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MOLD WASH

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This invention relates to the casting of metal and is particularly directed to the casting of metal in metal molds such as ingot molds.

In casting molten steel into ingot form difficulty is frequently encountered during teeming by reason of steel splattering and sticking to the mold walls, forming scabs on the ingots. Various mold washes have been proposed with the view of obtaining a surface smoothness which would prevent the splatters from sticking. However, such washes have proved decidedly expensive. Various mold washes in use are also undesirable because if the molds are too hot when painted, the washes are destroyed by the heat and the splatters stick; whereas if the molds are too cold, they do not dry and cause violent agitation of the metal during teeming. It frequently happens that the molds are outside of the narrow temperature range available in using present mold washes, and in such case difficulty and delays are encountered.

I have found that these difficulties may be overcome by employing a mold wash comprising an alkali metal compound. Preferably I employ the carbonate of an alkali metal, for example, soda-ash. The compound may be painted on the mold walls at any temperature below the fusing point of the compound and still be effective. Therefore, for all practical purposes there is no top limit for the temperature at which the molds may be painted.

Potassium carbonate may be employed, although soda-ash is preferred because of its lower cost. Caustic soda may also be used, although it is more difficult to handle.

When my improved mold wash is struck by a splatter the alkali metal compound is fused, thus preventing the splatter from adhering tightly to the mold wall. At the same time a small amount of gas is probably generated, creating a slight local pressure tending to throw the splatter off the mold wall.

An advantage of the class of compounds which I employ is that no objectionable inclusions in the metal result from their use. Certain materials, for example, lime, are not as satisfactory on this account. Calcium carbonate, if used, would tend to evolve carbon dioxide when heated, but the residue would be calcium oxide which is not readily fusible, remains in the metal, and upon solidification of the metal is present as a very objectionable type of non-metallic inclusion.

I have obtained satisfactory results by a mold wash comprising 5 pounds of soda-ash in a vehicle made up of 80 to 90 pounds of mold wash compound in 50 gallons of water. A typical analysis of a mold wash compound which I have successfully used is—

SiO_2	3.80
Combined oxides of iron and alumina	2.90
Lime	.38
Magnesia	.30
Carbon graphite	92.00

The proportions given above are for applying the mold wash in two coats. Where the molds are too cold to dry in the time available if painted twice, I have successfully used a single coating of 5 pounds of soda-ash and 120 pounds of mold wash compound in 50 gallons of water.

It is undesirable to use too large an amount of soda-ash. I have found that 15 pounds to the barrel of water is excessive.

The above description gives, by way of example, only a preferred embodiment of the invention. It will be understood that the vehicle above described is only one of many which may be used, and that the invention is not limited to the specific forms above given but may be otherwise embodied or practiced within the scope of the following claims.

I claim:

1. A mold wash for treating the surface of metallic molds comprising an alkali metal compound and graphite.

2. A mold wash for treating the surface of metallic molds comprising soda ash and graphite.

3. A mold wash for treating the surface of metallic molds consisting essentially of graphite having a small amount of an alkali metal compound added thereto.

4. A mold wash for treating the surface of

metallic molds consisting essentialy of graphite having a small amount of a carbonate of an alkali metal added thereto.

5. A mold wash for treating the surface of metallic molds consisting essentially of graphite having a small amount of soda ash added thereto.

6. A mold wash for treating the surface of metallic molds consisting of soda ash, oxide of silica, oxide of iron, oxide of alumina and graphite.

In testimony whereof I have hereunto set my hand.

KARL W. GRANT.