

P. B. CUNNINGHAM.

Dies for Cutting, Molding, and Punching Shovel Blades

No. 166,347.

Patented Aug. 3, 1875.

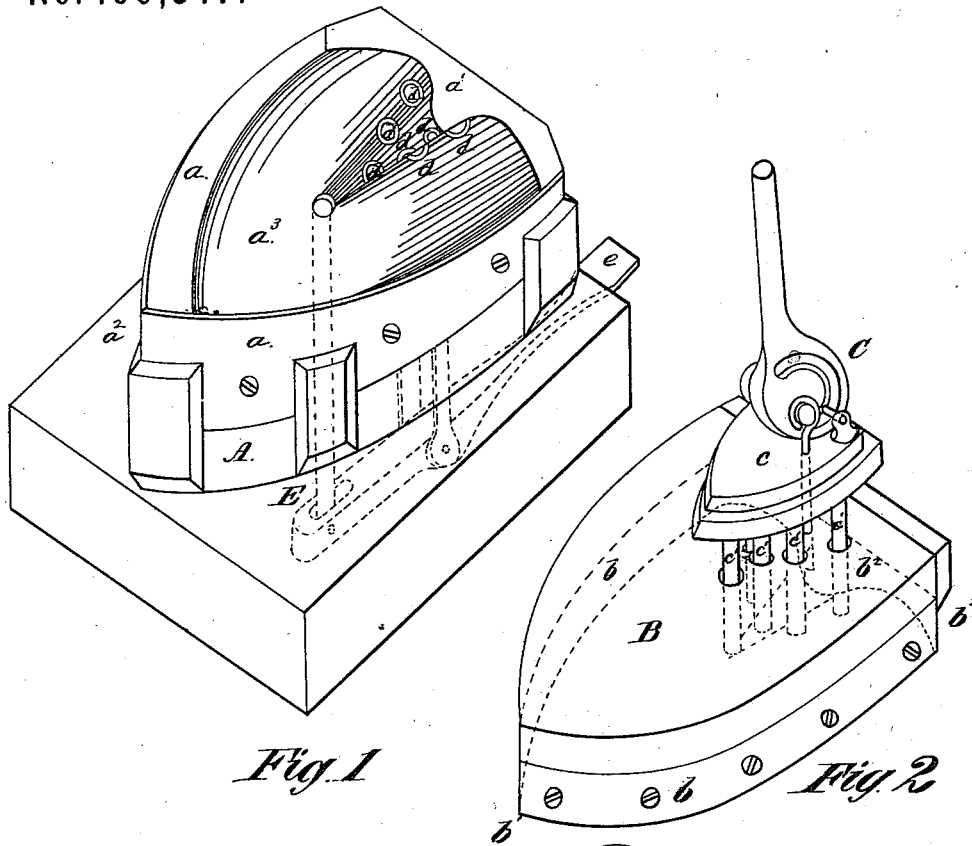


Fig. 1

Fig. 2

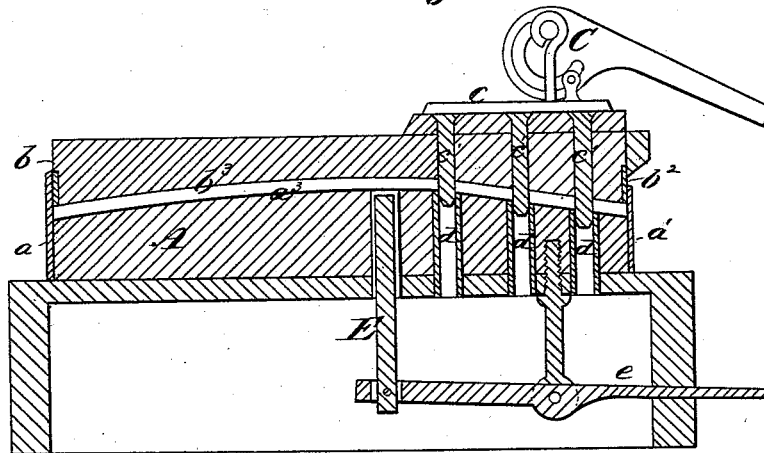


Fig. 3

Witnesses

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IMPROVEMENT IN DIES FOR CUTTING, MOLDING, AND PUNCHING SHOVEL-BLADES.

Specification forming part of Letters Patent No. **166,347**, dated August 3, 1875; application filed May 4, 1875.

To all whom it may concern:

Be it known that I, PETER B. CUNNINGHAM, of Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Methods and Dies for Forming Shovel-Blanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a perspective of the die. Fig. 2 is a perspective of the plunger. Fig. 3 is a vertical longitudinal section of die and plunger.

My invention has for its object to provide a die in which shovel-blanks will be both cut and formed in a single operation, and in which the holes in said blank for securing it to the strap will be also punched before leaving the die.

Referring to the accompanying drawing, A shows a female die, secured to the bed-plate of any suitable press or equivalent device. The surface or face a^3 of this die is made conformable to any desired shape of shovel, but is not confined to any particular one. The edge of this die is provided with steel knives a , a , and a^1 , the knives a meeting at the point a^2 , and their upper edges or cutting-surfaces sloping or inclining until they meet the knife a^1 . B represents a male die, the surface or face of which, b^3 , is made to conform to that of the die A. This die B is also provided with knives b , b , meeting at the point b^1 , and having straight cutting-edges, and with a knife, b^2 , having a curved or concave cutting-edge. The die B is to be secured to the plunger of a press, or to an equivalent device, so as to be moved up and down, the die A remaining stationary. C represents an eccentric lever or equivalent mechanical device for operating a punch-head, c , to which a series of punches, c' , are to be attached, for forming holes in the blank for the passage of the riv-

ets by which said blank, when formed, is to be attached to the shovel-strap. The punches c' work through the die B, cutting against the tubular dies d d in the die A. A series of dies, d d , conforming to the punches c' c' , are to be employed, and are designed to be readily removable from their sockets when sharpening is required. E is a plunger, actuated by a treadle, e , and designed to eject the blank from the die A after it has been cut, formed, and punched.

The operation is as follows: The sheet from which the blank is to be formed is placed on the die A. The die B is then caused to descend, severing the blank by a shearing cut, due to the sloping or inclined edges of the knives a a , and forcing it into the female die. The male die still continuing to descend, the cut-off blank is compressed between the surfaces or faces a^3 and b^3 , and by this means formed into the desired shape. The punches c' are now caused to descend by a suitable movement of the lever C, perforating the blank for the passage of rivets. The die B being then raised, the blank is ejected from the die A by an upward movement of the plunger E, produced by depressing the outward extremity of the treadle e .

What I claim as my invention is—

1. The combination of the female die, having knives or cutters a a a^1 , and a formed face, a^3 , with the die B, having knives b b b^2 , and a correspondingly-formed face, b^3 , substantially as shown and described.

2. In combination with the cutting and forming dies A and B, the punches c and sockets d , located in said dies A and B, for punching the blanks while in the forming-dies, substantially as shown and set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of April, 1875.

PETER B. CUNNINGHAM.

Witnesses:

GEO. C. SHELMERDINE,
THOS. WEISS.