

# UNITED STATES PATENT OFFICE.

LEONHARDT OTT AND HANS RIFFELMACHER, OF ROTH, GERMANY,  
ASSIGNORS TO THE BRONZEFARBENWERKE ACTIEN-GESELLSCHAFT,  
VORMALS CARL SCHLENK, OF SAME PLACE.

## PROCESS OF MANUFACTURING BRONZE-POWDER.

SPECIFICATION forming part of Letters Patent No. 657,883, dated September 11, 1900.

Application filed July 21, 1899. Serial No. 724,711. (No specimens.)

*To all whom it may concern:*

Be it known that we, LEONHARDT OTT, director, and HANS RIFFELMACHER, subjects of the German Emperor, residing at Roth, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Processes of Granulating Metals or Metallic Alloys and of Manufacturing Bronze-Powder, of which the following is a full, clear, and exact specification.

For the manufacture of bronze colors—that is, finely-ground metals or metal alloys—stamps are generally used which transform the metal by gradual reduction of fineness into metal dust in leaf condition. Hitherto it was necessary to bring the metal or alloy into the stamps while already prepared in leaf, because otherwise the final product could not be obtained with the desired degree of lustre, fineness, and softness. The preliminary preparation by beating or rolling, or by both, required much time and rather expensive on account of the repeated glowing and pickling of the plates or rods. German Patent No. 94,542, which also uses metal grains as starting product for the manufacture of bronze-powder, reduces the grains primarily to leaves by rolling before they are stamped. The powder issuing from the rollers is not a finished bronze color as yet, but it requires maceration in stamps. The present invention makes it possible to produce from granular metal powder, which may be obtained by mechanical, electrolytical, or chemical way by the stamping process only without further mechanical operation, a bronze-powder which satisfies all requirements of fineness, softness, and polish. The subject-matter of the new process consists in cleaning and pickling the metal grains immediately before they come into the stamps and in inter-

rupting from time to time the stamping process, which transforms the grains gradually into fine dust for the purpose of annealing the powdered metal and to take away the hardness.

The new process is carried out in the following manner: The cleaning and pickling of the granular metal powder is done in a suitable manner by means of sulfuric acid and tartar. Thereafter the grains, which may be of any round or angular shape, come into hermetically-closed boxes, where they are crushed by the fall of various refining-stamps which act successively. As this operation must not only effect a disintegration of the thin leaves, but a considerable transformation of the shape of the grains, the stamping process must be interrupted from time to time and the powder must be annealed. This annealing process requires but little time and is inexpensive, because it is not a matter of annealing rods or plates, as in the former process, but of a powder the individual particles of which are more accessible to the heat.

We claim—

The herein-described process of producing bronze colors from granular metal powder, consisting in cleaning and pickling the grains, gradually reducing the grains by stamping into fine dust, and annealing the powder for which purpose the stamping is interrupted at intervals.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

LEONHARDT OTT.  
HANS RIFFELMACHER.

Witnesses:

JULIUS OESTERBURG,  
ERNST EISENBERG.