(No Model.) 2 Sheets—Sheet 1.

# W. S. EATON.

## ART OF ENGRAVING.

No. 573,967. Patented Dec. 29, 1896.

Fig. 4.

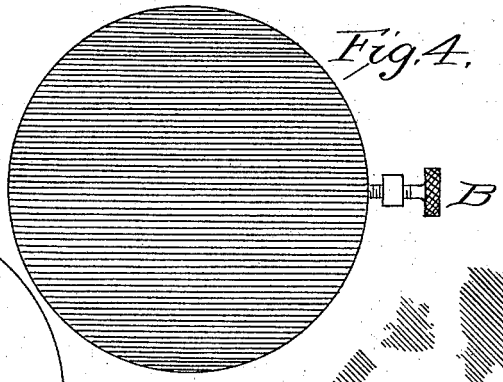



Fig. 1.

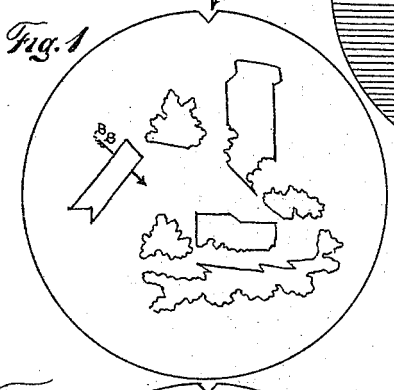



Fig. 1 A.

Fig. 2.

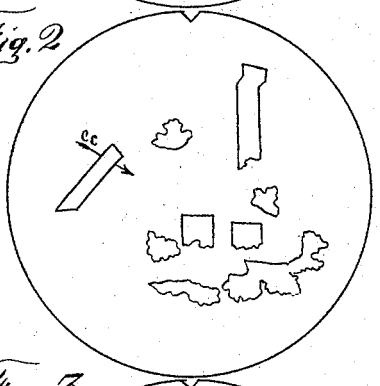
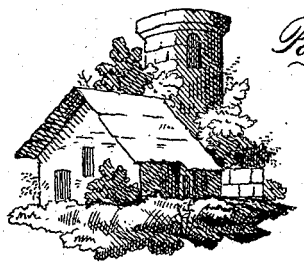



Fig. 2 A.

Fig. 3.

Fig. 3 A.



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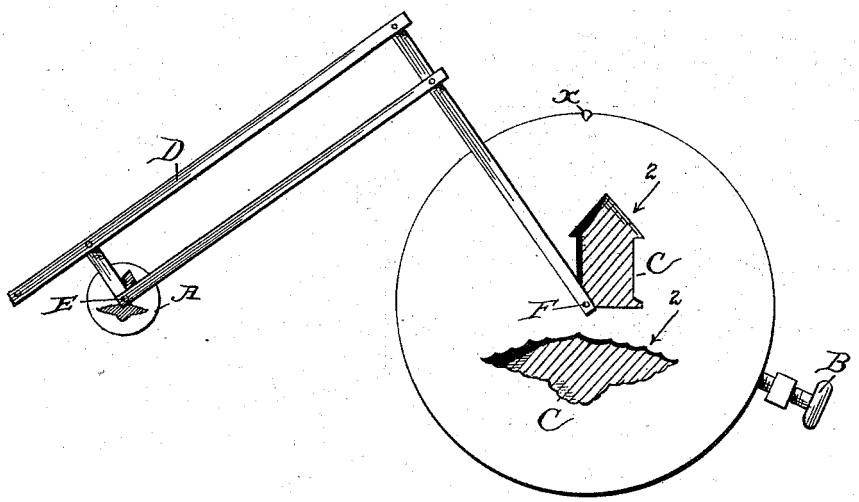
(No Model.) 2 Sheets—Sheet 2.

# W. S. EATON.

## ART OF ENGRAVING.

No. 573,967. Patented Dec. 29, 1896.

Fig. 5.

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# UNITED STATES PATENT OFFICE.

WILLIAM S. EATON, OF SAG HARBOR, NEW YORK.

## ART OF ENGRAVING.

SPECIFICATION forming part of Letters Patent No. 573,967, dated December 29, 1896.

Application filed January 9, 1896. Serial No. 574,894. (No specimens.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. EATON, a citizen of the United States, residing at Sag Harbor, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in the Art of Engraving, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention is an improved method of engraving, and affords a simple method of carrying out results which heretofore have been attained only by more expensive systems of working.

The invention contemplates the transfer of the design by the use of a pantograph engraving-machine.

The engraving of such subjects as landscapes, animals, &c., has heretofore been attended with much difficulty, owing to the high degree of skill required, whether such engraving had for its ultimate object the production of a plate for printing purposes or the ornamentation of some article of jewelry, as, for instance, watchcases. To overcome this obstacle, machines were devised operating on the well-known principle of the pantograph and with the subject to be made usually engraved on a large scale by a skilful artist, this large-scale plate serving as an original, the lines of which were followed by the tracing-point of the pantograph, and the work produced upon a smaller scale by a steel graver substituted for the pencil-point in the pantograph operating upon the work to be engraved. In practice, however, it was found that the work so produced was lacking in certain essential features, the resulting plate, when used for printing purposes, giving a more or less uniform effect of color. Deep shades were found to be lacking, and it was obvious that in order to properly bring out the effect cross-hatching must be resorted to. In attempting to cross the lines on the original model or large-size plate it was found that such cross-hatching thereon nearly obliterated the lines first engraved, and, moreover, the operator found that the lines were with great difficulty followed with the tracing-point, the tracer being often diverted from its course by the intersecting cross-lines. This made the work laborious and costly, and it was found that to attain any degree of success the lines on the model-plate must be practically continuous and unobstructed by interfering cross-lines.

By my present improved method I use but one engraved plate, and from other plates, generally of the same size, I saw out stencils and use these stencils in combination with a lined plate placed beneath the stencil, and then transfer so much of the lines from the lined plate as may appear through the stencil. In some special cases I use two or more stencils, and when the design has been engraved through the said stencils I finish the work with one engraved plate, which leaves the work in such an advanced stage that nothing more is necessary save a few hand cuts known to the trade as "bright-cutting." This affords a method superior to anything at present known in the art and makes possible results not heretofore attained.

In the drawings, Figure 1 shows a stencil-plate, and Fig. $1^A$, the result of its use. Figs. 2 and $2^A$ are like views of a second stencil-plate. Fig. 3 is a view of an engraved plate, and Fig. $3^A$ the result of the use of the stencil and engraved plate. Fig. 4 shows the lined plate. Fig. 5 shows the application of the invention in a conventional way.

In carrying out my invention I arrange my lined plate in or on the bed of the machine and so adjust it that it is circumferentially adjustable on a vertical axis. Fig. 4 shows the lined plate, and B shows a thumb-nut designed to secure the plate in position and keep it from turning while being operated upon, though any other convenient method of securing it may be used. The first step, therefore, in working by this method is to place upon the lined plate, Fig. 4, the stencil-plate, Fig. 1, and then adjust the lined plate, Fig. 4, until the direction of the lines thereon coincides with the arrow B B. The engraving is then proceeded with until all the lines appearing through the stencil have been transferred to the article to be decorated, which, as shown in Fig. 5 at A, is positioned beneath the graver E of a pantograph D. The lines on the stencil are followed by the tracing-point F and the same figure is reproduced (usually on a smaller scale) by the graver-point E. The result of such engraving will appear as in Fig.

1A, when the stencil shown in Fig. 1 is used on the lined plate. The first stencil-plate is now removed and stencil-plate, Fig. 2, is inserted as before. The lined plate is again turned until the lines thereon coincide with the arrow C C, and the operation is repeated as before. The result of this second engraving will appear as in Fig. 2A, but superimposed on the lines of the preceding operation, thereby supplying some of the shadows and darkest parts of the design. The second stencil is now removed and the engraved plate, Fig. 3, is inserted in the machine, and all the lines thereon are transferred to the work, when the result will appear as in Fig. 3A.

Any number of stencil-plates may be used, as the nature of the work warrants; but a special advantage of this stencil system lies in the fact that where deep shadows are required in the finished work the result may be had without making a large number of stencil-plates, but by simply turning the lined plate so that the lines run in a slightly-different direction and using the same stencil as before. This may be continued until sufficient depth has been obtained.

In practice I prefer to make the lined plate about the same size as the stencil and engraved plates, and the lines thereon I prefer to produce in any machine capable of producing straight lines of substantially uniform depth, as, for instance, a planing-machine. It is preferable also to make the lined plate of brass or other reasonably-hard metal and the stencil-plates of sheet-zinc. The engraved plate used in the last operation may be of any of the metals or materials now in use in connection with engraving-machines for engraving.

I have spoken of the engraved plate being last used. While in general I prefer to do so, it is not essential to the success of my method, since it may be used first or second with good results. I have simply indicated the plates in the order mentioned for convenience in making clear my method.

The result of the use of the stencil and engraved plates shown in Figs. 1A, 2A, and 3A will be in general on a smaller scale than the original stencil and engraved plates, but I have shown the work drawn to the same scale, since such a size makes the method more clear.

Excellent results may be obtained by my method by engraving the first series of lines through the stencil somewhat lighter than the succeeding set and the second set somewhat lighter than the engraved plate, but heavier than the first, when three is the number used. When the work is thus proceeded with, making the engraving as it advances progressively heavier and consequently darker, the result in general will be better than when all the sets of lines are of uniform depth.

In order that all the sets of lines as transferred shall register properly and fit into their proper places, I lay out my stencils and engraved plates from the center of the plate and a vertical line used as a guide, and in order to have each stencil register properly with the preceding one I provide a notch or indentation in the edge of the plates, (shown at X, Fig. 1.) All the plates are thus notched. The notch fits a pin *a* in the bed of the machine, so that when inserting a fresh stencil or engraved plate the work will come right without further trouble. The openings in the stencil also form a boundary beyond which the tracing-point cannot go, thus being a check against carelessness in the operator.

The drawings accompanying this specification show a house and castle, but it is obvious that the method is not limited to work of the kind shown. In floral work, for instance, excellent results may be produced by cutting out the body of the flower in the stencil, lining as already described, and then putting in the veins in the petals from another plate.

I claim—

1. An improvement in the art of engraving consisting in taking a plate having lines upon its surface, placing a stencil over said lined plate and transferring by means of a pantograph-engraver the lines exposed through the stencil and finishing the work by the use of an engraved plate, substantially as described.

2. An improvement in the art of engraving, consisting in taking a plate having lines upon its surface, placing a stencil over said lined plate and transferring the lines exposed through the stencil; removing the first stencil and placing over the lined plate a second stencil and again transferring the exposed lines, superimposing the same on the lines of the preceding transfer to supply shadows and dark parts, and finally removing the second stencil and finishing by the use of an engraved plate, substantially as described.

3. An improvement in the art of engraving consisting in transferring a part of the lines from a lined plate through stencils and a part from an engraved plate, substantially as described.

4. An improvement in the art of engraving, consisting in taking a lined plate, placing thereon a stencil, transferring the exposed lines to the article being decorated, shifting the lined plate and again transferring the exposed lines to the article, substantially as described.

5. In combination with a pantograph-machine, a lined plate and a stencil-plate superimposed on the lined plate, the exposed lines being transferred by the pantograph, substantially as described.

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

WILLIAM S. EATON.

Witnesses:
FRANK A. GAY, JR.,
FRANK B. GLOVER.