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UNITED STATES PATENT OFFICE.

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METHOD OF FORMING METALLIC COMPOSITIONS.

No Drawing. Application filed June 1, 1922. Serial No. 565,232.

To all whom it may concern:

Be it known that I, HENRIK BOVING, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Methods of Forming Metallic Compositions, of which the following is a full, clear, concise, and exact description.

This invention relates to alloys and metallic compositions and its object is to produce a unitary metallic mass from constituents having widely different volatilization points.

This application is a continuation in part of original application of the same inventor, Serial No. 384,264, filed May 26, 1920, and assigned to the same assignee.

In accordance with the features of this invention, an alloy or metallic composition is readily produced from metals having widely different volatilizing points such as barium and nickel where the melting point of one metal is considerably higher than the volatilizing point of the other. The metal or metals having a high volatilizing point are first placed into an air-tight chamber preferably in a form in which they have a large surface compared with their volume. Thus they may be in powdered form, in thin strips, in a spongy mass, or in the form of filaments. Powdered tungsten, spongy nickel, and platinum filaments are examples of satisfactory forms of high volatilizing point metals for the purposes of this invention. The chamber may then be evacuated, or the air may be replaced by a gas which will not affect the product obtained. The low volatilizing point metal or metals are then gasified and the chamber filled therewith. In this form they readily unite with the high volatilizing point metals to form the desired unitary mass. Accordingly, the high melting point metal or metals may be formed into any desired shape such as a filament in which it has a large exposed surface, and the vapor of the other metal or metals caused to unite therewith without destroying this shape. In such a process, the temperature must, of course, be maintained below the melting point of the alloy formed thereby in order that the shape of the filament or other object be not destroyed.

The character of the alloy and metallic composition may be controlled by varying the vapor pressure of the metallic vapor, the form of the solid metal, and the temperature at which the operation is conducted.

The invention claimed is:

The method of combining an alkaline earth metal with a refractory metal having a higher volatilizing temperature which comprises forming from the refractory metal a body having a large ratio of surface to volume, vaporizing the alkaline earth metal, and exposing said refractory metal to the vapor of the alkaline earth metal at a temperature lower than the melting point of the combined metals.

In witness whereof, I hereunto subscribe my name this 31st day of May A. D., 1922.

HENRIK BOVING.