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PIN RETAINING MEANS FOR BOWLING ALLEYS

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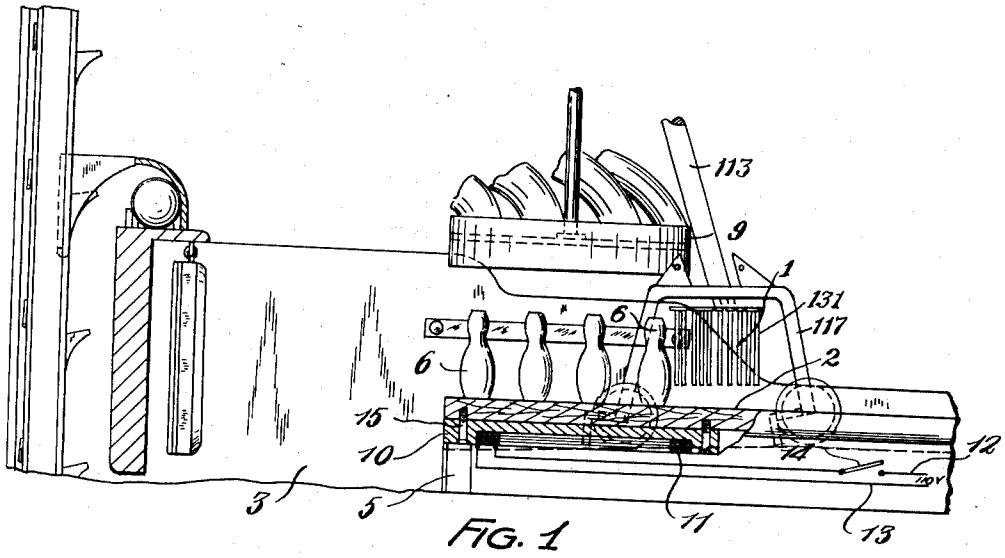


FIG. 1

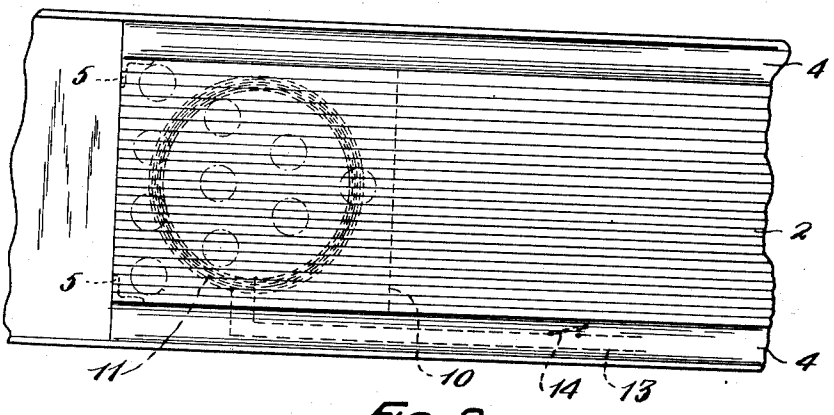


FIG. 2

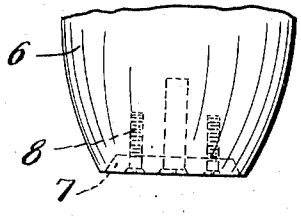


FIG. 3

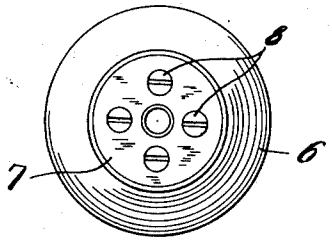


FIG. 4

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PIN RETAINING MEANS FOR BOWLING ALLEYS

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3 Claims. (Cl. 273—54)

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This invention relates to bowling alleys, especially to means for retaining pins in given positions while other actions are being performed around pins still standing on the bowling alley.

Heretofore there have been some efforts made to provide bowling alleys with means of a magnetic nature whereby pins having metallic portions or bases thereon can presumably be secured in a given position when the magnetizable means are energized whereby the pins are fixed in position. However, for any of several reasons, such previous constructions have not been completely satisfactory insofar as we are aware.

The general object of the present invention is to provide a novel, efficient structure of the class described which is characterized by its ability to retain pins in any position in a pin receiving zone of a bowling alley at any desired times.

A further object of the invention is to provide a magnetizable plate which is particularly adapted for use in a bowling alley having automatic pin setting means associated therewith, which magnetizable means will retain pins standing in given positions while the fallen pins are removed from the bowling alley.

An object of the invention is to secure standing pins on a bowling alley to the alley, temporarily, even though such pins are out of their normal positions.

Yet another object of the invention is to provide a magnetizable plate which extends over the entire pin receiving area of a bowling alley and which plate is positioned below the surface of the alley to facilitate resurfacing of the alley without interference from the magnetizable plate.

Still another object of the invention is to provide a relatively inexpensive, easily controlled means for retaining standing pins in such positions on a bowling alley by a positive retention action.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

Attention is now directed to the accompanying drawings wherein:

Fig. 1 is a side elevation, partially broken away and shown in section, of a bowling alley embodying the principles of the invention;

Fig. 2 is a plan of the bowling alley floor as shown in Fig. 1, with the pins being indicated in position on such bowling alley floor;

Fig. 3 is a fragmentary side elevation of the base portion of a bowling pin; and

Fig. 4 is a bottom plan of a bowling pin as indicated in Fig. 3.

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In the drawings, the details of the apparatus shown include a bowling alley which is indicated in general by the numeral 1 and this alley has a floor 2 which terminates in a pit 3 that usually provides a lower portion therein (not shown) into which the bowling ball and pins may fall when the bowling alley is used. Normally the floor 2 is formed from wood of any suitable composition and of conventional thickness. The bowling alley 1 has conventional gutters 4 formed at the lateral margins of the floor 2 whereas the end portion of the floor 2 adjacent the pit 3 may be supported on leg supports 5 that may also support another portion of the bowling alley 1, as hereinafter described.

A plurality of bowling pins 6 are shown in Fig. 1 as positioned on the floor 2 in a conventional arrangement for use in a bowling game. These pins 6 are provided with a metallic base portion, which may comprise a metal disc 7 that is secured in the base of each of the pins 6 by means of screws 8.

Any desired type of pin setting means indicated by the numeral 9 are provided in association with the bowling alley 1 for positioning the pins 6 on the alley.

As an important feature of the present invention, a magnetizable plate 10 is positioned below the floor 2 immediately adjacent the end portion thereof at the pit 3. This plate 10 is of substantially square or rectangular form and extends over the entire area of the floor 2 which normally has one or more of the pins 6 positioned thereon. Fig. 2 indicates that the plate 10 extends slightly forwardly of the normal position of the No. 1 pin on the alley. The plate 10 is made from a suitable metal, such as steel, and it has any desired conventional means associated therewith for magnetizing such plate 10 at desired times in a readily controllable manner. Such means comprise a coil of wire 11 that is suitably secured to the lower surface of the plate 10 and has a pair of leads 12 and 13 extending therefrom which connect to a suitable source of electric power for energization of the coil 11. The energization means may comprise a 110 volt direct current supply, or it may comprise other suitable energization means. A control switch 14 is provided in the lead 12 and such control switch 14 may be positioned at any desired point or location in or around the bowling alley 1. Hence the coil 11 will be energized whenever the switch 14 is closed. The switch 14 could be positioned near the opposite end of the alley 1 from that shown whereby such switch could be controlled manually by the person using the bowling alley, where-

as also the switch 14 could be automatically controlled by other electrical means provided in the bowling alley for automatically setting the pins 6 in position.

Fig. 1 best shows that the plate 10 may be secured to the floor 2 by means of screws 15 and the support legs 5 may engage with the lower surface of the plate 10 to aid in retaining the end portion of the plate in any desired position. The plate 10 may be left in an exposed position below the bowling alley 1 to permit entry thereto for servicing of the apparatus should any repair thereof be necessary after the apparatus has been in operation for some time.

It will be realized that in operation, whenever the coil 11 is energized, it should supply sufficient magnetic force that it will fixedly and positively retain the pins 6 in the positions that they are then in on the floor 2, if such pins are standing on the floor 2. When any pins are knocked over onto their sides, then the magnetizing energy provided by the coil 11 will not be sufficient to completely retain the pins 6 in a given position since they can readily be picked up or rolled off of the floor 2 depending upon any external forces that are applied to such fallen pins.

One control for the energization circuit is shown in our copending application Ser. No. 569,962 (U. S. Patent No. 2,591,265).

The present application is a continuation-in-part of our copending application Ser. No. 569,962 (U. S. Patent No. 2,591,265) which discloses certain sweep mechanism for removing, automatically, fallen pins from a bowling alley without interfering with the standing pins on the alley that are retained in a given position by magnetizing means such as those disclosed herein. Such sweep means are illustrated in the drawings and include a frame 117 and a control arm 113. Sweep fingers 131 are mounted on the frame 117. These sweep means are adapted to be moved along the surface of the floor 2 to move any fallen pins into the pit 3. The sweep means may be actuated in any desired manner, normally while the pin setting means 9 are in an elevated position, all as more specifically described in our U. S. Patent No. 2,591,265. Also, the apparatus of the invention may be suitable in many instances where fallen pins are manually removed from the alley. Hence the apparatus would prevent inadvertent movement of any of the standing pins by the pin boy.

In some instances, it may be desirable to have the plate 10 positioned flush with the surfaces of the floor 2 and actually forming a part thereof although usually it is preferred to have such plate below the surfaces of the floor and covered with flooring since the magnetizable energy produced in the plate 10 will readily be transmitted through the floor 2, which usually is made from wood, and still permit the desired retention action on standing pins on the floor.

From the foregoing, it will be realized that the apparatus of the invention provides a sturdy, effective but positive acting apparatus for retaining standing pins in a desired position on a bowling alley so that the objects of the invention are achieved.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined by the appended claims.

What we claim is:

1. In a bowling alley having continuous fixed wooden floor means extending over the bowling and pin receiving areas thereof, said bowling alley being adapted for use with bowling pins having metallic means in the bases thereof, a magnetizable plate positioned below said wooden floor means and extending the width of the alley over the length thereof on which bowling pins are normally positioned, and means for magnetizing said plate at desired times whereby standing bowling pins can be retained in exact locations when said plate is energized.

2. A bowling alley having continuous fixed wooden floor means extending over the bowling and pin receiving areas thereof, said bowling alley being adapted for use with bowling pins having metallic means in the bases thereof and having automatic pin sweeping means provided therefor, a magnetizable metal plate positioned immediately below said wooden floor means and extending the width of the alley over the length thereof on which bowling pins are normally positioned, and means for magnetizing said plate at desired times whereby standing bowling pins can be retained in exact locations when said plate is energized and fallen pins are removed by said pin sweeping means.

3. In combination with a bowling alley having continuous fixed wooden floor means extending over the bowling and pin receiving areas thereof, said bowling alley being adapted for use with bowling pins having metallic means in the bases thereof, means for sweeping fallen pins from the bowling alley, a magnetizable plate positioned below said wooden floor means and extending the width of the alley over the length thereof on which bowling pins are normally positioned, and means for magnetizing said plate at desired times whereby standing bowling pins can be retained in exact locations when said plate is energized and said pin sweeping means are actuated.

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