

April 1, 1941.

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2,237,208

BOWLING ALLEY SCOREBOARD

Filed Nov. 24, 1939

2 Sheets-Sheet 1

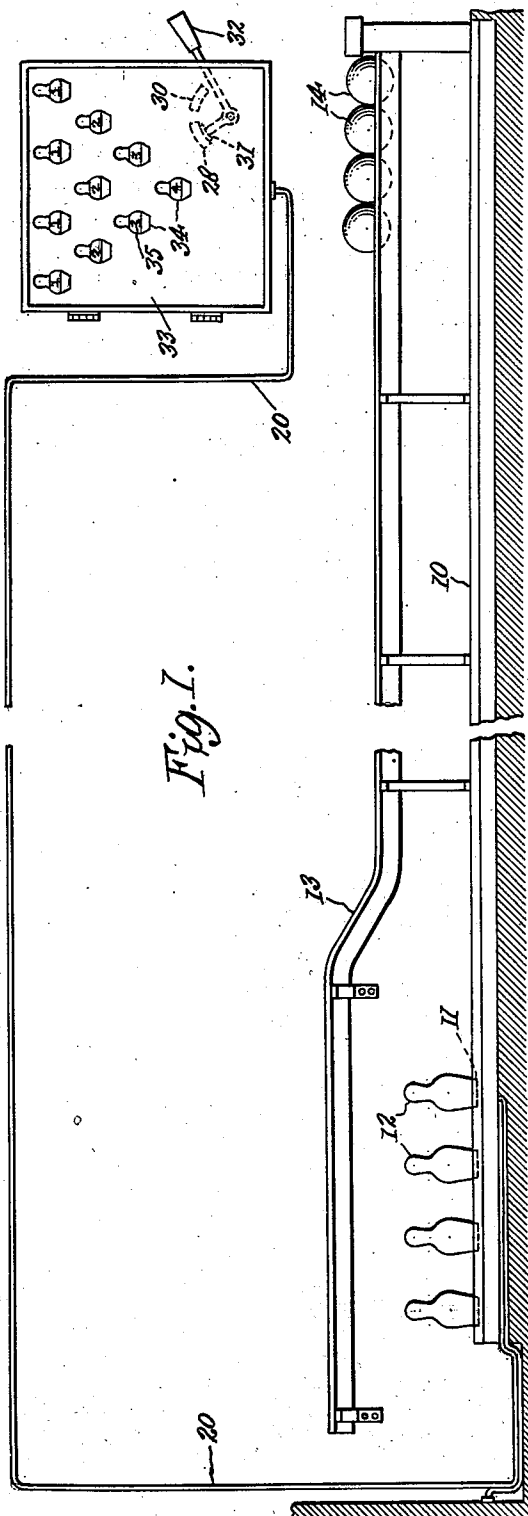


Fig. 1.

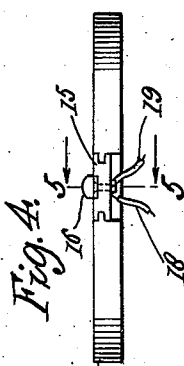


Fig. 4.

Fig. 3.

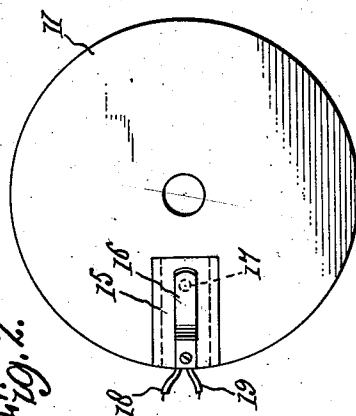


Fig. 2.

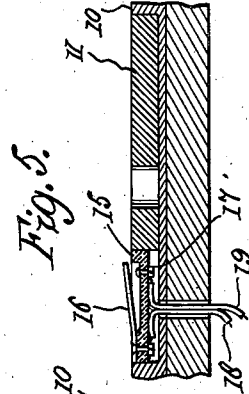


Fig. 5.

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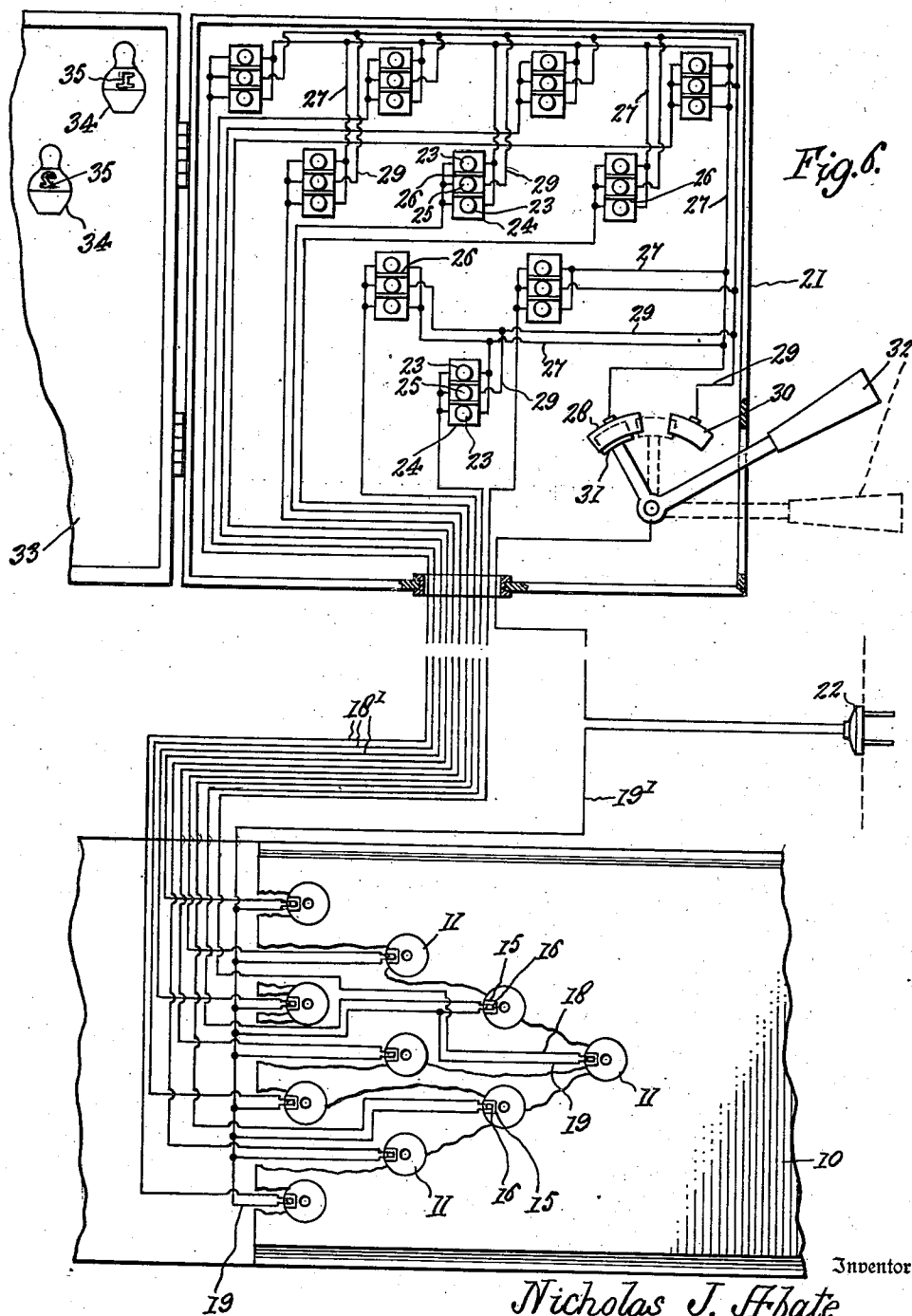
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,237,208

BOWLING ALLEY SCOREBOARD

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Application November 24, 1939, Serial No. 305,996

3 Claims. (Cl. 177—384)

The present invention relates to scoreboards adapted particularly for bowling alleys and the like, and an object of this invention is to provide certain improvements in scoreboards by means of which the scoreboard may be used for playing several different games wherein the pins or game pieces are displaced by projectiles, such as balls in the game of bowling.

Heretofore the scoreboards have had reference to but the standard method of playing the game of bowling and wherein the players strive for the highest score. The scoreboards heretofore known have pin simulations arranged thereon in the order of the pin disposal at the inner end of the alley and electrical means, including switches and circuits, connect the pin spots with the pin simulations on the board so as to show definitely on the board which pins have been bowled over by the balls.

According to the present invention the scoreboard is provided with certain improved constructions which admit of the ordinary use of the scoreboard as above pointed out and which also, by adjustment, show upon the pin simulations upon the board certain predetermined count or number values to the pins so that the game of bowling may be varied either in the normal counting thereof to reach a high score, or which may be used for playing the game with the object of obtaining the lowest score.

Another object of the invention is to provide a scoreboard of this character with pin simulations adapted to be illuminated by the setting up of the pins on the pin spots at the end of the alley and which are adapted to be darkened upon the bowling over the respective pins, and wherein the pin simulations are provided with numbers adapted to be illuminated upon adjustment of the board to show certain desired count numbers for the playing of the game in a different manner.

The invention further aims at the provision of a scoreboard of this character which is provided with relatively few structural features so combined and arranged as to obtain the necessary efficiency and accuracy, a scoreboard which may be relatively easily applied to bowling alleys of standard construction already installed, and which may be conveniently located where desired for the display of the pin simulations and for easy access for adjustment of the board.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to

like or corresponding parts throughout the several views:

Figure 1 is a fragmentary sectional view taken through a bowling alley having a scoreboard constructed according to the present invention connected thereto.

Figure 2 is a detailed enlarged top plan view of one of the pin spots of the bowling alley.

Figure 3 is a vertical section taken through the bowling alley on the central axis of one of the pin spots, showing a pin thereon and showing a switch of the present invention in closed position by the weight of the pin.

Figure 4 is a detailed edge view of one of the pin spots, showing the circuit-closing switch mounted therein.

Figure 5 is a fragmentary enlarged sectional view taken through the switch and adjacent portions substantially on the line 5—5 of Figure 4, and

Figure 6 is a diagrammatic illustration of the scoreboard, the pin spots and the electrical connections therebetween.

The scoreboard of this invention is disclosed as installed or mounted upon a bowling alley provided with the usual runway 10 and with pin spots or discs 11 disposed in the upper surface of the runway 10 and at the inner end of the alley, as shown in Figure 1. The pin spots 11 are arranged in the usual order of positioning the ten pins 12 as shown more clearly at the bottom of Figure 6.

The bowling alley is provided with the usual ball return trough 13 and one position in which the scoreboard may be disposed is over the outer end of the trough 13 where the balls 14 usually come to rest and where they may be easily accessible to the players.

Each pin spot 11 may be in the form of a disc, as shown in detail in Figures 2 to 5, and each disc or spot 11 is provided with an electrical switch 15 which may be dovetailed or otherwise suitably secured in embedded relation within the disc and having a spring contact 16 normally urged upwardly from the surface of the disc for receiving the base of the pin 12 thereon and adapted to be depressed by the weight of the pin to engage a fixed contact 17 in the casing of the switch to complete an electrical circuit. The contacts 16 and 17 are connected to wires 18 and 19 respectively. The wires 18 and 19 may be grouped into a cable 20 as shown in Figure 1 and carried from the inner end of the bowling alley in any convenient manner, such as along the ceiling or wall as shown, to the forward end of the bowling alley

where the body or casing 21 of the scoreboard is located.

The wires 19 from the various switches 15 are shown as connected to a common ground wire 19' which may be carried through the cable to the scoreboard body. This ground wire 19' may be utilized for supplying current to the circuits by means of a plug 22 of the usual type adapted to be inserted in any convenient outlet socket in the building. The wires 18 are carried individually through the cable 20, such as shown at 18', to the scoreboard body 21 and are each independently connected to lamps 23 disposed in the top and bottom portions of lamp housings 24 mounted in the body portion 21 of the scoreboard. The lamp housings 24 are disposed, as shown in Figure 6, in the corresponding positions to those of the pin spots or discs 11 of the bowling alley and the wires 18 and 18' extend individually between the corresponding pin spots and lamp housings.

Each lamp housing 24 is provided with a central lamp 25 which is in branch circuit connection with the lamps 23, and each lamp housing 24 is provided with partitions 26 separating the lamps 23 and 25 so that at times the central compartments of the lamp housings 24 may remain dark while the opposite end compartments may be illuminated by their lamps 23.

The lamps 23 of each lamp box are connected to a common return wire 27 all of which lead to a fixed contact 28 of a switch. The central lamps 25 of the lamp boxes 24 are connected by return wires 29 which lead to a second fixed contact 30 of the switch. A contact 31 mounted on the end of the pivoted arm is adapted to traverse the contacts 28 and 30 so that at one setting, when engaging the contact 28, the device is adapted to include the end lamps 23 in circuit with pin spot switches 15, and when the pivoted contact arm 31 bridges the contacts 28 and 30, as shown at dotted lines in Figure 6, both the end and the central lamps 23 and 25 are included in the circuit so that the entire lamp box is illuminated.

The switch arm may be operated in a suitable manner, such as by a handle 32, which projects through the side of the scoreboard body or casing 21 in position for easy access so that the players may swing the handle 32 to set the board for the game desired.

The casing 21 of the scoreboard is provided with a hinged panel or door 33 adapted to close the front of the casing and which may be of glass or the like suitably darkened with the exception of the transparent or translucent portions 34 of preferably the general shape or outline of the pins 12 so as to simulate the same. These simulations 34 of the pins are so disposed upon the panel 33 that when the latter is closed, as shown in Figure 1, the simulations will register over the respective lamp boxes 24 and the light radiating from the lamp box will thus illuminate the simulations 34 and show up the condition of the pins on the alley.

Each simulation 34 on the scoreboard panel 33 has a count number 35 at its central portion which registers with the central compartment of its lamp box 24 when the panel is closed. The partitions 26 of the lamp boxes 24 exclude the light of the end lamps 23 from the central compartments when the scoreboard is adjusted to leave the central lamps 25 out of the electrical circuits. Under this adjustment the count numbers 35 of the pin simulations remain dark, and the usual individual pin values of "one" each are counted from the scoreboard. The scoreboard is

thus used in the ordinary game of bowling where the players aim to make a high score.

When it is desired to play a "low" game of bowling, or wherein the player with the lowest score wins, the switch handle 32 is swung down from its full line position shown in Figure 6 to the dotted line shown therein. The main switch is thus adjusted with its contact 31 bridging the contacts 28 and 30 so that the central lamps 25 are closed in circuit with the end lamps 23 and thus the central portions of the simulations 34 are illustrated so as to show on the face of the scoreboard the various predetermined count numbers 35 which are played upon the central portions of the pin simulations 34.

As shown particularly in Figure 1, the pin simulations 34 of the scoreboard are provided with count numbers which when illuminated give to the different pins the various predetermined values. According to the present illustration the rear or upper row of pins each have a count value of one, the third row each a count value of two, the second row each a count value of three, and the single pin of the front row may have a value of four.

In playing the game, the bowler aims to strike down the pins with the highest count number and after each play by inspecting the scoreboard the remaining illuminated simulations are added together according to their count values as indicated, the purpose being to add up the least possible number of pins. In the "low" game a spare, where all of the pins are bowled over with two balls, may be given a count of "five" whereas when a strike is made, which is where all of the pins are bowled over with the first ball, a count of "ten" is assigned but these counts of "five" and "ten" are subtracted from the score of the player and minus counts may be indicated by an encircling ring or the like. The player obtaining the lowest score, or the greatest minus score is counted the winner.

The scoreboard is thus quickly converted for playing high and low score bowling games and this change in the scoring increases the use of the bowling alley in stimulating interest in the game when played first for the usual high score and then for a low score.

The arrangement of the master switch and the central lamps 25 is such that the circuit arrangement and the general structure of the scoreboard is relatively simple and inexpensive to manufacture and install, and a complicated structure is avoided. Of course any suitable construction of master switch may be used and any desired circuit arrangement may also be had for merely throwing the central lamps into operative connection with the end lamps when it is desired to illuminate the predetermined count value numbers on the pin simulations of the board.

In both the "high" and "low" games the pin spot switches operate in the same manner; the pins when set up depress the switch tongues or contacts 16 and close the circuits so that the simulations are all illuminated while the pins remain standing. When any or all of the pins are bowled over the respective spring tongue contacts 16 are released and the pin spot switches are opened so that the lamps are extinguished at the corresponding pin simulations on the scoreboard and consequently the count of the remaining pins standing after a play may be quickly, easily and accurately determined by inspecting the scoreboard.

What is claimed is:

1. In a bowling alley and in combination thereof, separate switches located in the respective pin spots at the inner end of the bowling alley and controlled by the pins thereof, a scoreboard having electrically operated indicating means for each pin, said indicating means having two indicating portions, one having a count number value significance and the other having pin identification significance, means controlled by said switches for rendering the respective second indicating means effective when the respective switch is operated and switch means for additionally rendering the count number indicating portion effective when the first indicating means is rendered effective.

2. In a bowling alley and in combination thereof, separate switches located in the respective pin spots at the inner end of the bowling alley and controlled by the pins thereof, a scoreboard having electrically operated indicating means for each pin, said indicating means comprising a body portion having pin simulations arranged thereon in the order of the pins of a bowling alley, said pin simulations having two indicating portions, one having a count number value significance and the other having pin identification significance, means controlled by said switches for

illuminating the respective second indicating means when the respective switch is operated and switch means for additionally illuminating the count number indicating portion when the first indicating means is rendered effective.

3. In a bowling alley and in combination thereof, separate switches located in the respective pin spots at the inner end of the bowling alley and controlled by the pins thereof, a scoreboard having electrically operated indicating means for each pin; said indicating means comprising a body portion having lamp boxes arranged therein in the order of the pins when standing on a bowling alley, a panel closing said lamp boxes and provided with pin simulations registering therewith, each of said lamp boxes having partitions therein providing end and central compartments, said pin simulations having two indicating portions, one having a count number value significance and the other having a pin identification significance, lamps disposed in said compartments, means controlled by said switches for illuminating the respective lamps of the second indicating means when the respective switch is operated and switch means for additionally illuminating the count number lamps when the first indicating means is rendered effective.

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