

A. J. SIMPSON.

METHOD AND MACHINE FOR BREAKING LOADED SHELL AND SHOT

No. 176,081.

Patented April 11, 1876.

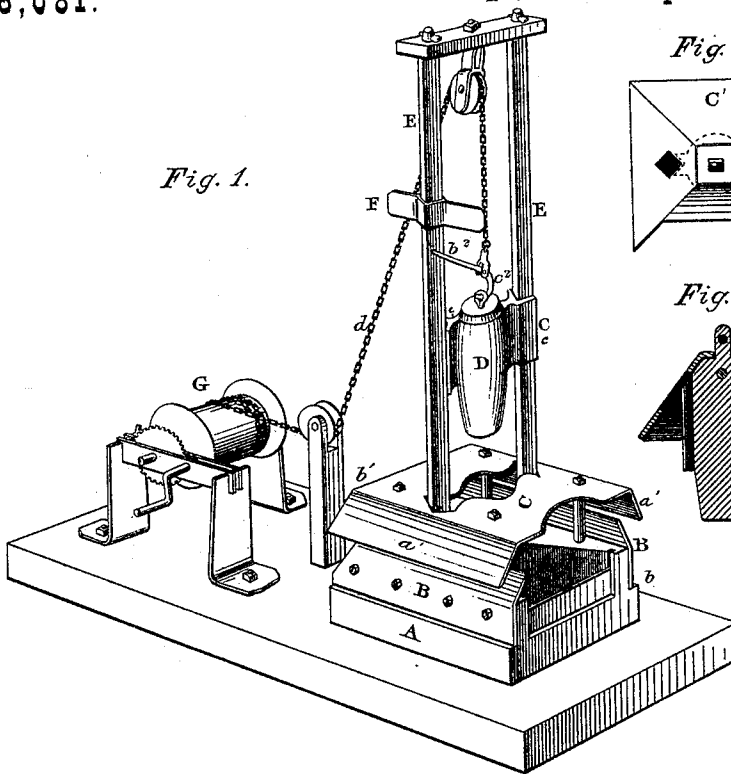


Fig. 1.

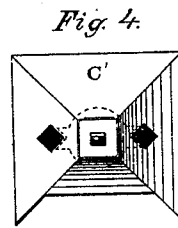


Fig. 5.

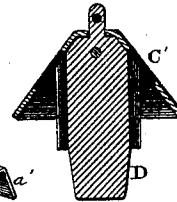


Fig. 3.

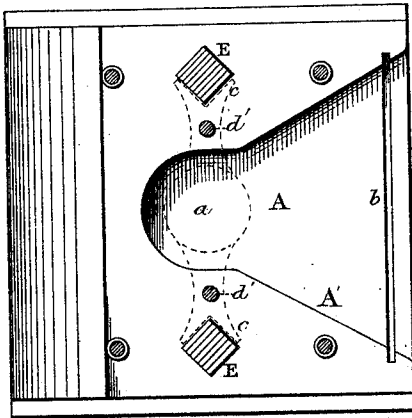
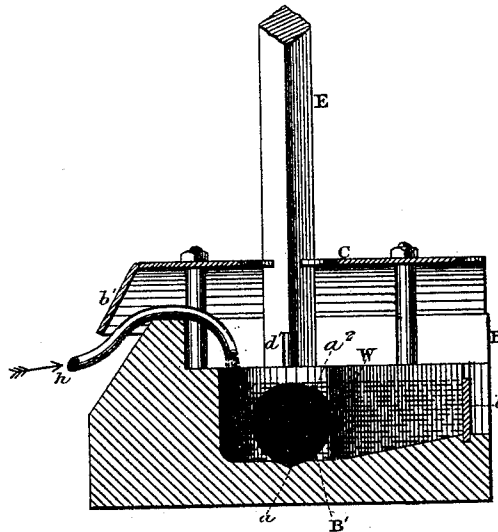


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ANDREW J. SIMPSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN METHODS AND MACHINES FOR BREAKING LOADED SHELL AND SHOT.

Specification forming part of Letters Patent No. **176,081**, dated April 11, 1876; application filed March 9, 1876.

To all whom it may concern:

Be it known that I, ANDREW J. SIMPSON, of Washington, in the county of Washington and District of Columbia, have invented a certain new and useful Method and Machine for Breaking Loaded Shell and Shot; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which drawings—

Figure 1 is a perspective view. Fig. 2 is a longitudinal vertical section. Fig. 3 is a horizontal section, presenting a top view of the basin-anvil. Figs. 4 and 5 are detached views of a hammer and attached bomb-proof.

My invention relates to a new method and machine for breaking loaded shell and shot; and the invention consists of a basin-anvil, constructed to receive and hold the shell or shot, and to contain a sufficient quantity of water to partly cover them, and of a portable bomb-proof, to protect the operator from injury, and of a drop-hammer, adjusted to be raised by suitable machinery and dropped upon the shell or shot, breaking them open in the basin-anvil, where their combustible contents are under water, and thus not liable to ignition or combustion, as hereinafter more fully described.

A represents the basin-anvil, of cast-iron or any other suitable material, having a depression, *a*, to hold in place a shell or ball, and a flaring mouth, *A'*, as shown in Figs. 1 and 3. A plate, *b*, is adjusted in grooves across the mouth of the basin-anvil, to hold the water in the basin, and to be removed to allow the water to escape when required. B represents plates of steel or wrought-iron, attached on the outside of the anvil, and extending above it. C is a portable bomb-proof, of steel or wrought-iron plates, attached by bolts to the anvil, and adjusted above the edges of the plates B sufficiently to allow space for the gases to escape from the basin-anvil. The two wings *a'* *a'* and the back part of the bomb-proof *b'* are depressed, and extend outside and below the upper edges of the plates B, as

shown in Figs. 1 and 2 of the drawings. D represents the drop-hammer, provided with guide-arms *c c*, having grooves to slide on the upright posts E. The hammer is tapered below the guide-arms, as shown in the drawing, to enable it to enter the shell or shot, and thus separate the different metals. If the hammer were made without such taper it would crush, and not separate, the contents of the shell and shot.

F represents an adjustable stop, attached to one of the upright posts E, to catch the lever end *b'* of the hoisting-hook *c'*, to throw the hook out of the ring in the end of the hammer to let it drop.

G is a windlass, provided with the requisite gearing to operate it; and *d* is a chain or rope, working in pulleys, and attached at one end to the windlass, and at the other end to the hoisting-hook, for raising the hammer.

I use a hammer weighing about six hundred and fifty pounds, and it may be raised by any suitable machinery actuated by hand or power, and the height to which it is raised is determined by the size of the shell or shot to be broken. To break the smallest-size shell the hammer is raised about eighteen inches, and to break the largest size the hammer is raised about five feet, and the point at which the hammer is dropped is regulated by the adjustment of the stop F. Check-bars *d'* are adjusted in the basin-anvil, under the guide-arms *c*, to check the hammer and prevent it from penetrating the combustible contents of the shell and shot, and to avoid unnecessarily crushing them. These check-bars are removable, and are of different lengths, in pairs, to suit the different sizes of the shell or shot.

The basin-anvil is supplied by a pipe, *h*, from a cistern, or by any other convenient means, with water sufficient to mostly cover a shell or shot represented by B' in position in the anvil, with fuse *a'* inclined toward the mouth of the anvil, so that the hammer will strike near the fuse, as shown in Fig. 2 of the drawings.

Instead of the bomb-proof C, attached to the anvil, a bomb-proof, C', may be attached to the hammer, as shown in Figs. 4 and 5.

The operator, with a suitable shovel, places a shell or case-shot in proper position in the

depression in the basin-anvil, and, retiring to the rear, raises the hammer till the lever *b*² strikes the stop F, throwing the hoisting-hook out of the ring in the hammer, letting it drop, and opening the shell and separating the metals contained therein. The combustible materials, being under water, are not liable to be ignited by any sparks which may be emitted by the concussion of the hammer; and when the shell is opened the water, instantly penetrating, destroys the combustible properties, rendering combustion thereafter impossible, and the operator then with perfect safety removes the broken shell and contents and places in position another, and proceeds as before.

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

1. The method of breaking loaded shell and

case-shot under water by mechanism, substantially as described.

2. A basin-anvil, supplied with the proper quantity of water, in combination with a drop-hammer, substantially as and for the purpose described.

3. The portable bomb-proof C, in combination with plates B and basin-anvil A, substantially as and for the purposes described.

4. The stop-bars *d'*, in combination with the hammer D and basin-anvil A, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ANDREW J. SIMPSON.

Witnesses:

G. B. TOWLES,

JAMES B. PHILP.