UNITED STATES PATENT OFFICE.

ARTHUR E. HOBSON, OF MERIDEN, CONNECTICUT.

ALLOY.

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To all whom it may concern:

Be it known that I, ARTHUR E. HOBSON, a citizen of the United States, and a resident of Meriden, in the county of New Haven and State of Connecticut, have invented and produced a new Alloy, of which the following is a specification.

My invention relates more particularly to that class of alloys composed of the softer metals; and the object of my invention is to produce an alloy composed of soft metals that shall be more ductile than those heretofore produced and that shall have extreme tensile strength; and a further object is to provide an alloy in which the strength of the metal in proportion to the weight thereof shall be greater than in any alloy heretofore produced; and a further object is to produce an alloy of finer grain and capable of taking a higher and finer finish than those heretofore produced.

My new alloy is designed especially for the production of articles of tableware or articles which have heretofore been composed of britannia metal; but while this new alloy is especially applicable to such purpose it will be found to readily adapt itself to the production of articles of various kinds.

My new alloy includes to a great extent the metals entering into the composition of britannia metal, which, as is well known, is composed as to a large part of tin.

Prior to my invention it has always been considered that the use of manganese in an alloy having more than two or three per cent. of tin would not be productive of beneficial results, for the reason that the use of manganese with more than the above-mentioned quantity of tin would deteriorate the latter and that such use should therefor not be attempted. By extended experiment, however, I have demonstrated the fact that manganese may be used in an alloy containing a high percentage of tin; in fact, that it may be used with the composition of metals usually employed for the production of britannia metal and with the greatest benefits resulting therefrom. The amount of manganese to be used in the composition will vary to a considerable extent, depending upon the uses to which the alloy is eventually to be put. For instance, the amount of manganese employed in casting metal may be considerably less than that employed in sheet metal.

In my experiments I have found that to the usual composition of metals entering into the making of britannia metal a considerable portion of manganese may be added, the britannia metal, as is well understood, consisting of a very large percentage of tin. I have found by my experiments that manganese can form one of the metals of an alloy in which tin is present to a large percentage and without deteriorating the tin; but, on the contrary, a new alloy will result having many advantages over britannia metal. I have also found that the copper or antimony entering into the composition of britannia metal may be dispensed with in the composition and manganese included therein—that is, the alloy may consist of tin, antimony, and manganese or tin, copper, and manganese. Such a composition produces an alloy having many desirable qualities and possessing many advantages over those present in britannia metal.

In demonstrating my invention I have found that to the usual composition making up britannia metal as small an amount as one-fourth ounce of manganese to one hundred pounds of the tin, antimony, and copper or to one hundreds pounds of tin and one of the other metals may be used with beneficial results and that this amount of manganese may be increased to as high as from five to ten pounds, the amount of manganese to be employed to depend, as hereinbefore stated, largely upon the uses to which the new alloy is to be put. I deem it desirable, however, in order to obtain the best results to use comparatively small amounts of manganese, varying from one-fourth ounce to three ounces to one hundred pounds of the other metals.

While the amount of the respective materials entering into the composition may vary, as above stated, and yet produce good results, I have found that a composition composed of about one hundred and nine pounds of tin, about three pounds of copper, about nine pounds of antimony, and about three ounces of manganese will produce an entirely satisfactory composition.

I have found that an alloy produced after my invention and containing tin to a large percentage and also containing manganese, as hereinbefore set out, possesses an increased tensile strength over britannia metal heretofore used and that the ductility of the new alloy is greatly increased. The metal is harder and tougher and the melting temperature is increased over that of britannia metal. The grain is extremely close, and the metal or

alloy is therefore much finer and capable of taking a higher finish. Articles made from this new alloy are also much lighter in weight with a comparative increase in strength.

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

1. A new metal alloy including tin in a large proportion, a hardening metal, and manganese.

2. A new metal alloy including tin in a large proportion, copper and antimony in comparatively small proportions, and manganese.

3. A new metal alloy including about ninety per cent. of tin and the remainder consisting of a hardening material, and manganese.

4. A new metal alloy including tin in a proportion of about ninety per cent., a hardening material including antimony and copper, and manganese.

5. A new metal alloy including tin in a proportion of about ninety per cent., a hardening material, and manganese in proportion of from one-fourth ounce to five or ten pounds to about one hundred pounds of the other metals.

6. A new metal alloy consisting of metals in substantially the following proportions: tin, about one hundred and nine (109) pounds, copper, about three pounds, antimony, about nine pounds, manganese, about three ounces.

ARTHUR E. HOBSON.

Witnesses:

BENJ. CHURCH, Jr.,

JOHN L. DALGLEISH.