April 2, 1929. J. D. JETER 1,707,726

BALL THROWING MACHINE

Filed Oct. 8, 1928 3 Sheets-Sheet 1

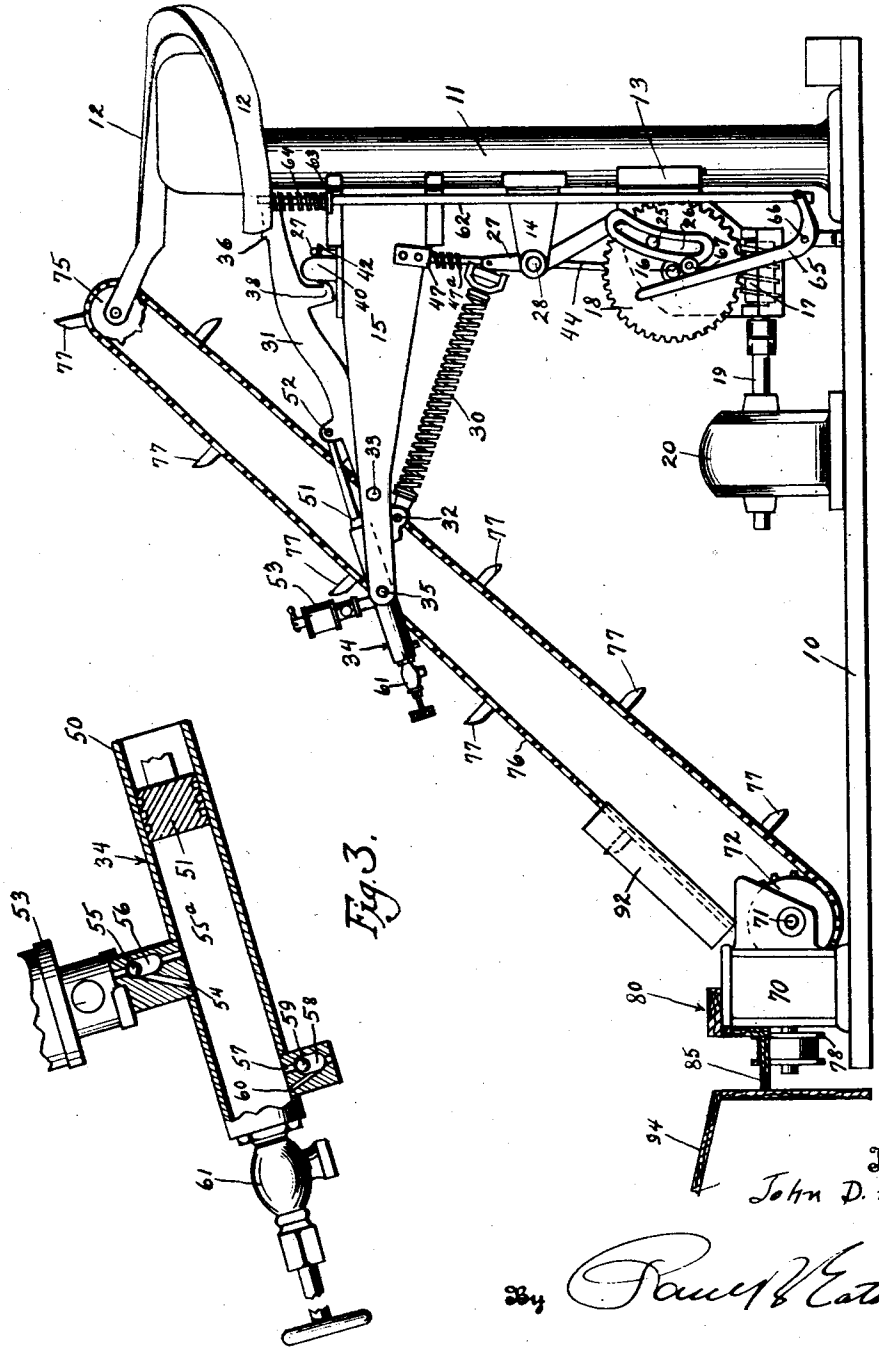


Fig. 1.

Fig. 3.

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BALL THROWING MACHINE

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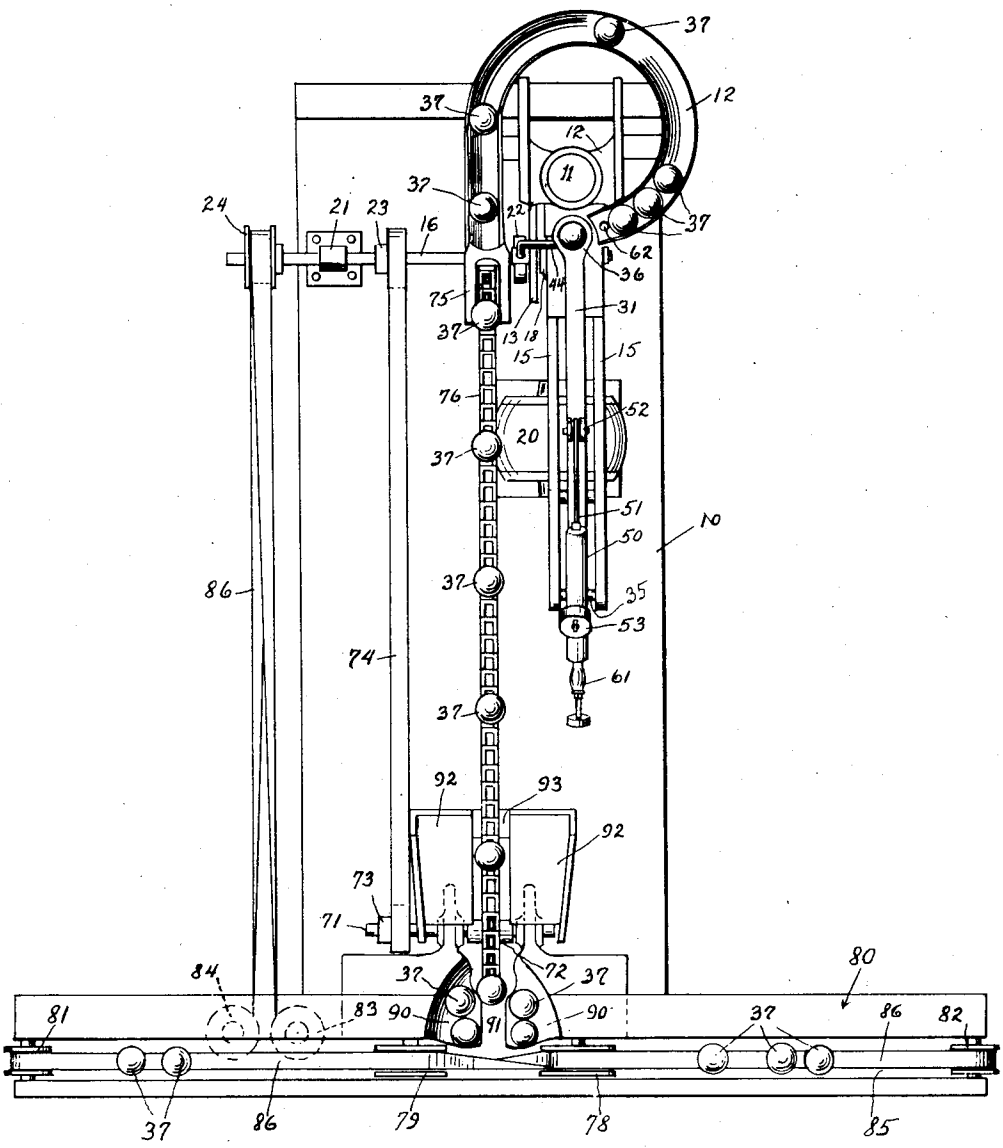


Fig. 2

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BALL THROWING MACHINE

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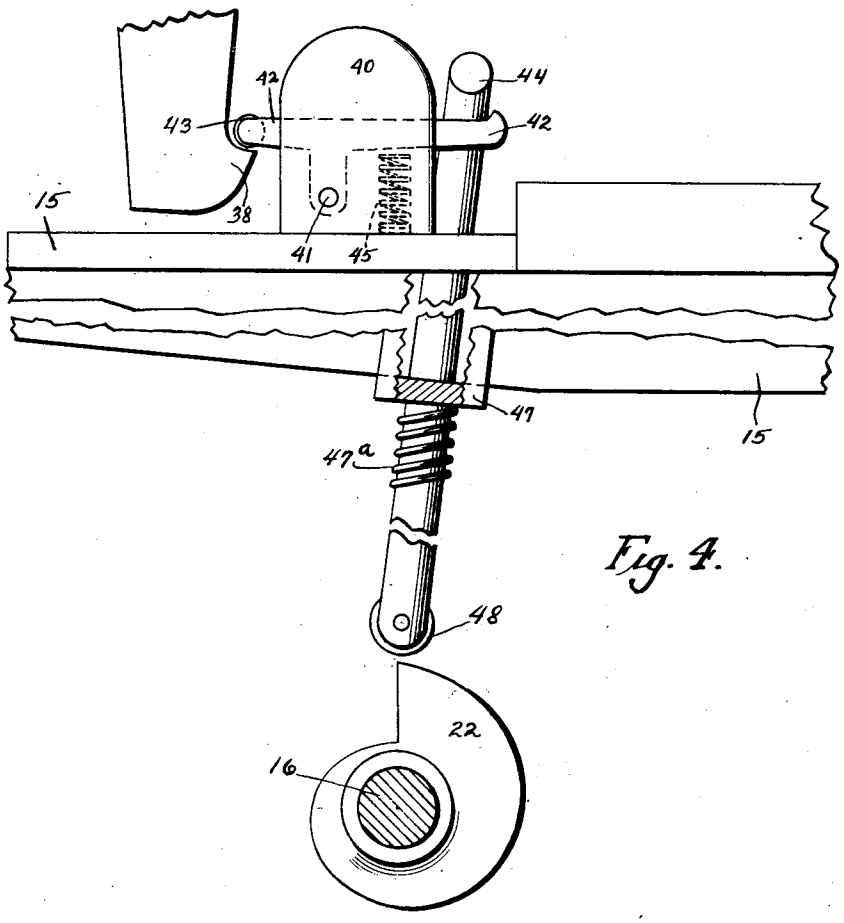


Fig. 4.

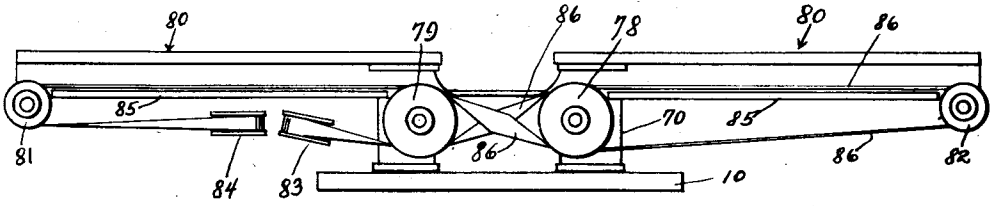


Fig. 5.

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Patented Apr. 2, 1929. 1,707,726

UNITED STATES PATENT OFFICE.

JOHN D. JETER, OF SALISBURY, NORTH CAROLINA.

BALL-THROWING MACHINE.

Application filed October 8, 1928. Serial No. 310,943.

My invention relates to automatic baseball throwing machines in which means are provided for throwing the balls, for returning the balls to the machine, elevating the balls to the top of the machine, delivering the balls one at a time to the throwing mechanism, releasing the throwing mechanism, returning the throwing means to a position for throwing another ball, and other features which will appear as the full description is made in connection with the accompanying drawings.

An object of my invention is to provide a baseball pitcher which will pitch baseballs at regular intervals, said pitcher being power driven, said machine being entirely automatic in every detail and will run continuously so long as desired without any attention.

Another object of my invention is to provide an automatic baseball pitcher which will pitch balls at regular intervals, which will return the balls after the same are thrown by the machine to the pitching mechanism, said returning means comprising an elevator and a transversely disposed trough in which a crossed belt runs to deliver the balls to the elevator.

Some of the objects of my invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of my machine;

Figure 2 is a plan view of my machine and the transversely disposed trough;

Figure 3 is an enlarged detail view, partly in cross-section, of the arresting means for the pitching arm;

Figure 4 is an enlarged detail in elevation of the holding and release means for the pitching arm;

Figure 5 is a side elevation of the ball delivering means which is disposed transversely of the machine for delivering the balls to the elevating mechanism.

Referring more particularly to the drawings, the numeral 10 indicates the base of my machine, which may be the floor of a building if desired and on this base I mount the stand 11 which has the circular sloping trough 12 secured at the top thereof, with the projections 13, 14 and 15 secured to one side thereof, the function of said projections will be later explained. The projection 13 has mounted therein the rotatable shaft 16, and in the lower end of the projection 13 thereto is mounted the worm 17 which meshes with the worm gear 18 mounted fixedly on the shaft 16 and being flush with the end of the said shaft.

The worm 17 is connected to the shaft 19 of the motor 20. The rotatable shaft 16 is supported also by the bearing in the upstanding projection 21, and fixedly mounted on this rotatable shaft is the cam member 22, the pulley 23 for driving the elevator, and also the pulley 24 for operating the mechanism for delivering the balls to the elevator.

On the outer face of the worm gear 18 there is secured the pin 25 which fits into the slot 26 in the lower end of the lever 27, which lever is pivoted intermediate its ends in the end of the projection 14, as at 28, and to the upper end of the said lever there is connected the tension spring 30 which has its other end connected to the pitching arm 31 as at 32. This pitching arm is pivoted intermediate its ends as at 33 between the twin projections 15, said projections extending outwardly and having the check mechanism 34 pivoted therebetween as at 35, which will be later explained. The upper end of the pitching arm has the cup-shaped portion 36 in which a baseball 37 is adapted to rest while being pitched. On the lower side of the upper portion of the pitching arm 31 there is the hook 38 which serves to hold the pitching arm in the position shown in Figure 1 until the same is released to throw the ball. Mounted on the twin projections 15 there is the upstanding forked member 40 which has the transversely disposed pin 41 therein on which is pivotally mounted the member 42. One end of this member 42 has therein the roller 43 which is adapted to be engaged by the hook 38, and the other end of the member 42 projects from between the members 40 and is adapted to be engaged by the hooked rod 44.

Mounted between the members 40 is the compression spring 45 which tends to hold the rear end of the member 42 in elevated position, after the same has been depressed by the rod 44. This rod 44 is slidably secured in the projection 47 secured to the lower edge of one of the twin projections 15, or to both projections if desired, and the said rod projects downwardly and has the roller 48 mounted therein, which roller is adapted to follow the cam 22 to trip the pitching arm at the proper time.

The check mechanism 34 comprises the casing 50 which is pivotally mounted as at 35 and in this the piston 51 slides, said piston being connected to the pitching arm as at 52,

and on the upper side of this casing there is mounted the oil cup 53 which has a passage 54 leading therefrom to the interior of the casing, and in this passage there is mounted the check valve 55 to prevent compressed air from being forced into the oil cup, and the additional passage 55ª leads from the interior of the casing to the enlarged portion 56 thru which air is forced to seat the check valve to prevent the upward travel of the air into the oil cup. A similar arrangement is provided on the lower side of the casing to allow a greater amount of air to be drawn into the casing while the pitching arm is being placed in position to throw another ball. This comprises the passageway 57 having the enlarged portion 58 in which the check ball 59 is mounted, and the additional passageway 60 is provided to allow air to enter the casing, but while the piston is returning the ball 59 will seat in the lower portion of cavity 58 and prevent any escape of air from the casing.

The conventional needle valve 61 is provided at the closed end of the casing 34, which regulates the amount of air which passes thru while the piston is moving in either direction. This allows the air to escape slowly when the ball is thrown and serves as a check for the pitching arm, and when the pitching arm is being placed in position to throw another ball, air is pulled in thru this needle valve and also thru the passageway 60, while when the ball is thrown and the air is being compressed in the casing, the passageway 60 is closed and only air can escape thru the needle valve.

The rod 62 is secured on the projection 63 in a slidable manner and the upper end thereof passes thru a hole in the bottom of the end of the circular trough 12, and secured to this rod and around the same is the compression spring 64 which normally pushes the rod downwardly. The lower end of the rod is connected to the lever 65, said lever being pivoted as at 66 and the free end of the lever fits against and follows the roller 67 on the lower end of the lever 27, so that when the rod 62 is in raised position the upper end thereof will project into the trough and prevent the balls from dropping into the cup in the upper end of the pitching arm. This rod will be in raised position while the pitching arm is released to throw a ball, but when the pitching arm is brought back to a position where it will be held while the spring 30 is being stretched, the rod will be moved to lowered position and this will allow a ball to roll into the cup in the upper end of the pitching arm.

The stand 70 is mounted on the opposite end of the base 10 and has the transversely disposed shaft 71 mounted therein for rotation, and on this shaft there is fixedly mounted the sprocket wheel 72, and the pulley 73 is mounted on said shaft, and the belt 74 is mounted on the said pulley and also on the pulley 23 on the shaft 16 by means of which a clockwise movement (see Fig. 1) is imparted to the sprocket wheel 72. In the upper end of the trough member 12 there is mounted the sprocket wheel 75 and the sprocket chain 76 is mounted on the two sprocket wheels, and the pockets 77 are secured on the sprocket chain, serving for the purpose of elevating the balls and dropping them in the upper end of the trough 12.

In the stand 70 there are mounted the pulleys 78 and 79, and mounted over these pulleys is the transversely disposed trough 80, and at the ends of this trough 80 there are rotatably secured, the pulleys 81 and 82, and mounted on the lower side of this trough member 80 there are the pulleys 83 and 84. This trough member 80 has the bottom member 85 therein with a cutaway portion in the central portion thereof opposite the sprocket wheel 72 and between the pulleys 78 and 79. A belt 86 is mounted on the pulley 24 and runs as follows: Around the pulley 84, then to pulley 81, then along the upper edge of the bottom member 85 and over the pulley 79, then under pulley 78, then under and over the pulley 82, then along the top of the bottom member 85, then over pulley 78, then under pulley 79, then around pulley 83 and back over pulley 23 to the beginning, and moving in the direction just described.

Mounted on the stand 70 is the trough member 90 which has the slot 91 therein into which the balls 37 fall where they are caught by one of the cups or pockets 77 and carried to the circular trough. The upwardly slanting trough member 92 runs for a short distance along the sprocket chain 76 and has the slot 93 therein in which the sprocket chain moves. The floor of the building is indicated by the numeral 94 and is sloping to cause the pitched balls to roll back into the trough member 80. The balls are pitched against a curtain or other suitable stop (not shown) from whence they bounce back on the sloping floor 94.

The spring 47ª is mounted below the member 47 and has its lower end secured to the rod 44 and this spring tends to press the rod 44 downwardly and cause it to follow the cam 22.

The method of operation of my machine is as follows: Looking at Figure 1 it is noted that the worm gear 18 moves in a clockwise direction, and in the position shown the upper end of the lever 27 is moving to the left and pushing on the spring 30 to cause the pitching arm 31 to become engaged by the catch 42, and as the gear wheel travels further until the pin 25 is over next to the motor 20 and in approximately a horizontal position with relation to the shaft 16, then the upper end of the lever will move to its furthest position to the right and the greatest

tension will be built up in the spring 30 and at this moment the rod 44 will drop from the highest portion of the cam 22 to its lowest portion and this will release the pitching arm from the roller 43 and cause the ball to be thrown, and the checking device will then operate to check the arm after the ball is thrown, and at this point the lever 65 will be pushed to the left and the rod 62 will be in raised position and thus prevent other balls from passing from the trough until the parts are in approximately the position shown in Figure 1, at which time the rod 62 will be lowered and a ball permitted to fall into the cup in the upper end of the pitching arm. The dotted lines at the upper end of the rod 62 indicates the position the rod will occupy when in raised position.

In the drawings and specification I have set forth a preferred embodiment of my invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:

1. In a baseball pitching machine, a throwing arm, a circular trough for delivering balls to the throwing arm, an elevator for delivering the balls to the trough, a sloping floor for causing the balls to return towards the machine after being thrown by the said machine, a transversely disposed trough for catching the balls from the rolling floor, a belt mounted in the transversely disposed trough, said belt running from one of the troughs to the central portion thereof, then running under the other half of the trough, then running in the upper portion of the trough and towards the center thereof, then running beneath the first mentioned portion of the trough, then running to a pulley driven by the machine, and from said pulley back to the said trough, whereby the balls are fed to the central portion of the trough where they are caught by the elevator.

2. In a baseball throwing machine, a pitching arm, a circular trough mounted above the pitching arm and being adapted to deliver balls one at a time to the said pitching arm, a transversely disposed shaft mounted in the machine and having means thereon for operating the pitching arm, a catch for holding the pitching arm in position while pressure is being applied thereto, a cam on the transversely disposed shaft, a pivoted lever adapted to normally hold the pitching arm, a hook on the said rod, a spring adapted to hold the rod against the cam, said cam being adapted to allow the rod to suddenly fall to trip the lever to release the pitching arm, a tension spring connected to the lower end of the pitching arm, the said pitching arm being mounted on a pivot intermediate its ends, a second lever mounted in the machine and having its upper end connected to the other end of the spring connected to the pitching arm, the lower end of the lever being slidably mounted on a cam on the said shaft, and means for moving said lever to increase the tension in the spring connected to the said lever.

In testimony whereof I affix my signature.

JOHN D. JETER.