C. B. THAYER.

Machine Gun.

No. 21,109. Patented Aug. 3, 1858.

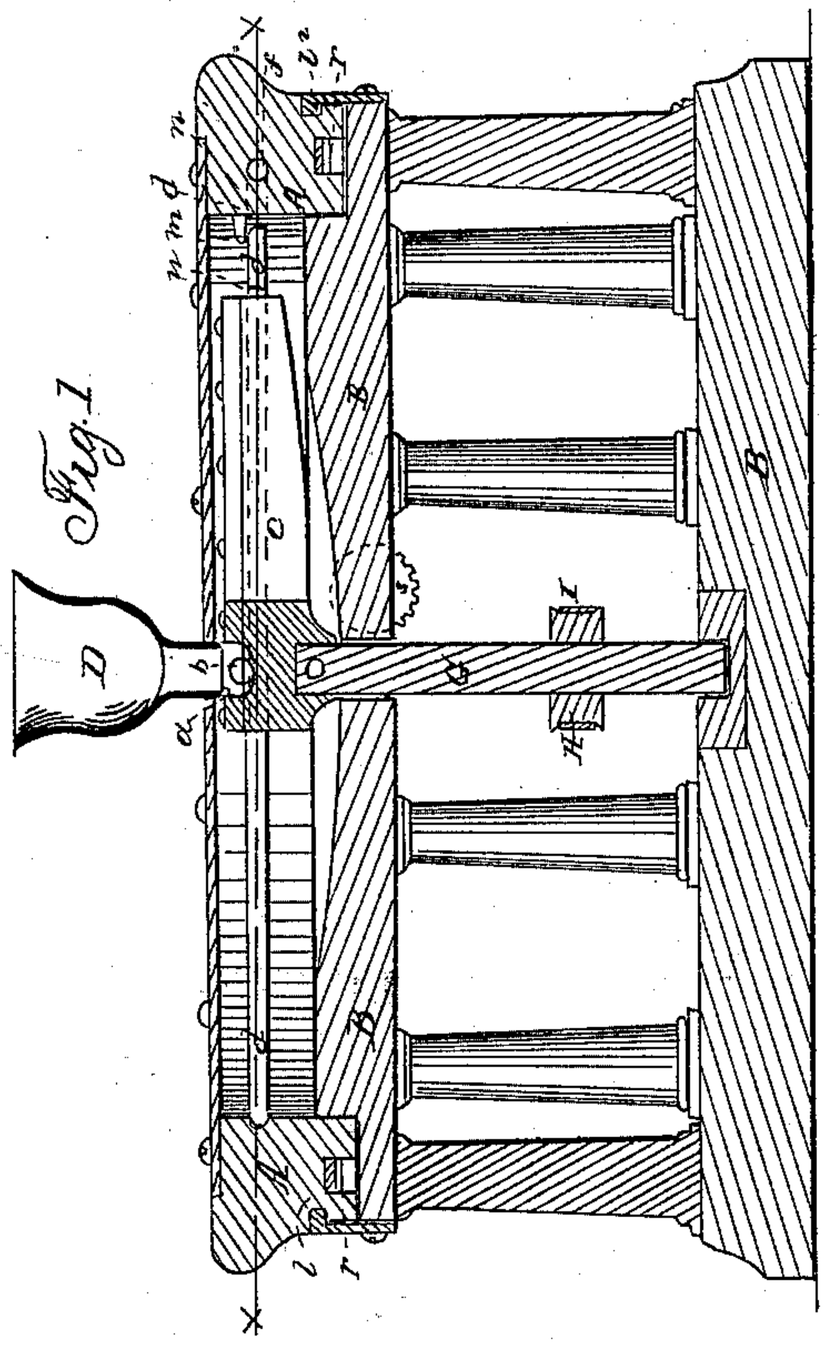

Fig. 1

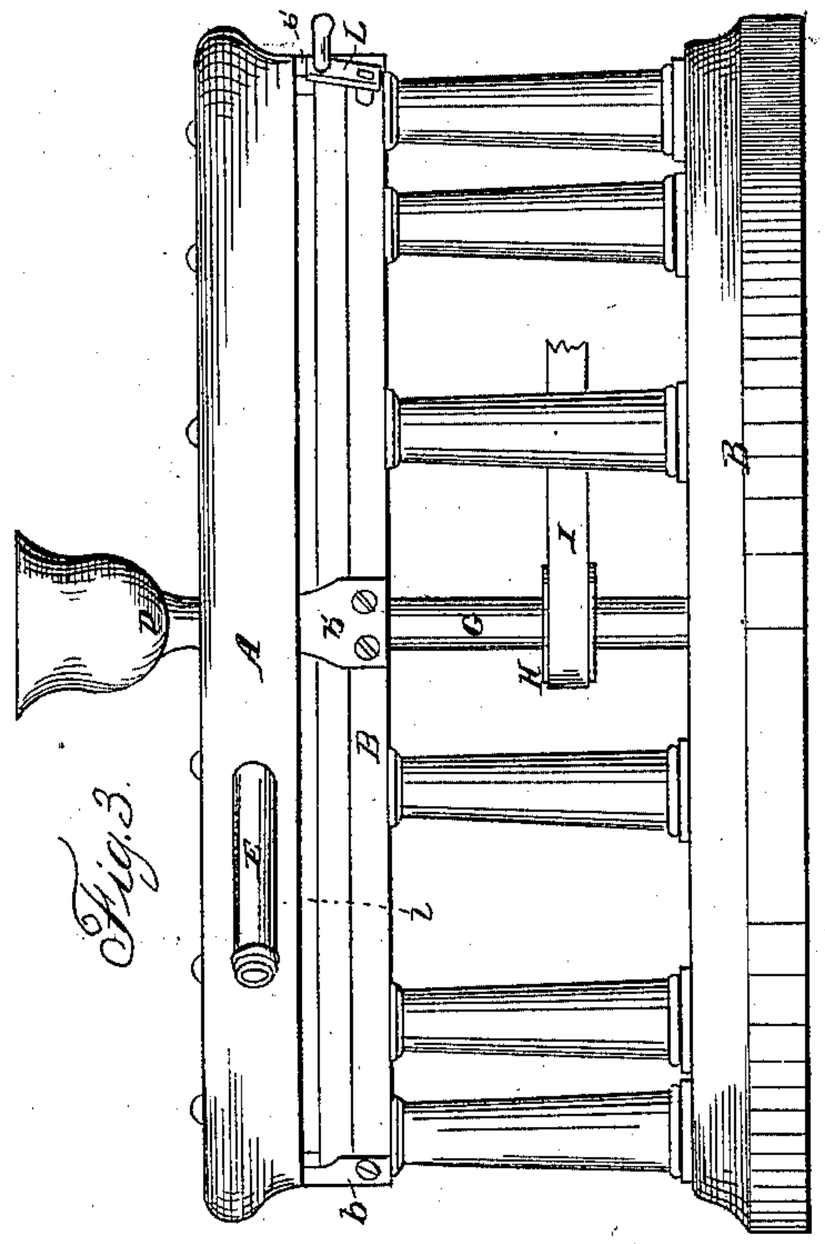

Fig. 3

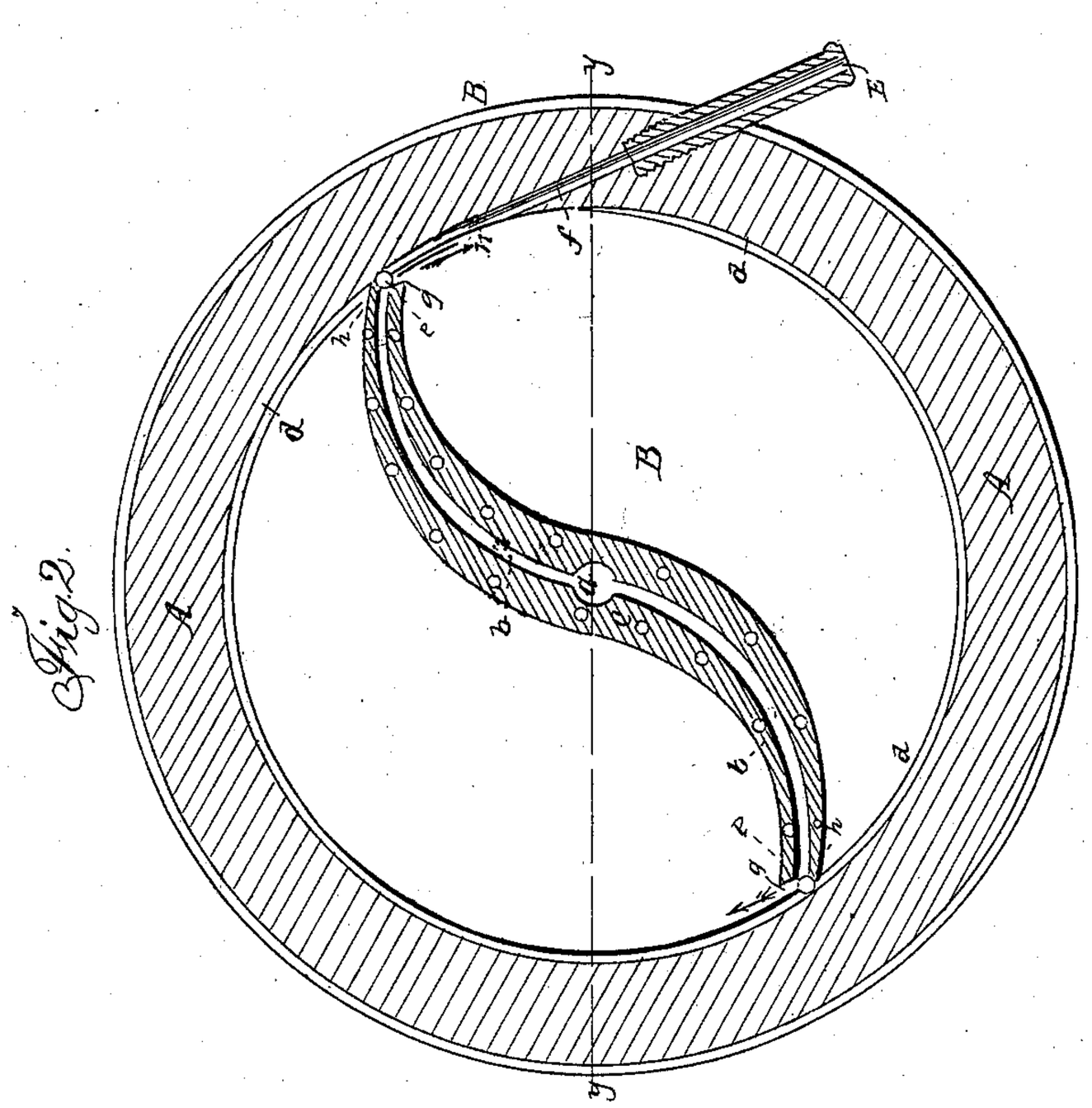

Fig. 2.

UNITED STATES PATENT OFFICE.

C. B. THAYER, OF BOSTON, ASSIGNOR TO HIMSELF AND CHARLES ROBINSON, OF CAMBRIDGEPORT, MASSACHUSETTS.

IMPROVEMENT IN CENTRIFUGAL GUNS.

Specification forming part of Letters Patent No. **21,109**, dated August , 1858.

To all whom it may concern:

Be it known that I, C. B. THAYER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Centrifugal Gun for Throwing Projectiles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a vertical section of the machine in the plan, indicated by the line *y y*, Fig. 2; Fig. 2, a horizontal section in the plane indicated by the line *x x*, Fig. 1; Fig. 3, an elevation of the machine.

Like letters designate corresponding parts in all the figures.

The principal parts of my machine for throwing projectiles by centrifugal force are a strong ring or short cylinder, A, mounted on a suitable base or support, B, and a revolving thrower, C, mounted on a shaft or spindle, G, by the rapid revolutions and consequently swift motion of which the required velocity is imparted to the projectiles. The ring A is arranged so as to be retained firmly and be turned freely in a position exactly concentric with the thrower C, the method of accomplishing which is clearly seen in Fig. 1. Its lower edge fits in a circular rabbet or recess in the base B, and it is held down by clips *i i*, attached to said base and fitting into a circular groove, *l*, in its outer periphery. In order to turn it in any direction horizontally for aiming at different points of the compass, a circular rack, *r*, Fig. 1, may be secured in its lower surface, into which may gear a pinion, *s*, turned by means of a winch, L. (Seen in Fig. 3.)

To give the slight vertical range required in aiming at an object, the whole machine may have a slight vertical movement; or any other convenient means may be employed.

For throwing projectiles to a great distance, wherein a high range is required, the machine may be placed in a vertical instead of a horizontal position.

The discharging-orifice *f* terminates in a suitable muzzle, E, as shown in Fig. 2.

A spiral cylindrical groove, *d*, is formed in the inner periphery of the ring A, being about equal to one circumference (more or less) in length, and beginning, as at *m*, Fig. 1, at a height just above and so as not to interfere with or extend into its termination *n*, where it leads to the orifice *f*, which is only a continuation of the groove in a direct tangent line through the ring, as represented in Fig. 2. From its commencing point *m*, where it has no depth, the groove gradually deepens till at its termination *n* it reaches a depth equal to its entire diameter, which should be sufficient to admit the size of ball or projectile required.

The thrower C may have the form of double-curved arms, as shown in Fig. 2, or of a complete disk, as may be preferred. It has a cup-shaped hollow, *a*, in its center, above which a suitable funnel or hopper, D, is situated to receive the projectiles when first placed in the machine. From the central cavity, *a*, tubular apertures *b b* extend to the ends of the arms, as shown in Fig. 2, curving forward in the direction of the motion to be given to the arms sufficiently to retard the passage of the projectiles from the center to the extremities of the arms till they gradually acquire the rapid motion of said extremities, so as not to produce any shock or concussion in the machine. These apertures terminate at the exact height of the commencing point *m* of the spiral groove *d*. Hence, when a ball or projectile reaches the ring, as soon as it is brought opposite the commencement of the groove it enters therein and is led along the groove and retained therein, at first by centrifugal force, till the groove becomes deep enough to permit the ball *p* to drop partially down by the end of the arm of the thrower, as seen at *g* on the left in Fig. 2. The space *g* between the arm and the inner periphery is not sufficient to let the ball pass; but as the projectile enters the groove it sinks gradually behind the ends of the arm till near the termination of the groove it passes entirely off of the arm, being supported and held by the groove itself, as seen on the right in Fig. 2. Thus the groove receives and unerringly conveys each projectile to the orifice *f* without danger of misdirection or of striking the inner edge of the orifice. A heel or projection, *h*, behind each aperture *b* *b* and reaching nearly or quite to the inner periphery of the ring, serves to move the projectile around and finally throw it forward at the outlet.

The balls may be placed in the machine at any time without care, and even numbers may be in the machine at the same moment, only one being allowed to issue from each arm at each revolution.

The motion may be communicated to the thrower by means of a band. I, passing from the driving-wheel of a steam-engine, horse-power, or other suitable motor to a pulley, H, on the spindle G of said thrower.

It is obvious that a sufficient speed may be given to the extremities of the arms of the thrower to hurl the projectiles with any desired velocity. Balls of any size, from that of bullets to that of many pounds, may be thrown in this machine, the size of the aperture *b b*, space *g*, groove *d*, and orifice *f* being made to suit the size of ball required.

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

1. The spiral groove *d*, arranged substantially as specified.

2. In combination with the spiral groove *d*, the space *g* and heel *h* at the extremity of each arm or aperture of the thrower, arranged and operating substantially in the manner and for the purpose herein set forth.

The above specification of my improved centrifugal gun for throwing projectiles signed by me this 17th day of May, 1858.

C. B. THAYER.

Witnesses:
C. P. JUDD,
CHAS. ROBINSON.