R. WHITE.

Ordnance and Fire-Arm.

No 57,607. Patented Aug. 28, 1866.

Fig. 1

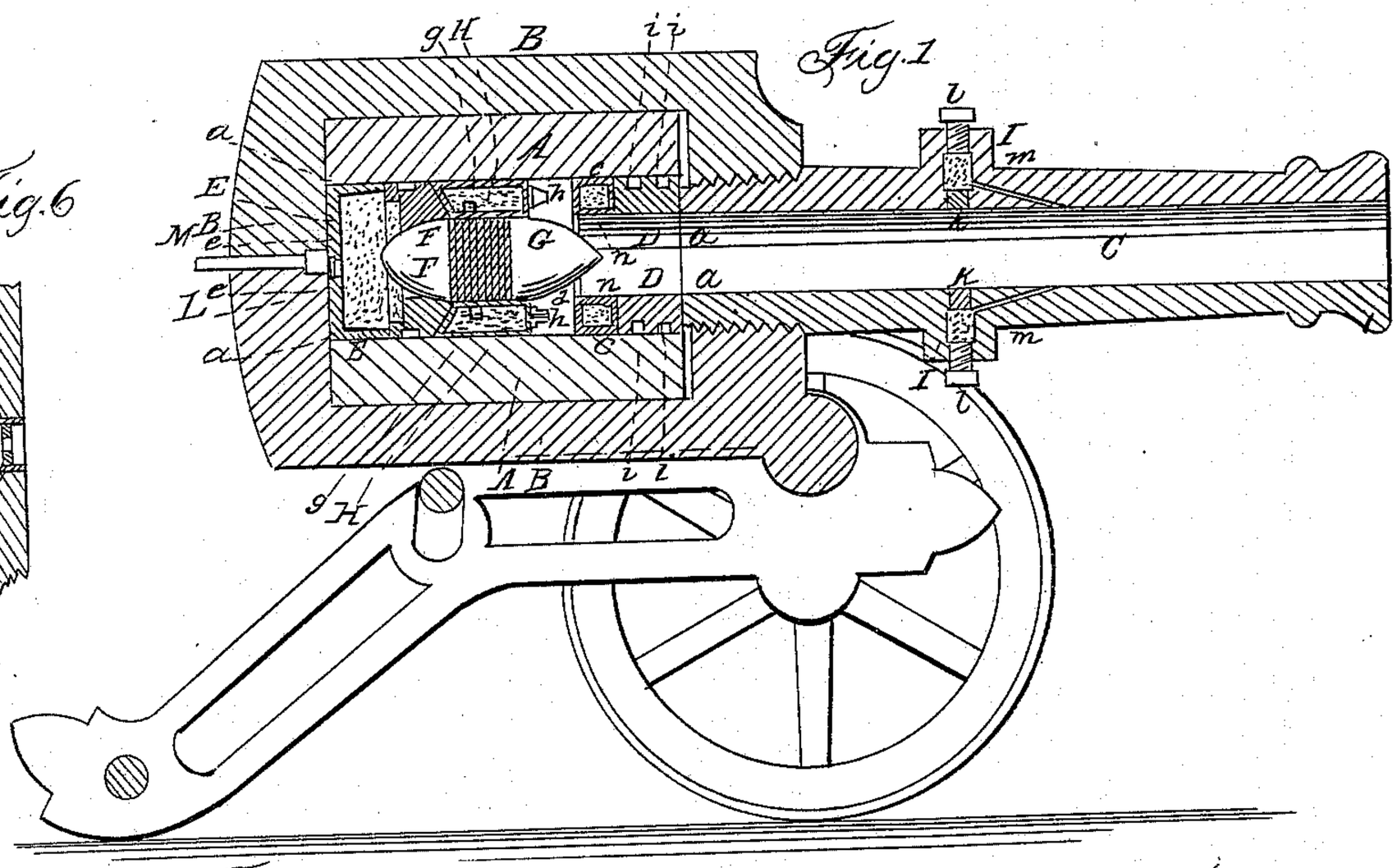

Fig. 6

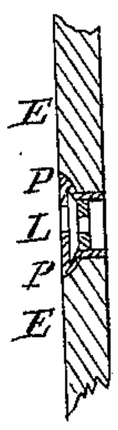

Fig. 4

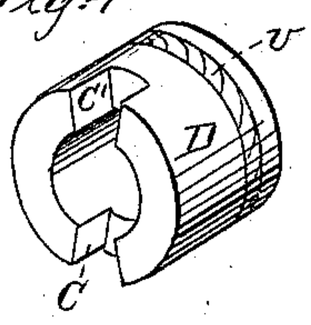

Fig. 5

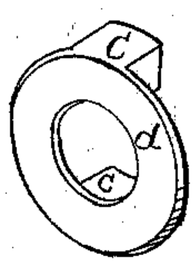

Fig. 3

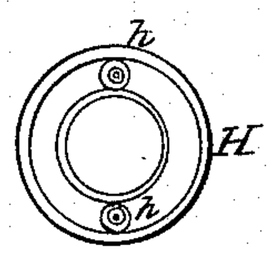

Fig. 2

Witnesses:

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UNITED STATES PATENT OFFICE.

ROLLIN WHITE, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN ORDNANCE AND FIRE-ARMS.

Specification forming part of Letters Patent No. **57,607**, dated August 28, 1866.

To all whom it may concern:

Be it known that I, ROLLIN WHITE, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Ordnance and Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of a two-chambered breech-loading cannon with my improvements. Fig. 2 is a plan of the same. Figs. 3, 4, and 5 are views of some of the details of the invention. Fig. 6 is a central section of the percussion-priming on a scale larger than the other figures.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in certain improved means of providing for the starting of the projectile gradually by means of a small charge of powder, and to give it an accelerated velocity by means of charges which are successively caused to act upon it.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The cannon represented is fitted with a slide containing two chambers; but my invention is applicable in connection with a single chamber, or with a slide or other movable piece containing more than two chambers, or with a rotating many-chambered cylinder.

A is the chambered slide, fitted to a strong frame, B B′, to the front of which the barrel C is firmly secured, and the back of which frame constitutes a recoil-shield. *a a* are the chambers, bored cylindrically right through the slide, and of considerably larger caliber than the bore of the barrel. Each chamber *a a* is furnished inside with a packing-ring, D, an expanding breech-piece, E, and a ring, F, in which the projectile is seated on its insertion into the chamber, the said rings being all of steel or other hard metal.

The ring D, of which Fig. 4 is a perspective view, occupies the front portion of the chamber, to which it is fitted accurately, and may be packed gas-tight by packing-bands *i i*, of soft metal. The interior of said ring is of such caliber that the projectile G, if of soft metal, or the packing *b*, by which it is surrounded, if made of hard metal, may "slug" within the said ring in passing through it, and so force the said ring right up tight against the rear end of the barrel, and so prevent any escape between the chamber and barrel, while the projectile is passing from the chamber. This ring D may be a plain cylinder, but is represented in the drawings (see Figs. 1 and 4) as having two recesses, *c′ c′*, Fig. 4, in its rear end for the reception of metal cartridges *c c*, containing accelerating charges of powder, such cartridges being attached to a thin ring, *d*, which fits up against the rear of the said ring D, and serves to hold the said cartridges in place. These cartridges, which, with their ring *d*, are represented by Fig. 5, are to be fired after the passage of the projectile by fire from the main charge, or a charge farther back in the chamber, the fire being admitted by forcing in plugs *n n*, Fig. 1, or setting fire to fuses occupying a similar position.

The expanding breech-piece E occupies the rear portion of the chamber *a a*, to which it is fitted accurately, and it is hollowed out in front in the form of a cup, the sides of which are made thin to give them flexibility, that they may be expanded against the sides of the chamber by the pressure of the gases evolved by the explosion of the first or main charge, *e*, Fig. 1, which is contained in a cartridge placed in the cavity of the breech-piece E. The said breech-piece is fitted with a percussion cap or priming, L, of peculiar construction. (Represented in Figs. 1 and 6, but best in Fig. 6, which shows it on a larger scale.) The said cap L is made with a hollow flange, *p*, around its head for the reception of the percussion-priming, and, instead of being fitted to a nipple, is fitted into the vent provided in the rear of the breech-piece E, and the vent is countersunk on the outside for the reception of the flange *p*.

The hammer M, working through the recoil-shield B′, is arranged to strike on the flange *p*, and so explode the priming. The recoil-shield holds the cap L in place against the force of the explosion, and the pressure of the gases of the powder, acting against the interior of the sides of the cap, causes them to

expand within and entirely fill up and close the vent.

The ring F is fitted accurately to the bore of the chamber and inserted therein in front of the breech-piece E and the cartridge *e*, and the said ring is grooved externally and circumferentially, for the reception of a band, *f*, of soft metal, to make it perfectly gas-tight within the chamber. The projectile G, employed in combination with this ring, should have its rear portion of conical or conoidal form, as represented, or be otherwise constructed to enable it to be received within the said ring, the interior of which is made of suitable form to constitute a seat for the projectile.

The charge *e* of powder, when ignited, not only acts upon the rear of the projectile itself, but also acts upon the whole rear of the ring F with an effect to drive forward the projectile, and the pressure upon the combined areas of the projectile and the ring E is, of course, more effective in overcoming the inertia of and starting the projectile than if only acting upon the projectile itself.

H is an accelerating-cartridge, of annular form, fitting to the chamber *a a a a* in front of the ring F, and also fitting to the exterior of the projectile. This cartridge H, which is of metal, surrounds the projectile when the chamber is loaded, and so serves to center it in the chamber. The said cartridge may be fired by fire admitted from the cartridge *e* after the ball has moved sufficiently forward in the chamber, such fire reaching the powder in the said cartridge H either by driving in plugs of leather, wood, or other material, *g g*, Fig. 1, in the said cartridge, by means of fuses occupying the position of *g g*, or by means of percussion-caps applied to nipples *h h*, provided on the front of the said cartridge, the said caps being exploded by striking the ring D as the cartridge is driven forward by the ring F along with the projectile. This cartridge H may be made with its inner and outer cylinders and rear end of stout metal, but with its front end very light, so that when the explosion of its charge takes place the front end will be blown out, and so allow the gases to act upon the projectile, the whole of the cartridge, except the front end, constituting, in that case, strictly speaking, a portion of the gun itself, and a very important portion, inasmuch as it serves to center the projectile in the chamber.

I I are accelerating-chambers provided in the sides of the barrel C for the reception of accelerating-charges of powder. These chambers are closed at their inner ends or muzzles by plugs *k k*, of wood or other material, which will be easily blown into the gun by pressure from the chambers, and closed at their outer ends by screw-plugs *l l*. The vents *m m* to these chambers open into the gun some distance in front of the chambers themselves, to prevent the charges being fired by windage before the projectile has passed the chambers themselves, the plugs *k k* preventing the fire passing directly through the muzzles of the chambers, so that in case of fire passing to the vents by windage it will not reach the chambers till the rear end of the projectile has passed their muzzles. The firing of the charges in these chambers I I before the projectile had passed their muzzles would be very liable to burst them; but by the arrangement of the vents in front of the said chambers such an accident is prevented. When the charges in the said chambers are fired their muzzle-plugs *k k* are driven into the barrel of the gun.

To insert the charges in the chamber fitted up as above described, it must be first brought out of line with the barrel and recoil-shield, and all the appurtenances except the ring D removed from it through its open rear end. The breech-piece E then has the cap L applied, the cartridge *e* is placed in the said breech-piece E, and the cartridge H and ring F applied to the projectile. The cartridges *c c* are next placed in the chamber within the cavities *c′ c′* of the packing-ring D, followed by the projectile, cartridge H, ring F, and breech-piece E, and when the chamber is to be fired it is returned to the position in line with the barrel and recoil-shield.

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

1. The ring F, of larger circumference than the projectile, applied, in combination with the enlarged chamber *a a*, to form a seat for the projectile, and to traverse in the enlarged chamber and carry the ball to the rear of the bore of the barrel, substantially as and for the purpose herein specified.

2. Providing the accelerating-chamber constructed in the barrel of a piece of ordnance or fire-arm with vents *m*, opening into the barrel in front of the muzzle of the said chamber, substantially as and for the purpose herein specified.

ROLLIN WHITE.

Witnesses:

MASON WHITE,

P. GROUNDESON.