Patented July 2, 1935

2,007,008

UNITED STATES PATENT OFFICE

2,007,008

COPPER ZINC ALLOY CONTAINING SILICON AND IRON

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No Drawing. Application February 19, 1934, Serial No. 712,015

1 Claim. (Cl. 75—1)

My invention relates to a copper zinc alloy containing silicon and iron, and has for its object to provide an alloy which is much stronger, and is equally workable and still has other desirable characteristics and physical properties of similar alloys heretofore in use.

One of the objects is to provide a copper zinc alloy with a strength in excess of ordinary brasses, with high ductility without having to resort to annealing, at the same time increased resistance to corrosion.

My alloy is manufactured preferably by melting the copper with the silicon and iron and when molten and sufficiently fluid for casting purposes the zinc is added. The melt is then brought up to the necessary heat and poured into the mould.

I have discovered that the brasses may be greatly improved by the addition of small percentages of silicon and iron and very desirable characteristics imparted thereto which are not present in the brass alloys alone.

These alloys can therefore be used where superiority is desirable over the zinc alloys, but which have increased strength, increased resistance to corrosion, and which may be extruded, drawn and cold worked to a greater extent than possible heretofore with brass alloys.

In these alloys the silicon is added in amounts from .1 to 3.5% and iron from .05 to 1.5%; both of these elements assisting in increasing the hardness, tensile strength and corrosion and erosion resistance.

For example: The alloy consisting of approximately 61% copper, .8% silicon and .4% iron, with the remainder zinc, has a tensile strength of 20,000 pounds per square inch greater than the brass alloy without these additions, and is much superior in service to brass alloys when manufactured into pump spindles, piston rods or propeller shafts.

This alloy can be cold worked in the manufacture of bolts and nuts and has superior corrosion resistance to other alloys used for this purpose.

Another alloy containing approximately 76% copper, 3% silicon and 1.3% iron, with the remainder zinc, has been found to have remarkable physical characteristics. The tensile strength is in the neighborhood of 80,000 pounds per square inch and has a Brinell hardness of 145. Such an alloy has exceptional ductility without having to resort to relief annealing.

These alloys may be drawn to small dimensions with great ease and such rods are very suitable for welding by both the oxyacetylene and electrical methods and may also be brazed.

Suitability of these alloys for sand casting purposes has been definitely established where strengths are required in excesss of those obtainable with ordinary brasses and which are therefore excellent for such castings as stern tube bushings and the like. The silicon and iron condition improves the fluidity and improved castings result.

I wish it distinctly understood that my copper zinc alloy herein described is in the proportions in which I desire to use it and that changes or variations may be made as may be convenient or desirable without departing from the salient features of my invention and I therefore intend the following claim to cover such modifications as naturally fall within the lines of invention.

I claim:

A copper zinc base alloy, comprising about 61% copper, about .4 to .8% silicon and about .2 to .4% iron, the remainder being zinc.

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