United States Patent

[11] **3,554,553**

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[54] **TILTING GAME BOARD WITH FRUSTO-CONICAL ROLLING MEMBER**
12 Claims, 12 Drawing Figs.

[52] **U.S. Cl.** **273/110,** 128; 46/100
[51] **Int. Cl.** **A63b 67/14**
[50] **Field of Search** ..... 273/110, 128RP, 86(3), 109, 113, 115; 46/100; 273/126

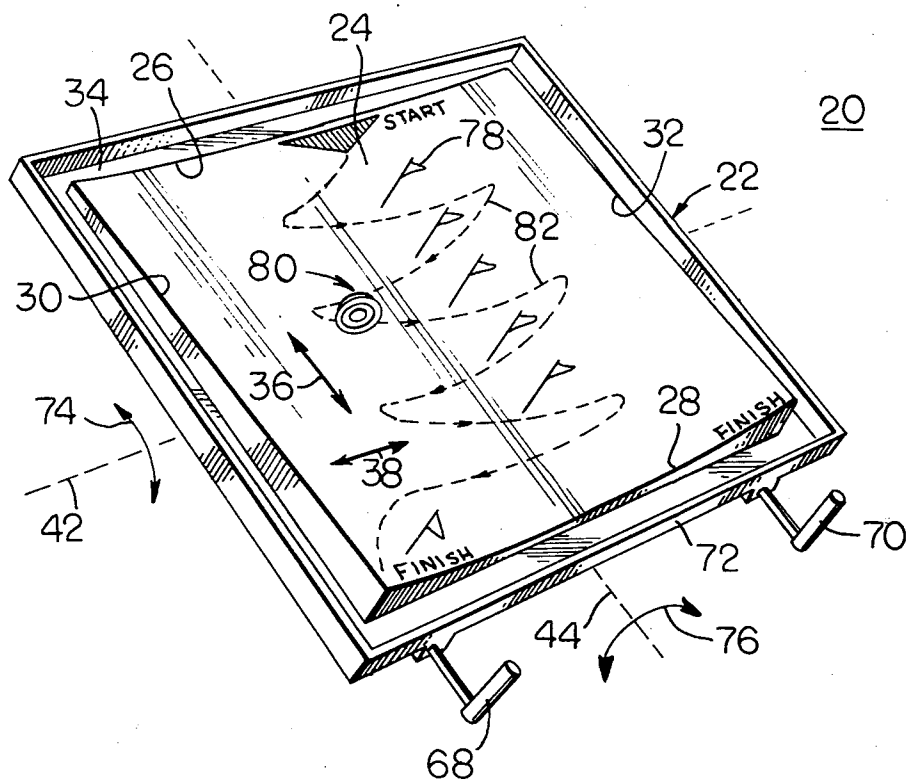
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ABSTRACT: A game apparatus including a game board which has an extended area, upwardly facing playing surface, the playing surface in cross section being substantially straight in one direction and convexly curved in a second direction which is transverse to the first direction. A supporting structure is provided for supporting the game board upon a supporting surface for compound tilting movement of the playing surface so that manipulation of the game board will cause a playing member to move on the playing surface in a desired path. In one embodiment, the board is supported for tilting movement of the playing surface in all directions. In another embodiment the board is supported for tilting movement about two axes respectively parallel with the first and second directions of the playing surface. The apparatus further includes a playing member which rolls upon the playing surface, the playing member having a rolling surface defining a frustum of a cone. In a preferred embodiment, the playing member comprises a pair of spaced-apart, coaxially mounted discs, one larger than the other, the outer peripheral edges of the discs mutually defining the frustum. An indicator member is provided rotatably supported between the discs and projecting radially outwardly beyond the frustum, the indicator member having means for maintaining the same in an upright position.



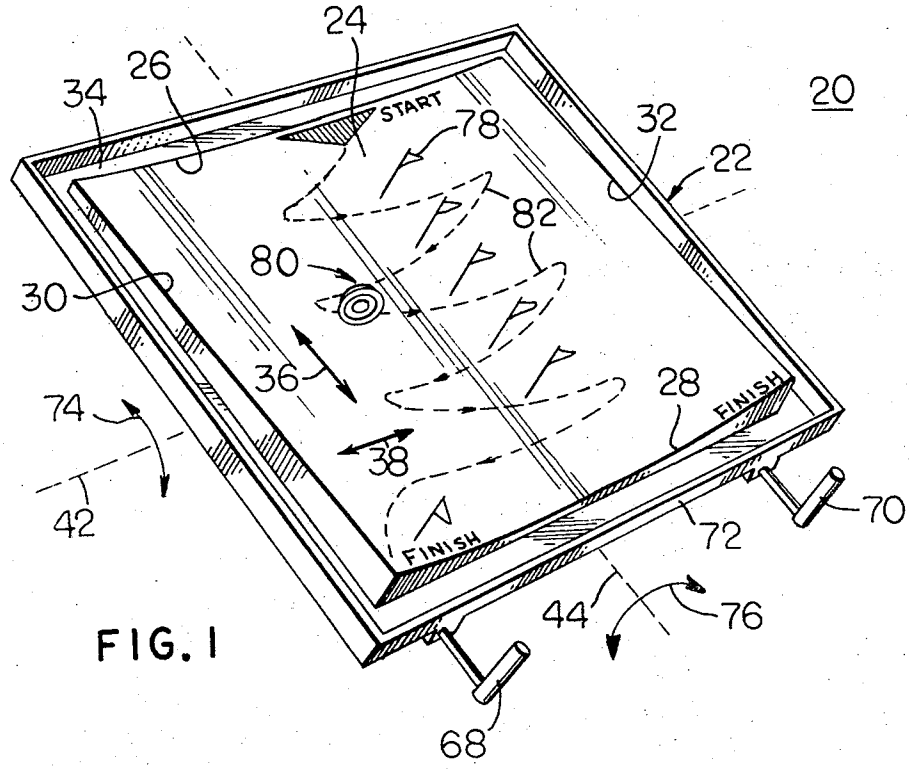


FIG. 1

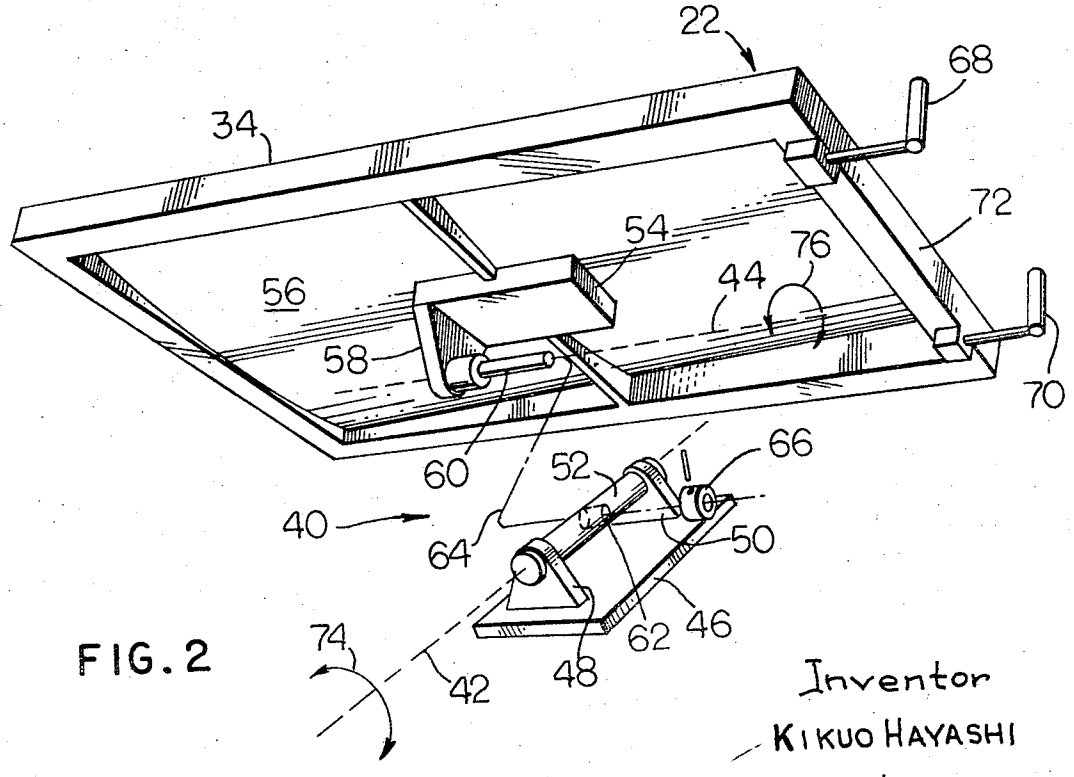


FIG. 2

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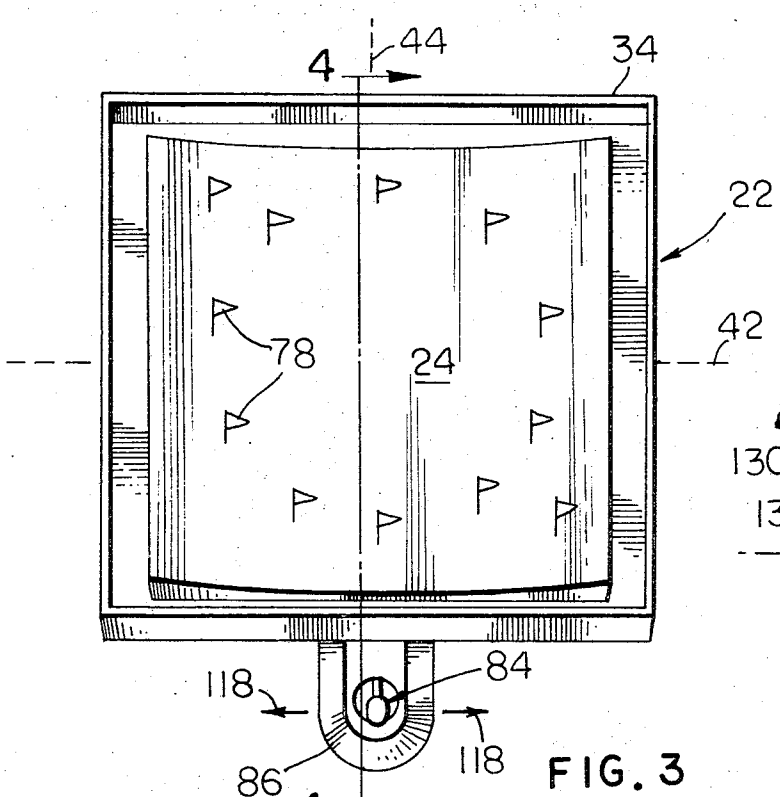


FIG. 3

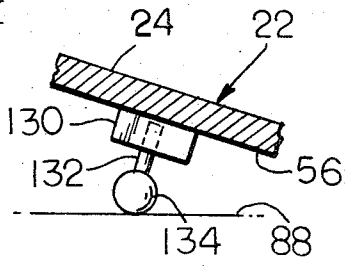


FIG. 7

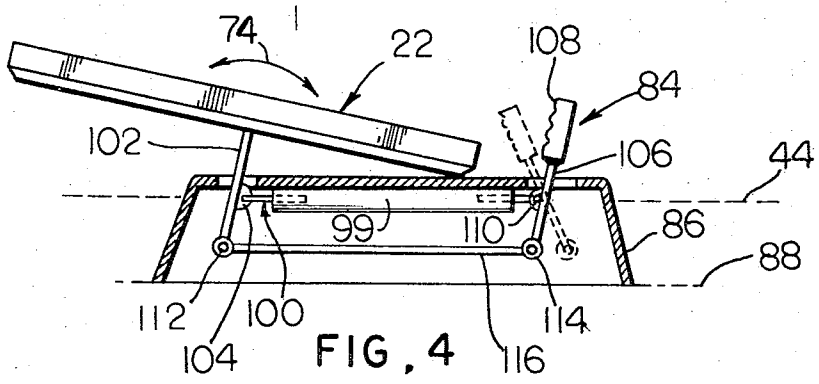


FIG. 4

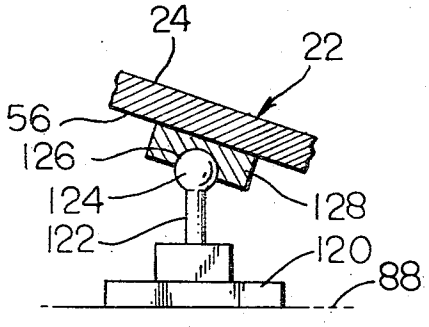


FIG. 5

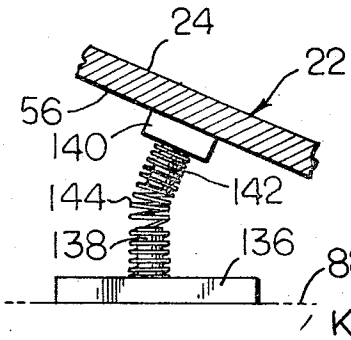


FIG. 6

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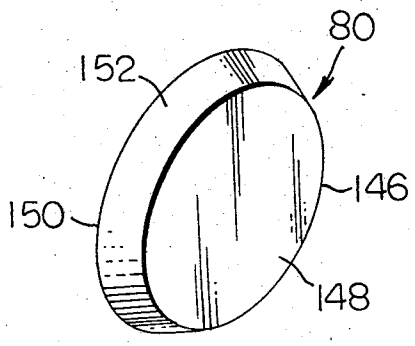


FIG. 8

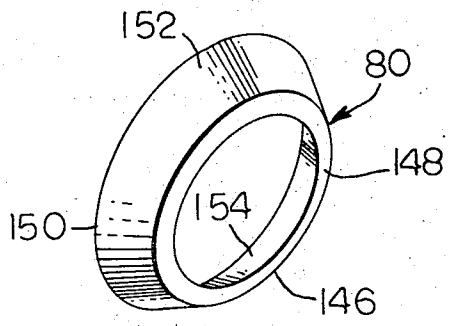


FIG. 9

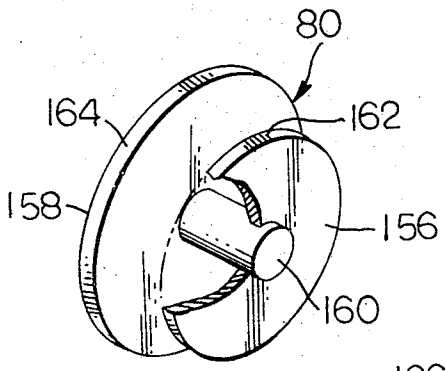


FIG. 10

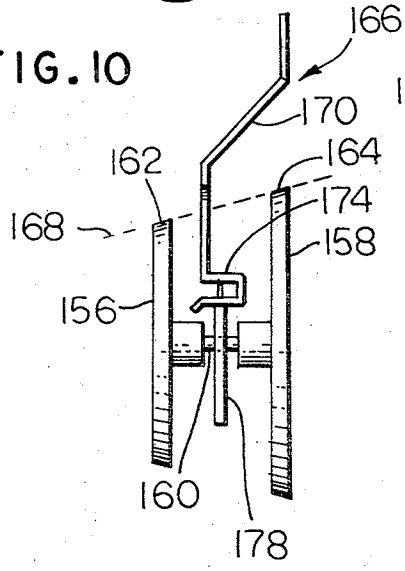


FIG. 11

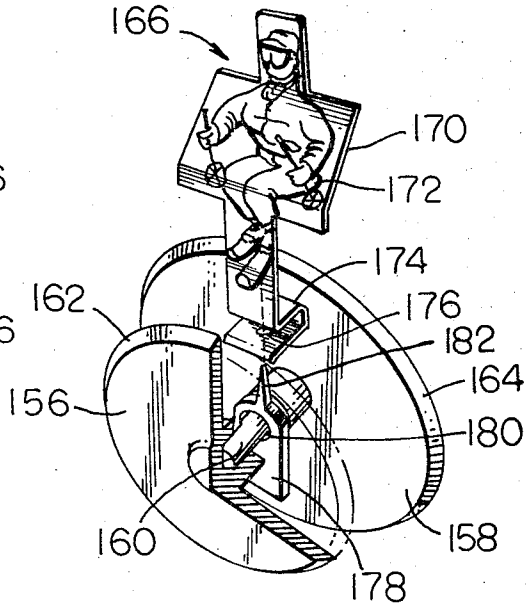


FIG. 12

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TILTING GAME BOARD WITH FRUSTO-CONICAL ROLLING MEMBER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to game apparatus, and more particularly to game apparatus of the type incorporating a game board which may be manipulated to cause a playing member to move thereover in a desired path.

2. Description of the Prior Art

Game apparatus has been provided incorporating a game board which may be tilted by manual manipulation in order to cause a playing member to move thereover in a path to avoid various obstacles. Such prior game apparatus has incorporated various mounting arrangements for providing the manually manipulatable tilting movement. In one such prior art arrangement, tilting movement in any direction is provided by a single "joy stick" type of control lever. In another such prior art arrangement, the board is mounted for pivotal movement about two mutually perpendicular axes with manually actuated handles on the board and the tilting arrangement respectively providing the tilting movement. In all such prior manually manipulatable game board apparatus known to the present applicant, the playing surface of the board has been flat and the playing member has been a ball or cylindrical roller.

SUMMARY OF THE INVENTION

In order to provide a more interesting game and to require increased skill in the play thereof, the playing surface of the game board of the present invention in cross section is straight in one direction but is convexly curved in a second direction transverse to the first direction. Further, the playing member has a rolling surface which defines a frustum of a cone. By reason of the curved playing surface of the game board and the frustoconical-shaped playing member, much greater dexterity is required in the manipulation of the board.

In its broader aspects, the invention provides a game board having an extended area, upwardly facing playing surface, the playing surface in cross section being substantially straight in a first direction and a convexly curved in a second direction transverse to the first direction. Means are provided for supporting the board upon a supporting surface for compound tilting movement of the playing surface so that manipulation of the board will cause a playing member to move on the playing surface in a desired path. In a preferred embodiment, the playing member has a rolling surface which defines a frustum of a cone.

It is accordingly an object of the invention to provide improved game board apparatus of the manually manipulatable type.

Another object of the invention is to provide an improved rolling playing member for use on manually manipulatable game board apparatus.

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view in perspective showing one embodiment of the game board of the invention;

FIG. 2 is a bottom, exploded view in perspective showing the game board of FIG. 1;

FIG. 3 is a top view in perspective showing another embodiment of the invention;

FIG. 4 is a side cross-sectional view taken along the line 4–4 of FIG. 3;

FIG. 5 is a fragmentary cross-sectional view showing a modified form of mounting arrangement for the game board of the invention;

FIG. 6 is a fragmentary cross-sectional view showing another form of mounting arrangement;

FIG. 7 is a fragmentary cross-sectional view showing yet another form of mounting arrangement;

FIG. 8 is a view in perspective showing one embodiment of the rolling playing member for use with the game board of the invention;

FIG. 9 is a view in perspective showing another embodiment of the rolling playing member;

FIG. 10 is a view in perspective, partly broken away, showing yet another embodiment of the rolling playing member of the invention;

FIG. 11 is a side view showing still another embodiment of the rolling playing member of the invention; and

FIG. 12 is a view in perspective, partly broken away, further showing the rolling playing member of FIG. 11.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 and 2 of the drawings, one embodiment of the improved game board apparatus of the invention, generally identified at 20, comprises a board assembly 22 having an extended area, upwardly facing, generally rectangular playing surface 24 formed thereon. Playing surface 24 is defined by opposite ends 26 and 28 and opposite sides 30 and 32. In the illustrated embodiment for playing a skiing-type game, end 26 of the playing surface 24 is the "starting" end and end 28 is the "finish" end. A gutter structure 34 peripherally surrounds the playing surface 24 for receiving playing members which may inadvertently be propelled over one of the edges of the playing surface.

In accordance with the invention, the playing surface 24, in cross section, is straight throughout its area in the direction parallel with side edges 30 and 32, as shown by the arrows 36, and is convexly curved throughout its area in the direction parallel with the end edges 26 and 28, i.e., transverse to the direction 36, as shown by the arrows 38.

The game board 22 is supported upon a supporting surface (not shown) by tilting apparatus 40 which provides tilting movement for the board 22 and its playing surface 24 about a first axis 22 parallel with the direction 38 and a second axis 44 parallel with the direction 36. Tilting assembly 40 comprises a supporting member 46 adapted to be supported upon the supporting surface and having a pair of spaced-apart, upstanding posts 48 and 50 formed thereon. Pivot member 52 extends between and is pivotally supported by the posts 48 and 50 for pivotal movement about the axis 42. A mounting member 54 is mounted on the bottom surface 56 of the playing surface 24 and has a post 58 depending therefrom. Another pivot member 60 is provided having one end secured to post 58 and extending on the axis 44. Pivot member 60 is rotatably seated in opening 62 formed in the pivot member 50 at right angles to the axis 42, as indicated by the dashed line 64, and is secured in position by means of a suitable collar member 66.

A pair of manual manipulating handles 68 and 70 are respectively secured to the board 22 extending outwardly from end 72 of the gutter structure 34 which is adjacent the "finish" end 28 of the playing surface 24. It will thus be seen that the game board 22 and its playing surface 24 may be manipulated manually by the handle members 68 and 70 to provide a compound tilting movement, the board and playing surface being tilted about axis 42, as shown by the arrows 74, and also tilted about the axis 44, as shown by the arrows 76.

In the illustrated embodiment for playing a skiing-type game, a plurality of abutments in the form of flags 78 are provided in spaced-apart relation along the longitudinal center line of the playing surface 24, i.e., midway between the side edges 30 and 32, the flags 78 thus simulating a slalom skiing course. Each of the flags 78 is preferably mounted for rotational movement on the playing surface 24. A rolling playing member 80, which may take any of the forms shown in FIGS. 8 through 12, is provided which rolls upon the playing surface 24 between the "start" end 26 and the "finish" end 28 in

response to manipulation of the handles 68 and 70, the object of the game being to cause the rolling playing member 80 to traverse the path defined by the flags 78 in slalom fashion as indicated by the dashed line 82. By reason of the rotatable mounting of the flags 78 upon the playing surface 24, flags 78 may be initially oriented in a direction parallel with the center line and thus a given flag hit by the rolling member 80 will be turned to a different position indicating engagement with the member 80. As will be more fully described in connection with FIGS. 8 through 12 inclusive, the rolling playing member 80 has a frustoconical rolling surface, the combination of this frustoconical rolling surface and the convexly curved playing surface 24 increasing the manipulative dexterity required in order to cause the rolling member 80 to traverse the slalom course 82 without impinging upon any of the flags 78.

Referring now to FIGS. 3 and 4, in which like elements are indicated by like reference numerals, another embodiment of the invention is shown in which the game board 22 and its playing surface 24 are manipulated by a single "joy stick" type control lever 84. Here a supporting frame 86 is provided adapted to be supported upon the supporting surface 88. A bearing member 99 is provided mounted on the frame 86 aligned with the axis 44 and pivot member 100 is journaled in the bearing member 99. A first lever member 102 is provided having its upper end mounted on the game board 22 and depending therefrom and being pivotally connected intermediate its ends to one end of the pivot member 100, as at 104. The manipulating handle member 84 comprises a second lever member 106 having a grip portion 108 on its upper end and being pivotally connected intermediate its ends to the other end of the pivot member 100 as at 110. The lower ends 112 and 114 of the lever members 102 and 106 are connected by a link member 116. It will be seen that movement of the manipulating handle 84 between the position shown in solid lines in FIG. 4 and the position shown in dashed lines will result in pivotal movement of the game board 22 about axis 42 which extends through pivot point 104, as shown by the arrow 74, and that side-to-side movement of the manipulating handle 84, as shown by the arrows 118 will result in pivotal tilting movement of the game board 22 about axis 44 as shown by the arrows 76.

In this illustrated embodiment, the abutments or flags 78 are shown arranged on the playing surface 24 of the game board 22 in a circular pattern for playing a different form of game, it being understood that the abutments or flags 78 may be arranged in a desired pattern, or even in a random pattern, upon the playing surface 24.

Referring now to FIGS. 5, 6 and 7, the game board 22 and its playing surface 24 may be supported upon the supporting surface 88 for tilting movement in all directions rather than for two-axis tilting movement as in the case of the previous embodiments. Referring to FIG. 5 in which like elements are indicated by like reference numerals, a supporting member 120 is provided adapted to be supported upon the supporting surface 88 and having a post 122 extending upwardly therefrom. Post 122 has a spherically-shaped portion 124 formed on its upper end which cooperatively engages a spherically-shaped recess 126 formed in a mounting member 128 which is mounted on the lower surface 56 of the playing surface 24.

Referring to FIG. 7 in which like elements are still indicated by like reference numerals, in the simplest form of the invention, a mounting member 130 is mounted on the abutment surface 56 of the playing surface 24 and has a post 132 depending therefrom. Post 132 has a spherically-shaped portion 134 formed on its lower end which engages the supporting surface 88.

Referring now to FIG. 6 in which like elements are still indicated by like reference numerals, a supporting member 136 is provided adapted to be supported upon the supporting surface 88 and having a post 138 extending upwardly therefrom. A mounting member 140 is mounted on the bottom surface 56 of the playing surface 24 and has a post 142 depending therefrom. An elongated, multicoil relatively stiff coil spring 144 is provided having its opposite ends respectively seated upon the posts 138 and 142 and extending therebetween, thereby providing the omnidirectional tilting movement of the game board 22 and its playing surface 24.

Referring now to FIG. 8, in one embodiment thereof, the rolling playing member 80 may take the form of a solid member 146 having opposite ends 148 and 150 joined by a continuous frustoconical rolling surface 152.

Referring to FIG. 9 in which like elements are indicated by like reference numerals, the rolling playing member 146, rather than being solid as in the case of FIG. 8, may be in the form of an annulus having a frustoconical interior surface 154, as shown.

Referring now to FIG. 10, the rolling playing member 80 may comprise a pair of circular disc members 156 and 158 coaxially mounted in spaced-apart relationship upon an axle member 160. Disc member 156 is smaller than disc member 158 and thus the peripheral edges 162 and 164 of disc members 156 and 158 mutually define the frustoconical rolling surface.

Referring now to FIGS. 11 and 12 in which like elements are indicated by like reference numerals, an indicator member 166 may be provided rotatably mounted on the axle 160 and projecting radially outwardly beyond the frustum, as indicated by the dashed line 168. More particularly, the indicator member 166 may comprise a member 170 formed of relatively thin sheet metal and having an upper portion 172 upon which a decorative image of a skier may be suitably formed, as suggested in FIG. 12. Member 170 has a generally U-shaped portion 174 formed at its lower end having an opening 176 formed therein. A weight member 178 is provided having a central opening 180 which rotatably receives the axle 160 and having a pointed upper end 182 which is received in the opening 176 in portion 174 of member 172, thus attaching the same. While thus attached it will be seen that the weight member 178 will retain the indicator member 170 in an upright position. In this embodiment, the peripheral edges 162 and 164 of the disc members 156 and 158 are beveled further to define the frustum 168, as shown.

The game of the invention as aforementioned is played by manipulating the game board 22 in a manner to cause the playing member 80 to traverse the playing surface 24. With reference to the above-described embodiment in which the flags 78 are arranged in a row in a manner simulating a slalom skiing course, individual players can compete by measuring the length of time it takes for the playing member 80 of an individual player to traverse the course 82. With reference to the embodiment illustrated in FIG. 3, the game may be played by measuring the time it takes for an individual's playing member 80 to roll radially of the circular pattern of flags 78 and to circumnavigate each of the flags 78. Alternatively, the total number of each of the flags hit by the playing member 80 in a given period of time by each of the players can be recorded as a score. As above mentioned, the flags 78 are rotatably mounted to the playing surface 24 such that the flags 78 when hit by the playing member 80 will turn thus indicating the score at the end of each player's turn.

While there have been described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention.

I claim:

1. Game apparatus comprising: a game board having an upwardly facing playing surface, said playing surface in cross section being substantially straight in a first direction and concavely curved in a second direction transverse to said first direction, said playing surface being extended in both said first and second directions; means supporting said board upon a supporting surface for tilting movement of said playing surface in all directions; a playing member on said playing surface, said playing member having a surface defining a frustum of a cone on which said playing member rolls, whereby manipula-

tion of said board will cause said playing member to move on said playing surface.

2. The apparatus of claim 1 wherein said supporting means further includes a support member adapted to be supported on said supporting surface, said tilting means comprising a single multiturn coil spring disposed between and respectively connected to said support member and said board and being the sole support therefor.

3. The apparatus of claim 1 wherein said tilting means comprises a member having a generally spherically-shaped surface adapted to engage and to be supported on said support surface, said member being rigidly connected to said board and being the sole support therefor.

4. The apparatus of claim 1 wherein said supporting means further includes a support member adapted to be supported on said supporting surface, said tilting means comprising another member having a generally spherically-shaped surface thereon cooperatively engaging a generally spherically-shaped recess formed in one of said support members and said board, said other member being rigidly connected to the other of said support members and said board and being the sole support for said board.

5. The apparatus of claim 1 wherein said supporting means includes means for providing tilting movement of said playing surface about first and second axes respectively parallel with said first and second directions.

6. The apparatus of claim 5 wherein said supporting means further includes a support member adapted to be supported on a supporting surface, said tilting means comprising a first pivot member pivotally connected to one of said support members and said board for pivotal movement about one of

said axes, and a second pivot member rigidly connected to the other of said support members and board and pivotally connected to said first pivot member for pivotal movement about the other of said axes.

7. The apparatus of claim 1 wherein said playing member has spaced opposite ends with said rolling surface extending continuously therebetween.

8. The apparatus of claim 1 wherein said playing member comprises a pair of discs, one larger than the other, and means for mounting said discs on the same axis in spaced-apart relationship, the outer peripheral edges of said discs mutually defining said playing surface.

9. The apparatus of claim 8 wherein said playing member further comprises a member rotatably supported on said mounting means between said discs and projecting radially outwardly beyond said playing member surface, and means on said member for maintaining the same in an upright position.

10. The apparatus of claim 1 wherein said game board has a starting position and a finishing position on said playing surface, said starting position and finishing position being spaced apart and adjacent to opposite portions of the periphery of said game board.

11. The apparatus of claim 1 wherein said game board has elements thereon arranged in spaced-apart relation, said elements defining a plurality of openings, each opening being defined by a pair of elements.

12. The apparatus of claim 11 wherein said elements are positioned in a row extending between said starting and finishing positions.