UNITED STATES PATENT OFFICE.

ALBERT TANNER, OF MELROSE PARK, ILLINOIS.

MOLDER'S SAND FOR STEEL CASTINGS.

SPECIFICATION forming part of Letters Patent No. 566,486, dated August 25, 1896.

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To all whom it may concern:

Be it known that I, ALBERT TANNER, a citizen of the United States, residing at Melrose Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Molder's Sand for Steel Castings, of which the following is a specification.

My invention relates to an improvement in molder's sand particularly adapted to the making of steel castings. It is well known that the conditions prevailing in the making of steel castings differ from those in the case of cast-iron castings, so that much difficulty is experienced in using the processes common to the making of cast-iron castings in casting steel. I have found that by mixing salt with the dry sand a mold is formed producing a much more perfect steel casting than is obtained from the use of the ordinary green sand. For obvious reasons it is desirable that the sand shall be moist, as it is in this condition much easier to handle and to pack into the proper form, but the use of green sand in steel castings is practically impossible, because of the chilling effect upon the surface of the casting. Where salt is combined with and forms a component part of the molding-sand, the effect seems to be to preserve in the mold for a greater period the heat due to the introduction of the molten steel, whereby the cooling of the steel and of the mold is approximately concurrent.

My invention consists, partly, in a molder's sand having mixed therewith, and forming a part thereof, salt dissolved in water. It is preferred to produce the admixture by saturating the dry sand with water in which salt has been dissolved.

My invention consists, further, in a composition for molder's sand comprising ordinary sand and salt together with carbonaceous dust, resinous material, and hydrocarbon oil, the three last named being used separately or together in the same composition, or any two of them being used without the third; but I prefer to use them all. I find that the following specific formula gives most desirable results, and in practice I prefer for steel castings to use this formula: old dry sand, about seventy parts; new dry sand, about eighty parts; coke-dust, one part; plumbago, four parts; rosin, one part, the whole being thoroughly mixed in a suitable box. Then to about two gallons of water add a half-pint of hydrocarbon oil and a half-pound of salt, mixing thoroughly until the salt is dissolved, and add to the dry contents of the box. The mass being thoroughly stirred and turned over is ready for use. Should it become dry, it is necessary merely to moisten it slightly with water. In cases where heavy castings are to be made I have found it profitable to add a small quantity of ordinary fire-brick dust.

I am aware that a facing for a core adapted particularly to making cast-iron castings has heretofore been suggested, comprising a mixture of coal-dust and salt, the purpose being to preserve the core and give it rigidity, and my invention is clearly to be distinguished from this practice, inasmuch as the salt is a component part of the molder's sand and the product is as well adapted and in fact is more particularly intended for the mold and not necessarily for the core. I am also aware that plumbago, rosin, and coke-dust, as well as a hydrocarbon oil, have been applied to the surface of a mold or core as a facing, and in some instances plumbago and coke-dust have been mixed with the sand, and my invention is clearly to be distinguished from any such practice.

It is found that the castings made with the composition for molder's sand herein described are more perfect in texture, cleaner, and more readily freed from the sand than is the case with ordinary castings, particularly steel castings made with sand, as heretofore practiced.

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

1. The composition for molder's sand comprising sand, salt and resinous material, the whole being combined substantially as described.

2. The composition for molder's sand, comprising sand, salt, resinous material, dry carbonaceous material and a hydrocarbon oil, the whole being combined substantially as described.

3. The process of producing a molder's sand, which consists in mixing sand, dry carbonaceous material and resinous material, in substantially the proportions named, and saturating the mass with a composition of water, salt and oil in substantially the proportions named, as set forth.

ALBERT TANNER.

In presence of—
J. N. HANSON,
J. H. LEE.