P. GIFFARD.

Cartridges for Atmospheric Fire-Arms.

No. 134,048. Patented Dec. 17, 1872.

fig. 1.

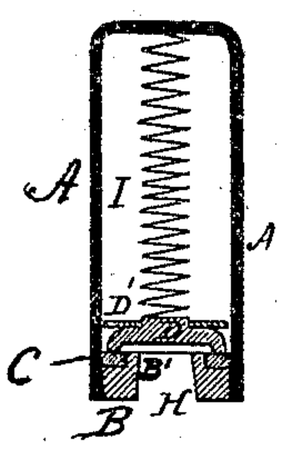


fig. 2.

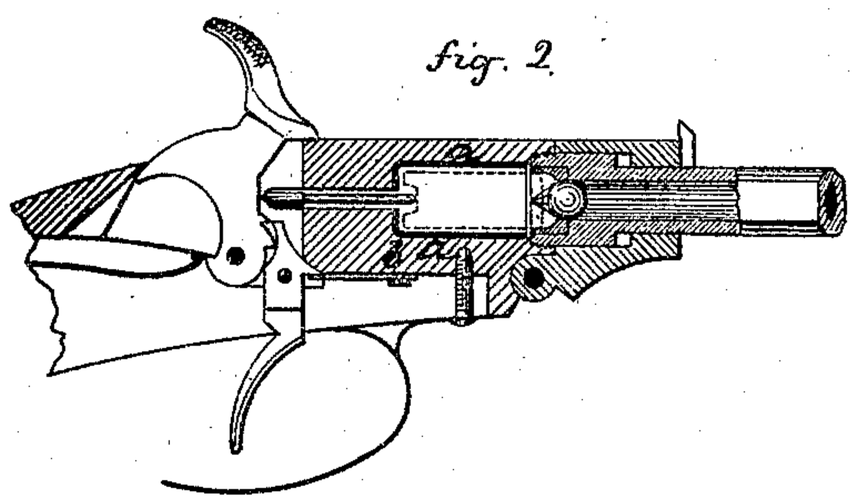
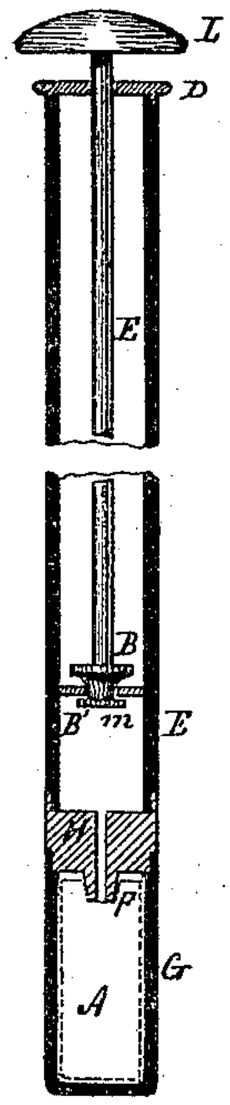


fig. 3.



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UNITED STATES PATENT OFFICE.

PAUL GIFFARD, OF PARIS, FRANCE.

IMPROVEMENT IN CARTRIDGES FOR ATMOSPHERIC FIRE-ARMS.

Specification forming part of Letters Patent No. **134,048**, dated December 17, 1872.

To all whom it may concern:

Be it known that I, PAUL GIFFARD, of Paris, in the Republic of France, have invented a new Improvement in Cartridges for Atmospheric Fire-Arms; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a vertical central section of the cartridge; in Fig. 2, a sectional view of the breech-portion of the arm; and in Fig. 3, a vertical central section of the charging-pump.

This invention relates to the construction and use of a cartridge containing compressed air or gas, or liquefied gas. This cartridge consists of a cylindrical shell of metal, closed at one end and provided at the other end with a valve opening inward. The valve is a disk of metal, made with a projecting rim, which seats upon a caoutchouc ring inserted into an annular recess formed in the base of the cartridge. A spiral spring within the cartridge presses the valve against its seat, and the valve is guided by projecting ribs bearing against the internal cylindrical surface of the cartridge, so that it seats fairly on the caoutchouc ring, and thereby tightly closes the mouth of the cartridge. It is preferred that the caoutchouc ring should be hard on the side on which the valve seats, and soft on the side which bears on the bottom of the recess in the cartridge.

A is a metal cylinder for containing the compressed air or gas, or liquefied gas. It is closed at one end, and has screwed or otherwise firmly fixed into its other end a base, B, provided with the closing device, which permits both the introduction of the air or gas into the cartridge and its discharge therefrom on firing. For this purpose the base B carries a caoutchouc ring, C, fitting accurately between the annular projection B′ and the side of the casing A, upon which the ring seats, the valve D consisting of a metal disk, which is guided in the casing by wings D′, and is pressed by the spring I against the caoutchouc ring. The latter is, by preference, made hard on the side against which the valve seats, and half hard on the side fitting against the base, so as there to effect a hermetic closure.

In forcing air into the cartridge, the valve opens and allows the air to pass in, and the pressure of the confined air then keeps the valve close down on its seat.

The base B has a conical or tapering hole, H, into which, when the cartridge is to be charged, is fitted hermetically the nozzle of the air-compressing pump.

These cartridges may be made of various dimensions, and they can be divided into several separate compartments by means of metal partitions. Fig. 2 shows one construction of a part of fire-arms for using this cartridge. The cartridge A is inclosed in a chamber, *a*, of larger diameter than the cartridge. The escape end *b* is situated furthest away from the projectile, and the compressed air, on issuing from the cartridge, has to pass along the annular space between the cartridge and the chamber, in order to act upon the projectile.

Several such cartridges may be simultaneously charged with compressed air or gas, by placing them in a cavity at the end of a compressing-cylinder, E. (See Fig. 3.) The air or gas compressed by the action of the piston B of the cylinder E opens the valves D of the cartridges A, and a portion of the fluid enters, each of the valves closing against the issue. The cavity G, in which the cartridges are placed to be charged, may be provided with a safety-valve which opens when the pressure reaches the desired degree. The cartridges so charged with compressed air or gas are removed from the cavity G, and are ready for use in fire-arms.

I claim as my invention—

The herein-described cartridge consisting of the shell A, head B, and valve D, constructed and arranged to operate substantially as specified.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

PAUL GIFFARD.

Witnesses:

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A. CAHENT.