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ALUMINUM ALLOY

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The object of this invention is to make an aluminum alloy having certain properties superior to those of any aluminum alloys heretofore known.

According to this invention we make an alloy by compounding the elements, and that in relative quantities within the ranges set out below:—nickel, .2 to 1.5% of the whole; magnesium, .2 to 5% of the whole; copper, .5 to 2% of the whole; silicon, .2 to .5% of the whole; iron, .7 to 1.5% of the whole; manganese and titanium up to a total maximum of .25%; aluminum the remainder; only traces of other elements.

The alloy is made in manner common, that is to say:—to molten commercial aluminum we add alloys each rich in one, or in some cases two, of the required elements.

The manganese and titanium are added merely to cleanse the particles of the metallic alloy and they disappear wholly or partially in the form of oxide or slag.

The presence of any residue or the total absence of these metals in the ultimate alloy is of no moment.

Were it practicable to be sure that the other component parts were free from impurities and that there would be no impurities from the oxygen of the air and furnace gases, these metals would not need to be added, but in fact, there is always a quantum of impurities, and hence it is desirable that there should be a small resultant residue in the alloy.

Within the ranges prescribed the resultant alloy is harder, the higher the proportion of the metals other than aluminum, but on the other hand it is not so resistant to corrosion, and is less ductile.

It will be obvious that increased lightness is attained by adopting in high proportion of the range of magnesium, this higher content is attended to some extent with increased hardness, lower ductibility and a tendency to surface oxidation in sand castings unless special precautions are taken.

With an alloy as described, a casting or forging can be made which from the point of view of lightness, strength, freedom from porosity and oxidation and resistance to corrosion (for instance, on exposure to sea water), is on the average comparably superior to the alloys heretofore in use.

What we claim is:—

An aluminum alloy composed of the elements and that in the relative quantities within the ranges set out below:—nickel, .2 to 1.5% of the whole; magnesium, .2 to 5% of the whole; copper, .5 to 2% of the whole; silicon, .2 to .5% of the whole; iron, .7 to 1.5% of the whole; manganese and titanium up to a total maximum of .25%; aluminum the remainder; only traces of other elements.

In testimony whereof we have hereunto affixed our signatures.

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