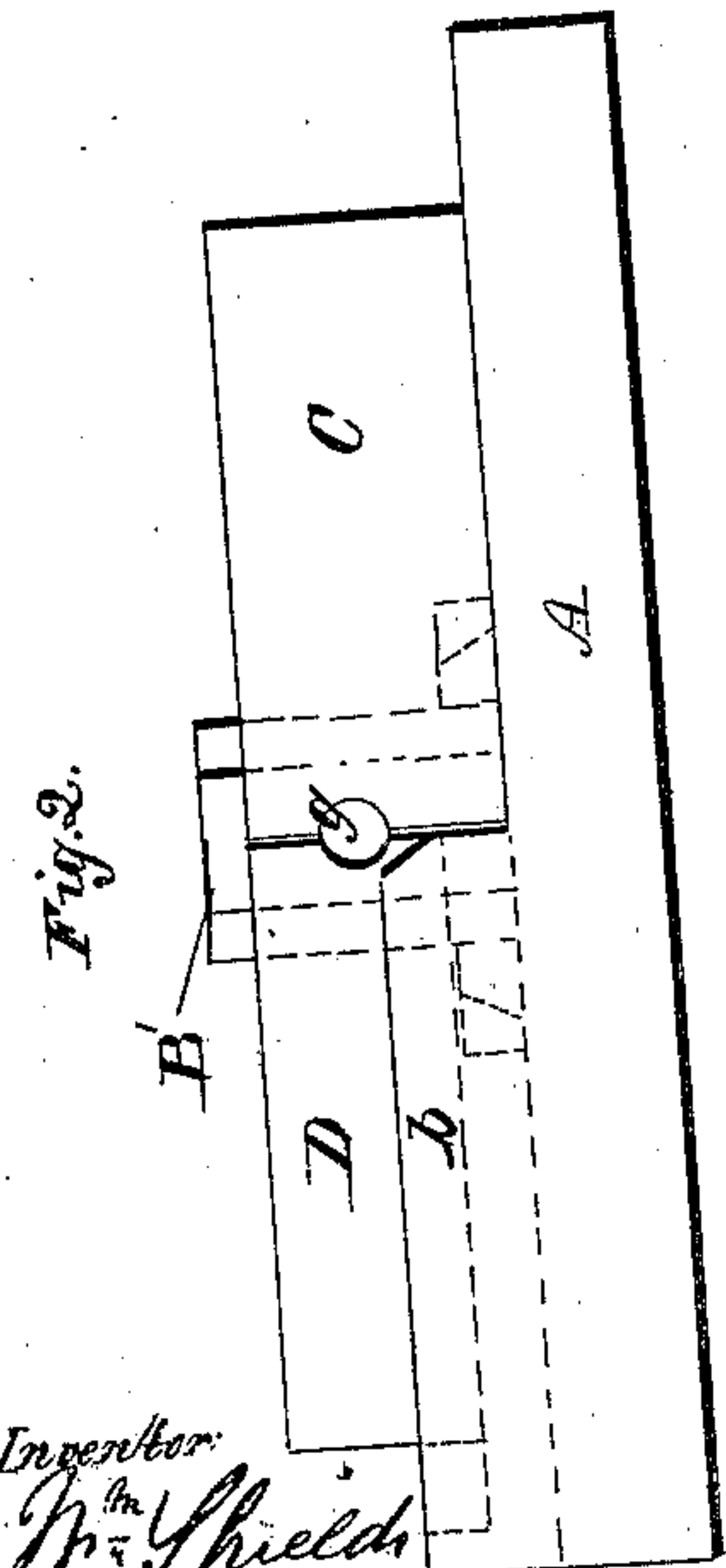
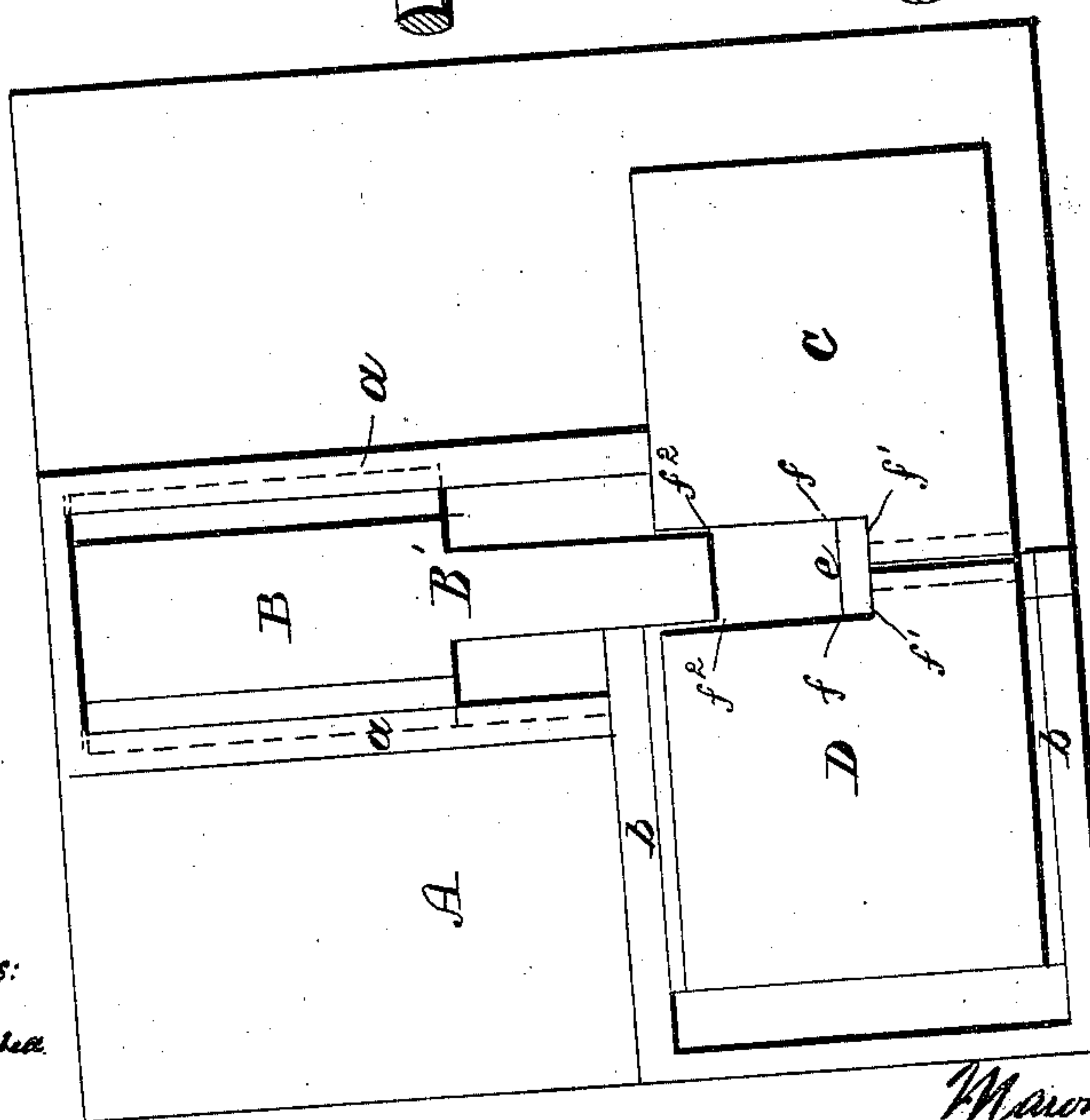
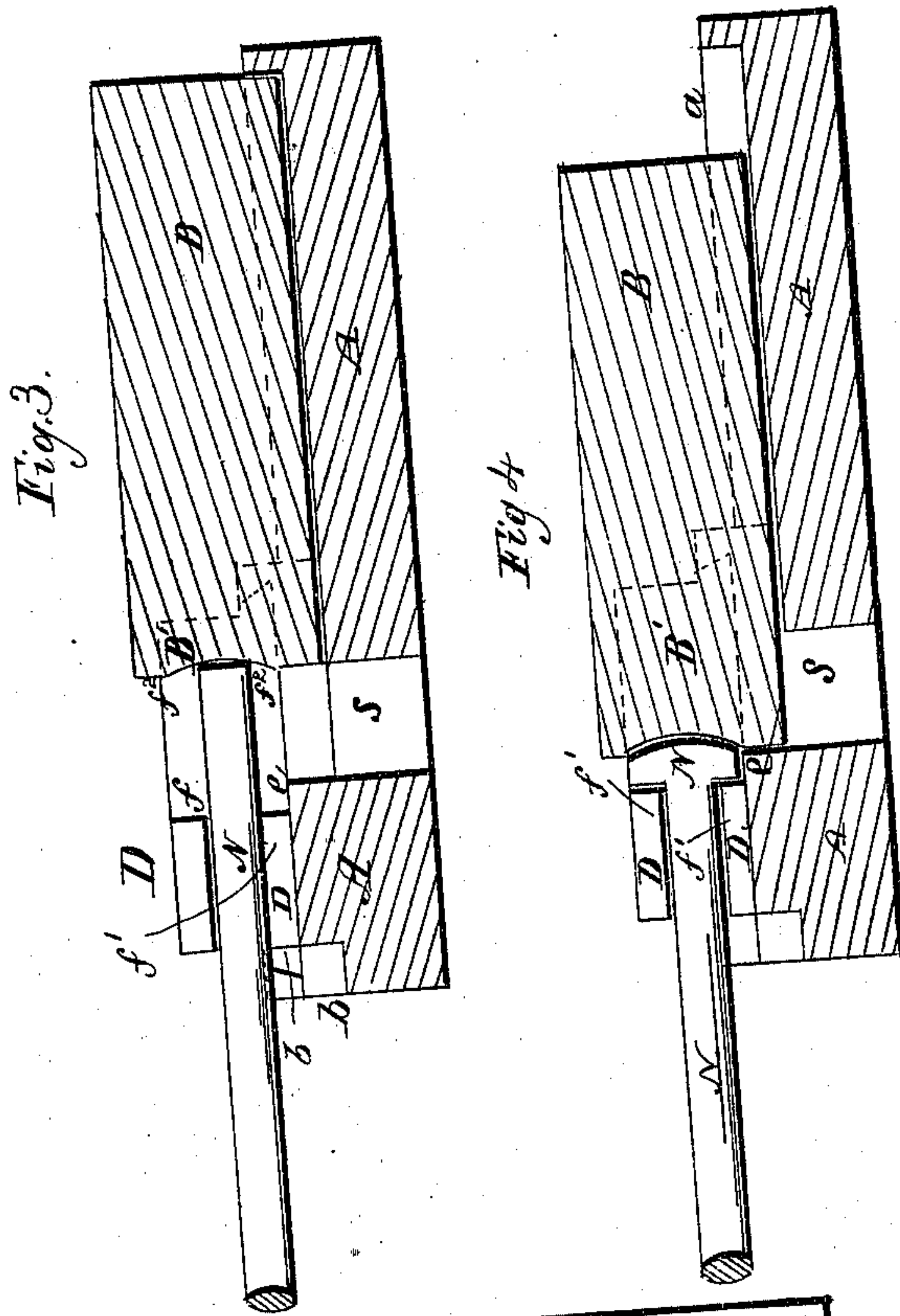


W. SHIELDS.
Bolt Heading Machine.

Patented Aug. 25, 1868.

No. 81,419.



Witnesses:

J. Campbell

R. T. Campbell

Inventor:

W. Shields

Mason. Hewitt & Lammer

United States Patent Office.

WILLIAM SHIELDS, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 81,419, dated August 25, 1868.

IMPROVED DIE FOR MAKING SQUARE-HEADED BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM SHIELDS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement on Dies for Making Square-Headed Bolts; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan-view of the improved dies and heading-plunger.

Figure 2 is a side elevation of the same.

Figure 3 is a longitudinal section, taken in a vertical plane through the centre of the devices, showing a heated rod in a position for being headed.

Figure 4 is a similar view of the same parts represented in fig. 3, showing the heading-plunger in the position which it assumes when the head is formed upon the rod.

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

This invention relates to a novel improvement on machinery which is designed for producing square heads upon rods, in the manufacture of square-headed bolts; and it particularly relates to an improvement on the Letters Patent granted to me on the 18th day of February, 1868, wherein the bolt-heads were described as being produced in a chamber having closed sides and bottom, with an open top, so that, in the act of producing a bolt-head, the metal was supported upon three sides, and the liability of making it oblong was thereby prevented. By my improvement, I retain the advantages attending the three supporting-walls, for producing square heads, but obviate an objection to having the bottom wall closed the full length of the chamber in which the heading-plunger moves, by using only two vertical or side walls for guiding the plunger up to the chamber within which the head of the bolt is finished, thereby allowing the "flash" or scale to freely escape in front of the heading-plunger, and preventing it from getting between this plunger and the walls within which it works.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The dies and heading-plunger, herein shown and described, may be arranged and operated in the same manner as now commonly practised in bolt-heading machinery, and for this reason it will not be necessary for me to show or describe the devices which give motion to said parts.

In the accompanying drawings, A represents the bed-plate, upon which the two chambered gripping-dies and the heading-plunger are applied.

The two jaws C and D are constructed with semicircular recesses in those edges which come together, which form a round hole, *g*, for receiving, gripping, and centring the rod during the operations of forming a square head upon it. This hole terminates in a rectangular chamber, which is formed by cutting away portions of the abutting edges of the jaws, and leaving vertical walls *ff*, within which the heading is performed.

The jaw C is rigidly fixed, and the jaw D is movable, so that, by suitable means, this latter jaw can be moved up to the jaw C, and held during the operation of the heading-plunger B', after which it can be made to recede, and allow the rod to be turned or removed.

The vertical side walls *ff*, and the end wall *f'*, together with a bottom portion, *e*, form the chamber within which the metal rod N is headed, and the vertical side walls *f''f''*, which extend beyond said chamber, serve as guides for the heading portion, B', of the plunger B, to prevent lateral deflection of this plunger while operating to produce the head N'.

It will be seen from the above description, and by reference to figs. 1, 3, and 4, that the bottom of the chamber within which the heading-tool works is not closed its full length, and that there is only a sufficient length of bottom to said chamber to afford a bottom support for the head N', when it has been reduced by the heading-plunger B' to a given thickness. Beyond this bottom portion *e* there is an opening, S, made through the bed A, which will allow the escape of scales, and prevent them, as well as the fins, which are formed on the heads in the act of producing them, from causing the heading-plunger to bend and work hard between its guides.

Under my Letters Patent, above mentioned, the bottom of the chamber within which the heading-plunger works is closed its entire length, and there is no bottom opening, and it frequently happens that the "flash" or

fin, formed in making the bolt-heads, will get under the heading-plunger, and cause it, as well as the bolt, to stick fast. By leaving out all that portion of the bottom of said chamber which is not required to support the metal while being swaged into shape, the objection above mentioned does not occur.

I am aware that a heading-plunger, with a die which is open at top and bottom, is not new for producing bolt-heads, and therefore I do not intend to claim broadly such devices as my invention.

The nature of my invention and improvement consists in employing a die having three walls for supporting the metal of which the bolt-heads are formed, during the final operations of the heading-plunger, and in combining therewith a bottom-opening, which will prevent the "flash" or "fin" from causing the bolt and the heading-plunger to bind, as set forth.

I am aware that, in the construction of bolt-heading machines, it is not new to leave one or two sides of the die open, in order that the blank, as it is staved up, may be permitted to spread outwardly in one or two directions, while prevented from spreading in all other directions by the lateral walls of said die, an instance where one side only of such a die is left open being seen in a previous patent granted to myself; and therefore I do not claim here such construction of die; but

What I do claim as my improvement, is—

The narrow ledge *e*, at the bottom of the die, in combination with the side walls thereof and the plunger, as and for the purpose herein described.

WILLIAM SHIELDS.

Witnesses:

CHAS. E. PANCOAST,
JAMES PENROSE.