Fig. 2.
To all whom it may concern:

Be it known that I, CONSTANTIN VON GÖRTZ, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Kingdom of Austria, have invented certain new and useful Improvements in Primers for Ordnance; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

In order to combine the certainty of firing with the advantages of electrical primers for ordnance with certainty of ignition, it is necessary for an electrical primer to be such that in case of a failure of the electrical firing the charge can be immediately fired mechanically (by percussion) without changing any part of the primer. When metal cartridge cases are not used, this object can be effected by means of a compound primer, such as hereinafter described, in combination with an arrangement of the breech-block of the gun, comprising an electrical conductor, which is situated in and insulated from the breech-block and leads to a contact-piece of the breech-block and a firing-pin, which is arranged in the breech-block for percussion-firing.

A primer according to this invention is shown in section in the accompanying drawings in Figure 1 and shown in firing position in gun in Fig. 2. The percussion-firing arrangement of the compound primer comprises a primer-body consisting of a rear shell a, of a material which is a conductor of electricity, and a forward metallic shell a', threaded and screwed to the rear shell, a percussion-cap b, and anvil e, screwed into the shell a and between which and the solid head of the shell a the percussion-cap b is held, primer composition d, loose granular powder j, and a detonating charge e. The shell a has a boss 13 formed in its end and provided with a central opening 14, said boss serving to separate the granular powder from the primer composition, and each portion can be separately loaded to facilitate the manufacture.

In Fig. 2 the primer is shown in position ready for firing in the breech-block 3 at the firing end of the gun 4. The breech-block 55 contains a suitable firing-sleeve 6, bayonet-jointed to the sleeve 6, that is likewise bayonet-jointed to the block, which is only shown in part. The sleeve 6 carries the firing-pin s, that is suitably propelled by a spring t. When the firing-pin is released, it will strike the comparatively thin head of the metallic shell a, force the cap b against the anvil, ignite the primer composition d, and then the detonating charge e to fire the gun.

In order to electrically discharge the primer, the head of the shell a is provided with non-conductive coating or face f and a conductive contact h. This contact is connected to an insulated wire f, wound in a groove cut in the outer cylindrical wall of the shell a, and is then connected to one end of a bare incandescent wire g, that has its opposite end connected to the interior wall of the shell a or passeth through this wall. This wire also passeth through the primer composition d.

In order to electrically fire, the breech-block is provided at the rear with an insulating plate 7 and one 8 to insulate the head of the primer from the sleeve 6, which is connected by wire 11 to one pole of a battery 12. The other pole of the battery is connected by wire 13 to a suitable circuit-closer or firing-button 10, and this is connected by insulated wire 9 to the part 3 and passeth through it, so that the end of the wire forms a suitable contact with the shell a or the end of the incandescent wire passing through the shell. Closing the button 10, circuit will be made from battery 12, wire 11, sleeve 6, contact h, insulated wire g, through the wall of the shell a or directly to contact end of insulated wire 9, button 10, and wire 13 back to battery, thereby heating the bare incandescent wire 9, and igniting the primer d, which ignites the granular powder j through the central opening 14 in the boss 15, formed on the inner threaded end of the shell a, that carries the detonating charge e.
Having thus described the invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A primer comprising a metallic shell formed in two parts, an anvil and a percussion-cap held between the anvil and head, and a priming composition in one of the parts, a detonating charge and loose granular powder in the other part, substantially as described.

2. A primer comprising a metallic shell having a central bore and solid head, an anvil screwed into the bore, a percussion-cap held between the anvil and head, a priming composition filling the bore, an outer shell provided with a perforated end screwed to the first-mentioned one and containing loose granular powder, and a detonating charge, substantially as described.

3. A primer comprising a metallic shell, an anvil screwed therein, a percussion-cap held between the anvil and the head of the shell, a priming composition therein, an incandescent wire passing through the priming composition, means for closing an electric circuit through the wire and loose granular powder, and a detonating charge beyond the priming composition, substantially as described.

4. A primer comprising a metallic shell, an insulating-covering for the head of the shell, an anvil screwed in the shell, a percussion-cap held between the anvil and the head of the shell, an electrical contact on the head of the shell, an incandescent wire within the shell and an insulating wire connecting the contact and incandescent wire, and a priming composition surrounding the incandescent wire adapted to be ignited by the percussion-cap substantially as described.

5. A primer comprising a metallic shell having an external groove, an insulating-covering for the head of the shell, an anvil screwed in the shell, a percussion-cap held between the anvil and head of the shell, an incandescent wire in the shell, an electrical contact in the head of the shell and an insulated wire in said groove connecting the contact and incandescent wire, a second shell screwed into the end of the first one and containing loose granular powder, and a detonating charge contained in said second shell, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CONSTANTIN VON GÖRTZ.
Witnesses:
GUSTAV PHILIPPTOSCH,
ALVESTO S. HOGUE.