United States Patent [19]

Parr

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[54] **PITCHING MACHINE**

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[52] **U.S. Cl.** ..... **273/26 E**

[51] **Int. Cl.** **A63b 69/40**

[58] **Field of Search** ..... 273/26 E, 95 A

[56] **References Cited**

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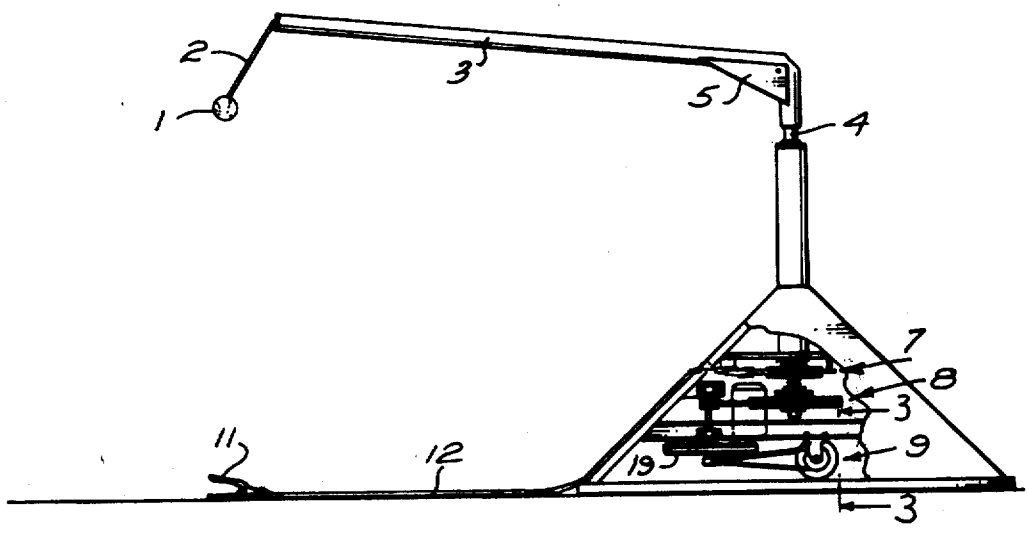
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Assistant Examiner—Theatrice Brown
Attorney, Agent, or Firm—Hornaday & Simmons

[57] **ABSTRACT**

This invention discloses a fully automatic centrifugal baseball pitching machine which has a main shaft clutch apparatus allowing a tethered ball to be driven in the opposite direction when impacted by the batter, a foot operated brake to create changes in the type of pitch, and a retractor mechanism which automatically takes up slack in the tether line.

3 Claims, 5 Drawing Figures



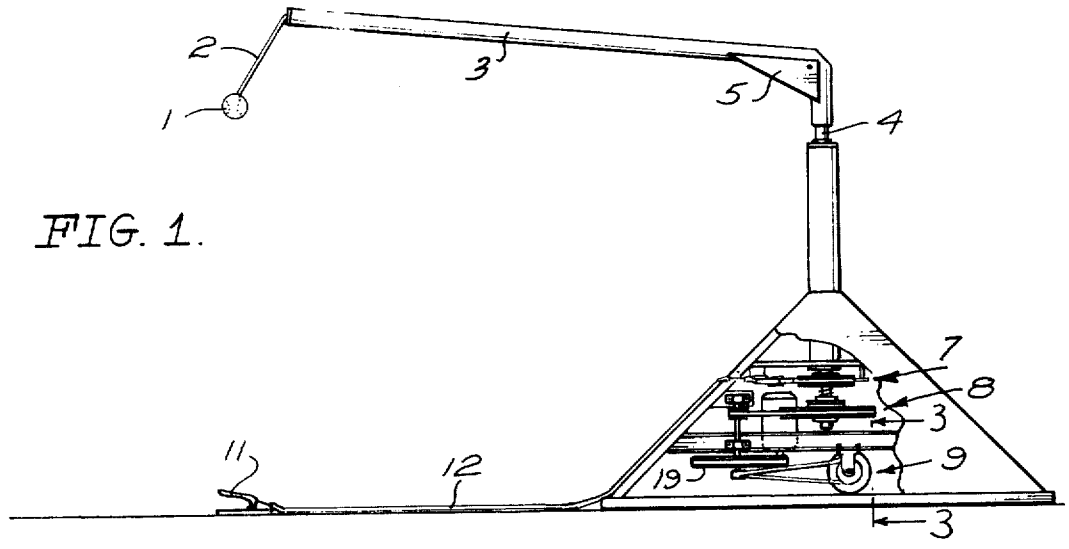


FIG. 1.

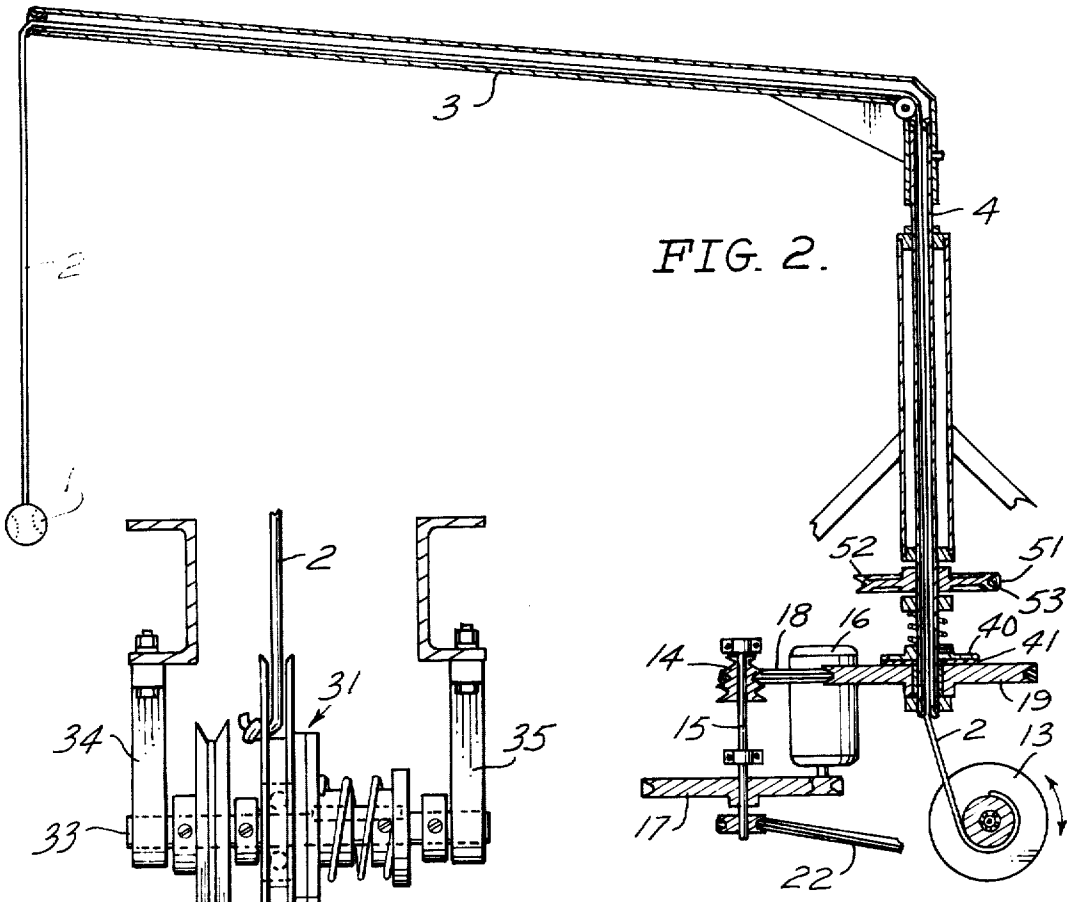


FIG. 2.

FIG. 3.

FIG. 5.

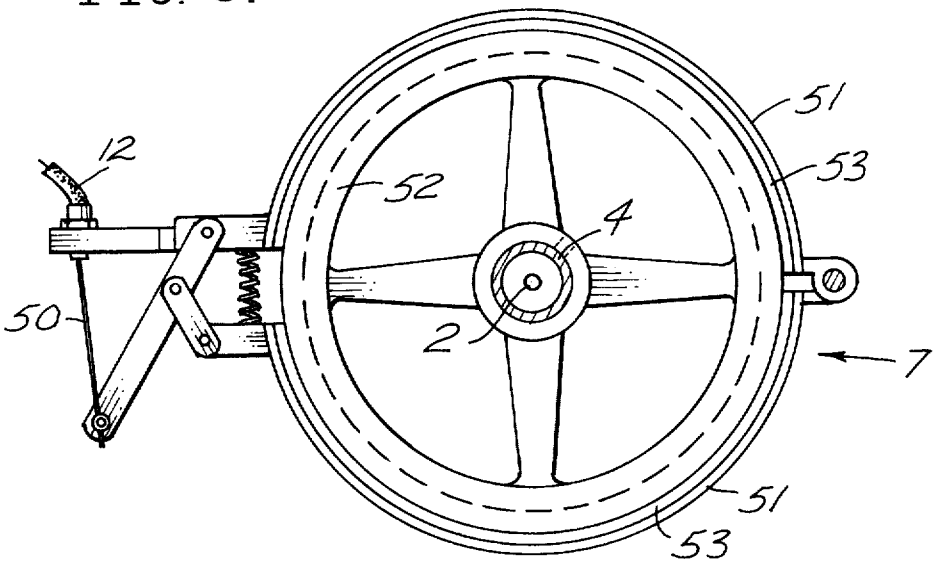
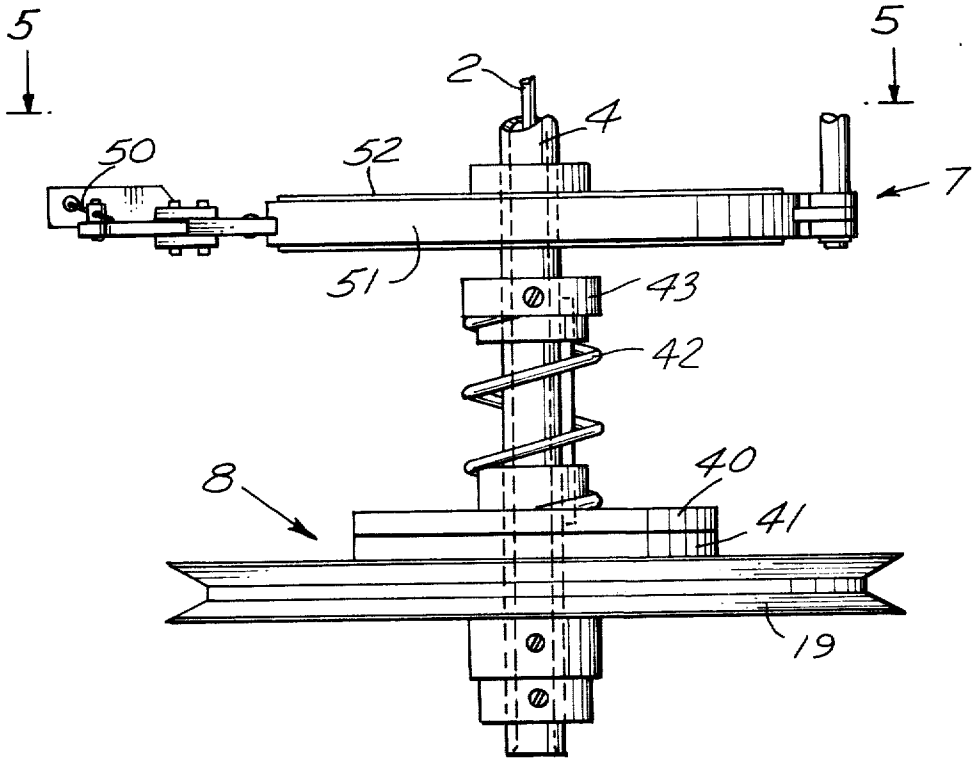


FIG. 4.



PITCHING MACHINE

SUMMARY

This baseball pitching machine incorporates unique shafting, braking, and retracting systems. Generally, the invention utilizes a rotating horizontal arm. The arm is pivoted on a shaft. Rotational power is applied to the shaft. At the extremity of the arm, the baseball is tethered by means of a line which runs through the arm, down the shaft and ultimately to a retracting mechanism.

There is a great need today for a safe, inexpensive, and one-man operated pitching machine. Commercial pitching machines now available are usually designed with the purpose of suitability for an entire team, such as a little league, high school, semi-professional, or professional team. It is one of the purposes of this invention to provide a "back yard" type pitching machine which is self-operated, and simple in design.

Unlike previously invented centrifugal pitching machines, this invention incorporates a retracting mechanism which automatically shortens the line so that the tethered baseball can make a smooth return to flight. Without it the ball tends to bounce and be erratic until the machine gets up to speed and the ball accepts a uniform flight pattern. With this machine the ball is immediately retracted, and as the horizontal arm recovers from the ball being hit, the ball assumes a uniform pattern. The line then extends itself as the centrifugal force of the baseball causes tension on the line and the retracting mechanism. This enables a very quick recovery and a shorter delay time permitting the batter to have more excercise with the machine.

The braking system of this machine is a safety feature as well as a means of manipulating the ball. The batter places his foot on the brake lever and thus determines varying types of pitches.

The objects and advantages of this invention which are most worthy of note have been stated. Other objects and advantages of the present invention become apparent to those skilled in the art upon consideration of the following detailed description of the preferred embodiment thereof, reference being had to the accompanying drawings, wherein;

FIG. 1 is a partially cutaway side elevation view showing the drive mechanism, the brake, and the retractor mechanism.

FIG. 2 is a sectional view of the rotating arm and drive mechanism.

FIG. 3 is a view taken on Line 3—3 of FIG. 1 showing the retractor mechanism.

FIG. 4 is a side elevation view of the drive pulley, clutch, and the brake.

FIG. 5 is a top plan view of the brake taken on Line 5—5 of FIG. 4.

Referring to the drawings in FIG. 1 the entire pitching machine is shown. A baseball 1 is tethered by a line 2. It is not apparent from the drawing in FIG. 1, but the line runs through the interior of the horizontal arm 3, and down through the main shaft 4, and ultimately to the retracting mechanism which will be described below. A brace 5 provides additional support at the elbow of the horizontal arm. The length of the line may incidentally be predetermined in such a manner that when the batter hits a line-drive the ball will hit the brace. The horizontal arm is affixed to the main shaft.

A molded housing 6 encloses the motor, pulleys and belt assemblies. The brake mechanism 7, engages the main shaft, as does the drive pulley and clutch assembly 8. The retractor mechanism is shown at 9. A foot brake lever 11, operates the brake cable 12.

Referring now to FIG. 2, the tether line 2, is disclosed following a course in the interior of the horizontalarm 3, and the main shaft, and down to the spool 13 of the retractor mechanism. Progressive pulleys 14 are mounted to the reduction shaft. The reduction shaft is driven by motor 16 through belts linked to pulley 17. The progressive pulleys 14 provide for the selection of three different speeds. From the progressive pulleys 14, a belt 18 provides for the rotational force to be applied to the main drive pulley 19. A retractor drive pulley 21 imparts rotation to the retractor spool 13 through a belt 22.

Referring to FIG. 3, the retractor mechanism can be more readily understood. The tether line 2 is engaged to the retractor spool 13. A clutch assembly 31 maintains tension on the retractor spool, and is thus always seeking to retract the line. The clutch is adjusted in such a manner that the retracting force may be overcome by the centrifugal force of the ball in motion and the force of the ball being struck by the bat. When any slack occurs in the line it will immediately be taken up on the retracting spool 13. The rotational force is applied to belt pulley 21 to operate the retracting. The belt pulley, retracting spool, and the clutch are mounted to shaft 33, which in turn is supported by pillar-block bearings 34 and 35.

FIG. 4 discloses the braking assembly 7, and the drive pulley and clutch combination 8. The line 2 is seen passing down through the main shaft 4. The drive-pulley 19 is connected to the shaft through the clutch assembly. Clutch plates 40 and 41 permit the slippage necessary when the ball is struck by the batter. The clutch tension is adjusted by means of collar 43 and compression spring 42, so that the proper amount of slippage will occur. Collar 43 is keyed to the shaft.

The brake mechanism disclosed in FIG. 5 is operated by cable 12 from the foot brake lever 11, which was discussed previously in conjunction with FIG. 1. Tension on the cable wire 50 causes the brake bands 51 to compress against the brake drum 52. Brake lining 53 is adhered to the bands.

To review the operation of this automatic centrifugal pitching machine, a switch is turned on which starts the motor and causes the horizontal arm to begin rotating about the machine. The rotational force of the motor is transmitted to the main shaft through a system of pulleys. The batter controls the type of pitch by applying force to the brake. For example, light pressure on the brake as the ball approaches the batter will produce a slow curve. Heavier, sharper pressure will produce a slider. Very quick, rapid strokes of the brake will simulate a knuckle ball. When the brake is locked into place the main shaft and the arm will stop instantly without the motor being shut off. This is a safety feature.

The machine will operate in the area of twenty feet by twenty minimum to fifty feet by fifty feet maximum. The machine will operate with any standard electric motor, and the inventor recommends from one-fourth to one-third horsepower. The desired speed of the ball can be attained by changing the belt on the main shaft to the selected progressive pulley on the reduction

shaft. The invention is also capable of using an AC-DC variable speed reversible motor.

When the machine is turned on, the centrifugal force of the ball pulls the line off of the retracting spool and into the hitting position. When solid contact is made with the ball the main shaft and the horizontal arm will surrender to the force in the opposite direction as the main shaft clutch slips. If the ball is hit in such a manner that slack develops in the line, then the retractor automatically takes up the slack, permitting the ball to smoothly return to a uniform orbit.

I claim:

1. A fully automatic centrifugal baseball pitching machine comprising the combination of:

a. a base;

b. A vertical shaft mounted on said base and having a horizontal arm attached to its upper end,

c. a tether line having a baseball attached to one of its ends and having its other end extending through said horizontal arm and vertical shaft,

d. a retracting spool mounted to said base;

e. said retracting spool engaged with said other end of said line;

f. a rotational drive means engaged with said retracting spool to maintain a positive pressure on said line to remove any slack in the line;

g. a friction slip clutch mounted between said rotational drive means and said retracting spool to permit the retracting spool to rotate relative to said friction slip clutch when said ball is hit with a predetermined force;

h. drive motor mounted to said base and connected to said vertical shaft to impart rotation to said shaft, horizontal arm and baseball.

2. A fully automatic centrifugal baseball pitching machine described in claim **1** wherein:

a. said retracting spool is engaged to said drive motor through said friction slip clutch;

b. a second friction slip clutch mounted between said drive motor and said vertical shaft to permit the rotating shaft to be disengaged from the said drive motor when a predetermined pressure has been reached by the ball having been hit by a batter.

3. A fully automatic centrifugal baseball pitching machine as described in claim **2** and including the following additional element:

a. a brake means affixed to said vertical shaft permitting the operator to introduce a change in the rotation and thus vary the type of delivery of the baseball.

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