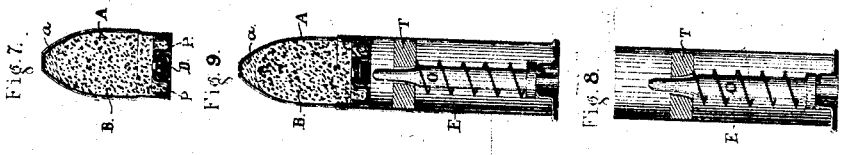
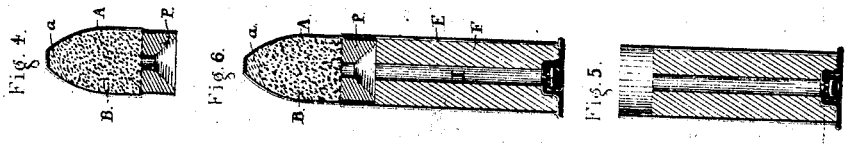
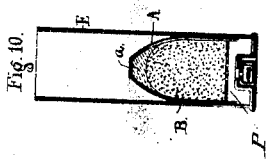
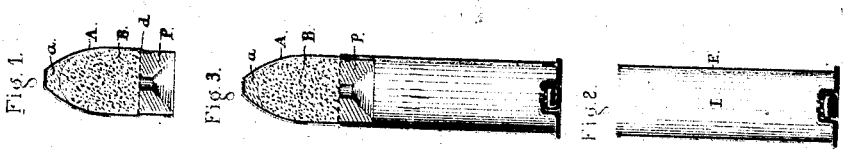
C. I. McGOWAN.
Cartridge.

No. 220,030. Patented Sept. 30, 1879.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CARTRIDGES.

Specification forming part of Letters Patent No. **220,030**, dated September 30, 1879; application filed March 10, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES I. McGOWAN, of the city, county, and State of New York, have invented certain new and useful Improvements in Cartridges for Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and letters of reference marked thereon, constituting a part of this specification.

The special object of my invention is to secure with ordinary military and sporting small-arms a target-practice at short ranges, such as attain in shooting-galleries and armories for military organizations, (State or otherwise,) which, while having all the essential conditions which attain at target-practice at long ranges, (and permitting the use in the case of troops of their special arms,) shall diminish the noise, smoke, and other objectionable features incident to practice with regular charges and weights of projectiles in buildings or at localities restricted in range and other facilities for the prosecution of practice with small-arms for accuracy and perfection.

My invention relates to an improved cartridge capable of use with all classes or species of small-arms, including pistols, revolving or otherwise, and sporting and military rifles.

The invention consists, mainly, in a hollow bullet made of a seamless shell of copper, or equivalent metal, pressed down or swaged up into shape, which, while securing a light projectile with respect to volume, affords a receptacle for the full charge of powder required for use with it.

It also consists in the use of this bullet in combination with the ordinary primed cartridge-shell, (for all calibers,) and in modified forms of the bullet and cartridge-shell, as is more fully set forth in the following extended description.

In the accompanying drawings, Figures 1 and 4 illustrate the bullet in section, its apex being filled with lead or other heavy metal, and its body, containing the powder-charge, closed by a wad. Fig. 2 illustrates the ordinary primed cartridge-shell, in which said bullet is to be supported. Fig. 3 is a sectional view of the charged bullet as secured in the ordinary primed cartridge-shell, which constitutes one form of my improved cartridge. Fig. 5 shows a section of a cartridge-shell, the body of which is filled with a cylinder, (paper or any other suitable material,) which is provided with a priming-hole to communicate between the cap of the shell and the charge of the bullet. Fig. 6 shows the charged bullet, Fig. 4, as supported in the cartridge-shell shown in Fig. 5, but not attached to the bullet. Fig. 7 shows a longitudinal section of a hollow bullet filled with its charge and having a primed base attached to its rear end. Fig. 8 is a longitudinal section of a metallic cartridge provided with a firing-pin, and thus adapted for use with the construction of bullet shown in Fig. 7. Fig. 9 is a sectional view of the charged and primed bullet as inserted in the cartridge-shell, Fig. 8. Fig. 10 shows a modified form of combining my improved bullet with a primed cartridge-shell.

The general mode of construction is as follows: The shells A of the hollow bullets are preferably formed from copper, or any alloy or metal possessing the qualities of copper, by the well-known process of drawing, swaging, or pressing, as commonly practiced in forming hollow articles from flat metal. These shells A are hollow cones in form, whereby is provided within them a chamber for the charge of powder B, and they have their rear or mouth ends turned inwardly a sufficient distance to form a seat to sustain them in the end of the cartridge-shell E, if that structure is employed. In order to enhance the power of penetration, as well as to increase their weight at the front end, I provide them with a solid body, *a*, of metal at the apex, which may be done either by pouring the metal while in a molten state or by inserting solid plugs of lead or other metal.

In order to retain the charge A within the bullet I provide a base, P, which has an opening through it to admit the passage of the igniting-flame, which opening will be covered by a reticulated plate, *d*, to prevent the charge of powder from becoming impaired by loss, or the base P might be perforated with a number of fine holes, and be used without the plate *d*.

This bullet may be supported in a cartridge-shell, E, having a primer at its base, as is usual, (see Fig. 2,) said shell E being constructed and formed by the known processes

now commonly practiced and well known in this art. This is done by inserting the bullet into the mouth of the cartridge-shell, as in Fig. 3, the contracted base of the bullet snugly fitting within the mouth end of the cartridge-shell, in which it may be pressed and securely held.

As is apparent, the flame resulting from the discharge of the primer in the usual way will extend through the hollow chamber I of the cartridge-shell, enter the bullet, and ignite its charge B, whereupon the bullet will be expelled from the said shell, and be discharged from the gun.

It is obvious that the flames resulting from the ignited powder will be more surely conducted to the charge in the bullet by contracting the chamber I, so as to more perfectly confine the same. This is accomplished by providing the cartridge-shell with an interior cylinder, F, having a diminutive chamber, I. This cylinder may be formed of wood, paper, or other suitable material turned, cast, or pressed into proper shape.

In order to attain the best results with my improved cartridge it may be desirable to fire the charge by means of a firing-pin operating on a primed base inserted into the base of the bullet. This is shown in Figs. 7, 8, and 9. In this case the base P, properly shaped to fit within the open end of said bullet, is provided with an ordinary primer, D. With a bullet thus constructed I provide the cartridge-shell E, which is to support it, with a spring-seated firing-pin, O, the point of which is centered in a collar, F, while its base end extends through the head of the cartridge shell in a proper position to be struck by the ordinary firing-pin of the gun or pistol.

The objects attained by this invention are evidently a light bullet employing a light charge suitable to any caliber, large or small, and the securing of all the advantages, where short and necessarily-restricted ranges attain; of a practice with fire-arms that will enable experts or others engaged in perfecting themselves in the art of the marksman to keep up their skill indoors and at home without resorting to distant and sometimes unattainable established range grounds.

The extreme thinness which may be attained in the construction of drawn-up bullets, such as proposed, evidently brings the scope of the invention within the limits of all ordinary small-arms, as any weight of projectile relative to the charge desired to be employed for practice-ranges can be readily secured. The powder, acting upon the walls of the bullet-shell, will evidently expand the latter and cause it to perfectly take the grooves or rifling of the fire-arm, as has been demonstrated by practice.

It has been seen that in the case of the ordinary empty primed shell, with the bullet supported in its end, the explosion of the primer at its base communicates the flame to the base of the charged bullet, and results in ignition of the charge. It is not, however, essential that the bullet shall be supported in the end of the primed cartridge-shell in order to secure the results of my invention.

The bullet may be made of a size adapted to nicely fit within the cartridge-shell and be supported therein by being inserted into the chamber I so as to rest upon the inner surface of the head or face of said cartridge-shell, as is shown in Fig. 10. In this form of it the primer of the cartridge-shell communicates its flames directly to the charge in the bullet, which charge may then obviously be protected by a simple perforated wad, *p*, of paper, foil, and the like.

In the structure shown in Figs. 8 and 9 the auxiliary firing-pin is operated by the firing-pin of the gun proper, which affords a sufficient blow to ignite the percussion-cap or primer placed in the base of the bullet.

Having now fully explained the scope and practicable mode of carrying out my invention, I claim, and desire to be secured to me by Letters Patent, as follows:

1. A hollow bullet, formed from copper or equivalent metal, having its apex loaded with a plug, *a*, substantially as described.

2. A short-range cartridge consisting of a hollow charged bullet introduced in and carried by an uncharged cartridge-shell of ordinary proportions, adapted to a given caliber, and of considerably greater length than the said bullet it carries, substantially as described, and for the purpose set forth.

3. The combination of an uncharged cartridge-shell provided with a firing-pin with a primed and charged bullet introduced in and carried by said cartridge-shell, substantially as described, and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. I. McGOWAN.

Witnesses:
H. T. MUNSON,
GEO. H. GRAHAM.