

UNITED STATES PATENT OFFICE.

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ALUMINIUM ALLOY.

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

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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 met-
als, including aluminium. There has also
15 been described an alloy in which aluminium was the principal metal and a small percent-
age 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 ob-
tain 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, manu-
factured either by casting or by rolling and
pressing; also, to produce a metal sufficiently
inexpensive to make it of practical commer-
cial 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 fus-
ing-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 mal-
leable, 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 culi-
nary 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 re-
sult; 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 de-
scribed.

CHRISTOPHER F. WHITNEY.

Witnesses:

A. J. BURROW,
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