No. 781,300. Patented January 31, 1905.

UNITED STATES PATENT OFFICE.

THOMAS PRESCOTT, OF HUDDERSFIELD, ENGLAND.

MANUFACTURE OF METALLIC ALLOYS.

SPECIFICATION forming part of Letters Patent No. 781,300, dated January 31, 1905.

Application filed February 2, 1904. Serial No. 191,713.

To all whom it may concern:

Be it known that I, THOMAS PRESCOTT, a subject of the King of Great Britain, residing at Lindenthorpe, Birkley Hall Road, Huddersfield, England, have invented certain new and useful Improvements in the Manufacture of Metallic Alloys, of which the following is a specification.

The object of this invention is to manufacture a metallic alloy of a light and strong character suitable for bearings of machinery and for figures, models, and other objects which can be produced from cast or stamped metals.

For the purpose of this invention the following ingredients are employed: zinc, aluminium, iron, and silicon. It is preferred that the ingredients be in or about the following proportions, the quantity of each constituent, by weight, varying according to the degree of hardness or toughness of metal required: zinc, 53.50 to 74.75 parts; aluminium, twenty-five to 43.50 parts; iron, 0.25 to two parts; silicon, 0.25 to one part. The silicon is formed from a powder made of the following constituents: potassium silico fluorid, 23.25 parts; calcium chlorid, 25.82 parts; powdered glass, 31.20 parts; carbonate of soda, 3.72 parts; carbonate of lime, 3.10 parts; common salt, 12.91 parts.

In making the alloy the amount of iron required is first melted in a crucible and the aluminium is then added, and when this is thoroughly melted add the zinc in the usual way, care being taken that the temperature is not too high when adding the zinc, as the latter being a volatile metal there would be considerable loss if this condition was not observed. When these have become thoroughly alloyed, the silicon in the form of powder is added, and in application this powder is spread over the surface of the molten metal, and the silicon contained in the powder enters into combination with the alloy, leaving a silicon on the surface of metal which is a strong deoxidizer and reduces the oxids that are formed during the alloying. If a hard metal is required, the proportion of zinc will be great and that of aluminium small.

This alloy may be used for pattern-plates or patterns for founding-work, machine-bearings, and for any articles where lightness combined with strength is required.

What I claim, and desire to secure by Letters Patent, is—

1. The method of making metallic alloy for casting, which consists in melting a quantity of iron, adding aluminium and zinc to the molten iron, thoroughly melting and alloying the mixture, and finally adding silicon, as set forth.

2. The method of making metallic alloy for casting, which consists in melting a quantity of iron, adding aluminium and zinc to the molten mass in succession, thoroughly melting and alloying the mixture, and finally adding silicon when the alloy is ready for casting, as set forth.

3. The method of making metallic alloy for casting, which consists in melting 0.25 to two parts of iron, adding twenty-five to 43.50 parts of aluminium and 25.50 to 74.75 parts of zinc, thoroughly melting and alloying the mixture, then adding 0.25 to one part of silicon when the alloy is ready for casting, as set forth.

4. The method of making metallic alloy for casting, which consists in thoroughly melting and alloying iron, aluminium and zinc, then spreading on the molten alloy a powdered mixture of potassium silico fluorid, calcium chlorid, glass, carbonate of soda, carbonate of lime, and common salt, as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS PRESCOTT.

Witnesses:

ALFRED STANLEY HOUGHTON,

ROBERT WILLIAM WATSON.