

UNITED STATES PATENT OFFICE.

OGDEN BOLTON, JR., AND JOHN PEDDER, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

Specification forming part of Letters Patent No. **140,761**, dated July 15, 1873; application filed March 11, 1873.

To all whom it may concern:

Be it known that we, O. BOLTON, Jr., and JNO. PEDDER, of Pittsburg, county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Iron and Steel, of which the following is a specification:

The nature of our invention relates to the manufacture of iron and steel; and it consists in placing the iron sponge in a tube, box, or mold, of any suitable description, and covering the same by a lid, or a covering of charcoal, or other suitable carbonaceous matter, or sand, or loam, and in washing or dipping the tube or mold in some suitable fluid so as to coat it over, and thus protect it from oxidation.

We take iron sponge and place it in a box, tube, or mold, of any suitable kind, and cover it with a lid, or covering of charcoal, sand, or loam, and charge the same into a furnace or cupola. In order to prevent the oxidation of the mold we dip it in a clay wash, or a wash of clay and black-lead, which forms a coating for its protection while in the furnace. We place the iron ore, or ore mixed with carbon, (and, when necessary, with lime,) in a box, tube, or mold, suitably covered, and charge the same into a bath of melted pig-iron or steel, or we may coat the iron sponge or reduced oxide of iron (preferably in a reduced state) with black loam, black-lead, clay, or other like suitable material. In case the

sponge should contain much foreign matter, such as silica, alumina, or lime, we flux this matter, so that when the mold and its contents are heated and compressed the foreign matter will squeeze out, leaving the sponge nearly pure and in a compressed state. The compressed sponge may then be used either in a steel-melting furnace, crucible, puddling-furnace, or worked in any other way. The sponge may in any case be either hot or cold, as desired, when first placed in the mold.

We know that the use of molds or tubes, broadly, is not now new, (witness our patent No. 135,512,) and do not broadly claim such in this application; nor do we claim broadly the immersion of metal in a bath of cast-iron; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

The method herein described of manufacturing iron or steel from "sponge" by the inclosure of the sponge in molds or tubes, and covering said molds with a coating of clay or clay and black-lead, substantially as set forth.

In testimony that we claim the foregoing as our invention we have hereunto affixed our signatures this 11th day of February, 1873.

OGDEN BOLTON, JR.
JOHN PEDDER.

Witnesses:

JOHN S. HOLLINGSHEAD,
JOHN H. BARGESSER.