

UNITED STATES PATENT OFFICE.

HOWELL W. WRIGHT, OF GLASTENBURY, CONNECTICUT, ASSIGNOR TO
ALBERT CHAPMAN, OF SAME PLACE.

IMPROVEMENT IN ALLOYS.

Specification forming part of Letters Patent No. **141,529**, dated August 5, 1873; application filed
December 30, 1872.

To all whom it may concern:

Be it known that I, HOWELL W. WRIGHT, of Glastenbury, in the county of Hartford and State of Connecticut, have invented a new and useful Metallic Alloy and Process for Producing the Alloy, of which the following is a specification:

The metals of which the alloy is composed are copper and zinc. The proportion of copper is from one-fourth to one-third of the whole, by weight, and the zinc forms the remainder.

The zinc is first melted in a crucible or other proper receptacle, being mixed as it is melted with powdered charcoal or other equivalent carbonaceous matter, so as to cover the zinc and exclude it from the air. When the zinc is all melted the cover of the crucible is put on, and the whole mass raised to the melting-point of copper, when the copper is added in thin sheets, the heat continued till the copper melts, when the melted mass is to be stirred thoroughly, so as to perfectly mix the two metals; and then the mass is cast into an ingot or block, the charcoal going out with the metal, thus excluding it from contact with the air. The carbon forms a black coating upon the ingot, which can be readily removed.

The color and quality of this alloy are improved by preparing the copper which is used as follows: Take, say, one hundred pounds of common copper, melt it, and continue the heat till it bubbles. Now put in about two ounces of common soda-ash, stir thoroughly, and continue the heat till the copper boils or bubbles in the center of the mass, then cast into sheets.

After the alloy of copper and zinc is cast into an ingot, as hereinbefore described, it is not to be disturbed till the ingot chills. This alloy melts at a little lower heat than common brass.

When this alloy is mixed with Britannia metal it cheapens it, but improves it, making it whiter, harder, tougher, and more tenacious. When mixed with brass it cheapens it, but improves its color and quality. When mixed

with German silver it cheapens it, but hardens it, and makes it tougher than even the admixture of copper. When mixed with pin metal it cheapens, but toughens and improves it. When mixed with bell metal it cheapens, but improves, giving it a finer ring and better color.

This alloy is probably capable of a similar use with many other metals.

When melted with any of the above-named metals it makes a finer and more fluid metal, giving a casting that is compact, sound, and free from pores.

The method heretofore in use for producing an alloy of zinc and copper has been to first melt the copper and then add the zinc, either melted or in scraps; and at the time of adding the zinc the copper has sometimes, as described in English patent to I. Revere, No. 5,892, of 1830, been covered with a flux, so as to prevent the combustion of the copper.

My process is quite different from this. I first melt the zinc, and then, under a flux of carbonaceous matter, I carry the zinc to the melting-point of the copper, when the copper is added.

I have found that the sudden plunging of the zinc into the melted copper has a tendency to burn the zinc and impair its quality; and, also, that it is almost impossible to prevent waste of the zinc from combustion when the zinc is plunged into the melted copper. By first melting the zinc, and then carrying it under a flux of carbonaceous matter to the melting-point of copper, I avoid the danger of its burning so as to impair its quality. I also avoid the waste from combustion. I further find that the process carbonizes the zinc, and that the resulting compound, with the copper, has distinctively different features and qualities from a compound of even the same proportions produced after the old methods. The alloy is much whiter, harder, and finer in grain.

This process of alloying zinc is not, obviously, confined to effecting a union with copper, for the zinc can, either alone or after having the copper added, be carried to the

melting-point of metals which are still more infusible, as nickel and zinc, or of nickel, copper, and zinc.

I claim as my invention—

The process of producing an alloy of zinc with copper, or other metal or metals, which melt at a higher temperature than zinc, by first melting the zinc and then carrying it under a carbonaceous flux to the melting-point

of the more infusible metal or metals, and then adding such other metal or metals, the whole being done substantially in the manner and for the purpose described.

HOWELL W. WRIGHT.

Witnesses:

WM. E. SIMONDS,
JOHN POLLITT.