(No Model.)

S. RUSSELL.

ELECTRIC CARTRIDGE.

No. 307,071. Patented Oct. 21, 1884.

Fig. 1.

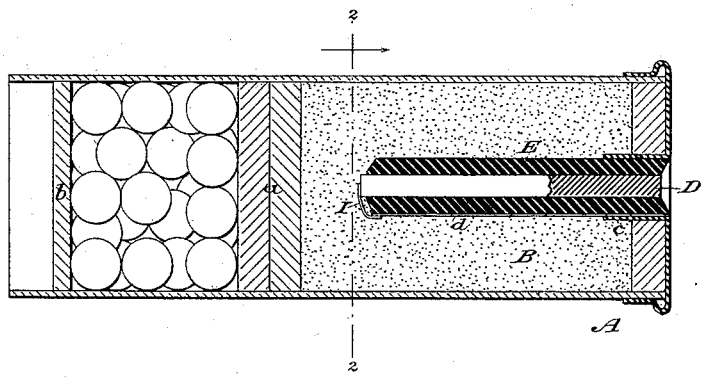


Fig. 2.

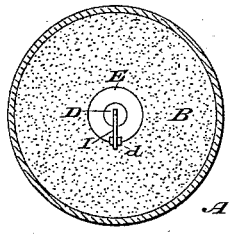
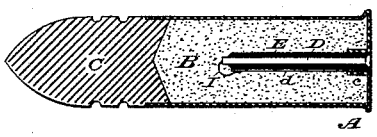


Fig. 3.



WITNESSES:

E. B. Bolton

Geo. Gaines

INVENTOR:

Samuel Russell

By his Attorneys,

Burby Fraser Hamnett

UNITED STATES PATENT OFFICE.

SAMUEL RUSSELL, OF BROOKLYN, ASSIGNOR TO THE AMERICAN ELECTRIC ARMS AND AMMUNITION COMPANY, OF NEW YORK, N. Y.

ELECTRIC CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 307,071, dated October 21, 1884.

Application filed February 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL RUSSELL, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cartridges, of which the following is a specification.

My invention relates to that class of cartridges for guns or fire-arms which are fired by electricity, being constructed with a small electric conductor of high resistance (usually platinum wire) in contact with the contained powder, which wire, upon the passage through it of a sufficient electric current, is heated to incandescence and ignites the powder.

My invention consists in the improved construction of the cartridge, with special reference to the incandescing conductor and the non-incandescing conductor in connection with it.

Figure 1 of the accompanying drawings is an enlarged longitudinal mid-section of a cartridge for a shotgun constructed according to my invention. Fig. 2 is a cross-section of the same cut in the plane of the line 2 2 in Fig. 1; and Fig. 3 is a longitudinal mid-section of a bullet-cartridge on a smaller scale.

Let A denote the shell of the cartridge; B, the powder therein, and C the shot in Fig. 1 or the bullet in Fig. 3.

In Fig. 1, *a* and *b* are the usual wads. A pin, D, incased in a tubular insulating-sheath, E, passes from the base of the cartridge forward into the powder-space, and terminates, by preference, near the front of the charge of powder. The distance to which it penetrates the charge is not material, and may be varied to better adapt the cartridge to different requirements. The sheath E is held in place by an inwardly-projecting neck, *e*, formed as part of or attached to the metallic base of the cartridge. From this neck a small strip, *d*, of conducting metal, preferably copper, extends along one side of the sheath E on the exterior of the latter and terminates at or near the front end thereof. Between the front end of this strip *d* and the front end of the pin D extends a very slender platinum wire, I, which is shown of exaggerated thickness in Figs. 1 and 2. The pin D and strip *d* thus form non-incandescing conductors in connection with the incandescing conductor I. The latter should be arranged near the front of the powder in order to ignite the latter at the front and cause it to burn backward, and thus avoid the blowing out of any unignited powder. This cartridge is designed to be fired in an electric gun wherein the breech-block and barrel are connected to one pole of the battery and a central firing-pin is connected to the other pole. The base of the cartridge when it comes against the breech-block or barrel establishes electrical connection therewith, and when the firing-pin is pressed forward until it makes contact with the rear end of the pin D the circuit is completed and the cartridge is fired. The course of the current then is from the battery through the firing-pin, the pin D, the incandescing wire I, the strip *d*, the metallic base of the cartridge-shell, and the breech-block or barrel, and thence back to the battery. The incandescing conductor I may lie close upon the end of the sheath E, as in Fig. 1; or it may be a loop, as shown in Fig. 3. In the former case the same cartridge-shell may be used repeatedly.

My improved cartridge is superior to electric cartridges as heretofore made by reason of the simplicity and cheapness of its construction, its durability, and the ability to ignite the front of the charge of powder. The incandescing conductor is very short and small, and it is so mounted as to avoid any liability of displacement in filling the cartridge-shell.

I claim as my invention—

1. An electric cartridge consisting of the combination of the cartridge-shell having a metallic base, a conductor extending from the center of the base toward the front of the shell and insulated from the base, another conductor in electrical connection with the base, and also extending forward, and an incandescing conductor extending from the forward end of one of said conductors to the forward end of the other, substantially as set forth.

2. An electric cartridge consisting of the combination of the shell A, having a metallic base, a center conducting-pin, D, inclosed in an insulating-sheath, E, a conductor, *d*, outside of said sheath and in electrical connec-

tion with said case, and an incandescing conductor, I, substantially as set forth.

3. The combination of shell A, having a metallic base, neck *c*, formed on said base, central conducting-pin, D, insulating-sheath E, inclosing said pin and held in said neck, conductor *d*, in electrical connection with said metallic base, and incandescing conductor I, in connection with pin D and conductor *d*, substantially as set forth.

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

SAMUEL RUSSELL.

Witnesses:
ARTHUR C. FRASER,
ARTHUR S. BROWN.