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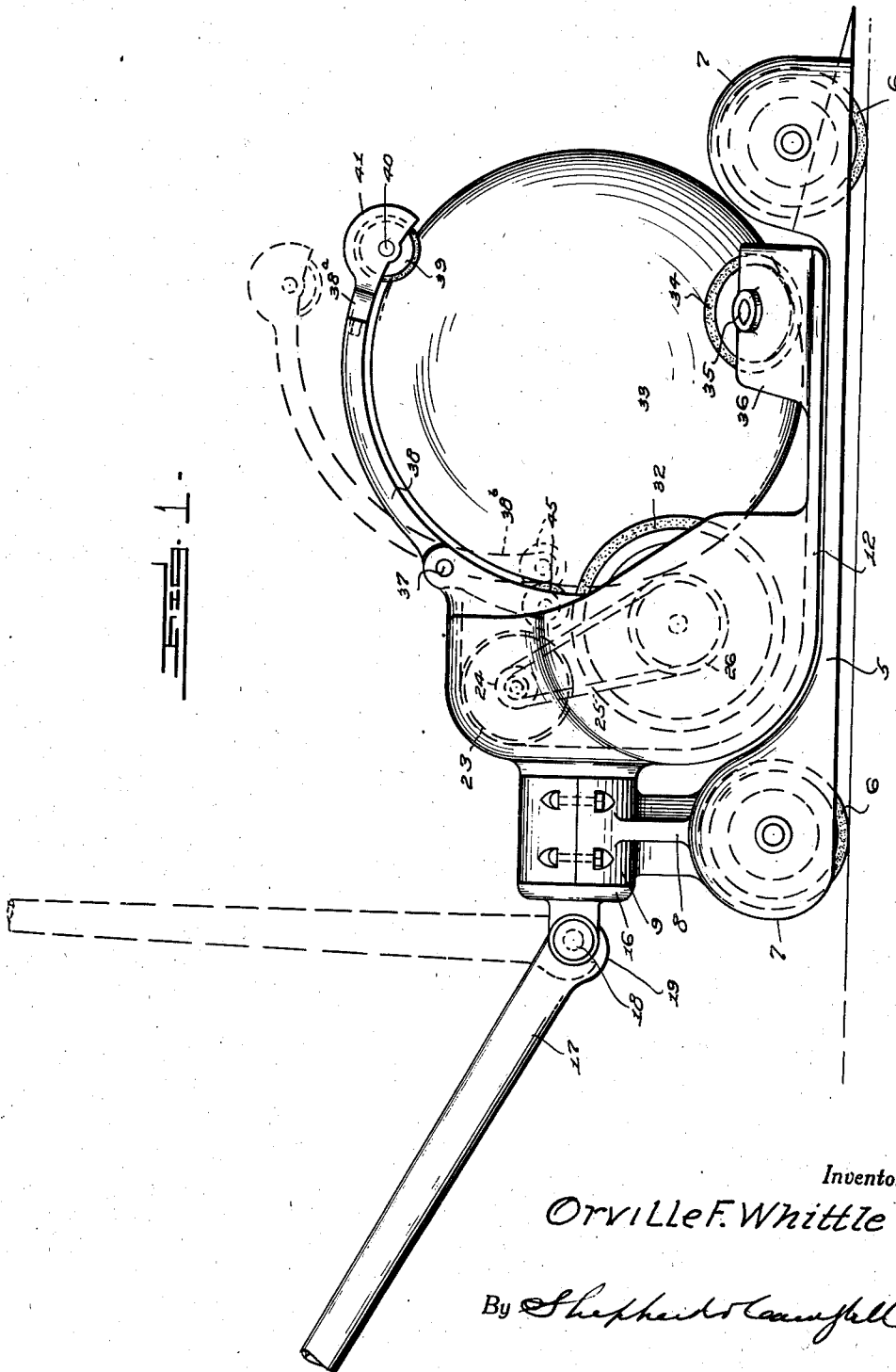
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2,263,602

BOWLING BALL ROTATING AND PROJECTING APPARATUS

Filed March 12, 1940

4 Sheets-Sheet 1



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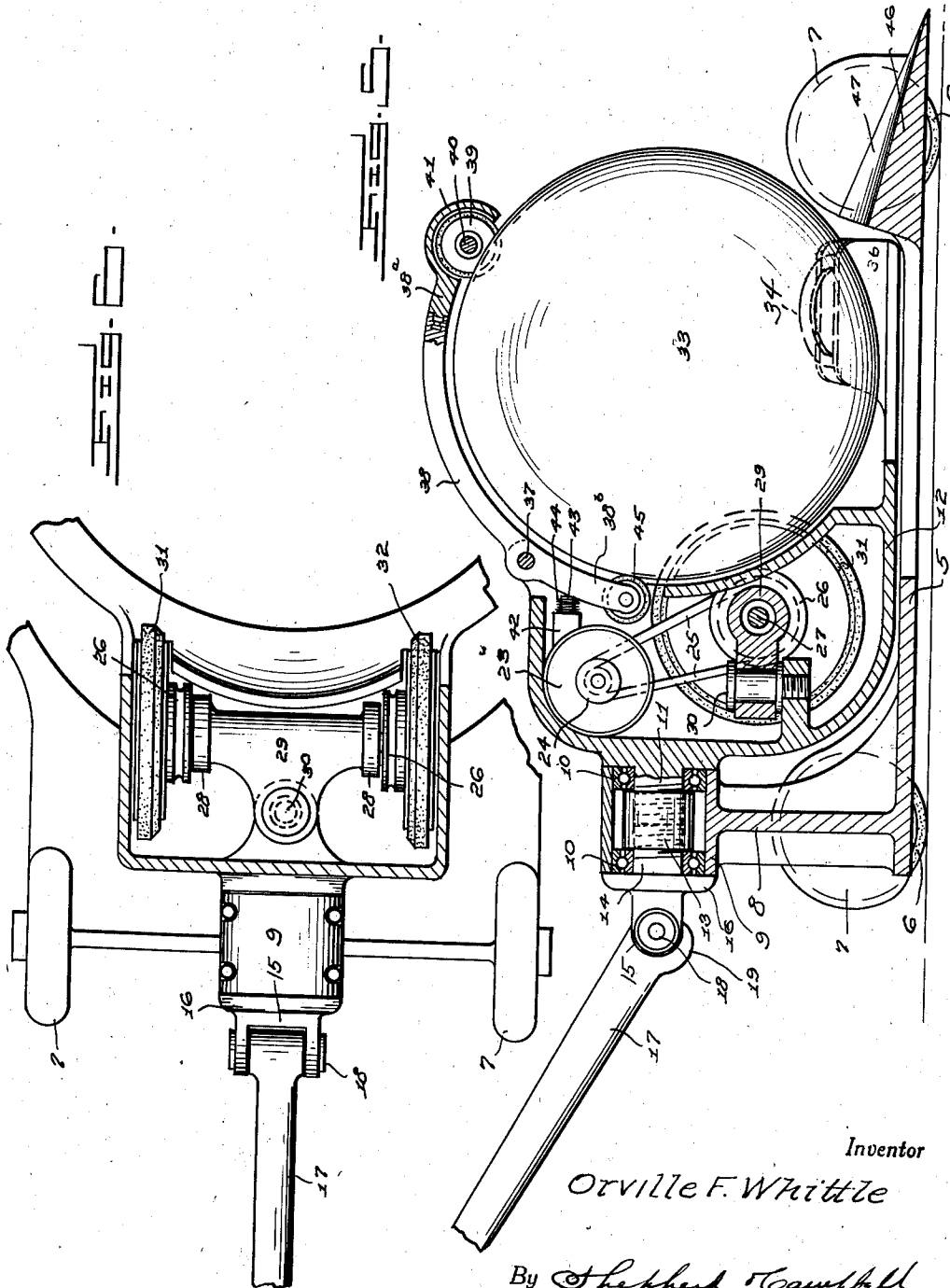
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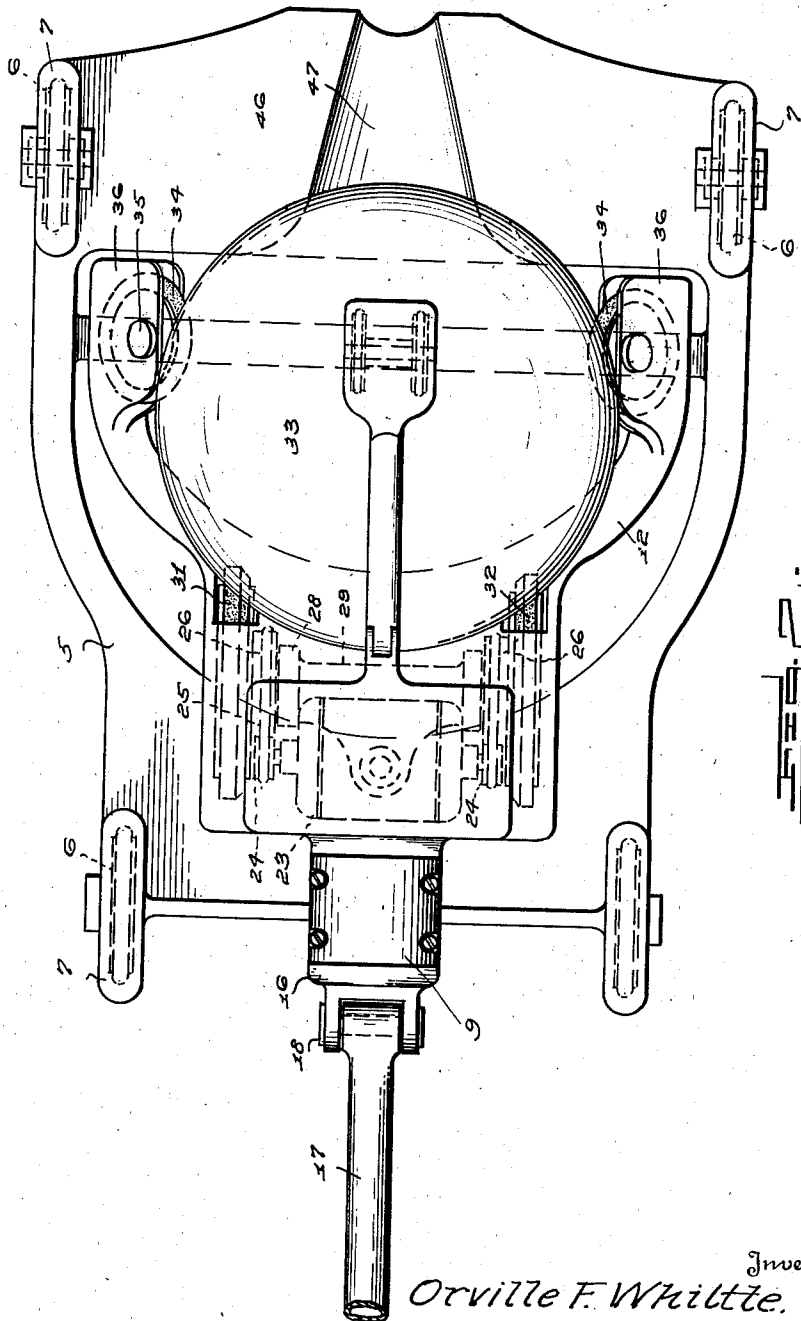
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4 Sheets-Sheet 3



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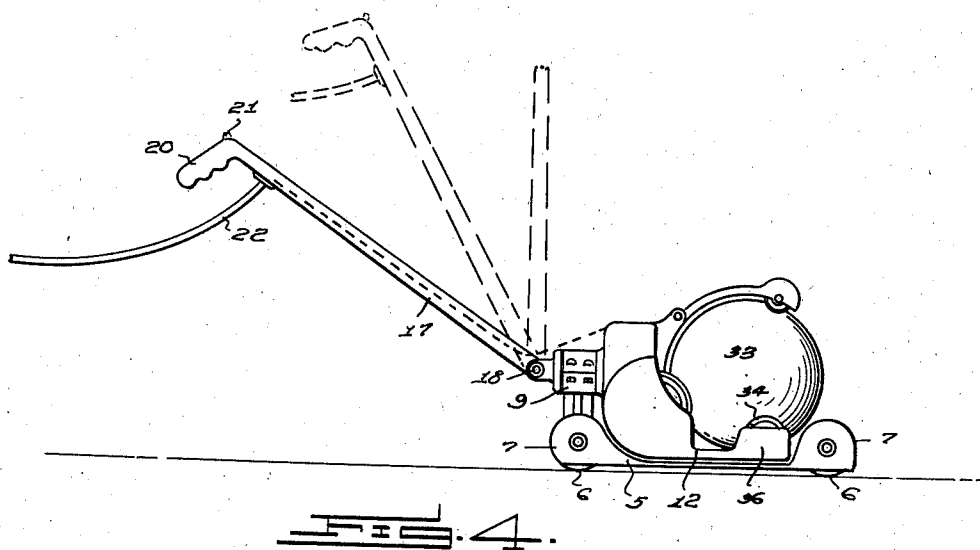
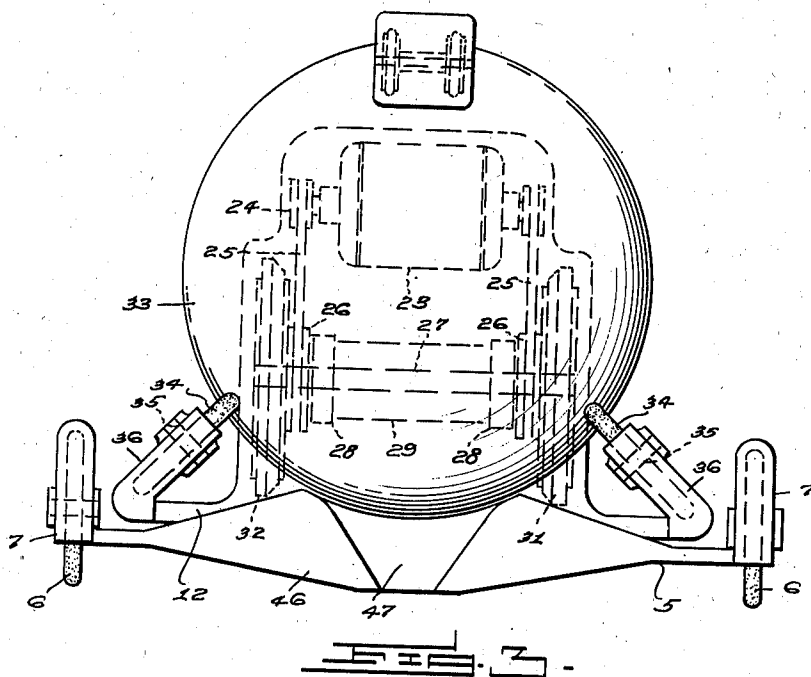
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,263,602

BOWLING BALL ROTATING AND
PROJECTING APPARATUSOrville F. Whittle, Miami, Fla., assignor to
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Application March 12, 1940, Serial No. 323,619

11 Claims. (Cl. 124—1)

This invention relates to game apparatus, and more particularly to a power bowling device, and it has for its object to provide a manually manipulatable structure adapted to receive support, and impart spinning movement to a bowling ball, the manual manipulation of the support permitting the ejection of a ball therefrom, and, in addition, serving to impart, when desired, such twist or "english" to the ball as to cause it to travel in a curved path. This application is a continuation, in part, of my co-pending application, Serial No. 319,123, filed February 15, 1940, which discloses broadly, a power device for rotating a bowling ball, and then ejecting it upon an alley along an aimed path.

Further objects and advantages of the invention will be set forth in the detailed description which follows:

In the accompanying drawings, Fig. 1, is a side elevation of a device constructed in accordance with the invention.

Fig. 2 is a plan view thereof.

Fig. 3 is a front elevation thereof.

Fig. 4 is a side elevation upon a scale small enough to show the manipulating handle, and its pistol grip, in full.

Fig. 5 is a longitudinal, vertical section, and,

Fig. 6 is a fragmentary plan view, with a part of the casing in section, to illustrate the pivotal mounting of the drive roller.

Like numerals designate corresponding parts throughout the several figures of the drawings.

The device comprises a main frame 5, that is mounted upon the ground wheels 6. These wheels are preferably enclosed by housings 7. At its rear end the main frame carries a standard 8, having a sleeve 9, at its upper end. This sleeve receives anti-friction bearings 10, which serve to mount the shank 11, of a rocking frame 12, in said sleeve.

One way of assembling the parts in the sleeve, is to thread the shank 11, for the reception of a coupling 13, and to screw into this coupling the stem 14, of a bifurcated head 15. This head comprises a collar 16, which bears against the end of the sleeve. The bifurcated head has the lower end of a handle 17, pivotally mounted therein at 18, and this handle has a protuberant lower portion 19, which limits the downward movement of the handle. The upper end of the handle (see Fig. 4) is provided with a pistol grip 20.

Disposed adjacent this grip, and in a position to be conveniently engaged by the thumb of the player, is the control element 21, of a conventional rheostat, by which the strength of current supplied to the apparatus through electric cord 22, may be varied. Any suitable way may be resorted to for connecting the rheostat to the operating electric motor 23 (see Fig. 5) such, for example, as the ways commonly employed in vacuum cleaners and the like. The motor is

provided with a pulley 24, at each end of its shaft. These pulleys drive through the pair of belts 25, to pulleys 26, upon shaft 27.

This shaft is journaled in anti-friction bearings 28, of a rocking head 29, said head being pivotally mounted at 30, upon a bearing stud that is carried by frame 12. At its outer ends, shaft 27, carries the friction drive wheels 31 and 32. The tires of these wheels may be made of any suitable friction material, such as fiber, rubber or the like. I prefer to use a stout wear-resistant rubber. These friction wheels engage and support the rear portion of the bowling ball 33, and it will be observed by referring to Fig. 1, that this engagement takes place at a point below the center of the ball, and at a point materially in the rear of the ball. This in conjunction with the limited rocking movement which the shaft 27, may have, causes the ball 33, to accurately center itself in the machine.

The lower forward portion of the ball is engaged and supported by the rollers 34, said rollers being mounted upon the inclined shafts 35, of bearing brackets 36, said bearing brackets constituting extensions of the rocking frame 12. The rollers 34, may be of hard rubber or fiber. I prefer the latter, and the same is true of the detent rollers, and the roller 45, hereinafter described.

Pivotally mounted at 37, upon rocking frame 12, is a curved arm 38. This arm supports a pair of detent rollers 39, which are mounted upon a shaft 40, in hood 41. By referring to Figs. 2 and 3, it may be seen that these detent rollers engage the ball 33, upon opposite sides of the longitudinal center of the machine, and that they engage the ball at a point in advance of the center of the ball. I preferably mount the rollers 39, upon an extension 38a, of arm 38, said extension having pivotal engagement with arm 38, to thereby permit such slight rocking of 38a, with respect to 38, as to cause the rollers 39, to evenly engage the ball with equal pressure from each.

An electric switch, the casing of which is indicated at 42, serves to interrupt the circuit to the motor, whenever its push-button 43, is thrust outwardly by spring 44, and this happens whenever the weight of ball 33, is removed from roller 45, that is mounted at the lower end of the tail 38b of arm 38. As long as the ball is in the position illustrated in Fig. 5, the push-button is thrust inwardly against the tension of spring 44, and the switch permits passage of current to the motor whenever the current is turned on at the rheostat 21.

When a play is to be made, the player grasps the handle 20, and moves the control member of the rheostat to start the motor 23, and through said motor, to start the ball 33, into rotation.

The rheostat may be manipulated to gradual-

ly build up the speed of rotation of the bowling ball, and when said ball has attained the speed desired by the player, the main frame 5, is given a sharp thrust forward in an aimed direction. This, in conjunction with the propelling action of the rollers 31, causes the ball to ride out of the machine, and downwardly over a tapered, pan-like member 46, which constitutes the front cross-bar of the main frame 12. The member 46, is grooved as indicated at 47, to aid in guiding the ball, and to deliver it without shock or jar upon the alley.

If it be desired to impart "english" to the ball, the handle may be manipulated to rock the frame 12, either to the right or to the left, simultaneously with the forward thrust, so that the twist imparted to the spinning ball will take place just as the ball leaves its seat.

The moment that the rear face of the ball starts to move away from the roller 45, the pressure of the ball upon arm 38, is relieved, and this arm is freed to permit the detent rollers 39, to lift slightly, and thus permit the ball to ride out of the machine. The spring 44, may be made strong enough to aid in lifting the rollers out of engagement with the ball. However, as long as the ball is in its seat in the machine, it acts to thrust the tail 33^b rearwardly, and thus hold the rollers 39, in such engagement with the ball as to prevent any tendency for the ball to leave its seat until positively given forward momentum under the manual thrust of the operator.

From the foregoing description it will be seen that the device of the present invention provides a power bowling means by which a controlled speed of spinning may be imparted to a bowling ball. The bowling ball may then be ejected toward bowling pins or other targets, and in its ejection may be given such twist or "english" as is necessary to cause it to travel in a curved path.

I may, if desired, provide a tachometer to visually indicate to the player the speed of rotation attained by the ball. However, this is a mere matter of choice, and an engineering detail.

The wiring to the motor has not been illustrated. It is common practice to conduct electric cords lengthwise through handles such as 17, of vacuum cleaners, floor waxers, floor Sanders, and many like devices. It is common practice in such machines to control them by a button corresponding to the button 21, adjacent the handle grip.

The invention is not limited to the precise arrangement shown, but includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. In a power bowling apparatus a main frame provided with anti-friction members upon which said frame is mounted for manual thrust, a secondary frame journaled for lateral rocking in the main frame, and bowling ball rotating members carried by the secondary frame.

2. A structure as recited in claim 1, wherein the ball rotating members comprise a pair of propelling friction rollers engaging the rear portion of the ball upon opposite sides of its center, an electric motor, and means for driving said propelling friction rollers from said motor.

3. In a machine of the character described, in combination with a wheeled main frame, a laterally rocking secondary frame mounted in said wheeled frame, a pair of bowling ball supporting

rollers carried by the secondary frame, adapted to engage the lower portion of a bowling ball at a point in advance of the center thereof, a pair of friction rollers mounted to rotate in vertical planes and to engage the rear portion of the bowling ball below the center thereof, a motor carried by the rocking frame, and means for driving the friction rollers from said motor.

4. A structure as recited in claim 3, wherein the said friction rollers are mounted for lateral rocking movement to permit them to assume positions of equal frictional engagement with a bowling ball to be rotated.

5. A structure as recited in claim 3, in combination with a detent roller engaging said ball and held in engagement with the periphery of said ball, under the influence of the weight of a bowling ball, when the latter rests upon the supporting rollers and the friction rollers.

6. A structure as recited in claim 3, in combination with a curved arm pivoted upon the secondary frame and having a portion extending forwardly from the pivot point over the top of the bowling ball, detent rollers at the forward end of said arm engaging the periphery of the bowling ball, an extension upon said arm which extends downwardly past the pivot point, and means upon said extension adapted to be engaged by the bowling ball to thereby throw the upper end of said arm and its detent rollers toward the ball as long as said ball is in place.

7. A structure as recited in claim 3, in combination with means for automatically cutting off current to the motor when the ball leaves the secondary frame.

8. A machine of the character described comprising a main wheeled frame having a horizontal bearing sleeve at its rear end, a secondary frame, anti-friction means mounting the secondary frame for rocking movement in said sleeve, a handle connected to the secondary frame, a motor upon the secondary frame, a control means for the motor upon the handle adjacent the free end of said handle, means for rotatively mounting a bowling ball in the secondary frame, said means comprising friction rollers driven by said motor and engaging said ball.

9. A structure as recited in claim 8, wherein the main frame comprises a tapered delivery portion at its front end.

10. A structure as recited in claim 8, in combination with a curved detent arm pivoted upon the secondary frame and overlying the upper rear portion of a bowling ball to be propelled, said arm carrying a pair of detent rollers at its forward end, the forward end said arm being mounted for lateral rocking movement with respect to the remainder of said arm, a roller carried by said arm at a point below its pivot point and against which the rear portion of a ball to be propelled is adapted to rest.

11. A structure as recited in claim 8, in combination with a curved detent arm pivoted upon the secondary frame and overlying the upper rear portion of a bowling ball to be propelled, said arm carrying a pair of detent rollers at its forward end, the forward end said arm being mounted for lateral rocking movement with respect to the remainder of said arm, a roller carried by said arm at a point below its pivot point and against which the rear portion of a ball to be propelled is adapted to rest, and spring means acting upon said arm and tending to elevate the detent rollers of said arm.

ORVILLE F. WHITTLE.