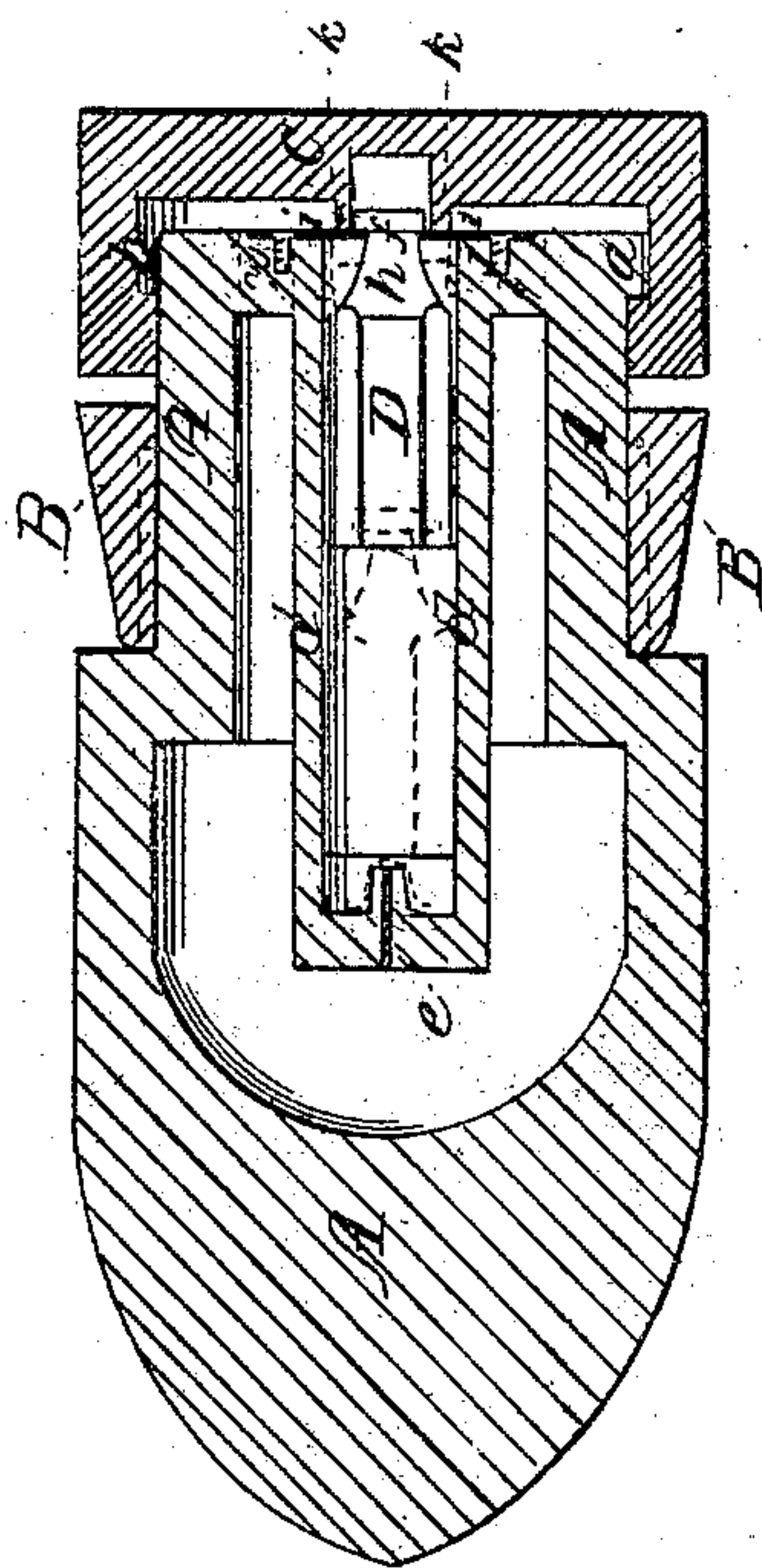
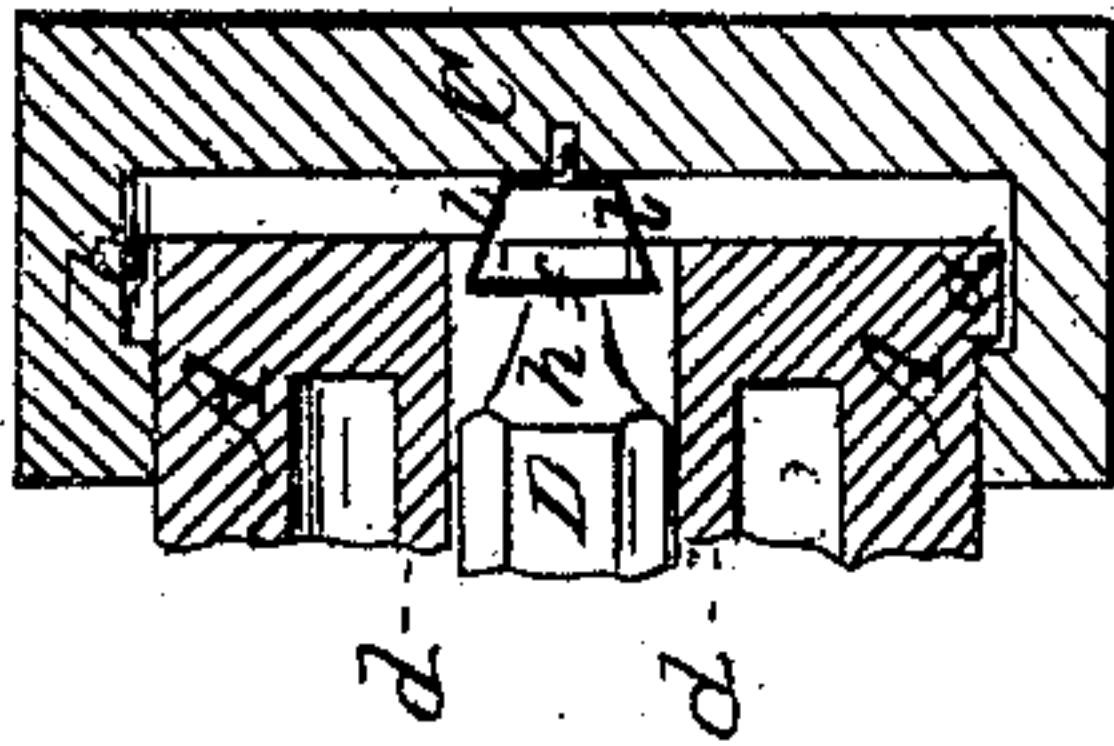


Shell.

Patented May 13, 1862.



Chas. H. Sibley

UNITED STATES PATENT OFFICE.

CHAS. W. ISBELL, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, AND
EDWIN S. ELY, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN EXPLOSIVE PROJECTILES.

Specification forming part of Letters Patent No. 35,277, dated May 13, 1862.

To all whom it may concern:

Be it known that I, CHARLES W. ISBELL, of the city, county, and State of New York, have invented a new and useful Improvement in Explosive Projectiles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central section of an elongated projectile with my improvement. Fig. 2 is a similar view of a portion of the projectile, illustrating a modification of my invention.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to explosive projectiles of elongated form to be exploded by the act of striking. Its principal object is to so supply a percussion apparatus in such a projectile as to enable it to be made solid at the point or end which strikes, and another object is to enable the projectile to be transported ready primed without danger.

It consists in the attachment of the hammer of the percussion apparatus to the rear portion or breech of the projectile by a device which holds it back until the discharge of the projectile from the gun; also, in so constructing and applying the said device for attaching the hammer to the rear portion or breech of the shell that it may be caused to liberate the hammer by the driving forward of the rear portion of the projectile relatively to the front portion thereof by the act of discharging the projectile from the gun, the hammer, when so liberated, being held back by inertia until the projectile strikes, when its momentum carries it forward and causes it to explode the percussion priming.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the hollow body of the projectile, having its rear portion fitted with a conical ring, B, of cast or wrought iron, which is to receive upon it a packing-ring of soft metal or other suitable substance, and with a cap or follower, C, to be driven forward against the said ring B, for the purpose of producing the expansion of the packing-ring by the force developed in the explosion of the charge of the gun by which

the projectile is discharged. This cap may be attached to the projectile in any suitable manner, as by means of two or more lugs, *a*, on the rear of the body, and a groove, *b*, in the interior of the cap, the part of the interior of the cap that is in front of the said groove having grooves cut across it transverse to *b*, to allow the lugs to pass into *b*. By turning the cap a little way after the lugs have entered *b*, it is prevented from dropping off. The body is charged through openings *g g* in its rear, and the said openings are plugged up before the cap is put on.

In the center of the hollow body A there is provided for the reception of the percussion-hammer D and cap-nipple *e* a tube, *d*, which may be cast with the body itself, said tube being attached to the rear end of the body, and being open at the rear, but closed in front, with the exception of its having a vent through the nipple *e*, which projects rearward into the interior of the tube. The hammer D is of plunger-like construction, but fitted loosely to the tube *d*, and it has around its rear end a shoulder, *f*, in front of which it is made conical, as shown at *h*.

In Fig. 1 the device for holding back the hammer is shown attached to the body A; but in Fig. 2 it is shown attached to the cap. The device shown in Fig. 1 consists of two small springs, *i i*, of sheet brass or iron or other tough and not too flexible metal, attached to the rear of the body, on opposite sides of the tube, by screws *j j*, and projecting over the edges of the mouth of the tube into the notch formed in the hammer in front of the shoulder *f*. In connection with this device I employ a central annular projection, *k*, on the interior of the cap, the exterior of the said projection being smaller than the interior of the tube *d*, and the interior of the said projection being larger than the exterior of the shoulder *f* of the hammer. When the force of the explosion of the charge of powder in the gun acts upon the cap C and drives it forward on the body A, this projection *k* presses forward the strips *i i* into the tube *d*, in the manner represented in red outline in Fig. 1, and so presses them aside far enough to allow the shoulder *f* of the hammer to pass them, and thus allow the hammer, to move forward in the tube. The ham-

mer, however, does not move forward therein until the projectile strikes and is arrested or greatly retarded in its flight, when the hammer, continuing to move forward by the momentum it has acquired, is caused to strike and explode the cap, and so fire the charge of powder in the hollow body A.

The device shown in Fig. 2 for holding back the hammer consists of two bent jaws, *l l*, of sheet brass or iron, attached to the cap C and hooking over the shoulder *f*. When the cap C is driven forward by the explosion of the charge of the gun, it drives the points of the jaws forward on the conical portion *h* of the hammer, and so causes the said jaws to be opened wide enough to let the shoulder *f* pass through or between them when the projectile strikes.

The operation of the hammer is the same as before described.

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

1. The attachment of the hammer of the percussion apparatus to the rear portion or breech of the projectile, substantially as and for the purpose herein specified.

2. So constructing and applying the device for attaching and holding back the hammer within the projectile that it is caused to liberate the hammer by the driving forward of the rear portion of the projectile relatively to the front portion thereof by the act of discharging the projectile from the gun, substantially as herein specified.

CHAS. W. ISBELL.

Witnesses:

R. GAMBY,

EDWD. W. HODGSON.