

UNITED STATES PATENT OFFICE.

FRANK D. TAGGART, OF WYOMISSING, PENNSYLVANIA.

ALLOY ROLL STEEL.

No Drawing.

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To all whom it may concern:

Be it known that I, FRANK D. TAGGART, a citizen of the United States, residing at Wyomissing, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Alloy Roll Steel, of which the following is a specification.

My invention relates to an improved alloy steel adapted especially for the manufacture of rolls used in shaping steel bars and plates etc.; and particularly to an improvement in the alloy steel for such purpose which is set forth in Patent No. 1,213,973 granted to me Jan. 30, 1917.

The alloy roll-steel set forth in my prior patent referred to, embodied specified percentages of carbon, chromium, and vanadium whereby required qualities of rigidity, strength, hardness, and homogeneity were secured in high degree as fully described. The present invention is based upon this prior product, and my object is to modify and improve the useful properties thereof for certain uses, particularly when subjected to high heating conditions.

To this end my present invention consists in adding to my previous composition referred to, the well known element molybdenum either alone or in connection with tungsten, so as to notably modify the properties imparted by the carbon, chromium, and vanadium elements, and particularly to impart heat-resisting properties whereby liability to fire cracking is effectually avoided. These desired results I attain preferably by adding to the elements previously specified both molybdenum and tungsten, each in percentages between one-tenth per cent (.10) and five per cent (5.00); the greater effectiveness of the

molybdenum than the tungsten, in imparting heat-resisting properties, being recognized in the relative proportions used, and the addition of molybdenum alone serving to impart the desired modification in the heat-resisting properties of the alloy for certain roll-steel purposes, but the addition of both elements being preferable in most cases, within the percentages stated therefor and for the carbon, chromium, and vanadium elements; it being found in practice that determined heat-resisting quality of my improved alloy may be secured by employing in connection with a reduced percentage of molybdenum a percentage of tungsten equal to about three times such reduction in molybdenum; the tungsten being only about one-third as effective as molybdenum for the essential purpose stated, and imparting no additional quality which materially affects the stated usefulness of the alloy.

What I claim is:

1. The improved alloy roll-steel described, composed mainly of iron, with percentages of carbon between 1.25 and 2.50, of chromium between 1.50 and 3.00, of vanadium approximately .25, and of molybdenum between .10 and 5.00; the minor elements present not exceeding one per cent.

2. The improved alloy roll-steel described, composed mainly of iron, with percentages of carbon between 1.25 and 2.50, of chromium between 1.50 and 3.00, of vanadium approximately .25, of molybdenum between .10 and 5.00, and of tungsten between .10 and 5.00; the minor elements present not exceeding one per cent.

In testimony whereof I affix my signature.

FRANK D. TAGGART.