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METHOD OF DESTROYING PATTERNS

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5 Claims. (Cl. 22-196)

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This invention relates to a method of casting various castable materials. It is adapted to be used particularly in casting metals and metal alloys but the invention may also be used in casting other castable materials which set upon casting.

While casting the material to be cast is poured into a sand mold, said sand mold being obtained by means of a model. Particularly in the case of intricate moldings the model requires thorough and accurate operation. The models are generally made of wood and are built up from several parts which are required to fit one another so that after the sand mold is made they are adapted to be removed therefrom. It is obvious that very much care must be bestowed upon the manufacture of such models and this renders the models very expensive. If a casting model is required to be quickly available the method hitherto adopted is inconvenient. If the model serves for the manufacture of only one or some few castings the cost of the model is comparatively high.

The invention has for its object to obviate these difficulties. According to the invention a casting mold or a casting model is modelled entirely or in part from combustible material which is adapted to burn entirely or substantially entirely without access of air oxygen and without leaving any substantial ash-residue. Such a casting model is used to make mold in the usual manner by means of sand or the like. The combustible model is provided with a projecting part adapted to be approached and ignited from the outside. In practice a projecting part of about 10 cm. suffices to enable casting.

A model according to the invention is adapted to be readily formed, for example by modelling, and there is no objection to its having the most capricious and irregular forms. Alternatively, it is possible previously to make a block from the combustible model-material and to give to this block the desired shape by turning or other operations, which may be effected when the form of the model is required to be more regular from a geometrical viewpoint. A great advantage is that the model may be in one piece. In such cases a casting model is obtained which is made entirely from the combustible material referred to. It is however also possible for the casting model to be made from the combustible material only in part and this has particular advantages in the case of large casting models. They may be built up from thin wood or other combustible material which is coated with the

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combustible material required to be used in accordance with the invention. The wood may be soaked with combustible material.

The combustible material to be used may be constituted by charcoal with a nitrate, for example ammonium nitrate. The latter gives off the required oxygen which is necessary for causing the charcoal to be burnt. A binder may be constituted by resin or synthetic resin, or an organic product comparable therewith, for example shellac.

Care should preferably be taken that the model contains only organic products and inorganic substances that leave no salt residues. In this connection ammonium nitrate is highly suited.

Combustible substances and mixtures of the kind required to be used in accordance with the invention are known in the pyro-technical industry. Slowly burning mixtures of this kind are used, for example, for fuses. In addition, timing in shells is effected by a slowly burning priming circle.

In the use of the invention, during combustion, the combustion gases may escape through the channel or the cavities which are produced by the combustion of the model from the outside. The low deposition of soot that may take place in the interior of the casting mold is not inconvenient and has even advantages while casting.

A suitable choice of the components of the model permits of controlling the speed of combustion.

What I claim is:

1. In a method of casting metals, that improvement which includes the steps of providing a casting mould made with a pattern of a substance essentially comprising a material which combines with oxygen in an exothermic reaction and whose oxidation products are primarily gaseous, an oxygen-combustible binder and a normally stable, solid, oxygen-rich compound which is unstable at temperatures below the temperature of said exothermic reaction, said compound being present in an amount sufficient fully to combust said material and said binder, and burning said substance within said mold, the oxygen for burning being supplied by said compound, whereby to leave a mold cavity.

2. A method as set forth in claim 1 wherein a portion of the pattern is extended beyond the mould and is ignited to start the burning.

3. A method as set forth in claim 1 wherein the substance is plastic.

4. A method as set forth in claim 1 wherein the material is charcoal, the binder is a resin and the compound is a nitrate.

5. A method as set forth in claim 1 wherein the pattern is thin wood coated with charcoal, a nitrate and a resin.

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