Oct. 26, 1965 E. A. LANEY 3,213,843

BALL PITCHING MACHINE WITH RECOIL CUSHIONING BRAKE MEANS

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Fig. 1.

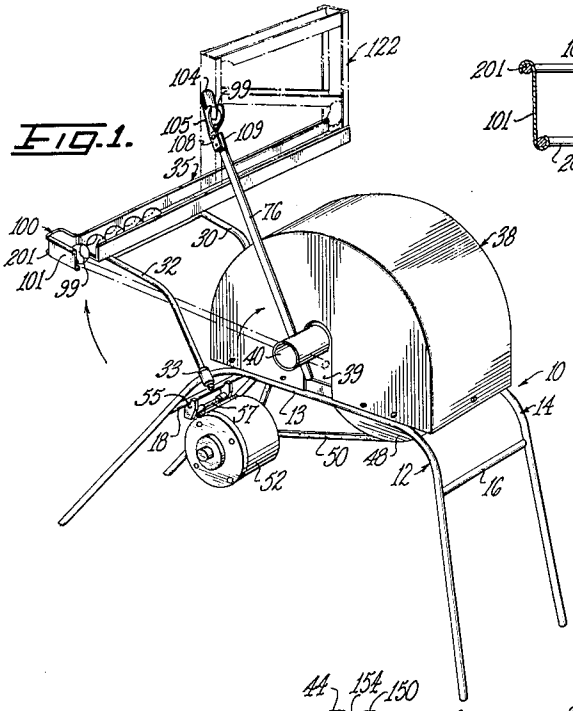


Fig. 7.

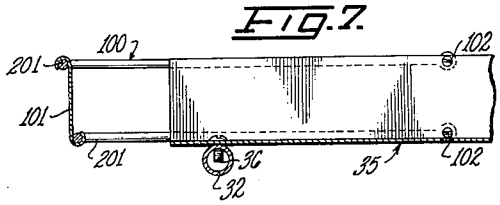
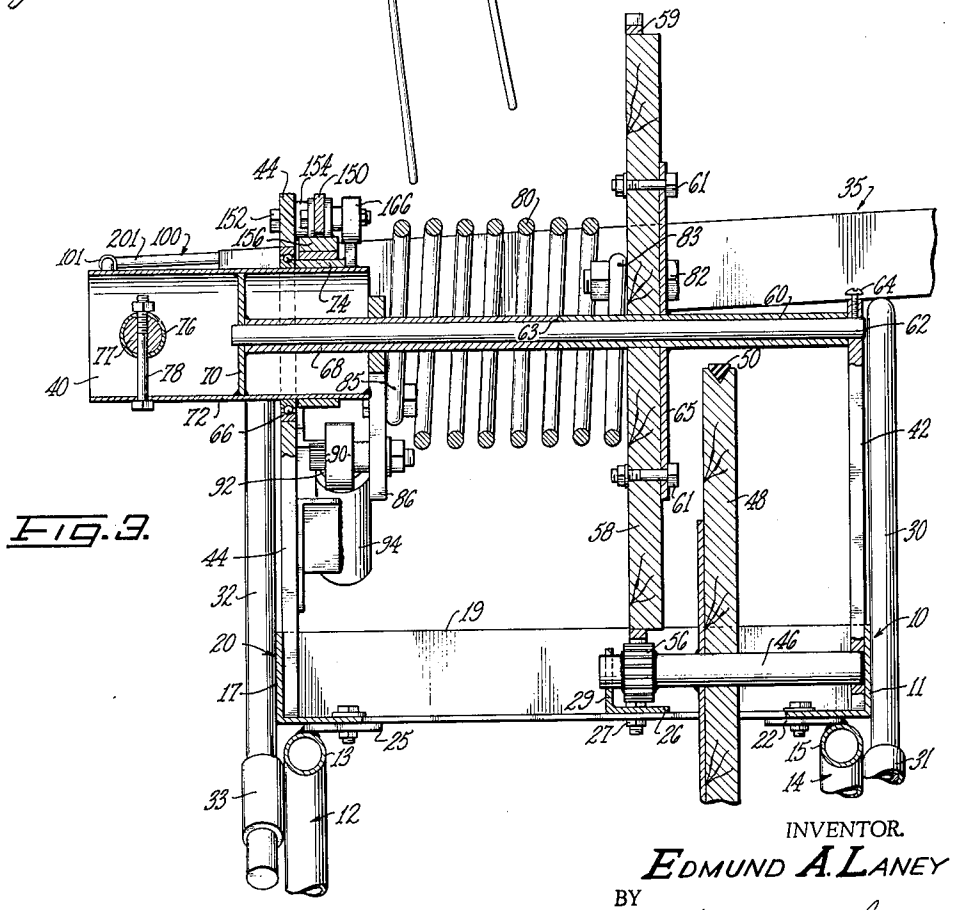


Fig. 3.



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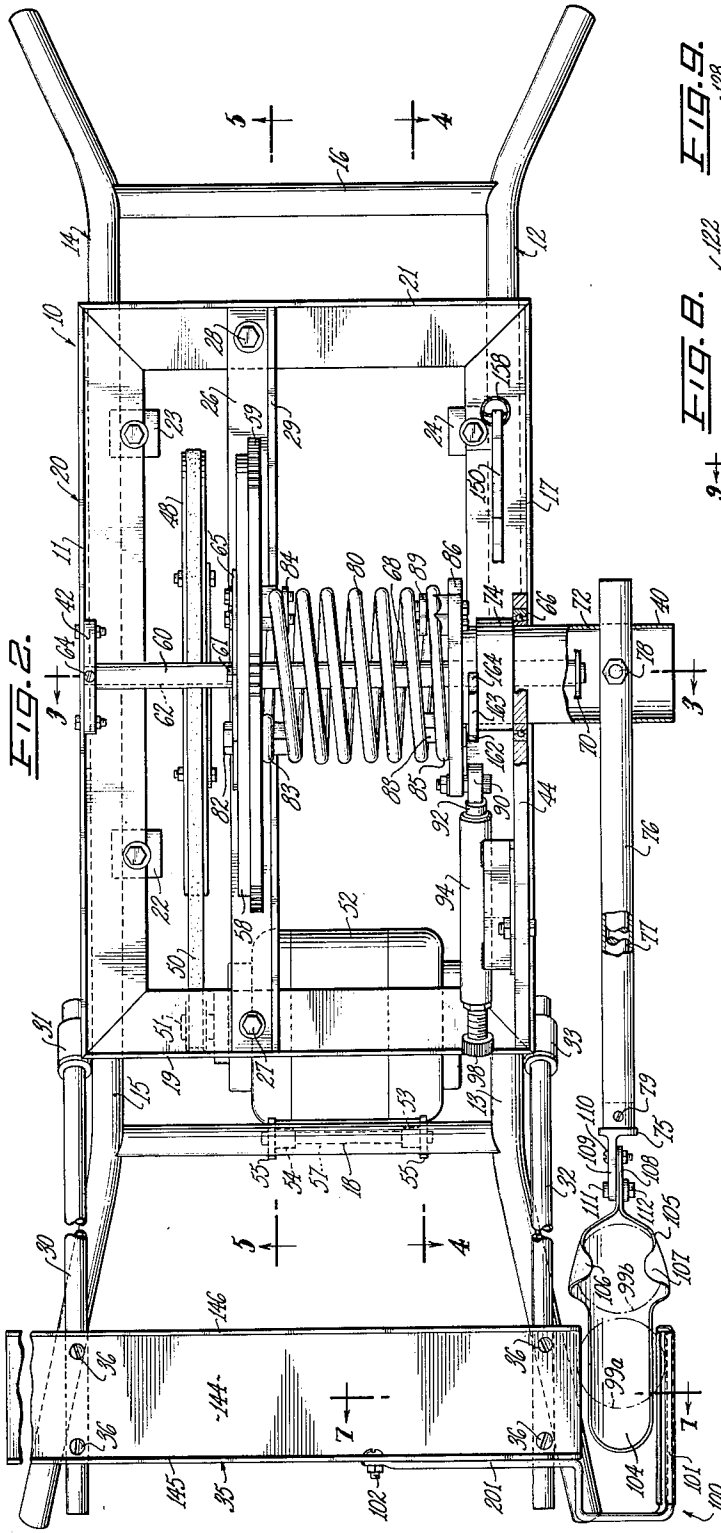


FIG. 2.

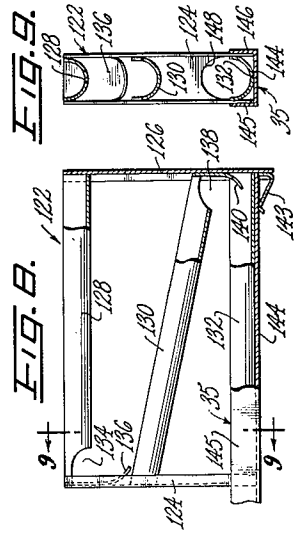


FIG. 8.

FIG. 9.

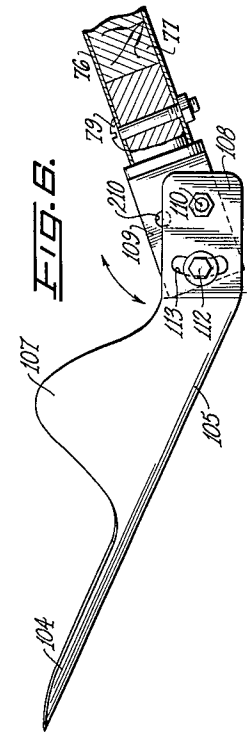


FIG. 6.

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FIG. 4.

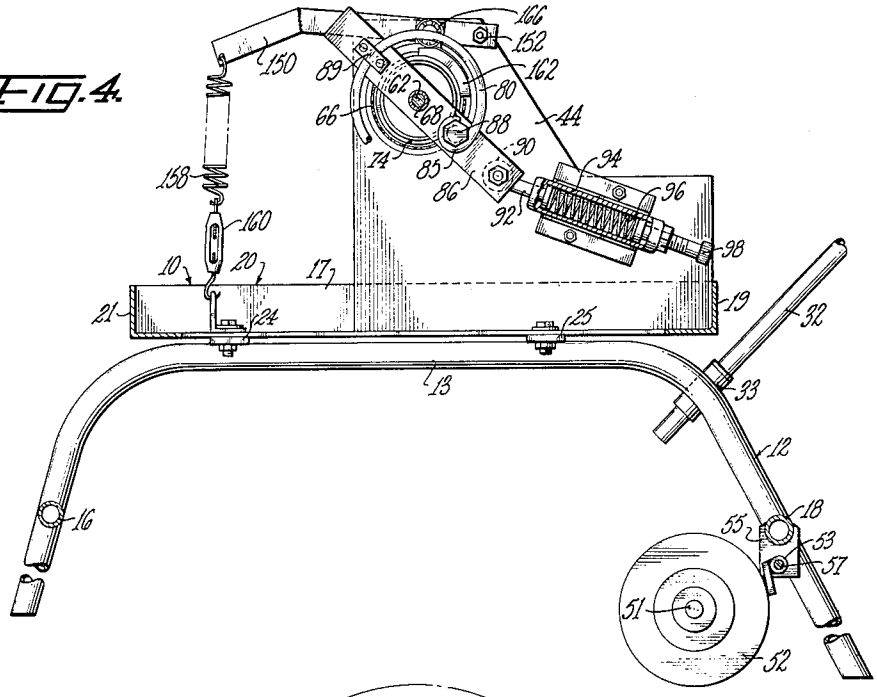
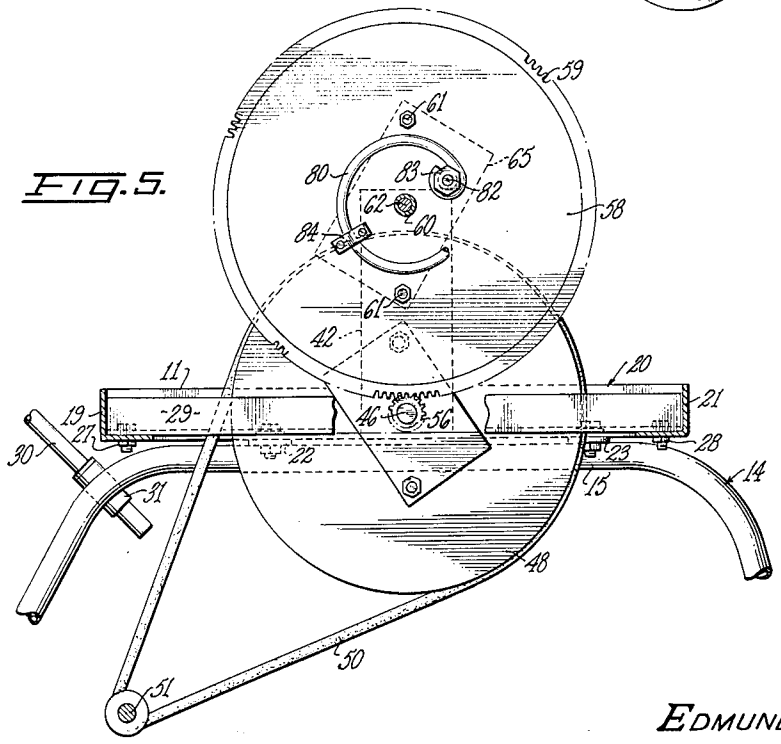


FIG. 5.



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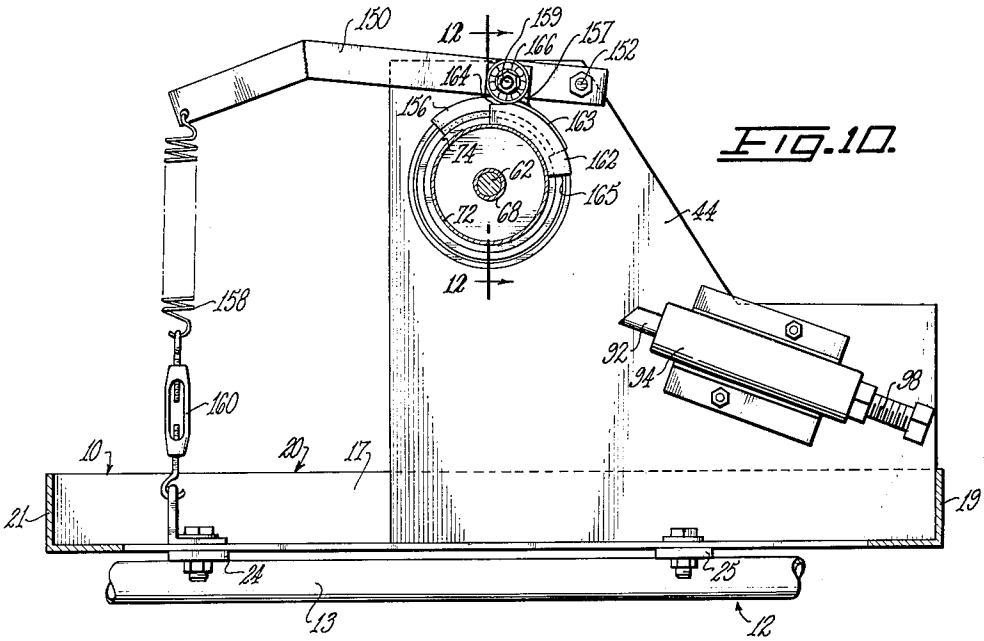


FIG. 10.

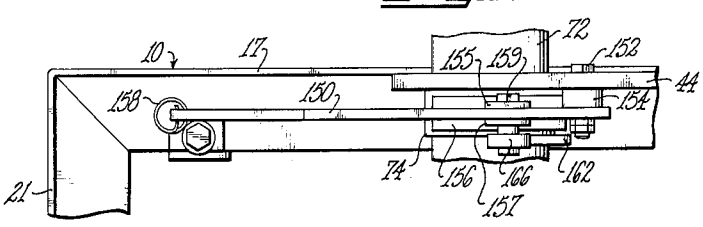


FIG. 11.

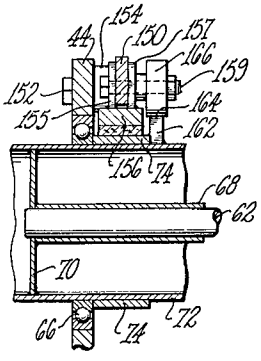


FIG. 12.

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United States Patent Office

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Patented Oct. 26, 1965

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BALL PITCHING MACHINE WITH RECOIL CUSHIONING BRAKE MEANS

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Filed Feb. 28, 1963, Ser. No. 261,622

3 Claims. (Cl. 124—7)

This is a continuation-in-part of my application Ser. No. 128,744, filed August 2, 1961, for a Ball Pitching Machine.

This invention relates to a portable mechanical device for pitching successive balls or similar objects in a predetermined and variably set path such as may be useful to a batter for practice in hitting baseballs. Such device may likewise be used in trap shooting, or to throw tennis balls or other articles which it is desired for a player to hit or respond to in one way or another.

Ball pitching machines which operated in various ways have been known, but a particularly objectionable feature of their operation has been the auto-variability of the trajectory followed by successive balls, even when the latter are identical in shape, size and weight. Thus with portable pitching devices—which it is desirable frequently to move to and from a playing field or from one playing location to another for short periods of use in contrast to such a mechanism permanently anchored at one spot—a notable defect has been that the backlash from each pitch so jars or moves the machine from its original or previous setting that the desired anticipation of each ball similarly being delivered over the "home plate" may be virtually destroyed. One result of this is that the pitched ball may hit the batter rather than vice versa.

Now, by he present construction, the shock of each recoil is absorbed by an automatic braking mechanism which enables the device to continue pitching balls in the narrow space corridors for which it is originally set, without appreciable lateral deviation. In addition, my device may be adjusted to produce a "high ball" or a "low ball," which still goes over the "home plate"—that is, the height of delivery can be changed without affecting the right or left deviation. Further, the speed of the ball can be varied by adjustment of the machine, specifically by altering the balancing force which must be overcome to release the pitching arm on each throw. Such controls can be changed between each pitched ball, if desired, or they can remain at the same setting for successive throws.

Accordingly it is an object of the invention to embody such features and advantages in a comparatively light weight or portable device of relatively simple and inexpensive construction, which is of long life and highly effective in operation, as well as consistently predictable in repetitive action.

The basic structure of my device was shown and claimed in my pending application Serial No. 128,744, filed August 2, 1961, of which this is a continuation-in-part. Due in considerable measure to the braking mechanism there embodied, it was possible to diminish the previously experienced backlash of analogous constructions to such as extent that a portable (lightweight) pitching device could be fabricated with a frame formed from light tube stock and having a total weight on the order, say, of only 140 lbs. (including the electric motor). Such device can simply be placed (without hold-down attachments) on a level surface and continue to hurl successive balls in the same undeviating course without shifting its stance as a result of backlash.

Such backlash in prior models was due to the necessity of more-or-less suddenly stopping the rotating arm after each pitch, in order then (a) to load another ball

and (b) to accumulate spring-tension in the drive mechanism so as to propel the next pitch. In my pending application, there was detailed one particular brake construction (involving a spiral brake band) which accomplished this result. The present application shows and claims another brake construction which has been found effective.

The basic drive mechanism with which my brake constructions are particularly adapted comprise a (radially mounted) pitching arm fixedly mounted on a (horizontal) drive shaft which makes complete successive single revolutions from a rest position at which successive balls are loaded. Each rotation is effected by a coil spring wound concentrically about the drive shaft and progressively tightened (between pitches) by a continuously-running (electric) motor. Thus after the arm is braked to a stop following a pitch, the drive spring is again tightened (by the motor) until its tension overcomes the holding force (of a separate trigger-detent). The holding force of the trigger is adjustable (as by variable spring-tension). The brake force which is applied to the swinging arm (desirably) immediately after it has pitched a ball can also be varied. With the present construction, the brake force must be sufficient to bring the arm to a stop in a little less than one revolution, but it must not act as a drag on the pitching arm at the instant of its trigger-release. Accordingly, by the present invention, means are provided to automatically disengage the brake from the stopped or (nearly) stationary arm, and allow it to be held primarily by the trigger pressure alone, until the latter force is overcome by the accumulated spring tension. Thus the retarding force or (adjustable) load put on the trigger, determines the ball-propulsive force which must be accumulated on the coil spring to (first) overcome the trigger-retaining-force and (then) to pitch the ball. The ball is hurled practically at the instant of trigger-release, so the braking force can then be applied at the same time and continue with the swinging arm around the complete (360°) rotation until the brake in effect passes its function to the trigger-detent.

Other objects and advantages will become apparent as the description proceeds, having reference to the presently preferred embodiment of the invention particularly illustrated in the accompanying drawings wherein:

FIG. 1 is a perspective view of my ball pitching machine, showing the rotary throwing arm, after having picked up a ball from the supply chute (while swinging thru the phantom position), the arm being now located at its stationary or coil-winding position;

FIG. 2 is a top plan view of the machine with the housing removed and the throwing arm in ball-receiving position, but with the inner mechanism at coil-winding position, some structure being broken away or shown in section;

FIG. 3 is a transverse, vertical sectional view taken thru the operating mechanism along the line 3—3 of FIGURE 2, with some structure shown in elevation;

FIG. 4 is a longitudinal, vertical sectional view thru the machine as viewed along the line 4—4 of FIGURE 2, particularly showing in elevation, the trigger mechanism which holds one end of the coil while it is wound from the opposite end, with more distant parts including the throwing arm omitted;

FIG. 5 is a corresponding vertical sectional view looking in the opposite direction along the line 5—5 of FIGURE 2, particularly showing the gear train extending from the electric motor to its connection to the winding end of the coil spring, with a central portion broken away;

FIG. 6 is a side elevational view of the ball-throwing cradle with the adjacent supporting end of the rotary throwing arm shown in axial section;

FIG. 7 is a fragmental vertical axial sectional view

thru the ball supply chute, particularly showing the attachment of the pick-up enclosure to the delivery end of the chute, as viewed along the line 7—7 of FIG. 2;

FIG. 8 is a side elevational view, partly in section, of a detachable rack which may be added to the right end of the ball delivery chute as seen in FIG. 1, the rack being particularly adapted to handle tennis balls;

FIG. 9 is a transverse sectional view thru the rack taken along the line 9—9 of FIGURE 8;

FIG. 10 is an enlarged vertical section, similar to FIG. 4, particularly showing, in elevation, the present braking mechanism;

FIG. 11 is a top plan view of the braking mechanism; and

FIG. 12 is a sectional view taken along the line 12—12 of FIG. 10 and showing the brake shoe being elevated from the rotary pitching shaft by engagement of the arcuate cam (on the shaft), with the contact roller of the tensioned lever arm which carries the dependent brake shoe.

In the illustrated portable form of ball pitching machine which embodies the invention, there is provided a supporting frame **10** assembled typically of L-shaped angle irons, plus tubular struts or rods suitably interconnected, as by spot welding and/or bolts. A parallel pair of generally inverted, U-shaped tubes or bars **12, 14** provide four legs for ground contact, being joined together by front and rear cross braces **16, 18**. The medial, horizontal spans **13, 15** of the inverted U's support and are held together by a rectangular, open-center skeletal tray or platform **20** formed of angle irons having their respective upright ends joined together at right angles, with the whole affixed to the underframe as by being bolted to four, inward projecting, horizontal tabs **22, 23, 24, 25** carried by the level tops of the inverted U-rods **13, 15**. Within the rectangular platform **20** thus anchored, there is disposed an intermediate, longitudinal angle iron **26**, terminally secured by bolts **27, 28** to the respective cross ends **19, 21** of the platform.

The upper framework of the machine is completed by a parallel pair of rearward, angularly upstanding tubes or rods **30, 32** secured to the U-rods **12, 14** by tubular attachment collars **31, 33**, and serving to support adjacent their raised ends a transversely directed, ball supply channel **35** disposed at a small inclination from the horizontal. A semi-annular hood or housing shell **38** may be provided to descendingly cover the platform **20** and thus enclose the operating mechanism (FIG. 1), the shell being formed with a downward opening, central vertical slot **39** along one side for mounting over the laterally projecting hub **40** of the adjacent throwing arm, so that the cover can thus remain in place during operation of the machine and guard a passerby against accidental contact therewith.

Immediately adjacent the inner, vertical face of each longitudinal L-rail **11, 17** of the platform **20**, is secured an upstanding, flat sided, mutually parallel, bearing plate **42, 44** (FIG. 2), transversely aligned along the central cross-axis of the platform, but of unequal area and height, the plate **44** alongside the throwing arm being the larger and higher (FIGS. 3–4).

With its opposite ends journalled respectively in the smaller bearing plate **42** and the upstanding arm **29** of the longitudinal rail **26**, there is a generally horizontal, transversely disposed drive shaft **46** upon which is fixedly secured a vertical wheel **48**, formed with a peripheral groove in which is received a V-belt **50** for transmitting power from a suitable motive source such as the electric motor **52**. A pair of vertical plates or hangers **55** are fixedly mounted on the cross-bracket **18** and jointly suspend a horizontal cross rod **57** (FIG. 4) from which the motor **52** hangs freely by means of a pair of suspension rings **53, 54**. The drive belt **50** when operatively mounted is of lesser span than the maximum distance between the drive wheel **48** of the frame and the drive shaft **51** of the motor if the latter hung vertically, so that the motor must be swung inward upon the pair of suspension rings **53, 54** for connection with the drive belt. Accordingly, the weight of the thus angularly hanging motor continually tensions the drive belt **50** to keep it taut.

Also fixedly mounted on the drive shaft **46** of the frame is a pintle gear **56** disposed in driving engagement with an upper cog wheel **58**, which latter is fixedly carried on a horizontal, tubular shaft **60**. A transverse, cylindrical rod or axle **62** is fixedly disposed, generally horizontally between and traversing the two upright bracket plates **42, 44** near their upper margins, being held in the former by a vertical set screw **64**. The tubular shaft **60** is rotatably mounted about a length of the fixed shaft adjacent the upright bearing plate **42**, while disposed in end-abutment with its inner end **63** (FIG. 3) and rotatably carried by the adjacent length of the axle **62** is a coaxial, tubular shaft **68** of a corresponding radial dimension. Secured to the outer end of the tube **68** as by a radial disk or web **70** is an outer cylindrical, open-end tube or housing **72** which is journalled in an annular, ball-bearing raceway **66** of the mounting bracket **44**. An annular brake band **74** is disposed about the cylindrical housing **72** adjacent the inner edge of the raceway. Diametrically traversing the projecting hub **40** of the housing tube **72** is a longitudinal throwing arm **76** detachably coupled thereto by a transverse bolt **78** and consequently rotatable in unison with the coaxial housing **72** and tubular shaft **68**.

A coil spring **80** is coaxially disposed about the fixed axle **62** and about the adjoining ends of the rotatable shafts **60** and **68**. In effect, the opposite ends of the coil are attached (indirectly) to the respective shafts **60** and **68** so as to provide an intermittent-acting drive means between the cog wheel **58** and the rotatable housing **72** with its throwing arm **76**. The cog wheel **58** may conveniently be made of wood with a cog-carrying annulus **59** secured about the periphery, and a vertical, reinforcing metal plate **65** centrally affixed thereto as by a pair of transverse bolts **61** (FIG. 5).

Disposed somewhat radially inward between the pair of plate-holding bolts **61**, is a transverse, anchoring bolt **82** about the inner end of which is wound one end **83** of the spring **80**, while diametrically disposed from the bolt **82**, the first loop of the coil **80** is additionally secured to the wooden face of the cog wheel **58** by a hold-down bracket **84**. Thus it will be seen that by comparatively slow rotation of the cog wheel **58** (thru the gear train **48, 56, 58** which reduces the effective speed of the electric motor **52**), the coil spring **80** is slowly wound or tightened from its end **82** whenever its opposite end is held stationary. Accordingly, the opposite end **85** of the coil spring is attached (FIG. 4) to a flat-sided, diametrically disposed trigger arm or plate **86** (which in turn is fixedly carried on the rotatable shaft **68**) by means of a headed bolt **88** and hold-down bracket **89** similar to the attachment of the previous end of the coil.

Adjustable trigger means are provided for intermittently restraining the plate **86** while the coil **80** is being tightened to a predetermined tension by action of the cog wheel **58**. Transversely disposed adjacent an outer end of the arm **86** is a freely rotatable annulus **90** having an outer surface of elastomeric material disposed, when at a "stop" position of the rotary arm **86**, to frictionally engage the outer end of a generally cylindrically projecting detent member **92**, which is longitudinally extensible from a housing structure **94**, the latter being secured against the inner face of the larger vertical bracket plate **44**. Within the cylindrical portion of the housing is disposed a coil spring **96**, one end of which is in frictional registration with the inner surface of the projecting detent **92**, while the opposite end bears against a rearward-projecting, tightening screw **98** threadedly mounted in the housing wall. Accordingly, by manual rotation of the screw **98**, the force with which the detent **92** yieldingly engages the stop member **90** is readily adjustable, thus varying the

discharge force or tension accumulated by winding or tightening the spring **80**. This results in control of the amount of projectal force embodied in each throw of the pitching arm **76**. In other words, by such means the machine can be set to pitch a "fast" ball or a "slow" ball, as a result of the greater or less tension accumulated by the coil spring **80** before it overbalances the frictional holding force between the trigger **90** and detent **92**, which holding force is variable by adjustment of the tightening screw **98**.

Supporting atop the outer lengths of the arms **30, 32** to which it is connected by four screws **36** (FIG. 2) is a longitudinally slanted, open-top supply channel or chute **35** usually wide enough to accommodate only a single row of balls and terminating in a three-sided, rectangular, pick-up enclosure **100** formed with open top, bottom and front areas. A supporting frame of the pick-up enclosure **100** can conveniently be bent from a single length of wire **201**. The respective upper and lower margins of an upright wall member **101** (typically consisting of sheet metal) are oppositely wrapped around the vertically separated stretches of wire, and the unit is attached to the rear face of the chute as by connection of the wire ends or eyelets with screws **102** (FIGS. 2 and 7). The width of the open bottom and front of the enclosure is a little less than the diameter of a ball **99** so as to prevent the latter from dropping or rolling out in any direction by itself. However it can be lifted out of the open top, as by the grooved tongue **104** of an up-swinging ball cradle **105** carried on the outer end of the rotatable throwing arm **76**. As the cradle **105** moves up (upon return swing of the throwing arm after discharging or hurling a previous ball), the projecting tongue lifts the terminal ball from the enclosure **100** at the position **99***a* (FIG. 2) and the picked-up ball immediately rolls down the short length of the moving tongue **104** into the socket position **99***b*, at which point it is loosely overlaid by a progressively converging pair of short, inwardly curved, wings **106, 107**. As the arm **76** moves on to the "stop" position of FIG. 1, it is there retained (holding its loosely cradled ball) by the trigger **92** while the coil spring **80** is wound up, as previously described. Upon trigger release of the coil **80** and its attached throwing arm **76**, the ball **99** is hurled longitudinally from the cradle **105** along the underface of the now-inverted tongue **104**, as the arm springs forward.

Provision is also made for varying the trajectory of the ball thus cast, namely, by tilting the cradle **105** forward or back longitudinally in the plane of rotation of the arm **76**. A flat-sided shank **108** of the ball cradle is pivotally secured to an axially projecting, terminal attachment tab **109** of the arm **76**, by means of a transverse pivot pin or screw **110** inserted thru one or the other of a pair of transverse openings **210** in the arm **76**. Another transverse bolt **111**, carrying a tightening or locking element **112** on one end, traverses both the shank **108** and the juxtaposed tab **109** distally to the pivot **110**. The cradle shank **108** is formed with an arcuate slot **113** permitting its limited sliding movement across the adjacent attachment tab **109** when traversed by the shaft of the bolt **111** (prior to tightening of the locking element **112**), as indicated by the arrow FIG. 6. Typically, the body of the throwing arm **76** (as well as the shafts **60, 68**) is formed of light-weight metal such as tubular aluminum, reinforced if desired by an inner wooden stem **77**, the two being fastened together as by a bolt and nut **79** adjacent an outer annular flange **75**. Accordingly, by such tilting adjustment of the ball cradle **105**—which corresponds to the ball pitcher's hand—either a "high ball" or a "low ball" is consistently delivered over the "home plate." In addition (or independently), either a "fast ball" or a "slow ball" is produced by regulation of the tension accumulated by the drive coil **80** before its automatic trigger-dsicharge, as earlier described.

Consistent control of the speed (for fast and slow balls) and trajectory (for high and low balls) of each successive ball is highly desirable in a baseball pitching machine, but it is even more essential that every ball is delivered within the same restricted area, that is, over the "home plate" rather than erratically to one side or the other thereof. As mentioned above, previous portable pitching machines, even when heavily weighted down were frequently displaced from their original ground alignment by the backlash of the rotating arm. Thus one ball might be pitched directly over the plate and the next one arrive along such a line of lateral displacement as to be out of reach of the batter when veering in one direction, or alternately to hit the batter if displaced in the other direction. Now by the present automatically controlled braking action of each rotation of the throwing arm, even the present comparatively light weight structure does not jump or move about on the ground or other surface on which it is merely stood without being bolted down or otherwise anchored.

As seen particularly in FIGS. 10–12, a longitudinal lever arm **150** is fulcrumed at one end on the transverse shaft of a headed bolt **152**, which is inserted thru the upright side plate **44** adjacent its upper margin. A spacing collar **154** on the shaft locates the arm **150** spaced inward from and generally parallel to the wall **44**. The latter is also traversed by the enlarged, cylindrical, rotatable housing portion **72** of the idler shaft **68**; and tangential in line therewith, the overlying lever arm **150** dependently carries an arcuate brake shoe **156** which conforms to the curvature of the brake band or annulus **74** which is disposed around the cylindrical structure **72**. The brake **156** is thus adapted to be forced against the brake band **74** of the rotatable housing for sliding frictional engagement therewith. Since the radially disposed, ball throwing arm **76** is carried on the outer portion of this housing **72**, the brake shoe **156** accordingly is intended to bring the revolving arm **76** (or its shaft **68**) to a complete stop in a little less than a complete revolution after each pitch. By lugs **155, 157** pivoting on pin **159**, shoe **156** aligns with the band **74**.

At its opposite end, the lever arm **150** is adjustably fastened to the platform **20**, or more particularly to its side rail **17**, thru the intermediate means of a successive tension spring **158** and turn buckle **160**. In such manner the brake **156** is normally held in engagement with the housing **72**, with the amount of tension being variable by manual manipulation of the turn buckle **160** from time to time. Along one side of the brake band **74**, the housing cylinder **72** fixedly carries an upstanding, arcuate-shaped cam **162** of comparatively short length (i.e. less than 90°) with an inclined contact edge **164**. In the same vertical plane as the cam, the overlying lever arm **150** disposes a contact roller **166**. The height of the upper, arcuate edge **163** of the cam above the rotatable housing **72** is such that when the roller **166** is rested or supported upon the cam, the lever arm **150** is thereby raised and its dependent brake shoe **156** is elevated from normal frictional contact with the band **74**. In other words, when the cam **162** comes around and contact-raises the roller **166**, and its attached lever arm **150**, elevation of the latter raises or disengages the brake **156**. This occurs at the end of a rotation of idler shaft **68** after the throwing arm **76** has pitched a ball. Desirably at this point—when the brake is lifted—the pitching arm or its corresponding shaft **68** has been braked practically to a stop. In any event, it is then held by mutual engagement of the detent-trigger **92** and the roller **90**. The coil spring **80** then tightens (by continuous action of the motor **52**, transmitted to the drive shaft **46**) until it has accumulated enough tension to disengage the roller **90** from the spring-loaded trigger-detent **92** and thus catapult the ball **99** from the cradle **105**. As the rear end **165** of the cam then passes beyond the roller **166**, again the brake shoe **156** immediately drops back (by tension spring **158**) against the brake band **74**. It

will thus be seen that since the roller **166** is freely rotatable, and also that since the width or thickness of the contact edge of the cam **162** which engages it is relatively narrow, there is no appreciable braking force between these two elements while they are mutually engaged. During this period (the brake shoe **156** being accordingly lifted), whether the pitching arm **76** is held still or not depends solely on the engagement between the roller **90** and the detent **92**. And the holding force of the latter can readily be varied by turning the tightening screw **98**.

Since tennis balls cannot readily be fed into a delivery chute from a funnel or hopper (because of the tendency of their surface for mutual engagement), there is here provided a rack **122** (FIGS. 7, 8, 9) conveniently formed of sheet metal, for detachable coupling to the free end of the channel **35** (FIG. 1). Fixedly suspended between a parallel pair of upstanding, channel-shaped end walls **124, 126** are three vertically spaced and aligned troughs **128, 130, 132** longitudinally tilted or slanted in varying degrees to form a continuous, criss-cross descending path. The several troughs are individually secured, as by spot welding of their sides, to the inturned edges of the respective end wall **124, 126**. The lower end of the uppermost trough is formed with a bottom opening **134** of sufficient size to allow a tennis ball to drop thru easily and strike a curved deflector **136** which is affixed to the adjacent end wall **124**. A similar end outlet **138** and dependently curved, deflector **140** are located adjacent the opposite end of the intermediate trough **130**. At the same end of the rack, beneath the bottom trough **132** is an inwardly directed, upturned clip or resilient engagement tab **143** terminally secured to the upright wall **126** and adapted to receive the floor **144** of the permanently mounted chute **35** slidingly inserted lengthwise between it and the underface of the trough **132**, with the side walls **145, 146** of the chute then providing lateral support for the sides of the trough and positioning the rack as a whole. The end wall **124** which is innermost when thus mounted, is formed with a lower opening **148** which thus provides an outlet for balls leaving the trough **144** for the chute **35**, ultimately arriving at the pick-up enclosure. Accordingly, by use of such rack **122** a comparatively large number of balls can be loaded at one time for successive individual pickup by the cradle **105** and throwing arm **76**.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described; and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as hereafter claimed.

I claim:

1. A pitching device of the character described, comprising, in combination: a tubular drive shaft and a tubular idler shaft, each independently rotatable and disposed generally end to end in axial alignment about a central fixed axle extending jointly through both shafts; a transversely disposed pitching arm fixedly carried by said idler shaft, said arm having a generally outwardly terminal ball cradle, which idler shaft also carries a radially disposed detent surface; means adapted for effecting continuous rotation of said drive shaft; a coil spring disposed generally coaxial about said shafts and axle and having opposite ends secured respectively to the idler shaft and to said drive shaft, whereby rotation of the latter acts to tension said spring when the idler shaft is held stationary; tension-adjustable, spring-loaded trigger means having a slide-contact surface disposed for yielding frictional engagement with said detent surface, whereby the idler shaft may be held against rotation while the coil spring is tightened until it overcomes the engaging force of said slide-contact surface and thereby effects sudden rotation of the idler shaft and attached pitching arm; and rotary brake means adapted to cushion recoil from the suddenly released coil spring, said brake means comprising a brake shoe disposed for substantially continuous engagement with said idler shaft during most of the cycle of each successive revolution thereof, variable tension means for regulating the brake force exerted by the brake shoe from one cycle to another, and automatic brake release means comprising a short arcuate, radially projecting cam carried by the idler shaft, and intermediate roller means disposed to be slidingly contacted by the rotating cam and thereby to disengage said brake shoe during the mutual engagement of said detent surface and said trigger means and for a short arcuate distance immediately thereafter, whereby upon such trigger release a ball may be thrown from the cradle before braking force is applied to said idler shaft by said shoe.

2. A pitching device of the character described, comprising, in combination: a drive shaft and an idler shaft, each independently rotatable and disposed generally end to end in axial alignment; a transversely disposed pitching arm fixedly carried by said idler shaft, said arm having a generally outwardly terminal ball cradle, which idler shaft also carries a radially disposed detent surface; means adapted for effecting continuous rotation of said drive shaft; a coil spring disposed generally coaxial with said shafts and having opposite ends secured respectively to the idler shaft and to said drive shaft, whereby rotation of the latter acts to tension said spring when the idler shaft is held stationary; trigger means having a slide-contact surface disposed for yielding frictional engagement with said detent surface, whereby the idler shaft may be held against rotation while the coil spring is tightened until it overcomes the engaging force of said slide-contact surface and thereby effects sudden rotation of the idler shaft and attached pitching arm; and rotary brake means adapted to cushion recoil from the suddenly released coil spring, said brake means comprising a brake shoe disposed for substantially continuous engagement with said idler shaft during most of the cycle of each successive revolution thereof, and automatic brake release means adapted by contact with said rotating idler shaft to disengage said brake shoe during the mutual engagement of said detent surface and said trigger means and during a short arcuate distance immediately thereafter, whereby upon such trigger release a ball may be thrown from the cradle before braking force is applied to said idler shaft by said shoe.

3. The device of the preceding claim **2** wherein said brake shoe is carried by a spring-loaded lever arm which additionally carries a contact roller, and said brake release means comprise a short arcuate, radially projecting cam carried by the idler shaft in position to engage said contact roller and thereby disengage said brake shoe during such interval.

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