

UNITED STATES PATENT OFFICE.

THOMAS SHAW, OF NEWARK, NEW JERSEY.

PHOSPHORIZED ALLOY OF COPPER AND ALUMINIUM AND PROCESS OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 303,236, dated August 5, 1884.

Application filed April 26, 1883. (Specimens.)

To all whom it may concern:

Be it known that I, THOMAS SHAW, a citizen of the United, residing at Newark, in the county of Essex and State of New Jersey, have
5 invented a new and useful Improvement in Phosphorized Alloys of Copper and Aluminium and Processes of Making the Same, of which the following is a specification.

The object of this invention is to produce
10 an alloy of aluminium with copper and phosphorus, adapted by means of its great ductility and malleability to numerous uses in which such qualities are desirable, and as it possesses great tensile strength, and, withal,
15 is an excellent electrical conductor, more especially for conducting-wires for telegraph, telephone, and other electrical uses. The conductivity of this alloy is greater than that of iron, steel, or phosphor-bronze. I use alloys of copper containing from less than one
20 to five per cent. of aluminium, and from one-twentieth of one per cent. to one per cent. of phosphorus. Intermediate proportions within this range may be used without departing
25 from my invention. The amount of tensile strength required will regulate the proportions within the above limits.

My method of making the aluminium copper phosphorus alloy is as follows: I first
30 melt the copper, then add the aluminium, a little at a time, with a flux consisting of palm-oil or similar oil, or any substance of like nature, stirring well all the time with a pine stick, then add the phosphorus, stirring again,
35 and then pour into chill-molds. It is of the greatest importance to watch the process closely to get the proper heat, which is obtained only by experience. The relative conductivity and strength vary with the propor-

tions of aluminium and phosphorus used. I have found very good results with from one-third of one per cent. to three or even five per cent. of aluminium, and from one-twentieth of one per cent. to one per cent. of phosphorus; but these proportions may be varied above or below, according to the purpose for which the metal is to be used.

The above-described alloy has remarkable working qualities. It can be worked cold without annealing, and can be drawn down rapidly without injury. It works so readily that it can be run through two or even three holes of the rolls at once. This I have done successfully.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An alloy composed of copper, aluminium, and phosphorus in the following proportions: aluminium from one-third of one per cent. to five per cent., phosphorus from one-twentieth of one per cent. to one per cent., and the remainder copper, substantially as described.

2. The process of producing phosphorized alloys of copper and aluminium, which consists in providing a bath of molten copper, and adding thereto metallic aluminium in the proportions stated, the bath being covered by a layer of palm-oil to prevent oxidation, and finally adding a small proportion of phosphorus, substantially as described.

In witness whereof I have hereunto set my hand.

THOS. SHAW.

Witnesses:

GEO. H. SONNEBORN,
JOHN M. O'BRIEN.