UNITED STATES PATENT OFFICE.

ALFRED SCHMID, OF ZÜRICH, SWITZERLAND.

ALLOY OF COPPER AND ZINC.

1,040,027. Specification of Letters Patent. Patented Oct. 1, 1912.

No Drawing. Application filed December 23, 1911. Serial No. 667,475.

To all whom it may concern:

Be it known that I, ALFRED SCHMID, a citizen of the Swiss Republic, residing at Zürich, in the Swiss Republic, have invented a new and useful Improved Alloy of Copper and Zinc, of which the following is a specification.

The invention relates to an alloy of copper and zinc having 56–62% copper, to which, as an exclusive adjunct, silicon and tin are added. A metal is then obtained, which, in a raw cast condition, combines all properties of most value in practice, viz. high limit of elasticity, toughness, small liability to formation of hollow spaces, and, to separation when solidifying in the mold, high resistance to the attack of salt solutions (sea water), diluted acids, and alkalis, and no undue resistance to the action of cutting tools. Such alloys having 56–62% copper, 43.3–35.0% zinc, 0.2–1.5% silicon and 0.5–1.5% tin have, in a raw cast condition, limits of elasticity of 12.7 to 19 tons per square inch, a tensile strength of 30.5 to 34.9 tons per square inch, extensions of 25–35%, and a high resistance to the notch bending test. When becoming solid there is only a very slight tendency to the formation of hollow spaces and no separation even in the case of large castings. In acids, salt solutions, and alkalis they are very durable. In spite of their high degree of toughness they can be easily shaped, planed, filed, turned, etc., and, when red hot, they can be wrought, rolled and pressed, and, at a normal temperature, drawn, rolled and hammered. This is a result which is not obtained by any ordinary or special brass.

An addition of silicon or of tin alone to brass is not new, but still they have never been added together as the only intentional adjunct to pure brass having 56–62% copper. On the other hand gun metal containing copper, tin, zinc, and silicon are known.

As an example for the practical production of the alloy of copper, zinc, silicon, and tin forming the subject matter of the invention the following proportions may be given: 58 lbs. copper are melted and well superheated, whereupon, while stirring said molten copper, 1 lb. of silicon copper having 30% silicon, 1 lb. tin and 40 lbs. zinc are dissolved.

What I claim and desire to secure by Letters Patent of the United States is:—

1. An alloy of copper, zinc, tin and silicon containing 56 to 62 per cent. of copper.

2. An alloy of 56–62% copper, 43.3–35.0% zinc, 0.2–1.5% silicon and 0.5–1.5% tin, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED SCHMID.

Witnesses:
CARL GUBLER,
AUGUST RUEGG.