

UNITED STATES PATENT OFFICE.

FRANCIS DANIEL TAYLOR, OF BROCKVILLE, ONTARIO, CANADA.

MOLD FOR CASTING.

SPECIFICATION forming part of Letters Patent No. 413,815, dated October 29, 1889.

Application filed April 2, 1889. Serial No. 305,758. (No model.) Patented in Canada May 4, 1889, No. 31,254.

To all whom it may concern:

Be it known that I, FRANCIS DANIEL TAYLOR, of Brockville, in the county of Leeds and Province of Ontario, Canada, have invented certain new and useful Improvements in Molds for Castings, (for which I have already obtained Letters Patent of Canada, No. 31,254, granted to me on the 4th day of May, 1889;) and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to produce castings which shall have upon their faces a thickness of wrought-iron or semi-steel, thus giving a perfectly smooth bright surface requiring no dressing, and thereby preserving the hardened outside. I propose to do this by the use for the lining of the mold of certain iron ores—such as hematite or other peroxide of iron—preferring that kind which contains the highest percentage of oxygen or equivalents of such ores. This pulverized ore I thoroughly incorporate with wood pulp in a plastic condition. I then take the pattern, in halves or otherwise, of any article or piece to be cast and cover it to the proper thickness with the above mixture, the amount used being commensurate with the size and shape of the casting. The pattern, with its coating, is then placed in a press, (preferably hydraulic,) by the pressure of which I obtain the exact shape or mold required. This is then dried, and when dried is ready for use. When required for use, I take the shape thus formed and set it on the pattern of the article to be molded. I then place over it the part of the molder's flask to be used and fill it in with ordinary molding-sand or other suitable material used in foundries, ramming it solid. The flask is then raised and the pat-

tern taken out, leaving the shapes composed of my mixture and independent of the molding-sand, which is only used to back them up and hold them in the flask.

When the flask is ready, the metal is poured in in the usual way, the effect produced upon the casting being as follows: When the molten iron enters the mold, the carbon contained in that portion of it which comes in contact with the lining combines with the oxygen contained therein, and by such contact the excess of carbon is eliminated from that portion of the iron on the outside of the casting, thus forming at once, according to the proportion of carbon taken up, a wrought-iron or semi-steel surface on the casting, the interior of the casting being iron containing the full amount of carbon.

By my process the shapes proper, in which the oxides are held in the pulp as in a matrix, are separate and distinct from the ordinary molding material, which simply serves as a backing; and, further, the shapes when used can easily be collected and thrown into the cupola, where they can be utilized in the decarbonization of the iron.

What I claim is as follows:

1. As a new article of manufacture, a lining for molds for casting metal, composed of a mixture of pulverized peroxide of iron and wood pulp, substantially as described.

2. A mold composed of an inner shape formed of a mixture of pulverized peroxide of iron and wood pulp and a backing of molding-sand or like material, substantially as described.

FRANCIS DANIEL TAYLOR.

Witnesses:

FRAS. HY. REYNOLDS,
WM. P. McFEAT.