UNITED STATES PATENT OFFICE.

THOMAS WHITEHOUSE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMERICAN TUBE WORKS, OF SAME PLACE.

IMPROVEMENT IN PROCESSES FOR CASTING METALS.

Specification forming part of Letters Patent No. **185,376**, dated December 12, 1876; application filed August 11, 1876.

To all whom it may concern:

Be it known that I, THOMAS WHITEHOUSE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Casting Metals, of which the following is a specification:

This improvement consists in pouring a suitable cooling-liquid—as, for instance, water—into the mold, so as to come in direct contact with the molten metal in the mold immediately after ceasing to pour, or as soon after as is possible, and in a quantity sufficient to at once condense and practically chill and solidify the molten metal with which it comes in contact to such a degree and depth (at the same time shrinking it on the core) as to set and fix it, and, through such set, so hold the rest of the molten metal within the mold that when the casting has been sufficiently cooled for removal the metal composing the casting will have a density and solidity substantially equal to that given to it by hydraulic or other pressure, as heretofore practiced for the same purpose, which is practically all that is necessary.

The improvement above described is more especially designed for use in casting hollow or tubular ingots or blanks to be manufactured into rolls or tubes, according to inventions made by me, for which I have already made three separate applications for Letters Patent of the United States, although, obviously, it is adapted to other uses. In such case, in addition to the advantages attained in obtaining solid castings, the cooling-liquid shrinks the molten metal on the core.

In carrying out this invention, in reference to castings for the purpose stated, I pour the water into direct contact with the top of the molten metal in the mold, and immediately after ceasing to pour the molten metal.

Practice shows a full bucket or pail of water to be sufficient, and it further shows that with a depth of twenty-four inches of molten metal in the mold—being a pouring of, say, one hundred and eighty pounds of copper, the metal preferably used for said purposes—the casting, when removed, shows only a length of twenty-one inches, or thereabout, the reduction in length being about three inches with the same amount of metal, or, in other words, that the said amount of metal is in a length of twenty-one inches, instead of twenty-four, which obviously secures and gives increased density and solidity in the metal of the casting.

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

The improvement herein described in casting metals, the same consisting in pouring water or other suitable cooling-liquid into direct contact with the molten metal in the mold, substantially as and for the purpose specified.

THOS. WHITEHOUSE.

Witnesses:
GEO. H. EARL,
EDWIN W. BROWN.