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PROCESS FOR IMPROVING NICKEL-TIN-ALLOYS

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2 Claims. (Cl. 148—11.5)

This invention relates to nickel-tin alloys.

It has been ascertained by exhaustive experiments that nickel-tin alloys can be hardened by a special heat treatment. If rolled or cast alloys containing 5 to 25% of tin be heated to a temperature above about 900° C. and thereupon cooled with sufficient rapidity in air or by immersion in water or oil and finally heated to temperatures between 400° to 800° 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 85% of nickel and 15% of tin be heated to 1100° C., quenched in water and annealed for one hour at 700° C. the hardness increases from 140 Brinell in the untreated state to 265 Brinell.

It is to be understood that certain quantities of other metals such as Cu Al, Fe, Co, Cr, Mn or non-metallic substances, 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 nickel and tin. Thus when in the ensuing claims I use the phrase "the balance substantially nickel", I intend that the content of nickel and tin shall be not less than about 85% of the whole.

I claim:—

1. A process for obtaining alloys of high hardness consisting in forming an alloy of 5 to 25% of tin and the balance chiefly nickel and heating said alloy to a temperature lying between 900° C. and the melting point of the alloy, then rapidly cooling said alloy and subsequently annealing it at temperatures between 400 and 800° C.

2. An alloy containing 5 to 25% of tin and the balance principally nickel, having high hardness produced by heating the alloy to a temperature between 900° C. and the melting point of the alloy, then rapidly cooling said alloy and subsequently annealing it at a temperature between 400 and 800° C.

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