DE WITT C. HITCHCOCK & E. B. & E. M. LARCHER.

METHOD OF PRODUCING RELIEF PRINTING PLATES, &c.

No. 30,630. Patented Nov. 13, 1860.

Fig. 1.

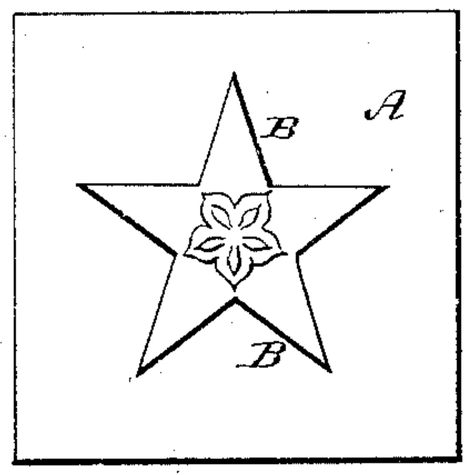


Fig. 2.

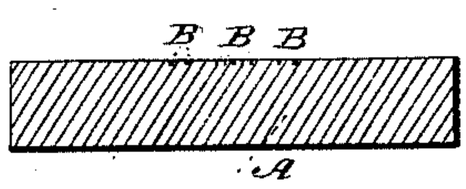


Fig. 3.

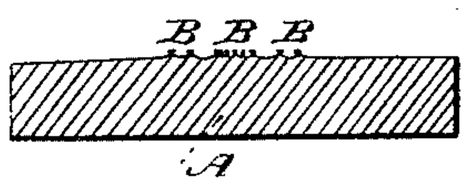
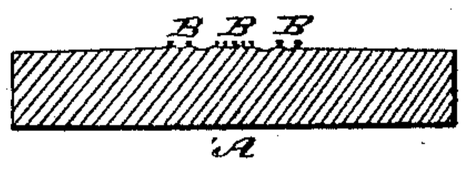


Fig. 4.



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UNITED STATES PATENT OFFICE.

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RELIEF PRINTING-PLATES, &c.

Specification of Letters Patent No. 30,630, dated November 13, 1860.

To all whom it may concern:

Be it known that we, DE WITT C. HITCHCOCK, EDWIN B. LARCHAR, and EDWIN M. LARCHAR, of the city, county, and State of New York, have invented a new and useful Method of Producing Relief Printing-Plates, Blocks, Cylinders, &c., which invention we denominate "The Graphotype;" and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

Figure 1, is a plan or top view of a plate or block of chalk, having the figure of a star inclosing a flower delineated on its surface with liquefied silex or other suitable marking material, the said figures being represented in red lines in the drawing. Fig. 2, is a cross section of the same at the line 1, 2, of Fig. 1, showing the extent and form of the absorption of the silex by the chalk. Fig. 3, is a similar section of the same, with the soft material between the lines of the delineations brushed away so as to bring said lines in relief after the manner of a wood-cut. Fig. 4, is a similar section with the whole body solidified or hardened to one homogeneous mass.

Similar letters in the figures refer to corresponding parts.

This invention consists in producing on the prepared surface of chalk, or other suitable material, alto-rilievo lines, figures, or any desired configuration by the simple act of delineating such lines, figures, or configurations on said surface with fluid silex or other suitable material that will harden the chalk, or other material employed, by its absorption in the same, and then brushing, rubbing or otherwise removing the soft material between the lines and outside the same, and hardening the entire block in such a manner as to produce strong and firm relief lines, corresponding in form and in other particulars with a wood cut, from which printed impressions can be taken.

To enable others skilled in the art to make and use our invention, we will proceed to describe the particular manner of carrying the same into effect.

The plate or block A, is made of chalk, clay, siliceous, or in fact any other suitable soft material, the component parts of which will admit of being readily pulverized, or removed by brushing, blowing, wiping or otherwise. This plate or block is brought to the desired solidity, size and form, by pressure in a mold, or by other means adapted to the purpose, so that its upper and lower surfaces shall be perfectly parallel, and its upper one sufficiently smooth to admit of the finest lines being drawn or marked thereon. The lines, configurations or devices to be produced in relief, are made upon this surface with a pen, brush or other instrument, whose marking material, or medium, or ink, is liquid silex, or any liquefied stone, mineral, metallic, or other simple or compound substance, susceptible of entering into the chalk or other material employed, and hardening the same; and this marking material may be either employed in its natural state or combined with any artificial coloring matter. The lines, tint or grain of liquid silex B, or other marking material thus made on the surface of the chalk, clay or other material, saturate, or become absorbed by, the immediately contiguous grains of the same below, to the depth represented by red lines in the drawings, and transform or change the portion of the said chalk or other substance through which it permeates, into a hard stony substance. This result may be facilitated in some cases by heat, or other artificial means. When this effect is produced, the chalk, clay or other substance, unacted upon next the surface, by the liquid silex or other petrifying material, is removed to the necessary depth by repeated brushing, rubbing or blowing, so as to reduce the base or sunk portions to the same relative depth to the hardened relief lines, as the corresponding parts are in a wood cut. The whole or part of the body of chalk, or clay, is then saturated with liquid silex, or the same material employed to harden the relief lines, which transforms or changes the body through which it permeates, into the same hardened and stony state with the relief portions previously solidified or petrified, and gives the entire plate or block the necessary strength to withstand the pressure exerted upon it in locking it up in a form, and printing impressions from it in a press.

The silex or other material for impregnating and hardening the chalk, clay, or other substance, may be used in the form of ink, pencil or crayon.

The drawing may be made by the liquid silex or equivalent material, upon the sur-

face of any desired substance, and thence transferred to the surface of the chalk, clay or other material susceptible of being hardened and brought into relief in the manner before stated.

Relief printing plates, blocks, cylinders, &c., produced by this method can be electrotyped, stereotyped and duplicated, with the same facility that other corresponding plates and blocks are.

What we claim as new and desire to secure by Letters Patent is,

The method of producing printing plates, blocks, &c., in relief, by employing liquid silex or other material that has a hardening effect upon chalk, clay, or other analagous substance, or that has an affinity for or the capacity to affiliate with the silex, as a marking material, medium or ink, to delineate lines, figures or any desired device, upon the surface of said chalk, clay or other material susceptible of thus becoming hardened or petrified, and then removing the intervening and unacted on soft material next the surface by brushing or rubbing so as to leave the said lines in relief; and finally, solidifying in a greater degree, hardening and petrifying the whole body, substantially in the manner and for the purpose herein set forth.

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Witnesses to signatures of Hitchcock and E. B. Larchar:
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