

UNITED STATES PATENT OFFICE.

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BEARING ALLOY.

No Drawing.

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My invention consists of an improved bearing material and the process of producing the same.

It is the primary object of the invention to produce a bearing material of the type known as "plastic bronze" whose lubricating ingredients are evenly diffused throughout its mass.

In manufacturing bronze bearings of the type extensively used for railway motors, it is desirable to have a high lead content inasmuch as this particular metal acts as a lubricating agent. It is, however, extremely difficult to introduce the lead as an ingredient of the bronze without causing segregation of the lead.

In many so-called anti-friction bearings the lead is only mechanically held and not actually alloyed with the other ingredients. Under such conditions it is very apt to segregate and settle to the bottom of the casting, particularly when the alloy is allowed to cool slowly.

In accordance with my invention a uniform distribution of lead in a cuprous metal is obtained by the addition of an ingredient, such as arsenic, which is alloyable both with copper and lead which acts in the nature of a bond between the lead and the copper.

In carrying out my invention an alloy of lead and arsenic is first prepared by heating these elements in contact with each other, an excess of lead preferably being employed. I may prepare, for example, an alloy containing 85 parts of lead and 15 parts of a metal of the fifth group of Mendelejeff's

periodic table, such as arsenic. This alloy is added in suitable proportions to the molten bronze, constituted of copper and a hardening agent, such as tin. In order to produce an alloy containing about 70 parts of copper, about 5 parts of tin and 25 to 30 parts of lead, I add a sufficient amount of the lead-arsenic alloy to the fusion of copper and tin to produce the desired lead content. Some of the arsenic is volatilized during the process of incorporating the lead into the fusion. The finished alloy usually contains about .05 to .50 per cent of arsenic in addition to the other ingredients above enumerated.

The resulting alloy can be used for bearings without babbitting, as it does not tend to seize should lubrication happen to be discontinued for a short period.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A bearing alloy comprising about 70 parts copper, a hardening metal, about 25 parts lead, and a fractional part of arsenic.

2. An alloy comprising about 70 parts copper, approximately 5 parts of a hardening metal, about 25 parts lead, and a fractional part of arsenic.

3. An alloy comprising about 70 parts copper, approximately 5 parts tin, about 25 parts lead, and a fractional part of a metal of the fifth group of the periodic table which is adapted to prevent segregation of the lead.

In witness whereof, I have hereunto set my hand this 21 day of September, 1925.

IRVING R. VALENTINE.