

(No Model.)

J. GAST.

METHOD OF PRINTING IN COLORS AND SCREEN THEREFOR.

No. 547,780.

Patented Oct. 15, 1895.

Fig. 1.

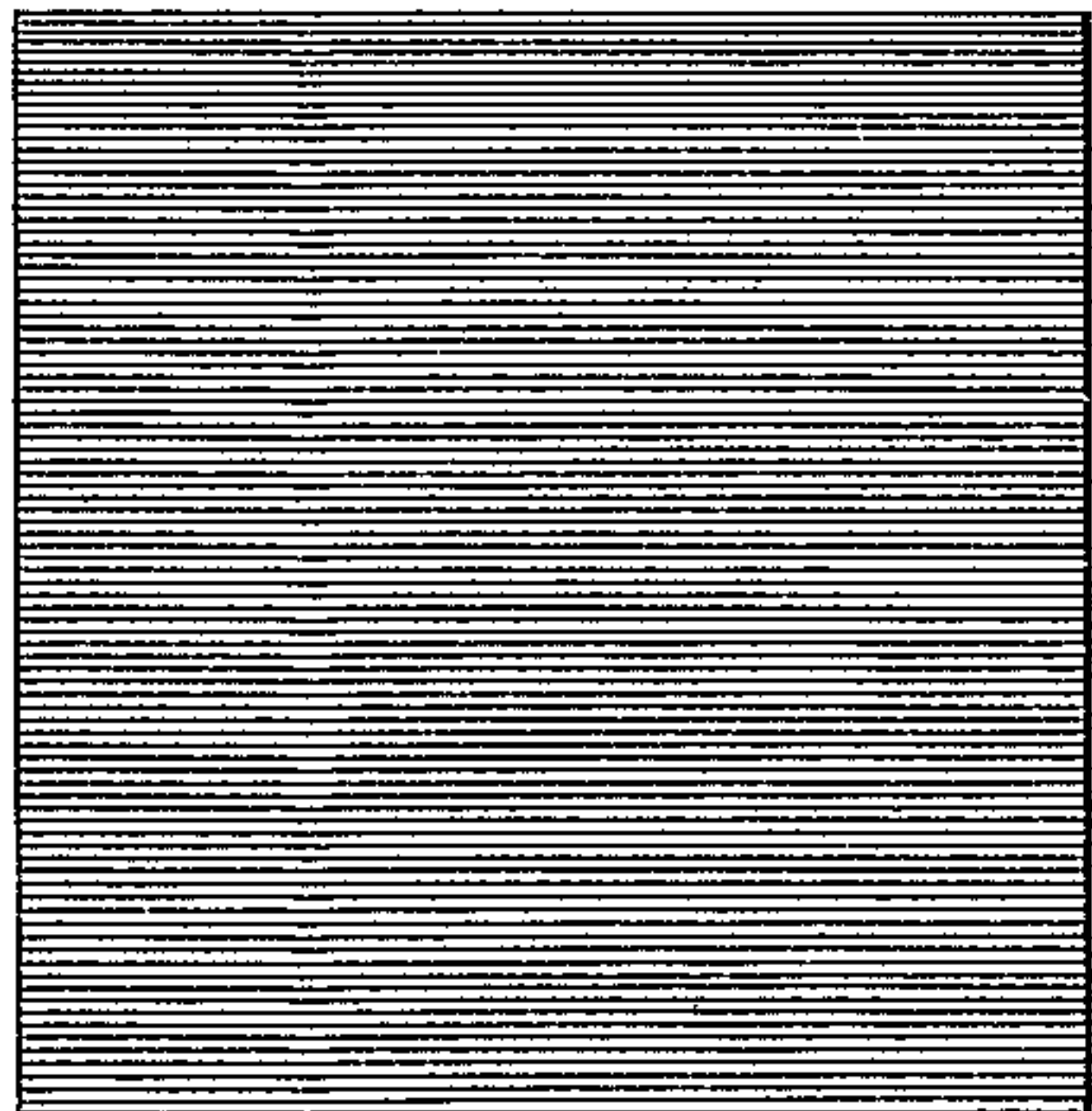


Fig. 2.

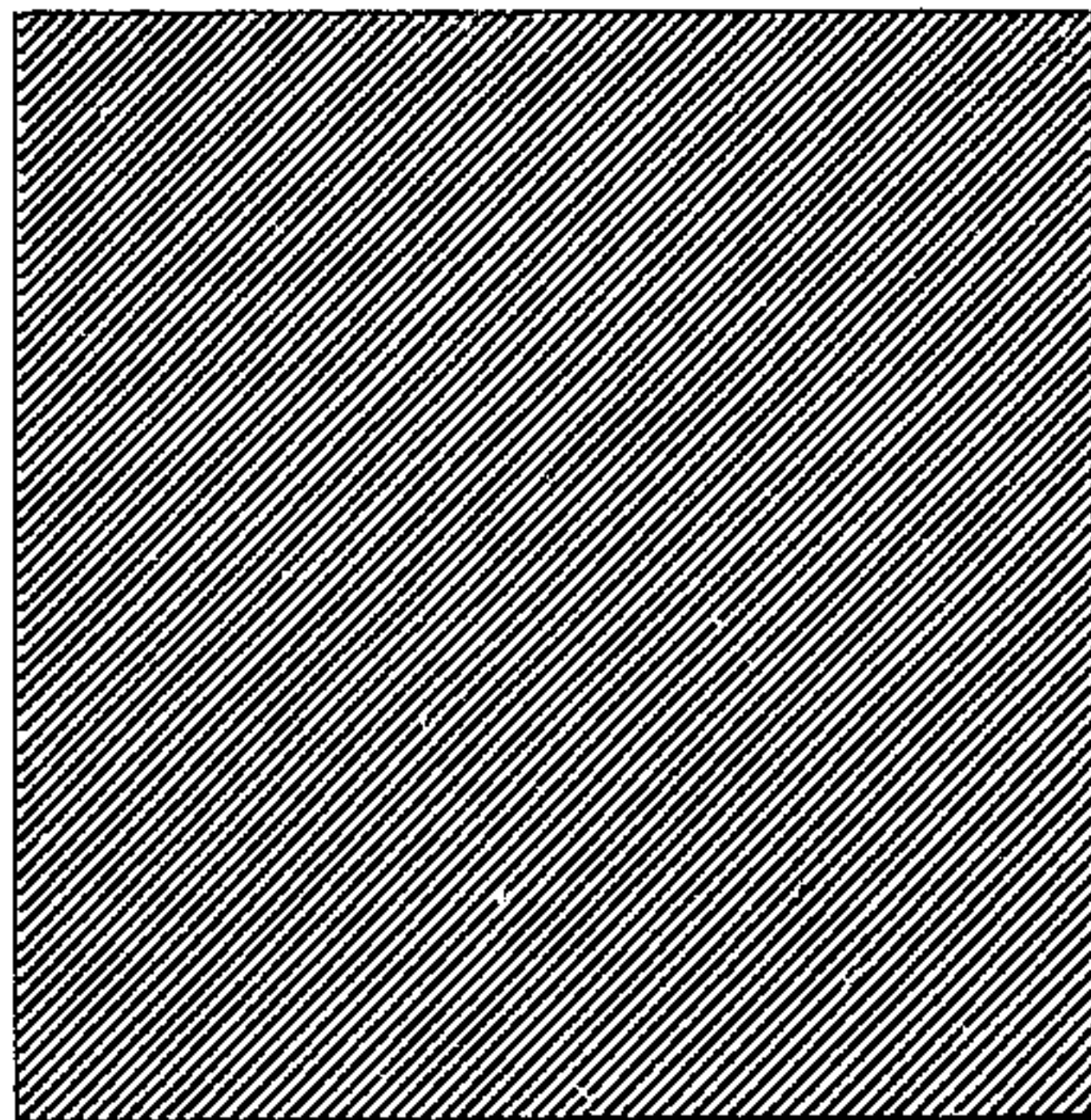


Fig. 3.

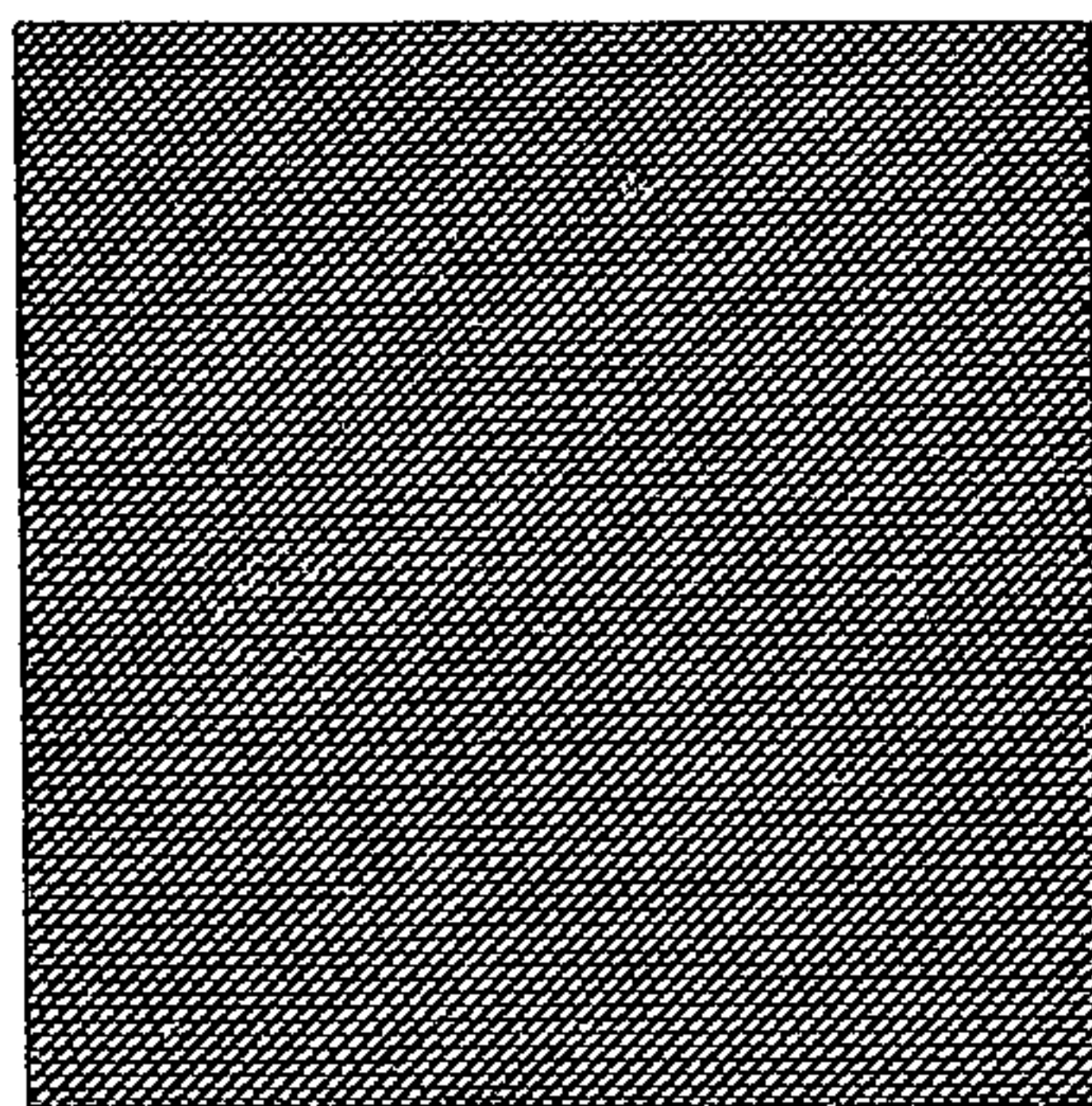


Fig. 4.

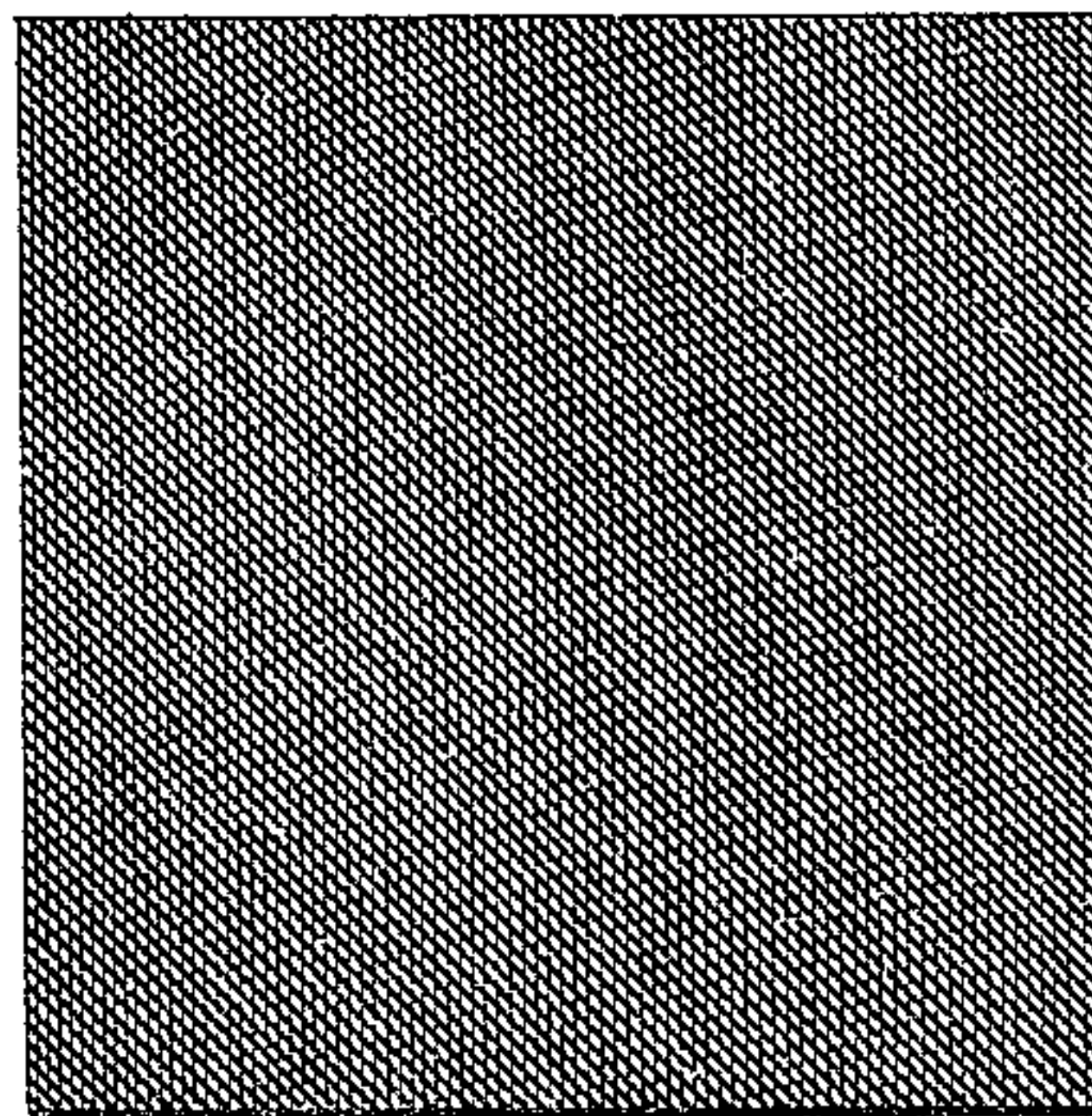


Fig. 5.

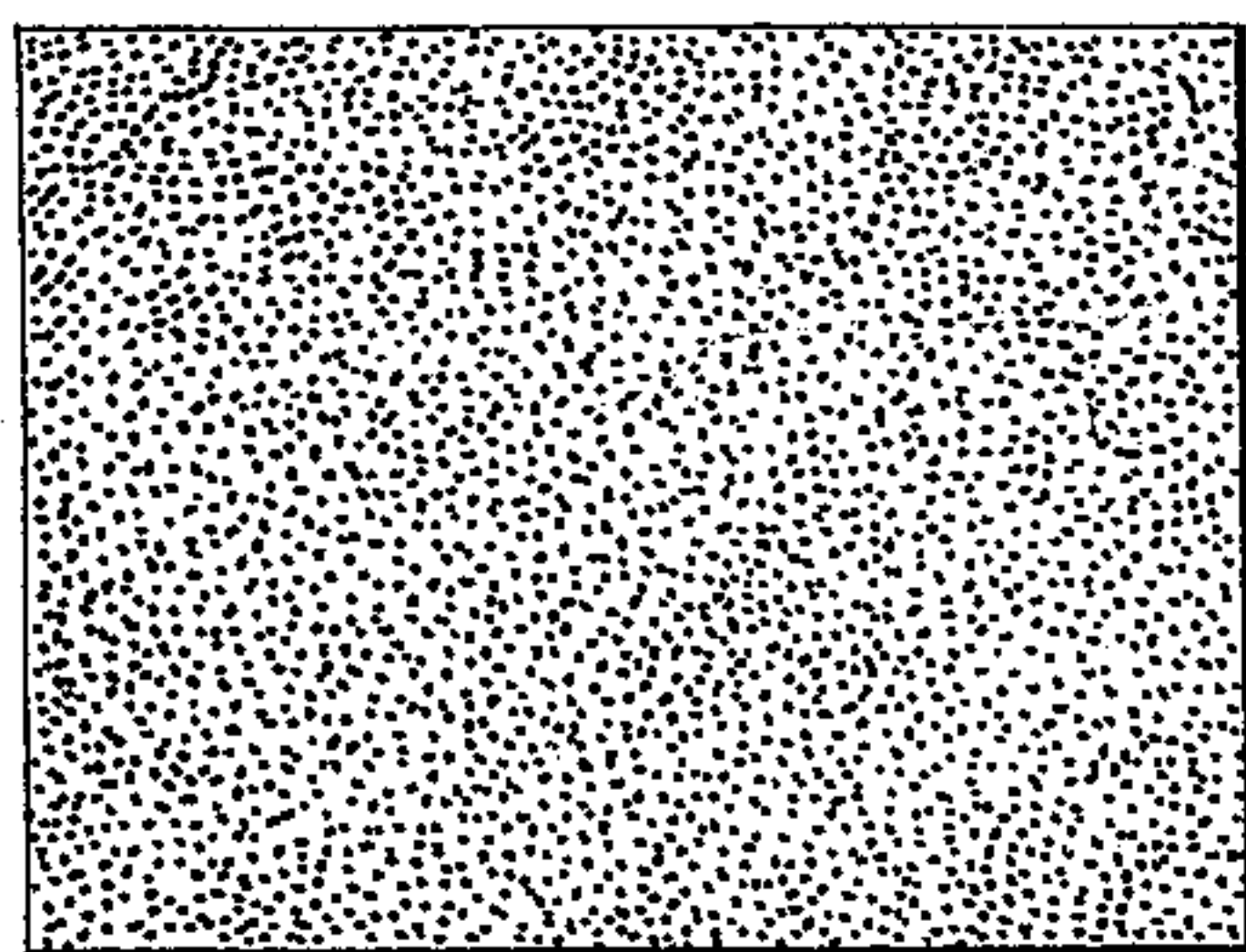
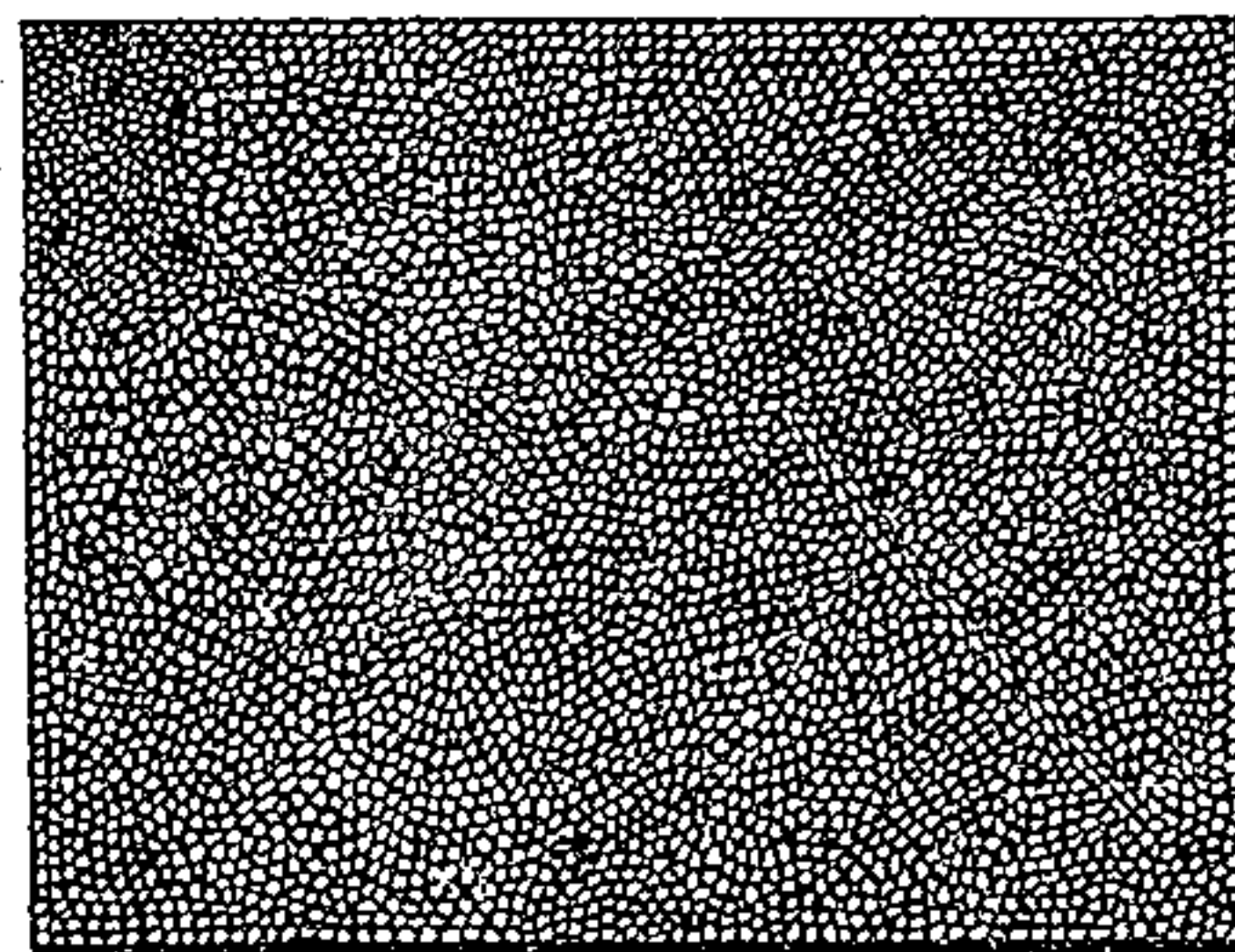


Fig. 6.



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METHOD OF PRINTING IN COLORS AND SCREEN THEREFOR.

SPECIFICATION forming part of Letters Patent No. 547,780, dated October 15, 1895.

Application filed April 14, 1894. Serial No. 507,542. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN GAST, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Method of Printing in Colors; 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.

In the making of color-plates by the methods of half-tone photo-engraving and the printing of such colors on paper it often occurs, through the slightest misregister, that the lines show a pattern such as watered silk, termed "moire." To prevent that, negatives have been made with a "single-line" screen-plate instead of the usual square cross-line screens generally in vogue.

The object and shortcoming of the single-line process is manifest to every practical photo-engraver and printer, as it does not produce the full modulation of a half-tone negative, but only about one-half of it. The results produced are flat, as the finer and lighter parts in the blending of the light shadings are not faithfully reproduced in an unbroken continuous line; but the line in the screen should be crossed, so as to produce a dotted line when required; but crossing must be done at such an angle as to avoid a pattern. Moreover, the single-line plate is not of a practical quality for the printing-press, as it is a well-known fact that plates made of linework of this description fill up very rapidly and are difficult to clean, but not so with dotted work or broken lines. In order to avoid these shortcomings and defects, I use a screen-plate which is ruled in two directions, and I use these lines of different thicknesses or dimensions, in one of which the white space and black line are of equal thickness. (See Figure. 2.) In the other the white space is about three times the thickness of the black line. (See Fig. 1.) These lines cross each other at an angle of forty-five degrees, and not as the old cross-line screens, which cross each other in equal thickness both ways at a right angle only.

In the three-color process, for which this improvement is especially adapted, the first

color, blue, is printed from a plate, Fig. 3, on which the diagonal lines run from the lower left-hand corner to the upper right-hand corner and its corresponding finer cross-line on a level. For the second color, or red, the same screen is used, but the screen-plate is turned on the other end, so that in the printing-plate the oblique or diagonal lines now run in the opposite direction to the first plate or from the lower right-hand corner to the upper left-hand corner, (see Fig. 4,) and the finer cross-lines are now on a perpendicular. For the third or yellow color I use a simple stipple screen. (See Fig. 5, positive, and Fig. 6 negative.) With this combination of diagonal horizontal, and vertical lines and stipple, used, respectively, for the blue, red, and yellow colors, I produce the most harmonious effect and blending, as well as full modulation in the colors of all the lights and shades. Paintings or objects from nature are reproduced in fac-simile by this method.

In carrying out my invention I first take a sheet of thin glass of suitable size cut to a square. On this I apply an even thin coating of a black opaque ground on both sides, consisting of a mixture of asphaltum, wax, and graphite. When properly dry the lines are cut with a ruling-machine, (according to requirements from one hundred to one hundred and fifty lines to the inch,) viz: On the one side of the glass the level or horizontal lines are cut, the black line measuring in thickness to the white space between lines, as one to three, more or less, (see Fig. 1)—that is, one part black and three parts white or light—and on the other side of the glass I cut a diagonal line of equal black and white space, running at an angle of forty-five degrees to the horizontal line previously cut on the other side. This forms my screen-plate, as shown in Fig. 3. The screen-plate is placed in the camera in front of a sensitized plate. An exposure is taken for one color in the usual manner of making half-tone negatives. Now, in order to expose another plate for the second color, I turn the screen-plate on end, so as to reverse the direction of the lines to an opposite position to that used for the first exposure or first color, Fig. 4. The third color is produced by placing in front of a third sensitized plate a stipple-negative or stipple

screen-plate. (See Fig. 6.) This gives a fine stipple effect. From these three negatives half-tone relief printing-plates or photolithographic transfers are made by any of the approved existing methods.

5 If more than three colors are required, I again use the screen-plates in the order and rotation as described, always turning the screen-plates after every exposure, thus avoiding a
10 confusion of lines or a moire pattern.

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

1. The process of printing in colors herein described, which consists in producing half
15 tone negatives by subjecting the first sensitized plate to an exposure through a screen ruled on one side with horizontal lines and on its other side with diagonal lines; then inverting the position of the screen plate and sub-
20 jecting the second negative to an exposure through this inverted screen; subjecting a third negative to an exposure through a stippled screen; next producing plates from said half tone negatives, and finally printing
25 in colors from these different plates, substantially as and for the purposes described.

2. In the art of printing in colors, the step herein described of preparing a half tone negative which consists in subjecting a sen-

sitized plate to an exposure through a screen
30 plate ruled with horizontal lines on one side and with diagonal lines on its opposite side, which diagonal lines cross the horizontal lines at an angle of forty-five degrees (45°), as and for the purposes set forth.

3. A screen plate for preparing half tone
35 negatives provided on one surface with lines which are parallel to two edges of the plate and on its other surface with parallel lines which cross, at an angle of forty-five degrees,
40 the lines on the first named surface of the plate, substantially as and for the purposes described.

4. A screen plate for preparing half tone
45 negatives provided on one surface with parallel lines and on its other surface with diagonal lines which cross the parallel lines, the lines on one surface of the plate being heavier or thicker than the lines on the reverse sur-
50 face, substantially as and for the purposes described.

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

JOHN GAST.

Witnesses:

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J. B. DAVENPORT.