J. H. BULLARD.

METALLIC CARTRIDGE.

No. 192,676. Patented July 3, 1877.

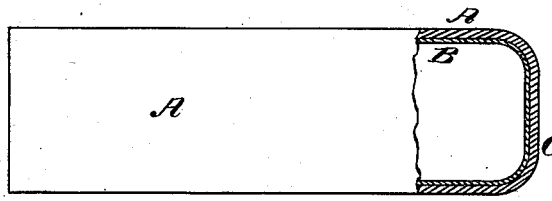


Fig. 3.

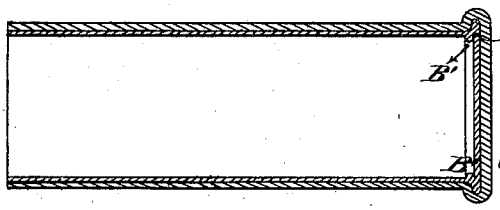
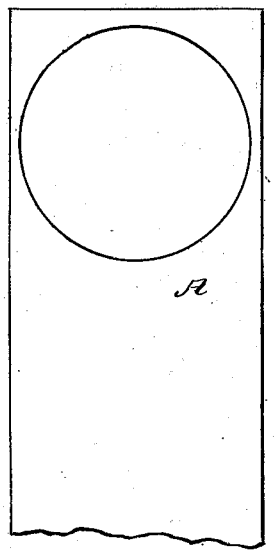


Fig. 4

Fig. 1



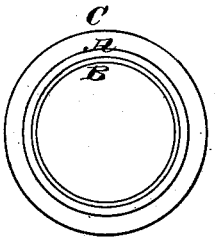


Fig. 5.

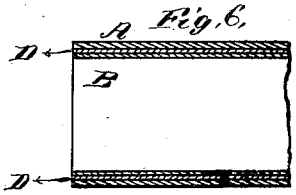


Fig. 6.

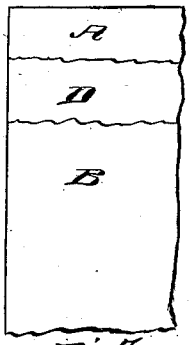


Fig. 7.

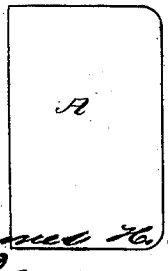


Fig. 2

WITNESSES

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IMPROVEMENT IN METALLIC CARTRIDGES.

Specification forming part of Letters Patent No. **192,676**, dated July 3, 1877; application filed February 24, 1877.

To all whom it may concern:

Be it known that I, JAMES H. BULLARD, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and valuable Improvement in the Process of Manufacturing Cartridge-Shells; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of the blank from which the shells are struck, and Fig. 2 is a side view of the same in the second stage. Fig. 3 is a sectional view of my cartridge-shell in the third state of construction; and Fig. 4 is a central sectional view in a further state of construction, showing the headed base. Fig. 5 is a front view of the headed base. Fig. 6 is a sectional view of a modification of my cartridge-shell; and Fig. 7 is a modification of Fig. 1, showing the different layers of metals.

This invention consists in the process of making cartridge-shells from two heterogeneous layers of metal, as will be hereinafter set forth.

My method or process of manufacturing is as follows: I take two loose thin sheets of metal and place one upon the other, without soldering, the lower being preferably brass, such as is ordinarily used for cartridge-shells, and the upper one being copper, or any metal which will not be injured by contact with gunpowder. I then place these sheets under a double-acting press, such as is in common use for making ordinary cartridge-shells, which cuts out the blanks and "cups" them at the same time, giving them the shape shown in Fig. 2. After this first operation the blank is drawn, in the usual manner, into the shape shown in Fig. 3. It is then "headed," so as to form the base, and the cartridge is complete, except such changes as may be necessary to adapt it to the chambers of certain fire-arms.

In the accompanying drawings, A designates the brass outer part of the shell, and B the protecting inner layer or lining, of material which is unaffected by gunpowder. C designates the base of the shell; and in heading or forming said base an annular rim, B′, of the copper or similar lining B is crimped within the annular expansion C′ of said headed base, which prevents it from any possibility of being detached or pulled out. This rim or bead B′, extending inward from the walls of the shell, acts as a re-enforce, which strengthens the base of the shell and prevents the same from being swollen or burst by the action of gases.

No permanent fastening is required to make heterogeneous layers A and B "draw" perfectly even. I prefer, however, to "tin," or coat with tin, either the upper side of the brass plate or sheet, or the lower part of the copper or similar plate or sheet, or the contiguous sides of such sheet of metal.

In the process of annealing the outer brass layer A and inner copper layer B will be soldered together by the action of the heat on said interposed layer of tin. This layer of tin (designated by D) is shown in Figs. 6 and 7.

The advantages of my method of construction above described are as follows: First, I am able to tell exactly how much of each metal is in each shell, and thereby to regulate the manufacture so as to obtain the greatest degree of elasticity, and also the requisite protection from the action of the powder. Secondly, my process does not require any special preparation of the metals, as in the case of soldering or other permanent fastening. Thirdly, I am enabled to separate the scrap without recourse to heat or any other agency. Fourthly, the only expense attending the manufacture, beyond that attending the manufacture of an ordinary brass cartridge-shell, is the cost of the copper or other material of which the lining is made, and that of the interposed tin when the latter is used. Finally, these cartridge-shells can be stored filled with powder for an indefinite length of time without injury.

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

1. An improvement in the art of manufacturing cartridge-shells, which consists in placing a sheet of copper upon a sheet of brass, cutting a blank from the double sheet, and

drawing and heading the blank, substantially as described, and for the purpose set forth.

2. A cartridge-shell having a brass body, A, and headed base C, and a copper lining, B, provided with a re-enforcing rim or filling, B′, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of three witnesses.

JAMES H. BULLARD.

Witnesses:

W. S. GREENE,

F. E. BECKWITH, Jr.,

M. G. BULLARD.