UNITED STATES PATENT OFFICE.

WILLIAM J. REARDON, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ALLOY.

1,305,166. Specification of Letters Patent. Patented May 27, 1919.

No Drawing. Application filed March 18, 1914. Serial No. 825,502.

To all whom it may concern:

Be it known that I, WILLIAM J. REARDON, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Alloys, of which the following is a specification.

My invention relates to alloys, and it has particular reference to alloys in which extreme lightness is combined with great tensile strength.

The object of my invention is to produce alloys of the kind designated having improved properties that render them especially well suited to the manufacture of castings.

Alloys composed of magnesium and aluminum are well known in the arts and are extremely useful in many situations where it is desirable to employ a very light and strong metal. The magnesium increases the hardness of aluminum without increasing its specific gravity.

Alloys of this class are extremely difficult to cast satisfactorily. Even when prepared with the greatest care, castings made from such alloys are frequently filled with blow holes and black specks which render them useless, and the loss due to oxidation during the melting process is very high.

I have discovered that the above-noted objections may be overcome by adding to the magnesium-aluminum alloys a small proportion of metallic vanadium, which acts as a deoxidizing agent, increases the tensile strength of the alloys, and makes possible the production of castings of uniform excellence, free from blow holes and specks.

Only a very small amount of vanadium is necessary, and the cost of my improved alloys is therefore but little greater than the cost of the ordinary aluminum-magnesium alloys.

My alloys may be compounded in a wide variety of proportions. According to one formula which I have found highly successful, I prepare an alloy of aluminum and vanadium containing 20% of vanadium and 80% of aluminum. I then prepare an alloy of aluminum and magnesium containing 92 to 93% of aluminum and 7 to 8% of magnesium. Finally, I add one-fourth of one per cent. of the aluminum-vanadium alloy to 99.75% of the aluminum-magnesium alloy. The final alloy, therefore, contains only .05 of one per cent. of metallic vanadium. This alloy casts readily, and has a tensile strength of over 28,000 pounds.

It is to be understood that the example which I have given is merely illustrative, and that many variations may be made in the proportions of the ingredients and in the order in which they are combined without departing from the spirit of my invention, which is to be limited only by the scope of the appended claims.

I claim as my invention:

1. An alloy suitable for casting without the formation of blow-holes and black specks in the castings, and containing aluminum, magnesium and less than one per cent. of vanadium.

2. An alloy comprising aluminum, magnesium and a relatively small proportion of vanadium.

3. An alloy comprising aluminum, magnesium and less than one per cent. of vanadium.

In testimony whereof I have hereunto subscribed my name this 28th day of Feb., 1914.

WILLIAM J. REARDON.

Witnesses:
C. E. DECKER,
B. B. HINES.