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MAGNESIUM ALLOY

Arthur Burkhardt, Berlin-Lichterfelde, and Richard Knabe, Berlin-Zehlendorf, Germany, assignors to Georg Von Giesche's Erben, Breslau, Germany, a corporation of Germany

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4 Claims. (Cl. 75—168)

Our invention relates to magnesium alloys, and more particularly to alloys of the class containing aluminium, cadmium, and a third element, which may be bismuth.

In our co-pending application, Serial No. 228,324, filed September 3, 1938, for a "Magnesium alloy of high strength and resistance to corrosion," we have described magnesium alloys containing 1 to 15% aluminium, 1 to 15% cadmium, and at least one metal of the group including bismuth, lead and tin, the total of the alloying elements being 6 to 23%. We have also described alloys of this class in which bismuth is replaced entirely or partly by lead or tin, or by lead plus tin.

Further investigations of these alloys have demonstrated the fact that the strength of the alloys under high temperature conditions, and their yield point, are much increased by adding to an alloy of the aforesaid composition at least one metal in the group including silver, beryllium, cerium, and lithium, at the rate of up to 3%. Only one of the said metals may be added, or any two or more of them may be combined, provided that their total percentage does not exceed 3%.

As described in our said co-pending application, the remainder of the alloys may be substantially all magnesium, the phrase "substantially all magnesium" being intended to include the usual impurities in technical magnesium, and minor amounts of certain usual alloying elements, generally not more than 0.1 to 1%.

The strength under high temperature conditions imparted to the alloys in the manner described, is very high, and the yield point is also much increased.

Examples of suitable alloys according to our invention will appear from the following table.

Alloy No.	Al, %	Bi, %	Cd, %	Ag, %	Be, %	Ce, %	Li, %	Pb, %	Sn, %
1	2	4	4	2	----	----	----	----	----
2	5	8	6	----	1	1	----	----	----
3	5	----	6	2	----	----	1	4	4
4	5	8	6	1	1	----	1	----	8

It is understood that in all cases the remainder is substantially all magnesium.

We claim:

1. A magnesium alloy containing from 1 to 15 per cent of aluminium, from 1 to 15 per cent of cadmium, and from 1 to 15 per cent of at least one metal selected from the group consisting of bismuth, lead and tin, the total content of said alloying elements being from 6 to 23 per cent, and an addition of up to 3 per cent of at least one metal selected from the group consisting of silver and beryllium, the remainder being substantially all magnesium.

2. A magnesium alloy containing from 1 to 15 per cent of aluminum, from 1 to 15 per cent of cadmium, and from 1 to 15 per cent of bismuth, the total content of said alloying elements being from 6 to 23 per cent, and an addition of up to 3 per cent of at least one metal selected from the group consisting of silver and beryllium, the remainder being substantially all magnesium.

3. A magnesium alloy containing 1 to 15 per cent aluminum, 1 to 15 per cent cadmium, 1 to 15 per cent bismuth, the total content of said alloying elements being from 6 to 23 per cent and an addition of up to 3 per cent of silver, the remainder being substantially all magnesium.

4. A magnesium alloy containing 1 to 15 per cent aluminum, 1 to 15 per cent cadmium, and from 1 to 15 per cent of at least one metal selected from the group consisting of bismuth, lead and tin, the total content of said alloying elements being from 6 to 23 per cent, and an addition of up to 3 per cent of silver, the remainder being substantially all magnesium.

ARTHUR BURKHARDT.
RICHARD KNABE.