

UNITED STATES PATENT OFFICE

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METHOD OF MAKING PRINTING PLATES

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This invention relates to improvements in printing processes and apparatus therefor and is directed more particularly to an improved and simplified process for producing printed material such as is now commonly produced by means of electro-typing.

As special features, the process and apparatus are such that the expensive and involved steps of electro-plating are avoided, yet I achieve all the advantages of the same. That is to say, I obtain the fine clarity of detail now obtainable only by an electro-plating process by the use of this invention which is much simpler and far less costly than electro-plating.

It is also an object of this invention to provide a novel substance which is adapted to be applied to a surface in the design desired and to subsequently make an impression in a printing plate. As will appear, the substance has special characteristics which make it possible to write with it upon a surface and then to pour thereover a plate-forming material which will eventually have the impression of the writing therein.

Various other novel features and advantages of the invention will be hereinafter more fully described.

The surface to be written upon may be any desired material but preferably is a cardboard surface or something similar. In any event, the surface will be such that the configurations or designs to be printed may be written or impressed thereon.

The substance which was above-mentioned and which will later be described more in detail, is in fluid form and I use it much like I would an ink. That is, I preferably dip a writing implement, such as a pen or brush, into the substance and then write or draw or stamp upon the surface the desired words or design.

The next step is to pour over the "inked" surface a molten plate-forming metal. The metal may be any various alloy but preferably consists of the well-known and commonly employed tin-type metal.

In any event, it is hot and in a fluid state when poured and hardens upon cooling. Because of the chemical nature of what I choose to call my "ink," the hardened plate will have an impression of what was written upon the mat surface.

The chemical substance which I employ is of such a nature that it rises, becomes relatively rigid upon the application of heat so as to stand out in relief. That is to say, when the hot metal is poured over the inked surface, it flows there-

over and the ink rises so as to form, while the metal hardens, a plate having the design on its under surface.

I have found that substances which have these characteristic of rising and becoming relatively rigid under heat and which at the same time are not fusible with the metal may be water-soluble silicates such as sodium silicate and potassium silicate. That is to say, silicates in solution, although partially dehydrated, have the capacity of increasing their bulk when heated and becoming rigid yet they are not adversely effected by molten metal.

It is desirable that some pigment be mixed in with the ink so that the designer may readily observe and be conscious of all that appears on the mat. The pigment may be any suitable color-giving material which will render the perhaps otherwise colorless fluid readily visible.

It is significant that my "ink" rises evenly upon the application of heat without creating bubbles or gasifying so that the lines produced are definite and the impression made in the plate is clear and has the desired nicety of detail.

While I have described the invention in great detail and with respect to the present preferred form thereof, it is not desired to be limited thereto since changes and modifications may be made therein without departing from the spirit and scope of the invention. The invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments are therefore to be considered in all respects a illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. The process of making a printing plate consisting of, making a desired configuration upon a substantially flat surface with a fluid composition which contains a water-soluble silicate and which solidifies and increases its bulk when heated, pouring over said surface a molten plate-forming metal which is non-fusible with said composition so as to solidify and increase the bulk of the configuration, and finally cooling said metal to harden the same.

2. The process of making a printing plate consisting of, making a desired configuration upon a substantially flat surface with a fluid

composition which contains one of a group of substances consisting of sodium silicate and potassium silicate and which solidifies and increases its bulk when heated, pouring over said surface a molten plate-forming metal which is non-fusible with said composition so as to solidify and increase the bulk of the configuration, and finally cooling said metal to harden the same.

3. The method of making a printing plate having a sunken design which consists in, applying to a substantially flat support a desired con-

figuration by means of a flowable fluid composition adapted to solidify after application to the support and to expand under the action of heat applied thereto, applying hot molten plate-forming metal to the support over the composition causing the composition to expand and allowing the metal to cool whereby a rigid metal printing plate is provided having a negative impression in a face thereof corresponding to the configuration on the support.

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