

M. E. CARD.
Ball-Traps.

No. 214,620.

Patented April 22, 1879.

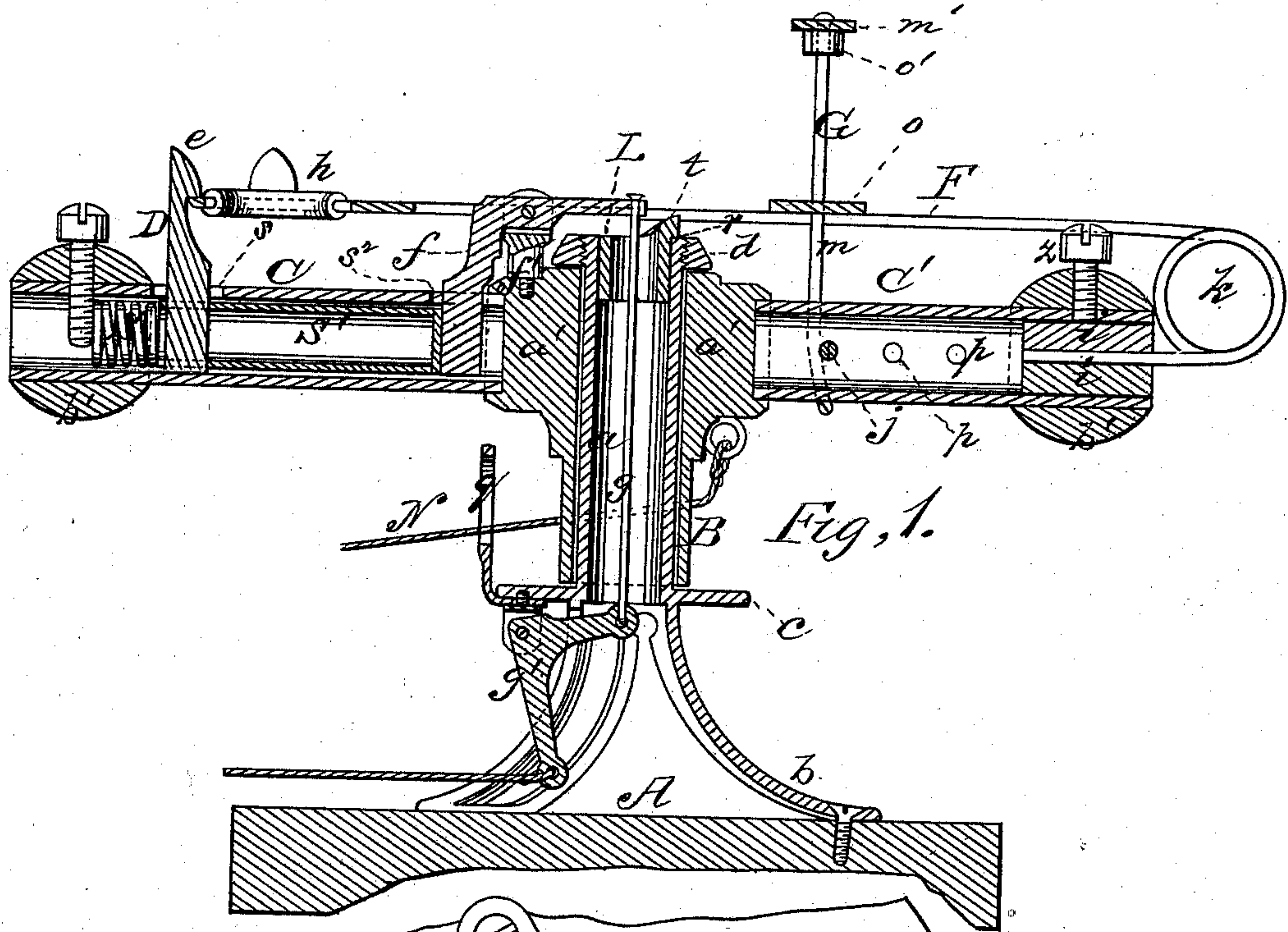


Fig. 1.

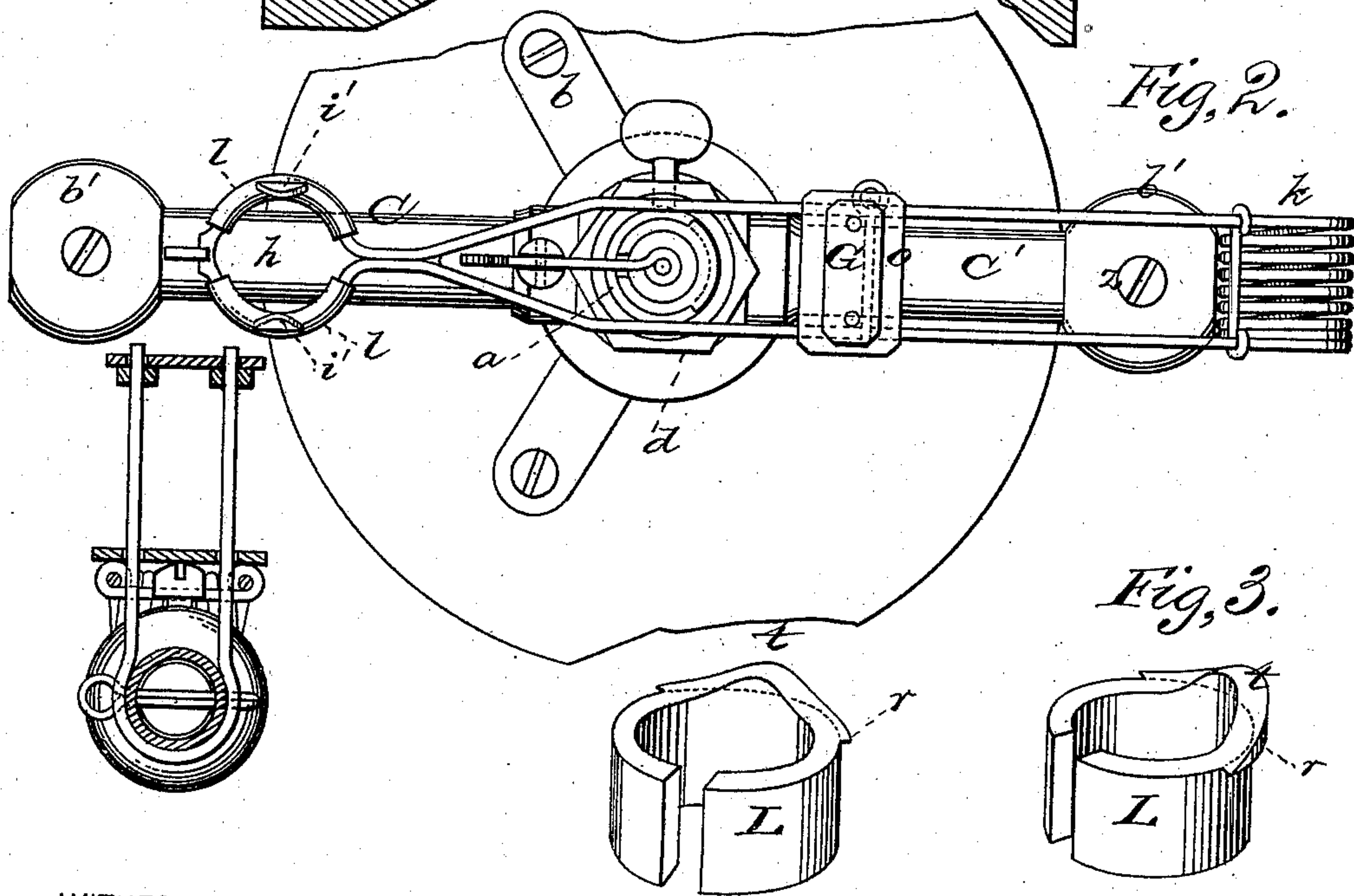


Fig. 2.

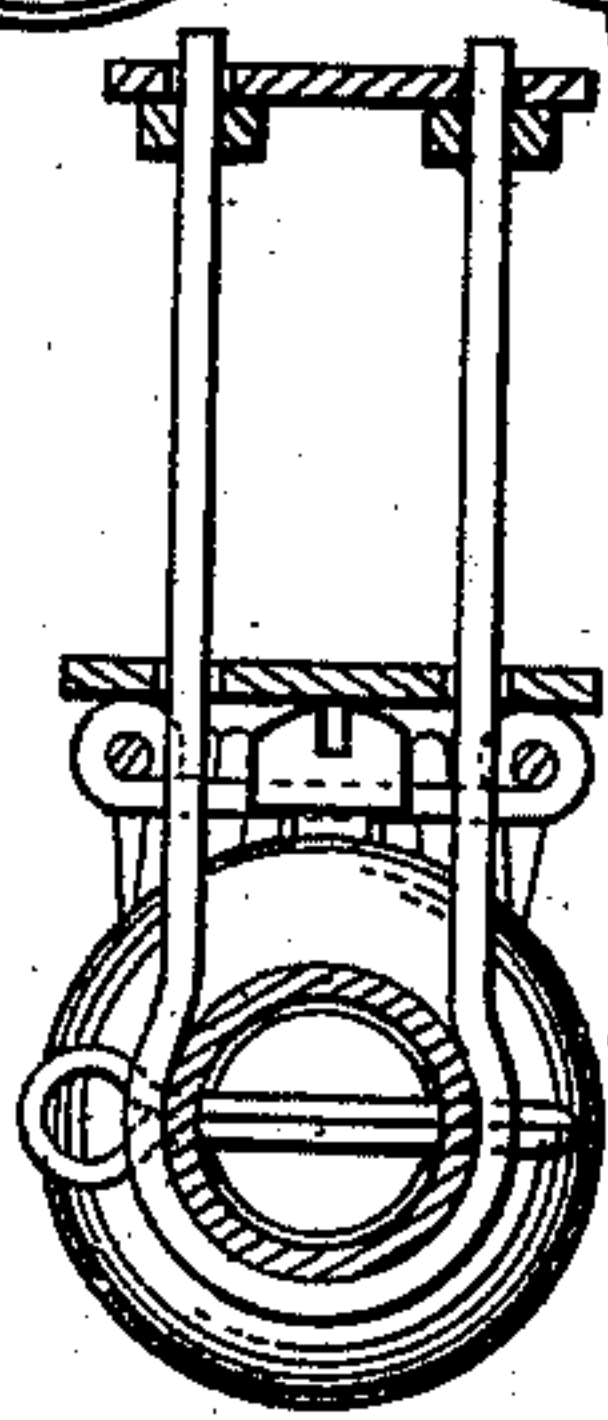
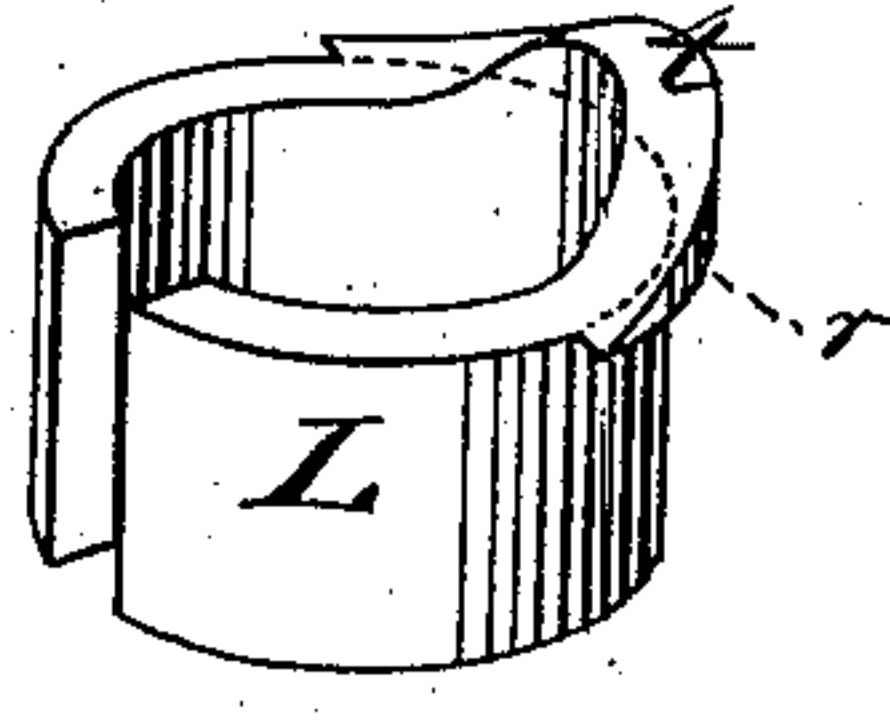
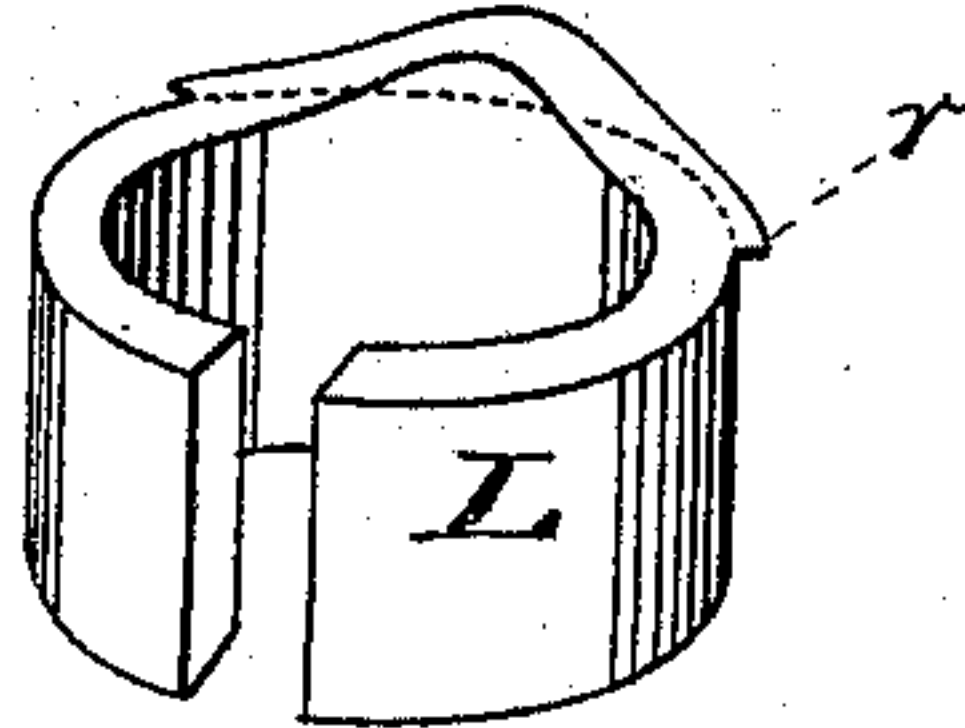


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

MILTON E. CARD, OF CAZENOVIA, NEW YORK.

IMPROVEMENT IN BALL-TRAPS.

Specification forming part of Letters Patent No. **214,620**, dated April 22, 1879; application filed March 20, 1879.

To all whom it may concern:

Be it known that I, MILTON E. CARD, of Cazenovia, in the county of Madison and State of New York, have invented a new and valuable Improvement in Rotary Glass-Ball Traps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal central vertical section of the ball-trap. Fig. 2 is a top view of the same, and Fig. 3 is a representation of perspective views of the annular cleft stop.

This invention has relation to improvements in glass-ball traps.

The object of the invention is to devise a revolving ball-trap that will cast the missile in any and all directions except directly toward the sportsman; to project the ball from the trap by a sudden jerk, which will increase the speed of its flight; to prevent the ball from breaking as it is thrown out or from falling out to either side; and, finally, to improve such machines generally.

The nature of the invention consists in certain novel combinations of parts, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates the base of my improved trap, upon which is secured, in any suitable manner, the tubular spindle *a*. This terminates usually at its lower end in a tripod, and, instead of being secured to the base, may be fixed to the ground directly by means of spikes or pins driven through holes formed in the ends of the feet *b*. This spindle is provided, near its lower end, with a broad collar, *c*, upon which rests the lower end of a tube, B, that is passed over the spindle and rotates freely thereon. This tube is confined to the spindle by means of a nut, *d*, screwed upon the end of the said spindle and overlapping the drum-tube B. At the upper end of the drum-tube is an enlargement, *a'*, into which are screwed the cross-arms C C'. These are also tubular, and are at right angles to the drum-tube and in line with each other. At the free ends of these arms are applied the governor-balls *b'*, that serve to regulate the

movements of the drum and arms during their revolution, and are secured in place each by means of a set-screw.

Extending through a longitudinal slot, *s*, in the upper wall of arm C is a metallic catch, D, having at its end a barbed head, *e*. This catch moves freely from end of slot *s*, and is included between a coiled spring, S, in the arm C, near its outer end, and a follower, S', also in the said arm. This follower is actuated by means of an angular lever, *f*, having its fulcrum in a post, *f'*, on arm C. One arm of this lever is carried through a slot, *s*², of arm C, and the other is carried over the tubular spindle *a*, and connected, by a rod, *g*, to the weight end of a bell-crank lever, *g'*, having its fulcrum on the under side of the collar *c*.

F indicates a metallic spring, formed of steel wire, in a single piece. This wire is bent to form an annular ball-seat, *h*. Its branches then diverge, as shown in Fig. 2, and, being carried a certain distance in parallel lines, are bent to form the spiral coil *k*. The branches are spread apart to allow the let-off mechanism to pass between them without interference therewith. Their free ends are then inserted in the open end of the arm C', between clamp-plates *i* in said arm, and secured by means of the screw *z* aforesaid, which confines the regulating-ball. The spring reaches to the catch, and, when depressed, the annular ball-seat engages the same, as shown in Fig. 1. By drawing upon a trip-cord attached to the power end of the bell-crank lever *g'*, the plunger is pushed outward in arm C, the spring S compressed, and the latch retracted, thus releasing the spring.

The annular ball-seat is provided with a soft yielding cushion, *l*, at its sides, having each an ear, *i'*, extending up therefrom. The object of this cushion is to prevent the jar occurring when the trap is sprung from breaking the ball, and the ears prevent it from falling off side-wise.

G indicates a stop, consisting, essentially, of a U-shaped bail, *m*, passed from below on the arm C', having the upper end of its branches connected together by a tie-plate, *m'*, and provided with a follower, *o*. This follower moves loosely on the branches of the bail, and, as the spring is released, is brought into contact with rubber blocks, or other equivalent devices, *o'*,

on said branches, thereby serving to mitigate the shock of the sudden stoppage of the spring. This stoppage causes the ball to be projected from the seat on the spring with great speed. The bail is held in place by a pin, *j*, passing through arm *C'*; but by shifting the said pin to perforations *p* in said arm, the point of discharge of the spring is regulated so as to throw the ball nearly directly upward into the air, or project it with a more or less flattened trajectory.

In the position shown in Fig. 1, the stop is shown adjusted to limit the throw of the spring to the smallest degree, and consequently to project the ball highest into the air. By shifting the pin to one of the outer perforations, *p*, the throw of the spring is increased; consequently the height to which the ball will be thrown is lessened, and the length of its flight or trajectory increased.

The entire superstructure of the trap turns on the spindle, and is rotated by means of a cord, *N*, wound around the drum *B* above the collar *c*, which thus serves as a guide, by drawing upon which the unwinding thereof causes the drum to revolve. This cord passes through a loop-guide, *q*, on the collar.

L indicates an annular metallic cleft ring, designed to be sprung into the open upper end of the spindle, and to hold therein by the expansion thereof. This ring has a collar, *v*, that prevents it from undue penetration into said spindle, and, above said collar, a projection, *t*, of rounded angular form, as shown. This ring is forced into the spindle with its rounded projection *t* on the opposite side of the spindle from the guide-loop. The top of this projection may be slightly flattened, if it be desired.

The sportsman stands on the guide-loop side of the machine, and the spring may be let off at any time during the rotation of the drum, except when the said spring would throw the ball toward him, when the angular lever rests upon the stop projection, and, being prevented from vibrating, however hard the trip-cord be drawn upon, will fail to operate the plunger and retract the catch. This position of the lever and stop-ring is illustrated in Fig. 1.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a ball-trap, the combination, with the spindle *a*, the armed drum *B*, rotating thereon, the spring *F*, catch *D*, plunger *S'*, angular levers *f g'*, and connecting-rod *g*, of the stop *L*, having projection *t*, substantially as specified.

2. In a ball-trap, the spring *F*, formed of one piece of wire by bending its middle portion in annular form for a ball-seat, *h*, then spreading the branches and extending them in parallel lines sufficient distance apart to receive the let-off mechanism between them, and bending them in spiral form to produce spring action at the other end, substantially as specified.

3. In a ball-trap, the spring *F*, having ball-seat *h*, and provided with cushions *l* and ears *i'*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MILTON E. CARD.

Witnesses:

WILL H. CRITTENDEN,
A. I. KINGSBURY.