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ALLOY

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5 Claims. (Cl. 308—242)

This invention relates to an alloy, and more particularly to an alloy bearing.

An object of the invention is to provide an alloy which is resistant to corrosion, and especially to corrosion caused by oxidation products of lubricating oils.

Cadmium-silver bearings have been proposed for use under relatively high speed, pressure and/or temperature. Such alloys have a high melting point and mechanical strength, do not weaken and disintegrate as easily as other bearings such as babbitt, and have a long working life. These bearings are usually composed predominantly of cadmium with small amounts of silver, and if desired, a small amount of a hardening metal, such as copper or nickel. However, they possess the serious disadvantage that they are corroded in use by oxidation products of a lubricating oil with which they come in contact, which greatly reduces their life and efficiency.

I have discovered that an alloy containing at least 95% cadmium and up to about 5% silver, and carrying a superficial layer of an alloy containing cadmium, silver and tin is not corroded by lubricating oils, and that the life and efficiency of the alloy are greater than other cadmium-silver alloys. If desired, the alloy and layer may also contain a hardening metal such as copper or nickel. The layer is of microscopic dimensions and need only be of sufficient thickness to give resistance to corrosion. The layer may be obtained in any suitable manner, for example electrolytically as by immersing a cadmium-silver alloy as the cathode in a tin salt solution. The deposited tin forms a superficial alloy layer of cadmium, silver and tin. During use, the layer does not wear away and expose the cadmium-silver base but progressively diffuses into the base, until the base has been appreciably worn away, for example up to 50%.

The percentages of cadmium, silver and tin in the surface layer will vary in very wide ranges. When the alloy layer is first formed, the percentage of tin therein may be relatively high, but in use when the layer wears away, the percentage composition of the tin will be decreased, and I am, therefore, not to be limited to any percentage compositon of the superficial layer.

A representative alloy base of the type mentioned may have the following composition:

	Per cent
Cadmium (at least)	95
Silver	0.5 to 4.9
Copper or nickel	0.25 to 1

An alloy base of the following composition gives very good results:

	Per cent
Cadmium (at least)	95
Silver	1.75 to 2.5
Copper or nickel	0.25 to 0.5

Alloys of the above general composition, carrying a superficial layer of a thickness as low as 50 millionth mm. improve the corrosion stability of a cadmium-silver bearing to a very remarkable extent. A layer having a thickness of 5 millionth mm. is practically non-corrosive. These bearings have a melting point substantially higher than ordinary babbitt bearings, are harder and tougher, and retain their mechanical strength over a long period of use.

The invention has been described with respect to bearings, but it is understood that it is not to be so limited, and covers broadly all alloys of the described composition for various uses. I am not to be limited to any details of the description, but only by the appended claims wherein I have endeavored to claim the inherent novelty.

I claim:

1. A composite bearing comprising a bearing base consisting of an alloy containing at least 95% cadmium and 0.5 to 5% silver, and a thin bearing working surface layer carried by said bearing base and consisting of an alloy containing substantially the same proportion of cadmium, and silver and a small amount of tin.

2. A composite bearing comprising a bearing base consisting of an alloy containing at least 95% cadmium and 1.75 to 2.5% silver, and a thin bearing working surface layer carried by said bearing base and consisting of an alloy containing substantially the same proportion of cadmium, and silver and a small amount of tin.

3. A composite bearing comprising a bearing base consisting of an alloy containing at least 95% cadmium, 0.5 to 4.9% silver, and 0.25 to 1% of a hardening metal, and a thin bearing working surface layer carried by said bearing base and consisting of an alloy containing substantially the same proportion of cadmium, and silver and a small amount of tin.

4. A composite bearing comprising a bearing base consisting of an alloy containing at least 95% cadmium, 0.5 to 4.9% silver, and 0.25 to 1% copper, and a thin bearing working surface layer carried by said bearing base and consisting of an alloy containing substantially the same proportion of cadmium, and silver and a small amount of tin.

5. A composite bearing comprising a bearing base consisting of an alloy containing at least 95% cadmium, 1.75 to 2.5% silver, and 0.25 to 0.5% copper, and a thin bearing working surface layer carried by said bearing base and consisting of an alloy containing substantially the same proportion of cadmium, and silver and a small amount of tin.

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