(No Model.)

C. W. HUBBARD.

Shovel.

No. 238,903. **Patented March 15, 1881.**

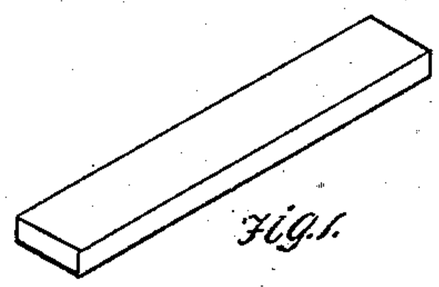

Fig. 1.

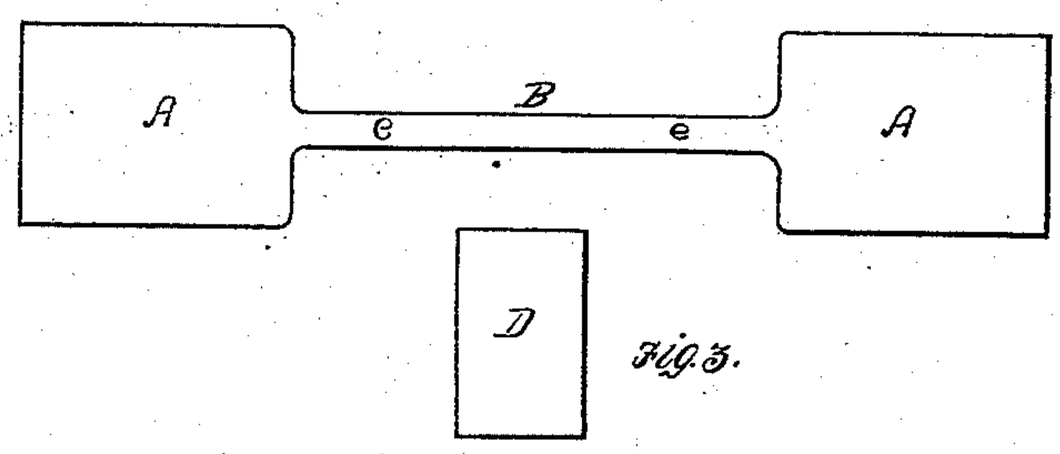

Fig. 2.

Fig. 3.

Fig. 4.

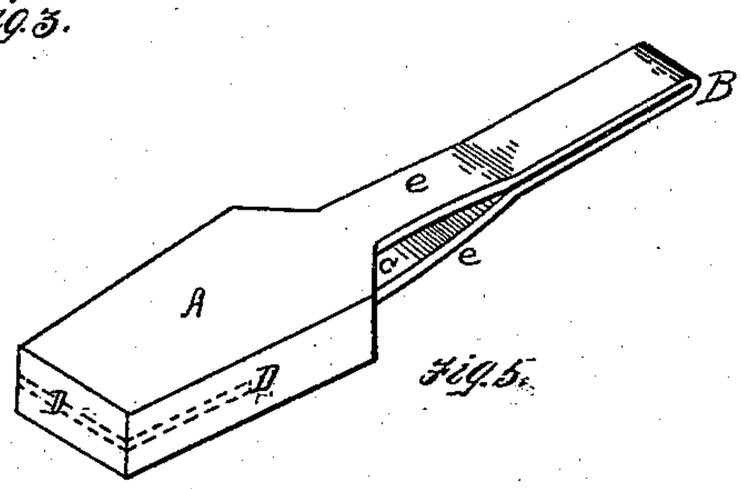

Fig. 5.

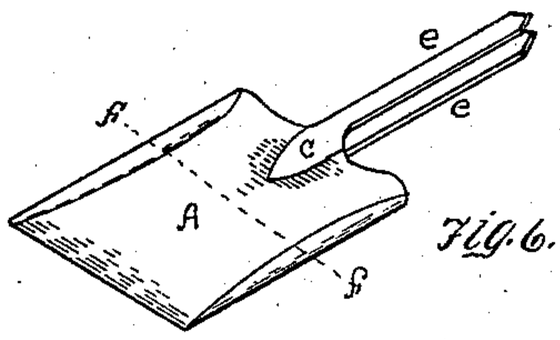

Fig. 6.

Witnesses.

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CHARLES W. HUBBARD, OF PITTSBURG, PENNSYLVANIA.

SHOVEL.

SPECIFICATION forming part of Letters Patent No. 238,903, dated March 15, 1881.

Application filed May 24, 1878.

To all whom it may concern:

Be it known that I, CHARLES W. HUBBARD, 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, and to the letters of reference marked thereon.

My invention consists of an improved shovel.

To enable others skilled in the art to which my invention is most nearly connected to make and use it, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a perspective view of a bar of soft steel or semi-steel. Fig. 2 is a face view, representing the form into which the bar shown in Fig. 1 is forged by the forging or "plating" process, well understood by shovel-makers. Fig. 3 represents a face view of a plate of fine cast-steel. Fig. 4 represents the blank shown in Fig. 2 doubled together, and the plate shown in Fig. 3 inserted between the parts which form the shovel-blade, and Fig. 5 an enlarged perspective view of the same forged together. Fig. 6 represents the finished shovel ready for the reception of the wooden handle.

In the manufacture of steel shovels blanks of steel have been cast, and subsequently forged and rolled into the desired form for the blade and strap for the handle. Experience has demonstrated that the straps when thus formed have not the desired softness and pliability for fitting them with facility to the wooden handle.

Another method of manufacturing steel shovels consists in constructing the straps of wrought-iron, and then casting cast-steel for the shovel-blade around them. Steel shovels have also been made by forging the blades and straps out from bars of cast-steel. Both of these methods are costly, and therefore do not meet the wants of the manufacturer and trade, and the handle-straps in the latter method are not sufficiently pliable for fitting them with facility to the wooden handle.

Shovels have also been constructed of wrought-iron with steel points, which are known to the trade as "steel-pointed shovels." The objection to this shovel is that it is not stiff enough just above the steel point, and often breaks off at the point of union between wrought-iron and steel.

For the purpose of furnishing the trade with a steel shovel which will be cheap and meet the wants of the user, I construct my improved shovel in the following manner: I take a bar of soft steel or semi-steel (see Fig. 1) and forge it into the form shown in Fig. 2, the parts marked A being for the blade, and the part marked *e* being for the handle-straps. The cavities C, formed by means of dies, are for forming the socket for the lower end of the wooden handle. The blank shown in Fig. 2 is bent at B, so as to bring the parts marked A together. I then take a plate, D, of fine cast-steel—that is to say, steel of a good quality—and place it between the parts marked A, as shown in Fig. 4. I next heat the parts A and D and weld them together under the hammer in the way usually practiced, and draw out the blade and straps also under the hammer. I then anneal the straps and the shoulders of the blade, so as to render them sufficiently soft and ductile to be shaped and laid down on the wooden handle without unusual labor or danger of breaking. The shovel is then planished and sheared to shape, and the result is a complete shovel, such as is shown in Fig. 5, having a hard-steel center bit, soft-steel blades, and annealed straps and shoulders.

By constructing a shovel by the method hereinbefore described the outer surfaces of the blade and the handle-straps will consist of soft steel or semi-steel, and the center of the blade, to about the dotted line *f*, will be fine steel, and the shoulders and straps will be capable of being shaped with ease and without danger of cracking. A shovel thus constructed will be susceptible of a high finish. The handle-straps *e* will be strong and sufficiently pliable to be fitted to the wooden handle with ease and rapidity. The outer surfaces of the blade being softer than the center

will cause the shovel to so wear that its point will always be sharp, and the straps being rendered tenacious by annealing will not be liable to break under strain while the shovel is in use.

Having thus described my improvement, what I claim as my invention is—

A shovel having a hard-steel center layer, soft-steel faces and straps, and annealed straps and shoulders, substantially as and for the purposes described.

In testimony whereof I, the said CHARLES W. HUBBARD, have hereunto set my hand.

CHARLES W. HUBBARD.

Witnesses:
W. N. PAXTON,
T. B. KERR.