T. J. BLAKE.

Manufacture of Shovels.

No. 162,146. Patented April 20, 1875.

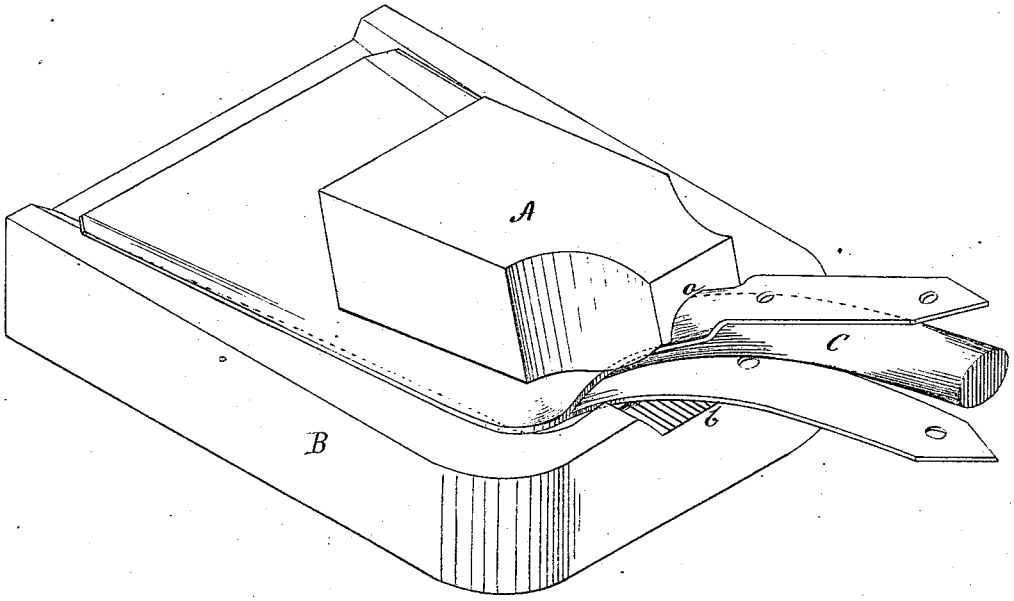

FIG. 1.

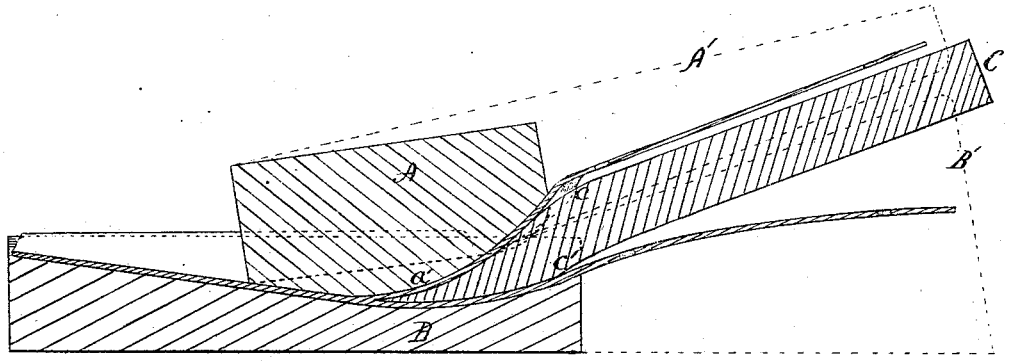

FIG. 2.

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THOMAS J. BLAKE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF SHOVELS.

Specification forming part of Letters Patent No. **162,146**, dated April 20, 1875; application filed February 18, 1875.

To all whom it may concern:

Be it known that I, THOMAS J. BLAKE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Manufacture of Shovels; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a perspective view of a set of dies or formers, and Fig. 2 is a vertical longitudinal section of the same.

Like letters refer to like parts wherever they occur.

My invention relates to the manipulation of the shovel or spade, and its straps in securing the handle thereto; and it consists, first, in setting up or forming and shaping the sockets and straps while in a heated state, and previous to the insertion of the handle, whereby the integrity of the shovel is preserved, and all liability of injury to the socket or straps is avoided; and, secondly, in the use of a mandrel and dies for setting up or forming and shaping the socket and straps, whereby the straps, &c., are fitted to receive the handle before the introduction thereof.

The common method of attaching the shovel or spade to its handle is to drive the handle into the socket after the socket has been set up or opened, then force the flat straps down upon the handle, and secure them by the usual rivets, after which that portion of the handle held between the straps is passed between grooved rolls, which shape the straps around it. This method of inserting the handles can only be practiced on wrought-iron shovels, or shovels having wrought-iron straps which can be bent while cold, and even with these the straps are frequently cracked or otherwise injured, and the socket is not closed down on the end of the handle.

The object of the present invention is to obviate these difficulties. In carrying out my invention I make use of a mandrel or former and dies, such as are illustrated in the drawing, in which—

A represents the upper die or swage, the face of which is concave from side to side, as shown at *a*, to correspond with the mandrel or former employed, and to close the socket and upper strap around the same, and convex from before backward, as at *a'*, to conform to the blade of the shovel. This die may be as large as the face of the shovel, if desired, but such a large upper die is not deemed necessary. The lower die or swage, B, which acts as a bed, conforms in general to the under side of the shovel or spade, except at the point *b*, where it is cut out or countersunk to conform to the mandrel, and for the passage of the lower strap. C indicates a mandrel or former used in conjunction with the dies A B, said mandrel agreeing in form and size with the handle to be inserted thereafter. In the drawing, mandrel C, it will be noticed, has two curves, one at *c*, indicating the bend of the handle above the shovel-blade, and a second, *c'*, at the heel of the socket, which is the preferred form given to the mandrel, yet it is not its essential shape. For the ordinary wrought-iron shovel, or for a cast-steel shovel having wrought-iron straps, these devices will in general be sufficient, as all that is necessary is to shape and set up the socket and part of the straps where the metal has to be spread as well as bent, after which the remainder of the soft-metal strap, which has only to be bent down, can be finished by the rolls in the usual way without liability to fracture. But in the handling of shovels and spades having cast-steel straps, which cannot be successfully rolled onto the handle, and which, consequently, have never been made to any considerable extent, I provide for setting up the straps for their whole length at one operation, by extending the upper die, as shown in broken line A', Fig. 2, and the lower die or swage, as shown at B'. The natural spring of the straps will be sufficient to permit the withdrawal of mandrel C.

The dies may be operated by a cam, screw, drop, or other suitable well-known devices, and are used as follows: After the shovel has been plated, and is ready to receive the handle, and while in a heated condition, the socket is set out by driving in mandrel C, and then the socket and straps are subjected to the action of dies A B, which set up the socket and bend the straps, conforming them to the mandrel for such distance as the dies extend, dependent on the use of dies shown in full or broken

line. As soon as released by the dies the mandrel C is withdrawn, and the shovel-handle is inserted and secured by the usual rivets.

The main advantages of my invention are, as above specified, that shovels of any and all kinds of wrought or cast metal may have the socket set up and the strap bent to conform to the handle without liability of breaking the straps or injuring the socket.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The improvement in the art of manufacturing shovels herein described, and consisting in setting up and shaping the socket and straps, while heated, by means of suitable dies and a mandrel, substantially as specified.

2. The combination of the dies or swages A B, and the mandrel C, substantially as and for the purpose specified.

In testimony whereof I, the said THOMAS J. BLAKE, have hereunto set my hand.

THOMAS J. BLAKE.

Witnesses:

F. W. RITTER, Jr.,

T. B. KERR.