UNITED STATES PATENT OFFICE.

REINHOLD BECKER, OF CREFELD, GERMANY.

HIGH-SPEED TOOL-STEEL.

1,099,532. Specification of Letters Patent. Patented June 9, 1914.

No Drawing. Original applications filed December 3, 1912, Serial No. 734,796, and August 7, 1913, Serial No. 783,599. Divided and this application filed October 7, 1913. Serial No. 793,967.

To all whom it may concern:

Be it known that I, REINHOLD BECKER, subject of the German Emperor, residing at Crefeld, Germany, have invented certain new and useful Improvements in High-Speed Tool-Steels, of which the following is a specification.

This invention relates to the manufacture of high speed tool steel and has for its object to produce a high speed tool steel which shall be of great efficiency and be capable of cutting at high temperatures.

The present invention comprises certain subject matter divided out from my copending applications for United States Patents Serial No. 734,796, filed December 3, 1912, and Serial No. 783,599, filed August 7, 1913, in which I have described a high speed tool steel produced by the addition of cobalt to the known compositions hitherto employed in the manufacture of high speed tool steels, which comprise, essentially, steel having a low percentage of carbon and containing tungsten and chromium.

The present invention relates to the manufacture of the high speed tool steel outlined in the aforesaid specifications and is the outcome of extensive experiments made in connection therewith.

The invention comprises the addition to the before mentioned high speed tool steel of the metals vanadium and molybdenum. The high speed tool steel is preferably produced from the following composition, namely: steel containing about 0.70% of carbon, about 5% of chromium, about 18% of tungsten, about 1% of vanadium, about 0.75% of molybdenum and about 4% of cobalt. It will also be understood that the steel may also contain small quantities of other metals such as hitherto employed in the manufacture of high speed tool steels.

I claim:

1. A high speed tool steel containing chromium, tungsten, vanadium, molybdenum and cobalt.

2. A high speed tool steel containing a low percentage of carbon, and containing chromium, tungsten, vanadium, molybdenum and cobalt.

3. A high speed tool steel containing a low percentage of carbon, and containing chromium, tungsten, vanadium, molybdenum and up to 15 per cent. of cobalt.

4. A high speed tool steel containing about 0.70% of carbon, about 5% of chromium, about 18% of tungsten, about 1% of vanadium, about 0.75% of molybdenum and about 4% of cobalt.

In testimony whereof I affix my signature in presence of two witnesses.

REINHOLD BECKER. [L. S.]

Witnesses:
HELEN NUFER,
ALBERT NUFER.