

J. W. SEAVER.
Machine for Manufacturing Bridge-Irons.
No. 223,011. Patented Dec. 30, 1879.

Fig. 1.

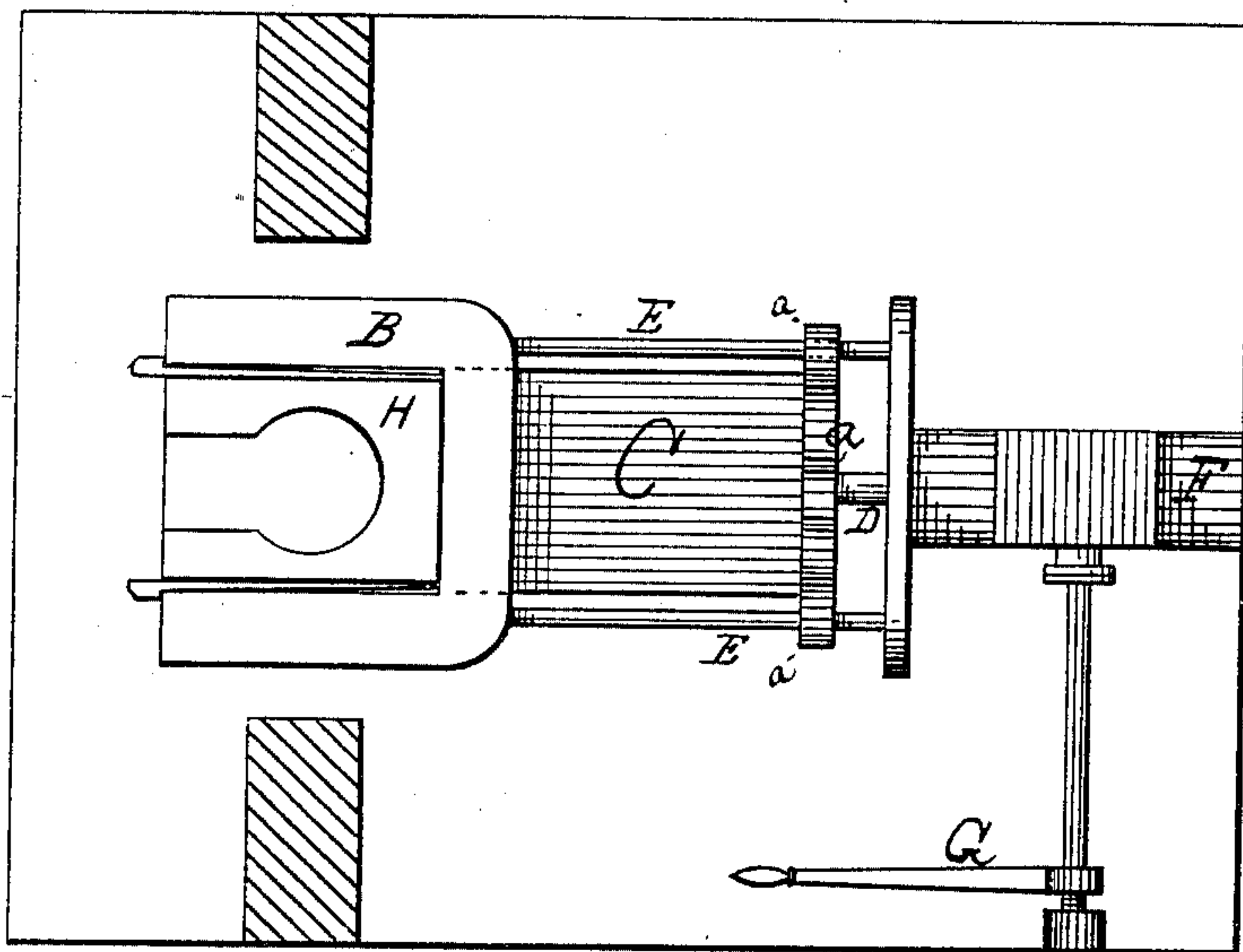
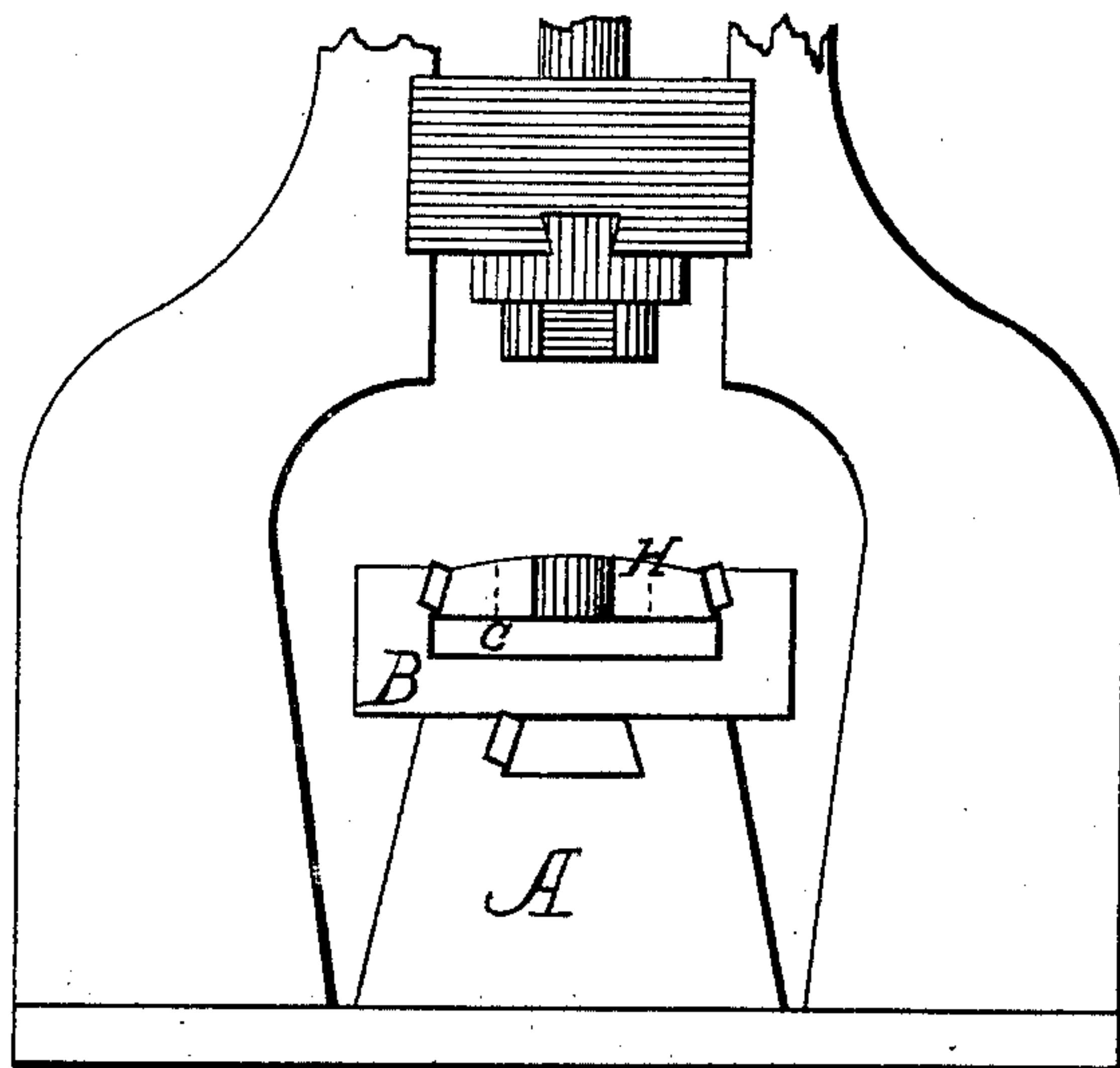


Fig. 2.



Witnesses:
V. H. Parsons.
J. R. Drake.

John W. Seaver,
Inventor, by
J. R. Drake, Atty.

UNITED STATES PATENT OFFICE

JOHN W. SEAVER, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF OF
HIS RIGHT TO ROBERT H. MONTGOMERY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MANUFACTURING BRIDGE-IRONS.

Specification forming part of Letters Patent No. **223,011**, dated December 30, 1879; application filed
September 18, 1879.

To all whom it may concern:

Be it known that I, JOHN W. SEAVER, of Buffalo, in the county of Erie and State of New York, have made certain Improvements in Machines for Manufacturing Bridge-Irons, of which the following is a specification.

In the drawings, Figure 1 is a plan with the hammer part removed; Fig. 2, a front-end view.

The anvil-blocks for power-hammers for making what are known as "die-forgings" have heretofore been constructed in two ways:

First, a solid block having a recess or matrix the shape of the corresponding die on the hammer-head cast into its face, the objection to which is, the great difficulty in removing the finished forgings from the matrix, it being almost impossible to do so on account of the excessive tension or friction against all the sides of the matrix.

Second, another form of anvil-block is made with a recess on its upper face, in which are placed two blocks of iron, each having a half of the matrix cut out of its abutting sides, one of the blocks being secured in a rigid position against the sides of the recess on the anvil-block. The other block is pivoted at one end, and the other end is held in position by means of a key or wedge, thereby allowing a slight lateral movement when the key is withdrawn, which will allow of the forging being lifted out of the recess or matrix. The objections to this are, first, the labor and time consumed in knocking out the key or wedge that holds the movable half of the matrix in position, requiring several very hard blows, especially when the key gets jammed in, which is of frequent occurrence, sometimes breaking the key, thereby causing delay in the work. Another objection to this form of anvil-block is, the labor required both in fitting up and finishing the two halves of the matrix and in adjusting them to the required position after each forging has been made.

The following is a description of my machine: A is the ordinary bed-block that is used for all hammers. On top of this bed is keyed or otherwise secured the anvil-block proper, B, which is made with a slot that extends clear through it from front to back, the width of

the slot in all cases being about two inches greater than the forging it is proposed to make. In this slot is a plate of wrought-iron or other suitable material, C, that is fitted so as to have a free movement in a direction from front to rear. This plate extends clear through the anvil-block, and at its back end is provided with three lugs or projections, *a*, which are bored out, the center one to receive the piston-rod D of the auxiliary cylinder F, set in a horizontal position for the purpose of operating the sliding plate C. Through the holes in two outside projections, *a*, of the sliding plate pass two rods, E E, their ends suitably supported, which form guides for the sliding plate C, which receives its movement from the small cylinder F, set directly back of the anvil-block. Steam being admitted therein at the front end withdraws the sliding plate C nearly its whole length from the anvil-block, leaving only its front edge resting in the slot in the block. The valve that admits the steam to this cylinder is operated by the shaft and lever G, which is brought to a convenient distance for the man working the valves for the hammer, who is thus enabled to attend to both at the same time. Directly over the sliding plate C is placed the matrix-block H, resting in a dovetailed or other recess, and rigidly secured to the anvil-block by means of wedges, bolts, or otherwise. This matrix has an opening the shape of the die on the hammer-head, that extends clear through it and forms a mold for the forging intended to be made.

The operation of my improved device is as follows: Supposing it is proposed to make an eye-bar, such as is used in bridge-work, a bar of iron of the proper length has a number of small pieces piled up on one end of it and wired thereto, so as to keep them in place while being handled. The end with these small pieces is then placed in a furnace and brought to a welding heat, when it is withdrawn and placed in the recess in the anvil-block, the sliding plate C being beneath it and entirely covering the bottom of the matrix-block. A few blows of the hammer will then form the small pieces on the bar into a solid homogeneous eye or head, making it practically one piece with the body. When

the forging is completed steam is admitted into the small cylinder F, which withdraws the sliding plate C from the anvil-block, leaving the forging in the matrix, where it will be held by the excessive friction against the sides of the matrix caused by the iron being forced into close contact by the process of hammering. When this sliding plate is withdrawn it will be seen that there is no bottom to the matrix, and a single blow from the hammer will then force the eye-bar (or forging) out of the matrix down into the space beneath left by the withdrawal of the sliding plate, from whence it is pulled out in front of the anvil-block. (The sliding plate is thicker and wider than the forging.) The hammer-head or die being then raised by means of its own steam-cylinder, steam is admitted to the back end of the auxiliary cylinder, forcing the sliding plate forward into the recess in the anvil-block ready for the next forging.

It will be readily seen that forgings can be rapidly and economically made, only a short time being consumed in removing the forging when finished and in readjusting of the matrix-block for the following work.

I claim—

The combination of the bed-block A, matrix-block H, anvil-block B, the latter having the slots or recesses therein, and the sliding plate or bottom C, moving forward and back therein, operated by the piston-rod D, or its equivalent, by any suitable power applied thereto, all arranged and operating substantially as and for the purpose specified.

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

JOHN W. SEAVER.

Witnesses:

J. R. DRAKE,

R. H. MONTGOMERY.