

No. 704,955.

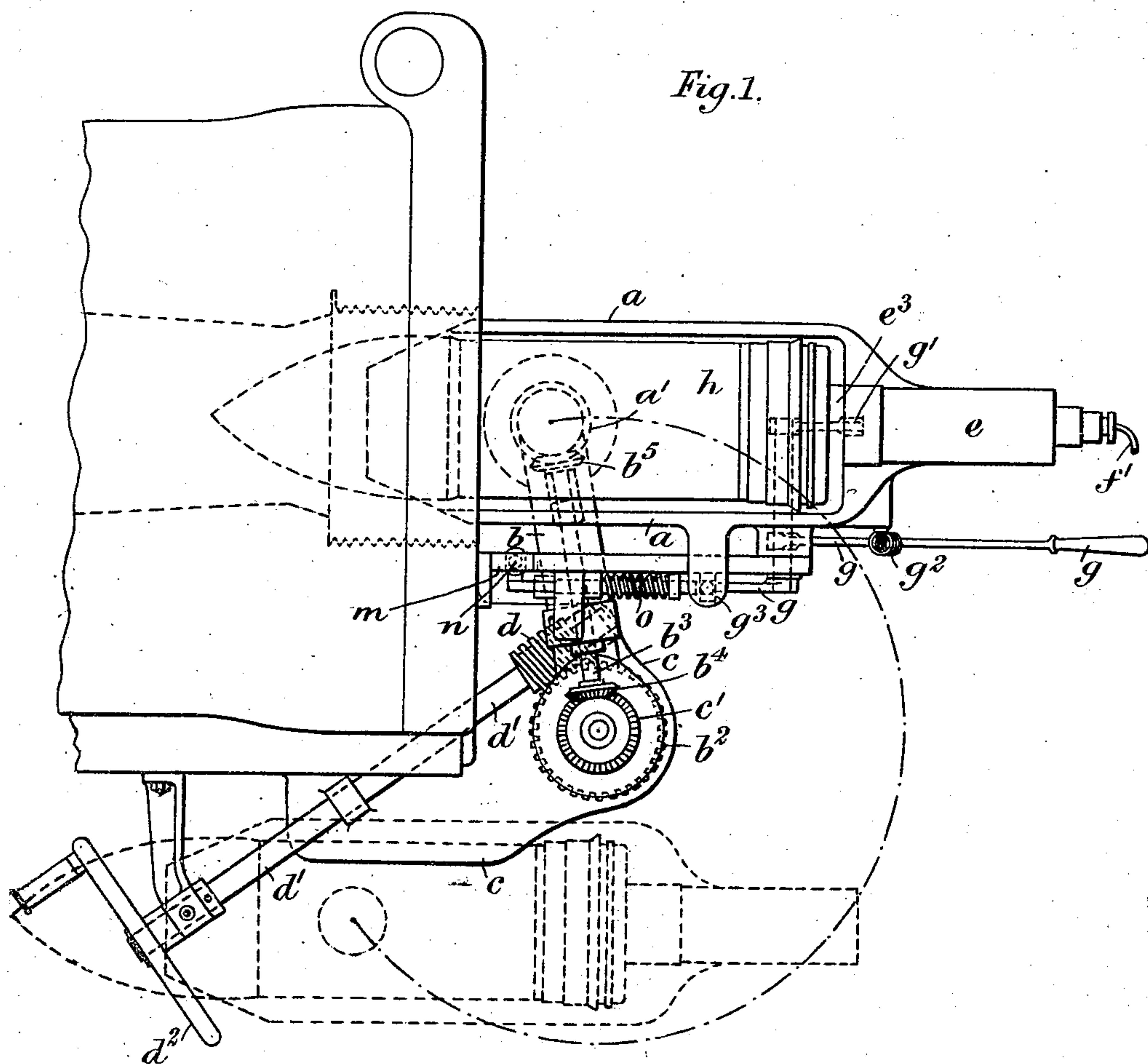
Patented July 15, 1902.

R. T. BRANKSTON.  
APPARATUS FOR LOADING ORDNANCE.

(Application filed Jan. 25, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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J. A. Macdonald.

Inventor

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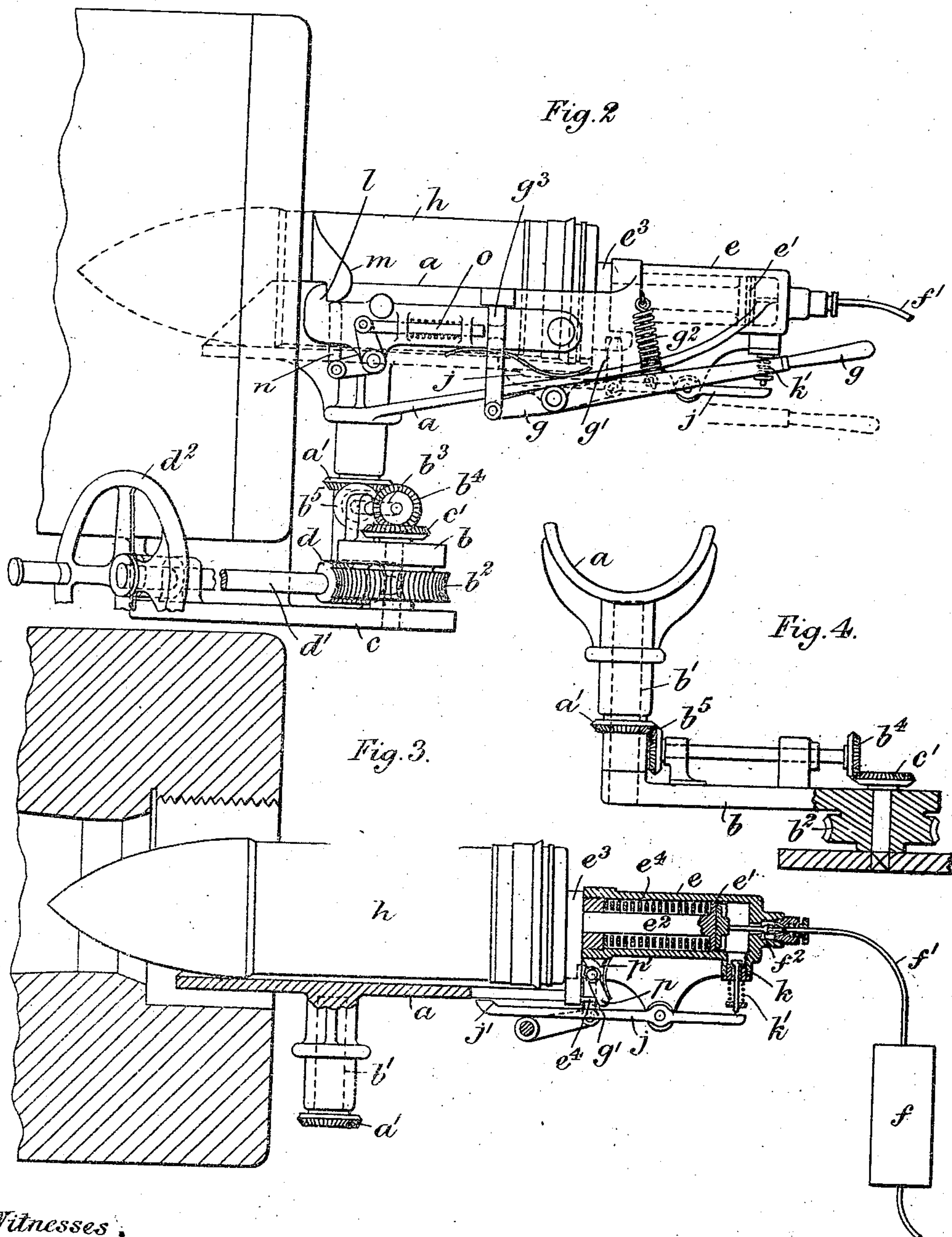
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 704,955, dated July 15, 1902.

Application filed January 25, 1902. Serial No. 91,233. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH THEW BRANKSTON, engineer, a subject of the King of Great Britain, residing at Elswick Works, Newcastle-upon-Tyne, England, have invented certain new and useful Apparatus for Loading Ordnance, of which the following is a specification.

According to this invention a short-stroke cylinder is fixed to the loading-tray, which is preferably of the revolving type. This cylinder is supplied with air or other gas from a high-pressure reservoir through a reducing-valve, or it may be from a small metal cylinder of sufficient capacity only to send one projectile home or with gas produced by a charge of an explosive. The piston in this cylinder imparts to the projectile sufficient velocity to send it home without the aid of a rammer.

Figure 1 is a plan, and Fig. 2 a side elevation, of a loading apparatus constructed according to this invention. Fig. 3 is a central vertical longitudinal section, and Fig. 4 is an elevation of a detail.

$a$  is the loading-tray, free to revolve on the vertical spindle  $b'$ , fixed to the arm  $b$ , whose pivot is free to revolve in bearings carried by a bracket  $c$ , fixed to the rear end of the gun.

$b^2$  is a worm-wheel fixed to the arm  $b$ , and  $c'$  is a bevel-wheel fixed to the bracket  $c$ .

$b^3$  is a shaft supported in bearings on the arm  $b$  and having at its ends bevel-pinions  $b^4$  and  $b^5$ , gearing, respectively, with the wheel  $c'$  and the wheel  $a'$ , fixed to the under side of the tray  $a$ .

$d$  is a worm fixed to a shaft  $d'$ , which is turned by the hand-wheel  $d^2$ .

As the arm  $b$  revolves the pinion  $b^4$  rolls on the wheel  $c'$ , and thus turns the tray relatively to the arm in such manner that the tray always moves parallel to itself. This method of working the loading-tray is well known, and no claim is made to it.

$e$  is a cylinder fixed to the tray  $a$  and having within it a piston  $e'$ , which has a head  $e^3$ , whose rod  $e^2$  acts as a rammer.

$e^4$  is a spring tending to return the piston  $e'$ .

$f'$  is a pipe by which air is admitted from the air-reservoir  $f$  to the reducing-valve  $f^2$ , which stops the supply as soon as the pres-

sure in the cylinder  $e$  has arrived at the pressure considered necessary, the air in the cylinder is then pressing against the piston  $e'$ , which is kept air-tight by means of a cup leather or packing.

When it is desired to send a projectile into the gun, a lever  $g$  is pushed downward, drawing out a catch-pin  $g'$  and releasing the piston-head. The air then acts on the piston  $e'$  in the cylinder  $e$  and immediately thrusts the projectile  $h$  into the gun. As soon as the piston commences movement the inlet-valve  $f^2$  closes, having previously been kept open by the piston. When the piston-head arrives near the end of its stroke, it strikes an inclined plane  $j'$  on the lever  $j$  and forces down the lever and opens the exit-valve  $k$ . This allows the air to escape from the cylinder  $e$ , and the spring  $e^4$  then returns the piston back with considerable velocity. Near the end of its stroke the piston strikes the spindle of the inlet-valve  $f^2$  and opens it; but just previously to this the catch-pin  $g'$  has been forced into the head of the piston by means of a spring  $g^2$  acting on the lever  $g$ . The piston is therefore prevented from returning until the lever  $g$  has been again pressed down. This lever, however, cannot be pressed down until a claw  $l$  has engaged with a bracket  $m$  on the face of the gun and by this means has pressed down a releasing-pin  $n$  and withdrawn a locking-pin  $o$  out of a hole in a safety-pin  $g^3$ , pivoted to the lever  $g$ . In this manner the projectile cannot be sent home until the claw has securely fixed the loading-tray to the gun. The lever  $j$  when struck downward by the piston on its arrival near the end of its stroke is held down by means of a pawl  $p$ , which is acted upon by a spring  $p'$ , and in this manner the exit-valve  $k$  is held open until the piston-head  $e^3$  returns near the home position, when a pin  $e^4$  on the head knocks out the pawl  $p$  and allows the exit-valve  $k$  to close by means of the spring  $k'$ , attached to it.

What I claim is—

1. The combination of a gun a loading-tray pivoted to the gun, a cylinder carried by the tray, a piston in the cylinder and means for admitting fluid to and allowing it to escape from the cylinder.



2. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, and admission and exhaust valves operated by the piston.
- 5 3. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston in one direction, and means for admitting fluid to and allowing it to escape from the cylinder.
- 10 4. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston in one direction, and admission and exhaust valves operated by the piston.
- 15 5. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston toward the rear end of the cylinder, admission and exhaust valves at the rear end of the
- 20 cylinder, springs tending to close the valves, a stem to the admission-valve projecting into the cylinder in the path of the piston, a stem to the exhaust-valve projecting out of the cylinder, a lever pivoted to the cylinder the
- 25 rear end of which bears on the stem of the exhaust-valve while its front end lies in the path of the piston, a second lever pivoted to the cylinder and a bolt carried by the second lever and engaging with the piston when in
- 30 its rearmost position.
6. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cyl-

inder, means for admitting fluid to and allowing it to escape from the cylinder, a bolt engaging with the piston when in its rear- 35 most position, mechanism for locking the bolt when in engagement with the piston and means operated by the contact of the tray with the gun for freeing the locking mechanism.

7. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston toward the rear end of the cylinder, admis- 40 sion and exhaust valves at the rear end of the cylinder, springs tending to close the valves, a stem to the admission-valve projecting into the cylinder in the path of the piston, a stem to the exhaust-valve projecting out of the cylinder, a lever pivoted to the cylinder the 45 rear end of which bears on the stem of the exhaust-valve while its front end lies in the path of the piston, a second lever pivoted to the cylinder, a bolt carried by the second lever and engaging with the piston when in its 50 rearmost position, mechanism for locking the bolt when in engagement with the piston and means operated by the contact of the tray with the gun for freeing the locking mechanism.

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Witnesses:

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