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ADJUSTABLE WEAR PLATE FOR PIN SETTING FRAMES

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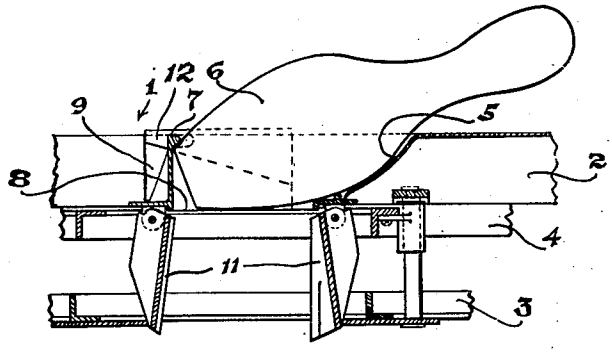


Fig. 1

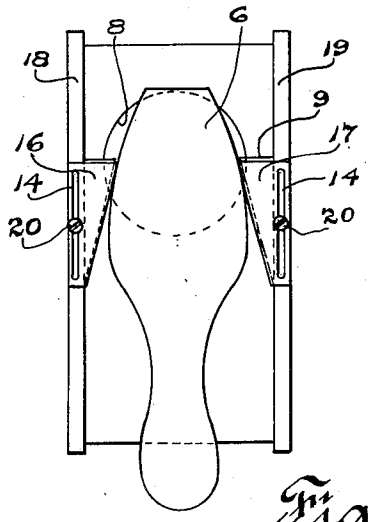


Fig. 2

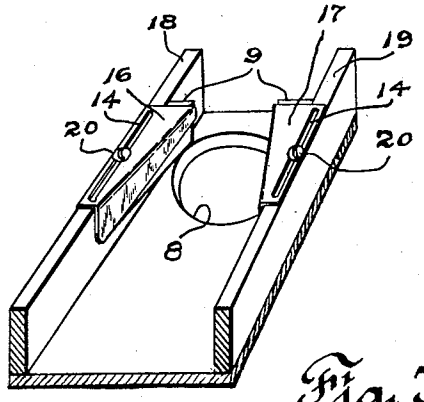
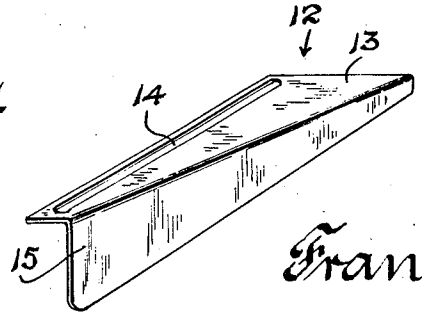


Fig. 3

Fig. 4



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ADJUSTABLE WEAR PLATE FOR PIN SETTING FRAMES

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5 Claims. (Cl. 273—42)

This invention, as indicated, relates to adjustable wear plate for pin setting frames of the conventional type used on standardized bowling alleys. In such frames each bowling pin is set in the frame at a small inclination to the horizontal position with the sides of the pin bearing against triangular wooden blocks which accurately position them with reference to the spots on the bowling alley. When the frame reaches the setting position the pins are elevated to pass through apertures in the frame and the series are accurately positioned upon their respective spots. In the course of time the triangular blocks which space the pins in their respective compartments in the frame become worn or split along the contacting surface so that the pins are no longer accurately held within the frame, and this results in incorrect spotting of the pins on the bowling alleys with consequent loss of time in manual adjustment to correct such errors.

To avoid the difficulties referred to frequent replacement of the triangular blocks is necessary in order that rapid and accurate service of the pin setting apparatus may be carried through. The present invention has in view reducing the frequency of such adjustment of the frames by providing an adjustable metal wear plate which may be positioned over the triangular blocks and moved to such position as to accurately hold each pin on the frame so that it will register with its particular spot without readjustment after the frame has been withdrawn.

It will be noted that the triangular blocks are used in pairs on opposite sides on each pin compartment, and accordingly wear plates are required to be made as complementary to fit respectively on the right and left-hand triangular blocks.

The principal object of the present invention is to provide wear plates to serve as pin positioning elements in a pin setting frame.

Another object of the invention is to provide adjustable means on each side of a bowling pin compartment in a pin setting frame.

Another object of the invention is to provide a metal plate with the depending flange adapted to overlie the triangular blocks on either side of each pin compartment in a pin setting frame to reduce wear and maintain accurate adjustment of the pin spacing means.

Another object of the invention is to provide a wear plate having a somewhat triangular top surface and a somewhat triangular side flange and having a longitudinal adjustment slot through the top plate portion whereby said plate may be adjustably positioned over an individual triangular positioning block in a pin receiving compartment of a pin setting frame.

Other and further objects of the invention will appear in the course of the following description.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain structures embodying the invention, such disclosed means constituting, however, but several of various forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a central vertical sectional view of a pin setting frame provided with an adjustable wear plate embodying the principles of the invention;

Fig. 2 is a top plan view of a portion of a pin setting frame provided with a pair of adjustable wear plates embodying the principles of the invention;

Fig. 3 is a perspective view showing a pair of adjustable wear plates applied to a pin setting frame over the wedge blocks thereof; and

Fig. 4 is a perspective view of one wear plate embodying the principles of the invention.

As is clearly shown in Figure 1 of the drawing illustrating a portion of a pin setting apparatus of conventional type having a frame 1 with an upper deck 2 and a lower deck 3 and an intermediate movable frame 4, the apparatus is provided with a plurality of pin compartments having a dished portion 5 to receive a bowling pin 6 in inclined position, the lower end of the pin engaging beneath a rib 7 on the opposite side of an aperture 8 extending through the frame adjacent one end of the compartment.

At each side of the compartment a wedge block or triangular positioning member 9 is provided, said block being of a shape to contact the lower curved portions of the body of the bowling pin and thus accurately register the pin for movement toward its set positioning over a spot on the bowling alley when the movable frame 4 is lowered and the pin turns to vertical position. The movable frame carries a pair of pivoted positioning shoes 11 and the pin passes intermediate said shoes when it turns to vertical position and is guided accurately into correct position upon its respective spot.

The loading of the pin setting frame causes wear and abrading action on the margins of the triangular blocks 9, and when these blocks no

longer contact the pin as required, the accuracy of the pin setting device will be greatly impaired. Thus, it is required that constant attention be given the wedge blocks so that proper service may be carried out, particularly in contests wherein exact unformity of pin setting is a basic requirement.

In the present case extreme accuracy of pin setting may be brought about and at the same time the disadvantages occasioned by wear of the wedge blocks avoided through the use of adjustable wear plates 12 of the type clearly shown in the drawing, and particularly in Figure 4. The wear plate comprises a sheet of thin material of triangular shape and of a size to engage over the wedge blocks 9 heretofore referred to. The top portion 13 of the plate is thus of a somewhat triangular shape and has a slot 14 adjacent one longitudinal edge. The opposite edge of the plate is provided with a flange portion 15 of somewhat triangular shape providing a surface adapted to abut the curved body portion of the bowling pin 6. The slot in the plate 12 permits sliding adjustment of the plate toward and away from the bowling pin when such plates are engaged over the respective wedge blocks 9 on each side of the pin compartment. The wear plates, it will be noted, are formed in pairs, there being a left-hand unit 16 and a right-hand unit 17 movable toward a pin adjacent an opening 8 through the frame. The wear plates are of a sufficient size to engage not only over the wedge block 9, but over the side rails 18 and 19 of the respective pin compartment.

In order to hold the wear plates in adjusted position locking screws 20 are engaged through the respective slots of the plates 16 and 17 and secured in the side rails 18 and 19, respectively. The wear plates, it will be found, have high resistance to wear and may be retained in any predetermined adjusted position by firmly engaging the locking screws in the side rails. The centering of the pin may be readily brought about in the event of uneven wear on the wedge blocks originally provided by moving the respective wear plates of each pair whatever degree may be necessary to bring about the accurate centering of the adjacent pin within its compartment. The wear plates thus are preferably formed of very durable material, such as sheet steel of high quality, as stainless steel or the like, and will require practically no attention over long periods of time. If at any time replacement is required, the same may be very readily brought about through the removal of the locking screw 20 from the plate requiring replacement and substituting the new plate in proper position within the compartment and tightening its locking screw when the plate has been moved to the proper position.

The device above set forth provides for a very high degree of precision in the functioning of pin setting frames, and as has been indicated, such extreme accuracy in pin setting is a matter of very great importance in connection with bowling contests of various kinds.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A pin setting device comprising a frame having compartments for holding bowling pins at a low angle to the horizontal, and complementary wedge members each with a triangular top face, and a depending flange and each having a longitudinal slot parallel to and spaced from the free margin of said top face, on each side of each compartment adjustable to pin contacting position to bring each pin into accurate adjustment for movement into registry with its respective spot.

2. A pin setting device comprising a frame having compartments for holding bowling pins at a low angle to the horizontal, and complementary longitudinally slidable wedge members, each formed of a thin plate with a depending flange and having a longitudinal slot parallel to and spaced from the free margin of said top face, on each side of each compartment adjustable to pin contacting position to bring each pin into accurate adjustment for movement into registry with its respective spot.

3. A pin setting device comprising a frame having compartments for holding bowling pins at a low angle to the horizontal, complementary metal wedge plates having depending flanges, positioned on each side of each pin compartment, a longitudinal slot formed in each plate parallel to and spaced from the free margin thereof, permitting longitudinal movement thereof into pin contacting position to bring each pin into accurate adjustment for movement into registry with its respective spot, and means for locking said plates in adjusted position.

4. A pin setting device comprising a frame having compartments for holding bowling pins at a low angle to the horizontal, a thin sheet metal wear plate having a depending flange adapted to be set angularly on each side of each pin compartment over the wedge blocks therein, a longitudinal slot in said plate to permit positioning contact with each respective pin, and locking means engaging said slot for holding said plate in any predetermined position of adjustment.

5. A wear plate for pin setting devices comprising a rectangular sheet of metal of greater length than width bent along a diagonal line extending lengthwise of the plate and presenting two plate sections at right angles to each other, each section being a right-angled triangle in outline reversely turned with respect to its companion section, and a longitudinal slot spaced from the margin of one section and parallel to said margin, whereby a locking screw engaged in said frame and extending through said slot will rigidly hold said plate in firmly locked position.

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