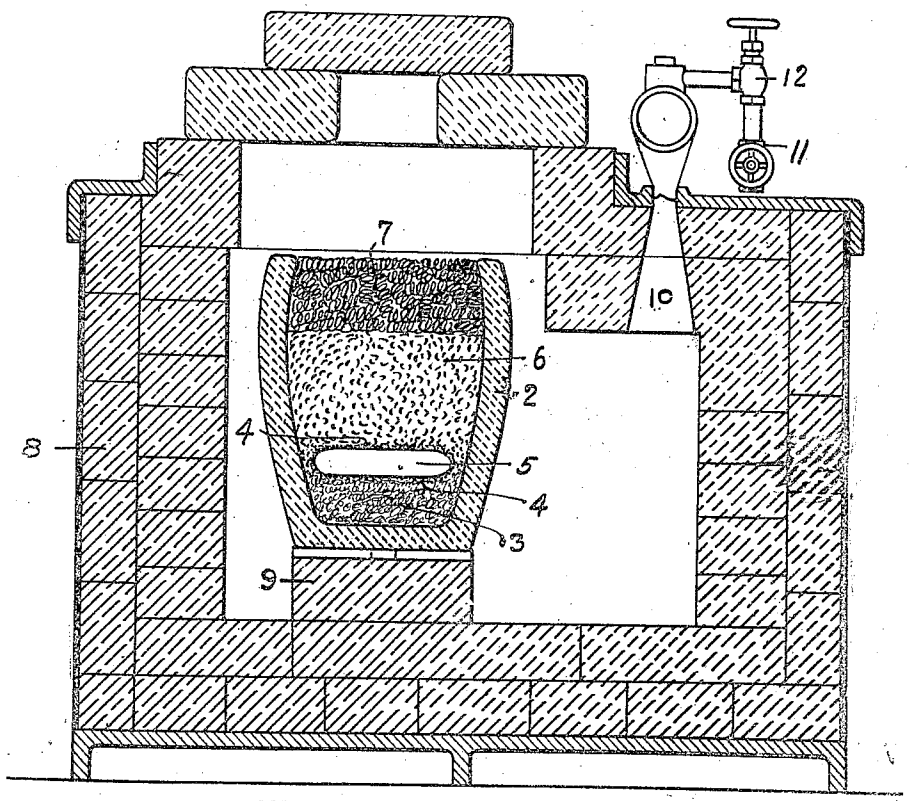
A. MIHALIC.

METHOD OF MAKING PHOSPHOR COPPER.

APPLICATION FILED OCT. 11, 1921.

1,435,649. Patented Nov. 14, 1922.



INVENTOR

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Patented Nov. 14, 1922. 1,435,649

UNITED STATES PATENT OFFICE.

ANTON MIHALIC, OF EAST PITTSBURGH, PENNSYLVANIA.

METHOD OF MAKING PHOSPHOR COPPER.

Application filed October 11, 1921. Serial No. 507,076.

To all whom it may concern:

Be it known that I, ANTON MIHALIC, a subject of the King of Servia, and resident of East Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Making Phosphor Copper; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a process of making phosphor-copper.

One of the chief difficulties in the making of phosphor-copper has been the introduction of the phosphorus into the metal. Heretofore the best method of adding phosphorus to the melted metal is by means of a phosphorizer. This is a clay or graphite tube fastened to the end of an iron rod. The sticks of phosphorus are put into the tube, and some means is provided for closing the end of the tube to hold the phosphorus sticks therein until the phosphorizer can be plunged into the molten metal. The phosphorizer is held in the metal until all the phosphorus has been absorbed. This manner of introducing the phosphorus results in the spattering of the metal and consequently waste of same, and at the same time is attended with danger to the workmen.

The object of my invention is to provide for the introduction of the phosphorus in such a manner as to avoid the above difficulties, and at the same time provide for the retaining of the proper percentage of phosphorus in the finished product.

In the accompanying drawing I have shown a suitable furnace for carrying out my process, and I will now describe the same in detail with reference to said drawing.

I employ an ordinary crucible 2 formed of graphite or other suitable material. In the bottom of the crucible I place a certain quantity of copper turnings 3 of a light quality. On this mass of copper turnings 3 I may sprinkle a small quantity of soda-ash 4, or equivalent material, which will tend to retard the reduction of the phosphorus which I introduce in the form of a cake 5. The phosphorus is molded into the form of a cake instead of in stick form, and as the cake is of less diameter than the crucible I am enabled to completely embed the phosphorus in the copper which is then introduced in the form of millings 6, some soda-ash, however, being sprinkled over the top of the cake before the millings are produced. It will be seen that the millings rest upon the turnings 3 and surround the cake of phosphorus so that it is completely embedded.

On top of the millings 6 I introduce copper in the form of loose coarse turnings 7, or even in the form of copper wire.

The crucible 2, charged in this manner, is then introduced into the furnace 8 which is of ordinary construction, the crucible resting upon the block 9. The fuel employed for heating the furnace is introduced at the nozzle 10, and if desired fuel oil may be employed which is turned off or on by the valve 11, the amount of oil being regulated by the valve 12, a suitable quantity of air being supplied by a suitable valve (not shown).

The copper is melted by the action of the heat and the phosphorus which melts at a much lower temperature melts first, and being completely surrounded by the copper which melts slower is confined and not permitted to escape. The soda-ash acts to retard to a certain extent the melting of the phosphorus. By embedding the phosphorus in the copper and melting it therewith the spattering and waste of metal is avoided.

Under ordinary heating conditions it will take about an hour to melt the copper, and when it is reduced to a molten condition it is stirred to get an even distribution of the phosphorus throughout the entire mass of metal.

While I have indicated the preferable manner and form of introducing the phosphorus, I do not wish to limit the invention to this particular way of introducing it, or the form, as that may be varied without departing from the spirit of my invention.

When the copper and phosphorus have been melted to form the phosphor-copper the crucible is removed from the furnace and the molten alloy is poured into suitable molds to form it into ignots or other desired shapes.

What I claim is:

1. The process of forming phosphor-copper consisting in embedding the phosphorus in a mass of copper in solid form and applying heat to melt the same.

2. The process of forming phosphor-copper consisting in embedding the phosphorus in the form of a cake in a mass of copper in solid form, and applying heat to melt the copper and phosphorus.

3. The process of forming phosphor-cop-

per consisting in placing a quantity of copper in a crucible, placing a cake of phosphorus upon the copper of less diameter than the crucible, super-posing a mass of copper on the cake, and embedding the same therein, and applying heat to melt the copper and phosphorus.

4. The process of forming phosphor-copper consisting in placing phosphorus in solid segregated form in a mass of copper and applying heat to melt the phosphorus and copper.

In testimony whereof, I, the said ANTON MIHALIC, have hereunto set my hand.

ANTON MIHALIC.

Witnesses:
JOHN F. WILL,
HENRY HOLM.