

UNITED STATES PATENT OFFICE

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PROCESS FOR IMPROVING COBALT-MOLYBDENUM ALLOYS

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2 Claims. (Cl. 148—11.5)

This invention relates to cobalt-molybdenum alloys.

It has been ascertained by exhaustive experiments that cobalt-molybdenum alloys can be hardened by a special heat treatment. If rolled or cast alloys containing 10 to 35% of molybdenum be heated to a temperature above 1000° C. and thereupon cooled with sufficient rapidity in air or by immersion in water or oil and finally heated to temperatures between 500 to 900° C. then the mechanical properties of the alloys will be very substantially increased in relation to those prior to said heat treatment. If for example, an alloy containing 75% of cobalt and 25% of molybdenum be heated to 1200° C., quenched in water and annealed for one hour at 800° C. the hardness increases from 165 Brinell in the untreated state to 215 Brinell. On occasion there may be added to these improvable alloys, one or more other elements, such as copper, aluminium, iron, nickel, chromium and manganese in amounts up to 40%. Moreover the mechanical properties of such alloys can be considerably improved by a suitable heat treatment, such as hereinbefore described.

It is to be understood that certain quantities of other metals such as Cu, Al, Fe, Ni, Cr, Mn, may be combined with the binary alloys described,

such as will not injuriously affect the nature of such alloys and which may to some extent modify their properties and render them more suitable for special requirements, without however affecting their ability to precipitation hardening, depending upon the fact that the principal part of the alloys consists of cobalt and molybdenum. It is to be understood that such compositions are covered by the phrase "the balance substantially cobalt", used in the ensuing claims.

I claim:—

1. A process for obtaining alloys of high hardness consisting in forming an alloy of 10 to 35% of molybdenum and the balance substantially cobalt and heating said alloy to a temperature above 1000° C. and below the melting point of the alloy, then rapidly cooling said alloy and subsequently annealing it at temperatures between 500° and 900° C.

2. An alloy containing 10 to 35% of molybdenum and the balance substantially cobalt, having high hardness produced by heating the alloy to a temperature above 1000° C. and below the melting point of the alloy, then rapidly cooling said alloy and subsequently annealing it at a temperature between 500° and 900° C.

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