UNITED STATES PATENT OFFICE.

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MOLDING COMPOUND.

SPECIFICATION forming part of Letters Patent No. 499,753, dated June 20, 1893.

Application filed February 6, 1893. Serial No. 461,254. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN ROWBOTHAM, a citizen of the United States, residing at Merchantville, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Molding Compounds, of which the following is a specification.

My invention has relation to the production of a compound for use in molding operations.

The principal objects of my invention are first, to provide an inexpensive and efficient neutral or substantially neutral compound for employment in molding or other similar operations; and second, to provide a compound for use in molding operations in a neutral or substantially neutral state or condition in contradistinction to an acid or alkaline state or condition and one that will not sour, ferment or otherwise deteriorate by age and that can be economically employed, due to the fact that waste is reduced in its use in molding operations to a minimum.

My invention consists of a compound composed of rosin, an alkali and a binder or body-material, as saw-dust, ground cork, bark, chaff, nut-hulls or other analogous vegetable material or materials.

My invention further consists of a compound for use in molding operations composed of rosin, caustic-soda and saw-dust or analogous material.

In order to enable others to understand my invention I will now proceed to describe a method of producing such a compound.

Rosin of commerce is introduced into an alkaline solution, as caustic-soda or like material and a binder or body-material, as saw-dust, ground cork, bark, chaff, nut-hulls or analogous vegetable material or materials added thereto. The alkali, for example, the caustic soda is dissolved in the quantity of water required for the production of the compound or mass and heated or boiled over a furnace or by means of a steam coil for a period of time ranging from one (1) to two (2) hours, more or less, and during this operation the rosin is added and kept agitated until it is thoroughly dissolved. The hot liquid compound is then removed and a binder or body-material, as saw-dust, chaff, bark, ground cork, ground-shells, nut-hulls or other vegetable material or materials mixed therewith.

In practice good results have been obtained by adding to every fifty (50) gallons of the compound from twelve (12) to twenty-five (25) gallons of the binder or body-material, that is, saw-dust, bark, ground-cork, chaff, ground shells, nut-hulls or other vegetable material or materials.

In the production of the compound excellent results have been obtained by mixing with ten parts of rosin one and one-tenth ($1\frac{1}{10}$) parts of caustic-soda, more or less. Moreover, in the use of the caustic-soda there is a thorough admixture, as well as a thorough chemical combination of the respective materials with each other in the compound in a viscous or semi-fluid state or condition, which can be readily demonstrated by testing the same in any preferred manner. Moreover, by pursuing the above prescribed course the compound is produced in a neutral or substantially neutral state or condition, because the alkali is thoroughly taken up or neutralized by the rosin therein. Preference is given to the use of caustic-soda with the rosin of commerce for the composition of the compound, because the viscous or liquid mass is obtained without having to skim or siphon off the same in the containing vessel. If any other alkali is employed after boiling the described materials of the compound together, they separate while cooling, and this separating and settling of the two materials in the containing vessel occurs, it has been found in practice, even when great care is exercised in the manufacture thereof. Moreover, that a light colored semi-liquid resinous mass settles in the bottom of the containing vessel and a portion of the alkaline solution floats on the surface, so that it becomes necessary in order to remove the same to siphon it off to prevent the precipitate from again separating and of assuming both thick and thin conditions in the containing vessel and necessitating a re-heating of the mass to overcome such separation and settling of the mass. By proceeding in the manufacture of the compound in the manner described, and employing caustic-soda with rosin in about the proportions stated, a most excellent neutral or substantially neutral

compound is obtained, which with the addition of the binder or body-material, as saw-dust, ground cork, chaff or other vegetable matter or materials gives a most excellent glutinous product for cores or use in molding operations, because it has been found in practice that cores treated with this liquid or semi-liquid compound are far less brittle when dried and that far less dense smoke and offensive odors are given off in the pouring of the molten metal.

In molding operations the offensive odors and dense clouds of smoke given off have been looked upon for a long time as features to be avoided, but molders have been without the means or materials at their command to effect such a result. In the use of this liquid or semi-liquid compound in such operations the pungent odors and dense and likewise offensive smoke given off are reduced to a minimum.

The described compound is used in connection with cores in molding and foundry work by mixing this liquid or semi-liquid compound thoroughly with the sand of the cores and in the production of large cores, it has been found advantageous to apply directly to the cores in any convenient manner this liquid or semi-liquid compound containing saw-dust or analogous material in addition to mixing the same with the sand thereof, which tends not only to strengthen them, but also to facilitate removal of the cores after the casting operation has been completed. This is due to the fact, that the binder or body-material of this liquid or semi-liquid compound will readily burn under the influence of the heat of the metal, thereby leaving the cores not only in a loose condition, but permitting of their ready removal and to compensate for any yielding or shrinkage of the metal while cooling, without straining the same.

In practice the important function of the binder or body-material in the compound in molding operations is to keep the sand of the molds porous or loose and thus to facilitate the escape of air and gases as well as to lessen liability to blowing and all difficulty of removing the casting. Moreover, such liquid or semi-liquid compound being produced in a neutral or substantially neutral state, that is, neither acid nor alkaline, will not sour, ferment or deteriorate by standing or age.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A neutral or substantially neutral compound, composed of an alkaline resinate and a binder or body-material, substantially as described.

2. A neutral or substantially neutral liquid or semi-liquid core compound, composed of rosin, caustic-soda and saw-dust or analogous material, substantially as described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOHN ROWBOTHAM.

Witnesses:
THOMAS M. SMITH,
RICHARD C. MAXWELL.