

E. A. WORTHEN.
 DEVICE FOR MANUFACTURING METALLIC CARTRIDGE SHELLS.
 No. 109,791. Patented Nov. 29, 1870.

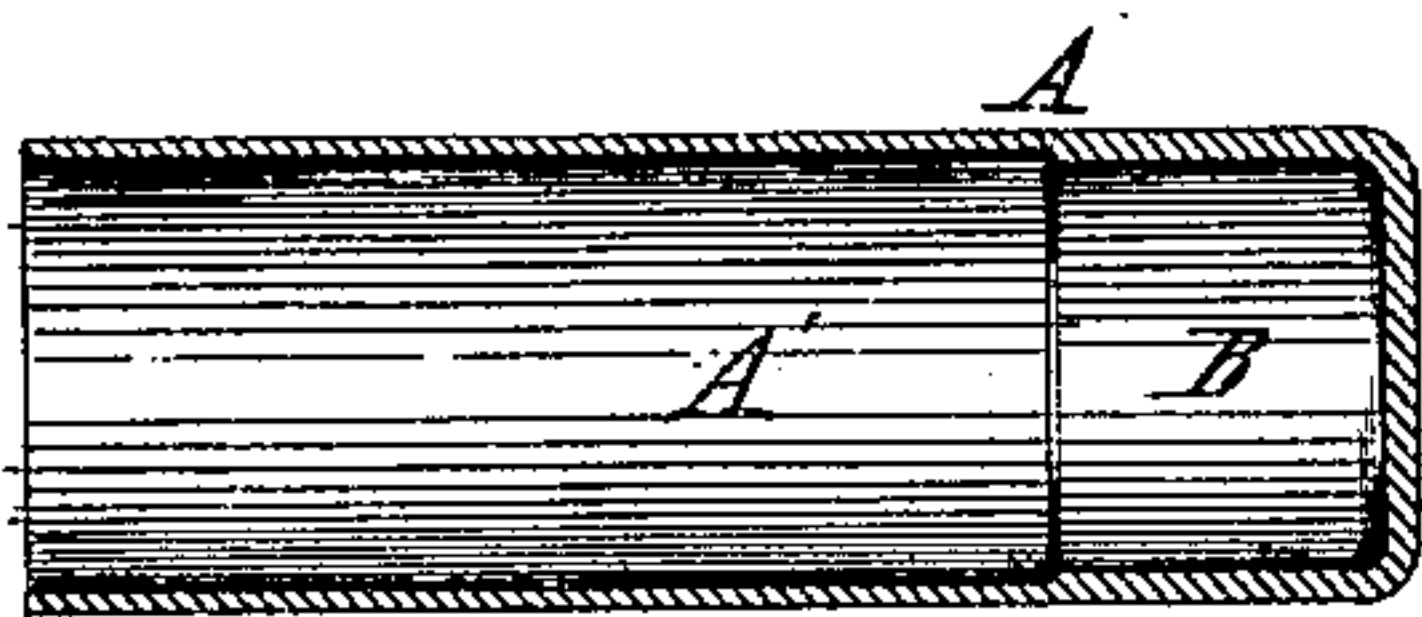


Fig. 1

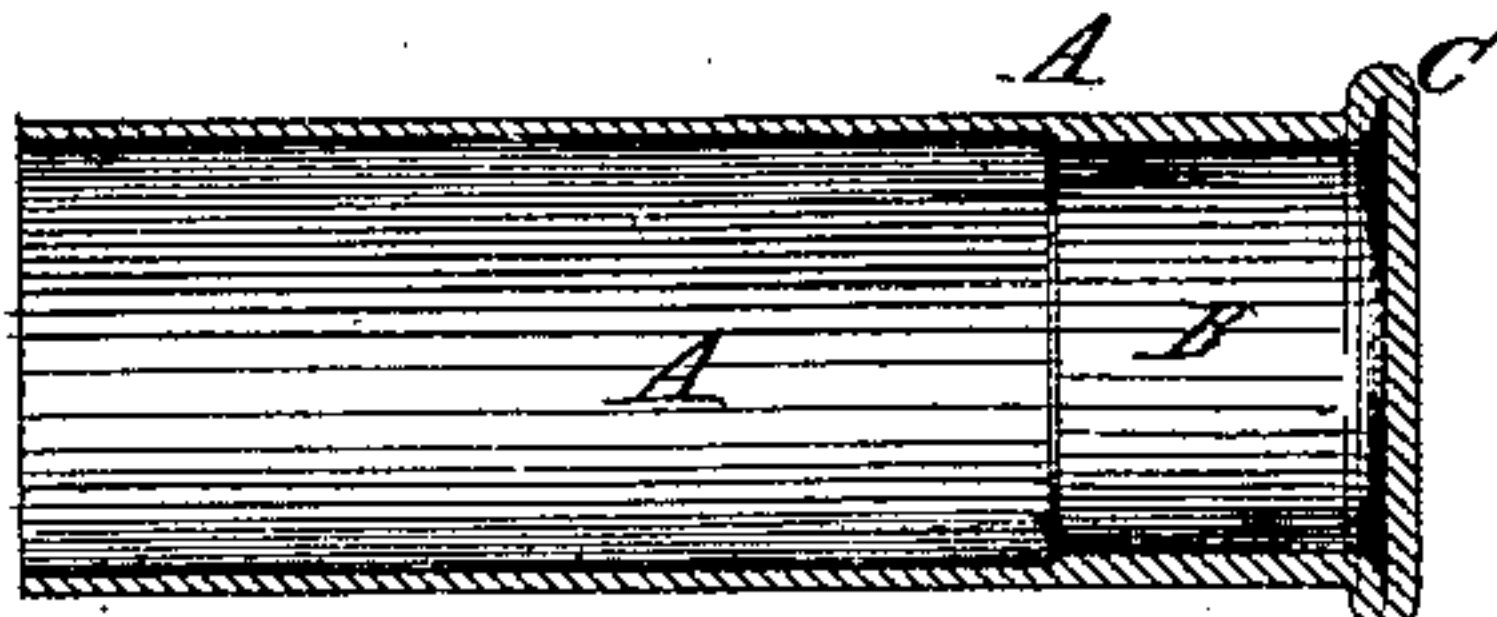


Fig. 2

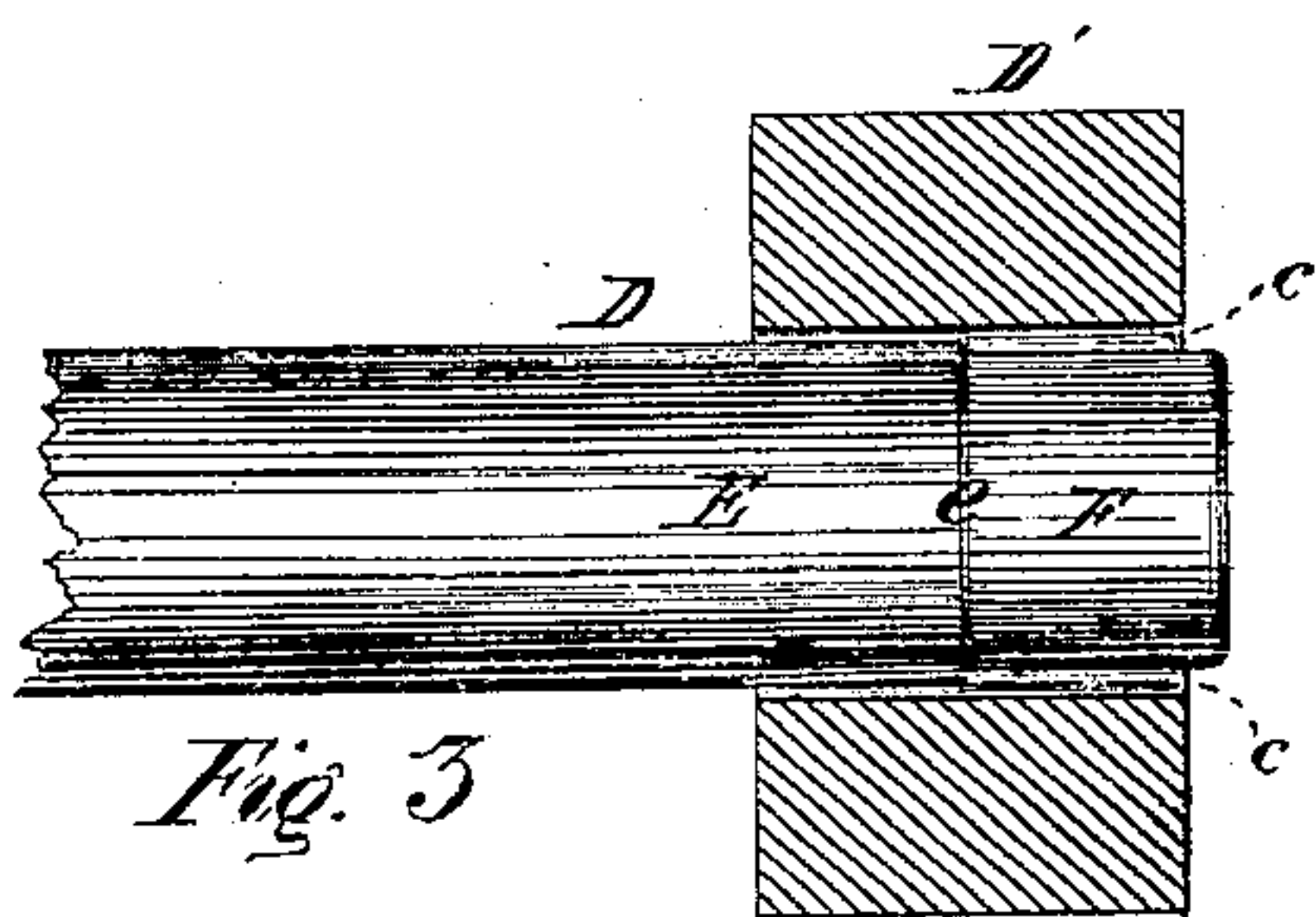


Fig. 3

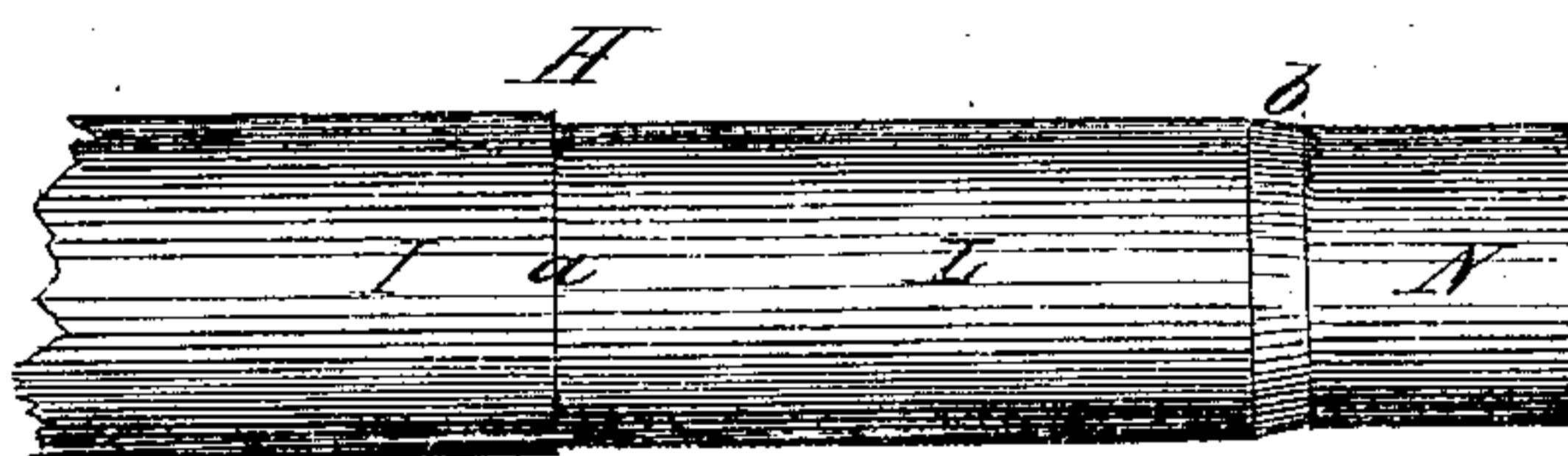


Fig. 4

Witnesses *M. S. Boynton.*
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UNITED STATES PATENT OFFICE.

EDWARD A. WORTHEN, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN DEVICES FOR MANUFACTURING METALLIC CARTRIDGE-SHELLS.

Specification forming part of Letters Patent No. **109,791**, dated November 29, 1870.

To all whom it may concern:

Be it known that I, EDWARD A. WORTHEN, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Devices for Manufacturing Metallic Cartridge-Shells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a longitudinal section of a metallic cartridge-shell made according to my improvement. Fig. 2 is the same view of the shell after the head has been formed thereon. Fig. 3 is a section of the die, showing its form, together with that of the drawing-tool or punch; and Fig. 4 is a side view of the heading-tool, showing its form.

My invention consists of an improvement in devices for the manufacture of metallic cartridge-shells wherein the punch or drawing-tool used has a shoulder formed near the end, and that part of the punch between said shoulder and the end is made somewhat smaller in diameter than the other part, so that when the punch is passing through the die, which is of one diameter throughout, in the operation of drawing the shell from a disk of copper, the exterior of the shell takes the form of the interior of the die, while the interior of the shell takes the form of the exterior of the punch, and the shell, when drawn, has a part, at and near the head, made thicker for the purpose of giving it additional strength, this thicker part extending up all around from the head as far as desirable, according to the length of the small part of the punch.

The object of this invention is to strengthen that part of the shell which is usually strengthened by the introduction of a re-enforcing-cup, without the separate operations of introducing and securing a separate re-enforcing cup within the shell.

That others skilled in the art may be able to make and use my improvement, I will proceed to describe the same.

In the drawings, D represents the die, which is of an equal diameter throughout, as shown at *e*, and the die in this matter is similar to those heretofore used, and is secured in place in any desirable manner.

The punch D is made of a diameter and form at E to correspond with the interior of the shell, which is of one diameter when drawn, and said punch has a shoulder at *e*, and that part below the shoulder at F is made somewhat smaller in diameter than the part E, so that when a copper disk of uniform thickness is driven through the die by the punch the metal will be reduced in thickness in that portion which surrounds the part above the shoulder *e*.

The form of the shell, after passing through the die or being drawn, is shown in Fig. 1, having an interior shoulder at *e'*, the part B and also the end being thicker than the part A above the shoulder *e'*.

The heading-tool, shown in Fig. 4, is of the same general form as those now in use, having a shoulder at *a*, and is tapered at *b*, the part N being made sufficiently small to pass into the part B of the shell, when the outside heading-tool drives the head up, forming the flange.

This improvement in the method of forming the shell obviates the necessity of the different operations of making, introducing, and securing the common re-enforcing cups within the shells, and gives the head of the shell any required or desired strength in the one operation of forming the shell.

Of course the different sizes of shells may have the different and corresponding thicknesses given them at the head, according as the relative proportion of the diameter of the parts E and F of the drawing-tool D is maintained or varied at pleasure.

I am aware that cartridge-shells have been re-enforced by the introduction of metallic cups and other substances, which were secured within the head by different and separate operations, and I do not claim the same, nor any part thereof; but

Having described my invention, what I do claim as new, and desire to secure by Letters Patent, is—

The punch E and die D, constructed substantially as described, and operating in connection with each other in the manner and for the purposes specified.

EDWARD A. WORTHEN.

Witnesses:

T. A. CURTIS,
M. L. BOYNTON.