

UNITED STATES PATENT OFFICE.

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ALUMINIUM ALLOY.

SPECIFICATION forming part of Letters Patent No. 480,445, dated August 9, 1892.

Application filed April 21, 1892. Serial No. 430,121. (No specimens.)

To all whom it may concern:

Be it known that I, CHRISTOPHER F. WHITNEY, of Newton, in the county of Middlesex and Commonwealth of Massachusetts, have
5 invented certain Improvements in Aluminium Alloys, of which the following description is a specification.

Heretofore there has been a great variety of metallic alloys in which, among other met-
10 als, aluminium has been used in small quantities. Chiefly iron and copper have been thus alloyed with small proportions of other metals, including aluminium. There has also been described an alloy in which aluminium
15 was the principal metal and a small percentage of titanium added thereto to harden it and give it elasticity; but titanium is a metal so rare and expensive that it is difficult to obtain it in quantities sufficiently large even for
20 experimental purposes and would be wholly out of the question for practical commercial uses.

The object of my invention is to obtain the beneficial qualities of aluminium—to wit,
25 lightness and incorrodibility—and at the same time both to raise its fusing-point and still keep it sufficiently malleable and tough to make it practically available and useful for purposes in the arts, and particularly for uten-
30 sils employed for culinary purposes, manufactured either by casting or by rolling and pressing; also, to produce a metal sufficiently inexpensive to make it of practical commercial availability. For this purpose I alloy the
35 aluminium with either nickel, manganese, iron, steel, tungsten, cobalt, or other metal of high fusing-point to harden and raise the fusing-point of the aluminium, and preferably with copper to give malleability and tough-

ness thereto. Silver will produce an effect 40 similar to that of copper to some degree; but it is too expensive for practical use, and tin, although making the aluminium more malleable, does not give sufficient toughness for a metal to be employed in making utensils 45 which are subjected to severe uses.

I have made tests in alloying aluminium with each of the above-mentioned hardening metals in varying proportions from one-half of one per cent. to eight per cent., both sin- 50 gly and in combination with small portions of copper, varying in amount from one per cent. to eleven or twelve per cent., and have concluded that for the requirements of culinary utensils the best proportions are about 55 eight per cent. of copper and about one per cent. of nickel, manganese, or other of the metals mentioned, which are comparatively inexpensive.

The use of about two per cent. of manga- 60 nese and one per cent. of nickel as an alloy for the aluminium produces a very good result; but the metal is not so malleable as when copper is used.

I claim as my invention— 65

A metal alloy consisting of aluminium, a malleable metal, and a metal of high fusing-point in proportions as follows: aluminium, eighty per cent. or more; a malleable metal, such as copper, twelve per cent. or less; a 70 metal of high fusing-point, such as nickel, eight per cent. or less, for the purpose described.

CHRISTOPHER F. WHITNEY.

Witnesses:

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