H. H. BARNARD.

Shot-Cartridge.

No. 212,170. Patented Feb. 11, 1879.

Fig. 1.

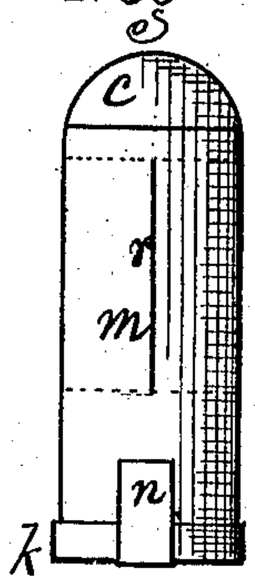


Fig. 2.

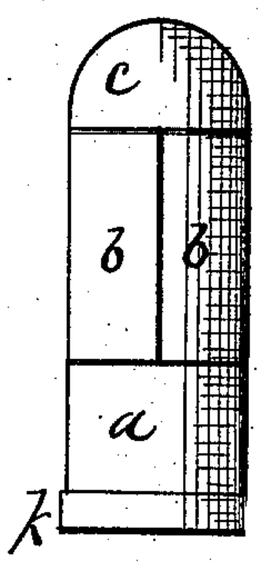


Fig. 3.

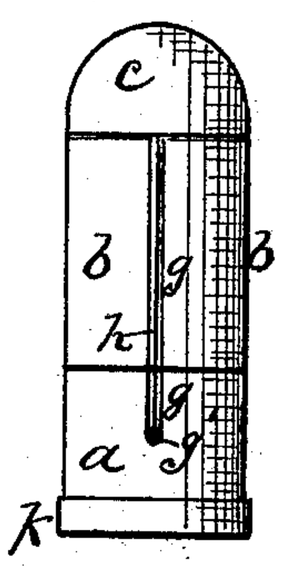


Fig. 4.

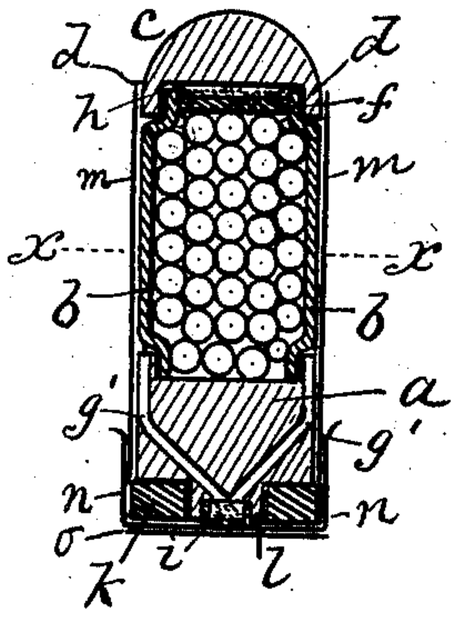
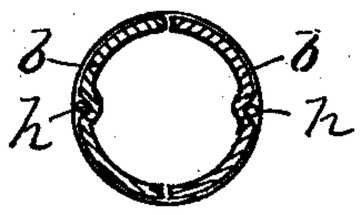


Fig. 5.



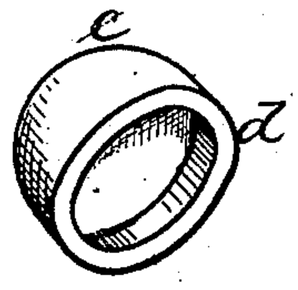
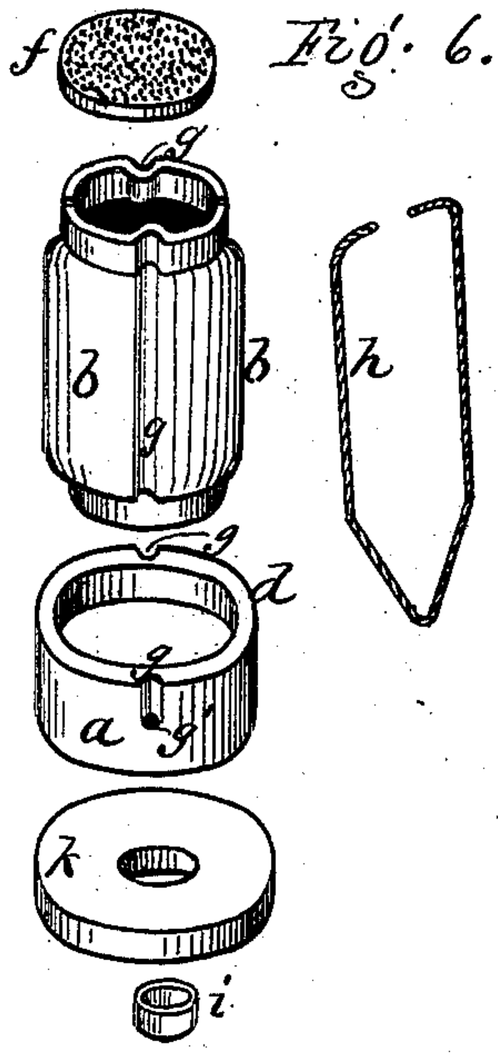


Fig. 6.



Attest.

Abner Benbank

Jacob Spuhn

Inventor.

Henry H. Barnard

per R. F. Osgood,

Atty.

UNITED STATES PATENT OFFICE.

HENRY H. BARNARD, OF ROCHESTER, NEW YORK, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO HENRY A. STRONG AND HENRY S. MILLER, OF SAME PLACE.

IMPROVEMENT IN SHOT-CARTRIDGES.

Specification forming part of Letters Patent No. **212,170**, dated February 11, 1879; application filed December 21, 1878.

To all whom it may concern:

Be it known that I, HENRY H. BARNARD, of the city of Rochester, county of Monroe and State of New York, have invented certain new and useful Improvements in Shot-Cartridges; 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, in which—

Figure 1 is an elevation of the completed cartridge, showing the same enveloped in paper covered with a coating of paraffine to render it water-proof, and provided at the bottom with a strip of tape covering the fuse or fulminate. Fig. 2 is a view similar to Fig. 1, but showing the outer covering of paper removed, and exhibiting the joint of the divided shot-case. Fig. 3 is a similar view, but at right angles to Fig. 2, and showing particularly the grooves in the shot-case for receiving the fuse or slowly-burning powder. Fig. 4 is a central longitudinal section. Fig. 5 is a cross-section in line *x x* of Fig. 4. Fig. 6 is a perspective view of all the parts separated.

My improvement relates to shot-cartridges that are arranged to open at a given distance by the explosion of a small quantity of powder within the cartridge itself, which is ignited by a fuse. Cartridges of this kind are already known; but in all with which I am acquainted the shot are forcibly ejected from the shell by the explosion, and driven and scattered in all directions indiscriminately, and not held in a body to strike the pattern.

The object of my invention is simply to use the force of the explosion to separate and detach the parts composing the shell, and allow them to fall away without ejecting or dispersing the shot.

To this end my invention consists in the construction and arrangement hereinafter more fully set forth.

The shell of the cartridge is composed of the following several parts: *a* is a base-piece, which is of considerable thickness, and preferably made of wood to give it lightness and to form the proper body for the attachment of the other parts. *b b* is the shot-case, consisting of half-sections of cylindrical form, made, preferably, of metal, and holding the shot, as shown in Fig. 4. *c* is a cap-piece, also preferably of wood, half-globular or conical in form, and forming the front end of the cartridge. The base and cap pieces are formed with flanges or shoulders *d d*, and the ends of the half-sections *b b* (which are contracted at the ends) are fitted therein, and thereby held in place.

To disengage the parts and release the shot, the cap-piece or the base has to be thrown off when the case falls open.

In the narrow neck of the top of the case *b b* is fitted a thin wad, *f*, resting upon spurs or points struck in from said case, and also resting on top of the shot. On top of this wad and beneath the cap *c* is a very small quantity of gunpowder or other explosive material, a few grains only being required.

In one or both sides of the case *b b* and the base *a* is formed a groove, *g*, and through the base a perforation, *g'*, communicating therewith, is carried down to the extreme bottom, as shown in Fig. 4. In this groove and passage rests a slowly-burning fuse, *h*, which passes up outside the case, and is carried under the cap *c*, so that at the top it comes in contact with the powder on top of wad *f*. Instead of a fuse, as described, a layer of slowly-burning powder may be placed in the groove and passage. Fuses on both sides are preferable to one side only, as they are thereby more certain in action.

i is a small metallic cap placed within an orifice of the bottom of the base *a*. This cap contains ordinary gunpowder or other explosive material, which comes in contact with the lower end of fuse *h*. A small perforation is made in the base of cap *i*, so that at the discharge of the gun the powder in said cap is exploded, the fuse is set on fire, and, at the end of the given range, said fuse explodes the powder on top of wad *f* and blows off cap-piece *c* and releases the shot from the shell.

Instead of the cap *i*, filled with powder, a fuse or a fulminate may be used.

k is a wad fitting upon a projection, *l*, of the

base-piece, for the purpose of filling the bore of the gun when the cartridge is applied. The wad has a central hole, which allows the cap *i* to project through.

The cartridge thus constructed is covered with a layer of paper, *m*, which is wrapped around and stuck to it by some adhesive material. The paper is slitted, either before or after it is applied, so that the slits shall correspond with the joints between the sections *b b* of the case, as shown at *r*, but holding above and below, by which means the parts are all held together. A small strip, *n*, of tape or equivalent material is also placed across the bottom of the cartridge, covering the cap *i* and projecting up on one or both sides of the cartridge, to form a finger-hold, and over this tape, and covering the bottom of the cartridge, is pasted another piece of paper, *o*. The cartridge is then dipped in melted paraffine wax, which coats it with a thin film, and renders it perfectly water-proof.

This cartridge may be used either in a breech-loading or muzzle-loading gun. In inserting it in the gun, the tape *n* is first torn off, which exposes the powder or the fuse in the cap *i*. At the discharge of the gun the powder or the fuse is ignited, and when the proper range is attained the cap-piece *c* is blown off, the case divides and falls away, and the released shot pass in a body directly to the target, scattering only sufficiently to make a good pattern.

It is the prime object of this invention to separate the shell from the shot with the least possible disturbance of the latter, and allow the shell to drop off and away from the shot without dispersing the latter; hence the explosive power in the cartridge is so graded and applied as simply to break or disconnect the part which binds the cartridge together, allowing the latter to simply drop off by the action of the wind.

Where the explosive power is used to violently burst the shell, as in the old form of cartridge, the shot are also scattered in all directions by the explosion.

I do not wish to confine myself to the precise form of disconnecting the cartridge above described.

Instead of throwing off the cap-piece, the explosion may throw off the base, or it may detach a plug, break a cord, or otherwise disconnect a part which holds the cartridge together, thereby releasing the shell and allowlowing it to separate from the shot.

The base-piece *a*, by being made thick and light, as described, serves to lighten the rear of the cartridge and insure its proper direction; also, forms a body for the attachment of the fuse *h;* and, furthermore, it forms a solid surface to resist the explosion in the gun, and therefore has a tendency to prevent recoil.

The paper covering of the cartridge holds the cartridge together, as before described, and by being slitted to coincide with the joints of the case *b b* allows the latter to separate when the explosion takes place, being, therefore, of special application to this cartridge.

The different ranges at which the cartridges will open may be graded either by using fuses or powders of different rapidities of burning, or by making a fuse or powder one portion of the length of which is quick-burning and the other portion slow-burning, and gagging said lengths to the requirements of the case.

In this cartridge any desired length of range up to several hundred yards may be attained without trouble.

Instead of the paper covering, before described, felt or cloth might be used. This covering serves also to protect the gun-barrel from contact with the metal of the shell.

The shot-case *b b*, instead of being divided longitudinally, as shown, may be divided any other way which will insure its separating from the shot when the explosion occurs.

What I claim as new is—

1. In a shot-cartridge, the combination, with the divided shot-case *b b*, held together by the cap *c*, or its equivalent, of an explosive material applied within the cartridge, and a fuse leading from said explosive material to the base of the cartridge to be ignited by the discharge in the gun, the whole arranged so that, at the end of the given range, the discharge of the explosive material in the cartridge will detach or remove the cap, or equivalent, and allow the shot-case to open and fall away from the shot, as specified.

2. In a shot-cartridge, the combination of the cap-piece *c*, divided shot-case *b b*, and base-piece *a*, the said cap and base pieces being provided with inclosing-flanges *d d*, and the ends of the shot-case resting within said flanges, the whole arranged as described, so that on the detachment of either the cap-piece or base-piece the shot-case will separate, as and for the purpose specified.

3. In a shot-cartridge, the combination of the cap-piece *c*, divided shot-case *b b*, base-piece *a*, and a fuse, *h*, leading from the base of the cartridge to an explosive material placed within and in contact with the cap-piece, as shown and described, and for the purpose specified.

4. In a shot-cartridge, the combination, with the cap-piece *c* and divided shot-case *b b*, of a wad, *f*, resting beneath or within the cap-piece, and charged with an explosive compound for discharging said cap-piece from the shot-case, as herein shown and described.

5. In a shot-cartridge, the combination, with the shot-case *b b*, of the paper or equivalent wrapping *m*, provided with slits *r r* coinciding with the division-joints of the shot-case, the ends of said wrapping being integral and

holding upon the upper and lower ends of the cartridge, as shown and described, and for the purpose specified.

6. In a shot-cartridge provided with a fuse or other igniting means at the base end, the covering-tape *n*, covering the end of the fuse, as shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY H. BARNARD.

Witnesses:
R. F. OSGOOD,
R. E. WHITE.