Oct. 31, 1950 J. R. CREELY 2,528,341

BALL FEEDER

Filed Dec. 15, 1947

FIG. 1.

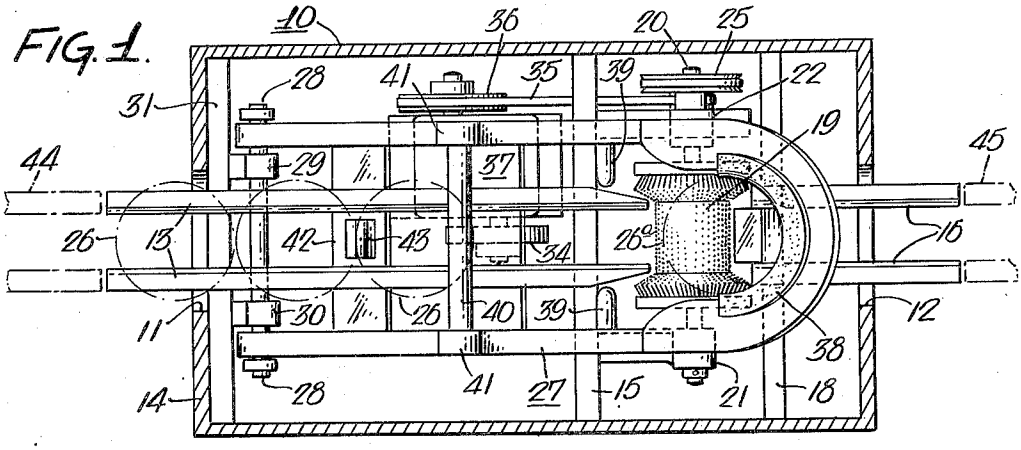


FIG. 2

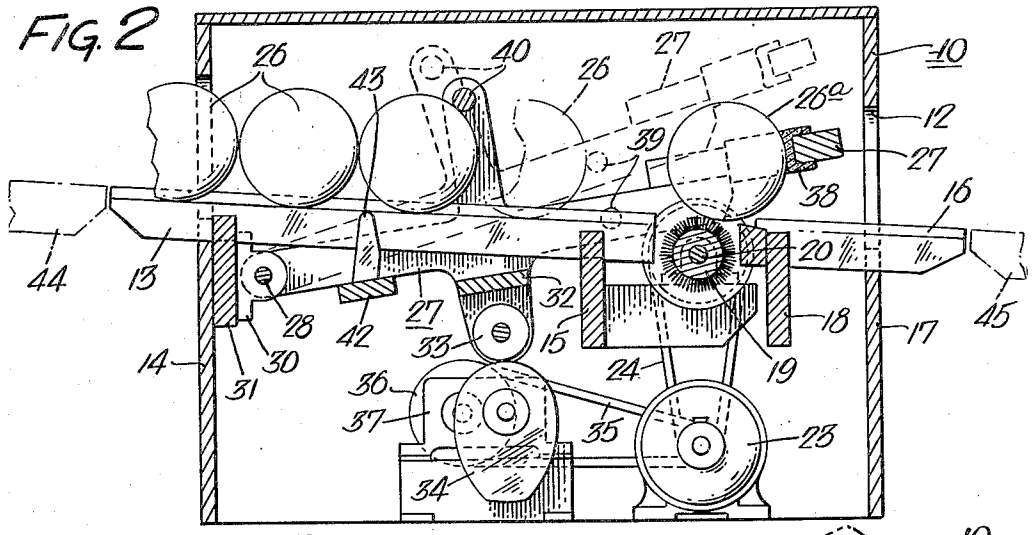


FIG. 4.

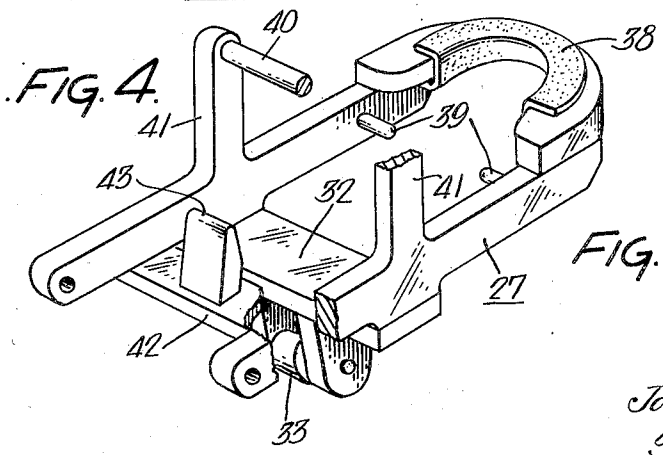
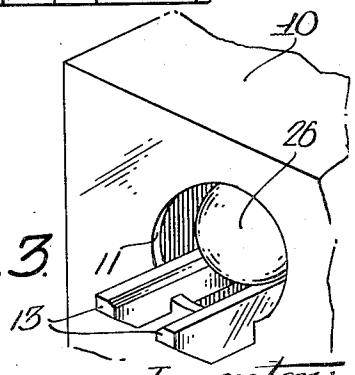


FIG. 3.



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BALL FEEDER

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5 Claims. (Cl. 193—40)

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This invention relates to devices for cleaning bowling balls or like objects.

The principal object of the invention is to provide a ball-cleaning device which is completely automatic in operation and which functions to clean articles, such as bowling balls whenever they are supplied to the device.

Another object of the invention is to provide a device of such character that bowling balls may be fed to it gravitationally along a track or runway, and the balls are automatically cleaned in succession and are permitted to roll gravitationally along a track or runway leading away from the device.

A further object of the invention is to provide a ball-cleaning device in which the balls are successively subjected to a positive and vigorous cleaning action.

Another object of the invention is to provide a compact and unitary ball-cleaning device of the above-mentioned character having all of the operating parts contained in a single housing.

A further object of the invention is to provide a device of the stated character which is simple in construction and which may be manufactured at low cost.

Other objects and features of the invention will be apparent from the following detailed description in conjunction with the accompanying drawing, in which

Fig. 1 is a horizontal sectional view taken through the device of the invention along a plane above the operating mechanism;

Fig. 2 is a vertical sectional view taken longitudinally through the center of the device;

Fig. 3 is a fragmentary perspective view showing the track mounting; and

Fig. 4 is a perspective view of the ball-controlling member, with certain portions broken away for the purpose of illustration.

Referring more particularly to the drawing, there is provided a casing or housing 10 having a ball inlet opening 11 and a ball outlet opening 12. A declined inlet track 13 extends through the inlet opening and is supported by the casing wall 14 and by a cross bar 15. A declined outlet track 16 is similarly supported by the casing wall 17 and by a cross bar 18. The rails of the two tracks may be notched to fit over the supporting members as illustrated, particularly in Fig. 3 which shows the mounting of the inlet track rails on the casing wall 14. The rails may be securely held in position in any suitable manner, for example by being fastened with nails or screws.

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Within the casing 10, in fixed location between the tracks 13 and 16, there is provided a rotary cleaning member 19 preferably in the form of a specially shaped brush mounted on a shaft 20 which is journaled in bearings 21 and 22 carried by the transverse bar 15. The shaft 20 is driven by an electric motor 23 through a belt 24 which passes over a pulley 25 on the end of said shaft. In this manner the brush is driven at relatively high speed.

The articles to be cleaned, such as the bowling balls represented at 26, are fed successively to the cleaning position and are successively discharged by means of a cyclically operated member 27. This member is yoke-shaped and has its ends pivotally connected to a rod 28 which is carried by brackets 29 and 30 on a transverse support 31 secured to the inside of wall 14. A cross bar 32 on the yoke-like member 27 carries a roller 33 which engages a cycling cam 34. The cam is driven from the motor 23 through a belt 35 and a pulley 36, and through a reduction gear box 37 which gives a relatively low speed of rotation of the cam.

At its free end, member 27 is cradle shaped and is provided with semi-circular element 38 of felt or the like which substantially conforms to the shape of the bowling balls. Element 38 serves several purposes. It acts as a bumper stop and retains a ball, as shown at 26a in a position to be cleaned. It also serves cooperatively with brush 19 to clean the ball, as hereinafter described.

Member 27 is also provided with a pair of pins 39 extending inwardly from its sides, and said member also carries a transverse rod 40 mounted on upwardly extending arms 41. Member 27 carries a transverse support 42 on which is mounted an upwardly extending finger or detent 43. The purpose of these various elements on member 27 is to control the movement of the bowling balls, as will be seen from the following description of the operation.

The device is adapted to be used in conjunction with tracks leading to it and away from it, as indicated in dot-and-dash outline at 44 and 45. Considering the operation, let it be assumed that a number of bowling balls have been fed to the device and have rolled onto the inlet track as shown in Figs. 1 and 2. During most of a revolution of the cycling cam 34, the controlling member 27 is in the solid line position of Fig. 2, in which it retains one ball in cleaning position and also retains the succeeding balls against movement, the cross rod 40 serving the latter

purpose. The ball in cleaning position is supported on the brush **29** by the arcuate stop element **38**. The rotary action of the brush causes the ball to rotate, the rotation of the ball being relatively slow due to the frictional retardation by element **38**. As the ball rotates it is thoroughly scrubbed both by the brush and by the element **38**.

At a certain point in the operating cycle, the cam **34** raises member **27** to the dotted line position shown in Fig. 2. When the member is raised, the ball which has been cleaned is permitted to leave the cleaning position, and the next succeeding ball is released by rod **40** but it encounters the pins **39** as shown in dot-and-dash outline in Fig. 2. At the same time, the finger or detent **43** retains the succeeding balls against movement. When the member **27** is lowered shortly thereafter, the ball that was released by the rod **40** is permitted to roll to the cleaning position against the bumper stop **38**. At the same time, the rod **40** becomes effective to retain the succeeding balls. The described operation is cyclically repeated, the balls being automatically and successively fed to the cleaning position where each is cleaned by the rotary brush **29** and elements **38**, after which the cleaned ball is permitted to roll onto and down the outlet track.

From the foregoing description it will be seen that the invention provides a novel automatic ball-cleaning device which is simple in construction and operation. Most of the parts of the device may be of wooden construction which minimizes the cost.

By utilizing at least one such device in a bowling establishment the balls may be rapidly cleaned at regular intervals, for example at the end of each day. For convenience a feed track of suitable length may be provided, and the lead-away track may lead to a bumper stop. It is a simple matter then to place the balls on the feed track and remove them from the receiving or lead-away track.

While a particular preferred form of the invention has been illustrated and described, it will be apparent that the invention is not limited thereto but is capable of various modifications and other specific embodiments.

I claim:

1. Apparatus for feeding bowling balls or like articles to a cleaning position, comprising declined track means for conveying balls gravitationally to and from said position, a pivoted member movable between two positions to feed the balls successively to said cleaning position and to discharge the balls successively from said cleaning position, stop means on said member effective to retain a ball in said cleaning position when said member is in one of its positions but ineffective when said member is in its other position, other stop means on said member adapted to restrain the succeeding balls when said member is in said one position and to release a single ball when said member is moved to said other position, and power-driven means for cyclically actuating said member.

2. Apparatus for feeding bowling balls or like articles to a cleaning position, comprising declined track means for conveying balls gravitationally to and from said position, a pivoted U-shaped member movable between two positions to feed the balls successively to said cleaning position and to discharge the balls successively from said cleaning position, the closed end of said member

constituting a stop means effective to retain a ball in said cleaning position when said member is in one of its positions but ineffective when said member is in its other position, other stop means on said member adapted to restrain the succeeding balls when said member is in said one position and to release a single ball when said member is moved to said other position, a cam follower on said member, and a power-driven cam engaging said follower for cyclically actuating said member.

3. Apparatus for feeding bowling balls or like articles to a cleaning position, comprising declined track means for conveying balls gravitationally to and from said position, a member pivoted for movement between two positions to control the movement of the balls, a first stop on said member effective to retain one of the balls in said cleaning position while said member is in one of its positions but ineffective when said member is in its other position, a second stop on said member effective to restrain the succeeding balls while said member is in said one position but ineffective when said member is in said other position, a third stop on said member ineffective while said member is in said one position but effective to restrain all but one of the succeeding balls when said member is in said other position, a fourth stop on said member ineffective when said member is in said one position but effective when said member is in said other position to restrain the released ball, and power-driven means for cyclically actuating said member.

4. Apparatus for feeding bowling balls or like articles to a cleaning position, comprising declined track means for conveying balls gravitationally to and from said position, a member pivoted at one end for movement between two positions to control the movement of the balls, a bumper stop at the opposite end of said member effective to retain one of the balls in said cleaning position while said member is in one of its positions but ineffective when said member is in its other position, a second stop on said member effective to restrain the succeeding balls while said member is in said one position but ineffective when said member is in said other position, a third stop on said member ineffective while said member is in said one position but effective to restrain all but one of the succeeding balls when said member is in said other position, a fourth stop on said member ineffective when said member is in said one position, but effective when said member is in said other position to restrain the released ball, and power-driven means for cyclically actuating said member.

5. Apparatus for feeding bowling balls or like articles to a cleaning position, comprising declined track means for conveying balls gravitationally to and from said position, U-shaped member having its open end pivoted below said track means and being inclined upwardly in the direction of declination of said track means, the closed end of said member being above said track means and constituting a bumper stop effective to retain one of the balls in said cleaning position while said member is in one of its positions but ineffective when said member is in its other position, a second stop on said member effective to restrain the succeeding balls while said member is in said one position but ineffective when said member is in said other position, a third stop on said member ineffective while said member is in said one position but effective to restrain all but one of the succeeding balls when said member is in said other position, a fourth stop on said member

ineffective when said member is in said one position but effective when said member is in said other position to restrain the released ball, and power-driven means for cyclically actuating said member.

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