T. B. MOORE.

Manufacture of Cartridge-Shells.

No. 202,363. Patented April 16, 1878.

Fig. 1.

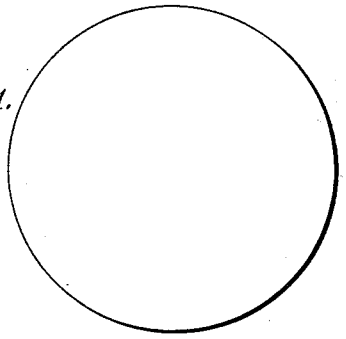


Fig. 2.

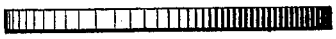


Fig. 3.

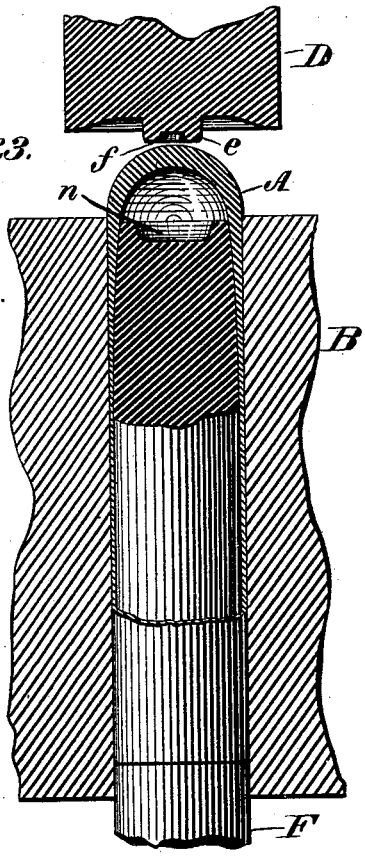
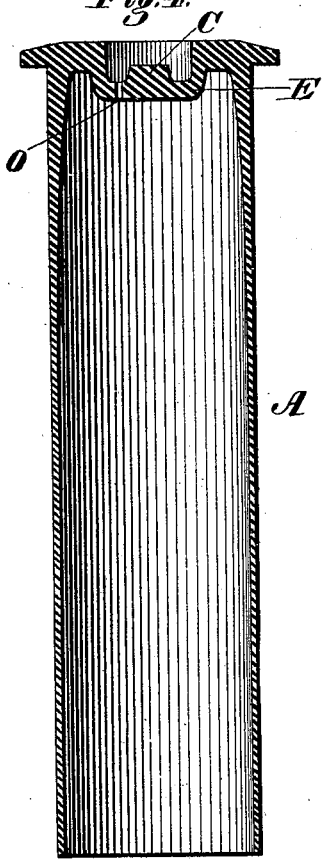


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS B. MOORE, OF FRANKFORD, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES L. SWOPE, OF SAME PLACE.

IMPROVEMENT IN THE MANUFACTURE OF CARTRIDGE-SHELLS.

Specification forming part of Letters Patent No. **202,363**, dated April 16, 1878; application filed February 26, 1877.

To all whom it may concern:

Be it known that I, THOMAS B. MOORE, of Frankford, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Metallic Cartridges, of which the following is a specification:

My invention relates to metallic cartridge-shells; and the invention consists in an improved method of forming the anvil in the pocket of the shell, as hereinafter more fully described.

Figure 1 is a plan view, and Fig. 2 an edge view, of the blank or disk from which the shell is subsequently made. Fig. 3 is a vertical section of the shell after it has been drawn, with the die and bunter used in forming the head and making the anvil. Fig. 4 is a longitudinal section of the completed shell.

In the manufacture of cartridge-shells, they have heretofore been made with anvil formed of a portion of the metal forming the bottom of the pocket by bending or striking up the same from the inside, as in the well-known Berdan cartridge. Anvils have also been made of a separate piece of metal, fastened in the pocket by various means. Both these plans are objectionable, the first for the reason that if the cartridge be reloaded and refired several times the repeated blows of the firing-pin or hammer is apt to drive back the projecting point which forms the anvil until it becomes so sunken that it will not operate to explode the primer when struck; and the latter plan is objectionable for the reason that several additional operations are required to make the separate anvil and secure it in place in the pocket of the shell.

As ordinarily constructed, the bottom of the pocket and the anvil are left of the same thickness as the original sheet from which the shell is drawn; and in order to form the vent-holes in the bottom of the pocket, it is necessary to use punches of such a size (in order to pierce the metal without breaking the punches) that a considerable portion of the metal forming the bottom of the pocket, and which supports the anvil, is cut away, and thereby rendering the anvil still more liable to yield from the repeated blows of the firing-pin or hammer.

The object of my invention is to so construct a shell of sheet metal as to form the anvil of an integral portion of the metal of the head, and make it more rigid by increasing its thickness, and making it thicker when finished than the original sheet or blank, and at the same time make the bottom of the pocket which surrounds and supports the anvil thinner, so that the vent-holes may be made with smaller punches or pins, and thus avoid cutting away so much of the supporting metal, and to do all this at the same operation and by the same tools that form the head of the shell.

To carry out my invention, I take the ordinary blank, (shown in Figs. 1 and 2,) and from it draw up a shell, A, in the usual manner, this shell being left, as represented in Fig. 3, with the metal at its closed end of the same thickness as the original blank. I then insert the shell A in a die, B, on a supporting mandrel or punch, F, in the usual manner for heading, and bring to bear upon its closed end a bunter, D, which has a central projection, *e*, having in its end a cavity, *f*, of the form and size that the anvil is to be when completed, these tools being shown, with the shell in position ready for operation, in Fig. 3.

As the bunter D descends, the projection *e* first comes in contact with central portion of the rounded end of the shell, and forces it down into the cavity *n* in the end of the mandrel F, thereby forming the pocket in the head of the shell.

The projection *e* is made of such a length in relation to the face of the bunter that after the projection *e* has pushed the metal down so that it rests on the end of the mandrel F, the bunter has to move still farther in order to complete the head or flange of the shell, and as it does this the metal in the bottom of the pocket is squeezed between the end of the mandrel F and the projection *e*, and thereby made to flow up into and fill the cavity *f* in the projection *e*, thereby forming the anvil C, as shown in Fig. 4.

The metal which forms the raised portion of the anvil is thus taken from the bottom of the pocket surrounding the anvil, thereby leaving that portion correspondingly thinner. As a result of this, smaller punches or pins can be

used to punch the vent-holes *o*, and thus there is less of the supporting-base of the anvil cut away, and consequently the anvil is more rigidly supported, and less liable to be driven in by repeated firings.

By this method of construction it will be seen that I make the anvil itself solid, and considerably thicker than the sheet from which the shell is formed, instead of merely indenting or bending up the metal of its original thickness, thus making it more rigid and strong; and that there is less of the surrounding bottom E of the pocket cut away, thus leaving a better support for the anvil; and that all this is done at a single operation, thereby greatly simplifying and cheapening the manufacture. A shell having its anvil constructed in this manner is capable of being reloaded and fired many times in succession.

Having thus fully described my invention, what I claim is—

The improvement in the art of manufacturing cartridge-cases, which consists in upsetting the thickened end of the case to form the head and pocket, and by displacing the metal from the bottom of the pocket to form the solid anvil of increased thickness, in the manner and by the means substantially as set forth.

THOMAS B. MOORE.

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