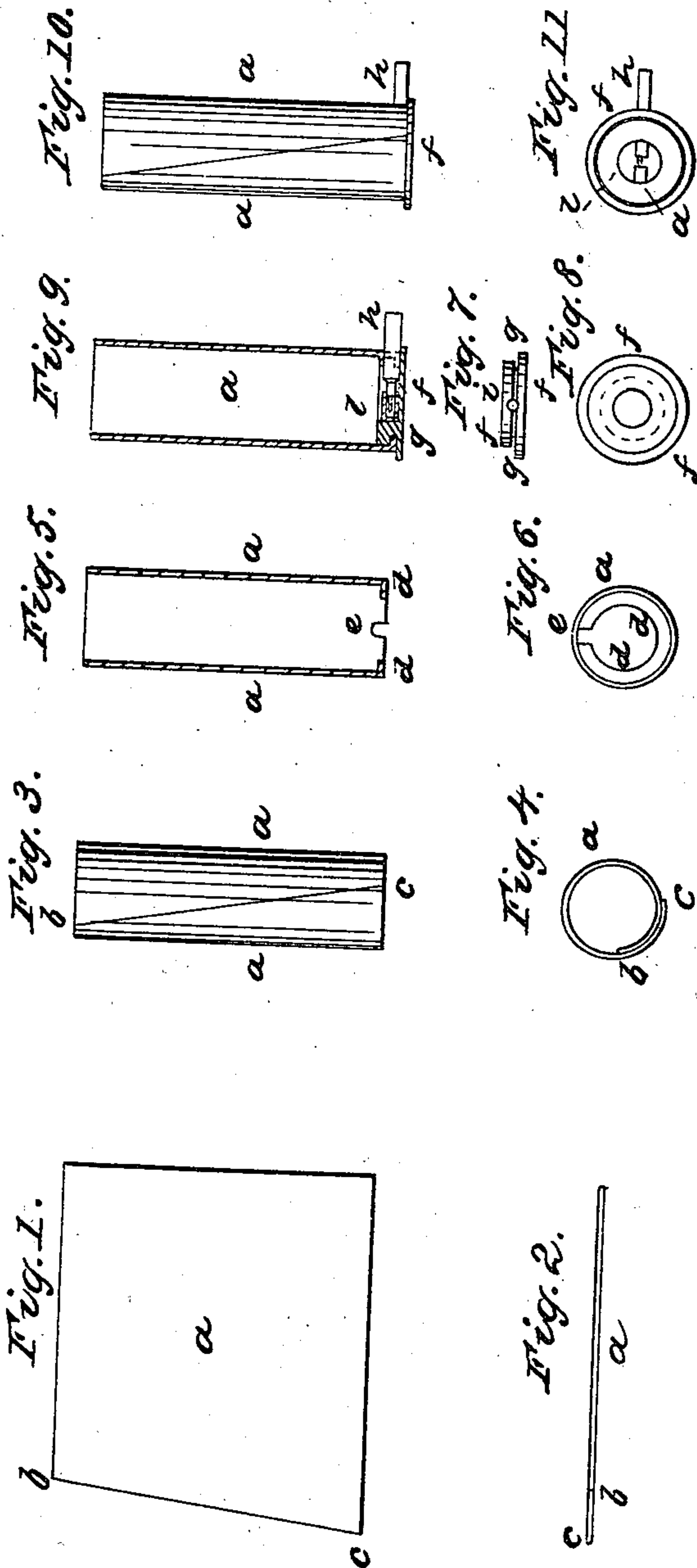


A. N. C. GAVARD.

Cartridge.

No. 102,109.

Patented April 19, 1870.



Witnesses:
J. H. Schumacher
a. J. Tilton

Adonis Nicholas Gustave Gavard
Inventor
By his attorney
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United States Patent Office.

ADONIS NICOLAS CRISTIN GAVARD, OF PARIS, FRANCE.

Letters Patent No. 102,109, dated April 19, 1870.

IMPROVEMENT IN METALLIC CARTRIDGES.

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

To all whom it may concern:

Be it known that I, ADONIS NICOLAS CRISTIN GAVARD, of Paris, France, have invented a new and useful Improved Metallic Cartridge; and do hereby declare the following to be a true and exact description of the same, reference being had to the accompanying sheet of drawings, that is to say:

My invention relates to an entirely metallic cartridge, the shell of which consists of a thin steel tube, unclosed, and perfectly elastic. The base is itself also formed entirely of metal. Constructed in this manner the cartridge can be used again, for the charge can be renewed as often as desirable.

The shell is formed by rolling a piece of sheet-steel upon a mandrel, the edges of the shell being simply placed in contact, or they may be superposed or soldered. In this last case they may be furnished with a longitudinal groove to give them elasticity. The metallic base, upon which is mounted the steel shell, may have a space formed therein either applicable for lateral, annular, or central fire.

I will describe, in connection with the accompanying drawing, the manufacture of the pin-cartridge applicable for lateral fire.

1. The Steel Shell.

I cut from a thin sheet of steel, previously annealed, a piece, *a*, Figures 1 and 2, corresponding to the size of the case, one of the edges of the piece being inclined so that when the sheet is rolled up upon a mandrel, the apparent line of external covering is oblique, (see Figures 3 and 4.)

I prefer to give this oblique shape to the line of junction of the shell, to facilitate the elastic action resulting from the explosion and the recoil. In this state the lower end of the shell is pressed inward to form a shoulder, (see Figures 5 and 6,) the shoulder *d* engaging in the groove of the metallic base, as hereafter described.

A small recess, *e*, is cut or stamped in the base of the shell *a*, for the percussion pin to pass through.

The shell, thus prepared, is tempered to restore the elasticity lost by annealing.

2. Metallic Base.

The base is formed of copper or other metal, as represented in Figures 7 and 8. It is, in the case of the pin-fire system taken for example, a disk, *f*, having an interior cavity for the introduction of the cap.

Around the disk is formed a groove, *g*, in which is inserted the shoulder *d* of the steel shell *a*.

A hole, *i*, is drilled laterally in this base for the introduction of the pin *h*.

3. Mounting the Shell on the Base.

To mount the shell on the base the shell is opened so that the shoulder *d* enters the groove *g*, the elasticity of the steel causing the said shoulder to remain securely fixed in the groove, (see the longitudinal section, Figure 9.) It is necessary to make the recess *e* in the shell correspond with the opening drilled in the base, so that the pin may be easily introduced.

The complete arrangement of the shell, the base, the pin *h*, and the cap *l*, is represented in Figures 10 and 11.

The shape of the central aperture of the metallic base will vary according as the fire is intended to be lateral, annular, or central, and it will also vary with the species of fulminate used.

This permanent metallic cartridge is applicable for all kinds of sporting and war arms of any size that are loaded at the breech, whether they are annular, lateral, or central-fire arms.

I claim as my invention—

The above-described metallic cartridge, entirely formed of metal, and composed of a thin steel case, rolled up with an oblique joint free to expand, and having a metal base in the groove, in which is secured the shoulder of the steel shell.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

A. N. C. GAVARD.

Witnesses:

C. LAFORD,
J. U. ZUST.