

(No Model.)

S. RUSSELL.
ELECTRIC PRIMER.

No. 319,627.

Patented June 9, 1885.

Fig. 1.

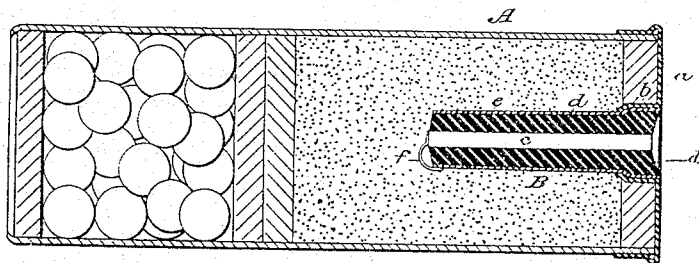


Fig. 2.

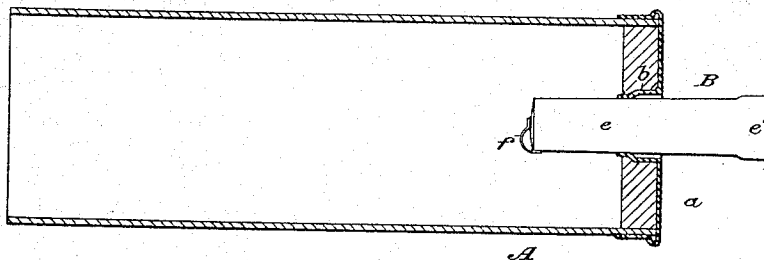


Fig. 3.

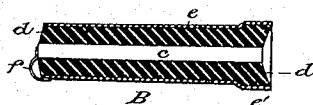


Fig. 4.



Fig. 5.

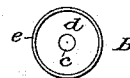
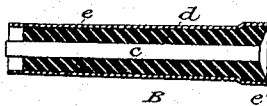


Fig. 6.



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ELECTRIC PRIMER.

SPECIFICATION forming part of Letters Patent No. 319,627, dated June 9, 1885.

Application filed November 29, 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 Primers for Electric Cartridges, of which the following is a specification.

This invention relates to cartridges to be discharged by electricity, either by the passage of an electric current adapted to heat to incandescence a conducting-wire or by a spark passing from one terminal to another.

My Patent No. 307,071, dated October 21, 1884, describes a cartridge to be fired by an electric current provided with a conducting-pin extending from the center of the base toward the front of the charge, insulated from the base by being inclosed in a tubular sheath, and connected at its front end to a platinum wire, and with a conducting-strip of metal connected with the other end of the platinum wire, extending back outside of the insulating-sheath, and joining the metallic base of the shell.

My present invention has for its object to improve the construction of the electric firing device or primer, to the end that it may be constructed complete before being inserted in the cartridge, and in order to enable it to be sold independently of the cartridge-shells as a separate article of manufacture.

Figure 1 of the accompanying drawings is a longitudinal mid-section of a cartridge provided with my improved primer. Fig. 2 is a similar section of a cartridge-shell with the primer partly inserted, the primer being shown in elevation. Fig. 3 is a longitudinal mid section of the primer removed. Fig. 4 is an elevation of the front end thereof. Fig. 5 is an elevation of the rear end thereof; and Fig. 6 is a section of a shell, illustrating a modification. All the figures are drawn to a magnified scale.

Let A designate the cartridge-shell, of which *a* is the metallic base, and *b* the neck turned in centrally therefrom.

B is my improved primer. (Shown best in Figs. 2 and 3.) This primer consists of a central metallic pin, *c*, a tubular sheath, *d*, of insulating material, surrounding said pin, and a metallic tube, *e*, surrounding said sheath. A

piece of slender platinum wire, *f*, or other high-resistance conductor, such as carbon, is fastened at one end to the front end of the pin *c*, and at the other end to the front portion of the tube *e*. The rear portion, *e'*, of the tube *e* is made of somewhat larger diameter and is slightly coned, as seen best in Fig. 2.

This device I call an "electric primer." It is complete in itself and applicable to any cartridge-shell that is made to fit it. Both primers and shells will be made in standard sizes and be sold separately, being put together by the user. To apply the primer to the shell, it is only necessary to insert it through the base of the shell, as shown in Fig. 2, pressing it forward into place. Its enlarged base portion *e'* wedges thus tightly into the neck *b*, and holds the forward portion of the primer in correct position in the shell. The shell will then be charged with powder and shot, whereupon it is ready for use.

The method of manufacturing this primer, which I consider preferable, is to form the metal pins *c c* and tubes *e e* in quantities by processes now well known, and to make the sheaths *d d* of any suitable plastic or fibrous substance—such, for instance, as vulcanized fiber—and to first press the pins into their sheaths and then press the sheaths into the metal tubes. The latter are made very slightly conical, and the sheaths are made so tight a fit that considerable pressure is required to force them in. After being thus put together the platinum wire is soldered to the pin and tube.

It will be observed that in my present invention the metal conducting-strip on the outside of the sheath in my said patent is replaced by the tube *e*, which has the same electrical function, but differs mechanically from the strip in that it incloses and embraces the sheath, making the primer a device complete in itself.

The modification shown in Fig. 6 is a primer designed for firing the charge of powder by the passage of an electric spark. The construction is the same as shown in Fig. 3, except that the platinum wire *f* is omitted and the end of the pin is caused to project beyond the sheath. The spark then passes between the

end of the pin and the end of the tube, igniting the intervening powder. This modification in its specific feature of firing by a spark forms no part of my present invention, being here introduced merely to illustrate the scope of my generic claim to the separate electric primer. Its specific features are claimed in another application executed by me this day, to be filed simultaneously herewith, application No. 149,158, filed November 29, 1884.

I make no claim in this application to anything shown in my said previous patent, No. 307,071.

I claim as my invention—

1. An electric primer consisting, essentially, of a central pin of conducting material, a tubular insulating-sheath surrounding said pin, and a metallic tube inclosing and tightly embracing said sheath, extending to the front end thereof, and leaving said pin exposed at both ends, constructed and adapted to operate substantially as set forth.

2. An electric primer made distinct from and separable from and insertible in a cartridge-shell, consisting of a central conducting pin, a tubular insulating sheath surrounding said pin, and a metallic tube inclosing and tightly embracing said sheath and leaving both ends of said sheath and pin exposed, substantially as set forth.

3. An electric primer consisting, essentially, of a central metallic pin, a tubular insulating-sheath surrounding said pin, and a slightly-

conical metallic tube forced over and tightly inclosing said sheath, leaving both ends of both sheath and pin exposed, substantially as set forth.

4. An electric primer for firing by incandescence, consisting of a central metallic pin, a tubular insulating-sheath surrounding the same, a metal tube inclosing said sheath, and a high-resistance conductor joined at one end to the front of said pin and at its other end to said tube, substantially as set forth.

5. A cartridge shell having a metallic base combined with a separable electric primer, B, the latter consisting of an outer metallic tube, *c*, in electrical connection with said metallic base, a tubular insulating-sheath, *d*, a central metallic pin, *e*, and a high-resistance wire, *f*, substantially as set forth.

6. A cartridge-shell, A, having a metallic base, *a*, and an inturned neck, *b*, in combination with a separable electrical primer, B, constructed substantially as described, and having a slightly-conical enlargement, *c'*, at its base tightly fitting said neck, substantially as set forth.

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

SAMUEL RUSSELL.

Witnesses:

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