

UNITED STATES PATENT OFFICE.

WILLIAM H. PELKEY AND ANTOINE ST. LOUIS, OF FAIR HAVEN, VERMONT,
ASSIGNORS OF ONE-THIRD TO GEORGE M. FULLER, OF SAME PLACE.

ART OF MOLDING METAL.

SPECIFICATION forming part of Letters Patent No. 520,076, dated May 22, 1894.

Application filed March 19, 1890. Serial No. 344,561. (No specimens.)

To all whom it may concern:

Be it known that we, WILLIAM H. PELKEY and ANTOINE ST. LOUIS, both citizens of the United States, residing at Fair Haven, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in the Art of Molding Metals, of which the following is a specification.

The invention relates to the production, by casting, of finished bores and faces of metal castings which ordinarily require to be finished by the lathe or other mechanical appliance.

The invention is particularly applicable to the casting of devices requiring smooth and true bores and faces, such as pulleys, gear wheels and the like, but is capable of a more general use.

Its object is to produce a good finish without tool-working, to prevent the adhesion of the casting to the core or mold, and incidentally to modify the usual effect of the chill produced by metal cores and molds; and the invention consists in the improvement in the art of molding metal hereinafter described and particularly pointed out.

In carrying out our improvement, we preferably use metal cores or molds. These should have, to secure the best results, as smooth a surface as practicable. Before pouring the molten metal, the surface of the core or other part of the mold is covered with a thin coat of asphaltum which has been previously thinned by spirits of turpentine, benzine or other solvent. This is conveniently applied to the core or mold by the use of a brush or by dipping, and is then dried, and is ready for use. The matrix or mold having in whole or in part a coating such as described is then used for casting in the usual manner, and the result is a product having a finished surface wherever the metal was poured in contact with an asphaltum coated surface. We believe that the heat of the molten metal converts the asphaltum, or a considerable part of it, into a gaseous cushion between the molten metal and the core or mold which modifies the chilling action of the metal core or mold, and prevents the adhesion of the cast metal thereto, whereby the casting can be readily removed therefrom without injury to the core, mold or casting,

leaving the cast surface smooth. The combustion of the gas so produced aids to maintain the heat of the mold and to prevent too sudden a chill. A slight carbonaceous residuum may be left on the casting. When this is brushed off, a smooth metal surface is disclosed which ordinarily requires no tool-working, but which nevertheless is not so chilled but that it can be easily cut or worked when desired.

We are aware that a mixture of charcoal and hydrocarbon oil has been used in the treatment of metal.

We are aware that a mixture of gum shellac, alcohol and lamp-black, such as described in the Reichenbach patent, has been employed in casting small screw-threaded nuts and bolts with partial or limited success, the patent itself reciting the fact that these ingredients are not sufficient when larger castings are desired. When the metallic core is screw-threaded, and small, a screw-threaded nut cast thereon might be turned off the core by the application of considerable power, provided the nut was not broken off in the operation. When sufficient sand coating is applied to the metallic core to insure an unchilled casting and the successful removal of the casting from the core, the work accomplished is no better than with an all-sand core in the old way. We do not claim any other than the dried residuum of a bituminous compound and prefer that of asphaltum and naphtha or turpentine.

We do not limit the invention to a mold made entirely of metal since it can be employed with good results in molds composed of metal in part only.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

In a mold for casting, a metal mold surface provided with a thin coat consisting of the dried residuum of an asphaltum compound whereby to produce a casting with a smooth surface, substantially as set forth.

WILLIAM H. PELKEY.
ANTOINE ST. LOUIS.

Witnesses:

WILLIAM T. HUGHES,
GEO. M. FULLER.