(No Model.)

A. HOEN.

LITHOGRAPHIC PROCESS.

No. 277,730. Patented May 15, 1883.

Fig. 1

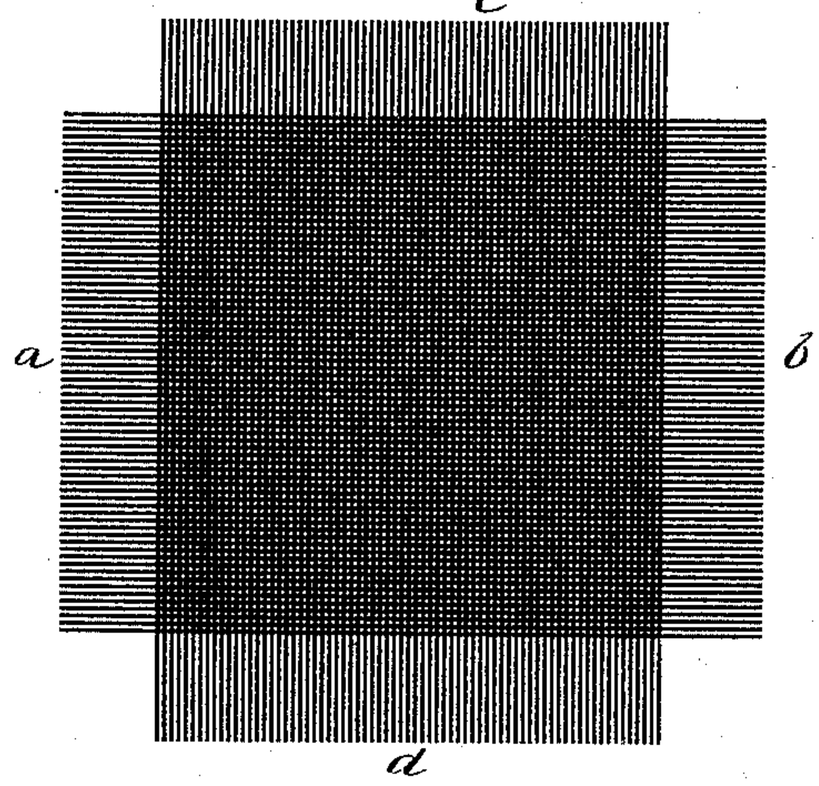
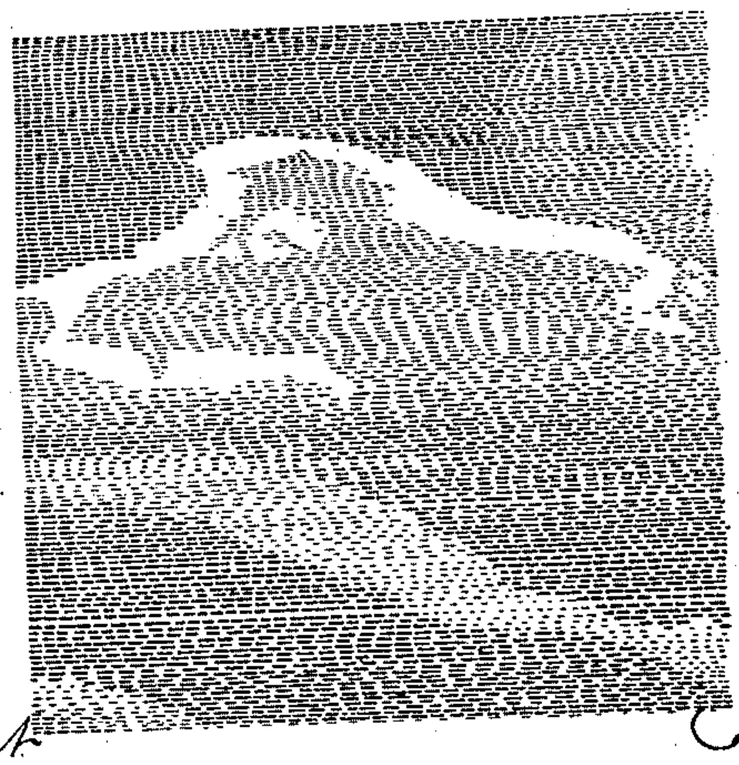


Fig. 2.



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AUGUST HOEN, OF BALTIMORE, MARYLAND.

LITHOGRAPHIC PROCESS.

SPECIFICATION forming part of Letters Patent No. 277,730, dated May 15, 1883.

Application filed July 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, AUGUST HOEN, of the city of Baltimore, and State of Maryland, have invented a new and Improved Lithographic Process; and I do hereby declare that the following is a full, clear, and exact description of the same.

Letters Patent No. 27,981 have been granted to me for improvements in lithography, which were in the nature of a lithocaustic process. Although very satisfactory results have been attained, the lines produced being equal in delicacy to the finest steel engraving, still experience has developed the fact that the multiplication of these lithocaustic engravings by the transfer process (the usual and only practical mode of lithographic printing) cannot be accomplished with entire satisfaction, owing to the great difficulty in transferring the more delicate tints or shades produced by machine-ruling. For instance, in graduating the lines of a sky from the darker to the lightest portion, they require to be made so fine that they often fail to take the ink from the roller when they have been transferred, and, on the other hand, if made sufficiently coarse or strong to answer this purpose, the pictorial effect is a shade that is too heavy or murky. To overcome this difficulty has been with me the object of much study and many experiments, and I have conceived and practically executed a process by which the object may be attained. The process is a development of the idea of substituting a dotted line for a continuous or solid line, the dots being separated from each other more or less, according to the effect desired. For instance, if the lines be interrupted or filled at intervals, thus forming dots located the same distance from each other as the lines are separated in the ruling, this would reduce the effective strength of the lines at least six or eight fold, and thereby produce the effect sought for—to wit, making the lines faint, and yet of sufficient substance to admit of perfect transfer.

After testing various ineffective methods of producing the dotted lines I have discovered the following, which is at once entirely effective, and also simple: A plate (stone) on which it is desired to etch a sky is treated precisely as in the former process—that is to say, it is covered with an etching-ground consisting of asphaltum varnish, and the parallel lines are then cut through this ground by means of a diamond, without, however, cutting the face of the plate or stone. Now, before etching in these lines to the strength required to produce clouds or any other effect that may be desired, they are filled or stopped out with ink at regular intervals, so that a line of minute white dots appears in place of the previously solid or continuous line. My method of doing this is to transfer on the lines—that is to say, on the surface of the plate across which the continuous lines are drawn—an impression taken in strong transfer-ink from another plate on which lines have been ruled to appear in white while the remainder of the impression is covered with ink. The impression or transfer sheet having such lines in white is laid across the plate on which are the lines it is desired to stop out, and the latter will absorb the ink from the impression or transfer sheet at all points where the lines of the plate and sheet intersect. It is preferable that the lines of the impression shall cross the lines of the plate at right angles; but a diagonal position will produce good results. As the result of this operation, the lines on the plate are filled or stopped out at regular intervals, leaving only that portion of the lines exposed where the white lines of the transferred impression cross them. Such portion will hence appear as minute white dots on a dark surface. The comparatively soft ink which was thus transferred is now dusted with finely-pulverized rosin to strengthen its power of resistance to the action of the acid, which will only act on the exposed portion—to wit, the white dots. The further procedure of etching in the dots instead of the lines is precisely the same as in my former lithocaustic processes. The dots, being in lines, and small as well as close together, are almost invisible to the naked eye, and will hence present to it the appearance of unbroken or solid lines, but of so extremely delicate shading as to produce the effect of a gray tint.

In the accompanying drawings, Figure 1 illustrates the process as will be hereinafter explained, and Fig. 2 is a sky produced by my improved process.

In Fig. 1 the letters *a b* indicate the lines drawn on an etching-ground upon a lithographic stone, and *c d* the cross-lines formed

by laying the transfer-sheet thereon, thus forming the white dots before described—that is to say, the lines *a b* are drawn with a diamond on an etching-ground. Then an impression or transfer sheet prepared as hereinbefore set forth, and having lines filled with transfer-ink, is laid across said plate, and thus produces the lines *c d*, the fresh ink from said transfer-sheet filling the lines *a b* at regular intervals, and necessarily producing the dotted surface represented in Fig. 1. Both sets of lines are necessarily drawn coarsely in order to render the white dots plainly visible to the naked eye. This surface—namely, that formed by the white dots—is then etched in the usual way in order to produce the desired effect—say a sky. When suitably prepared the printing is effected in the usual way, and the dots or dotted surface takes the lithographic ink, which is transferred to the print and appears in fine dots, producing a stipple effect, as illustrated in the sky represented in Fig. 2, the dots being there indicated as coarse and large, and thereby plainly visible, whereas in practice or actual work they are invisible to the natural eye.

Various other means than that above described may be employed for stopping out the lines on the stone, and I do not desire to restrict my invention in that direction. For example, impressions taken from wood or metal blocks may be used; or even the direct application of a rubber stamp having raised lines which have been supplied with ink is practicable.

What I claim as new is—

1. The process of preparing a stone or plate for lithocaustic engraving, consisting in stopping out or filling in with ink, at regular intervals of space, the lines drawn on an etching-ground, thereby producing a series of dotted lines in place of those which were previously solid or continuous, substantially as hereinbefore set forth.

2. The process of lithocaustic engraving hereinbefore described, which consists in drawing parallel lines upon an asphaltum or other suitable etching-ground, next applying a sheet or stamp suitably ruled with lines and covered with transfer-ink to the ruled lithographic surface or ground thus formed, the lines of the two surfaces thus brought in contact crossing each other at a suitable angle, whereby the ink from said sheet or stamp is transferred to the lines of the etching-ground, so as to produce a series of lines composed of alternating white and black dots, then etching the white or uncovered portion in the usual way, as specified.

AUGUST HOEN.

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