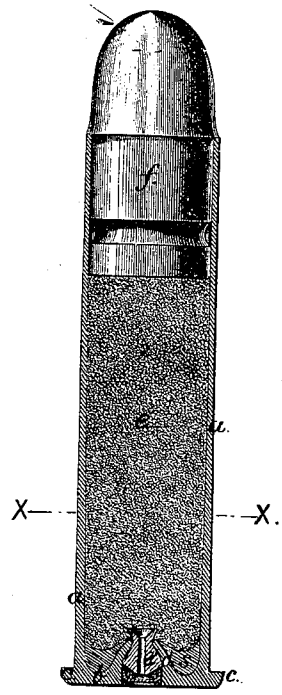
R. J. GATLING'S

IMPROVEMENT IN METALLIC CARTRIDGES.

102675

PATENTED MAY 3 1870

FIG. 1.



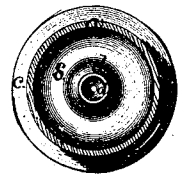


FIG. 2.

R. J. Gatling
by his Attorney
C. B. Richards.

Lewis Sheldon
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} Witnesses.

United States Patent Office.

RICHARD J GATLING, OF HARTFORD, CONNECTICUT.

Letters Patent No. 102,675, *dated May* 3, 1870.

IMPROVEMENT IN METALLIC CARTRIDGES.

The Schedule referred to in these Letters Patent and making part o the same

To all whom it may concern:

Be it known that I, RICHARD J. GATLING, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Cartridges; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification.

My invention is a metallic-cased central-fire recapping cartridge, adapted for small arms or for battery-guns, and which may be repeatedly recharged and fired with heavy charges without being injured.

Before my invention, cartridges were made with hollow rims, reinforced by a mass of solder at the base, to stiffen the head and prevent the rim from being swelled by the force of the explosion, but this construction does not permit of so frequent recharging and firing without injury as is desirable.

Cartridges with solid rims were also made before my invention, and a patent of the United States has been issued to B. B. Hotchkiss for a peculiar construction of solid-rimmed cartridge, which, when carefully made from metal of good quality, is a strong and good cartridge. I do not here intend to admit the priority of the said Hotchkiss in the invention which is the subject of the said patent.

Both kinds of cartridges which I have mentioned are liable to failure, if carelessly manufactured.

The solid-rimmed cartridges, even when made with as great care as practicable in general manufacture, are liable, after repeated firing, to break apart at a point near the rim. I have frequently had the heads of such cartridges pull off after being fired several times, leaving the greater part of the shells in the chamber of the gun, from which they could with difficulty be extracted.

Now, in the case of ammunition for automatic repeating guns, the correct action of which depends in a great measure upon the certain removal, by the automatic extractor, of the empty shells from the barrels, cartridges which are liable to the accident I have mentioned are objectionable, and any improvement which increases their reliability is of importance. To effect this is the object of my invention; and to this end,

My said invention consists in the combination of several features, all of which have before been separately used, and some of which are described in combination in the patent aforesaid to Hotchkiss, but which have not, to my knowledge, been all before united. These features are the following:

A solid rim, a head with a central indentation, forming an internal teat, and a mass of solder filling the space between the teat and the tube, so applied that the tubular part of the shell is thereby more firmly attached to the head.

To enable others skilled in the art to make and use my invention, I will proceed to describe it, referring to the accompanying drawings, in both figures of which the same parts are indicated by similar letters.

Figure 1 is a central longitudinal section of a cartridge embodying my invention.

Figure 2 is a cross-section of the empty case, at the line X X, fig. 1.

The entire case or shell is made in one piece, and is drawn or struck up from sheet-metal by processes well known to manufacturers of solid-rimmed cartridges.

The process described in the aforesaid patent to Hotchkiss is applicable also to forming the shell of this cartridge.

a is the tubular part of the shell;

b, the head;

c, the rim; and

d, a teat inside the case, formed by bending in the central part of the head. This forms a central recess in the outside of the head, into which an anvil, *d'*, is fitted, on which the caps or primer rests. This central indentation makes the head very stiff.

e is the powder of the charge, and

f, the lead.

The tubular part of the shell is made thicker near the head than at any other part, and at this place its inner surface is so curved as to avoid a sharp angle where it joins the head, the case being thereby made stronger.

The rim *c* is solid, as shown in fig. 1, and has sharp corners at its front outer edge and at the place where it joins the tube, its front surface being flat. This shape, which it is impracticable to have with a hollow rim, is easily made when the solid metal is pressed over to form the rim, as is the case with the kind of rim shown, and it is important as a means of affording a sure hold for the extractor.

S is a mass of solder, which fills the space between the central internal teat *d* and the tubular part of the shell.

This mass of solder reaches up into the tubular part far enough to get a firm hold of this part, and also attaches itself firmly to the lower part of the head and to its teat *d*. By this means the tubular part of the case is so firmly united to the head that even if the metal of the shell be completely cut apart at the point where the tube *a* and the head unite, yet the solder will prevent the two portions of the case from being separated by firing, or by the action of the extractor.

The process by which I prefer to introduce the mass

s of the solder is, by first forming the solder into a ring by casting it in a mold of proper shape. This ring is then dropped into its place around the teat *d*, and the shell being placed on its head on a hot plate, the solder is melted, and attaches itself to the metal of the shell, assuming the form shown in the drawings.

Having described my invention, I disclaim the features named, in their separate use; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, in a cartridge-case formed from sheet-metal, of a solid rim, *c*, a central internal teat, *d*, and a mass of solder, *s*, and the anvil *d'*, the said anvil being secured by striking the metal of the teat *d* around the neck of the anvil, or by upsetting the anvil over the said teat, these features being combined in the manner hereinbefore specified, and for the purpose herein set forth.

Witnesses: RICHARD J. GATLING.

REGINALD HALL,

H. CLAY.