

UNITED STATES PATENT OFFICE.

JOHN DEERE, OF MOLINE, ILLINOIS.

IMPROVEMENT IN MOLDS FOR CASTING STEEL.

Specification forming part of Letters Patent No. 41,203, dated January 12, 1864.

To all whom it may concern:

Be it known that I, JOHN DEERE, of Moline, in the county of Rock Island and State of Illinois, have invented a new and useful Improvement in Molds for Casting Steel Plows and other Articles; and I do hereby declare that the following is a full, clear, and exact description of the same.

Various plans have been tried in order to cast in a perfect manner the shares, mold-boards, landsides, and other articles of steel. Green-sand molds will not answer the purpose, as the castings are formed with air spaces or cells, or "blown," as it is technically termed. Dry-sand molds cannot be used, as the melted metal fuses and cuts away the inner surface of the mold, so that it will not produce a perfect casting. Cast-iron molds have also been tried; but these also are fused or cut away by the melted steel, and also produce blown castings, as there is no ready escape for the air and gases during the advent of the melted steel into the mold. Imperfect steel castings therefore are now quite commonly used.

By my invention I can produce perfect steel castings for the purpose specified with the greatest facility and without any greater expense, or not appreciably greater than that attending ordinary iron castings in sand molds.

To enable those skilled in the art to fully understand and practice my invention, I will proceed to describe it.

I form a mold by means of a suitable pattern out of dry sand in the usual way, and after the mold is formed I coat its inner surface with black-lead, (plumbago,) which may be moistened by water having a little fire-clay dissolved in it. The sand also used in forming the mold may be tempered with fire-clay water. This fire-clay water has a tendency to ren-

der the sand and black-lead or plumbago rather more adhesive than they would be if water alone were used. After the mold is formed and coated internally with the black-lead or plumbago, it is baked, say, for about twelve hours, or until all moisture is thoroughly expelled from it, and when thus baked and thoroughly dried the black-lead or plumbago will form a hard crust, coat, or glazing for the inner surface of the mold, so as to prevent the melted steel from coming in contact with the sand. The latter therefore cannot be fused and cut away by the melted steel, and will form or produce a perfect casting, or one with a smooth surface and free from holes or air-cells. This mold may, before being baked and dried, be perforated with vent-holes to admit of the escape of air and gases. I would further remark that the mold is used but for one casting only, it being, after once used, broken up or pulverized and the same ingredients used for the formation of another mold.

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

For casting plow-plates or other articles of steel, the use of molds prepared as herein set forth—that is to say, the body of the mold formed of dry sand or loam and its internal surface coated with plumbago, both of which substances, previous to being used, to be moistened with an aqueous solution of fire-clay, and the mold, when so made, to be thoroughly baked and dried in an oven or furnace, all substantially as and for the purpose herein described.

JOHN DEERE.

Witnesses:

M. S. PARTRIDGE,
M. M. LIVINGSTON.