Aug. 16, 1949 P. CUSANO 2,479,477

BOARD LEVELING MECHANISM

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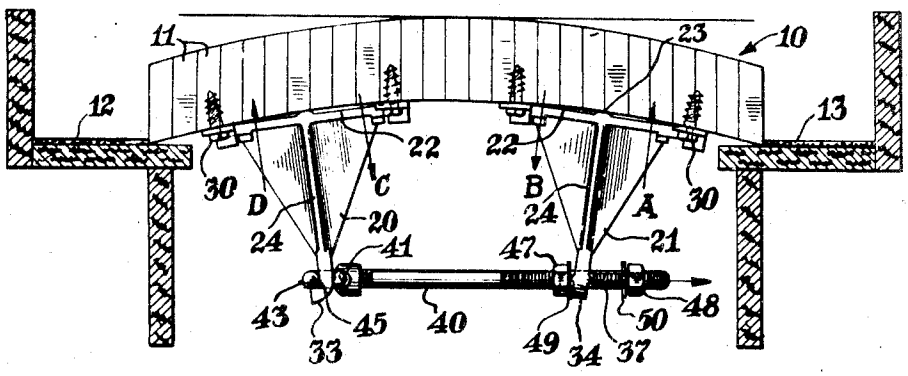


Fig. 1

Fig. 2

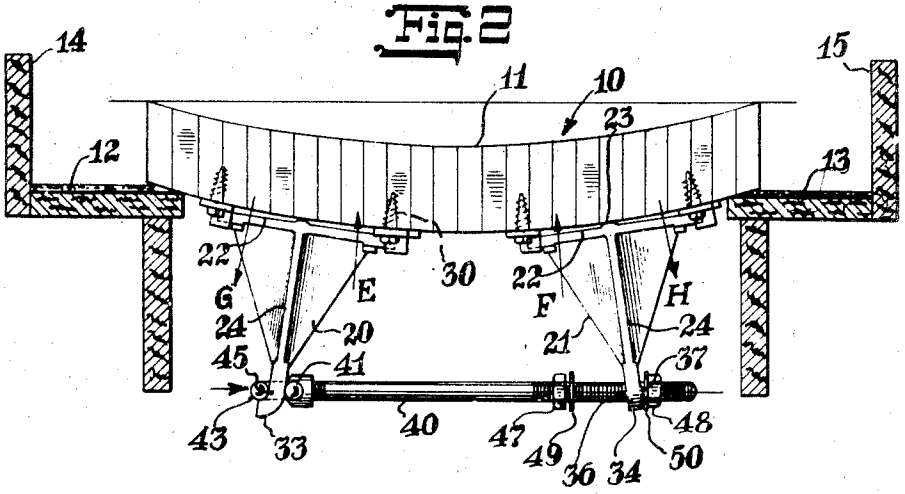
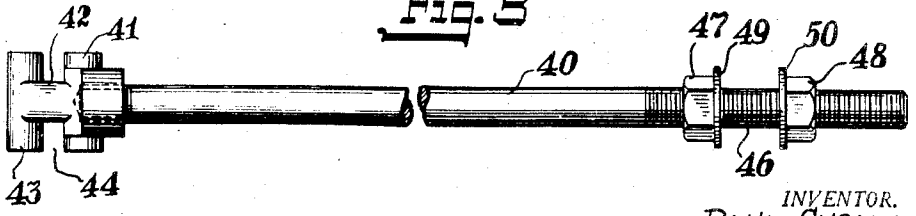


Fig. 3



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BOARD LEVELING MECHANISM

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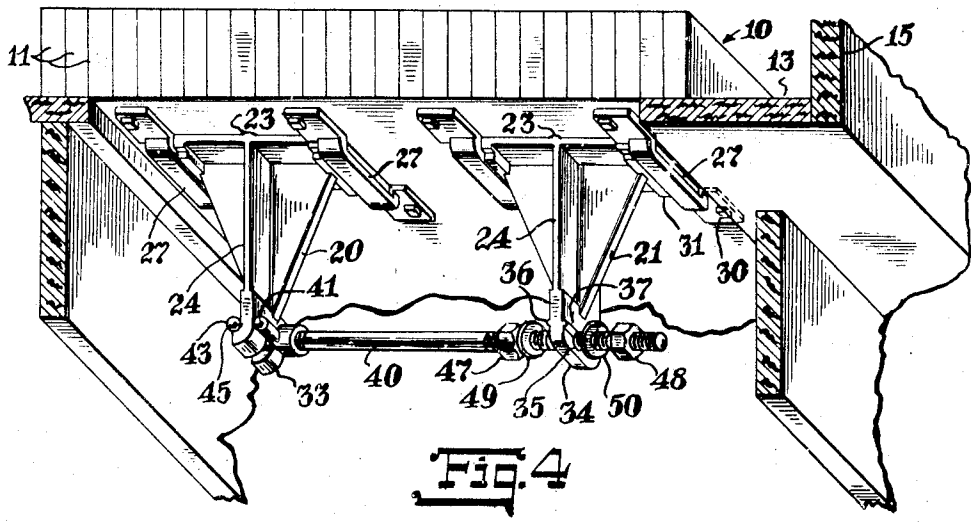


Fig. 4

Fig. 5

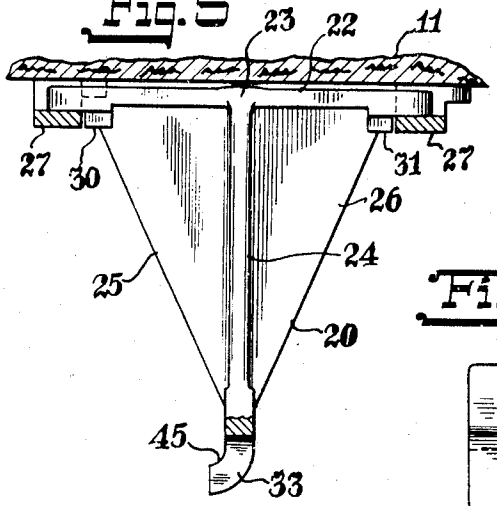


Fig. 6

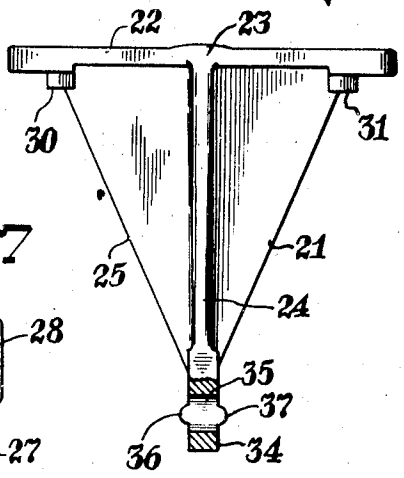


Fig. 7

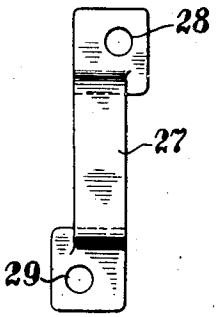
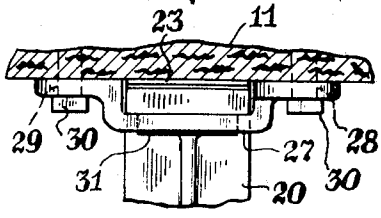


Fig. 8



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BOARD LEVELING MECHANISM

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4 Claims. (Cl. 273—126)

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This invention relates to mechanism for leveling boards, such as those used for game boards.

Game boards, such as shuffleboards, are usually made of maple strips measuring approximately one inch by three inches, these strips being glued and nailed flat to flat so that the resulting board is approximately three inches thick and twenty inches wide, and in length may range from sixteen to thirty feet. Such game boards, to be satisfactory and to give full play to the skill of the players, must be flat and level throughout the entire area of the playing surface. Manufacturers of high grade shuffleboards use the best types and grades of wood and go to great expense to produce game boards that satisfy these requirements.

However, even if the boards, when delivered, are entirely satisfactory and are level and flat, they are seriously affected by atmospheric conditions and changes in humidity and such varying conditions cause the board and playing surface to warp out of shape. For instance, they may bulge upwardly in the middle or center of the board, or may become concave at the center, with the ends bulging upwardly. Such conditions, moreover, may take place in different parts of the same game board where varying conditions exist. When this happens and the playing surface is not level, the weights do not slide or travel true to form and the players become irritated and lose interest in the game.

This invention has for its salient object to provide simple, practical, and readily accessible means which can be easily operated for leveling boards of the character described.

Another object of the invention is to provide leveling mechanism of the type specified which can be used at will to level the board and, furthermore, so constructed that the use thereof does not require any special skill or training.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is a sectional elevation of a game board having mounted thereon leveling mechanism constructed in accordance with the invention, the game board being shown in this view as bulging upwardly or convex;

Fig. 2 is a view similar to Fig. 1 but showing the board bulging downwardly or concave;

Fig. 3 is a plan view of the adjusting bolt by means of which the leveling mechanism is operated;

Fig. 4 is a perspective elevational view showing

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the game board in section and illustrating the leveling mechanism mounted thereon;

Fig. 5 is a view partly in elevation and partly in section illustrating one of the brackets or levers used for adjusting or leveling the game board;

Fig. 6 is an elevational view, partly in section, illustrating the other bracket or lever;

Fig. 7 is a top plan view of one of the hanger brackets for supporting the leveling brackets; and

Fig. 8 is an end elevation of the upper end portion of the leveling bracket showing the end supported in the hanger bracket.

The invention briefly described comprises a pair of leveling brackets which are secured in alinement across the under surface of a game board. These leveling brackets are connected at their lower ends by a bolt so constructed and so arranged that the lower ends of the brackets can be drawn together or forced apart, as the occasion demands. The brackets are mounted in hangers and are tiltable and when one of the nuts on the connecting bolt is turned in a direction to cause the nut to travel outwardly, the brackets will be forced apart at their bottoms, thus causing upward pressure to be exerted on the outer portions of the game board and causing downward pressure to be exerted on the central portion of the game board. On the other hand, when the nut first described is moved toward the center and the outer nut is turned in a direction to cause it to move inwardly on the bolt, the opposite action takes place and the central portion of the game board will be forced upwardly and the outer lateral portions will be drawn downwardly.

Further details of the invention will appear from the following description.

In the particular embodiment of the invention illustrated, there is shown in section a game board 10 which is formed by securing flat to flat a plurality of wooden strips 11, these strips being nailed and glued together under great pressure. When the board is manufactured it is planed and cut to the utmost accuracy so that it is absolutely straight, level and flat, within several thousandths of an inch, both crosswise and lengthwise. Thus, it can be assumed that when the board is delivered it will satisfy all of the most stringent requirements.

However, after the board has been delivered, it is subjected to varying changes in atmospheric conditions and humidity and the adjusting mechanism described below has been designed to enable the owner or user to easily and quickly

restore the board to level, flat and satisfactory playing condition.

The game board 10 is supported at its ends on suitable supports and gutters 12 and 13 are formed between the side walls 14 and 15 and the lateral edges of the game board.

The leveling mechanism comprises a pair of brackets 20 and 21 having elongated bases 22. Intermediate the ends of the bases 22 are formed ribs 23 which act as fulcrums as the brackets are adjusted.

Each bracket has a vertical, downwardly extending rib 24 which is connected to the base 22 intermediate the ends of the base and the rib 24 is braced or reinforced by webs or struts 25 and 26.

Each bracket 20, 21 is supported at the ends of its base in a hanger bracket 27 and from the showing in Fig. 7 it will be noted that each hanger bracket has bolt holes 28 and 29 at the ends thereof which are offset so that securing bolts 30 which secure the hanger brackets 27 to the under surface of the game board 10 will be screwed into different strips 11 of the game board.

From the illustration, particularly in Figs. 5 and 8, it will be noted that the ends of the base 22 are loosely mounted in the hanger brackets so that the leveling bracket can tilt about the fulcrum 23 as the adjusting means is manipulated in the manner described below. Each of the bases 22 has formed thereon downwardly extending lugs 30 and 31 which hold the bracket in place between the hanger brackets and prevent lateral movement of the base 22 which would tend to unseat the leveling bracket from the hanger brackets.

The leveling bracket 20 has formed on its lower end a downwardly extending bifurcated arcuate lug 33. The leveling bracket 21 has formed on its lower end a downwardly extending lug 34 having an opening 35 therethrough and having on opposite sides thereof and disposed laterally of the opening 34, outwardly extending substantially horizontal ribs 36 and 37.

The brackets 20 and 21 are tilted and adjusted by means of a bolt 40 having at one end a transversely extending pin 41, and beyond the pin and spaced therefrom by a connecting member 42 is a second pin 43. The space 44 between the transverse pins 41 and 43 is dimensioned to receive the bifurcated lower end or lug 33 of the leveling bracket 20 and when the bolt is mounted on this lug, as shown in Figs. 1, 2 and 4, one of the pins 41 will be disposed inwardly of the lug 33 and the other pin will be disposed outwardly of the lug 33, the pin 43 resting on the surface 45 of the lug 33.

The other end of the bolt 40 is threaded, as shown at 46, and on the threaded portions 46 are mounted oppositely facing nuts 47 and 48, between which are mounted washers 49 and 50. The bolt is passed through the opening 35 in the leveling bracket 21 after the nut 47 and washer 49 have been placed thereon, this nut and washer being disposed between the leveling brackets 21 and 22. Then the nut 48 and washer 50 are threaded onto the outer end of the bolt.

The adjusting mechanism or leveling mechanism is used in the following manner. Referring to Fig. 1, wherein the game board is shown in exaggerated form as bulging upwardly or convex, the nut 48 has been threaded outwardly on the bolt 40 and the nut 47 is then turned in a direction to cause this nut to travel outwardly toward

the end of the bolt. As the nut is thus adjusted, the washer 49 will engage the ribs 36 on the lug 34 of the leveling bracket 21 and cause this bracket to swing in an anti-clockwise direction about the fulcrum 23, thus forcing the right hand end portion of the base 22 upwardly in the direction of the arrow A and drawing the left hand end of the base 22 downwardly in the direction of the arrow B. This downward pull will be communicated to the game board by the hanger bracket at the left hand end of the leveling bracket 21. At the same time the pull exerted on the bolt 40 will be communicated to the hanger bracket 20 since the cross pin 41 will engage the inner surface of the lug 33 and force the leveling bracket 20 in a clockwise direction, pulling downwardly on the hanger bracket 27 which supports the right hand end of the leveling bracket 20, and forcing the other end of the base 22 of the leveling bracket 20 upwardly. The downward pull of the right hand end is indicated by the arrow C and the upward push on the left hand end is indicated by the arrow D.

When the game board is concave, as shown in Fig. 2 in exaggerated form, the nut 47 is screwed inwardly on the bolt 40 and the outer nut 48 is then screwed inwardly, causing the lower ends of the leveling brackets 20 and 21 to be pulled toward each other, thus forcing the inner ends of the bases 22 of the brackets 20 and 21 upwardly and pulling downwardly on the outer ends of these bases. The upward force on the inner ends is shown by arrows E and F and the downward pull on the outer ends is shown by the arrows G and H.

It will be obvious that a plurality of sets of leveling brackets will be necessary to adjust the game board throughout its length and the desired number will be provided to satisfy the requirements.

Although one specific embodiment of the invention has been particularly shown and described it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. A game apparatus comprising an elongated game board and a leveling mechanism attached to the lower side of said board, said mechanism comprising two spaced brackets secured to the board in alinement transversely thereof, each of said brackets comprising a base providing bearing surfaces of substantial area extending in opposite directions from the center of the bracket and transversely of the board, and a rigid arm depending from the center of each bracket, a connecting rod extending loosely through alined apertures in the lower ends of the bracket arms, and means on said rod and coacting with the rod and the arms for tilting the arms, relative to said rod, either toward or away from each other.

2. A game apparatus comprising an elongated game board and a leveling mechanism attached to the lower side of said board, said mechanism comprising two spaced brackets secured to the board in alinement transversely thereof, each of said brackets comprising an elongated base extending transversely of the board and a rigid arm depending from the center of the base, a connecting rod between the lower ends of the bracket arms and connected thereto at its ends and means on said rod and coacting with the rod and

arms for tilting the arms relative to said rod either toward or away from each other.

3. Leveling mechanism adapted for attachment to the underside of elongated game boards, said leveling mechanism including a pair of brackets adapted for attachment in spaced alined relation to the underside of the game board transversely of the longitudinal axis of the board, each bracket comprising an elongated cross head extending transversely of the game board and a rib centrally depending from the cross head, and adjustable means between the free ends of the ribs for connecting them and selectively drawing the ends of the ribs together or forcing them apart to impart tilting movements to the brackets.

4. Leveling mechanism adapted for attachment to the underside of elongated game boards, wherein the game boards comprise a plurality of flat elongated wooden strips adhesively secured together, said leveling mechanism including a pair of T-shaped brackets to be mounted loosely on the underside of the game board in alinement transversely thereof, and adjustable means between the free ends of the legs of the T-shaped brackets for connecting them and simultaneously selectively drawing the ends of the legs together or forcing them apart to impart tilting movements to the brackets.

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