

UNITED STATES PATENT OFFICE.

PIERRE HENRI GASTON DURVILLE, OF PARIS, FRANCE.

ALUMINIUM BRONZE.

1,007,548.

Specification of Letters Patent.

Patented Oct. 31, 1911.

No Drawing.

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To all whom it may concern:

Be it known that I, PIERRE HENRI GASTON DURVILLE, a resident of 38 Rue Jouffroy, Paris, France, have invented new and useful Improvements in Aluminium Bronze, which improvements are fully set forth in the following specification.

The properties of those aluminium bronzes consisting of copper and aluminium, which are known at present, are best from the industrial point of view, when the proportion of aluminium is in the neighborhood of 9%. On the other hand, alloys of copper, aluminium and manganese which have special magnetic properties and contain with 70-60% of copper a proportion of manganese and aluminium in the proportion of 2:1, are also known. Manganese coppers are also known, that is to say, alloys chiefly consisting of copper and manganese, to which a few units of aluminium are added, but always less than the quantity of manganese. Finally, a large number of various alloys are known, the properties of which are modified by the addition of a small quantity of aluminium. On the other hand, it has hitherto been usual to add manganese in small proportions to the various bronzes, other than aluminium bronzes, because manganese improves their quality by acting as a reducing agent for oxids. Up to the present, however, no one has used manganese for such an improvement of the very special class of industrial aluminium bronzes, for the simple reason that manganese has not the power to reduce aluminium oxid or alumina. So much so, that up to now no attempt has been made or even suggested to effect an improvement in industrial aluminium bronzes by the addition of manganese. The inventor however, having found that such an improvement exists nevertheless for another reason, namely because manganese has the property of fixing certain elements other than oxids, which are specially injurious in the industrial class of aluminium bronzes, and thus prevents these injurious elements from remaining in a free state in the alloy, has thought of applying industrially this prop-

erty of manganese to industrial aluminium bronzes, that is to say, chiefly to those which consist of two constituents α and β in which the injurious elements, other than oxids, are more particularly the source of great difficulty in the manufacture and, if left in a free state, produce unsound ingots with blow holes.

The alloys forming the subject of this invention, are characterized by the addition of manganese which plays the part of a purifier. These alloys are of the following composition: Cu 86-95%, Mn 0.05-5%, Al 6-11%. The metals can be melted in the order indicated above, but a portion at least of the manganese must be added in the form of an alloy with copper, or with aluminium, at the time of casting.

Manganese in small proportions plays, as already stated, the part of a purifier as regards impurities other than oxids, which are not removed from the alloy by aluminium. The greatest proportion of manganese, up to 5%, in addition to the part hereinbefore indicated, increases the hardness and the malleability of the alloy.

These alloys have all the qualities of "binary" aluminium bronzes (consisting of copper and aluminium only), that is, great strength, good color and resistance to chemical agents while being very easy to work. They are characterized moreover by possessing the advantage that very sound ingots are obtained which can be afterward easily converted by forging, stamping, rolling, drawing, etc., into industrial products of any form.

Claim:

Aluminium bronze comprising about the proportions of eighty-six to ninety-five per cent. of copper, six to eleven per cent. of aluminium, and five-tenths to five per cent. of manganese.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PIERRE HENRI GASTON DURVILLE.

Witnesses:

EMILE LEDRET,
H. C. COXE.