S. W. Collins,

Casting Hardware

No. 30,668. Patented Nov. 20, 1860

Fig. 1.

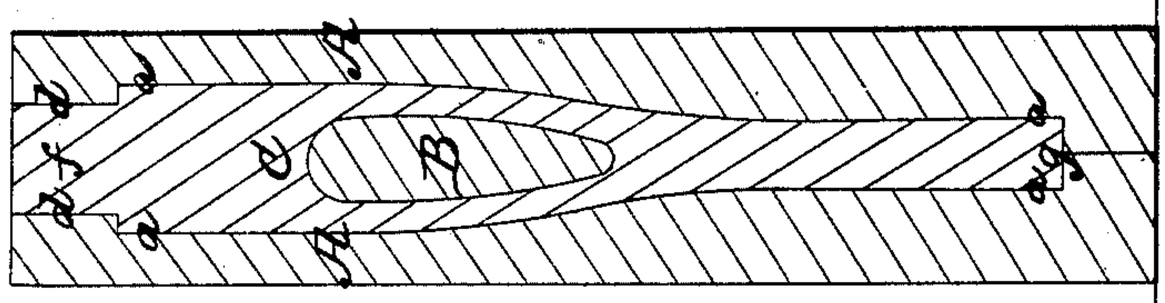
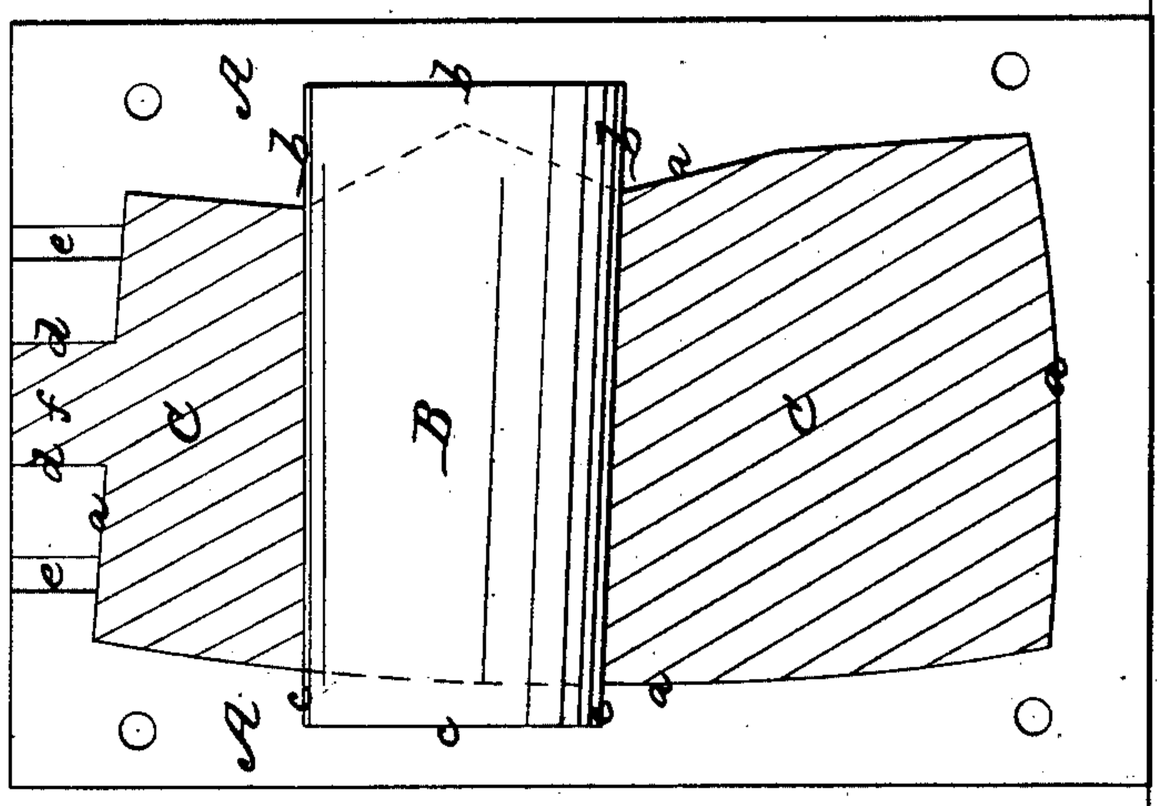


Fig. 2.



Witnesses.
S. H. Hales
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UNITED STATES PATENT OFFICE.

SAMUEL W. COLLINS, OF CANTON, CONNECTICUT.

IMPROVEMENT IN THE MANUFACTURE OF EDGE-TOOLS.

Specification forming part of Letters Patent No. **30,668,** dated November 20, 1860.

To all whom it may concern:

Be it known that I, SAMUEL W. COLLINS, of Canton, in the county of Hartford and State of Connecticut, have invented a new and improved mode of manufacturing edge-tools and other tools and implements and other articles of steel or steel and iron combined; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention consists in the manufacture of axes, adzes, hammers, anvils, or other tools or implements or other articles by pouring from a crucible or other vessel or drawing from a fire or furnace of suitable character into a mold of proper shape steel or steel and iron in a molten or fluid state, thus dispensing either altogether or for the most part with the welding, punching, and forging or swaging processes.

To enable others skilled in the art to use my invention, I will proceed to describe, by the aid of the accompanying drawings, its application to the manufacture of axes.

Figure 1 in the said drawings represents a longitudinal section of the mold and casting, taken transversely to the sides of the ax. Fig. 2 exhibits a face view of one of the halves of the external portion of the mold and a section of the eye-core and casting in a plane corresponding with the dividing plane of the external portion of the mold.

Similar letters of reference indicate corresponding parts in both figures.

A A are the two halves of the external portion of the mold, made of iron or other material, each containing one-half of the cavity *a a a*, in which the exterior of the ax is formed, half of each of the two cavities *b b* and *c c*, which receive and hold the ends of the eye-core B, and half of the pouring-gate *d d* and of each of the vent-holes *e e*. To one of the parts A A are attached steady-pins, fitted to holes in the other of said parts. The two parts A A may be secured together by bands or clamps of metal in a suitable manner.

The drawings represent a casting, C, in the mold. *f* is the sprue.

I prefer always to melt the metal in a crucible, which may be heated in a furnace of any suitable construction. The metal should, before being placed in the crucible, be broken up into small pieces. When reduced to a fluid state, I pour it into the mold. When it is desired to form the blade of the ax of steel and the eye and head of iron, or to form the two parts of steel of different quality, one metal or quality of metal will first be poured and then the other, care being taken, however, to commence pouring the second before the pouring of the first is stopped.

In manufacturing axes of two kinds of metal, the mold is arranged as shown in the drawings, and the metal for the edge part is first poured, and afterward the metal for the eye and head. When only one kind or quality of metal is used, I prefer to have the sprue below the core instead of at the head, as represented in the drawings.

Other edge-tools may be cast in the same way as axes, as above described, and in the manufacture of all edge-tools I leave the edge thick in the mold, as represented at *g* in Fig. 1, and to draw it down thinner under a hammer, the drawing always improving the quality of the steel. In this manner we avoid also the flaws and other imperfections which will always be found to exist when tools are cast with a sharp or thin edge.

Hammers, anvils, or other implements or articles may be made with steel faces and iron bodies by the same process; and in making such articles I prefer to so arrange the mold that the part to receive the steel is lowest, to permit it to be poured first. Either cast or wrought iron may be combined with steel for various articles, cast-iron with steel for some articles, and wrought-iron with steel for others.

I am aware that steel has heretofore been cast into various solid forms, and I do not, therefore, claim to have invented the manner of casting it into pigs or ingots or any other shapes into which it can be successfully cast by a single complete process and with a homogeneous metal; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The casting of axes and other tools and implements partly of iron and partly of steel or of different qualities of steel by pouring, in a melted state, first one of those metals and

then the other, thus superseding the necessity of welding or otherwise attaching the different metals together in the way heretofore practiced, all which is done in the manner and for the purpose hereinbefore set forth.

2. The casting of edge-tools from steel or from steel and iron combined by leaving the steel edges thick in the first instance and afterward drawing them down under a hammer, in the manner above described.

SAMUEL W. COLLINS.

Witnesses:
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