

UNITED STATES PATENT OFFICE

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ALLOY

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The invention relates to improvements in alloys.

It is one of the objects of this invention to provide an improved alloy which has desirable strength and which is exceptionally staple under changing climatic conditions.

A further object of this invention is to provide an alloy which is well adapted for use in forging, rolling, die casting, sand casting and mold casting.

A further object of this invention is to provide an alloy which is particularly suited for use in the manufacture of automobile connecting rods.

With the above and other objects in view, the invention consists of the improved alloy and its parts and combinations, as set forth in the claims, and all equivalents thereof.

The improved alloy, in its preferred form, comprises a major portion of aluminum, together with molybdenum, chromium and zinc, the zinc being of great importance in view of the fact that it is capable, in the combination, of preventing deterioration of the alloy and of rendering it staple under changing climatic conditions. In addition to the above, small quantities of titanium and zirconium may be utilized, but the addition of these latter ingredients is not essential. The following tabulation discloses one combination of ingredients together with a desirable range of proportions for each of said ingredients:

Aluminum	76%-97.90%
Molybdenum	.05%-5%
Chromium	.05%-5%
Zinc	2%-14%
Optional:	
Titanium	.10%-50%
Zirconium	.10%-50%

In forming the alloy, the aluminum is first melted to a bright red heat, a suitable flux being used to protect the aluminum from oxidation. Next, molybdenum, chromium and zinc are added, and also titanium and zir-

conium if the latter are to be employed. After the mixture has become thoroughly melted and has been stirred well, it is poured into ingot molds. It may be formed either as a complete alloy with the total amount of aluminum present in the first instance, or it may be made in the form of a hardener, with but a portion of the aluminum, the remainder to be added at the time the hardener is used for the manufacture of some article.

Where the alloy is to be employed in the manufacture of automobile connecting rods, the following approximate proportion of the ingredients is preferred:

	Per cent
Aluminum	90
Zinc	8
Molybdenum	.75
Chromium	.75
Titanium	.25
Zirconium	.25

By utilizing the ingredients mentioned in substantially the range of proportions first referred to, an aluminum alloy is formed which is strong and exceptionally staple under changing climatic conditions, and by substantially following the last mentioned formula, an alloy may be produced which is particularly well adapted for use in the manufacturing of automobile connecting rods.

What I claim is:

1. An alloy consisting of a major portion of aluminum, together with .05-5% molybdenum, .05-5% chromium, and 2-14% zinc.

2. An alloy consisting of a major portion of aluminum, together with .05-5% molybdenum, .05-5% chromium, 2-14% zinc, and .10-50% titanium.

3. An alloy consisting of a major portion of aluminum, together with .05-5% molybdenum, .05-5% chromium, 2-14% zinc, and .10-50% zirconium.

4. An alloy comprising a major portion of aluminum, together with .05-5% molybdenum, .05-5% chromium, 2-14% zinc, 90

.10-.50% titanium, and .10-.50% zirconium.

5. An alloy consisting of approximately 87% aluminum, 2.5% molybdenum, 2.5% chromium, and 8% zinc.

6. An alloy comprising approximately 86.5% aluminum, 2.5% molybdenum, 2.5% chromium, 8% zinc, .25% titanium, and .25% zirconium.

7. An alloy adapted for use in the manufacture of automobile connecting rods comprising approximately 90% aluminum, .75% chromium, .75% molybdenum, .25% titanium, .25% zirconium, and 8% zinc.

In testimony whereof, I affix my signature.

CHARLES D. RUSSELL.