

Oct. 22, 1968

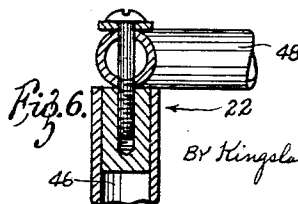
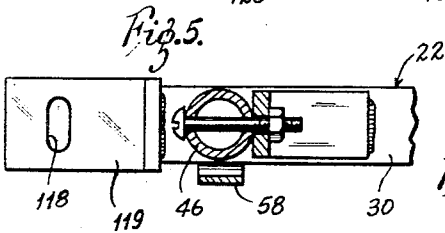
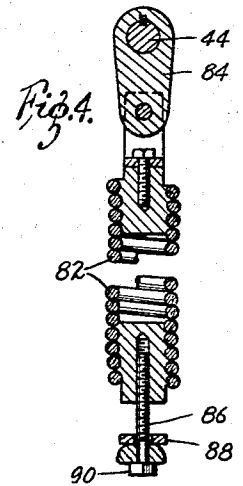
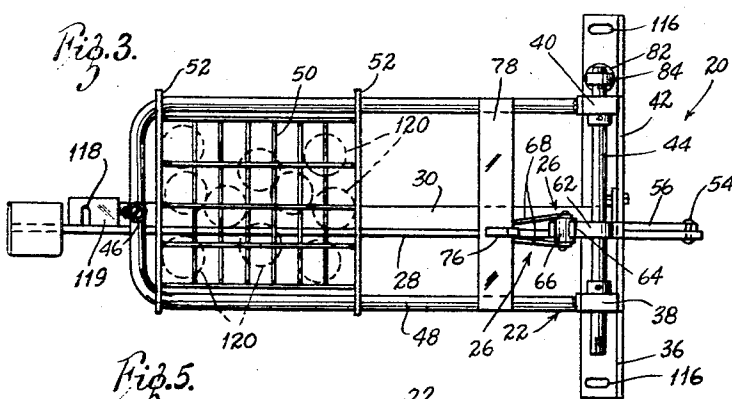
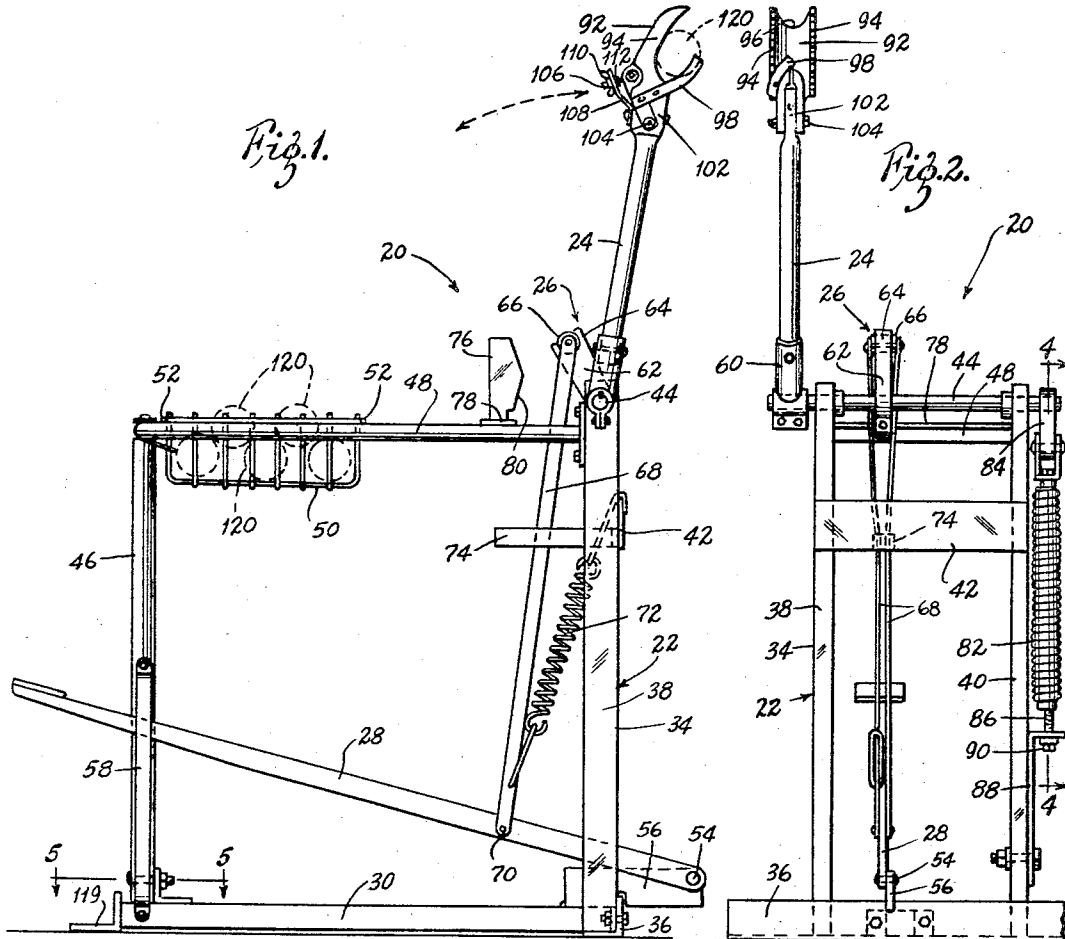
C. J. ZONE

3,406,674

CENTRIFUGALLY OPERATED SPRING RESPONSIVE BALL THROWING DEVICE

Filed Feb. 18, 1965

2 Sheets-Sheet 1



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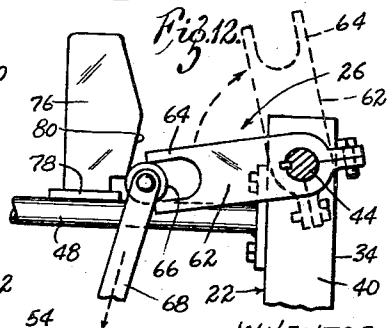
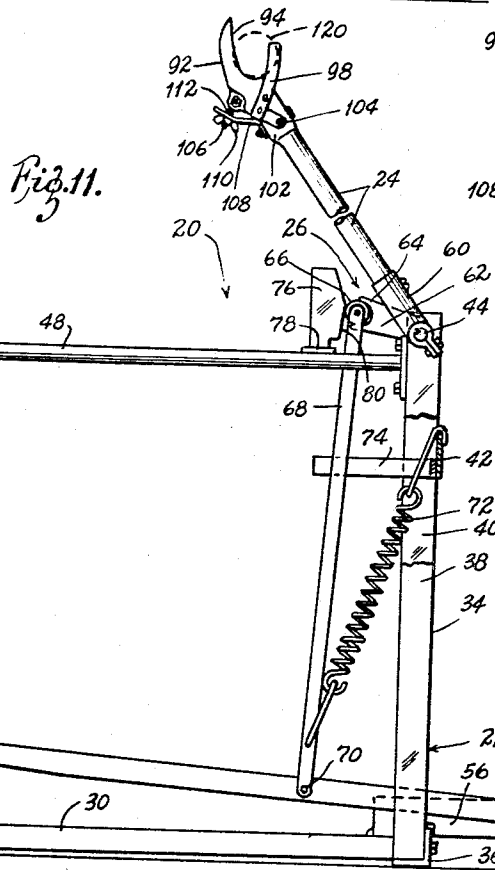
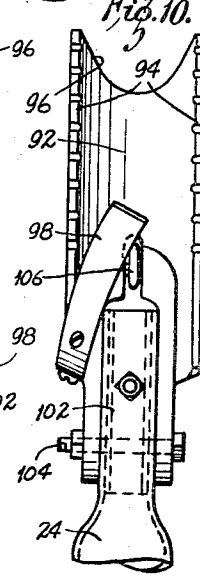
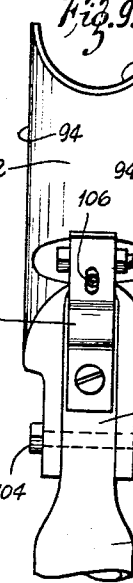
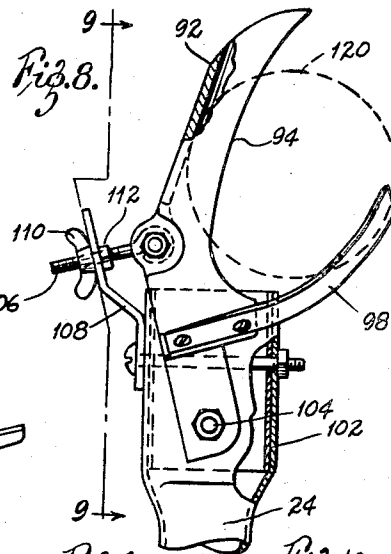
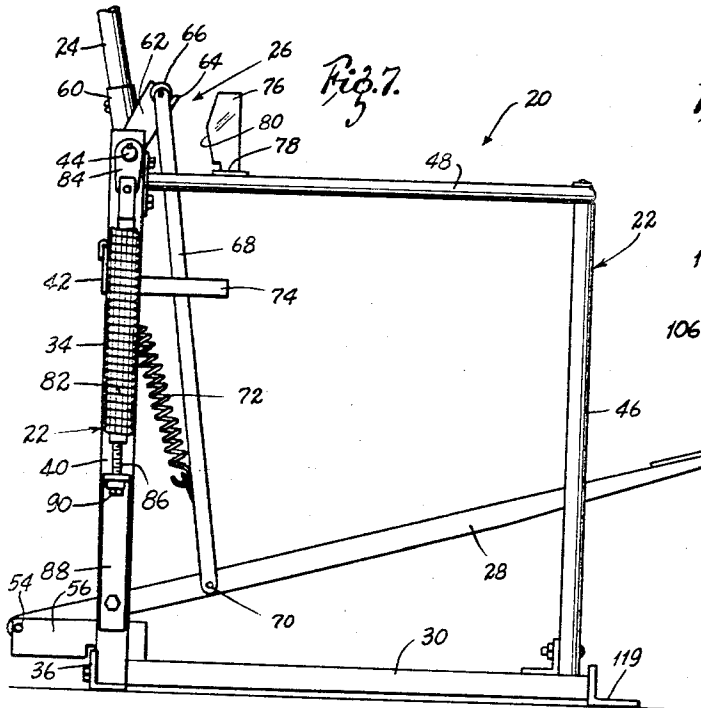
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2 Sheets-Sheet 2



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CENTRIFUGALLY OPERATED SPRING RESPONSIVE BALL THROWING DEVICE

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5 Claims. (Cl. 124-7)

ABSTRACT OF THE DISCLOSURE

A foot operated baseball pitching machine. The machine comprises a frame mounted upon the ground and a pitching arm adapted to be cocked and powered by an arm powering means operated by the operator's foot. The arm powering means is spring loaded and employs a cocking trigger means, which includes a trigger yoke fixed to the pitching arm and a trigger operating rod engageable with the trigger and connected to the foot lever. A cam means provides for disengagement of the trigger operating rod from the trigger to actuate the pitching arm.

It is a feature of this invention that there has been provided a relatively small baseball pitching apparatus that can be mounted upon the ground and operated by the foot to throw baseballs powerfully and accurately, as in pitching or batting practice. The machine is relatively simple and inexpensive, yet rugged enough to be used in various types of team practice where a relatively inexpensive device is desired. A substantial frame is utilized that can be mounted upon the ground to provide a stable support. The machine is trigger operated with power being supplied by a powerful spring which is cocked by foot operation. A pitching arm is pivoted upon the frame of the apparatus with a trigger mechanism connected between a foot pedal and the trigger to provide for cocking and triggering of the pitching arm. The instant invention finds use by individuals or relatively modest employment by little leagues or high schools, and the like, as contrasted to my invention in Patent No. 3,009,451, granted Nov. 21, 1961, for a Baseball Pitching Robot, which may be used by major leagues, amusement parks, or the like, to provide simulated action of a pitcher.

Accordingly, through the instant invention there has been provided a rugged and relatively simple baseball pitching machine, which has a high degree of reproducible and accurate performance. Further, the apparatus may be employed by unskilled users, and is small enough to be simply moved from one spot to another.

The above features are objects of this invention and further objects will appear in the detailed description which follows and will be otherwise apparent to those skilled in the art.

For the purpose of illustration of this invention, there is shown in the accompanying drawings a preferred embodiment thereof. It is to be understood that these drawings are for the purpose of example only, however, and that the invention is not limited thereto.

In the drawings:

FIGURE 1 is a view in side elevation of the pitching machine in a rest position;

FIGURE 2 is a view in front elevation of the pitching machine with the foot operated pedal spring being omitted for the purpose of clarity;

FIGURE 3 is a top plan view of the pitching machine with the pitching arm being omitted for the purpose of clarity;

FIGURE 4 is an enlarged view in section taken on the line 4-4 of FIGURE 2 showing the spring powering mechanism;

FIGURE 5 is an enlarged view in section taken on the line 5-5 of FIGURE 1 showing part of the frame construction;

FIGURE 6 is a view taken in vertical enlarged section at the upper left hand corner of FIGURE 1 showing part of the frame connection;

FIGURE 7 is a view in side elevation of the machine taken from the left side thereof with part of the pitching arm being broken away for clarity;

FIGURE 8 is an enlarged fragmentary view partially in section showing the construction of the pitching claw;

FIGURE 9 is a view partly in section taken on line 9-9 of FIGURE 8 showing the rear of the pitching claw;

FIGURE 10 is a fragmentary view in front elevation showing the pitching claw;

FIGURE 11 is a view similar to FIGURE 1 but showing the pedal partially depressed and the pitching arm in a partially cocked position; and

FIGURE 12 is an enlarged view in side elevation showing the pitching arm cocking structure at its limiting position just as the arm is about to be released.

The pitching machine of this invention is generally represented by the reference numeral 20 in FIGURES 1, 2, 3, 7 and 11. As there shown, it is comprised as its main components of a frame structure 22, a pitching arm 24 mounted on the frame, a trigger and cocking mechanism 26, and a foot lever 28.

The frame 22, as shown in FIGURES 1, 2 and 3, is comprised of a base 30, which is connected to a rectangular front frame portion 34. The front frame 34 consists of a ground support bar 36 to which the base 30 is connected at a medial portion, as shown in FIGURE 2. The front support 34 further has a pair of vertical legs 38 and 40 braced apart by a top horizontal brace element 42. An arm support shaft 44 is journaled within the top ends of the aforementioned legs 38 and 40.

An upright bar 46 is connected to the rear of the base 30 and supports a generally U-shaped rail 48 at the top. The front ends of the U-shaped rail are connected to the legs 38 and 40 to provide a rigid frame structure.

A ball retaining basket 50 having a plurality of horizontally extending studs 52 is supported on the top of the rail 48. This provides a reservoir for a supply of balls to be used in the machine.

The foot lever 28 is pivotally supported at pivot point 54 upon an extension 56 mounted on the top of the base 30. The foot lever extends to the rear and is retained adjacent the vertical upright bar 46 by a foot lever retaining guide member 58.

The pitching arm 24 is fixed to the end of the shaft 44 as best shown in FIGURE 2 by a sleeve member 60. To provide cocking power to the pitching arm a trigger yoke 62 is fixed to a medial portion of the shaft 44. This trigger yoke has a U-shaped yoke portion 64 which receives a roller element 66 mounted at the end of a roller bar 68. The roller bar is pivoted at point 70 to a medial portion of the foot lever.

The roller bar 68 is biased to an upward position by a biasing spring 72 connected at one end to the bottom portion of the roller bar and hooked at the top portion over the brace 42. To guide the roller bar, a bifurcated guide 74 is provided which extends from the rear of the aforementioned brace 42. A cam guide element 76 is mounted upon a lateral brace 78 connected to the ends of the U-shaped rail 48. The guide cam has a lower cam surface 80 which co-acts with the roller 66, as will further appear, to bring about the cocking operation and ultimately triggering of the pitching arm to release it to its pitching motion.

The pitching arm is powered by means of a power spring 82. The power spring is connected at the top to an

end of the shaft 44 through a connecting element 84. The bottom of the power spring is connected to an adjustment bolt 86, which is retained within a bracket 88 mounted on the leg 40 of the frame. The bolt has a head 90, and thus provides means for adjusting the tension placed upon the spring to increase or decrease the force upon the pitching arm and, accordingly, to increase or decrease the force of the pitched ball.

The pitching arm 24 receives a baseball pitching claw 92 at the top. The claw is best shown in FIGURES 8, 9 and 10. The claw itself has a pair of serrated sides 94 spaced from one another and is of generally U-shaped cross section. The top of the claw also has a U-shaped recess 96 permitting the ball to ride out of it when the pitching arm is pivoted forwardly. A ball retaining arm 98 supports the ball when the arm 24 is in the rest position. The claw is supported on the end of the arm by a socket 102. A pivot pin 104 mounts the claw 92 to the socket and adjustment is provided by means of an adjustment bolt 106 connecting the back of the claw to a back adjustment plate 108. Wing nut 110 provides for the adjustment mechanism, together with adjustment nut 112. By means of this adjustment the claw may be moved forwardly or to the rear of the position shown in FIGURE 8 whereby the trajectory of the pitched ball will be lowered or raised, respectively.

The pitching machine of this invention is adapted to very simply employed without any skill required for operation. The machine through openings 116 in the bar 36, and 118 in an angle plate 119 at the rear end of the base 30, may receive pegs or appropriate pins to be driven into the earth to mount it in firm position. Alternatively, should the machine be used indoors, it will be understood that appropriate bolts may be employed. The machine is of relatively light weight and can be simply moved from one place to another, and, of course, uses manual power which removes it from the necessity of being located adjacent a source of electricity.

Once the machine has been placed in the desired position it is simply employed by placing a ball 120 in the claw in the position shown in FIGURE 1. The operator insures that the roller bar is placed within the trigger yoke in the position shown in FIGURE 1 with the roller 66 received within the yoke opening 64.

The machine is then ready for use and the operator simply steps on the foot lever 28, which is moved against the force of the power spring 82. This operation causes the trigger yoke 62 to be pulled downwardly through the operation of the roller bar 68 connected to the foot lever. As this action occurs, the trigger yoke rotates the shaft 44 counterclockwise from the position shown in FIGURE 1 and the pitching arm is likewise moved counterclockwise or pivoted rearwardly in the path of the dotted arrow. As the foot lever is continued to be depressed, the pitching arm is progressively lowered through the position shown in FIGURE 11. As this occurs the roller is moved against the guide cam 76 and is retained within the trigger yoke through the coaction of the cam guide surface 80.

As the foot lever is continued to be depressed, additional power is placed on the pitching arm through the tensioning of the spring 82 and ultimately the trigger yoke is lowered to the position shown in FIGURE 12 where the roller rides out of contact with the trigger yoke. As this occurs the trigger yoke and the pitching arm are rapidly moved to the clockwise position shown in the dotted arrow of FIGURE 12 and the ball is hurled forwardly.

After the ball has been pitched, the roller bar 68 and the foot lever 28 are biased to the upward position by the biasing spring 72, and the roller 66 is simply re-engaged within the trigger yoke. The baseball pitching machine is then ready for another pitching operation by placing another ball in the pitching claw.

When it is desired to alter the trajectory of the pitched ball, the pitching claw can be moved either to the front or to the rear by simple adjustment to lower or raise the

trajectory of the pitched ball, respectively. This is simply effected by adjusting the pitching claw about the pivot pin 104 and altering the adjustment of the adjustment nut and the wing nut 110. By this means a simple and speedy trajectory adjustment is provided.

Should the force of the pitched ball be desired to be altered, this is simply effected by altering the adjustment nut 90 to alter the tension of the power spring 82. To increase the force of the hurled ball the adjustment nut is tightened and alternatively to reduce the force it is loosened against the threaded adjustment bolt 86 connected to the power spring.

Various changes and modifications may be made in the apparatus of this invention as will be obvious to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. A baseball pitching device comprising a frame, a pitching arm pivoted upon said frame, said pitching arm having means for receiving a ball when the pitching arm is pivoted rearwardly and arm powering means for moving the pitching arm forwardly, said arm powering means being spring loaded, a foot lever, said arm powering means comprising a cocking means including a trigger yoke which is in rigidly secured relation with the pitching arm and a trigger operating rod connected to the foot lever which is engageable with the trigger yoke in a cocking operation and disengageable to release the arm powering means in the pitching operation, said trigger operating rod being pivoted at a bottom end to the foot lever and having a roller means at the top engaging the trigger yoke through the cocking operation and disengaging it in the pitching operation, and cam guide means positioned to engage said roller means during rearward pivoting of the pitching arm in the cocking operation to initially retain said roller means in engagement with said trigger yoke and to subsequently permit disengagement of said roller means and said trigger yoke for releasing said pitching arm for forward pivoting movement under the action of said arm powering means.

2. A baseball pitching device comprising a frame, said frame being comprised of an elongated base connected to a rectangular shaped upright frame member, said base being connected to a medial portion of a bottom horizontally extending leg of said frame member, the rear of said base being connected to a vertical upright, and a top rail means connecting the top of the vertical upright to the top of the vertical frame member, said rail means being of generally U-shaped configuration formed from two legs connected at their free ends to opposite sides of the vertical frame member, and said rail means being connected at a bight portion to the top of said vertical upright, said rail means being adapted to support a ball receiving basket between the two legs, a pitching arm connected to a shaft journaled upon the top of the vertical frame member, said pitching arm having means for receiving a ball when the pitching arm is pivoted rearwardly and arm powering means for moving the pitching arm forwardly, said arm powering means being spring loaded.

3. A baseball pitching device comprising a frame, said frame being comprised of an elongated base connected to a rectangular shaped upright frame member, said base being connected to a medial portion of a bottom horizontally extending leg of said frame member, the rear of said base being connected to a vertical upright, and a top rail means connecting the top of the vertical upright to the top of the vertical frame member, a pitching arm connected to a shaft journaled upon the top of vertical frame member, said pitching arm having means for receiving a ball when the pitching arm is pivoted rearwardly and arm powering means for moving the pitching arm forwardly, said arm powering means being spring loaded, a foot lever for pivotally moving and cocking said pitch-

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ing arm, said foot lever being pivoted at one end to the front of the frame and extending therefrom rearwardly to a foot pedal positioned to the rear of said vertical upright, and means biasing the foot lever upwardly.

4. A baseball pitching device comprising a frame, said frame being comprised of an elongated base connected to a rectangular shaped upright frame member, said base being connected to a medial portion of a bottom horizontally extending leg of said frame member, the rear of said base being connected to a vertical upright, and a top rail means connecting the top of the vertical upright to the top of the vertical frame member, a pitching arm connected to a shaft journalled upon the top of vertical frame member, said pitching arm having means for receiving a ball when the pitching arm is pivoted rearwardly and arm powering means for moving the pitching arm forwardly, said arm powering means being spring loaded, a foot lever for pivotally moving and cocking said pitching arm, said foot lever being pivoted at one end to the front of the frame and extending therefrom rearwardly to a foot pedal positioned to the rear of said vertical upright, and means biasing the foot lever upwardly, said arm powering means comprising a cocking means including a trigger yoke secured to said shaft, and a trigger operating rod connected to the foot lever which is engageable with the trigger yoke in a cocking operation and disengageable to release the arm powering means in the pitching operation.

5. A baseball pitching device comprising a frame, said frame being comprised of an elongated base connected to a rectangular shaped upright frame member, said base being connected to a medial portion of a bottom horizontally extending leg of said frame member, the rear of said base being connected to a vertical upright, and a top rail means connecting the top of the vertical upright to the top of the vertical frame member, a pitching arm connected to a shaft journalled upon the top of vertical

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frame member, said pitching arm having means for receiving a ball when the pitching arm is pivoted rearwardly and arm powering means for moving the pitching arm forwardly, said arm powering means being spring loaded, a foot lever for pivotally moving and cocking said pitching arm, said foot lever being pivoted at one end to the front of the frame and extending therefrom rearwardly to a foot pedal positioned to the rear of said vertical upright, and means biasing the foot lever upwardly, said arm powering means comprising a cocking means including a trigger yoke secured to said shaft, and a trigger operating rod connected to the foot lever which is adapted to be engaged with the trigger yoke in a cocking operation and disengaged to release the arm powering means in the pitching operation, said trigger operating rod being pivoted at a bottom end to the foot lever and having roller means at the top engaging the trigger yoke through the cocking operation and disengaging it in the pitching operation, and cam guide means positioned to engage said roller means during rearward pivoting of the pitching arm in the cocking operation to initially retain said roller means in engagement with said trigger yoke and to subsequently permit disengagement of said roller means and said trigger yoke for releasing said pitching arm for forward pivoting movement under the action of said arm powering means.

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