UNITED STATES PATENT OFFICE.

EDWARD D. GLEASON, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO PLASTIC METAL COMPANY, INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

LEAD-COPPER-TIN ALLOY.

1,066,428. Specification of Letters Patent. Patented July 1, 1913.

No Drawing. Original application filed October 2, 1912, Serial No. 723,579. Divided and this application filed November 16, 1912. Serial No. 731,864.

To all whom it may concern:

Be it known that I, EDWARD D. GLEASON, of Brooklyn, in the county of Kings, city and State of New York, have invented a certain new and useful Improvement in Lead-Copper-Tin Alloys, whereof the following is a specification.

This application is a division of my application Serial 723,579 filed October 2, 1912 for Letters Patent of the United States.

My invention relates to plastic alloys including lead, copper and tin, which may be advantageously used in the manufacture of bearings for shafts, etc.

It is an object of my invention to provide such alloys free from "lead sweats" and segregation, which are defects usually found in such alloys due to lack of affinity of the lead for the copper or copper and tin, and the high specific gravity and low melting point of lead, for, at best, such alloys are but mechanical mixtures wherein copper is held in a finely divided state in a matrix of lead.

Another object of my invention is to provide such alloys including a given percentage of copper but of different degrees of hardness.

The effect of my improvement is to provide an alloy which is homogeneous in that the copper therein is comminuted to the greatest possible extent and equally distributed throughout the mass of the alloy.

In practising my invention, I incorporate boron in copper, as graphite exists in cast iron; such a boron copper product and a method of producing it being the subject matter of another application Serial 731,863 filed November 16, 1912 for Letters Patent of the United States. Such boron copper is harder than ordinary copper and by its employment in varying percentages I am able to make copper-lead-tin alloys which are alike in total percentage of copper but different in degrees of hardness. For instance, an alloy in accordance with my invention may contain 50 parts of boron copper and would be much harder and more brittle than another alloy, in accordance with my invention, containing 50 parts of copper if the latter is an aggregate of ordinary copper and boron copper. In other words, diminishing the percentage of boron in the alloy diminishes the hardness and brittleness thereof, and variation in this respect is conveniently effected by employing more or less of the boron copper, to wit, the copper containing boron, with more or less copper devoid of boron. In any case I prefer to proceed by first melting the copper, with suitable appliances, and adding the lead and tin thereto when the copper is in the fluid state, and, then stirring or otherwise agitating the mixture before pouring it into ingot molds. All of these products are free from lead sweats or segregation and have an unctuous anti-frictional texture and a surface resembling planished copper; properties which are advantageous in bearings, piston rings, gaskets and steam packing.

In making alloys of copper, lead and tin; the tin will segregate if not in the proper proportion for the copper and lead. For instance, if copper 67 parts, lead 24 parts and tin 9 parts are mixed in accordance with ordinary foundry practice, the lead will sweat out and form in little pools and the tin will segregate and stratify. On the contrary, by the employment of boron copper as above contemplated such alloys of copper, lead and tin may be made entirely homogeneous and of any desired degree of hardness.

I do not desire to limit myself to the precise methods of procedure or proportions herein set forth as it is obvious that various modifications may be made therein without departing from my invention as defined in the appended claim.

I claim:—

An alloy including lead, copper, boron and tin.

In testimony whereof, I have hereunto signed my name at Brooklyn, New York, this 15th day of Nov., 1912.

EDWARD D. GLEASON.

Witnesses:

HENRY J. MOYER,

BENJAMIN ZEKOWSKI.