

No. 611,681.

Patented Oct. 4, 1898.

S. E. DITTMAN.
OVERLAY AND PROCESS OF MAKING IT.

(Application filed Aug. 17, 1897.)

(No Model.)

Fig. 1.

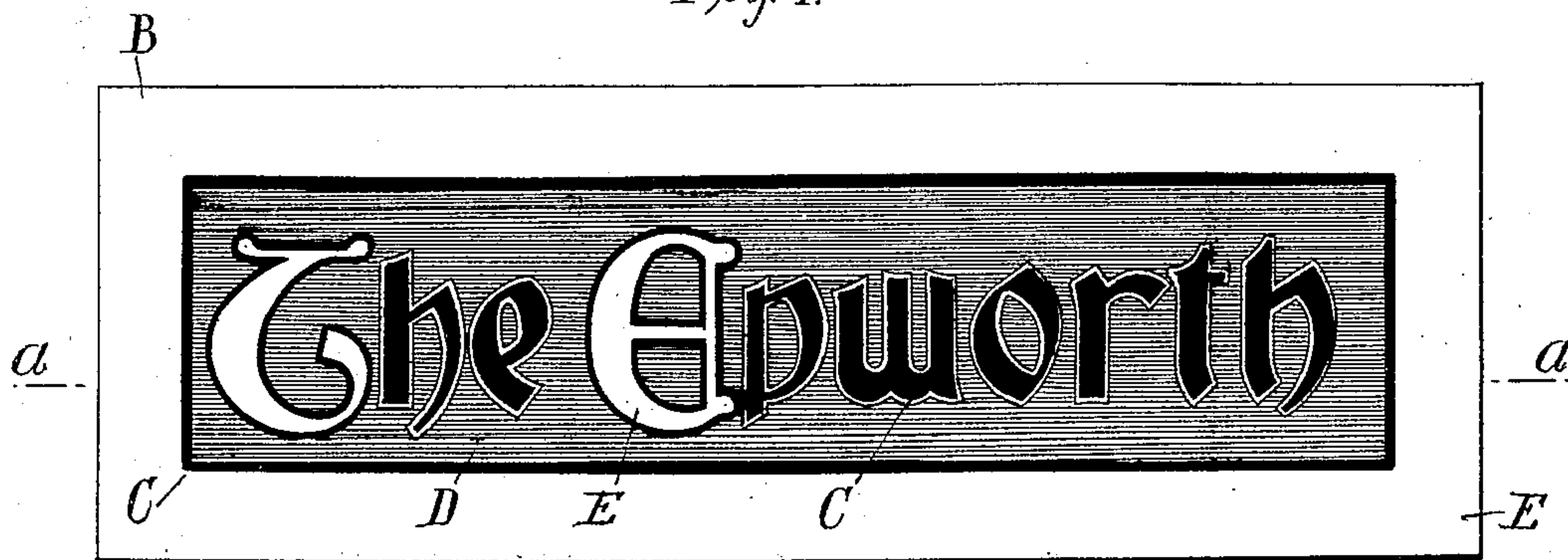


Fig. 2.

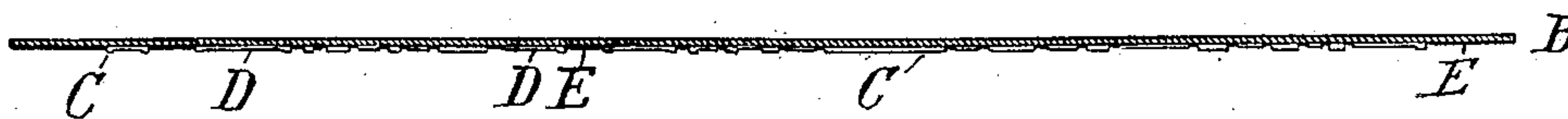
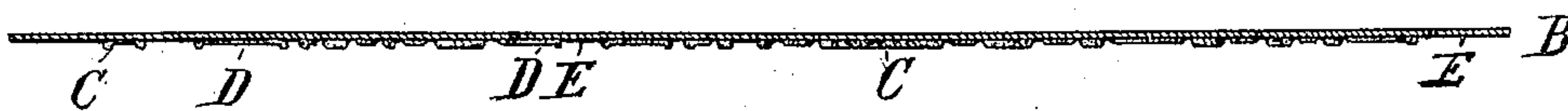


Fig. 3.



Witnesses:
C. L. Belcher
J. H. Capel.

Inventor
Samuel E. Dittman
By
Townsend & Decker
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL E. DITTMAN, OF CHICAGO, ILLINOIS.

OVERLAY AND PROCESS OF MAKING IT.

SPECIFICATION forming part of Letters Patent No. 611,681, dated October 4, 1898.

Application filed August 17, 1897. Serial No. 648,594. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. DITTMAN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Overlay and Process of Making It, of which the following is a specification.

This invention relates to the art of printing and therein to that part of the process of "making ready" known as the construction of the "overlay."

In the steady progress toward perfection in the art of printing many improvements have been made in reproduction both in the excellency of the print and in the time and expense in making it. Yet there is one process which as now commonly practiced consumes an unnecessary amount of time and requires a degree of artistic skill which makes it very expensive. That process is the construction of overlays from layers or sheets of paper of various thicknesses and texture built up on the "foundation-sheet" to give the desired graduations of impression upon the plate or form. Another process, equally as long and expensive, has been reported, but has been little used. It consists in applying a paint to the foundation-sheet in layers of varying thickness corresponding to the graduation of impression desired.

The object of the present invention is to construct an overlay in a manner such as to secure a graduation of impression far more accurate and effective than can possibly be secured by the old processes and to produce the perfected overlay in an interval of time measured in minutes, whereas formerly the time for making one consumed hours and even days.

With this end in view the invention consists in an overlay and the process of making the same, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 indicates a finished overlay; Fig. 2, a section through the foundation-sheet, showing the location of viscid compound or ink in which the impression is taken, such section being taken on the line *a a*, Fig. 1; and Fig. 3 shows a section in the same plane after the powder has been applied to the ink.

In making ready in connection with this improved overlay the "underlay" and prepa-

ration of the tympan are effected in the usual and well-known manner, this invention being concerned simply with the construction of the overlay. In its construction a suitable foundation-sheet—such, for instance, as has heretofore been used as the basis of paper overlays—is "pulled" or given an impression from the plate or form. Then it is taken from the tympan while the ink or other impression material is fresh and placed face downward upon a layer of fine powder evenly spread over some suitable surface, preferably one that is plane and smooth. The sheet is then pressed down upon the powder by passing the hands evenly over it or by using any other means suitable for the purpose, such as a roller or rollers. This causes the powder to adhere to the inked parts of the sheet in proportion to the amount of ink upon the respective parts. Where the ink is heaviest, there will be the most powder and where there is the least ink there will be the least powder. The accompanying drawings will serve to show this, though in a crude and somewhat exaggerated manner. Therein B indicates the foundation-sheet, the projections C the greater deposits of ink, and the projections D the lesser deposits thereof, and E the places where there is no ink, Fig. 3 indicating by dots in the projections C and D that powder has been added to the ink. The overlay at this stage is then replaced upon the tympan or platen, and a sheet of paper having been placed over the plate or form the overlay is "squeezed" to thoroughly impregnate with the ink the powder that has been picked up by it. By this means the ink and powder are formed into a paste, which adheres tenaciously to the foundation-sheet and which is thicker in the places which register with the dark spots of the cut and grows gradually thinner toward the light spots thereof. For certain grades of the work this step of the process may be omitted; also, with pastes or compounds which are only slightly compressible the squeezing on the plate or form may be as well omitted. The overlay is then placed in a suitable oven or heater and baked until the paste is thoroughly hardened, which takes but a few moments. Then all loose particles of powder are brushed off and a light coat of varnish is applied to the overlay, when it is again placed

in the oven for a moment and baked or dried. This varnish is preferably thin and sinks somewhat into the paste, thereby insuring closer and firmer adhesion of the particles of the powder at the surface of the paste, and thus making the overlay smoother, harder, and more durable. The overlay as it comes from the second baking may be put immediately into use, but it may be rendered more perfect by passing a straight-edge over the prepared surface to remove any grains or particles of the powder that may have been raised or left on the surface of the paste or foundation in the application of the varnish. After passing the straight-edge over it the surface can be still more improved by brushing it with a rather stiff brush.

The above is in the main the process as now practiced and which produces an overlay automatically graduated to the desired intensity of tones. There are, however, some details and refinements of the process which have not yet been mentioned. It is best in taking the impression upon the foundation-sheet to repeat it two or more times, as by this means the sheet is more thoroughly and evenly inked. Better results are also obtained by squeezing the freshly-powdered overlay several—say four or more—times, thereby insuring the proper intimacy of the powder with the ink.

As will be clearly seen from the above, those parts of the overlay which received the most ink—namely, those which register with the dark parts of the cut—will have the thickest layer of paste, and all other parts for the same reason will have layers of paste proportionate to the degrees of darkness of the different parts of the cut, and the squeezing of the freshly-powdered overlay will tend to intensify this gradation of the different portions of the paste. By this means of preparation it is positively assured that the parts of the cut which require the most color and most impression will get them and those which need less will receive their proportionate amount.

Pulverulent materials or powders of various kinds and composition may be used in carrying out this invention; but wheat or similar starchy flour has been found to give the best results of all powders that have as yet been tried. The paste produced from it becomes extremely hard and yet retains an elasticity which enables an overlay to stand up under heavy pressure and innumerable impressions in a remarkable manner and to excel all known overlays in longevity and clearness of impression. Furthermore, wheat-flour on being wet by the ink and baked expands and so materially increases the bulk of the raised portions of the overlay.

The ink best adapted for use in the construction of this new overlay is of a viscid nature and may be produced by mixing printer's gloss-varnish with any of the well-known viscid inks of commerce. Such mixture may

be made in varying proportions; but so far as tried the best results are obtained when three parts of the fresh ink are mixed with one part of the fresh varnish.

Other viscid substances and other powders than the above mentioned may be found to serve the purposes of this process of constructing an overlay. Therefore this invention is not limited to the use of the precise ingredients nor to the proportions of the ink which enter into the formation of the paste or compound employed in building up the overlay.

The viscid compound or paste may be applied to the foundation-sheet in other ways and conditions than those described and still be within the spirit of this invention. Likewise the powder may be applied to the freshly-impressed foundation-sheet in a different manner from that described, as by sifting it thereon, and its intimate association with the ink or other substance by which the impression is made may be produced in a different manner than that outlined and yet the spirit of the invention would not be departed from, the gist of the invention lying in using the difference in amount of the viscid material or ink left upon the foundation-sheet in taking an impression from the plate or form as a means for graduating the thickness of the overlay and in the use of a pulverulent material having a high degree of expansibility when moistened and an enduring hardness and toughness when baked.

What I claim as my invention is—

1. The process of forming an overlay, consisting in constructing the raised portion thereof from a viscid compound impregnated with wheat-flour and hardened, substantially as set forth.

2. The process of forming an overlay, consisting in making an impression on the foundation-sheet, adding pulverulent material to the substance in which this impression is taken, and hardening the compound or paste so formed.

3. The process of forming an overlay, consisting in making an impression on the foundation-sheet with viscid ink then adding a powder to the ink in quantities proportionate to the amounts of ink on different parts of the sheet, then baking the overlay to harden the paste formed by the powder and ink.

4. The process of forming an overlay, consisting in making an impression on the foundation-sheet, adding a powder to the material of said impression, squeezing the freshly-powdered overlay upon the plate or form and baking the overlay for the purpose set forth.

5. The process of forming an overlay, consisting in making an impression upon the foundation-sheet, adding a powder to the material of said impression, baking the overlay, and then varnishing it for the purpose set forth.

6. The process of forming an overlay consisting in applying a paste to the foundation-sheet in suitable locations to register with the

raised parts of the plate or form from which an impression is to be taken and in quantities proportionate to the pressure desired upon said parts for the purpose set forth, then squeezing the overlay upon said plate or form and then hardening the paste.

7. The process of forming an overlay, consisting in taking an impression from the plate or form in a viscid compound, mixing powder in the compound of the impression by laying the sheet face downward upon a powdered surface, squeezing the freshly-powdered overlay, baking it, removing therefrom loose powder, varnishing it, baking again, and then removing any roughness from the surface of the overlay, substantially as and for the purpose set forth.

8. The process of forming an overlay consisting in constructing the raised portions thereof by means of a viscid material and a starchy powder, graduating said portions to the intensity of tone desired, and then hardening them, substantially as set forth.

9. An overlay consisting of a suitable foundation-sheet having raised portions thereon located and formed in a manner to produce the desired intensity of tones in the impression, and consisting of a compound of wheat-flour and a viscid substance hardened and having a protective coating applied thereto.

10. The process of forming an overlay, consisting in making an impression on the foundation-sheet with viscid material, then adding a powder to said material in quantities proportionate to the amounts thereof on different parts of the sheet, and then hardening the compound so formed.

11. An overlay having the raised portions

of its surface formed of a viscid ink impregnated with powder compressed and hardened by baking.

12. An overlay the raised portions of which consist of a paste or compound formed from a viscid substance and wheat or similar flour.

13. An overlay consisting of a foundation-sheet, having the raised portions thereof formed of a paste made of wheat-flour and a viscid ink compressed and baked.

14. An overlay consisting of a foundation-sheet having raised portions thereon formed from a viscid compound impregnated with a fine powder and baked and varnished, substantially as and for the purpose set forth.

15. An overlay having the raised surface thereof formed from a hardened plastic substance graduated in thickness to correspond to the intensity of the tones in the plate or form through the manipulation of said substance by the said plate or form.

16. The process of making an overlay consisting in taking an impression or impressions upon a foundation-sheet in a suitable viscid substance, adding a powdered material to said substance, and hardening the mixture so formed, the thickness of the mixture upon different portions of the sheet being graduated by the amount of said viscid substance taken from the plate or form, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 14th day of August, A. D. 1897.

SAMUEL E. DITTMAN.

Witnesses:

WM. H. CAPEL,
JOHN KEPKE.