

UNITED STATES PATENT OFFICE.

BART KANE, OF CINCINNATI, OHIO.

IMPROVEMENT IN FACING COMPOUNDS FOR MOLDS.

Specification forming part of Letters Patent No. **147,138**, dated February 3, 1874; application filed May 23, 1873.

To all whom it may concern:

Be it known that I, BART KANE, of Cincinnati, Ohio, have invented a certain Compound to be Used in and about Molding Iron, of which the following is a specification:

This invention relates to that class of compounds used in dusting that portion of the face of a mold that comes in contact with the melted iron in the process of casting, and is applied through the medium of a dust-bag. It consists in a composition formed by mixing fire-clay and manganese with mineral or vegetable carbon finely pulverized.

The best proportions of the mixture are three (3) parts of fire-clay, two (2) of manganese, and five (5) of carbon. The properties of each ingredient, their functions, and the chemical result of their combination when applied, are described as follows: Carbon has the scaling property that prevents the molding-sand from adhering to the iron, and imparts the iron color to the casting. It is, however, destitute of the property of attracting moisture from the molding-sand, so as to cause it (the carbon) to adhere to the mold; consequently the flow of the liquid iron washes it along the surface of the mold, and the sand is burned into the casting, giving it a rough surface. This effect is counteracted by the mixture of the fire-clay, which, having likewise scaling properties, has also the property of attracting moisture from the sand sufficient to hold the carbon, as well as the other ingredients of the compound, in place, in conjunction, of course, with the pressure of the atmosphere. Fire-clay has also the important property of rendering the face of the mold fire-proof—a property that does not exist, except in a very limited degree, in any other facing now in use. Manganese is a heavy mineral, and, mixed with the other ingredients, assists the moisture and atmosphere in making all adhere to the mold. The combination of these ingredients when applied to the face of the mold also produces an important result by the elimination

of carbonic acid gas, enabling the molder to return the pattern without the use of a return facing.

After the mold has been faced or dusted, the pattern is returned to the mold, for the purpose of making a smooth surface on the casting. This necessarily excludes the air from between the pattern and the mold. With the compounds ordinarily used, should the pattern be lifted out, there being no atmospheric pressure against the facing from within, but a pressure from beneath through the sand, a thin layer of the facing is pressed against the pattern, where it adheres and is lifted out with it, spoiling the surface of the mold. This is counteracted by using what is called a "return facing," composed of coarse sand mixed with various other ingredients, which is applied on the top of the facing before the pattern is returned, preventing the complete exhaustion of the air and furnishing a medium through which air is supplied by circulation between the coarse particles to the space between the pattern and the mold in such quantities as are required; but with this compound, when the air is excluded from the mold by the return of the pattern, the fire-clay, manganese, and carbon, so closely blending together, the oxygen of the second unites with the carbon, with the assistance of the moisture drawn by the first, forming carbonic-acid gas between the pattern and the mold in sufficient quantity to overcome the atmospheric pressure from beneath, preventing the facing from adhering to the pattern, thus avoiding the use of the return facing.

I claim as my invention—

The combination of fire-clay, manganese, and carbon, to be used as a foundry facing, prepared substantially as described.

BART KANE.

Witnesses:

L. H. PUMMILL,
CHAS. E. JENKINS.