

# UNITED STATES PATENT OFFICE.

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## ANTIFRICTION-ALLOY.

934,637.

Specification of Letters Patent. Patented Sept. 21, 1909.

No Drawing.

Application filed January 6, 1909. Serial No. 470,932.

*To all whom it may concern:*

Be it known that I, ENRIQUE A. TOUCEDA, a citizen of the United States, residing at Albany, county of Albany and State of New York, have invented certain new and useful Improvements in Antifriction-Alloys, of which the following is a specification.

This invention relates to the class of alloys adapted for use as bearings, and the principal object of the invention is to provide an alloy of high efficiency and readily adaptable to the different conditions under which bearing metals are employed.

My invention in its preferred use comprises a bearing composed of an alloy containing cadmium and magnesium with or without other metals.

The following is one of several methods by which this alloy can be produced. The cadmium is melted in a suitable vessel under potassium cyanid, which acts as a flux and which also serves to protect the molten metal from oxidizing agencies. After the cadmium has reached a temperature of about 150 degrees Fahrenheit above its melting point, the magnesium is, by means of a pair of tongs or other suitable apparatus, thrust quickly down through the flux, and held immersed in the molten cadmium until the magnesium is also melted, after which the molten mass of metal is run off into suitable molds in the usual manner.

I do not wish to be limited to the foregoing method of producing my improved alloy, as other methods may be employed without departing from the spirit of my invention.

An alloy produced in accordance with my invention has a very fine grain, and is readily adaptable, by changing the relative proportions of cadmium and magnesium, to the various conditions of load, shock and speed of rotation to be met by bearing metals under different conditions of use. I have found this alloy containing from one-half of one per cent. to two and one-half per cent. of magnesium to be very useful under ordinary conditions; such an alloy being both hard and tough, and well adapted to sustain heavy loads, while possessing antifriction qualities of a high degree.

Magnesium in proportions less than three and one-half per cent. imparts great hardness to cadmium without destroying or materially reducing the malleability or ductility of the cadmium. Less than one-half of one per cent. of magnesium can be advantageously used where the load is very heavy, the rotary speed high, and the bearing not subjected to severe shocks. When the load is constant and light, and the speed high, the proportion of magnesium may be increased to five per cent., or even more, the resultant alloy being more brittle and extremely hard.

I do not wish to be limited to a bearing composed of an alloy containing only cadmium and magnesium, as I consider within the scope of my invention any bearing composed of an alloy wherein a cadmium constituent is hardened by a magnesium constituent.

What I claim as new and desire to secure by Letters Patent is—

1. An antifriction bearing composed of an alloy containing cadmium and magnesium.

2. An antifriction bearing composed of an alloy containing a relatively large proportion of cadmium and a relatively small proportion of magnesium.

3. An antifriction bearing composed of an alloy containing cadmium toughened and hardened by the presence of magnesium.

4. An antifriction bearing composed of an alloy containing substantially three and one-half per cent. of magnesium and a relatively large proportion of cadmium.

5. An alloy containing a relatively large proportion of cadmium and a relatively small proportion of magnesium.

6. An alloy containing substantially three and one-half per cent. of magnesium and a relatively large proportion of cadmium.

In testimony whereof, I have hereunto set my hand this 28th day of Dec. 1908.

ENRIQUE A. TOUCEDA.

Witnesses:

JACOB ACKER,  
AUGUSTUS J. RIEGEL.