

A. Shepard,
Casting Hardware.

N^o 84,072.

Patented Nov. 17, 1868.

Fig: 1

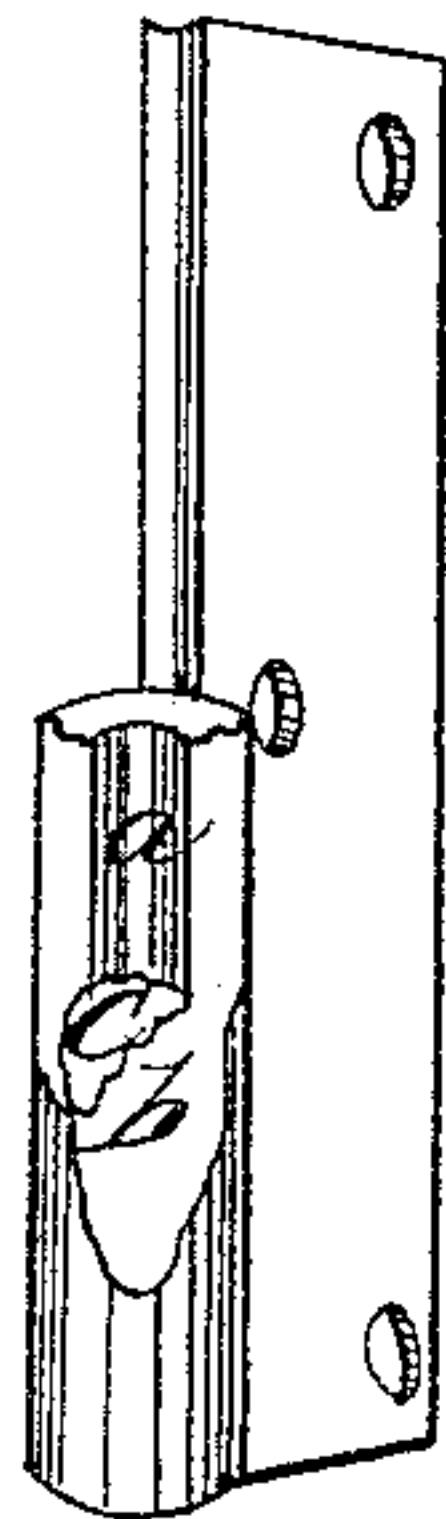


Fig: 2.

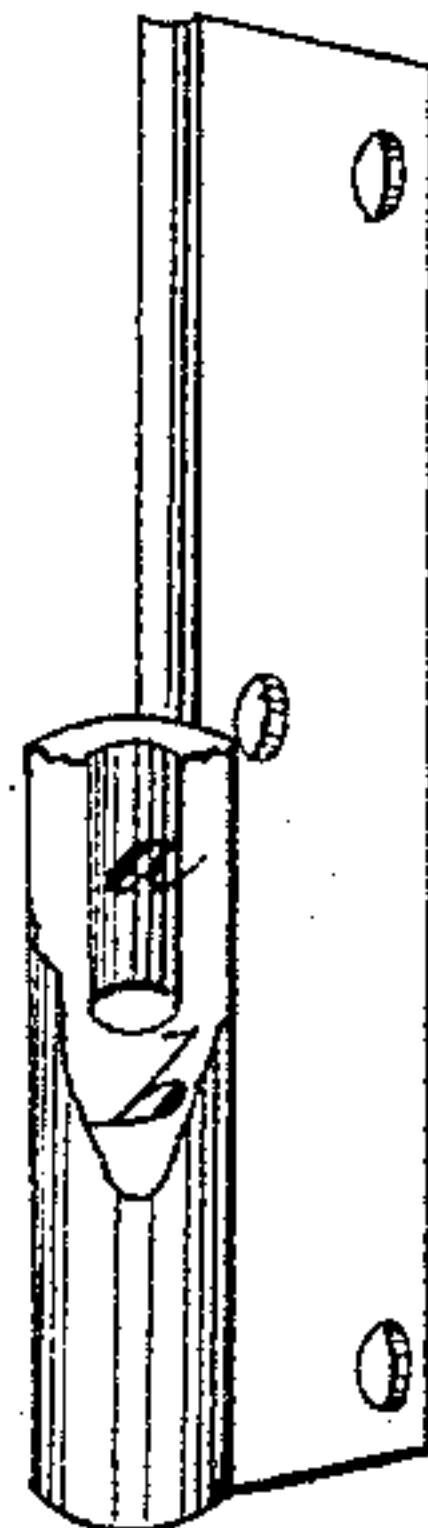
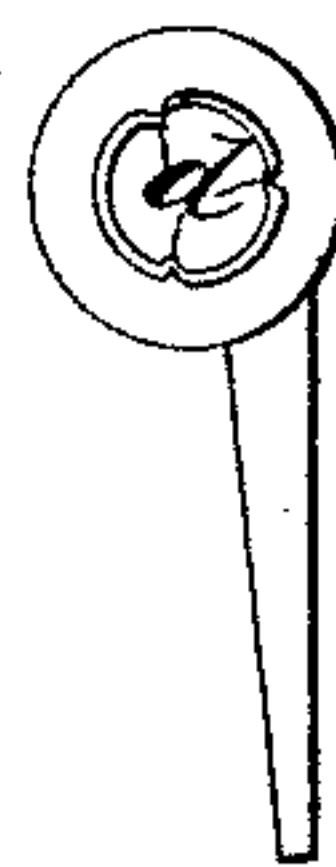
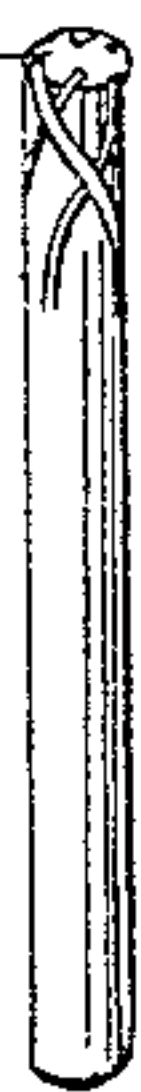


Fig: 3. Fig: 5. Fig: 7.



Fig: 6. Fig: 4.



Witnesses:

Frederick H. Mead
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AMOS SHEPARD, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO
"UNION MANUFACTURING COMPANY," OF SAME PLACE.

Letters Patent No. 84,072, dated November 17, 1868.

IMPROVEMENT IN VENTING METALLIC CORES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, AMOS SHEPARD, of New Britain, in the county of Hartford, State of Connecticut, have invented a new and improved Process in the Art of Running Molten Metal Upon and Around Cold Metal; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a casting of a half but, cast in the ordinary way.

Figure 2 is a perspective of a casting of a half but, cast by my improved process.

Figure 3 is an elevation of the same.

Figure 4 is a transverse section of the same.

Figure 5 is a perspective view of a metal wire, with one end prepared to be enclosed by the molten metal.

Figure 6 is a perspective view of another style of the same.

Figure 7 is a perspective view of the wire as ordinarily used.

Similar letters of reference indicate like parts.

My invention consists in providing the metal to be enclosed by the molten metal with creases, flutes, or acute angles, so sharp or fine that the molten metal will not close solid over them, thus leaving small apertures through which the air or gas will escape to the pores in the sand, and effectually prevent imperfect castings.

a designates a cavity in the broken but, from which the wire was removed by breaking.

The buts are broken at *b*, to show the quality of the castings.

Fig. 2, cast by my process, is found to be solid and perfect, while fig. 1, cast by the ordinary mode, has what foundrymen term a "blow-hole," *c*, which is a place where a small amount of air or gas was confined. Had the wire been fluted or creased, as at *d*, the air or gas would have escaped before the molten metal was chilled, and allowed the space *c*, occupied by the air or gas, to be filled by the metal.

The creases or flutes *d* can be of any desired form or shape, but should be sufficiently fine or sharp to pre-

vent the molten metal from closing perfectly solid over them, and thus leave a small aperture for the air or gas to escape.

If desired, the direction of the length of the creases or flutes *d* can be curved, or crooked, in order to cover more of the surface of the metal to be enclosed by the molten metal, but this main direction or course should be such as to soon lead to the pores of the sand.

If the metal to be enclosed is provided with acute angles or sharp projections, the same effect will be produced, as molten metal will not close solid upon a sharp angle.

Sometimes, in casting in wire, indentations, transverse creases, and grooves around the wire have been made for the molten metal to fill, and thus prevent the wire from being withdrawn from its place, but such grooves and creases are not for the purpose of venting the moulds, and are not in any way connected with this invention.

When the metal to be enclosed by the molten metal is properly creased, fluted, or angled, it is set in the mould for casting around it, in the usual manner, which is too well known by those skilled in the art to need description.

By my invention, I produce a process for chilling in wires, &c., into buts and other articles, by which perfect casting will generally be insured, whereas, by the ordinary mode, a large per cent. of the castings are imperfect.

As there are no "blow-holes" near the vicinity of the wire or metal chilled in, it will be firm and solid in its place.

The expense of making the flutes or creases *d* is trifling, when compared with the castings thus saved.

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

Venting the interior surface of the molten metal which comes in contact with the solid metal, by means of grooves *d*, formed in the solid metal, substantially as described, and for the purpose herein specified.

AMOS SHEPARD.

Witnesses:

J. WARREN TUCK,
FRED. G. MEAD.