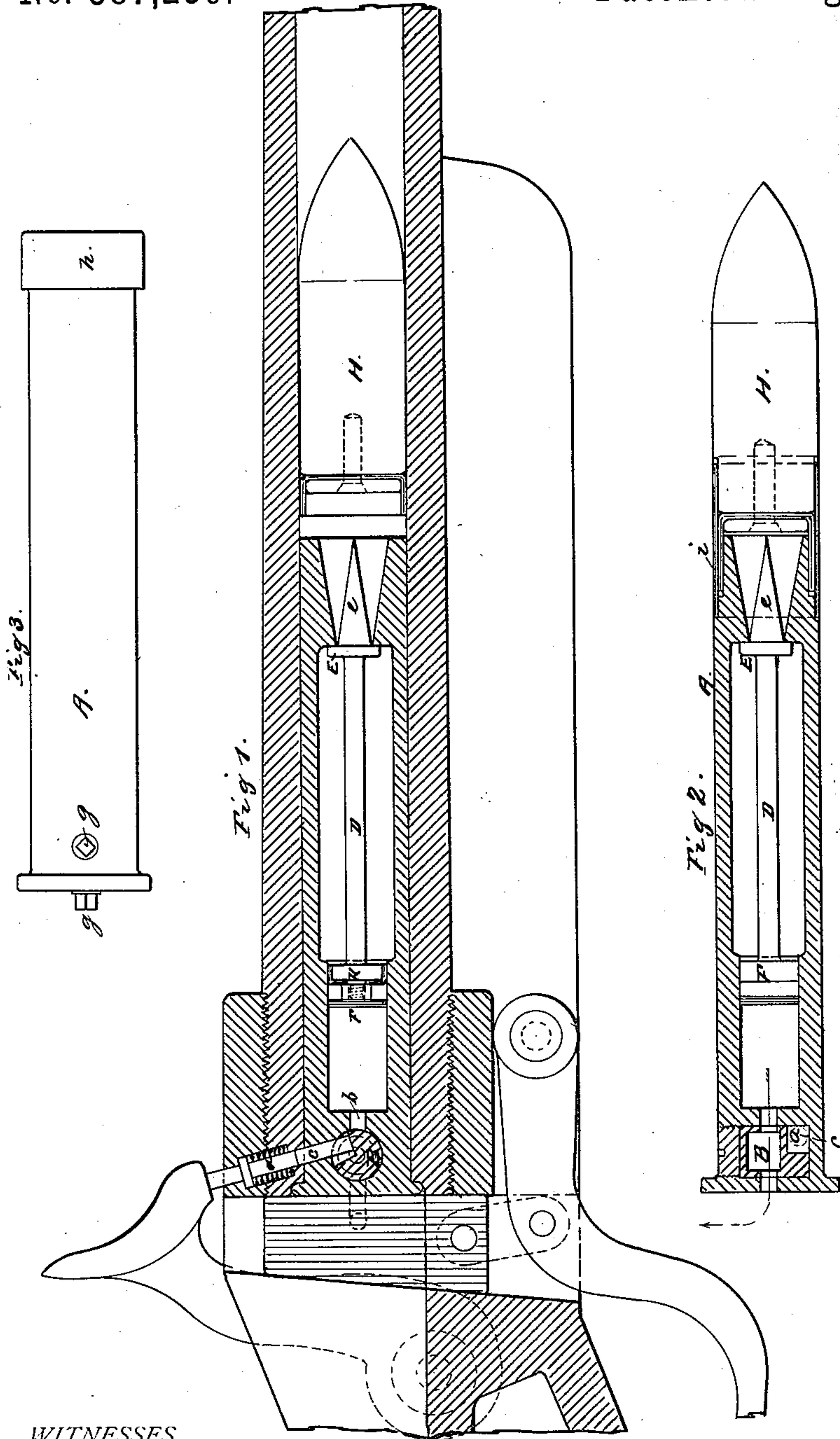


(No Model.)

N. W. PRATT.
PNEUMATIC CARTRIDGE.

No. 387,256.

Patented Aug. 7, 1888.



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PNEUMATIC CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 387,256, dated August 7, 1888.

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To all whom it may concern:

Be it known that I, NAT. W. PRATT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Pressure-Cartridges, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents a longitudinal sectional side view of a cartridge embodying my invention arranged, together with a projectile, in a gun ready for firing. Fig. 2 is a longitudinal sectional plan view of the cartridge, and showing a means of attaching the projectile to the cartridge; and Fig. 3, an external view of the cartridge charged and sealed for transportation.

To enable others to understand and practice my invention, I will first proceed to describe a construction embodying the same, and subsequently to point out in the claims its novel characteristics.

In the drawings the essential parts and details of construction are indicated by corresponding letters of reference in the several figures.

A represents the shell of the cartridge; B, a rotating exhaust-valve located in its base; C, a connected or contact pin for operating the valve, said pin extending through the shell of the cartridge in position to register with the firing-pin *a*, that passes through and projects from the gun-barrel breech. The interior of the shell is fitted with a valve, E, for closing the outlet at its forward end. This valve E is attached to a valve-rod, D, which is connected to a piston, F, at its opposite end, said piston being fitted to reciprocate in a chambered portion of the interior of the shell adjacent to its base.

The exhaust-valve B is constructed with a recess that forms a passage through it when turned to register with the exhaust-port *b*, as indicated by the arrow in Fig. 2.

The projectile is shown at H, and in Fig. 1 is represented disconnected from the cartridge. In Fig. 2 the projectile is shown connected thereto by means of a sleeve or ferrule, *i*, into which the end of the cartridge-shell and the base of the projectile are placed, so that, if

desired, the cartridge and projectile may be passed into the gun together.

In Fig. 3 the cartridge is shown ready for transportation, the forward end having a sealed cover or cap, *h*, and the openings at and near its base fitted with screw-plugs *g g*.

I have now referred to such essential parts and details of construction that are necessary to the operation of the invention, which I will now explain.

The interior of the cartridge is charged with gas or air under high pressure through the port *b* and valve B, by means of any suitable connected air-compressing apparatus, the pressure being equalized on opposite sides of the piston F by means of an opening through or around its periphery, which is fitted with a cup-packing that will allow the air to pass in one direction. A central opening at K may be provided and fitted with a balanced check-valve opening from the forward side. The internal pressure closes the valve E, and when closed the piston F is located at the position shown, and the valve B is placed to close the port *b*, as shown in Fig. 1. The cartridge is now charged and ready for firing, and if it is to be transported a sealed cap, *h*, is placed over its forward end, and screw-plugs *g g* inserted in the exhaust-port and over or in place of the pin *c*, which will prevent any leakage or loss of internal pressure.

In firing the cartridge the valve B is opened by means of a hammer acting on the spring firing-pin *a*, which in turn forces the pin *c* inwardly, as shown in Fig. 1. This opens the valve B and allows the air to escape from the back of the piston F and relieves the pressure from that side. The pressure on the opposite or forward side of the piston is held by the cup-packing or by a check-valve, as suggested, and the piston is instantly moved backward, and by means of the connected valve-rod D the valve E is simultaneously opened.

It will be observed that the piston F is made of larger diameter than the valve E. Consequently the pressure acting on the larger area or surface of the piston draws the valve E open, and the contained air acts upon the base of the projectile and forces the latter through the barrel of the gun.

When it is desired to use this cartridge with

a shell containing dynamite or other explosive, the valve E is provided with a conical extension or prolongation, e, which lifts with the valve and at first allows but a portion of the air to act, thus effecting a gradual start in the projectile and avoiding a shock that might communicate to and explode the projectile when loaded with an explosive.

For the purpose of this application I have shown a means for operating the exhaust-valve B; but I do not wish to be confined to such special devices for the purpose, as it is obvious that the valve may be operated by other firing mechanisms or by an outwardly-projecting hand-piece forming an extension of the valve.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A cartridge containing air or gas under compression, provided with a valve-seat and valve, said valve having a conical projection

extending through the valve-seat to effect a gradually-increasing discharge of the contained air.

2. A cartridge containing air or gas under compression, provided with a discharge-valve, said valve being connected to a reciprocating piston which upon the exhaustion of air or gas from the chamber at its rear is retracted to operate said discharge-valve, as described.

3. A cartridge containing air or gas under compression, having interiorly a piston-valve adapted to be held seated by the contained air or gas, and a second valve which governs the air or gas passage leading to the chamber at the rear of said piston-valve, whereby the pressure of the air or gas is relieved upon one side of said piston-valve to move it from its seat, substantially as described.

NAT. W. PRATT.

Witnesses:

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