E. BINNS & E. A. BARNES.

Casting Shovel-Blanks.

No. 162,145. Patented April 20, 1875.

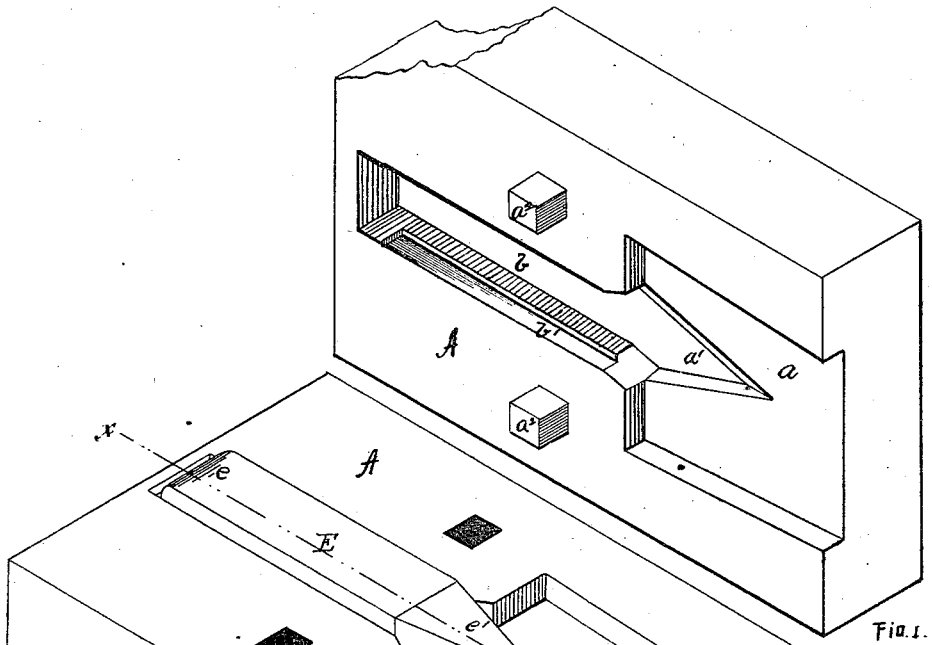

FIG. 1.

FIG. 2.

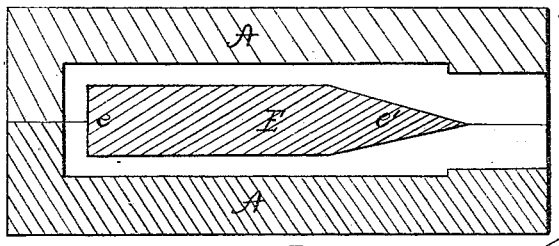

FIG. 3.

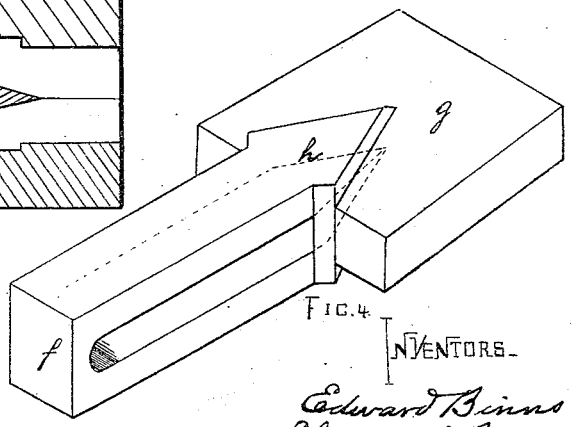

FIG. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD BINNS AND ELMORE A. BARNES, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN CASTING SHOVEL-BLANKS.

Specification forming part of Letters Patent No. **162,145**, dated April 20, 1875; application filed February 15, 1875.

To all whom it may concern:

Be it known that we, EDWARD BINNS and ELMORE A. BARNES, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cast Shovel-Blanks; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 illustrate the two halves of a mold employed in carrying out our invention. Fig. 3 is a sectional view of the mold and core, on the line *x x*, Fig. 2. Fig. 4 is a perspective view of a blank.

Like letters refer to like parts whenever they occur.

Our invention relates to cast blanks for shovels, spades, scoops, and similar articles; and it consists, first, in a cast blank having those parts of the casting which correspond to the straps in the finished article united at the outer ends, forming a loop, whereby the blank may be worked by the rolls without liability of displacing the straps; and, secondly, in employing, with a mold having suitable shoulders or ledges, a destructible pointed core, the core being supported above the bottom of the mold by means of said ledges or shoulders, so that the socket and loop will be formed in the casting.

The manufacture of wrought-iron shovels, as commonly followed, consists in first forming, by means of suitable dies, a blank having two broad portions corresponding to the blade of the shovel, said portions connected by a narrow strip. The blank is folded, to bring the two broad portions together, in which position they are welded to form the blade, the narrow strip forming a loop, which enables the shovel to be plated and finished by the rolls, the union of the straps at the outer end preventing their displacement, and facilitating the work.

Heretofore, when the shovel has been formed from a cast blank having the portion for the strap cast with the portion for the blade, two forms of blank have been employed—one in which the portion for the strap was cast in two parts or projections, and another in which the portion for the straps was cast solid and afterward divided. Both of these forms of blanks are necessarily plated under the hammer, for the reason that the straps become twisted or displaced under the rolls. The object of the present invention, therefore, is to produce a cast blank having those features of a wrought blank which enable the latter to be worked by the rolls, so that the difficulties existing in the plating of cast blanks by rolls is overcome, and a cheaper and better shovel may be produced.

Having described above the known form of cast blanks, the objections thereto, and the object to be attained by the present devices, we will now proceed to describe our invention in detail, so as to enable others skilled in the art to apply the same.

In casting the blank, we preferably employ a mold of two parts, as seen at A A, each part A having a broad recessed portion, *a*, corresponding to the part of a blank which forms the shovel-blade, and a narrow extension, *b*, corresponding to the strap. The portion *a* may have the triangular depression a^1, corresponding to the usual point of attachment of strap and blade, and the portion *b* of the mold has on both sides thereof the ledge or shoulder *b′*, to support a destructible core, E. E represents a destructible core, formed of sand or other suitable material, square or rounded, as preferred, at one end, *e*, and terminating at the other end in a point, *e′*, which, in casting a blank, forms the socket therein. This core is supported by the shoulders *b′*; but as said shoulders do not extend the whole length of mold-extension *b*, of course the core E is suspended out of contact with the bottom of the mold, leaving a free passage for the molten metal upon two sides and around the end *e* of core E, as is clearly shown in Fig. 3 of the drawing. The halves of the mold may be secured together by pins a^2 or other suitable devices.

Having a mold of substantially the construction described, we proceed as follows to obtain our blank: The parts of the mold having been secured together, and the destructible sand core being in proper position, we cast in the usual manner. The molten metal, entering the portion *a*, fills the mold surrounding the core E, except on the two sides, which are

in contact with the mold, the point e' of core E forming the socket in the blank.

When the casting is removed from the mold it brings with it the destructible core, which may be readily removed, leaving a cast blank having the looped portion f corresponding to the strap, substantially like the one shown in Fig. 4 of the drawing, in which g represents the part corresponding to the blade of the shovel, and f the part corresponding to the straps, the part f being looped, as seen, and h (dotted lines) indicating the socket as left in the casting by core-point e'.

The clear distinguishing feature of this cast blank is, that the parts which are to form the straps in the finished shovel are united at their extremities, forming a loop. This enables the blank to be plated by the rolls without distorting the straps, and gives the advantages incident to the manufacture of the wrought-iron shovel without the disadvantages arising from the necessary folding and welding required in the wrought-iron shovels.

It is evident that the ends of the strap or portion f of the casting might be united or looped by casting in a link, or by supporting the end e of the core above the bottom of the mold by a small piece of metal, said piece of metal tying the ends f of the blank by uniting therewith at the time of casting, each of which will effect the object, but neither of which is to be preferred to the method set forth in detail.

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

1. A cast shovel-blank having those parts of the casting which correspond to the straps united at their outer ends, forming a loop, substantially as specified.

2. In combination with the molds A A, having shoulders or ledges b' b', a destructible pointed core, E, supported within the mold and above the bottom thereof, substantially as and for the purpose specified.

In testimony whereof we, the said EDWARD BINNS and ELMORE A. BARNES, have hereunto set our hands.

EDWARD BINNS.
ELMORE A. BARNES.

Witnesses:
T. B. KERR,
F. W. RITTER, Jr.