

UNITED STATES PATENT OFFICE.

JAMES BURNS, OF VERONA, PENNSYLVANIA.

MANUFACTURE OF ALLOYS OF COPPER AND IRON.

SPECIFICATION forming part of Letters Patent No. 616,599, dated December 27, 1898.

Application filed February 17, 1898. Serial No. 670,703. (No specimens.)

To all whom it may concern:

Be it known that I, JAMES BURNS, a citizen of the United States of America, residing at Verona, in the county of Allegheny and State
5 of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Alloys of Copper and Iron; and I do hereby declare the following to be a full, clear, and exact description thereof.

10 My invention relates to the production of a compound metal or alloy, consisting of iron, or an alloy thereof, and copper in any required proportions.

The object of my invention is to produce a
15 metal alloy of uniform density in which a small proportion thereof is copper, so thoroughly commingled or alloyed with either iron or steel as to produce a compound metal of uniform density and appearance, non-cor-
20 rosive, and of great flexibility.

To this purpose my invention consists in, first, charging a crucible with either iron or steel and copper in the proportions required in the compound metal or alloy, and when in
25 a molten condition charging therein a mixture of caustic alkali and resin in equal proportions, and then, by shaking or otherwise agitating the crucible, mixing the contents thereof thoroughly, and finally pouring the
30 metal into any suitable mold.

In the practice of my invention I have discovered that one and one-half ($1\frac{1}{2}$) ounces of each of the ingredients specified, to about
35 sixty-five (65 lbs.) pounds of metal produce good results.

In the practice of my invention the copper may be separately smelted and poured into the crucible previous to drawing the metal, the ingredients being charged into the crucible at about the same time and mixed, as
40 heretofore specified.

The alloy produced as specified consists of iron or steel eighty (80 %) per cent. and copper twenty (20 %) per cent.

The proportions of iron or steel and copper comprising the alloy may be varied, if desired, to produce a hard or soft alloy, it being necessary, however, to increase proportionately the resin and caustic alkali with the
45 increase of copper in the alloy.

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

The herein-described improvement in the manufacture of alloys of copper, and iron
55 which consists in first bringing the metals to a molten condition and mixing therewith, previous to pouring or drawing the same, a mixture of caustic alkali and resin, substantially as herein described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JAMES BURNS.

Witnesses:

ALBERT J. WALKER,
C. A. WILLIAMS.