UNITED STATES PATENT OFFICE.

GUSTAV KOLLER, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR OF ONE-HALF TO FRANZ PÖNNINGER, OF SAME PLACE.

PROCESS OF TREATING GLUE AND GELATINE MOLDS.

SPECIFICATION forming part of Letters Patent No. 419,779, dated January 21, 1890.

Application filed June 8, 1888. Serial No. 276,505. (No specimens.)

To all whom it may concern:

Be it known that I, GUSTAV KOLLER, chemist, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in the Process of Treating Glue and Gelatine Molds; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to provide a new and improved process for treating glue and gelatine molds for casting works of art, the molds being adapted for making serviceable plaster and wax casts and permitting of pouring alloys of a low melting-point directly into them.

The invention consists of treating the surface of the mold with strong oxidizers and afterward exposing the same to the action of the light.

The elastic glue and gelatine molds, on account of their cheapness of manufacture and of the sharp negatives they afford of the most artistic designs, have superseded in all branches of reproducing plastic objects the formerly-used plaster-of-paris molds.

The glue and gelatine molds as heretofore constructed have a serious drawback, which becomes very apparent when taking plaster or stucco casts from the molds or when removing wax casts.

As is well known, plaster-of-paris and all compositions containing this substance heat when hardening in the molds, so that the uppermost layer of glue or gelatine mass is melted. The preventive measures heretofore taken against this, by coating the molds with oil varnish and adding alum to the plastic mass used for the cast, do not affect this drawback, as the varnish stands a relatively small number of casts only and as the addition of alum hastens the solidification of the superficial portion of the cast, thus admitting of its being taken out of the mold before it is too highly heated, but causing crystals to form on the surface of the cast, which, although they do not render it wholly unserviceable, mar its aspect.

Taking wax casts which fully meet all artistic requirements from glue or gelatine molds has so far proved impossible, as the molten wax acts on the mold and dissolves the superficial portion of the same, so that, notwithstanding the fact that the molds are varnished, only blunt and inaccurate casts can be obtained.

By my improved process of treating and preparing glue and gelatine molds, presently to be described, the drawbacks hereinbefore mentioned are fully overcome. By this process the outermost or superficial layer of the molds, or the whole mass of them, is rendered resistant against being highly heated without prejudice to the sharpness of the forms and to the elasticity of the molds, so that plaster casts may be allowed to cool within the molds, the molten wax can be heated to a temperature of nearly 212° Fahrenheit, or molten alloys the melting-point of which is not much above this temperature may be poured into the molds without alteration of their surface. In this way it is possible to use elastic glue or gelatine molds when making wax casts or fillings necessary in casting brass upon a core.

The necessary resistance is given to molds by treating their surface with energetically-oxidizing substances. For this purpose an aqueous solution of anhydrous chromic acid, chromates or permanganates of alkalies, or nitrate of silver can be used to great advantage. After having coated the molds one or more times with one or the other of said solutions they are exposed to daylight, or, if necessary, to an artificial light, and so allowed to dry, which completes the process. The oxidizing layer which is thus formed imparts to the mold a strong resistance against heat without impairing in the least the neatness of the forms. By applying one or more concentrated solutions of the said strong oxidizers to the surface of the molds a greater or less number of times and by exposing the molds a longer or shorter period of time to the action of light a thicker or thinner layer of the oxidizing substance is obtained, according to the special requirements. After the molds are provided with a layer of the oxidizing substance the molds may be coated with a thin layer of varnish.

When it is not desirable to use the material of unserviceable molds again, the glue or gelatine may be dissolved in one of the aforesaid solutions instead of dissolving it in water, as usual. The molds are formed in the usual way from the solution of glue or gelatine thus obtained, and afterward they are exposed to the action of the light, so that the whole mass of the mold is oxidized and rendered resistant against heat. It has been found by experiment that an aqueous solution of anhydrous chromic acid gives the best results. By applying this liquid from two to six times to the surface of the molds and subsequently exposing the molds to the action of light during six hours, molds are obtained which do extremely well for plaster or stucco and wax casts, as well as for work on relief-plates and statuary. It is obvious that molds of the desired kind, owing to their resistance against heat, can be directly used for taking casts in alloys the melting-point of which is not much above 212° Fahrenheit.

The glue or gelatine material of dried-up or unserviceable molds in which the superficial layer only has been treated with the said oxidizers can generally be used again. To this end the molds are cut to pieces and said pieces are boiled in water, and finally the mass is caused to pass through a sieve, so that the oxidized portions will be retained by the sieve, as the said oxidized portions are less soluble in water than genuine glue or gelatine.

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

1. The herein-described process for treating glue or gelatine molds, consisting in treating the surface of the molds to strong oxidizers and afterward exposing the same to the action of light, substantially as described, and for the purpose set forth.

2. The herein-described process for treating glue or gelatine molds, consisting in dissolving the glue or gelatine in an aqueous solution of energetic oxidizers, then forming the molds in the usual way, and finally exposing the same to the action of light, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GUSTAV KOLLER.

Witnesses:
EDMUND JUSSEN,
OTTO SCHIFFEN.