

UNITED STATES PATENT OFFICE.

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POWDER FOR DUSTING PATTERNS.

No. 820,099.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANZ DAMHORST and AUGUST KEMPER, manufacturers, and ERNST UTKE, molder, subjects of the German Emperor, residing at Berlin, in the Empire of Germany, have invented new and useful Improvements in Powder for Dusting Patterns, of which the following is a specification.

In the preparation of molds from patterns, especially such patterns as serve for the production of finer castings, lycopodium powder has hitherto been regularly employed for powdering the pattern. The lycopodium forms between the pattern and the mold a separating layer which renders impossible direct contact between the molding-sand and the pattern, the clinging of the pattern to the mold being intended to be consequently prevented. Practice has nevertheless shown that in spite of the use of very expensive lycopodium unevennesses and raw places appear on the surfaces of the castings. These unevennesses on the casting are principally to be attributed to the fact that the lycopodium on account of its slight specific weight lacks the capacity of clinging sufficiently to the pattern, so that the layer of lycopodium is partially removed from the pattern when the sand is sieved in and partially collects together, results which naturally cause the surface of the mold itself to become uneven and produce unclean castings. The slight capacity which the lycopodium possesses to cling to the pattern makes itself particularly unpleasantly noticeable when the pattern has fairly large vertical surfaces. In the case of such patterns it is possible to cause the lycopodium to cling to a certain extent only by pressing by hand molding-sand against the surfaces of the pattern before sifting in sand, an expedient which requires time and work while, however, nevertheless it cannot affect the maintenance of a uniform intermediate layer; but, on the contrary, by this expedient a disarrangement of the lycopodium layer in itself is caused to take place and a non-uniform distribution of the same on the pattern is brought about. Further, the lycopodium has a disadvantage in that the parts of the same clinging to the mold burn and form ashes when the mold is dried, whereby the surface of the mold is made rough, which naturally has as a consequence the production of a correspondingly rough surface on the casting.

According to the present invention the facilitation of the removal of the pattern from the mold is effected not by the intermediate insertion between pattern and mold of a layer consisting of specifically lighter organic materials, but by employing a mineral powder which on the one hand renders it possible to coat the pattern with an exceedingly fine layer capable of clinging well and on the other hand has the effect that a layer of gas or steam is formed between the pattern and the mold by the powder touching the moist molding-sand, which layer brings about the separation of the pattern from the mold. As an example of such pattern-powder may be mentioned calcium carbid.

If a pattern after having been previously sprayed with petroleum is sprayed with powdered carbid, acetylene-gas is generated, even at ordinary temperatures, on the moist molding-sand touching the carbid, which gas forms a kind of separating layer between the pattern and the mold and renders it possible to remove the pattern readily without the danger of damaging the mold. In this case the previous spraying of the pattern with petroleum is of importance on account of the fact that the latter retards the combination of water with the carbid, so that the generation of gas is slow and lasts until the ramming of the mold is complete. The use of carbid as a pattern-powder has also the advantage that on the one hand it is much cheaper than lycopodium, while on the other hand also it clings to the pattern in such a manner that the molding-sand can be sifted in and rammed without a disarrangement of the particles of the powder being thereby brought about. In consequence of this circumstance and of the layer of gas appearing as a separating layer the mold, and consequently also the casting, has an absolutely smooth surface.

If pulverized quicklime be employed as the pattern-powder, which, as is well known, becomes converted into hydrate of lime on coming into contact with water and which by this conversion produces a considerable development of heat, in consequence of this heat development a vaporization of the particles of moisture in the molding-sand not chemically bound takes place, so that a layer of steam is formed between the mold and the pattern or the layer of lime covering the latter, which layer of steam in the same

manner as the gas layer in the case of the carbid acts as a separating layer between the pattern and the mold and excludes the danger of the pattern clinging to the mold when
5 it is removed.

What we claim as our invention, and desire to secure by Letters Patent, is—

Powder for dusting patterns, containing powdery pulverized calcium carbid.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANZ DAMHORST.

AUGUST KEMPER.

ERNST UTKE.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.