

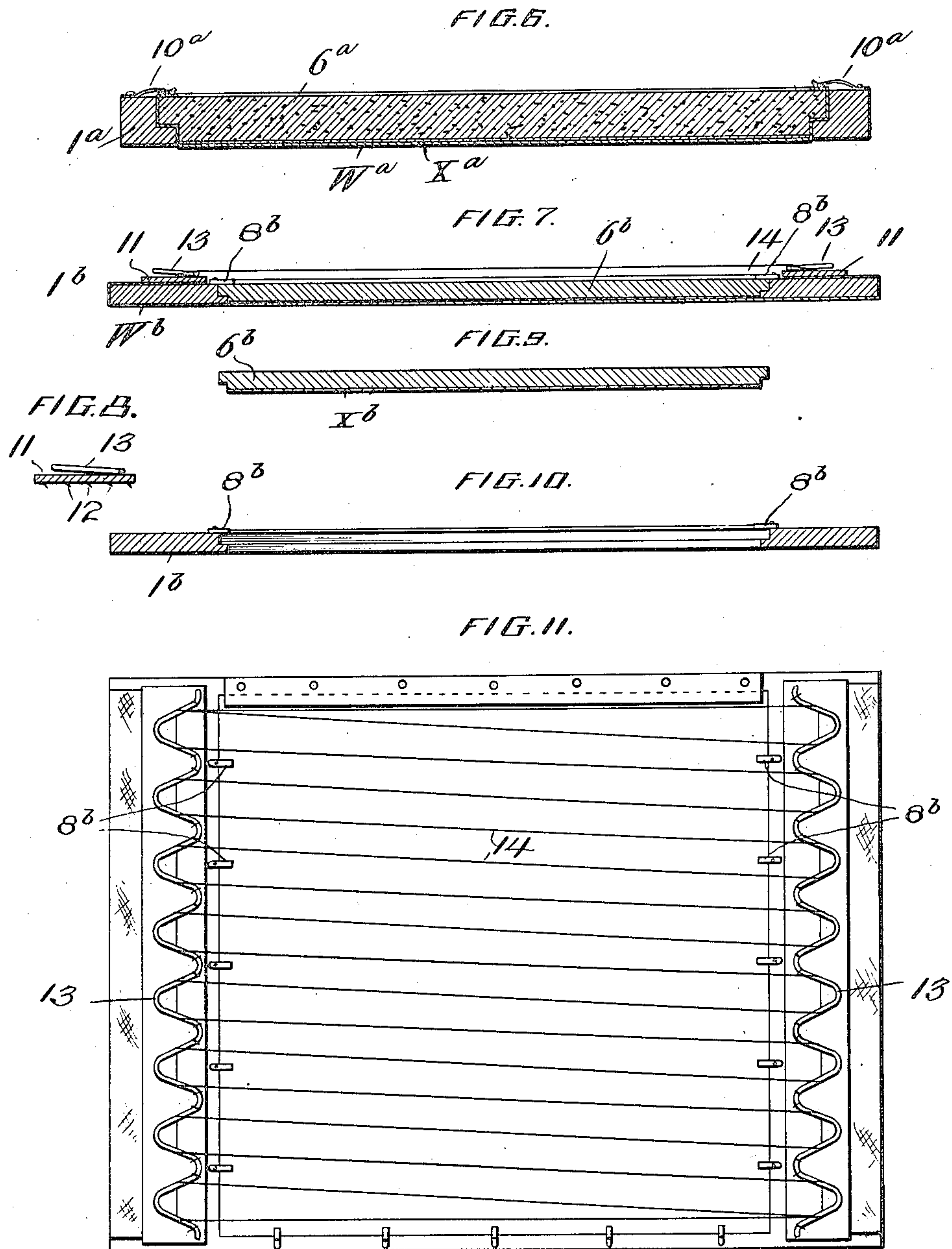


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MANUFACTURE OF STENCILS.  
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961,579.

Patented June 14, 1910.

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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF STENCILS.

961,579.

Specification of Letters Patent. Patented June 14, 1910.

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*To all whom it may concern:*

Be it known that I, WILLIAM H. BOONE, citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Manufacture of Stencils; 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.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings which illustrate devices for carrying the said invention into effect, and the invention is fully disclosed in the following description and claims.

The invention relates to the manufacture photo-mechanically of stencils to be used in the decoration of surfaces. These stencils are usually made by impregnating a fabric or web of suitable material with a substance which becomes insoluble when exposed to light, and to expose the treated fabric under a "negative," photographic or otherwise, to the action of light, and then to wash out the portions of the photographic material not affected by the light, thereby providing a web or fabric having pervious and impervious portions, which can be used as a stencil for decorative or other purposes.

In the carrying out of this general process, it has been proposed to stretch and permanently secure the fabric upon an open frame, before applying the sensitive material but this is open to objections, as the web or fabric has no proper support in the center, and may be torn or stretched or otherwise injured in the handling of the same. It has also been proposed to secure the fabric temporarily to a flat metal plate throughout the area of the stencil by means of the photographic sensitizing material, and to treat the fabric throughout while it is so attached to the surface of the plate, from which it is afterward removed or stripped. This is also open to objection in that it is expensive to properly polish and prepare the plates each time they are used, as they must be very highly polished, similarly to an engravers plate, and again in freeing the web from the plate after the stencil is produced, small particles of the sensitizing material adhere to the surface of the plate causing

pin holes in the imperforate portions of the stencil which must be closed by shellac or other suitable material which consumes considerable time and adds to the expense of the operation.

In carrying out my improved process I avoid all the objections above noted by supporting the web or fabric in a frame provided with a platen beneath the stencil portion of the fabric, which platen is treated so that the sensitizing material employed will not adhere or cause the fabric to adhere to any part thereof.

In the accompanying drawings, Figure 1 represents a sectional view of a frame or supporting device which can be advantageously employed in carrying out my process. Figs. 2, 3 and 4 are detail sectional views of the parts of said frame, Fig. 2 representing the platen, Fig. 3 the inside frame section and Fig. 4 the outside frame section. Fig. 5 is a plan view of the frame in closed or assembled position. Fig. 6 is a sectional view of a modified form of frame in which a foraminous platen is employed. Fig. 7 is a sectional view of another modified form of frame which I may employ. Figs. 8, 9, 10 are details thereof, and Fig. 11 is a plan view of the frame shown in Figs. 7 to 10.

In carrying out my improved process, I take a piece of fabric, which consists of a netting of suitable mesh and stretch the same over a platen having a flat face which has been previously treated so as to prevent the adhesion of the web or sensitizing solution hereinafter referred to, to any part thereof. The platen may be composed of metal, wood or other suitable material, the web engaging surface of which is treated with a composition of glycerin, carbolic acid, lime, chlorid of potash, stearine (or stearic acid) and elaine, (or oleic acid) in the proper proportions. I have found that the following proportions of said ingredients give very satisfactory results: glycerin 1 part, carbolic acid  $\frac{1}{2}$  part, lime (hydrate) 1 part, chlorid of potash 1 part, stearic acid 40 to 70 parts, oleic acid 50 to 80 parts, acetate of potash 2 parts.

The web engaging surface of the platen is first treated with the above composition which remains thereon in moist condition after which the web is stretched over the said surface and held in any desired manner. The web is then treated with a well-known



sensitizing material consisting of glue impregnated with bichromate of potash, or bichromate of ammonia (preferably the latter) which fills the interstices of the fabric but does not adhere or cause the web to adhere to the platen. After drying, the sensitized web is exposed to light while supported upon the platen, under a suitable negative, or other device having transparent and opaque portions. The parts of the sensitizing material exposed to light are rendered insoluble and after exposure the web is washed while still supported by, but detached from, the platen, thereby removing the portions of the sensitizing material not exposed to the light. The web is now dried, when it is ready for use. I prefer to remove the platen, during the drying operation, without removing the web from its supporting frame, in order to facilitate the drying action by allowing the air to reach both sides of the web. In some instances I may employ a platen which is composed of foraminous material such as fire clay, wire netting or the like, the web engaging surface of which has been treated to prevent the web from adhering thereto, in which case the platen need not be removed during the drying operation.

In Figs. 1 to 5 inclusive, I have shown one form of frame which may be conveniently employed in carrying out my process. In these figures 1 represents an exterior frame having a rabbeted portion 2, to receive an inner frame 3, rabbeted at 4 to fit the outer frame, and being internally rabbeted at 5 to receive the platen 6, which is rabbeted at 7 to fit therein. The construction is preferably such that the outer surface of the platen 6, and the outer surfaces of frames 1 and 3 are in the same plane, when the parts are assembled. The platen 6 is held in position in the inner frame by turn buttons 8 or equivalent devices, and the two frames 1 and 3 are held together by a suitable device comprising in this instance a plate 9 secured to one side of the outer frame 1 and extending over the inner frame and pivoted spring fingers 10, 10 secured to the other sides and adapted to extend over the inner frame. The web engaging surface of the platen is shown as provided with a coating (X, see Fig. 2) of material to prevent the web from adhering thereto, which coating is necessarily shown in an exaggerated manner. W represents the web or fabric showing how it is held between the rabbeted portions of the frames 1 and 3, and lies upon the platen 6 without adhering thereto. It will be seen that by loosening the turn buttons 8 the platen can be removed to facilitate the drying of the web W.

Fig. 6 shows a modified form of frame in which an outer frame 1<sup>a</sup> is rabbeted and fitted with a rabbeted platen 6<sup>a</sup> of foraminous material to facilitate the drying of

the web, here indicated by W<sup>a</sup>, said platen being also treated with the solution to prevent adhesion, as indicated at X<sup>a</sup>. The platen is held in position in the frame by pivoted spring fingers 10<sup>a</sup>.

Figs. 7 to 11 inclusive represent another form of frame in which 1<sup>b</sup> represents the outer frame and 6<sup>b</sup> the removable platen having the treated web engaging surface X<sup>b</sup>, and held in place in the frame by turn buttons 8<sup>b</sup>. 11 represents strips of metal or other material, having faces provided with minute teeth 12 (or with some adhesive material as preferred) to enable them to be firmly attached to the marginal untreated portions of the web. Said strips 11 are provided with suitable lacing projections, in this instance a zig-zag piece 13 of wire secured at the inner edge to the strip and projecting above the same at its outer edge. There may be two or four such strips, and the web is firmly stretched by suitable lacing cords 14 which are laced backward and forward to connect opposing strips as shown in Fig. 11.

The stencils manufactured by my improved process are used by laying them upon the surface to be decorated and pressing paint or any plastic material or pigment through the open portions of the stencil, thus transferring the picture, design or ornament upon the surface beneath.

As the stencil never adheres to the supporting platen at any time, the solid portions of the stencil will be free from pin holes, and no shellacking of the stencil is necessary before use.

What I claim and desire to secure by Letters Patent is:—

1. The herein described process of preparing stencils, which consists in treating a flat supporting surface with material for preventing the adhesion thereto of sensitizing material, applying a piece of fabric to said treated supporting surface, coating the fabric with a sensitizing material, photo-printing the sensitized fabric, washing out the soluble portions of the sensitizing material, said operations being performed while the web is supported by but not adhering to said supporting surface and finally drying said web.

2. The herein described process of preparing stencils, which consists in treating a flat supporting surface with material for preventing the adhesion thereto of the sensitizing material, stretching a piece of fabric upon said surface, and securing its marginal portions, treating the portion of the fabric upon said treated surface with a sensitizing material, photo-printing the sensitized fabric, and washing out the soluble portions of the sensitizing material, and exposing both the front and back faces of the



fabric to the air, without releasing it from its stretched condition to dry the fabric evenly, and rapidly.

3. The herein described process of preparing stencils, which consists in treating a flat supporting surface with material for preventing the adhesion thereto of sensitizing material, stretching a piece of fabric over said treated surface, and securing the marginal portions of the web independently of said surface, coating the fabric with a sensitizing material, photo-printing the sensitized fabric, washing out the soluble portions of the sensitizing material, said oper-

ations being performed while the web is supported by but not adhering to said supporting surface, removing the supporting surface from contact with said fabric without releasing the edges of the fabric, to afford access of the air to both sides of the fabric, and finally drying the fabric while still in a stretched condition.

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

WILLIAM H. BOONE.

Witnesses:

J. H. SUNDMAKER,  
JOHN J. WENNER.