UNITED STATES PATENT OFFICE.

GEORGE H. WORRALL, OF KIRKWOOD, MISSOURI, ASSIGNOR TO UNITED LEAD COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

LEAD ALLOY.

1,360,347. Specification of Letters Patent. Patented Nov. 30, 1920.

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To all whom it may concern:

Be it known that GEORGE H. WORRALL, United States citizen, residing in Kirkwood, Missouri, has invented the following described Improvements in Lead Alloys.

My invention consists in a hard lead alloy suitable for machine bearings and like purposes, and containing lead, magnesium and mercury with or without other ingredients. I have discovered that mercury exercises a hardening effect on lead alloyed with certain of the lead-hardening metals such as magnesium and that it may be used for this purpose with economy and general improvement in the product alloy.

My new alloy is made substantially as follows:

To a quantity of molten lead there is added in any suitable manner an amount of magnesium constituting from, say one-half of one per cent. to three per cent. of the product. This alloy if allowed to cool will be found to possess a certain degree of hardness according to the known effect of magnesium on lead. To this alloy I add either in the same vessel or elsewhere a small percentage of mercury generally less than 2% and the resulting alloy is then cast into ingots ready for sale.

The addition of the mercury raises the resulting hardness and improves the fluidity of the alloy when molten. Variation in the amount added produces corresponding various degrees of resulting hardness. My alloy thus preferably consists of lead upward of 90%, magnesium 2% or less, mercury 2% and preferably about .5%. Other metals may be added when desired to give special effects to the product, aluminum being a useful addition for preventing drossing of the alloy when molten, and when aluminum is introduced it is added in small amounts less than 1%, although still larger quantities of aluminum or other metals such as zinc or tin can be used so far as they do not impair the usefulness of the alloy for the purposes intended. Such additions will naturally be made at the sacrifice of the proportion of lead, which for general bearing-metal purposes should ordinarily be as high as possible. In such alloys, with or without other metals, the use of mercury enables a desired degree of hardness to be attained with the use of less magnesium than would otherwise be required, and hence at less expense of manufacture.

Claims.

1. A hard lead alloy suitable for bearings and like uses comprising a main body of lead, 2% or less of magnesium and 2% or less of mercury.

2. A hard lead alloy suitable for bearings and like uses comprising upward of 90% lead, 2% or less of magnesium and about .5% of mercury.

In testimony whereof, I have signed this specification.

GEORGE H. WORRALL.