L. W. BROADWELL.

CARTRIDGE.

No. 172,382. Patented Jan. 18, 1876.

Fig. 3.

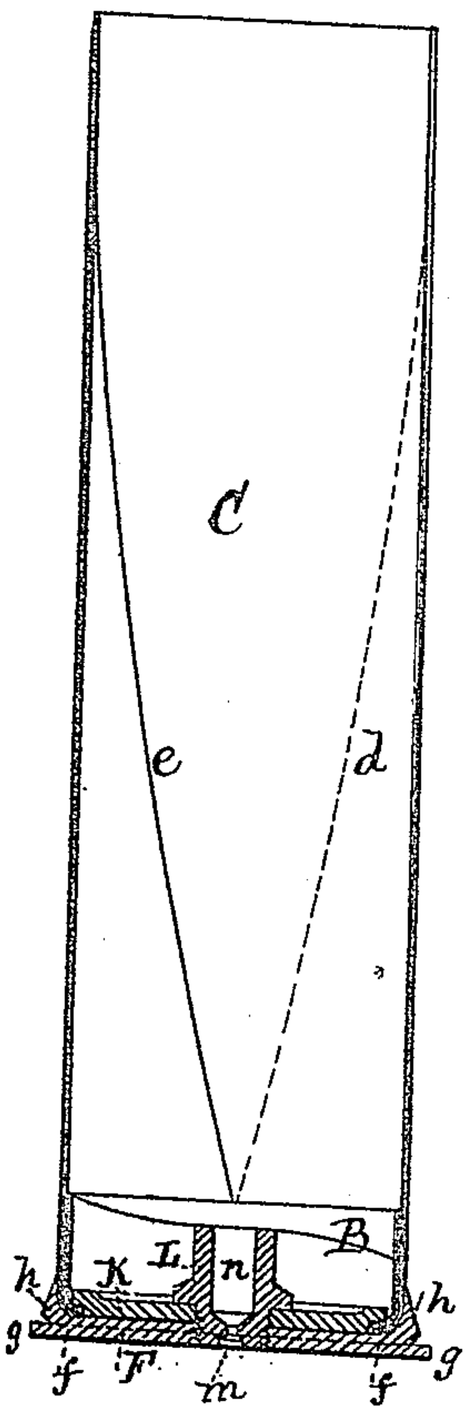


Fig. 1.

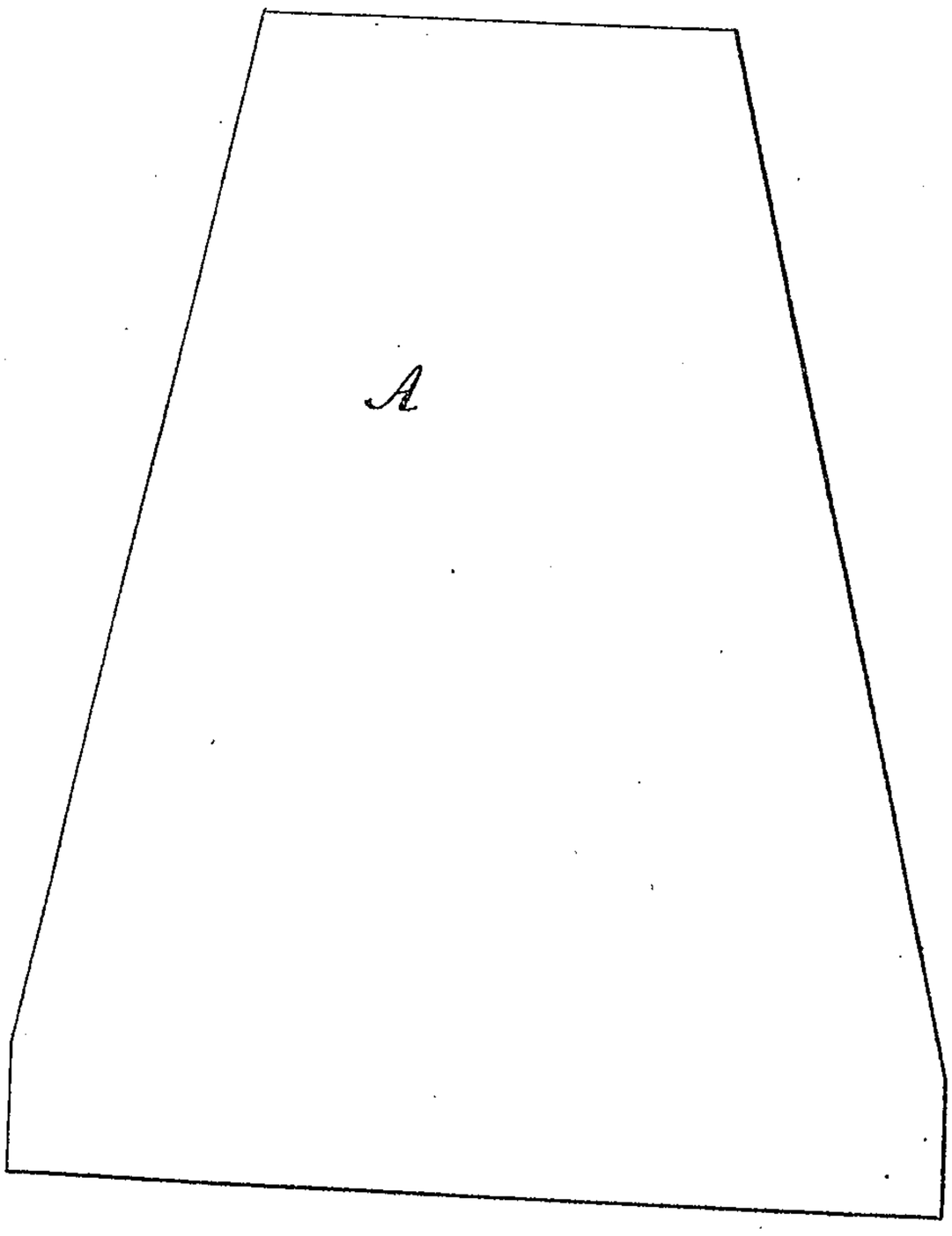
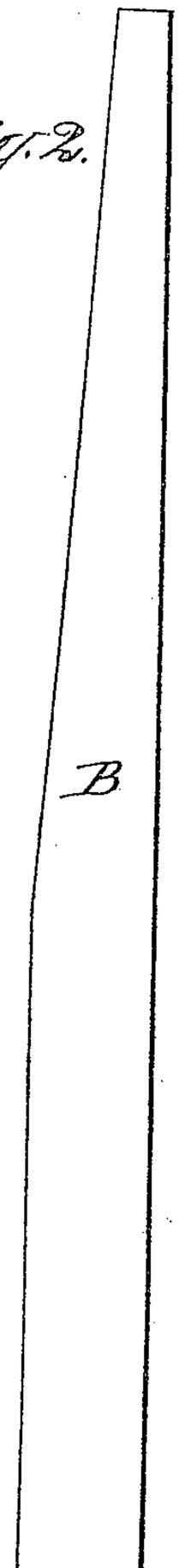


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

LEWIS W. BROADWELL, OF HIETZING, NEAR VIENNA, AUSTRIA.

IMPROVEMENT IN CARTRIDGES.

Specification forming part of Letters Patent No. **172,382**, dated January 18, 1876; application filed November 27, 1875.

To all whom it may concern:

Be it known that I, LEWIS WELLS BROADWELL, a citizen of the United States, temporarily residing at Heitzing, near Vienna, Austria, have invented certain Improvements in Artillery Cartridge-Cases; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention consists in a novel construction of a metallic cartridge-case tube and re-enforce, whereby great strength is obtained nearest the head of the cartridge, and provis ion is made for expansion of the tube under the pressure of the charge, and for preventing the escape of gas or injury to the shell; and, further, in a novel construction of the cartridge-head, whereby it is rendered substantial and durable, and facility is afforded for its secure attachment to the tube, and its ready detachment therefrom when desired; also, whereby said head is made to form an outside gas-check, and to clamp within it, independently of the gas-check, the flanged rear edges of the tube.

In carrying out my invention I construct the tube of one or more pieces of sheet metal, of such shape that when rolled into a tube it will be of double thickness at the rear portion, and single thickness at the front end. The tube thus formed is re-enforced by means of a long narrow strip of metal, rolled into a ring or band, and placed in the rear portion of the tube. The edges of the rear end of the tube are turned inward, so as to form a flange, by which it is secured to the head. The head is made of cast or wrought metal, and consists of three pieces, one of which serves as a gas-check, and is also provided with a rim or flange to facilitate its extraction; another constitutes a clamping-ring, and these two are secured together, with the flanged edges of the tube between them, by means of a third piece, which is provided with a small chamber for the primer, and a larger chamber for holding a small charge of fine powder to insure the ignition of the main charge.

The accompanying drawing illustrates a mode of carrying out my invention.

Figure 1 is a view of the plate or sheet metal before being rolled into a tube. Fig. 2 is a view of the strip which forms the re-enforce. Fig. 3 is a longitudinal sectional view of a completed cartridge-case.

The plate or sheet metal A is cut in tapering form, with its narrowest edge about half the width of the widest edge. When but one piece is used for making the tube, the narrowest edge is equal to the desired circumference of the tube, and the widest edge is equal to double said circumference, so that when the tube is formed it is of double thickness at the rear and single thickness at the front end. When two pieces are used they are made to lap each other, as shown in Fig. 3, in which *d* represents the inner joint, and *e* the outer joint, formed by the laps; and in such case the narrowest edge is equal to about half the desired circumference, and the widest edge equal to the entire circumference, so that when the two pieces are placed together to form the tube the two narrow portions simply meet, or very slightly lap each other, to form the front end of single thickness, and the two wide portions lap and pass each other in opposite directions, to form the rear end of double thickness. This mode of making the tube is preferred in some cases, as it insures more uniformity than when a single piece is used. The tube C thus formed is further strengthened by means of a long and narrow strip of sheet metal, B, which is rolled together longitudinally to form a ring or hoop, and placed in the rear portion of the tube, and thus serves as a re-enforce, after which the edges of the rear portion of the tube are turned inward to form a flange, *f*, by which it is attached to the head. The point or points where the edges of the sheet metal meet to form the front end of the tube may be soldered or otherwise secured together, if found necessary, in order to retain the proper shape; but no other portion of the joint is thus fastened, nor is the re-enforce soldered or otherwise fastened together or to the tube. By this construction of the tube and re-enforce the greatest strength is obtained at the rear end of the cartridge-case, where it is most needed, and the metal is allowed to expand under pressure of the charge, and thus prevent the escape of gas and the tearing or injuring of the tube.

The head of the cartridge-case is constructed of three pieces. The head proper consists of

a disk, F, on the periphery of which is a rim or flange, *g*, to facilitate extraction in the ordinary manner; and forward of said rim or flange is a conical projection, *h*, which enters a correspondingly-formed chamber in the bore of the gun, and thus acts as a gas-check. A disk, K, lies against the inner surface of the head-piece F, and has a rabbet or offset around its periphery for the reception of the flange-like inward projection *f* on the tube C. The disks F and K are provided with internally-threaded central perforations, for engagement with an external thread on a screw, L, by which they are secured together, with the flange *f* on the tube between them, and thus the tube and head are firmly connected. In the outer or rear end of the screw is a small chamber, *m*, for the reception of a primer, and in the inner or forward end is a larger chamber, *n*, for holding a small charge of fine powder, the object of which is to insure the ignition of the large-grained powder of the main charge.

A cartridge-case constructed as described consists of four finished pieces—namely, the tube and the three pieces composing the head, which may be readily put together, and as readily taken apart. The three pieces F, K, and L may be of cast metal, or may be stamped or struck out by dies from wrought metal, and may be tinned, if desired. This head is strong, substantial, and durable, and will stand a great many rounds; and when the thin metal tube becomes worn or injured it is only necessary to replace it by a new tube, in order to render the cartridge-case as good as new. By unscrewing the piece L, all four of the pieces will fall apart.

Heretofore the chief difficulty attending the application of metallic cartridge-cases to artillery has been the obtaining of sufficient strength at the base or head of the case. This difficulty I have completely overcome in the present invention, and have also produced a successful gas-check, which is constructed and operates upon the same principle as the gas-rings for which Letters Patent have been heretofore granted to me, said gas-check being conical in its external form, and entering a conical recess in the bore of the gun, in the same manner as the rings referred to.

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

1. The combination of one or more tapering plates, A, and a re-enforcing-piece, B, constituting the tube of the cartridge-case, substantially as herein described.

2. The combination of the head-piece F, formed with the outside gas-check *h*, the inner clamping ring or plate K, the tube C, having the flange-like projection *f* at its rear end, and the screw L, substantially as shown and described.

In testimony whereof I have hereunto signed my name in the presence of the two subscribing witnesses.

L. W. BROADWELL.

Witnesses:

JOS. CHLADEK,

A. HENNY.