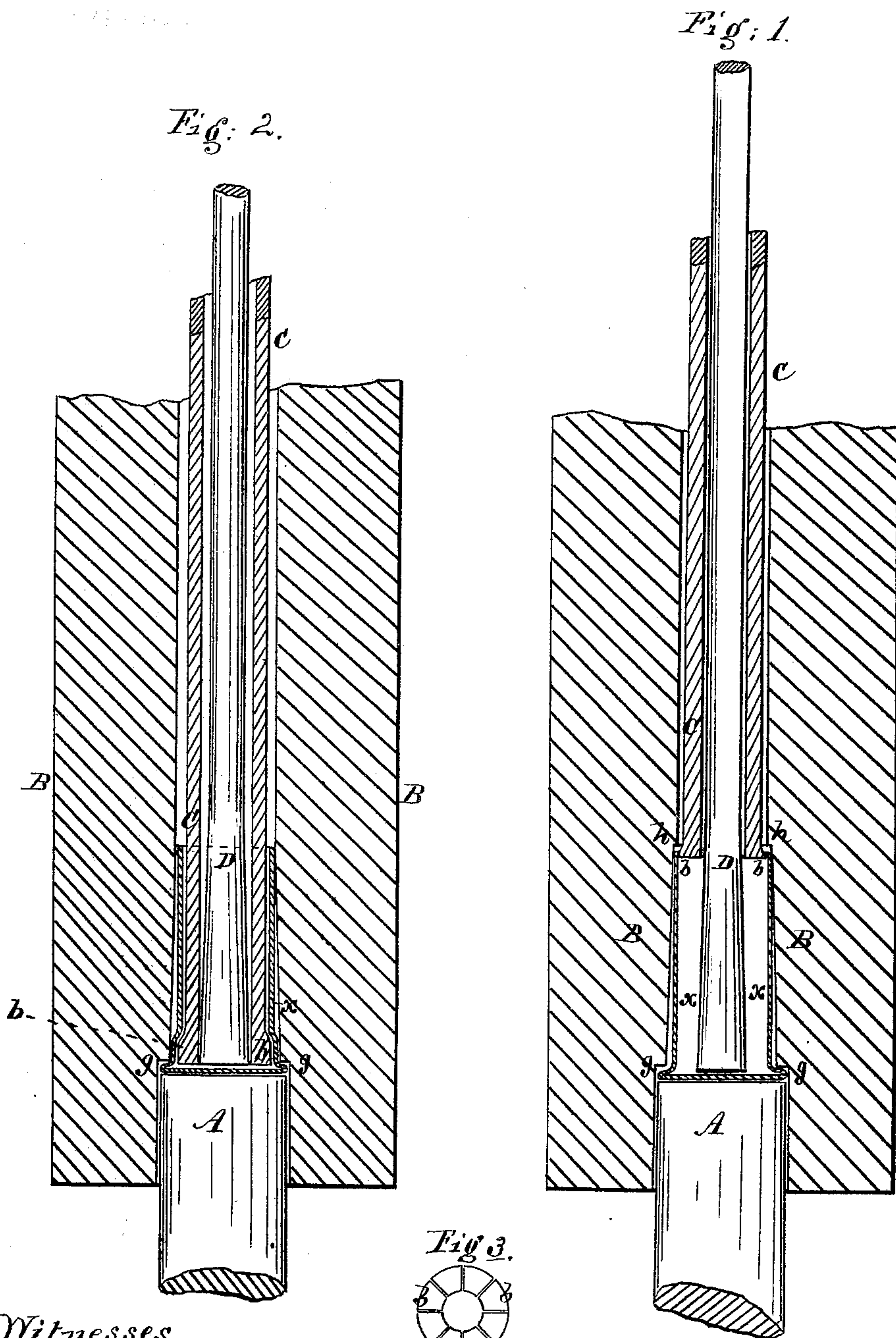


STEPHEN W. WOOD.

Improvement in Machines for Tapering Cartridge-Shells.

No. 126,609.

Patented May 7, 1872.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

STEPHEN W. WOOD, OF CORNWALL, NEW YORK.

## IMPROVEMENT IN MACHINES FOR TAPERING CARTRIDGE-SHELLS.

Specification forming part of Letters Patent No. 126,609, dated May 7, 1872.

*To all whom it may concern:*

Be it known that I, STEPHEN W. WOOD, of Cornwall, county of Orange, and State of New York, have invented an Improved Machine for Tapering Metallic Cartridge-Shells; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification—

Figure 1 representing a central, vertical, or longitudinal section of the essential parts of the machine; Fig. 2, a corresponding section, indicating a modified operation of the parts; Fig. 3, a view of the lower end of the sectional expanding and contracting tool employed in the machine.

Like letters designate corresponding parts in all of the figures.

The parts represented are, a seat or support, A; a hollow die, B; a sectional expanding and contracting tool, C; and a tapered rod, D. These fulfill the respective functions herein described; and the movements thereof for performing their functions are effected by any suitable and known means, which any one skilled in the art can readily apply.

The cartridge-shell X to be tapered is first placed on the seat or support A, and the die B is then brought down over it, (or the shell is moved up into the die,) the flange of the shell bearing against or projecting under an inner shoulder, *g*, thereof, and the upper end of the shell also being preferably shielded by another shoulder, *h*, of the die, as shown.

By the operation of the parts as indicated in Fig. 1 the rod D, which is of taper form, largest at the lower or inner end, and is situated concentrically in the die B, is first brought down to the base of the shell, as shown. The sectional expanding and contracting tool C, which concentrically surrounds the tapered rod, first being at the top of its movement, is then caused to descend inside of and in contact with the shell, and is gradually expanded equally on all sides, as it descends, by the tapered rod D, over which it moves and fits, whereby the shell is gradually enlarged in diameter, more and more toward the base, to the exact taper required. The cavity in the

die B is of the required taper, and is of sufficient size to admit of the requisite enlargement or tapering of the shell. The tool C and tapered rod D are then withdrawn from the shell—first the tool, and then the cam-rod. Then the tapered shell is removed from the machine, and the succeeding shell brought into position to be tapered in the same way.

According to the arrangement indicated in Fig. 2, the expanding and contracting tool C first descends inside of the shell X to the base thereof, or to the point where the taper is to commence. Then the tapered rod D descends inside of the tool, expanding it during the descent until it reaches the base of the shell or termination of its downward movement, as shown in the drawing. At this time the working-lip or projection *b* on the lower end of the tool, at its outer edge, has expanded the body of the shell, where it is in contact therewith, to the full diameter required for the taper, as represented. Then the tool is drawn out of the shell, contracting gradually in diameter as it is withdrawn, and ascends along the tapered rod D, with which it moves in contact, and consequently less and less enlarging the shell toward its open end, and producing thus the taper required. Then the tapered rod is withdrawn and the tapered shell removed, when the machine is ready to taper the succeeding shell in the same manner.

The difference between the two operations above described is that, in one, the expanding-tool enlarges and tapers the shell from the open end toward the base; and in the other from the base, or where the taper commences, toward the open end.

The parts described may be arranged in a horizontal or oblique position, or in an inverted vertical position. If inverted in position, the seat A may be dispensed with in the arrangement indicated in Fig. 2; or, in any case, a single part for holding the shells may take the place of the parts A B.

The tool C is divided into sections to allow its expansibility and contractibility. In Fig. 3 it is represented as divided radially and longitudinally into eight sections. These sections

have, or may have, sufficient flexibility and elasticity to permit the necessary expansion and contraction of the tool.

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

The combination of the expanding and contracting tool C, the seat or support A, and die

B, and the tapered rod D, substantially as and for the purpose herein described.

STEPHEN W. WOOD.

Witnesses:

J. C. LYONS,  
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