

# UNITED STATES PATENT OFFICE.

E. MOURIER AND J. F. E. VALLENT, OF PARIS, FRANCE, ASSIGNORS TO  
HENRY MIGEON, OF NEW YORK, N. Y.

## IMPROVEMENT IN FLUXES FOR TREATING ALLOYS.

Specification forming part of Letters Patent No. 16,771, dated March 3, 1857.

*To all whom it may concern:*

Be it known that we, ELIE MOURIER and JULES FRANCOIS EDWARD VALLENT, of the city of Paris, did invent, make, and apply to use a certain Method of Refining Metals and Producing Metallic Alloys or Composition, (for which we obtained Letters Patent of the Empire of France, dated the 30th day of December, 1854,) which alloy or composition we denominate the "orède" or "gold kalcogène;" and that we, ELIE MOURIER and JULES FRANCOIS EDWARD VALLENT, declare that the following is a full, clear, and exact description of the nature of said invention and of the manner of compounding and applying our composition—that is to say:

The object of our invention is to purify the metals and produce a new composition or alloy having all the appearance of gold and uniting, over and above all other alloys hitherto made for that purpose, first, a greater density; second, a greater sonority than copper or any other alloy of copper; third, a very great homogeneity, which may be ascertained by breaking the metal or filing it off; fourth, a brilliancy which may be compared to that of gold, and a fixed hue or color which even wear does not obliterate; fifth, a ductility and malleability nearly equal to that of pure gold.

The combination to procure the above effects is as follows: one hundred parts, by weight, of copper; seventeen parts, by weight, of zinc; six parts, by weight, of magnesia; 3.60 parts, by weight, of sal-ammoniac; 1.80 parts, by weight, of quicklime; nine parts, by weight, of unpurified tartar.

Copper of any kind, when purified and freed from all the heterogenous substances which it may contain, is used for the production of the new alloy; but according to the ductility required and the color to be obtained the proportions of the zinc, magnesia, quicklime, and unpurified tartar, may be varied. Some parts of zinc may be replaced by an equal number of parts of tin to give more brittleness to the compound.

The combination of our alloy is effected as follows: In a crucible well set up we throw one hundred parts, by weight, of copper. When it is fused, we add the magnesia, sal-

ammoniac, quicklime, and unpurified tartar, all previously mixed together. These chemical substances should be reduced to powder and kept excluded from the air, and when the same have been introduced into the crucible the same should be subjected to the heat for about twenty minutes. When these substances are well incorporated, we add the zinc or tin, entering the same in the form of strips, rods, or lumps, through the crust formed over the copper by the above-mentioned ingredients, and the contents are to be thoroughly stirred to mix the substances together and disengage the air or gases. The crucible is then closed and heated till the contents are fused, which requires about twenty-five minutes. The crucible is then to be skimmed with very great care, so as to remove all the dross and surplus chemical agents. When this has taken place, the alloy is to be poured out into sand-molds, well dried, and contained in frames or boxes, if the compound is required to be well rolled; otherwise the alloy may be poured out into iron molds. The metal, when remelted in a blast-furnace, is rendered more applicable to works of art and rendered more ductile and malleable.

The castings are to be cleaned in the ordinary pickle and dipped in the usual manner to remove oxide.

Having thus described the nature of our said invention, and shown the best manner we are acquainted with of carrying the same into execution, we remark that the non-metallic chemical agents herein specified, when used as a flux with copper, aid in refining the same, as well as the alloys of copper with other metals; but the precise chemical or other action produced on the metals cannot be easily determined, if at all. Suffice to say, that we have herein specified what we believe to be the best proportion in which to use said non-metallic chemical agents, and shown the manner of applying the same, by which we purify the metal and produce an alloy possessing greater density, malleability, ductility, and brilliancy than any other alloy with which we are acquainted.

We do not claim making an alloy of copper and zinc or tin, as this is well known, and we do not limit ourselves to the precise propor-

tions specified of non-metallic chemical substances used with said metals during the process of refining, as said non-metallic substances may be slightly varied, according to the quality of metal operated on, so long as substantially the same effect is produced on the metal by the ingredients specified, or others having equivalent properties. Therefore

What we claim, and desire to secure by Letters Patent, is—

The employment, in combination, of the non-

metallic substances, substantially as specified, (or substances having equivalent properties,) in the refining of copper and its alloys, whereby the essential qualities specified are imparted to the copper or its alloys.

E. MOURIER  
J. VALLENT.

Witnesses:

G. T. POUSSIN,  
W. S. CHASE.