large bore tube 2 of plastic material for example standard polyethylene water piping of 1¼ bore with plugged ends as the main floatation means for the goal 1 is another feature of the invention.

This circular tube 2 supports the rays 8 and through them, the goal 1, so that the rays 8 in effect act as suspension bridges at right angles to each other supporting the goal 1 at their centres. This is especially the case when I use two double-ended rays 8 instead of four separate rays so that the rays in effect cross each other under the centre of the goal 1 although this is not apparent unless the underside of the goal 1 is examined.

This construction adds very greatly to the strength of the rays 8 and is an advantage with the "suspension bridge" design. An easy but firm junction of the meeting ends of the circular tube 2 may be arranged, see FIGURE 3, by a short plug 14 which is fixed in one end 15 of the tube 2 and the projecting end of which is within 30° of the tube 16 of the tube 2. The loosening off of the ends 15, 16 during play is prevented by connecting a ray to the tube at the joint and by the provision of a loop 9 of wider material for the connection of this ray as indicated for example in FIGURES 1 and 2 at 9. The extra width of the device 9 at the joint where the two ends 15, 16 of the tube are connected assists in retaining the plug 14 in its connecting position.

In at least some cases some form of special retaining device may be advisable because many teams playing Ringball will consist of young children not strong enough to pull out any tight fitting simple push-in device.

One method of providing for the quick release of the rays 8 and to locate them in position is to provide a loop 17 at the end of each ray member 8 as a fixture to the rays as commenced within the loops 17 may be slipped over one end of the tube 2 when it is disconnected, that is before assembly, and the loops 17 may be pushed around the tube 2 so that they assume their proper position relatively to the centre and relative to one another. In order to locate the rays and loops in their proper position I provide a pair of collars 18 at each locating point, the collars 18 being fixed to the outside of the tube with a space in between to receive the loop. The loops 17 are arranged so as to be big enough and sufficiently resilient to slip easily over the collars when the loops are being put on but when the apparatus is assembled the tension on the rays 8 is sufficient to hold the loops in position.

The centre parts 19 of the rays may be of tubular formation or of part tubular formation as indicated for example in FIGURES 1 and 2 and strips of polyvinyl chloride or other suitable plastic material may be used for the outer part 20 of the rays 8.

The net 7 may be fixed to the goal arch 3 by a series of bands of plastic insulating tape or by any other convenient method.

The arch 3 is arranged to hold the net very accurately in position and this is important because I provide a double-sided net to give an equal chance of scoring from either side of the net. Hard shooting will soon disturb the accurate centering of the net unless it is firmly secured in position.

The lower ends of the arms of arch 3 are of inverted U shape at 22 to fit over the corresponding centre part 19 of a ray under the goal 1. This U shaping at 22 is an important part of the arch fitting because the arch 3 has to withstand frequent and possibly extremely hard blows from the ball 6 without changing position or shape and yet has to be easily removable for transit by being withdrawn through the 2 tight-fitting circular holes 12 in the goal top surface. Nylon or other cord fixes the 2 inverted U arch ends to the ray tube as will be hereinafter more fully described.

A reel 24 is provided for the cord 4 to which the weight 5 is connected and this reel 24 may be made of a length of plastics pipe with end flanges 25 fitted. One of the end flanges may have slots 26 to receive and fix the cord 4 to retain it at a desired length, see FIGURE 8. When using two double ended rays 8 the outer part 20 of each ray 8 may be of flat strap form and is relatively flexible and the centre part 19 may be of more rigid plastic material.

In FIGURE 8 it will be observed that the outer part
of each ray is a flat strap and that the centre part of each ray comprises a tubular section extended through a hole in the side of the inverted bowl and then flattened or opened out inside the bowl. Each strap is pushed through its tubular section and is secured in position therein by shaping the inner end of the strap to engage with the tubular section.

As an alternative I may use four entirely separate rays 8 in which case easy ray may be partly relatively rigid and partly flexible or each may be flexible along its whole length, but in the preferred construction each ray comprises a length of flat plastics material connected at the outer end to the tube and at the inner end to the central goal as described in connection with FIGURE 8.

The net may be connected to the arch in various ways but I prefer to connect it in position by means of a relatively thick cord 27 secured at each lower end to lugs 28 connected to the arch, the cord 27 being connected at intervals around the arch by a series of loops 29 in a thinner cord 30 pulled out through holes in the arch. In this case it will be understood that the arch is tubular and the cord 30 is extended around the arch inside the tube. The ends of the cord 27 are secured below the lugs by a knot at each end.

Another method of connecting the rays 8 to the tube 2 to provide the quick connection and release feature is illustrated in detail in FIGURE 10 in which each ray, only one being shown, has a slot 31 therein which for connection is slipped over a T-shaped projection 32 on a sleeve connected to the outside of the tube 2, disconnection being effected simply by aligning the slot with the projection and then slipping the ray off the projection.

To sum up therefore I have provided a game apparatus comprising a goal 1 surrounded by a circular tube 2, an arch 3 being provided over the goal to support a net 7. The apparatus is anchored by a weight 5 suspended from a cord 4 and the game is played with a ball 6. Flexible rays 8 connect the goal 1 to the tube 2 and these rays are under tension so that the goal is properly centered. Other details of the apparatus will be readily understood from the foregoing description.

I claim:
1. A goal assembly for a game comprising an outer substantially circular, resilient, water tight tube by means of which the assembly is caused to float when in the water and which may be looked upon as the rim of a wheel, a central goal member adapted to receive and to retain a ball when a goal is scored and which may be looked upon as the hub of a wheel and a plurality of flexible rays connecting the outer circular tube to the central goal in the manner of spokes, the arrangement being such that the radial length of the rays is less than the true distance from the goal to the natural circular shape of the tube so that the tube is pulled inwardly at the places where the rays join the tube and the rays are kept under constant tension whereby the goal member is effectively centralised and stabilised.

2. A goal assembly according to claim 1 wherein each ray forms a radius of the circular tube and extends from the central goal to the tube.

3. A goal assembly according to claim 1 wherein two rays are formed by a single member which extends across the circle formed by the circular tube, as a diameter.

4. A goal assembly according to claim 1 wherein the outer circular tube comprises a length of standard polyethylene water pipe.

5. A goal assembly according to claim 1 wherein the central goal includes a bowl of plastics material which is inverted and has the central bottom of the bowl removed to make an opening to receive the ball.

6. A goal assembly according to claim 1 wherein the central goal includes a bowl of plastics material which is inverted and has the central bottom removed to receive the ball, a number of additional rays being provided, some in the side through which the inner ends of the rays are extended and some in the outer bottom to receive the legs of an arch member which stands up above the goal to act as the goal posts.

7. A goal assembly according to claim 1 wherein four separate radial rays are provided set at 90° apart.

8. A goal assembly according to claim 1 wherein four diametrical ray members are provided connected to the central goal member in the middle so as to form two pairs of oppositely disposed radial rays.

9. A goal assembly according to claim 1 wherein the circular tube consists of a single length of tube with its two ends interconnected by means of a plug fixed in one end and projecting therefrom so that the projection can be inserted into the other end, disconnection being prevented by providing a sleeve to embrace the joint.

10. A goal assembly according to claim 1 including an anchor in the form of a weight connected to the central goal by a flexible and resilient cable which is wound on and unwound from a reel as required.

11. A goal assembly according to claim 1 wherein each ray has a loop at the outer end to be slipped over the tube to secure the rays on the tube, the rays being located in correct position by a pair of collars at each locating point, the collars being fixed to the outside of the tube.

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U.S. Cl. X.R.