Sept. 4, 1951 E. G. STRONG 2,566,379

BALL RETURN MEANS FOR BOWLING ALLEYS

Filed Feb. 10, 1949 2 Sheets-Sheet 1

Fig. 1.

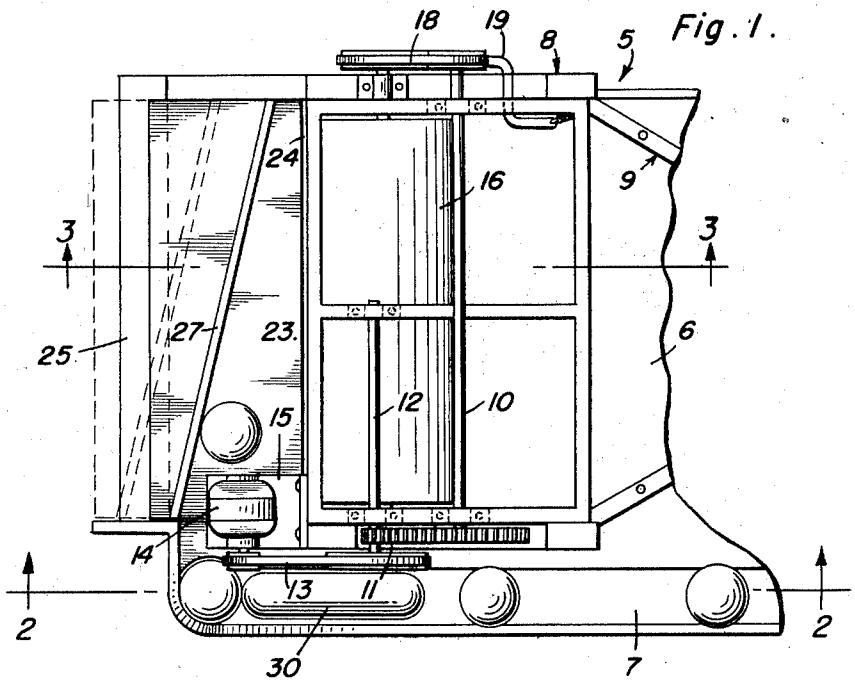
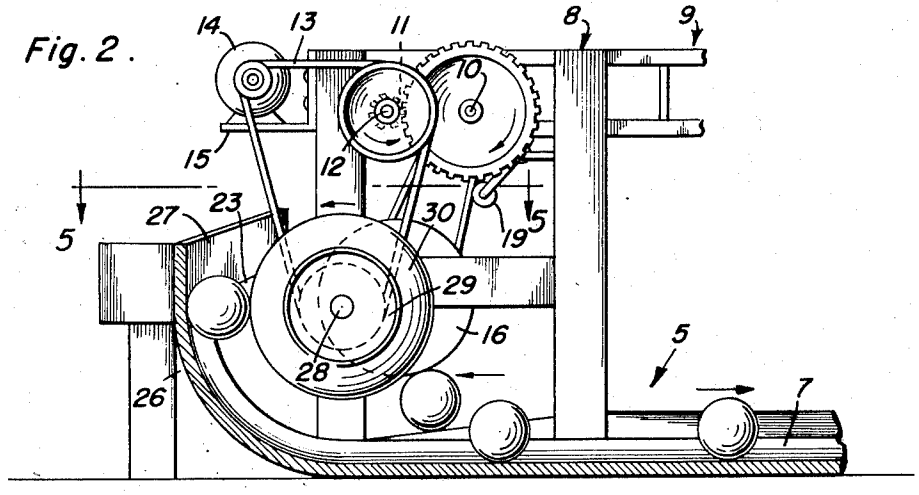


Fig. 2.



Earl G. Strong
INVENTOR.

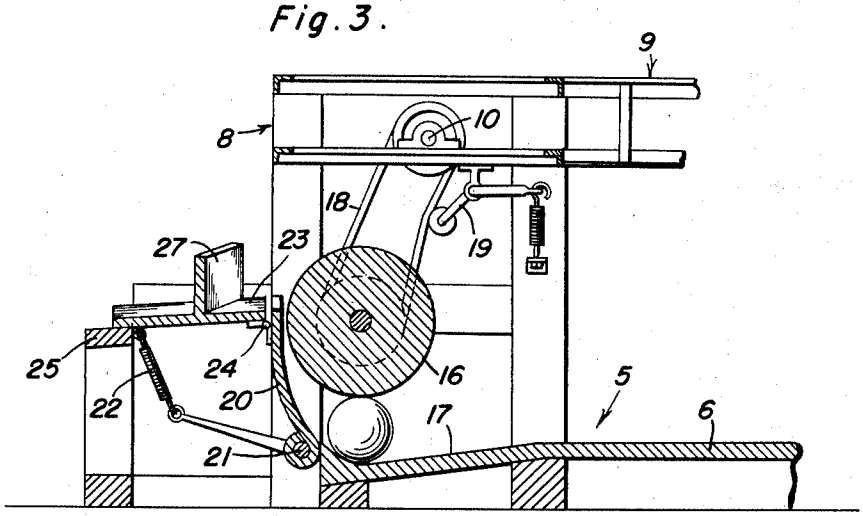
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Sept. 4, 1951 E. G. STRONG 2,566,379

BALL RETURN MEANS FOR BOWLING ALLEYS

Filed Feb. 10, 1949 2 Sheets-Sheet 2

Fig. 3.



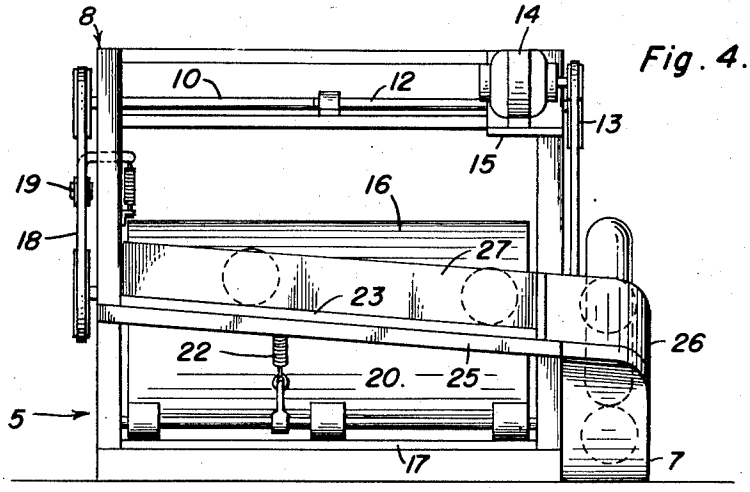


Fig. 4.

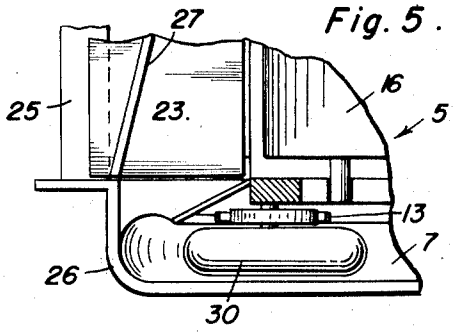


Fig. 5.

Earl G. Strong

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Sept. 4, 1951 2,566,379

UNITED STATES PATENT OFFICE

2,566,379

BALL RETURN MEANS FOR BOWLING ALLEYS

Earl G. Strong, Milan, Ohio

Application February 10, 1949, Serial No. 75,728

1 Claim. (Cl. 273—49)

1

This invention relates to bowling alleys, and has more particular reference to means for automatically returning the playing balls to the players' end of a bowling alley.

The present invention is an improvement upon the ball return means disclosed in my U. S. Letters Patent No. 2,207,643, dated July 9, 1940.

The primary object of the present invention is to generally simplify and improve the ball return means disclosed in my above mentioned patent.

Another object is to provide a ball return means of the above kind which is simple in construction and highly efficient in operation.

The exact nature of the present invention will become apparent from the following description when considered in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary top plan view showing the pin end of a bowling alley provided with the present ball return means;

Figure 2 is a vertical longitudinal section taken on the line 2—2 of Figure 1;

Figure 3 is a vertical longitudinal section taken on the line 3—3 of Figure 1;

Figure 4 is a rear elevational view of the construction shown in Figure 1;

Figure 5 is a fragmentary horizontal section taken on the line 5—5 of Figure 2.

Referring in detail to the drawings, 5 indicates the pin end of a bowling alley including the usual floor 6 over which the playing balls are rolled as customary in bowling. A ball return trough or gutter 7 extends along one side of the floor 6 for the return of the playing balls to the players' end of the alley. Associated with the pin end of the alley is a supporting structure 8 on which may be mounted an elevated forwardly projecting pin supporting frame 9, as disclosed in my above mentioned patent.

A transverse driven shaft 10 is journalled on the supporting structure 8 and is geared at 11 to a transverse drive shaft 12 journalled on the structure 8 behind the shaft 10. The drive shaft 12 is belted as at 13 to an electric motor 14 carried by a bracket 15 mounted on the structure 8 rearwardly of said shaft 12 and near the side of the alley at which the gutter 7 is located.

An upwardly yieldable transverse check roller 16 is journalled in the structure 8 above the rearwardly inclined rear end portion 17 of the floor 6, so that the space between the bottom af said roller 16 and the floor portion 17 is normally slightly less than the diameter of the playing balls. The shaft of roller 16 is belted as at 18 to the driven shaft 10, and a spring actuated tightener 19 is provided for the belt 18.

2

A substantially vertical transverse arcuate plate 20 is pivoted at its lower edge to the structure 8 as at 21 so as to extend upwardly from the rear edge of the floor portion 17 and behind the roller 16. A tension spring 22 is connected to the plate 20 to normally swing its upper portion forwardly into close proximity to the roller 16. A rearwardly sloping delivery platform 23 is hinged at its forward edge to the upper edge of plate 20 as at 24, and is slidably supported on a cross member 25 of the structure 8. The ball return trough or gutter 7 is provided at its rear end with an upwardly curved arcuate extension 26, and the platform 23 is inclined laterally to deliver the playing balls by gravity into the upper end of said extension 26. Platform 23 has an oblique rail 27 to prevent the balls from rolling rearwardly off of the same and to guide them into the extension 26.

Journalled on the structure 8 is a shaft 28 carrying a friction wheel 29 disposed in front of and concentric with the trough extension 26 so as to frictionally engage playing balls delivered into the latter. The belt 13 extends about pulleys on the shaft of motor 14, on drive shaft 12, and on the shaft 28 so as to drive the friction wheel 29 and the drive shaft 12. The wheel 29 preferably has a pneumatic tire 30.

In operation, motor 14 drives the roller 16 and friction wheel 29, through the driving connections described, in the directions shown by arrows. As the balls pass the pins, not shown, they pass beneath the roller 16 and are elevated thereby onto the platform 23, the latter and plate 20 yielding rearwardly. From platform 23, the balls roll by gravity into the trough extension 26 and are peripherally engaged by friction wheel 29 so as to be given forward momentum sufficient to deliver them in trough 13 to the players' end of the alley.

From the foregoing description, it is believed that the construction, operation and advantages of the present invention will be readily understood and appreciated by those skilled in the art. Modifications and changes in details of construction are contemplated, such as fairly fall within the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In a bowling alley having a floor, a ball return trough along one side of the floor, said trough having an upwardly extending arcuate extension at its rear end, a supporting structure at the pin end of the alley, a transverse check roller journalled in the supporting structure above the rear end portion of the floor, a transverse plate pivot-

ed at its lower edge and disposed at the rear end of the floor behind said check roller, yieldable means acting to swing the plate toward and to a position close to the check roller, a rearwardly sloping ball delivery platform slidable on the supporting structure and hinged to the top of said plate, said platform being inclined laterally to the upper end of said extension of the ball return trough, an oblique guide rail on the platform for leading the balls on the platform laterally and rearwardly to the trough extension, a ball-propelling friction wheel journalled on the supporting structure concentric with and in front of said trough extension, said friction wheel having a resilient ball-engaging tire, and means for driving said friction wheel and said check roller to elevate balls onto said platform between said roller and said plate and to deliver them from between said extension and said friction wheel through said trough to the players' end of the alley.

EARL G. STRONG.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,292,738	Estabrook	Jan. 28, 1919
1,375,835	Fairchild	Apr. 26, 1921
1,647,451	Kniebusch	Nov. 1, 1927
2,207,643	Strong	July 9, 1940
2,292,753	Gerald	Aug. 11, 1942