United States Patent Office.

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Letters Patent No. 86,426, *dated February* 2, 1869.

IMPROVEMENT IN METAL-FACED DIES FOR THE MANUFACTURE OF IMITATION ST
GOODS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY LOEWENBERG, of the city, county, and State of New York, have invented a new and useful Process for Manufacturing Metal-Faced Dies, for the Manufacture of Imitations of Flexible, Porous, Natural Objects, such as lace goods and straw goods, and that the following is a full, clear, and exact description of my invention.

My invention consists of a process of producing a metal-faced die, which is a counterpart of the surface of a flexible, porous, natural article, of the form and size of the imitations to be manufactured, and my process consists of the following operations, viz:

First, the filling of the pores of the flexible, porous, natural article (which serves as the prototype of the imitations to be manufactured) with a preparation that renders it practically impervious to water, or aqueous solutions of acids or alkalies.

Second, the staying of the article in the shape of the face of the die to be made.

Third, the preparation of the portion of the surface of the treated flexible, porous article from which the die is to be made, so as to render it a conductor of electricity.

Fourth, the deposition of a metallic shell upon said surface by electrotyping it.

Fifth, the transformation of the metallic shell into a die, by combining it with a mass of material which will adhere rigidly to the shell, so that the shell and backing are united as thoroughly for all practical purposes as if made of one piece of metal.

It will thus be seen that the acting surface of the metal-faced die is produced directly from the surface of the flexible, porous article, as distinguished from being produced indirectly by being formed upon a cast or mould taken from the article, and as the mode of treating the article, (by a liquid, resinous preparation,) and of making its surface a conductor of electricity, does not practically affect the form of the surface of the article, the die, when finished, has for all practical purposes all the peculiarities of the surface of the article from which it has been made.

My invention may be used for the manufacture of dies from various flexible and porous articles, such as leaves, straw goods, lace goods, &c.; and in order that it may be fully understood, I will proceed to describe the best mode with which I am acquainted of practising it, when the die to be made is one suitable for the manufacture of imitations of articles of natural straw, such as bonnets.

I procure an article of natural straw, of the form and size of the imitation-articles to be manufactured, (as, for example, a natural Leghorn-straw bonnet,) or I procure the natural straw-braid, and have it made into the desired article, in the usual manner.

To the interior of this article is applied a resinous preparation, which may be beeswax alone, or m composed of equal quantities, by weight, of bee and gutta-percha, or other suitable resin or fat, are simmered together, at about the boiling-poi the mixture, until they are thoroughly combined

This preparation is applied while hot, by mean brush, and in such quantities as to penetrate the article.

This application renders the interior of the practically impenetrable by acids or alkaline solu and it also stiffens the article, which is advantag

To the exterior of the article is applied a res varnish, and the varnish used for this purpose m that produced by dissolving gum-ammoniac in alc in the proportions of one pound of the gum to pounds of alcohol, of ninety-five per cent. Or varnish may be the "flocking-varnish" used by m facturers of wall-papers, which varnish is compose linseed-oil, gum-copal, Burgundy pitch, and spiri turpentine.

This varnish is applied with a brush, and shoul sufficiently liquid to strike into the article unt meets the composition previously applied to th terior, so that all the pores of the article are fille a neutral material that is not affected practicall acid solutions.

If the flocking-varnish, when purchased from manufacturer, is not sufficiently liquid for this purp its consistency should be reduced, by adding spirit turpentine to it.

The purpose of filling the pores of the article, i prevent acid or alkaline solutions from penetratin substance, and the varnish is also a suitable mean retaining a coating of plumbago, when that mate is used to make the surface a conductor of electric

While the exterior of the varnished article is sticky, finely-powdered black-lead, or plumbago, is plied to it, and brushed evenly and thoroughly, s to produce a surface that will conduct electricity, w out materially affecting the form of the surface of straw.

Then the prepared article is bent to the form of face of the die required, and is stayed in that fo the most convenient means of effecting this being stick the article fast to a stay of sheet-brass, by wa ing the composition on its interior.

The sheet-brass stay should approximate in form that of the interior of the article, and should be coa beforehand with beeswax, or with the composition gutta-percha and beeswax.

The prepared article, stayed into the desired for is immersed in a suitable electrotyping-bath, is c nected with a battery, and is electrotyped with copp in the usual manner, which, being well known, d not require a detailed description.

When the electrotype has formed upon the arti

sired thickness, say about one-fortieth of an
article with the electrotype upon it is removed
bath, and the article is stripped out of the
pe, which has the form of a shell, whose inte-
counterpart, in size and surface, of the flexible,
natural article, upon which it has been depos-
is also a counterpart of the form in which
article was stayed.
nell is tinned upon its exterior, by being heated
gh to melt tin-foil, which is applied to it in the
anner practised in preparing electrotypes for
or the back of the shell may be tinned by the
tinsmith's copper, in the usual way practised
niths, and the shell is then backed by casting
type-metal upon it, in the usual manner prac-
electrotypers, the face of the shell being first
with clay, to prevent the accidental adhesion
metal to it.
backing-operation may be effected in several

, the shell may be placed upon a table, and
ded by a box or mould, of the required form
ie, and then melted type-metal may be poured
mould, care being taken, as is customary in
erations, to prevent the shell from rising in the

ne shell may be supported, during the opera-
on a bed of dry clay, well rammed, or of plas-
Paris.
he shell may be supported upon a core of type-
formed by casting type-metal into the shell,
should be previously rubbed with clay, to prevent
on; and, if necessary, the exterior of the shell
supported, during the casting of the core, by
ld-board of wood, or a bedding of dry clay, or
ster, well rammed.
type-metal unites with the tinned surface of
ell, and completes the die, which, by reason of
ion that has been effected between the copper
nd metal back, through the intervention of the
g, is practically as solid as if made of one piece
tal.
en the mass has cooled, the whole is removed
the mould, and its exterior is, by preference,
d up in a planer, (for planing metals,) so that its
n is true and level, and its exterior is of the ex-
ze required.

When the planing-operation has been performed, the die (when cleansed of the clay) is an article, having one of its surfaces (its interior) a substantial counterpart of the surface of the flexible, porous, natural article, which has served as a pattern, with all the curvature and inequalities that are peculiar to the form in which it was stayed previous to depositing the shell, while the back is adapted to fit the platen of the press in which it is to be used.

Having thus described the operations of which my process is composed, and the mode in which I prefer to perform them, I declare that I am aware that deposits have been made, by the electrotype-process, upon flexible, porous articles, such as cloth and leaves, for the purpose of coating them with copper, which was left upon their surfaces; I am also aware that dies have been made, by the electrotype-process, from inflexible articles, such as composition and plaster articles, which do not require to be stayed in the form of the desired die; I am also aware that dies from straw goods have been described as made of electrotype-shells, backed with melted zinc or brass, poured directly upon the shells, (without tinning them,) which mode of manufacture I believe to be practically valueless, and incompetent to produce a useful die; and I am also aware that dies of shells, tinned and backed with type-metal, have been made from impervious casts or moulds, taken from porous, flexible, natural articles, in which case the process is indirect, and the first three of the operations of my process are not performed. I do not claim, therefore, the separate operations of which my process is composed, nor a combination of two or more of such operations, less than the five before specified; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The process, substantially as herein described, of producing metal-faced dies, for the manufacture of imitations of flexible, porous articles, directly from such articles, by the five operations before specified.

In testimony whereof, I have hereunto set my hand, this 6th day of March, A. D. 1867.

HENRY LOEWENBERG.

Witnesses:

E. S. RENWICK,

W. L. BENNEM.