Jan. 30, 1962 F. L. PARSONEAULT 3,018,769

BASEBALL PITCHING AND FIELDING PRACTICE DEVICE

Filed July 2, 1959 3 Sheets-Sheet 1

FIG. 1.

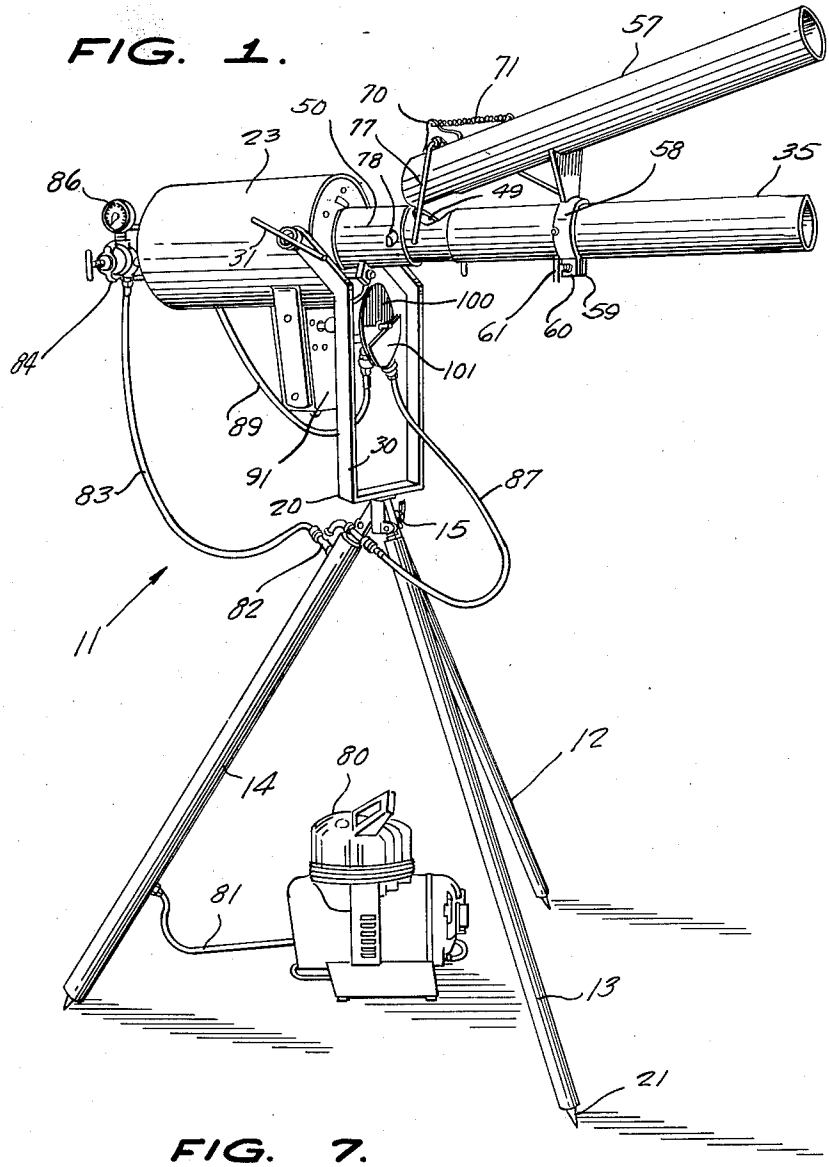
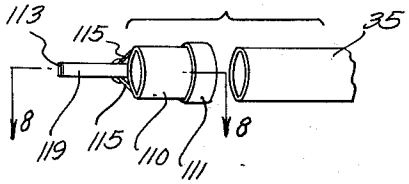


FIG. 7.



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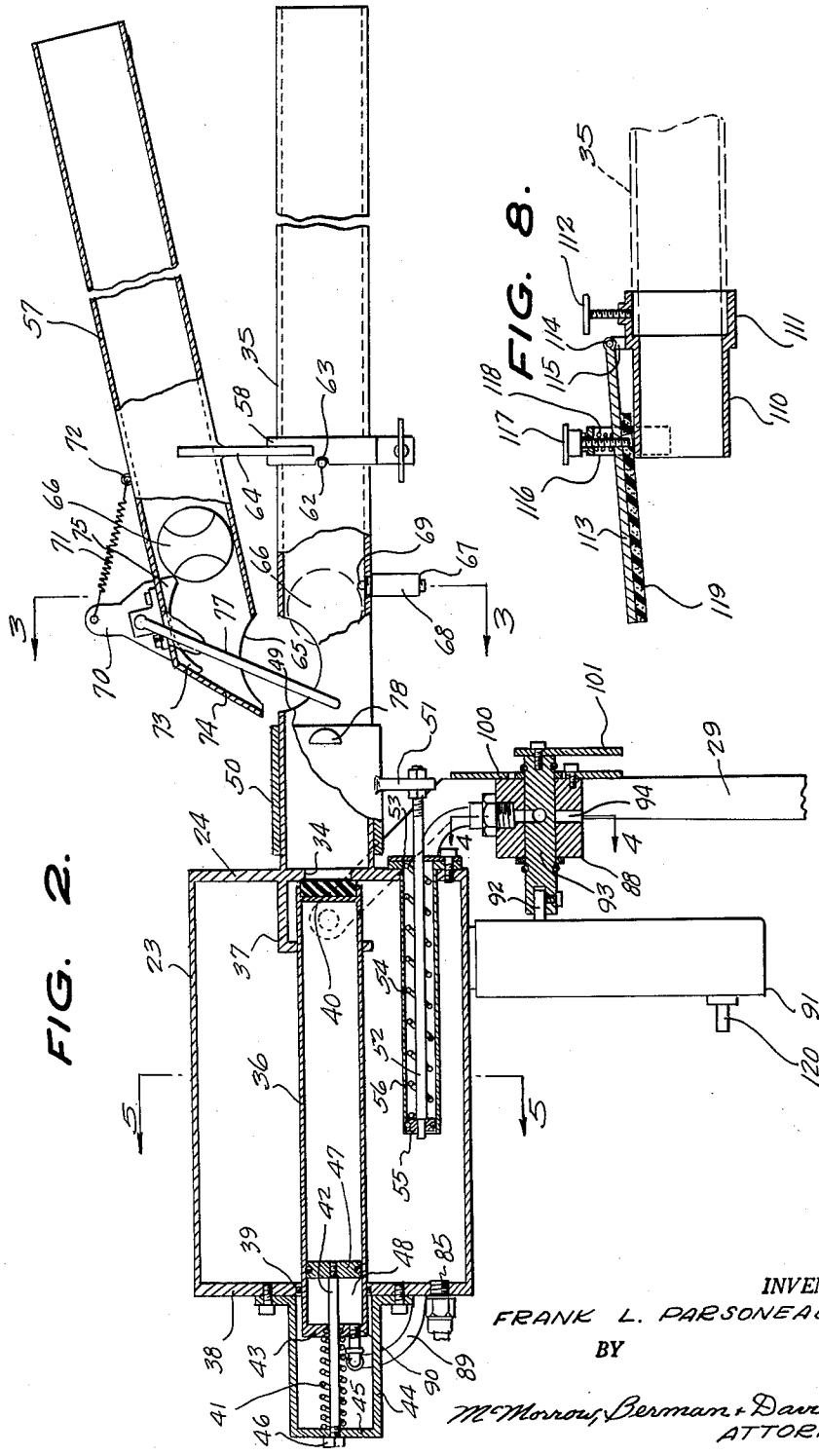


FIG. 2.

FIG. 8.

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BASEBALL PITCHING AND FIELDING PRACTICE DEVICE

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FIG. 3.

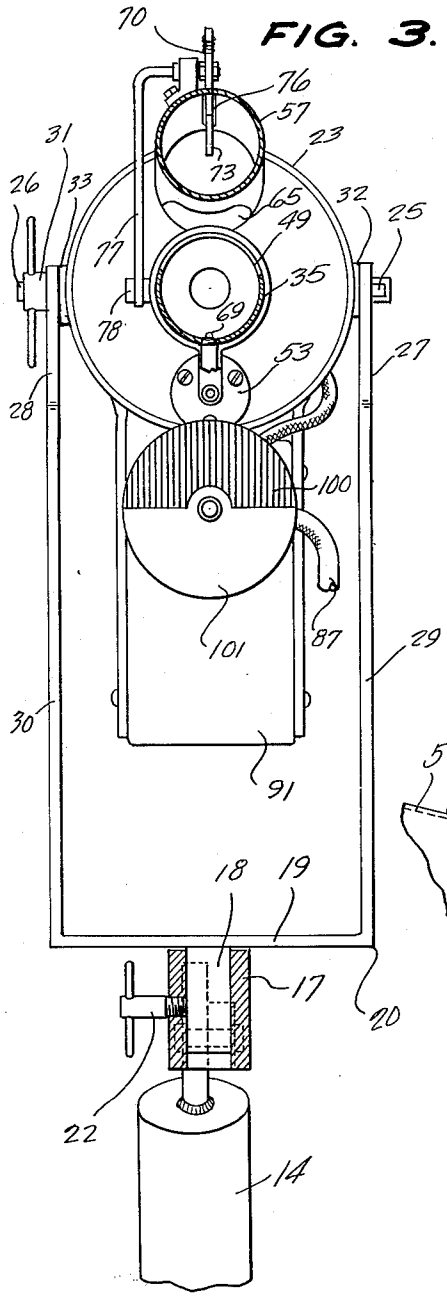


FIG. 4.

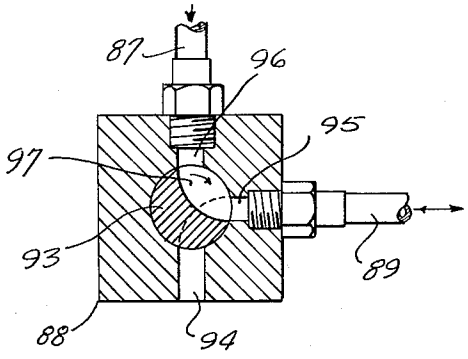


FIG. 5.

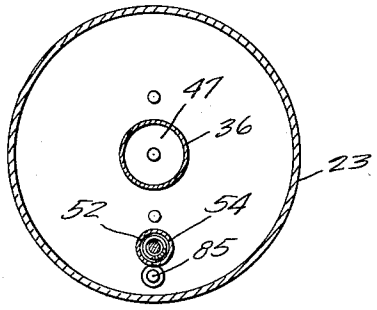
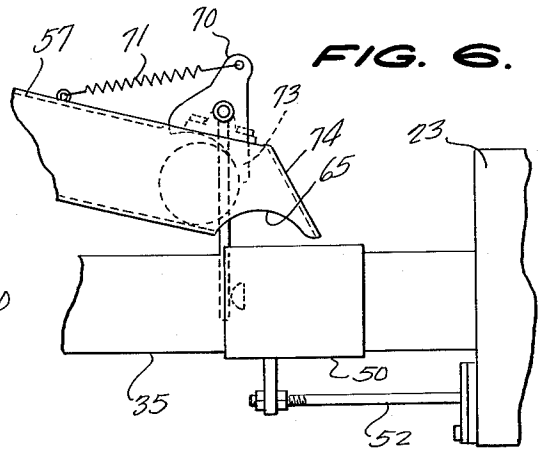


FIG. 6.



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BASEBALL PITCHING AND FIELDING PRACTICE DEVICE

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Filed July 2, 1959, Ser. No. 824,713
6 Claims. (Cl. 124—11)

This invention relates to athletic practice equipment, and more particularly to an apparatus for projecting baseballs in such a manner as to be useful for batting practice, for fielding practice, and for similar practice activities wherein it is desirable for a baseball to be repeatedly projected onto a playing field or over a desired path of travel.

A main object of the invention is to provide a novel and improved baseball projecting apparatus which is simple in construction, which is easy to set up for use, and which is readily adjustable so that baseballs may be projected therefrom in any desired manner so as to afford a desired type of baseball practice activity.

A further object of the invention is to provide an improved apparatus for projecting baseballs, said apparatus being relatively compact in size, being light in weight, being easily transportable, and having relatively small recoil so that it does not need readjustment after it has once been set up for use.

A still further object of the invention is to provide an improved baseball projecting apparatus which can be set up to provide various desired types of practice conditions, for example, which can be set up to provide batting practice wherein the baseballs are projected toward the practice batters, which can be set up to provide infield practice, and which may be set up to provide other practice conditions.

A still further object of the invention is to provide an improved baseball projecting apparatus which is controllable so that baseballs projected therefrom will have a desired speed, which does not damage baseballs projected therefrom, and which involves a minimum number of moving parts so that it is relatively safe to operate.

A still further object of the invention is to provide an improved baseball projecting apparatus which gives a clearly visible signal each time a baseball is to be projected therefrom and which provides a constant sequence of baseballs projected therefrom, which may be adjusted so that baseballs projected therefrom will spin or curve in a desired manner, and which is completely automatic in operation, requiring no attention from the operator after it has once been set up for use and placed in operation, except for replenishment of the baseballs after the initial supply thereof has become exhausted.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIGURE 1 is a perspective view of an improved baseball projecting apparatus constructed in accordance with the present invention.

FIGURE 2 is an enlarged fragmentary side elevational view, partly in vertical cross section, of the main components of the baseball projecting apparatus of FIGURE 1.

FIGURE 3 is a transverse vertical cross sectional view taken substantially on the line 3—3 of FIGURE 2.

FIGURE 4 is an enlarged vertical cross sectional view taken substantially on the line 4—4 of FIGURE 2.

FIGURE 5 is a vertical cross sectional view taken on the line 5—5 of FIGURE 2.

FIGURE 6 is a fragmentary side elevational view of the inner end portion of the barrel member of the baseball projecting apparatus of FIGURE 1 and the inner end portion of the tubular magazine, showing the closure sleeve of the barrel member in closed position.

FIGURE 7 is a fragmentary perspective view showing the outer end portion of the barrel member of the baseball projecting apparatus of FIGURE 1 and a ball-curving attachment adapted to be engaged thereon.

FIGURE 8 is an enlarged cross sectional view taken substantially on the line 8—8 of FIGURE 7.

Referring to the drawings, 11 generally designates an improved baseball propelling apparatus according to this invention. The apparatus 11 comprises a tripod consisting of a pair of rod-like legs 12 and 13 and a hollow tubular leg 14. The top ends of the legs being pivotally connected to respective outwardly projecting lugs 15 spaced at equal angles around a vertical collar member 17 in which is adjustably secured the depnding stud 18 rigidly secured to and depending from the horizontal bight portion 19 of a vertical, U-shaped bracket member 20.

The legs 12, 13 and 14 are provided at their lower ends with pointed ground-penetrating tips 21 which enable the legs to be firmly anchored in the ground in the spread-apart positions thereof such as shown in FIGURE 1.

The collar 17 is provided with a manually operable locking screw 22 which may be tightened to secure the stud member 18 in a stationary position in the collar member, whereby the bracket member 20 may be thus locked in a desired position.

Designated at 23 is a generally cylindrical tank which is provided adjacent its forward end wall 24 with a pair of diametrically opposed outwardly projecting trunnion studs 25 and 26 which are rotatably received in the apertured top end portions of respective rearwardly and upwardly inclined arms 27 and 28 formed on the top portions of the vertical sides 29 and 30 of the U-shaped bracket member 20. A manually operable locking nut 31 is threadedly engaged on the trunnion shaft element 26, whereby the tank 23 may be secured in an adjusted position on the arms 27 and 28 by tightening the locking nut 31. As shown, shouldered collars 32 and 33 are provided on the tank 23 inwardly adjacent the arms 27 and 28.

As will be readily apparent, the axis of the tank 23 may be adjusted around a transverse vertical axis defined by the diametrically opposed outwardly projecting horizontal stud elements 25 and 26, and may be further adjusted around the vertical axis defined by the collar 17.

The end wall 24 of tank 23 is formed with a central aperture 34, and rigidly secured to said end wall around the aperture and coaxially with the tank 23 is a tubular barrel 35. Designated at 36 is a tubular plunger member which is slidably mounted inside the tank 23 coaxially therewith, the plunger member 36 being slidably supported adjacent the wall 24 by an apertured inner bracket 37 and being slidably supported at its opposite end in a central aperture provided in the opposite end wall 38 of the tank 23. The central aperture of end wall 38 is provided with a suitable resilient deformable sealing ring 39 which sealingly engages the hollow plunger member 36, as is clearly shown in FIGURE 2.

Secured to the end of the plunger member 36 adjacent the end wall 24 is a sealing pad 40 of resilient deformable material, such as rubber or the like, adapted to engage the end wall 24 around the aperture 34 and seal off said aperture when the plunger member 36 is in the position thereof illustrated in FIGURE 2, namely, is moved to its extreme right-hand position. The plunger member 36 is biased toward its sealing position, shown in FIGURE 2, by a coiled spring 41 which surrounds a stationary axial rod member 42 extending slidably and sealingly through the end wall 43 of the tubular plunger member 36. A U-shaped bracket 44 is secured to the end wall 38 of the tank 23, the rod 42 extending through the central portion of the bight element 45 of the bracket 44 and being retained by an anchoring nut 46 threaded on the outer end of the rod. The coil spring 41 bears between the

bight portion 45 of bracket 44 and the end wall 43 of the hollow plunger 36, biasing said plunger to the right, as viewed in FIGURE 2, namely, towards sealing position. A piston element 47 is threadedly secured on the inner end of the rod 42, the piston element sealingly and slidably engaging the inside surface of the hollow plunger 36. A chamber 48 is thus defined between the piston member 47 and the end wall 43 of the plunger 36, said chamber being adapted to receive fluid under pressure, as will be presently described, whereby to move the plunger 36 at times to the left, as viewed in FIGURE 2, to uncover the discharge aperture 34 of the tank 23.

Barrel 35 is formed at its inner portion with an upwardly facing baseball-receiving aperture 49, and a sleeve member 50 is slidably mounted on the barrel member between the aperture 49 and the end wall 24 of the tank 23. The sleeve member 50 is provided with a depending lug 51 to which is connected the outer end portion of a rod 52, said rod extending slidably and sealingly through a vertical plate member 53. The plate member 53 comprises the end wall of a tubular chamber 54 secured inside the tank 23 and extending parallel to the axis of said tank, as shown in FIGURE 2. Rod member 52 is provided at its inner end with a piston element 55 which slidably and sealingly engages inside the tubular chamber 54 and which is urged to the left, as viewed in FIGURE 2, by a coiled spring 56 provided in chamber 54 and surrounding the rod 52. The spring 56 bears between the piston element 55 and the plate member 53, as shown, thus biasing the sleeve member 50 to the retracted position thereof illustrated in FIGURE 2, namely, to a position adjacent the end wall 24 of tank 23.

As will be presently explained, when fluid pressure builds up inside the tank 23, the piston 55 is urged to the right, as viewed in FIGURE 2, against the force of the biasing spring 56, moving the sleeve member 50 to a position covering the aperture 49. When the pressure inside the tank 23 is released, the spring 26 retracts the sleeve 50 to the position thereof illustrated in FIGURE 2, uncovering the aperture 49.

Designated at 57 is a tubular magazine which is rigidly mounted on a collar member 58, the collar member 58 surrounding the barrel 35 and being provided with depending opposing clamping lugs 59 and 60 connected by a manually operable clamping screw 61. By tightening the screw 61 the lugs 59 and 60 may be urged together to cause the collar 58 to tightly grip the collar 35, whereby to secure the magazine 57 rigidly to the barrel, for example, in the position thereof illustrated in FIGURE 2. A positioning pin 62 may be provided on the barrel which is engageable in a positioning notch 63 formed in one edge of the collar 58, whereby to positively locate the collar 58 on the barrel 35.

As shown in FIGURE 2, the magazine 57 is connected rigidly to the collar 58 by a vertical bracket member 64, the magazine 57 being inclined upwardly and forwardly with respect to the barrel 35 when mounted on said barrel in the manner shown in FIGURE 2. The magazine 57 is formed at its lower end with a discharge opening 65 which faces the opening 49 of the barrel member 35 when the magazine is mounted on the barrel in a manner illustrated in FIGURE 2, whereby baseballs 66 fed by the magazine will drop through the aperture 49 into the barrel 35.

The barrel 35 is provided forwardly adjacent the receiving portion thereof subjacent the aperture 49 with a yieldable detent member 67, comprising a depending barrel 68 having a yieldable top lug 69 which projects upwardly into the barrel 35 into obstructing relationship with respect to a baseball 66 disposed in the barrel subjacent the opening 49, as shown in FIGURE 2. The detent element 69 is yieldable responsive to a substantial projecting force exerted on the baseball 66 to allow the baseball to pass forwardly through the barrel 35, as will be presently described.

Designated at 70 is a detent cam which is pivoted in the top portion of the rear end of magazine 57, the detent cam 70 being connected by a biasing spring 71 to a hook 72 provided on the magazine 57 and spaced forwardly from the cam 70, as shown in FIGURE 2. The cam 70 is formed with a stop arm 73 which extends into the magazine 57 and which is urged by the spring 71 into engagement with the downwardly and rearwardly inclined rear wall 74 of the magazine, as shown in FIGURE 2. Cam 70 is further provided with a depending forward detent lug 75 which normally projects into the upper portion of the magazine 57 in obstructing relationship to a baseball 66 disposed in the magazine, the baseball 66 being held against movement towards the discharge opening 65 as long as cam 70 is in the normal position thereof illustrated in FIGURE 2. However, when the cam 70 is rotated in a counterclockwise direction, as viewed in FIGURE 2, the detent lug 75 is elevated in the cam slot 76 sufficiently to allow the baseball 66 to move therepast by gravity and to pass through the discharge opening 65. The ball will drop into the barrel 35 through the aperture 49 if sleeve 50 is in a retracted position, such as that shown in FIGURE 2.

A depending arm 77 is rigidly secured to the supporting shaft of cam 70, the arm 77 being engageable by a laterally extending lug 78 provided on the sleeve 50 responsive to the forward movement of said sleeve on the barrel 35. Thus, as sleeve 50 is moved forwardly into covering relationship with the aperture 59, the lug 78 engages the downwardly and rearwardly extending arm 77 and rotates the cam 70 counterclockwise, as viewed in FIGURE 2, releasing a baseball 66 so that the ball travels toward the discharge opening 65. This action occurs when pressure builds up in the tank 23, since the fluid pressure in the tank then moves the piston member 55 to the right, as viewed in FIGURE 2. When the fluid pressure is released, the sleeve 50 is retracted by the biasing action of the spring 56, allowing the retaining lug 73 to move to the left and allowing the baseball to drop into the barrel 35 through the openings 65 and 49.

As will be readily understood, a baseball 66 is thus fed from the magazine 57 into the rear end portion of barrel 35 for each reciprocation of the closure sleeve 50.

Designated at 80 is a compressor which is connected by a conduit 81 to the lower portion of the hollow leg 14. Connected to the top portion of leg 14 is a T-fitting 82. One branch of the T-fitting 82 is connected through a conduit 83 and a conventional manually adjusted pressure-regulating valve 84 to a conduit fitting 85 provided in the rear end wall 38 of tank 23. The valve 84 is provided with a pressure gauge 86 enabling the valve to be set to provide a desired maximum fluid pressure in the tank 23. As will be readily understood, the fluid pressure in the tank will momentarily drop to a relatively low value, approaching that of atmospheric pressure, when the aperture 34 is exposed.

The remaining branch of fitting 82 is connected by a conduit 87, a timing valve 88 and another conduit 89 to a conduit fitting 90 provided in the end wall 43 of the tubular plunger 36.

The conduits 83, 87, 89 are preferably of the flexible type, allowing free adjustment of the parts associated therewith and allowing free reciprocatory movement of the plunger member 36.

A timing motor 91 is rigidly secured to the bottom wall portion of tank 23, depending vertically therefrom, as shown in FIGURE 2. The shaft of the timing motor, shown at 92, is rigidly coupled to the rotor 93 of the timing valve 88.

The main body of valve 88 is provided with a vertical vent opening 94 and with a diametrically opposed fluid intake opening 96. Said main body is further provided with a passage 95 which is connected by the conduit 89 to the chamber 48 of the hollow piston member 36. As shown in FIGURE 4, the passage 95 is angularly spaced midway

between the passages 94 and 96. The rotor 93 is formed with a recess 97 which is dimensioned so that the fluid intake opening 96 may be at times connected to the passage 95, whereby to admit fluid under pressure into chamber 48, and the rotor 93 may be rotated in a clockwise direction, as viewed in FIGURE 4, to at other times connect passage 95 to the atmosphere through the vent opening 94, allowing chamber 48 to be discharged. The timing motor 91 rotates the rotor 93 at a constant speed, whereby the passage 95 is alternatively connected to the fluid supply conduit 87 and to the vent opening 94.

A circular index plate 100 is secured to the main body of valve 88 at its forward end, the rotor 93 extending rotatably through the center of the disc 100. A semi-circular indicating disc 101 is secured to the end of the rotor 93 parallel to and in front of the disc 100. As shown in FIGURE 1, the top half of the disc 100 may be suitably colored and the semi-circular member 101 may be likewise colored, so that the colored portions of disc 100 and element 101 may be at times superimposed. This may be employed to indicate the point in the cycle of rotation of rotor 93 at which recess 97 connects passage 96 to passage 95, namely, connects the fluid pressure supply conduit 87 to the chamber 48 which causes plunger 36 to be retracted to expose aperture 34 and cause propulsion of a baseball 66 through the barrel 35.

In operation, when the rotor 93 reaches a position wherein passage 95 is connected to the fluid supply passage 96, the fluid under pressure enters the chamber 48, causing the plunger 36 to be retracted and exposing the opening 34 to the fluid pressure in the tank 23. This fluid pressure discharges through the opening 34 into the barrel 35 and propels the baseball 66 provided in the barrel outwardly therethrough, overcoming the yieldable detent element 69. As previously mentioned, under these conditions the sleeve 50 is in covering relationship to the opening 49, preventing another baseball from dropping into the barrel. As the pressure in tank 23 drops due to the exposure of aperture 34, plunger 55 is moved to the left, as viewed in FIGURE 2, causing the sleeve 50 to be retracted, whereby a baseball may drop into the barrel 35 through the aperture 49, as above described. Subsequently, the rotor 93 advances to the position wherein passage 95 is connected to the vent opening 94, whereby chamber 48 is allowed to discharge to atmosphere, and whereby the spring 41 acts on the plunger 36 to move the plunger to the right, as viewed in FIGURE 2, namely to the position wherein the sealing pad 40 engages around the margin of the opening 34, closing off the tank 23, and allowing the pressure in the tank to again build up to the established pressure set by the valve 84. This action moves the piston 55 to the right, as viewed in FIGURE 2, causing the sleeve 50 to cover the opening 49 and rotating the cam 70 to allow another baseball 66 to drop into feeding position in the lower end portion of magazine 57 by the action of cam 70, as above described. When recess 97 again reaches the position illustrated in FIGURE 4, a baseball is again propelled through the barrel 35 in the manner above described, and this action continues as long as a supply of baseball is available in the magazine 57.

Designated at 110 is a sleeve member provided with an attaching collar 111 engageable on the end of the barrel 35, the collar 111 being provided with a manually operable locking screw 112 to rigidly secure the sleeve 110 on the barrel 35 in a desired position of angular adjustment around the axis of the barrel. Designated at 113 is an arm which is pivoted at 114 between a pair of lugs 115, 115 projecting from the collar 111, the arm 113 extending through a U-shaped bracket 116 secured on the end of the sleeve 110. An adjusting screw 117 extends rotatably through the bight portion of the bracket member 116 and is threadedly engaged with the arm 113. A biasing spring 118 surrounds the screw 117, bearing between the bight portion of bracket 116 and arm 113. By adjusting the screw 117, the inclination of the arm 13 may be adjusted.

As shown in FIGURE 8, the arm 113 is provided at its inside surface with a pad of friction material 119, and the arm extends forwardly adjacent the end of the sleeve 110 in the path of travel of a ball ejected through said sleeve from the barrel 35. The angular position of the arm 113 may be regulated by adjusting the screw 117, whereby to regulate the degree of frictional engagement of the ball with the pad 119 as the ball leaves the sleeve 110. This accordingly regulates the amount of spin imparted to the ball and thus adjusts the degree of curving action applied to the ball as it is ejected from the sleeve 110. By adjusting the collar 111 around the axis of the barrel 35, the direction of curvature may be likewise adjusted.

As will be readily apparent, the various parts of the apparatus are separable from each other so that the apparatus may be easily taken apart for transportation or storge, and conversely, may be quickly and easily put together when use of the device is desired.

The compressor 80 is of conventional construction, and may be driven by any suitable prime mover, such as an internal combustion engine. The hollow leg 14 serves as a reservoir to receive a substantial volume of the compressed gas, namely, compressed air, and store same so that it may be delivered through the pressure-regulating valve 84 to the tank 23 and through the timing valve 88 to the chamber 48 of the hollow plunger member 36.

The timing motor 91 is likewise of conventional construction and may be a conventional electric motor driven by any suitable supply source, for example, energized from batteries contained in the housing of the timing motor, the energization of the motor being controlled by a suitable manually operated switch 120 mounted on the housing, as shown in FIGURE 2. The timing motor is suitably designed with internal reducing gears so that the output shaft 92 rotates at a relatively slow speed, for example, at a speed of six revolutions per minute, whereby the valve rotor 93 likewise rotates at this speed. Thus, the balls are propelled from the barrel 35 at the rate of six per minute which provides a sufficient interval between balls for baseball practice requirements. Obviously, any suitable timing motor may be employed, in accordance with the desired interval between the propulsion of the balls.

As will be further apparent, the barrel 35 may be adjusted to any desired angle, in accordance with the type of practice desired. When adjusted to a substantially horizontal position, as shown in FIGURE 1, the apparatus is set up to provide propulsion simulating pitching of the baseballs, whereby the device is suitable for batting practice. By directing the barrel 35 downwardly and forwardly, the device may be employed for fielding practice since the balls will be projected downwardly onto the ground. Similarly, by adjusting the barrel 35 so that it is inclined upwardly and forwardly at a relatively steep angle, the apparatus may be employed to project balls to simulate "pop-ups" and to provide practice in fielding this type of ball.

While a specific embodiment of an improved baseball projecting apparatus has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel and communicating therewith to supply balls thereto, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansi-

ble chamber located opposite said one wall and being of substantially the same cross-sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a valve, means alternately opening and closing said valve, and conduit means connecting said source of compressed gas to said chamber through said valve.

2. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel and communicating therewith to supply balls thereto, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansible chamber located opposite said one wall and being of substantially the same cross sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a timing motor, a valve, means drivingly connecting said timing motor to said valve and being constructed and arranged to alternately open and close said valve responsive to operation of said motor, and means connecting said source of compressed gas to said chamber through said valve.

3. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel, said magazine being open at its lower end and said barrel being formed with a ball-receiving aperture subjacent the open lower end of the magazine, a closure sleeve slidably mounted on said barrel adjacent said ball-receiving aperture, pressure-responsive means in the tank, means operatively connecting said pressure-responsive means to said closure sleeve to move said sleeve into covering relation to said ball-receiving aperture responsive to the building up of gas pressure in said tank, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansible chamber located opposite said one wall and being of substantially the same cross sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a valve, means alternately opening and closing said valve, means connecting said source of compressed gas to said chamber through said valve, whereby to vent said tank through said valve responsive to retraction of said plunger member, and means moving said sleeve to uncovering position relative to said ball-receiving aperture responsive to venting of said tank.

4. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel, said magazine being open at its lower end and said barrel being formed with a ball-receiving aperture subjacent the open lower end of the magazine, a closure sleeve slidably mounted on said barrel adjacent said ball-receiving aperture, pressure-responsive means in the tank, means operatively connecting said pressure-responsive means to said closure sleeve to move said sleeve into covering relation to said ball-receiving aperture responsive to the building up of gas pressure in said tank, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansible chamber located opposite said one wall and being of substantially the same cross sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a valve, means alternately opening and closing said valve, conduit means connecting said source of compressed gas to said chamber through said valve, whereby to vent said tank through said valve responsive to retraction of said plunger member, means moving said sleeve to uncovering position relative to the ball-receiving aperture responsive to venting of said tank, movable detent means in the magazine normally obstructing passage of balls to the open lower end of said magazine, and means moving said detent means to non-obstructing position relative to said open lower end responsive to the movement of said sleeve toward covering position relative to said ball-receiving aperture.

5. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel, said magazine being open at its lower end and said barrel being formed with a ball-receiving aperture subjacent the open lower end of the magazine, a closure sleeve slidably mounted on said barrel adjacent said ball-receiving aperture, pressure-responsive means in the tank, means operatively connecting said pressure-responsive means to said closure sleeve to move said sleeve into covering relation to said ball-receiving aperture responsive to the building up of gas pressure in said tank, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansible chamber located opposite said one wall and being of substantially the same cross sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a timing motor, a valve, means drivingly connecting said timing motor to said valve and being constructed and arranged to alternately open and close said valve responsive to operation of said motor, conduit means connecting said source of compressed gas to said chamber through said valve, whereby to vent said tank through said barrel responsive to retraction of said plunger member, means moving said sleeve to uncovering position relative to said ball-receiving aperture responsive to venting of said tank, movable detent means in the magazine normally obstructing passage of balls to the open lower end of said magazine, and means moving said detent means to non-obstructing position relative to said open lower end responsive to the movement of said sleeve toward covering position relative to said ball-receiving aperture.

6. A ball projecting device comprising a support, a compressed gas tank mounted on said support, a source of compressed gas connected to said tank, said tank being formed in one wall thereof with an aperture, a tubular barrel secured to said tank around said aperture, an inclined tubular magazine mounted on said barrel, said magazine being open at its lower end and said barrel being formed with a ball-receiving aperture subjacent the open lower end of the magazine, a closure sleeve slidably mounted on said barrel adjacent said ball-receiving aperture, pressure-responsive means in the tank, means operatively connecting said pressure-responsive means to said

closure sleeve to move said sleeve into covering relation to said ball-receiving aperture responsive to the building up of gas pressure in said tank, a piston rigidly secured in said tank in alignment with said aperture, a hollow plunger member sealingly and slidably supported on said piston and defining therewith an expansible chamber located opposite said one wall and being of substantially the same cross sectional area as said plunger member, whereby to retract the plunger member responsive to expansion of the chamber, means biasing said plunger member into sealing contact with said one wall around said aperture, a timing motor, a valve, means drivingly connecting said timing motor to said valve and being constructed and arranged to alternately open and close said valve responsive to operation of said motor, conduit means connecting said source of compressed gas to said chamber through said valve, whereby to vent said tank through said barrel responsive to retraction of said plunger member, means moving said sleeve to uncovering position relative to said ball-receiving aperture responsive to venting of said tank, movable detent means in the

magazine normally obstructing passage of balls to the open lower end of said magazine, means moving said detent means to non-obstructing position relative to said open lower end responsive to the movement of said sleeve toward covering position relative to said ball-receiving aperture, and an inclined friction arm yieldably mounted on the end of said barrel and extending forwardly adjacent said end of the barrel into the path of travel of a ball ejected from the barrel, whereby to spin the ball as it leaves the barrel.

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