

UNITED STATES PATENT OFFICE.

DAVID STENQUIST, OF STOCKHOLM, SWEDEN.

METAL ALLOY FOR CABLE-CASINGS AND THE LIKE.

1,360,045.

Specification of Letters Patent. Patented Nov. 23, 1920.

No Drawing.

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To all whom it may concern:

Be it known that I, DAVID STENQUIST, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented new and useful Improvements in Metal Alloys for Cable-Casings and the like, of which the following is a specification.

The present invention relates to a metal alloy consisting of lead and magnesium for cable casings, and the like. The characteristic feature of the invention is that the content of magnesium is 0.01-0.1%. Such a metal alloy is specially adapted for replacing such lead alloys as contain, in addition to lead, 2 to 3% tin, and which are used particularly for cable casings. The lead magnesium alloy in question has the same properties in regard to resistance to breaking strain, elasticity, and hardness as the said lead tin alloy with 2 to 3% tin. Alloys of lead and tin prove comparatively expensive, owing to the high price of tin. I have therefore sought to find a substitute for the tin ingredient in the alloy. After experiments with different metals, such a substitute has been found in magnesium. It will be seen that the amount of magnesium required in the lead magnesium alloy in accordance with the present invention in order to obtain the necessary qualities of strength and resistance, is minute in comparison with the amount of tin which is required, when the latter metal is used. In the said experiments, the most suitable amount of magnesium has been ascertained to be about 0.05%.

The alloy is produced, for instance, in the following manner:—The lead is melted and heated to a temperature slightly above its melting-point, whereupon magnesium to the amount of 0.01-0.1% is added. The mass should be thoroughly stirred, so as to obtain a product with as homogeneous a texture as possible.

By numerous tests and experiments, it

has been demonstrated that lead has a resistance to breaking strain of 1.68 kilograms per square millimeter, a ductility of 47 per cent., and hardness of 3.6. It has also been found that, by the addition of magnesium beyond 0.12 per cent., there will be practically no increase in the qualities referred to, while with 0.04 per cent. of magnesium, the resistance to breaking strain is 2.5, the ductility 39 and the hardness 6.1. The corresponding values for a 3 per cent. of tin in a lead-tin alloy are 2.34, 52 and 6.4. It will thus be seen that, with a 0.04 per cent. content of magnesium, the lead-magnesium alloy possesses characteristics approximately equal to those of a lead-tin alloy having a tin content of 3 per cent., and, therefore, owing to the minute quantity of magnesium employed, an alloy is produced which is very much cheaper than the lead-tin alloy, while possessing qualities that render it available for all of the purposes for which the latter is desirable.

What I claim is:

1. Articles having ductility, hardness and resistance to breaking strain approximately in the proportions of 39, 6.1 and 2.5 respectively and consisting of lead and magnesium, the content of magnesium being from 0.01 to 0.1 per cent.

2. Articles having ductility, hardness and resistance to breaking strain in proportions approximately equal to those of a lead-tin alloy with a tin content of 2 to 3 per cent., said articles consisting of lead and magnesium, the content of magnesium being 0.01 to 0.1 per cent.

3. Articles having ductility, hardness and resistance to breaking strain, consisting of lead and magnesium, the content of magnesium being from 0.01 to 0.1 per cent.

In testimony whereof I have signed my name to this specification.

DAVID STENQUIST.