Dec. 9, 1969 R. E. MYERS ET AL 3,482,837

ROLLING OBJECT GAME WITH ELASTIC BED AND PROBE

Filed March 28, 1967

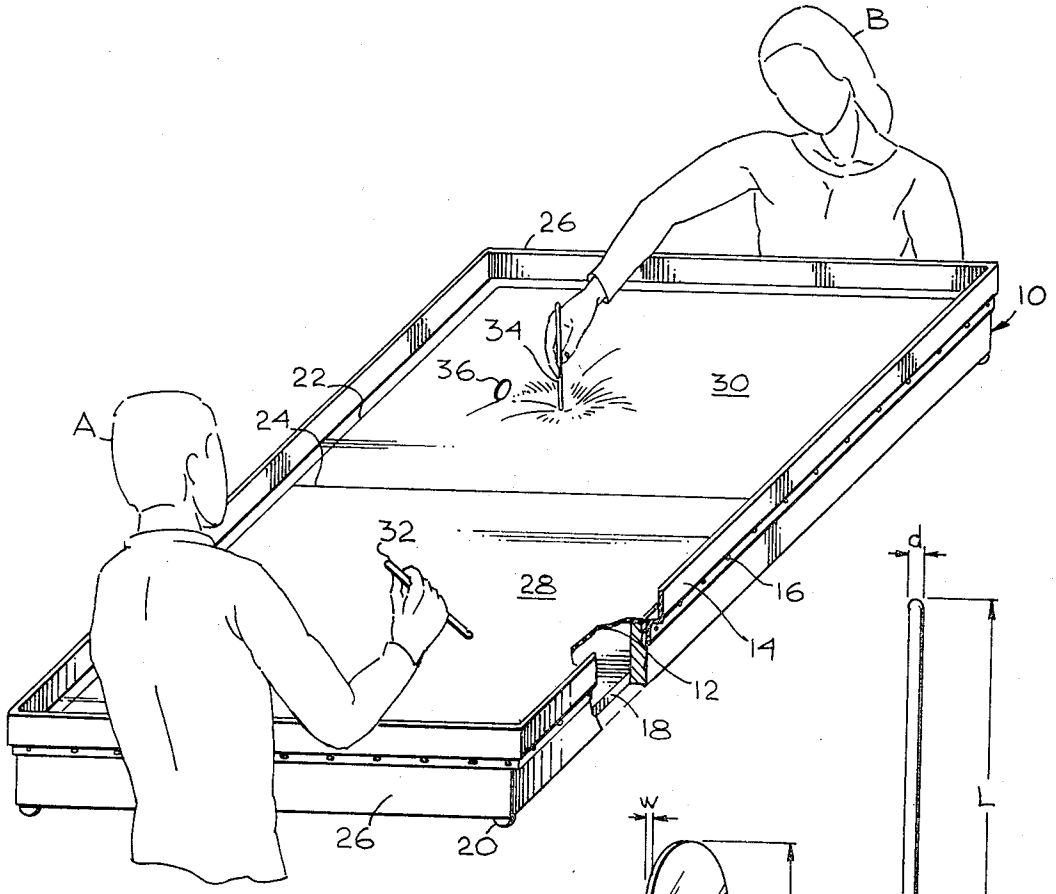


Fig. 1

Fig. 2

Fig. 3

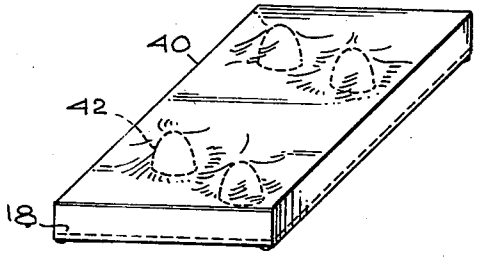


Fig. 4

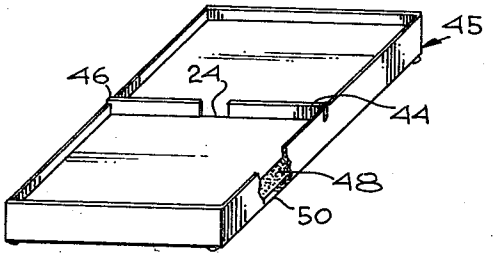


Fig. 5

INVENTORS
ROBERT E. MEYERS
EUGENE R WESTERBERG
BY Lindenberg & Freilich

ATTORNEYS

United States Patent Office

3,482,837

Patented Dec. 9, 1969

3,482,837

ROLLING OBJECT GAME WITH ELASTIC BED AND PROBE

Robert E. Myers, 1161 Noel Drive, and Eugene R. Westerberg, 1118 Laurel St., Apt. 3, both of Menlo Park, Calif. 94025

Filed Mar. 28, 1967, Ser. No. 626,479

Int. Cl. A63f 7/00

U.S. Cl. 273—109 4 Claims

ABSTRACT OF THE DISCLOSURE

A game apparatus comprising a sheet of rubber supported on a frame, a disc which can roll on the sheet, and rods held by the players for deforming the sheet to change the speed and direction of the rolling disc. The game may be played by two players at opposite sides of the sheet, who cause a disc to roll back and forth between them by each player pressing his rod into the rubber sheet as the disc rolls onto his side to cause the disc to curve around, increase speed and roll back toward the opponent's side.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to apparatus for playing games and more particularly to apparatus including a deformable surface for enabling a player to direct the movement of a rolling object.

Description of the prior art

Some of the more entertaining types of games employ the dexterity of the players to move objects. Many of such games involve the passing of an object between two players by throwing or hitting it or otherwise applying direct force to the object. Additional entertainment could be obtained from games of the type where objects are passed back and forth if force were applied indirectly to the object so that more complicated considerations were involved and the satisfaction were obtained of observing the outcome of indirectly applied forces.

SUMMARY OF THE INVENTION

Accordingly, one object of the present invention is to provide a game apparatus for directing the movement of a rolling object by indirectly applied forces.

Another object of the present invention is to provide a game apparatus wherein the speed and direction of rolling objects can be altered by pressing on a portion of the apparatus with a force which is varied in accordance with the present and desired location, speed, and direction of movement of the object.

Yet another object of the present invention is to provide game apparatus for enabling the passage of objects between players wherein the object moves with relatively low speed yet with stable motion, so that the apparatus can be made relatively small.

The foregoing and other objects of the invention are realized by a game apparatus comprising a sheet of elastic material such as rubber held taut by a rectangular frame. Rolling objects such as discs are rolled onto the sheet so that they pass from one side to the other. A player holding a rod depresses the rubber sheet as the rolling disc approaches his side. The sheet may be depressed in a manner that causes the disc to make a wide U-turn and roll back towards the other side of the apparatus, and the speed

of the disc may be increased. As the disc approaches the side of the sheet from which it came, the other player may push his rod into the sheet to alter the speed and direction of the disc so that it rolls back toward his opponent. The player who fails to keep his disc in motion, as by allowing it to fall over while on his side of the sheet, loses.

Various embodiments of the invention may be employed such as thick plates of of elastomeric material instead of a stretched sheet, the use of spherical or other shaped objects, the employment of barriers through which the object must pass, or the inclusion of static depressions or his in the surface. The apparatus can be used to play a large variety of games where a rolling object must be controlled, or may be used for entertainment where no competition between players is involved but the enjoyment is obtained by the indirect manipulation of rolling objects.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is an isometric view, partly in section, of a game apparatus constructed in accordance with the invention, showing two players utilizing rods to direct the rolling motion of a disc on the apparatus;

FIGURE 2 is an isometric view of the disc used in the apparatus of FIGURE 1;

FIGURE 3 is an elevation view of a probe used in the apparatus of FIGURE 1;

FIGURE 4 is an isometric view of an embodiment of the invention which includes static deformations; and

FIGURE 5 is an isometric view of an embodiment of the invention which includes a barrier through which a rolling object must pass.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The apparatus of the invention shown in FIGURE 1 comprises a rectangular frame **10**, a sheet of elastomeric material such as natural rubber **12** stretched over the rectangular frame, rails **14** located around the periphery of the frame and extending above the level of the elastomeric sheet **12** which form a catching trough around the playing area, and a multiplicity of screws **16** which project through screw holes in the railing **14** and elastomeric sheet **12** and screw into threaded holes in the frame **10**. A rectangular backing board **18** is disposed at the bottom of the frame about six inches below the sheet **12**; the backing board **18** serves to limit the amount of deformation of the sheet which prevents tearing of it, and also serves to brace the frame **12**. Rubber feet **20** support the apparatus on a table or the like. Perimeter boundary lines **22** are marked on the upper side of the sheet near its edges, and a net line **24** is marked on the sheet parallel to the short side **26** of the rectangular frame and along the center of the sheet to divide it into two rectangular playing sides comprising a first side **28** and a second side **30**.

A game may be played by two players A and B who hold probes **32** and **34** in their hands. The probes are rods of plastic, wood or any other structural material having rounded ends to prevent puncturing of the sheet **12** when they are pressed there against. A disc **36** rolls on the surface of the sheet **12** during play, and the players press the ends of their probes into the sheet **12** to depress it and create valleys into which the disc **36** tends to roll. By coordinating the pressure and time at which the pressure is applied to the sheet by the probe, with the location, speed and direction of the rolling disc **36**, a player

can increase or decrease the velocity of the disc and may also change its direction to the extent that the disc may be made to make a 180° turn or "U-turn" and move back in the direction from whence it came.

At typical game which may be played with the apparatus of FIGURE 1 involves rolling the disc **36** back and forth across the net line between the first and second playing sides **28** and **30**. The object of the game is for each player to keep the disc rolling while it is on his playing side and not to allow it to go past the boundary line **22** around his playing side, while attempting to return the disc so that the opponent is unable to keep it in motion or is unable to prevent it from rolling outside of the boundary line **22** around his playing side. Each player may depress the elastomeric sheet **12** anywhere on his playing side to control the motion of the disc **36** as it passes the net line **24** and enters his playing side. By depressing the sheet with the probe, a "gravitational potential well" is produced which will cause the rolling disc to accelerate and turn. The motion produced on the disc by the probe is analogous to the motion of a free body orbiting in space around a fixed body. With practice, a player can generally develop the skill required to capture and "orbit" the disc by pressing his probe into the elastic sheet at an appropriate point, and can release the disc in a desired direction by decreasing the pressure on the sheet.

The game may typically be started by one player such as player A serving the disc by rolling it with his hands from his side toward playing area **30**. His opponent player B then attempts to steer the disc back over the net line **24** by depressing the elastic sheet. If player B thus returns the disc, without having the disc topple on his side or roll out of bounds, the disc is said to be "in play" and the game begins. If player B is not successful, player A must again serve the disc and continue to do so until it is returned over the net line by player B.

When the disc is in play, the player on whose side the disc is located may place his probe in any position on his playing side and may modulate the pressure (but in many games, not the position of the probe) to change the speed and direction of the disc. If a player should cause the disc to bounce in his return across the net line, his opponent may continue play or may require a new serve. When the disc topples or goes out of bounds on the opponent's side, a point is scored, and the first player to accumulate a predetermined number of points wins the game.

It is found that when two discs are placed together so that their flat surfaces are fully in contact, the discs tend to remain together with their tops remaining in contact and the parts touching the sheet separately slightly. The two-disc pair generally forms a stable rolling structure which can be accelerated and turned and the discs will remain together provided sufficient skill is exercised by the players. Games can be played wherein the object is to keep the two discs together, or to turn around all discs even though there is more than one disc in play at one time.

Variations in the playing surface itself can be established to provide for other interesting games. Fore example, FIGURE 4 illustrates an elastic sheet **40** under which have been placed four mound-shaped objects **42** having bases which rest on the backboard **18** and zeniths which deform upwardly the elastic sheet. The mounds in the elastic sheet add variations to the game. Another example of a variation is the apparatus illustrated in FIGURE 5 wherein barriers **44** and **46** extend along the net line **24**.

In the embodiment of FIGURE 5 the object, such as a disc or ball, can pass only through the opening between the barriers **44** and **46**, and this obstruction adds additional challenge to the game. The addition of the obstruction shown in FIGURE 5 is especially useful where the apparatus is employed by only one player to play a solitary game. The solitary player holds a probe in each hand and attempts to pass the object through the barriers a maximum number of times; in the case of a disc object the goal may be to pass the disc through the barriers a maximum number of times without allowing the disc to fall on its side, as it would when it hits a barrier **44** or **46**.

A large number of basic variations may be resorted to in the design of the apparatus in accordance with the invention. The elastic playing surface may be a stretched sheet of natural rubber, a synthetic rubber such as neoprene, an elastic material of the plastic type such as styrene butadiene block copolymer, a foam material such as polyurethane, a woven elastomer such as spandex, a woven cloth such as a stretch nylon fabric, or any of a variety of other materials. Furthermore, thick plates of elastic material such as polyurethane foam may be employed wherein the elastic material rests on a supporting bed instead of being stretched tautly over a frame. Apparatus of this type is shown in FIGURE 5 wherein the elastic material is a block **48** of polyurethane foam which is not stretched on the frame **45**, but is instead supported over its lower surface by a backing board **50**. In order to obtain substantial control over rolling objects and to enable the return of them, the elastic plate should be at least about one inch thick and preferably at least four inches thick. Various materials and thicknesses have been employed for the elastic and it has been found that for playing surfaces of a rectangular shape with a size of approximately 42" x 32", natural rubber sheets having thicknesses in the range of .01 inch to .02 inch are most satisfactory.

In general, small discs, as opposed to spheres, cylinder or irregular objects, have proved most satisfactory as rolling objects, largely because of the challenge of keeping them from falling over and because they can easily be made to accelerate and turn. Discs such as the one shown in FIGURE 2 have been made using various sizes and constructions. Discs with diameters D of 1 to 1½ inches and widths of about 1/16 inch have proved most satisfactory, whether of solid unitary construction, of washer shape, or as washers with center plugs of a different material from the washer. Cylinders, spheres, and oddly shaped rolling objects have been tried but have not been found as satisfactory as discs in ease of control and entertainment value.

Rods of the type shown in detail in FIGURE 3 constructed of plastic with lengths L of six inches and diameters *d* of ¼ inch have been found convenient to hold and easily used. Obviously a wide variety of probes can be used, for example, a finger, or even the whole hand of the players, and a glove or thimble-like attachment for the fingers can be used to prevent damage to the sheet surface from fingernails.

While a rectangular shape has been shown, many other shapes such as square or circular shapes may be utilized. Furthermore, various markings may be employed on the surface of the elastic material and games can be played using more than two players, for example several players may be gathered about a circular apparatus to play a game where the object is to transfer a rolling disc from one player to the next around the circular playing field.

Although particular embodiments of the invention have been described and illustrated, it should be understood that many variations and modifications may be resorted to without departing from the teachings of the invention, and the scope of the invention is defined only by a just interpretation of the accompanying claims.

What is claimed is:

1. Game apparatus for controlling rolling movement of an object with a circular circumference comprising:

a bed of taut elastic material for supporting said object, said bed having an appreciably depressible upper surface;

frame means for supporting said bed to allow sufficient depression of said upper surface thereof to allow appreciable changes in the speed and direction of said object, said frame means including a back-up

board located below the bed, and said frame means substantially devoid of hidden obstructions to said depression; and

a probe unattached to said bed and frame, with an end for downwardly depressing said bed from above to the depth of said back-up board, said board being spaced below the bed a distance sufficient to allow depression of said bed.

2. The game described in claim **1** wherein:

said probe comprises an instrument adapted to be held by a hand.

3. The game apparatus described in claim **1** wherein:

said frame means includes rails extending around the perimeter of said bed to prevent the loss of objects.

4. The game apparatus described in claim **1** including:

a disc-shaped rolling object.

References Cited

UNITED STATES PATENTS

1,593,421	7/1926	Blum	273—85
2,160,299	5/1939	Zinngrabe	273—85
2,580,616	1/1952	Spiegel	273—109 X

FOREIGN PATENTS

735,347	11/1932	France.
514,384	12/1930	Germany.

ANTON O. OECHSLE, Primary Examiner

THOMAS ZACK, Assistant Examiner

U.S. Cl. X.R.

273—126