

UNITED STATES PATENT OFFICE.

ALONZO CHASE, OF ITHACA, NEW YORK, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO EZRA CORNELL, OF SAME PLACE.

IMPROVEMENT IN MAKING STEREOTYPE-MOLDS OF PAPIER-MACHÉ.

Specification forming part of Letters Patent No. 128,285, dated June 25, 1872.

SPECIFICATION.

I, ALONZO CHASE, of Ithaca, county of Tompkins, and State of New York, have invented certain Improvements in the *Papier-Maché* Process of Stereotyping, of which the following is a specification:

Nature and Objects of the Invention.

The first part of my invention relates to the preparation of a new and improved *papier-maché* matrix. The second part relates to a new and improved method of drying *papier-maché* or similar matrices apart from the form of type.

The objects of my invention are: First, to effect a saving of time in producing stereotype-plates. Second, to obtain a more sharply-defined and perfect matrix when dried, from which better plates can be cast. Third, to effect a saving of money by using simpler and cheaper apparatus for drying the matrices. Fourth, to avoid heating the type, and by so doing the injury to them which results from baking together, and from the unequal expansion of type and chase, and the delay which occurs during the heating up and cooling down of the type.

The present method of stereotyping by the *papier-maché* process consists of four operations: First, preparing the matrix; second, taking the impression; third, drying the matrix, and fourth, casting the plate.

It is only to the first and third of these operations that my invention relates.

The matrix as at present formed consists of several sheets of soft, bibulous, or unsized paper pasted together, having the blanks or raised portions of the matrix filled up with a backing-paste to enable them to resist the pressure of the molten metal during the subsequent operation of casting, and the whole being covered with a backing-sheet to inclose and confine the backing-paste and stiffen the matrix. To such a matrix I add as an improvement a coating of paste, evenly distributed over its whole face, forming a plastic surface, upon which the impression of the type is received, and which gives as sharp and smooth definition to the face of the letters as can be obtained in plaster, gutta-percha, or wax, and much superior to that obtained from *papier-*

maché, in which the impression comes upon the fiber of the paper and is, comparatively, rough, especially when such a matrix is dried apart from the type.

The paste used for the matrix-facing in the before-mentioned invented improvement consists of dextrine, one part, and whiting, two parts, mixed thoroughly with water to the consistency of thick cream, and is brushed over the face of the matrix in one or more applications to a thickness varying from one-fiftieth to a hundredth of an inch. The thicker coating gives the better cast, but this matrix is often destroyed during its separation from the cast. If, therefore, several casts are needed from one matrix a thinner facing of paste should be applied.

It is not necessary, practically, to thus limit the proportions of the ingredients. One part of dextrine to ten parts of whiting gives a paste which, applied as a facing to the matrix, takes a very good sharp cast; but the matrix cannot be used more than once, and is liable to injury in handling from the friable nature and deficient strength of the facing. Again, one part whiting and ten parts dextrine give a good sharp cast, but not so perfect as with a larger proportion of whiting. Any proportions between these limits may be used, but as the proportions approach those first given a facing is obtained best suited for general work.

When casts are to be repeatedly taken from the same matrix a thinner coating of a paste containing dextrine one part and whiting one part is found most suitable.

Great care must be taken to have the coating of the proper degree of softness and plasticity for taking the impression. This is best accomplished by taking the matrix-sheets which have been previously coated and dried and laying them between sheets of damp paper. If this makes them too soft for taking an impression—a fact which becomes apparent from the adhesion of the coating to the type—they will quickly harden to the proper condition from an evaporation of a few-minutes in the air.

For dextrine may be substituted gums, sugar, gelatine, or starch; and for whiting ground plaster, sulphate of baryta, witherite, oxide of zinc, precipitated chalk, French chalk, clay, or

any other mineral powder insoluble in water, with more or less perfect results; the conditions necessary being a fine, impalpable, plastic paste, coating the face of the matrix, to receive and retain a perfect impress of the face of the type-form, and which may afterward be rendered hard enough in drying to receive a bath of molten type-metal without injury, and which will not emit gases or vapors to blow the cast.

The third operation in the present process of *papier-maché* stereotyping is performed by placing the form of type with the impressed and still soft metal upon it—the whole covered with blankets—on a hot steam-table, beneath an iron plate or platen, which is then firmly screwed down upon the same. Under the pressure of this screwed-down platen the matrix dries without warping or other injurious movement, when the heat reaches it from the steam-table through the type. Sometimes the platen itself is made hollow and heated by steam to quicken the drying.

I substitute for this method of drying the following process, which comprises the second part of my invention: After the impression is made I remove the still soft matrix from the form of type, which is easily done if the type have been previously brushed over with a light oil like kerosene or coal-naphtha. The matrix is then placed with its face or impressed side upward upon any plane, dry, level surface, and covered to an even depth of about four inches with hot sand, or similar finely-divided material. A simple shallow tray or box, large enough to receive the matrix, and open at the top, is all the apparatus needed for this operation. If the tray has a metal bottom, heating the sand may be dispensed with, and the ma-

trix dried by application of heat from any source through the bottom, though the rapidity of drying depends, of course, on the amount of heat which is effectively applied to the matrix. It is better to apply the heat in both ways, being careful to keep the temperature below 300° Fahrenheit to avoid blistering the matrix. After the matrix is dried every particle is easily brushed out of the same, if it be previously dusted with French chalk.

The work done by the sand is not merely conveying heat to the matrix, but chiefly and primarily holding the matrix in its place, and preventing warping or other movement during the drying. The sand fills into the intaglio parts of the matrix, and, receiving a certain pressure from the weight of the mass above, serves the same purpose as the form of type under the pressure of the platen in keeping the matrix flat and in place during the operation of drying.

With this method, under similar conditions of moisture and temperature, a matrix is dried more quickly than in the ordinary way.

I claim as my invention—

1. A plastic coating on the face of a *papier-maché* stereotype-matrix, composed of dextrine, whiting, and water, or their equivalents, substantially in the proportions and for the purposes set forth.

2. Drying a *papier-maché*, or similar stereotype-matrix, apart from the type, under a superimposed body of sand or its equivalent, substantially as and for the purposes set forth.

ALONZO CHASE.

Witnesses:

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