

## UNITED STATES PATENT OFFICE

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## COPPER-SILICON-ALUMINUM ALLOYS

Daniel R. Hull, Watertown, Conn., assignor to The American Brass Company, Waterbury, Conn., a corporation of Connecticut

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This invention relates to a copper alloy and more particularly an alloy of copper-silicon and aluminum.

It is an object of the invention to produce a copper alloy which has increased corrosive resistance, hardness and strength over that of copper, but which can be hot or cold worked to produce various articles.

The addition of silicon to copper in certain proportions hardens the copper and increases the tensile strength, toughness, and resistance to corrosion. It, however, also increases the difficulty of working the metal.

I have found that the addition of aluminum in certain amounts to the copper-silicon alloy facilitates the working, or that it improves the workability of the alloy, and especially hot rolling and extruding, and it can also be cold rolled. The aluminum also further increases the strength and hardness.

The relative proportions of the elements may vary depending on the use to which the alloy is to be put, the silicon content varying from about 0.1% up to about 3.5%, the aluminum from about 0.1% to about 0.75% and the balance copper; while the preferred range is from about 2% to 3% silicon, from about 0.1% to about 0.5%

aluminum and balance copper. A specific alloy which has been found very useful and to have the characteristics noted is composed of approximately 3% silicon, 0.3% aluminum and balance copper.

These alloys are adapted for various uses. They may be hot rolled, extruded, and cold rolled. They may be made into wire, rods, tubes, sheets and various shapes. They may also be drawn, stamped, formed or spun into cups and other forms of drawn metal articles. In short they may be made into various articles by hot rolling, cold rolling, extruding, drawing, or spinning, or any combination of these various operations.

Having thus set forth the nature of my invention, what I claim is:

1. A copper base alloy composed of from 0.1% to 3.5% silicon, from 0.1% to 0.75% aluminum, and balance copper.

2. A copper base alloy composed of approximately 2% to 3% silicon, 0.1% to 0.5% aluminum, and balance copper.

3. A copper base alloy composed of approximately 3% silicon, 0.3% aluminum and balance copper.

DANIEL R. HULL.