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COPPER ALLOY

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3 Claims. (Cl. 75—155)

This invention relates to a copper alloy the composition of which while being similar to that of brass alloys, special brass alloys or aluminum bronzes, respectively, differs from the said known alloys both by its contents of phosphorus and by the fact that its quality is improved by a cold working operation.

In its simplest form my novel alloy consists of copper, forming the basis of the alloy, and about 40 percent zink. The refinement is obtained by a contents of phosphorus of 0.01 to 3 percent and a cold working operation.

It is also possible to replace the zink entirely or partly by aluminum, whereby an alloy similar to the known so-called aluminum bronzes is obtained. In this case one part by weight of aluminum replaces 4 parts by weight of zink.

Phosphorus may be added in quantities from 0.01 to 3 percent, but advantageously for facilitating the kneading operation, less than 1.5 percent, and preferably 0.4 to 0.6 percent of phosphorus is admixed only.

Lead may be used as a further constituent for improving the quality of the alloy, and an amount of 0.1 to 3 percent, but preferably, with a view to facilitating the cold working operation, less than 1.0 percent of lead may be admixed by way of alternative, equivalent substances, for instance, tin or cadmium, may be used instead of lead, in corresponding quantities.

In addition, up to about 10 percent of other alloying metals may be used for improving the quality of the alloy; for example, manganese, aluminium, iron, tin and/or nickel may be added, thus obtaining a material which as to its composition is similar to the so-called special brass alloys.

One embodiment of my novel kneaded alloy has the following composition: 68 percent copper, 31 percent zink, 0.6 percent lead or cadmium and 0.4 percent phosphorus. This alloy is brought into its final shape by a drawing operation.

Substituting aluminum for zink in this alloy, in a proportion of 1 to 4, the following composition is obtained: 91 percent copper, 8 percent aluminum, 0.6 percent lead and 0.4 percent phosphorus.

While my novel alloy as to its composition is similar to various alloys it differs from the same by a number of important technological properties rendering it very useful, for example, as a material for construction, as an anti-friction material and as an anti-corrosive material, for example, in vessels and pipe lines.

The following properties render my novel alloy suitable as a constructional material, viz: high tearing strength, elasticity, bending strength, compressive strength, shearing strength, resistance to wear and hardness. On account of these properties my novel alloy may be used especially for the manufacture of nuts, bolts and screws and other threaded parts, moreover for studs, parts of joints and sliding blocks, in particular in the construction of airplanes and vehicles where material of very high quality is needed.

In regard to its anti-friction properties my novel alloy has better running characteristics than the best cast bearing materials, such as phosphorus bronze.

The anti-corrosive features of my novel alloy is shown by the fact that a condenser tube consisting of my novel alloy immersed in a pickle for 6 weeks did not show any noticeable changes. Therefore it may used, for example, for vessels and pipe lines for water, steam, lyes and acids.

The alloy of the present invention has been described in detail with reference to specific embodiments. It is to be understood, however, that the invention is not limited by such specific reference but is broader in scope and capable of other embodiments than those specifically described.

I claim:

1. An alloy consisting of about 40% zinc, 0.01 to 3% phosphorus, 0.1 to 3% lead and the balance copper, said alloy having the characteristic strength, hardness and other properties resulting from the cold working of an alloy of said composition.

2. An alloy consisting of about 40% zinc, 0.4 to 0.6% phosphorus, 1% lead and the balance copper, said alloy having the characeristic strength, hardness and other properties resulting from the cold working of an alloy of said composition.

3. The alloy of claim 1 wherein the phosphorus is below 1.5% and the lead is below 1%.

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