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UNITED STATES PATENT OFFICE.

WILLIAM A. SCHEUCH, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DEGASIFYING AGENT.

No Drawing. Application filed May 26, 1920. Serial No. 384,354.

To all whom it may concern:

Be it known that I, WILLIAM A. SCHEUCH, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Degasifying Agents, of which the following is a full, clear, concise, and exact description.

This invention relates to degasifying agents for molten metals and alloys, and particularly to those which exhibit a comparatively low volatilizing point when in their elemental state.

In the founding of metals and alloys, a great deal of difficulty has been experienced heretofore from the occluded gases which accumulate within the molten mass. These gases not only tend to produce blow holes in the final product, but they also have a marked effect on its ultimate electrical, magnetic and mechanical properties. It has been known that the addition of the alkaline earth metals—which term for the purposes of this invention is considered to include the following metals, magnesium, barium, strontium, and calcium,—to molten metals and alloys assists greatly in removing these occluded gases. Owing to the low volatilizing points which these metals exhibit, however, especially at the temperatures of the molten material to which they are added, considerable difficulty is met with, in insuring an even distribution of the degasifying agent, throughout the melting pot. Proposals have been made to place a protecting covering over the degasifying agent so that no action will take place until this outer sheath has been melted. Although this, in some cases, has seemed to solve the problem, it is of no avail in many instances. One such case is that where the material to be degasified is of a brittle nature at ordinary temperatures, thus affording no satisfactory method of forming a protecting sheath for the degasifying agent. If other material be used for the sheath, it must subsequently be removed from the melt in order that no contamination will occur.

An object of the invention is to provide a means whereby a degasifying agent may be added readily to any molten material in such a manner as to insure complete degasification.

It has been found that if a small amount of the material to be degasified is consolidated with one or more of the degasifying agents, either forming a composite metallic structure or an alloy, the usual rate of activity of the degasifying agent is greatly reduced due to the changing of the volatilizing point, and that such a mass when added to the molten material will insure a complete degasification. This composite metallic structure or alloy may be readily formed by reducing its constituents to a finely divided state, and then consolidating the resulting particles into a unitary mass by means of pressure, heat or chemical means, or by a combination of such means. By this means a solid compact degasifying agent is formed which may be readily added to the material to be degasified either directly after its formation, or at any subsequent time, without further change in the physical condition of the same.

The advantage of the invention over the various methods which have been proposed in the past will be apparent to one skilled in the art. No foreign materials need be added, which would of necessity have to be removed from the melt before solidification. All of the degasifying agent is used effectively in removing the occluded gases from the molten material, thus affording a much more efficient process than those employed heretofore.

The basic idea of the invention being to add to the degasifying agent some diluent which will reduce its great activity and thus effect a more even reaction between it and the occluded gases, it is intended to include as the diluent, any other metallic body which will serve the desired purpose. Obviously, in most cases, it is advisable to employ the element or elements which comprise the molten material to be degasified as the diluent.

What is claimed is:

1. A degasifying agent for molten materials consisting of an alloy or metallic com-

position in a solid compact form consisting of a metal of the alkaline earth group and a smaller amount of the metal to be degasified.

2. The method of degasifying a molten metal which consists in adding thereto an alloy or metallic composition in a solid compact form consisting of a metal of the alkaline earth group and a smaller amount of the metal to be degasified.

3. The method of degasifying molten metal which consists in adding thereto an alloy or metallic composition comprising a metal of the alkaline earth group and a smaller amount of the metal to be degasified.

In witness whereof, I hereunto subscribe my name this 24th day of May, A. D. 1920.

WILLIAM A. SCHEUCH.