Dec. 12, 1933. J. D. SILBERMAN 1,938,980

SCOREBOARD FOR BOWLING ALLEYS

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Fig. 1

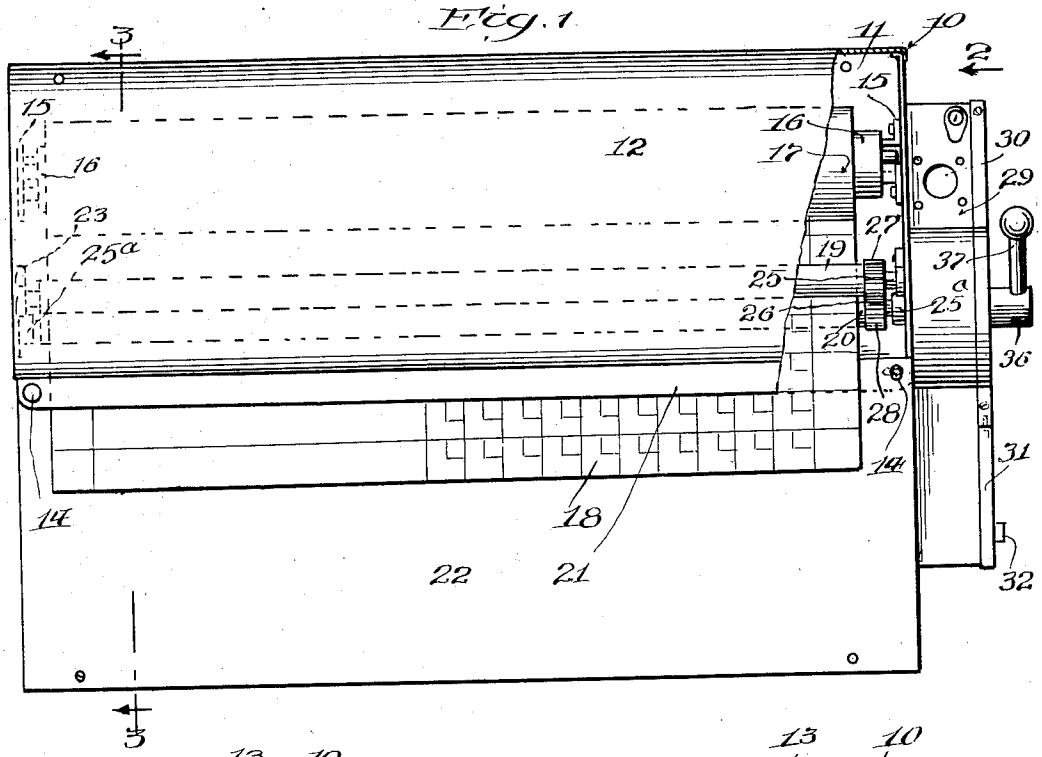


Fig. 2.

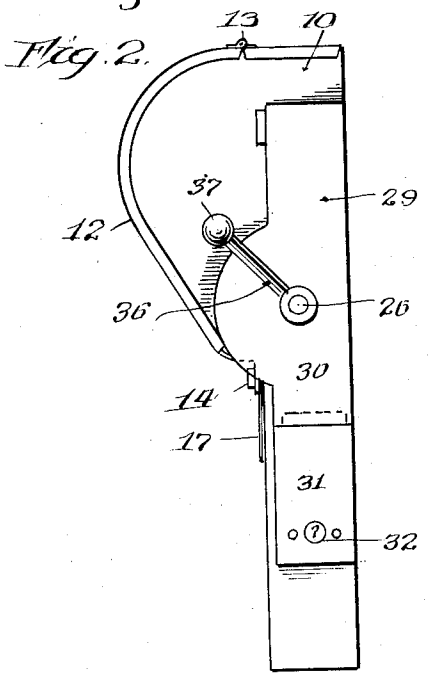
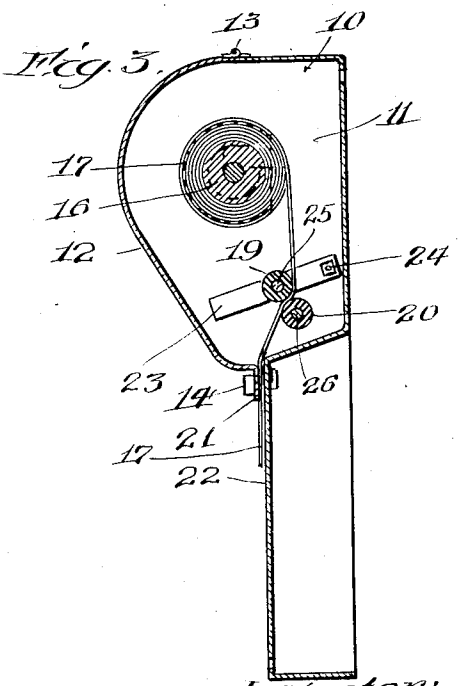


Fig. 3.



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Fig. 4

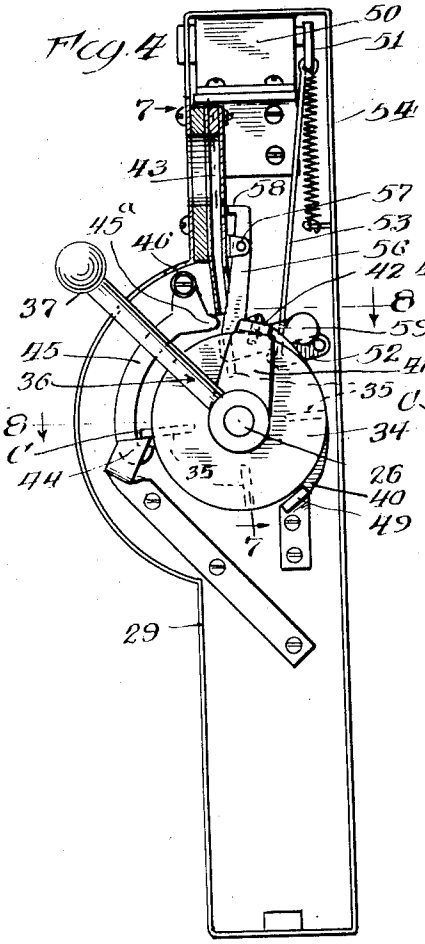


Fig. 5.

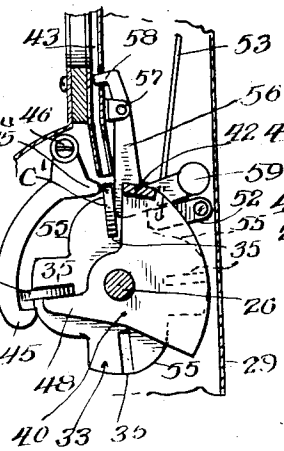


Fig. 6.

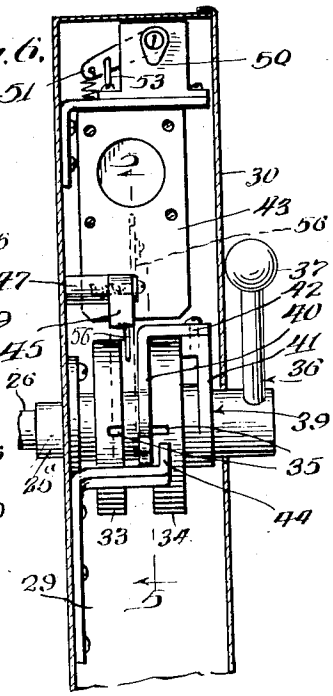


Fig. 8.

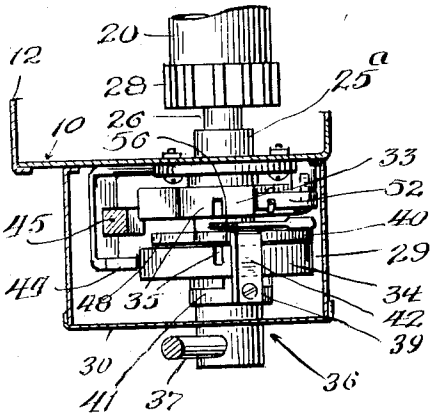
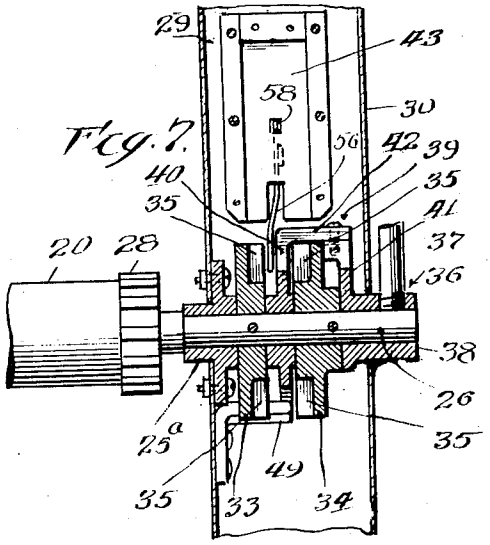


Fig. 7.



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UNITED STATES PATENT OFFICE

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SCOREBOARD FOR BOWLING ALLEYS

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Serial No. 576,026

4 Claims. (Cl. 194—63)

This invention relates to score boards for bowling alleys of that type in which a score sheet of indefinite length is employed for receiving the scores and having coin controlled mechanism for advancing the score sheet in a step by step manner whereby to present a fresh portion thereof, for receiving the score, each time that a coin or token is deposited and the mechanism is actuated.

Score boards of this character are used in bowling alleys, and in order to prevent dishonesty of the attendant having charge of the score board, some means are required for registering the number of coins deposited, thereby making it necessary for the attendant to account for an equal number of coins.

One of the objects of this invention is to provide a meter or register for registering the number of coins used to operate the device. Another object is to provide a meter or register which is actuated by the sheet feeding mechanism whenever a coin has been deposited and the mechanism has been actuated.

Another object is to provide means for preventing another coin from being deposited into the coin chute directly after a coin has been so deposited and before the mechanism has been actuated to advance the sheet. Another object is to provide improved means for preventing a person from withdrawing a portion of the score sheet without depositing the necessary coin or token.

With these and other objects and advantages in view, this invention consists in the novel features of construction, arrangement and combinaion of elements hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawings accompanying this specification in which—

Figure 1 is a front elevation, partly broken out, of a score board for bowling alleys embodying a simple form of the present invention;

Fig. 2 is an end elevation looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a vertical cross section taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail end elevation of the sheet feeding mechanism, the coin chute being illustrated in vertical section;

Fig. 5 is a fragmental vertical cross section of the sheet feeding mechanism illustrated in Fig. 4, the line of section being indicated at 5—5 in Fig. 6;

Fig. 6 is a front elevation of the sheet feeding mechanism seen in Fig. 4, the case being illustrated in section;

Fig. 7 is a fragmental vertical longitudinal section taken on the line 7—7 of Fig. 4; and

Fig. 8 is a horizontal section taken on the line 8—8 of Fig. 4.

Referring to said drawings, the reference character 10 designates a case or cabinet, in the upper portion of which is a compartment 11, the open front of which is closed by a cover 12 hinged to the case as at 13 and provided with locking means 14, whereby the cover may be locked to the case so as to prevent unauthorized access to the compartment thereof.

Rotatably mounted in brackets 15 secured to the end walls of the case is a roller 16 on which is wound a roll of paper 17 which forms the score sheet and has printed on one side thereof the usual "frames" 18 such as are used for keeping score in the game of bowling. The roller 16 is removably mounted in the bracket 15, whereby a new roll of paper may be inserted in place of the former one when entirely removed from the roller.

Below the roller 16 is mounted a pair of rubber feed rolls 19 and 20 between which the score sheet is threaded, and coin controlled means are provided for rotating the feed roll 20 in a step by step manner to feed out the required amount of the sheet, each time that the sheet feeding mechanism is actuated, to present a new line of frames into position to be written upon. The lower end of the cover 12 is formed with a flat horizontally extending lip 21 which is spaced a slight distance from the front wall 22 of the case to provide a slot through which the score sheet is fed, and the lower edge of said lip is straight and forms a tearing edge across which the used portion of the score sheet may be drawn to sever it from the remainder of the sheet.

The feed roll 19 is rotatably mounted in a pair of swinging arms 23 pivotally mounted at their rear ends upon the end walls of the case as at 24, and said arms are weighted so as to press the feed roll 19 tightly against the interposed score sheet. This arangement also permits the feed roll 19 to be freely raised when threading a new score sheet between the feed rolls.

The rubber feed rolls 19 and 20 are mounted upon shafts 25 and 26 journaled in bearings 25a, which shafts are geared together by intermeshing pinions 27 and 28. The shaft 26 extends into a box or case 29 in which the coin controlled actuating mechanism is contained. The box or case 29 is riveted or otherwise secured to one end wall

of the main case 10 and is provided with a cover 30 screwed or otherwise fastened to the open end of the box 29 and partly closing said end. Below the cover 30 is a door 31 which is locked to the box 29 by a lock 32, which, when unlocked, permits the door 31 to be removed. The lower end of the box 29 serves as a money box for receiving the coins or tokens deposited.

Rigidly mounted on the shaft 26 is a pair of notched disks 33 and 34, each of which is provided with radially extending oppositely disposed notches 35 which are spaced equi-distant around the circumferences of the disks. The opposing notches form pockets for receiving the coins or tokens that are deposited in a coin chute, and a hand lever 36 is provided on the shaft 26 for engagement with a deposited coin, whereby to make the feed mechanism operative only whenever a coin is deposited.

The hand lever 36 is provided on its hub, outside of the box, with a handle 37 and is also provided with a yoke-like arm 39 within the box. The disk 34 is located between the two arms 40 and 41 of the yoke-like arm 39 and prevents endwise movement of the lever on the shaft, and the arm 40 is located between the disks 33 and 34 and is arranged to engage a deposited coin when the hand lever is moved in the right direction and thereby rotate the disks 33 and 34 and therewith the feed roll shaft 26 through an arc of a circle of definite extent. Above the disks 33 and 34 is a coin chute 43 having an opening in the front of the box 29 through which the coins are inserted, and said chute leads to a place directly above the uppermost pair of notches 35 in the disks whereby a coin will fall into said notches.

A stop 44 is provided for limiting the active stroke of the hand lever 37, and said stop may be in the form of a bent up bar fastened to the end wall of the case and having a part extending into the path of movement of the cross bar 42 of the yoke-like member 39 of the hand lever. When the hand lever is swung down the cross bar 42 encounters the stop 44, thus determining the limit of its movement, and whenever a coin has been introduced into the uppermost opposing notches of the disks, the engagement of the cross bar 42 with the stop 44 brings the next succeeding pair of notches of the disks into proper position below the coin chute to receive a coin subsequently deposited in the chute.

To prevent a person from pulling out a section of the score sheet, a swinging stop member 45 is provided which, when the disks are rotated by pulling down upon the score sheet, is arranged to be encountered by a coin C held in opposing notches of the disks. Said stop member 45 is shown in the form of a swinging hook fulcrumed at 46 upon a post 47 secured to an end wall of the case. The feed rolls are made of rubber in order to obtain sufficient friction upon the score sheet to prevent the same from being pulled between the rolls when the rolls are held against rotation, and whenever an attempt is made to withdraw a section of the score sheet, the friction between the score sheet and feed rolls start the feed roll 20 to revolve, but by reason of the engagement of the coin C with the stop 45, the feed roll is prevented from any further movement.

The arm 40 of the hand lever yoke 39 is provided with a finger 48 (see Fig. 5) which is arranged, whenever the hand lever 37 is moved upward, to engage with the underside of a coin C which has been carried down by opposing notches of the disks to a position directly above the finger, and the purpose of this is to restore the notched disks into proper position with the upper notches of the disks aligned with the coin chute. Another stop 49 for the hand lever is provided which is arranged to be encountered by the arm 40 whenever the hand lever is returned to its initial position, which brings the yoke member in a position behind the uppermost notches that are in position to receive a coin deposited in the coin chute. The purpose of the stop 49 is to register the uppermost notches of the disks with the lower end of the coin chute in case the notched disks have been moved out of register therewith by reason of the score sheet having been pulled upon.

Supported in the box 29 is a meter or register 50 of conventional form for counting or registering the number of coins deposited, and said meter or register is actuated by a member of the feed mechanism, but only when a coin has been deposited. The meter has an actuating arm 51 projecting from its rear side which is connected to an arm 52 by a link 53 and a coiled tension spring 54 is connected to the arm 51 which serves to return said arm 51 to its initial position after it has been actuated by the feed mechanism.

The disk 33 is formed with a number of depressions in its periphery which leave cam-like surfaces 55 on the disk 33 that are arranged to engage with the arm 52 and swing the same in an upward direction each time that the notched disks are actuated by the hand lever and an interposed coin. As shown in Fig. 5, the arm 52 lies in one of the depressions in the periphery of the disk 33 in position to be engaged by the adjacent cam face.

Means are provided for preventing a coin from being dropped through the coin chute after a coin has been inserted and before the hand lever is actuated to feed out a section of the score sheet. As shown, said means comprises a detent 56 which is pivotally mounted upon the rear side of the coin chute as at 57 and has a finger 58 which is adapted to be projected through an opening in the rear side of the coin chute so as to lie in the coin passageway thereof.

The detent 56 is substantially L-shaped in form and its lower end is provided with a weight 59 whereby to normally swing the detent into a position where the finger 58 is retracted from the passageway in the coin chute. The lower forward end of the detent is normally held in the path of movement of the coin, and the weight of the coin and its impact against the detent serves to swing it back, thereby permitting the coin to pass the lower end of the detent and enter the uppermost opposing notches in the disk. However, when this takes place, the lower end of the detent is swung backward and the finger at the upper end thereof is projected into the coin passageway, thereby obstructing said passageway and preventing another coin from reaching the notched disks. The detent 56 occupies a position in the space between the disk 33 and arm 40.

In the operation of the score board, a person wishing to bowl and make use of the score board, deposits a coin C' in the coin chute and swings the hand lever forward and downward as far as it will go. The coin having been deposited into the chute drops into the uppermost notches of the disks, and when the hand lever is swung forward the arm 40 thereof engages the coin which in turn transmits the motion of the hand

lever to the notched disks. The notched disks being rigidly connected with the feed roll shaft 26 partially rotates said shaft and therewith the geared feed rolls 19 and 20 which in turn feed the score sheet down far enough to bring a line of frames into exposed position in front of the front wall 22 of the case to receive the score. The stop 44 limits the stroke of the hand lever by reason of the engagement of the cross bar 42 with the stop.

To feed another section of the score sheet into position for use, the hand lever is swung upward as far as it will go, another coin deposited and the hand lever swung down. Each time that the notched disks are moved by the hand lever and an interposed coin, a cam face 55 of the disk 33 engages and raises the arm 52, thereby actuating the meter or register 50 through the rod 53, whereby the use of the coin in actuating the sheet feeding mechanism is registered.

It will be observed that if an attempt is made to pull the score sheet from the outside of the case, the coin C will encounter the stop member 45 and prevent rotation of the notched disks and therewith the feed rolls, but when a coin is deposited in the chute and received in the uppermost notches of the disks, the forward movement of the hand lever will first engage the coin C' with the part 45^a of the stop member 45 and swing the latter out of the path of movement of the coin C thereby permitting the hand lever with the interposed coin C' turn the notched disks and therewith the feed roll.

In case a coin is deposited in the feed chute after the hand lever has been started down and before it is fully returned to its initial position, the coin will lodge upon the curved edge of the arm 40 and be prevented from dropping out of the coin chute until the hand lever has been returned to its initial position.

More or less variation of the exact details of construction is possible without departing from the spirit of this invention. I desire, therefore, not to limit myself to the exact form of the construction shown and described, but intend, in the following claims, to point out all of the invention disclosed herein.

I claim as new, and desire to secure by Letters Patent:

1. The combination of coin controlled actuating means for a pair of geared together feed rolls, and locking means therefor including a stop member adapted to be encountered by a coin carried by a member of said actuating means to prevent rotation of the feed rolls caused by external force applied to the feed rolls, said locking means having a part adapted to be actuated by a subsequently deposited coin carried by said member of said actuating mechanism, whereby to release said locking means.

2. The combination of geared together feed roll shafts, a notched disk rigidly connected to one of said shafts, a coin chute having a discharge end with which said notch of the disk registers, a hand lever rotatively mounted on said shaft and having an arm arranged to encounter a coin deposited in a notch of the disk and therewith partially rotate said disk when the hand lever is moved from an initial position, said arm having also a finger adapted to encounter a previously inserted coin held in said notched disk and a fixed stop arranged to be encountered by said arm for determining the initial position of the hand lever, said previously inserted coin forming a connection between the notched disk and the finger of the lever, whereby said lever when moved to initial position restores the notched disk to a position with a notch in register with the coin chute.

3. The combination of geared together feed roll shafts, a pair of disks having oppositely disposed coin receiving notches spaced equi-distant around the edges of the disks, a swinging stop member adapted to be encountered by a coin held in the disks and having a part arranged to be encountered by another coin held in the disks, and a hand lever having means arranged to encounter a coin held in the disks whereby to partially rotate said disks.

4. The combination of feed roll shafts, a pair of notched disks rigidly connected with one of the shafts, a hand lever having means adapted to encounter a coin held in notches of the disks, whereby to partially rotate said disks when the hand lever is moved from an initial position, and stops for determining the extent of movement of said hand lever, one of said stops being fixed and arranged to be encountered by said lever, and one being swingable and arranged to be encountered by an interposed coin, said swingable stop having a member arranged to be encountered by another interposed coin whereby to swing said swingable stop out of the path of the first mentioned coin, when the lever is actuated.

JAY D. SILBERMAN.