March 14, 1967 H. L. GILROY ETAL 3,308,587

BOWLING ALLEY BOARD ADJUSTOR

Filed Dec. 30, 1963 2 Sheets-Sheet 1

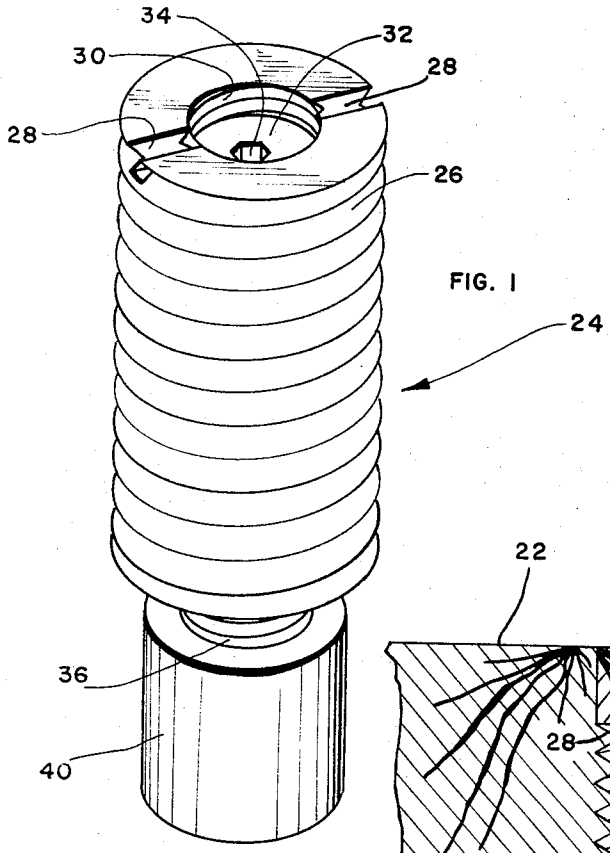


FIG. 1

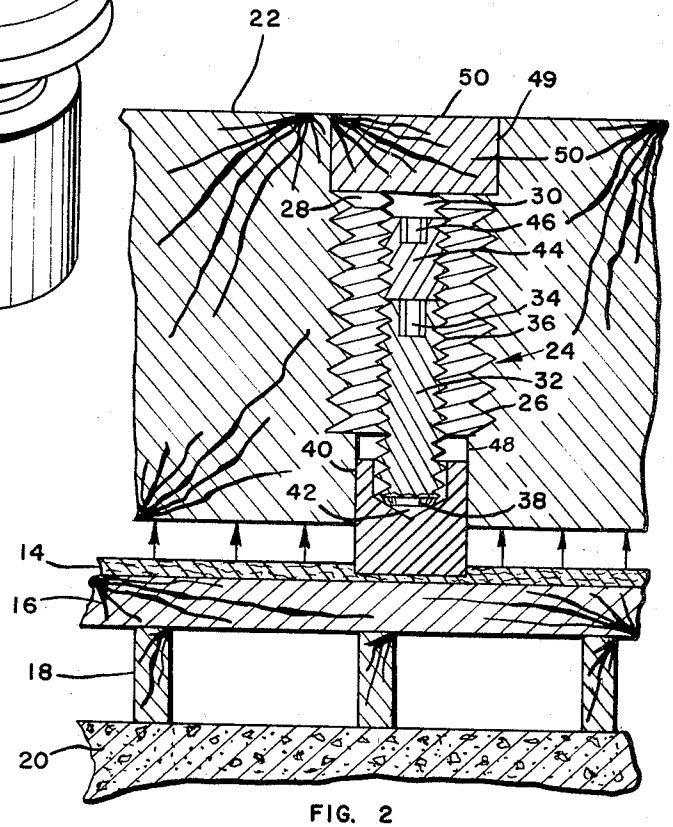


FIG. 2

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BOWLING ALLEY BOARD ADJUSTOR

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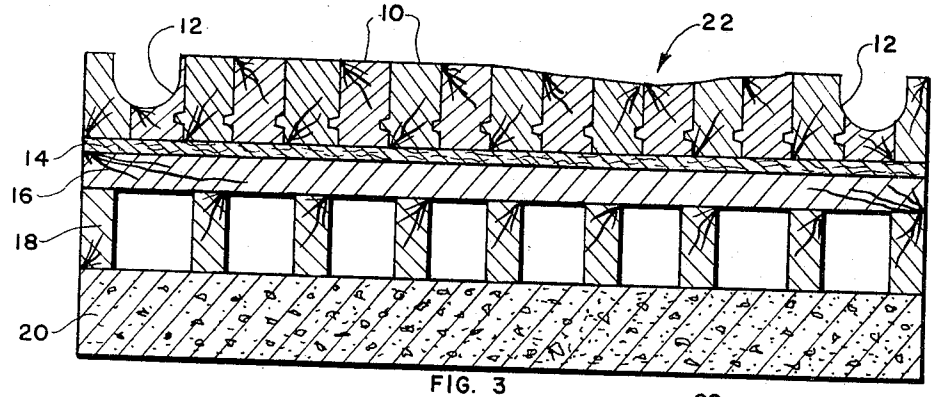


FIG. 3

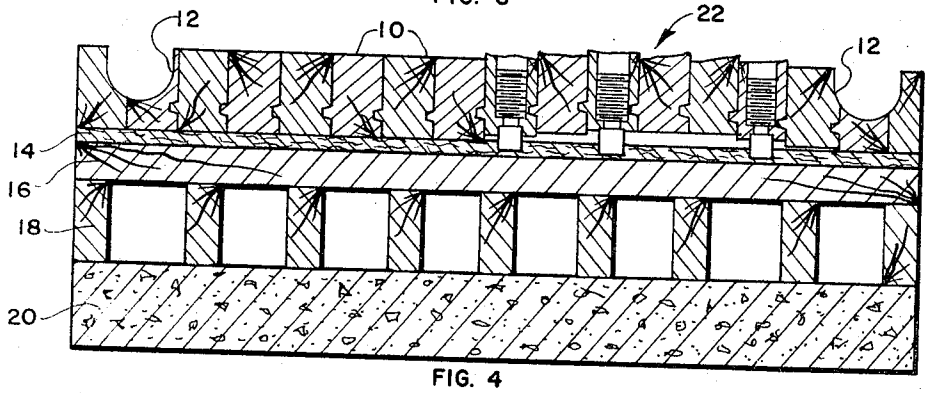


FIG. 4

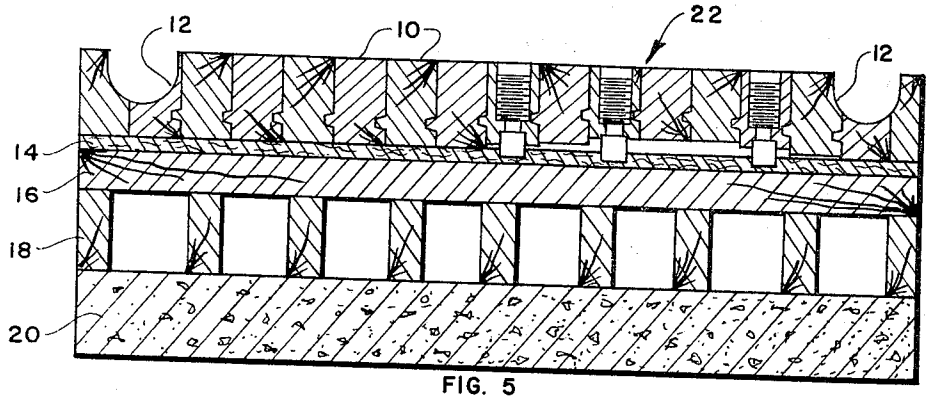


FIG. 5

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BOWLING ALLEY BOARD ADJUSTOR

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2 Claims. (Cl. 52—126)

This invention relates to method and apparatus for leveling, adjusting elevation, and repairing worn or warped portions of the surface of bowling alleys.

The surface of a bowling alley is subject to uneven wear by bowling balls during play. Such wear results in the formation of depressions in the surface of the alley which affect the course of the ball and are hence undesirable. Changes in temperature and humidity can also cause warping of the surface of the bowling alley, with a similar undesirable effect.

It is accordingly an object of the invention to provide improved means for leveling a portion of the surface of a bowling alley.

Another object of the invention is to provide improved means for adjusting the elevation of a portion of the surface of a bowling alley.

A further object of the invention is to provide improved means for elevating a worn portion of a bowling alley to a level superior to that of the alley proper, to facilitate repair thereof.

Still a further object of the invention is to provide an improved method for repairing worn portions of the surface of a bowling alley.

Broadly, the apparatus of the present invention comprises an externally threaded sleeve adapted to be threadably embedded within a vertical bore in a board of a bowling alley, a screw threadably engaged within said sleeve, and a bearing cup adapted to rest upon a leveling strip below said board and to receive the lower end of said screw. The method of the present invention comprises, broadly, drilling a bore downwardly into said board, dropping said bearing cup downwardly through said bore to rest upon said leveling strip, screwing said sleeve downwardly into said board completely below the upper surface of the board, and then screwing said screw downwardly within said sleeve and against said bearing cup to raise the upper surface of said board to an elevation superior to that of the alley proper. A hardwood plug is then inserted into said bore in said board, and the portion of the bowling alley thus elevated is sanded to the level of the alley proper and is varnished.

The above and other objects of the invention which will later become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, forming a part of this specification in which like characters are employed to designate like parts throughout the same, and wherein:

FIGURE 1 is a perspective view of a bowling alley adjustor with locking screw removed.

FIGURE 2 is a vertical section of a bowling alley adjustor operatively employed to elevate a portion of a bowling alley.

FIGURE 3 is a cross-section of a bowling alley, showing a depressed area worn in the surface thereon.

FIGURE 4 is a cross-section of a bowling alley showing a worn portion thereof elevated to a level superior to that of the alley proper.

FIGURE 5 is a cross-section of a bowling alley showing a previously worn portion thereof after repair.

Referring now more particularly to the drawings, a conventional bowling alley is formed by a plurality of elongated, interconnected tongue and groove hardwood

boards **10** having gutters **12** along the sides of the array. Boards **10** rest upon a one-half inch thick layer of Celotex **14** or similar material which cover a plurality of transversely arranged leveling strips **16** formed from common two inch by four inch lumber. Leveling strips **16** are supported by a plurality of wooden stringers **18** which, in turn, rest upon a concrete slab **20**.

While the particular materials and construction may vary considerably from one bowling alley to another, the construction of all bowling alleys are similar in their provision of boards and of leveling strips which support the boards from below. Repeated use of the bowling alley results in wear of the surface of boards **10**, creating depressions, such as that shown at **22** in FIGURE 3, in portions thereof.

We form from steel or other metal a sleeve, generally indicated at **24**, of a height less than that of boards **10**, bearing external threads **26** preferably standard ⅝ inch–11, and having a slot **28** in the upper end thereof and an internally threaded bore **30** extending longitudinally therethrough. A headless steel screw **32** is provided, and bears conventional recessed gripping and turning means at the upper end thereof, such as an hexagonal socket **34**, external threads **36** adapted for engagement with threaded bore **30**, and preferably a beveled lower end **38**, A metal bearing cup **40**, preferably formed of steel, is also provided, and bears a recess **42** drilled into the top thereof. The outside diameter of bearing cap **40** is slightly less than the minor diameter of external threads **26** of sleeve **24** and preferably of ½ inch, and the inside diameter of recess **42** is slightly greater than the major diameter of threads **36** of screw **32**. A short headless locking screw **44**, also adapted for engagement with treaded bore **30** and bearing gripping and turning means, such as an hexagonal socket **46** identical to socket **34**, is also provided.

To repair depression **22**, a vertical bore **48**, having a diameter equal to the minor diameter of external threads **26** of sleeve **24** and preferably of ½ inch, is drilled downwardly through every third or fourth board **10** within the depressed area, to the layer of Celotex **14** resting upon a leveling strip **16** therebelow. A counterbore **49**, approximately 11/16 inch in diameter, is then drilled into the upper end of each bore **48**. Each bore **48** is then threaded, by a conventional steel tap, to receive threads **26** of sleeve **24**. A bearing cup **40** is then dropped downwardly into each bore **48**, to rest atop leveling strip **16** with its recess **42** facing upwardly.

A sleeve **24** is then coated with an epoxy resin glue and screwed downwardly into each bore **48**, respectively, slot **28** being utilized to receive the blade of a screwdriver or similar tool for such purpose, until the upper end of the sleeve is substantially below the upper surface of board **10**. A screw **32** is then threadably engaged within bore **30** of each sleeve **32**, respectively, if not already so engaged, and screwed downwardly therein until lower end **38** thereof is seated within recess **42** of the bearing cup **40** therebelow, suitable means, such as a hex wrench, being engaged with socket **34** of the screw for such purpose.

Further rotation of each screw **32** then compresses Celotex **14** against leveling strip **16** and forces each sleeve **24** upwardly, away from bearing cup **40** and the leveling strip, thus elevating the sleeve and board **10** in which it is embedded. Since each board **16** is interlocked with the adjacent boards by tongue and groove construction, glue, screws, or similar means, such boards adjacent to those in which sleeves **24** are embedded are also elevated or deformed upwardly during the process, thereby arching upwardly all of boards **16** within the depressed area, as best shown in FIGURE 4.

When the entire upper surface of area **22** has been thus raised to an elevation superior to that of the surface of the bowling alley proper, a locking screw **44** is screwed downwardly into the bore **30** of each sleeve **24** and wedged tightly against the top of screw **32** therein, thus firmly locking screws **32** in place within sleeves **24**.

A hardwood plug **50** is then driven and glued into the upper end of each bore **48**, atop sleeve **24** therein. Area **22** is then sanded down precisely to the level of that of the bowling alley proper, and varnish or a similar conventional protective coating is applied thereto. The surface of the bowling alley is thus quickly, easily, and economically repaired and restored to level.

Should it be necessary to repair the same area of the bowling alley again, plugs **50** may be removed by drilling, locking screws **44** unscrewed from bores **30**, and the heads of screws **32** thus exposed. Screws **32** may then be screwed further downward within sleeves **24** until boards **10** have been further elevated to the new desired elevation, whereupon locking screws **44** and new plugs **50** may be again inserted and area **22** again sanded and refinished in the same manner as heretofore described.

While we have shown and described our invention primarily as used to elevate and repair a depression in the surface of a bowling alley, it may with equal facility and result be used to raise the level or straighten warped portions of the surface of a bowling alley and to lower the elevation of portions thereof which have been previously so raised but which have subsequently heaved upwardly. Further, the invention is not limited to use with bowling alleys but may be used with any other game boards which lend themselves to the method and apparatus herein described and claimed.

It is still further to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same and that resort may be had to various changes in construction without departing from the scope of the subjoined claims.

What is claimed is:

1. In combination with a bowling alley board and a leveling strip supporting said board from below, an externally threaded sleeve having a transverse slot in the upper end thereof and adapted to be embedded completely within said board by threadable engagement with a vertical bore extending through said board, an internally threaded longitudinal bore extending downwardly through said sleeve, a bearing cup having an upwardly disposed recess therein, and adapted for insertion into said bore

in said board and to be supported by said leveling strip, a first screw arranged for adjustable, threaded engagement with said threaded bore of said sleeve, the lower end of said first screw being received within said recess in said bearing cup and the upper end of said first screw being disposed below the upper end of said sleeve when said lower end of said first screw extends below the lower end of said sleeve, means for gripping and rotating said screw to force and maintain said sleeve and board upwardly from and in spaced relationship with said bearing cup and leveling strip, a locking screw adapted for threadable engagement within said threaded bore of said sleeve above said first screw and disposed to contact, and to be wedged against the upper end of said first screw to restrain said first screw against rotation, and means for gripping and rotating said locking screw.

2. The method of repairing a worn portion of the surface of a bowling alley supported by support means comprising, drilling a vertical bore downwardly through at least one of the boards of said alley, dropping bearing means downwardly through said bore to rest upon said support means, threadably engaging an externally threaded sleeve within said bore from above, screwing a screw downwardly through a threaded bore within said sleeve and against said bearing means to force said board upwardly from said support means until the upper surface thereof is above the level of that of the bowling alley proper, inserting a plug into the top of said bore in said board, and sanding the upper surface of said board and plug down to the desired elevation.

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