

UNITED STATES PATENT OFFICE.

CHARLES SP. SZÉKELY, SR., OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE METAL CASTING COMPANY OF AMERICA.

ART OF CASTING METALS.

SPECIFICATION forming part of Letters Patent No. 772,440, dated October 18, 1904.

Application filed June 10, 1903. Renewed March 16, 1904. Serial No. 198,485. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES SP. SZÉKELY, Sr., a subject of the Emperor of Austria-Hungary, residing in the city, county, and State of New York, have invented certain Improvements in the Art of Casting Iron and Steel, of which the following is a specification.

It has always been a great desideratum in the casting of iron and steel in metal molds to obtain a casting without a chilled surface—that is, to obtain a casting of which the surfaces shall be soft and readily workable with tools; but up to the present time, so far as I am aware, this result has not been attained.

It is also a common occurrence to find metallic articles cast in metal molds full of blow-holes or having a certain degree of porosity due to the included gases.

I have discovered that in order to successfully cast molten iron and steel in a metal mold and to keep the surfaces of the article cast from chilling, and also to obtain a casting of more compact and uniform texture than is usually obtained, certain conditions must be fulfilled, namely: First, the surface of the mold which is to come in contact with the molten metal must be coated with a wash spread uniformly over said surface; second, that this coating must be of such a nature that it will adhere to said surface, although submitted to the influence of greatly-varying temperatures; third, that this wash employed must leave a thin coating between the surface of the mold and the casting, which coating shall not act either upon the metal of the mold or the metal of the casting; fourth, that this wash must be composed of an inorganic substance which will produce said inert coating and a liquid substance of such consistency and quality as will hold the inorganic substance in suspension; fifth, that this liquid medium shall be inflammable from contact with the molten metal of the casting; sixth, that this liquid substance must not, however, be so volatile that its contact with the molten metal will generate gases too rapidly and cause by their generation and ignition explosions that would endanger the work and the workmen; seventh, that this liquid substance or medium

in volatilizing and burning shall generate sufficient gas to carry off with it the included gases of the molten metal. When these conditions are maintained, a casting will be produced in a metal mold whereof the surfaces will be soft and workable and the metal of uniform close texture and free from porosity or pitting. The casting may also be readily removed from the mold, as there will be no adhesions. For the inert coating-body of the wash any inorganic substance may be used which has no chemical action on either the metal of the mold or the metal of the casting that will not decompose and combine with either under the conditions to which it is exposed in the mold. For the vehicle of said inorganic substance, said vehicle having the inflammable and gas-producing requisites, mineral oils of various kinds will serve. As an example of the wash I prefer to employ the following: French chalk, in powder, twenty parts; kerosene, of over one hundred and fifty flash test, forty parts; paraffin-oil, refined, forty parts. These are mixed thoroughly together, the fluid ingredients holding the chalk in suspension.

In carrying out the process of making a casting the inner surfaces of the metal mold are evenly coated with the above compound or wash with the aid of a brush or any other suitable tool or implement, the mold closed, and the molten iron or steel poured in. When the mold is opened, the casting may be readily removed, and when cooled it will be found to be smooth, free from porosity or blow-holes, without chill or surface hardening, and of uniform compact texture when its fracture is examined.

The invention is not of course limited strictly to the particular ingredients and proportions thereof given in the above example. The vehicle for the French chalk will be of paraffin and kerosene or their equivalents.

The particular mold-coating described above is not claimed herein, as this is embodied and claimed in a separate application.

Having thus described my invention, I claim—

1. The herein-described improvement in the art of casting iron and steel in metal molds,

which consists in first coating the interior surfaces of the mold with a coating-wash composed of an inert inorganic substance which will have no chemical action on either the
5 metal of the mold or the metal of the casting, and a vehicle of paraffin and kerosene or their equivalents, then closing the mold, and then filling the latter with the molten metal.

2. An iron or steel casting made from a
10 metal mold, having a smooth, soft, workable surface, free from blow-holes, and a compact texture, said mold having been coated on its interior surfaces with a wash composed of a

liquid vehicle of paraffin and kerosene or their equivalents, and an inorganic substance which
15 had substantially no chemical action on either the metal of the mold or the molten metal during the operating of casting substantially as described.

In witness whereof I have hereunto signed
20 my name, this 9th day of June, 1903, in the presence of two subscribing witnesses.

CHARLES SP. SZÉKELY, Sr.

Witnesses:

HENRY CONNETT,

WILLIAM J. FIRTH.