

(No Model.)

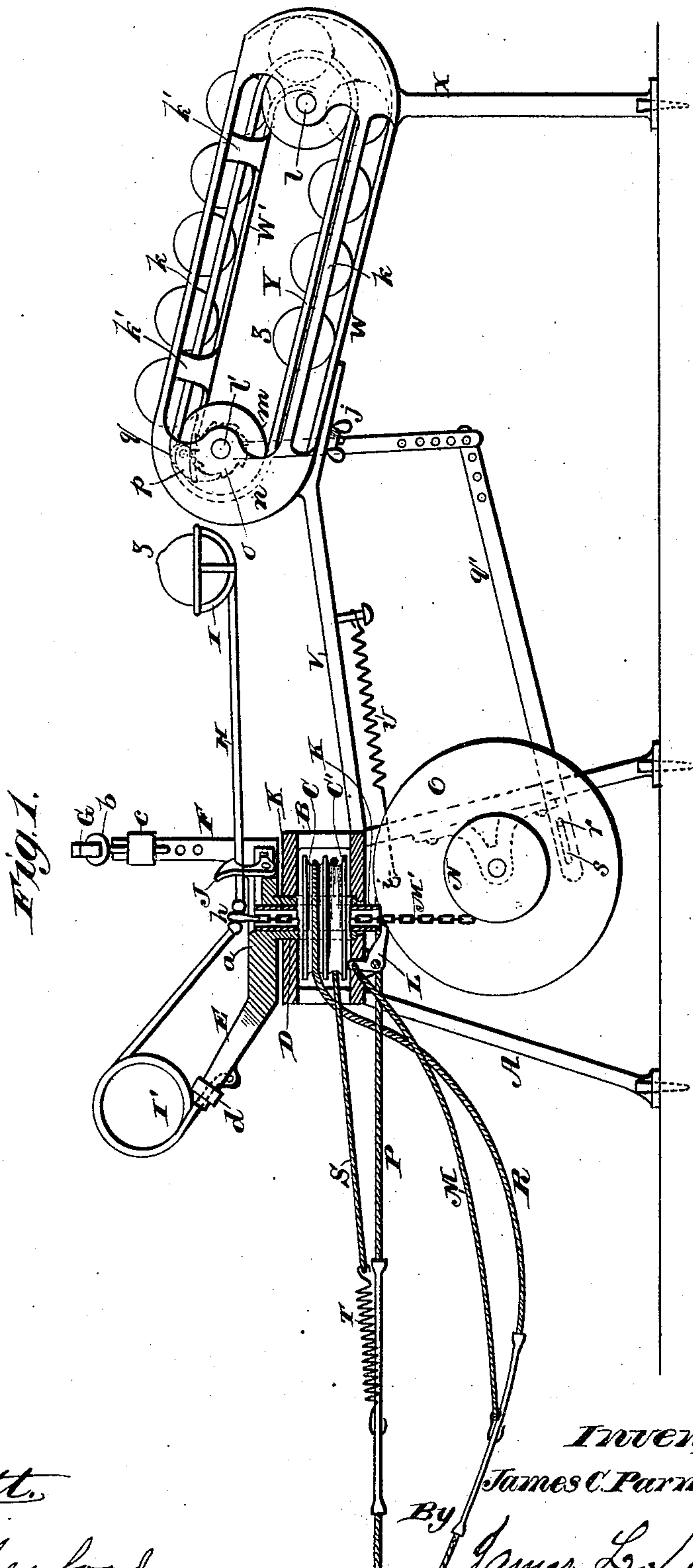
2 Sheets—Sheet 1.

J. C. PARMERLEE.

BALL TRAP.

No. 292,043.

Patented Jan. 15, 1884.



Witnesses,
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Inventor.
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(No Model.)

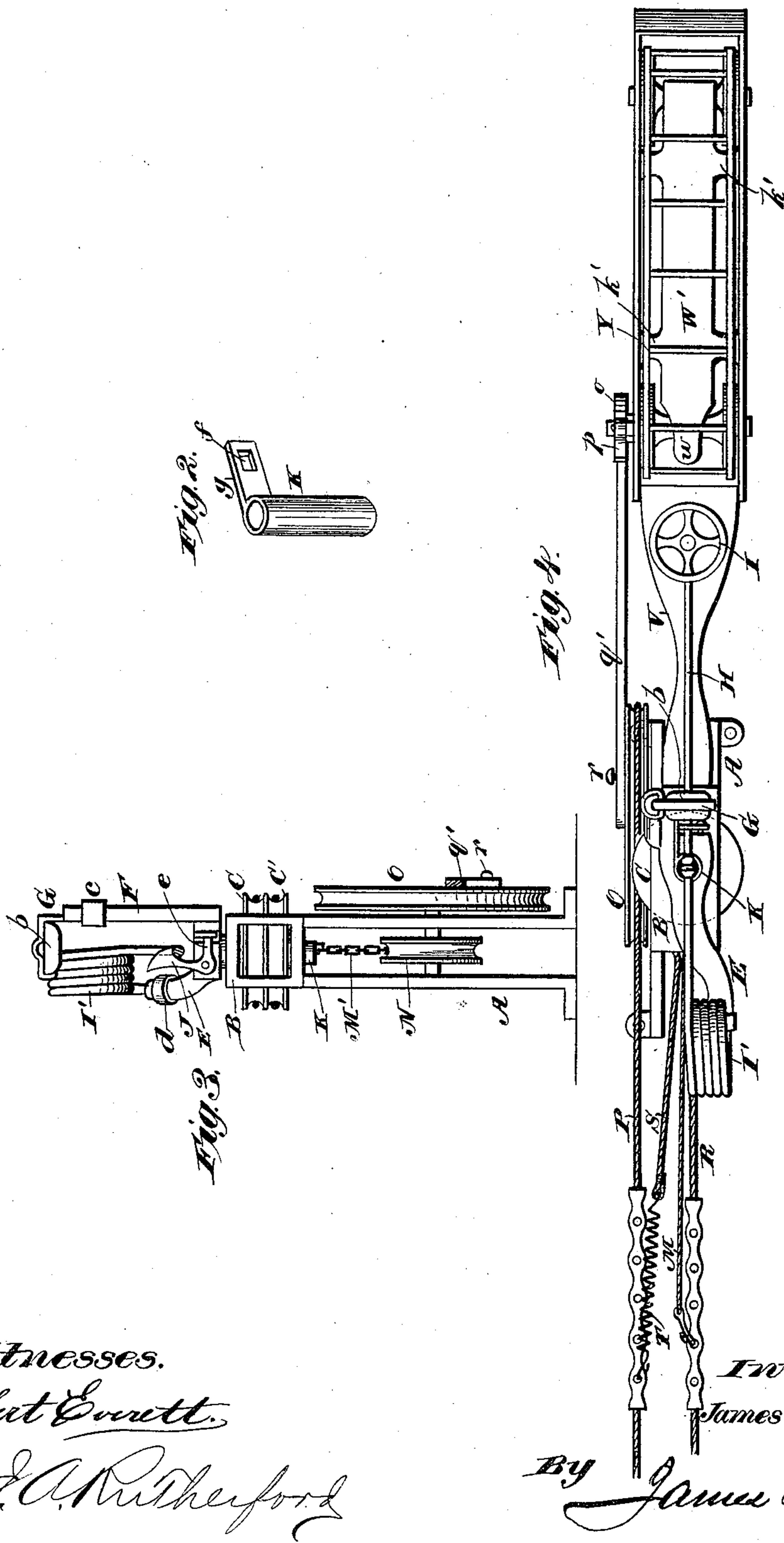
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UNITED STATES PATENT OFFICE.

JAMES C. PARMERLEE, OF SEDALIA, MISSOURI.

BALL-TRAP.

SPECIFICATION forming part of Letters Patent No. 292,043, dated January 15, 1884.

Application filed July 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. PARMERLEE, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented new and useful Improvements in Ball-Target Throwers, of which the following is a specification.

My invention relates to improvements in target-throwing traps, and in it the spring or throwing-lever is set or engaged with the trigger by the operation of a suitably-constructed leverage with proper connections, and simultaneous with the setting process deposits the object to be thrown, such as a ball in a cup or other proper receptacle.

The objects of my improvements are, first, to provide a self-setting and self-loading, or automatic setting and loading, rotary trap, which revolves in a complete circle, whirling around as many times as may be desired, independent of the loading attachment; secondly, to provide a trap which may be operated from a distance, dispensing with the services of an attendant at or near the trap; thirdly, to provide a trap to diminish the dangers incident to the practice of shooting at target-balls with an attendant at or near the trap; fourthly, to provide a trap to dispose of the danger of being struck by the spring-lever, for in loading ball-traps by hand serious consequences have resulted by the spring slipping while being set and after being set, and the spring in many instances has dealt furious blows in the face or on the person of those engaged in trapping, while even more serious consequences have resulted from the attendant being struck by a flying ball or the shot from some unskillful shooter; and, fifthly, to provide a compensating rotary self-setting and self-loading trap, which may be brought into position and the proper rotary movement imparted by positive and uniform motion, no springs being required to wind up the trap for another shot, the operation of setting the traps winding up the pulley-cord ready for another whirl. I attain these objects by means hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the entire machine; Fig. 2, a detached perspec-

tive view of the trigger-trip. Fig. 3 is an end view of the machine, and Fig. 4 is a top view of the entire machine.

In the drawings, A indicates a standard supporting upon its top a rectangular box-frame, B, within which are two rigidly-connected concentric sheaves, C C', sustained in a horizontal position by a hollow shaft, D, to which they are keyed. This shaft is an extension of an inclined arm, E, and extends vertically through the rectangular frame, and is stepped in its base, so as to be free to revolve. From a hub, a, of the arm E, which extends beyond the hollow shaft, there rises a vertical post, F, perforated transversely, and supporting a bracket, G, which has a cushion, b, preferably of rubber or some other suitable yielding material, in its face near its top, and which is vertically adjustable by a pin projecting from its arm and entering one of the perforations in the post, to which it is securely held by a collar or clasp, c, encircling both the arm and the post. The cushioned bracket on the post is intended to serve as a stop to the forward movement of the bent lever H, which carries a cup, I, at one end, and is formed near the other end into a coiled spring, I', and at that end connected to the arm E by an angle of the spring itself passing through a lug or ear on the arm, and the connection of the two parts is strengthened by a sliding collar or clasp, d, encircling both the arm and lever. The cup at the end of the lever is to hold the ball that is to be projected by the force of the spring at the other end, and until the time for projecting the ball the lever is held down by a trigger, J, pivoted to the end of the heel of arm E, opposite to the side of post F, and formed with a hook to pass over the lever, and with a heel, e, to enter a slot, f, in the arm g of the trigger-tripping tube K. This tube passes through the hollow shaft D, and is allowed a vertical play therein, so that when raised it will throw or trip the trigger from the spring-lever, and allow the latter to be thrown forward to project the ball by the tension of the spring till the lever strikes against the elastic cushion in the stopping-bracket. The tripping-tube is raised by a bell-crank lever, L, pivoted below the rectangular frame, so that when one arm of it is drawn

down by the rope or chain M, the other arm will be thrown up against the lower end of the tripping-tube, so as to raise the latter and effect the tripping of the trigger and releasing of the projecting or impelling lever, after which the tripping-tube will drop down by gravity and restore the trigger to its normal position.

The projecting or impelling lever is drawn down to engage with the hook of the trigger by means of a chain, M', connected to the lever at the bend or point *h*, and extended down and around a grooved pulley, N, journaled in suitable bearings or standards, A, which pulley is operated through a large main pulley, O, on the same shaft, which latter pulley is revolved by what will be designated a "setting" rope or chain, P, which passes one or more times around the latter pulley. The difference in diameter of the two pulleys affords considerable leverage, so that notwithstanding the power of the spring to the impelling-lever, the latter is drawn down with much ease against the beveled face of the hooked end of the trigger, thus pressing the latter outward till the lever has passed under the hook, when the hook, by the weight of its tripping-tube, is thrown over the lever, so as to hold the lever down till released by throwing the crank-lever L against the tripping-tube. This crank-lever is operated by what will be designated a "trigger-cord," M, connected to one arm of the lever and to a rope or chain, R, which will be designated the "rotating rope." This rope or chain is connected to and passes around the pulley C, and the connection of the trigger-cord therewith is such that when the rope is wound around the pulley the trigger-cord hangs with slack enough to permit the impelling-lever to be revolved or rotated by drawing on the rotating rope before the trigger-cord is drawn taut enough to throw up the crank-lever. The amount of slack depends on the number of times the impelling-lever is to be revolved before being released, and it may be regulated by adjusting the trigger-cord along the rotating rope, the latter being provided with eyelets or rings for that purpose, and the number of times that the impelling-lever shall be rotated is regulated by winding the rotating cord one or more times around the pulley. After the lever has impelled its ball it is returned to its normal position by a rope or chain, S, designated the "positioning-rope," connected to the lower pulley, C', and passed around it the same number of times that the rotating rope passes around the upper pulley, but in the opposite direction, so that when either rope is drawn on the other rope will be wound around its pulley to the extent that the unwinding rope is withdrawn, and thus the impelling-lever is brought back to its normal position, and one rope has its slack taken up and is placed in position for operation by the operation of the other rope. The positioning-rope S is connected at its outer end to the setting-rope

P by a coil or other spring, T, which has a hook at one end that engages with an eye or ring formed in or attached to the setting-rope. The point at which the positioning-rope is connected to the setting-rope is such that when the positioning-rope has been drawn out as far as necessary to bring the lever back to its normal position the setting-rope may be drawn several inches (more or less) further to bring the lever into engagement with the trigger, the spring-connection between the two ropes permitting that to be done without liability of moving the cup on the lever too far to receive the ball from the delivering device. As stated, the slack of the positioning-rope will be taken up by drawing out the rotating rope, and the slack in the setting-rope will be taken up or wound around its pulley O by a coiled or equivalent spring, U, connected to the pulley at one end and to the bars V at the other end by a button, *i*, or by a coiled spring on the axis of pulley O. This spring distends when the pulley is turned in one direction, and as soon as the impelling-lever is released and the setting-rope slackened the spring recoils or retracts and turns the pulley backward and takes up the slack in the rope and unwinds the chain M' from the pulley N. The bars V extend from the standards next to the box-frame B in the direction shown, and have secured to their outer ends by bolts and thumb-screws *j* one end of a frame, W, which is supported at the other end by standards X.

The frame W has top and bottom side rails, *k*, and carries an endless chain-belt, Y, formed of links large enough to hold each a ball, *z*, and supported at both ends by shafts *l* *l'*, provided with side flanges, *m*, and journaled, the one in standards X, and the other in posts *n*, resting upon bars V. The shaft *l'* has a ratchet-wheel, *o*, secured to one end, with which engages a pawl, *p*, pivoted to the upper part, *q*, of a lever which is free to turn upon shaft *l'*, the part *q* of the lever being jointed to the lower part, *q'*, and the latter part being connected with the pulley O by a pin, *r*, which passes through a slot, *s*, in that end of the part *q'*. The junction of the two parts of the lever and their connections with the frame carrying the delivery-apron and the pulley O is such that in the movement of the pulley to bring the cup end of the impelling-lever opposite to the delivery-belt the lever is made to operate the pawl, so as to turn the ratchet and move the belt far enough to deliver one of the balls into the cup when brought into position to receive it. Both parts of the lever at their jointed ends are perforated, so that the points of juncture may be altered to conform to the number of times the setting-rope is passed around the pulley, and thus to time the movement of the delivery-apron to the movement of the impelling-lever.

It will be observed that the delivery device may be horizontal or inclining downwardly or upwardly from the impelling-arm, and the

links of the chain act as partitions, so that the balls will not crowd upon one another in feeding to the arm.

The operation of the several parts will be understood from the statement of their operation made in connection with the description of their construction, and it is not considered necessary to recapitulate them. It will be observed that the impelling-lever can be swung in a circle as many times as may be necessary for giving the desired impetus and direction to the balls, and that the feeding of the balls is automatic and timed with precision to the movement of the impelling-lever. The simplicity of construction and the absolute safety of the device and its satisfactory working must all commend themselves to those persons interested in such devices, and therefore it is unnecessary to enlarge upon them here. As the balls advance toward the cup I they roll upon a plate, W', which is hung from the top rails, k, by pendants. The plate W' is provided at its forward end with a tongue, w, projecting toward the cup, and as the balls are successively pushed forward they roll upon said tongue, and are thereby carried into position to drop from its end into the cup I.

Having thus described my invention, what I claim is—

1. The combination, in a ball-trap, of a spring-lever for impelling the ball, a revolving lever-supporting arm, a trigger pivoted to the latter and having a heel-piece, a vertically-movable trigger-tripping device having an arm at its upper end connected with the heel of the trigger to move the latter both into and out of engagement with the ball-impelling lever, said trigger-tripping device revolving with the lever-supporting arm, and means for lifting the trigger-tripping device to swing the trigger on its pivot and release the ball-impelling arm, substantially as described.

2. The combination, in a ball-trap, of a spring-lever for impelling the ball, an arm supporting said lever and provided with a vertical shaft, two pulleys secured to said shaft, two ropes respectively connected with said pulleys for revolving the lever-supporting arm and restoring it to its normal position, a trigger for holding the ball-impelling lever, and means for operating the trigger to release said lever, substantially as described.

3. The combination, in a ball-trap, of a spring-lever for impelling the ball, an arm supporting said lever and provided with a vertical hollow shaft, a trigger secured to the lever-supporting arm, a trigger-tripping tube extending through the hollow shaft and connecting at its upper end with the trigger, means for vertically moving the trigger-tripping tube, a chain extending through the said tube and connected with the ball-impelling lever, and means for drawing the chain downward to engage the ball-impelling lever with the trigger, substantially as described.

4. The combination, in a ball-trap, of a

spring-lever for impelling the ball, an arm supporting said lever, and having a vertical hollow shaft, a trigger for holding the ball-impelling lever, a trigger-tripping tube projecting through the hollow shaft and connected at its upper end with the trigger, a pivoted angle-lever, on one end of which the trigger-tripping tube bears, a rope for operating the lever to lift the tube, a chain extending through said tube and connected with the ball-impelling lever, and means for drawing the rope downward to engage the ball-impelling lever with the trigger, substantially as described.

5. The combination of the ball-impelling lever, the lever-holding trigger, the trigger-tripping device, a chain connected with the ball-impelling lever, a pulley with which said chain is connected, a shaft supporting the pulley, an additional pulley on said shaft, and a rope for rotating the latter pulley to draw the impelling-lever downward to engage the trigger, substantially as described.

6. The combination, in a ball-trap, of the spring-lever for impelling the ball, the arm supporting the lever, and having a shaft, the two pulleys secured to said shaft, and the positioning and the rotating ropes passing around the pulleys in opposite directions, substantially as described.

7. The combination, in a ball-trap, of the lever for impelling the ball, a chain connected with the lever, a pulley for winding and unwinding the chain, a traveling carrier for carrying the balls and delivering them to the ball-impelling lever, and connecting mechanism between the chain-pulley and the carrier for moving the latter when the ball-impelling lever is set, substantially as described.

8. The combination, in a ball-trap, of the lever for impelling the ball, a chain connected with the lever, a pulley for winding and unwinding the chain, an endless traveling belt for carrying the balls arranged in line with the lever, and connecting mechanism between the belt and the chain-pulley for driving the belt when the lever is set, substantially as described.

9. The combination, in a ball-trap, of the spring-lever for impelling the ball, the arm supporting said lever and carrying a vertical post having a series of perforations, and the cushioned stop-bracket having a pin adapted to enter any one of the perforations to adjust the bracket vertically, substantially as described.

10. The combination, in a ball-trap, of the spring-lever for impelling the ball, the arm supporting said lever and carrying a vertical post, the cushioned bracket adjustably connected with said post, and means for vertically adjusting and holding the bracket on the post, substantially as described.

11. The combination, in a ball-trap, of the ball-impelling lever, a chain connecting therewith, and a pulley for actuating the chain to set the lever, the ball-feeding mechanism com-

posed, substantially, of a traveling apron, and pawl and ratchet for moving it forward, and devices connecting the chain-pulley with the pawl and ratchet, substantially as described.

5 12. The combination, in a ball-trap, of the revolving arm and its hollow shaft, the ball-impelling lever supported thereon, the tripping-tube passed through the hollow shaft, the trigger pivoted to the arm and entering a slot
o in the extension of the tripping-tube, a lever for operating the tripping-tube, a rod, string, or chain passing through the tube and connecting the impelling-lever and a pulley, the rope connecting with the chain-pulley, the two
5 pulleys on the hollow shaft, the rotating-rope connecting with one of said pulleys, and the positioning-rope connecting with the other, the setting-rope connecting with the positioning-rope and passing around the main operating-
o pulley, and the trigger-cord connecting with the rotating-rope and tripping-lever, substantially as described.

13. The combination, in a ball-trap, of the revolving arm having the shaft, the pulleys on
5 the shaft, the trigger, the tripping-tube, the

lever for operating the tube, the main pulley, the positioning and the rotating ropes connected to the pulleys on the shaft of the arm, the setting-rope connecting the positioning-rope and main pulley, the trigger-rod connecting the tripping-lever and rotating-cord, and the spring for reversing the main pulley, substantially as described. 30

14. The combination, in a ball-trap, of the revolving arm, the ball-impelling lever there- 35 on, the pulley for revolving the arm, the pulley for operating the chain which draws down the arm, the setting-rope, and the positioning-rope joined to the pulley connected with the arm, and having a spring or elastic con- 40 nection with the setting-rope, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES C. PARMERLEE.

Witnesses:

J. S. LANE,

J. R. WEBBER.