(No Model.)

C. SCHAEUFFELEN.

DRAWING PAPER.

No. 500,081. Patented June 20, 1893.

Fig. 1.

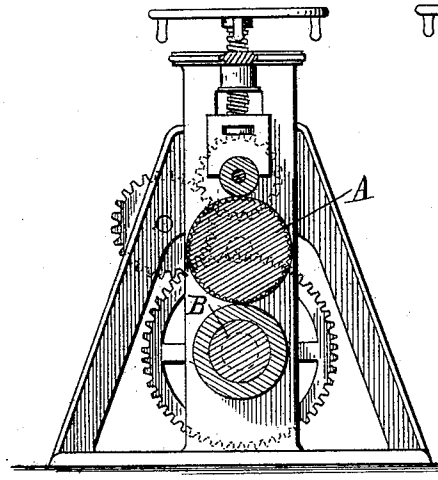


Fig. 2.

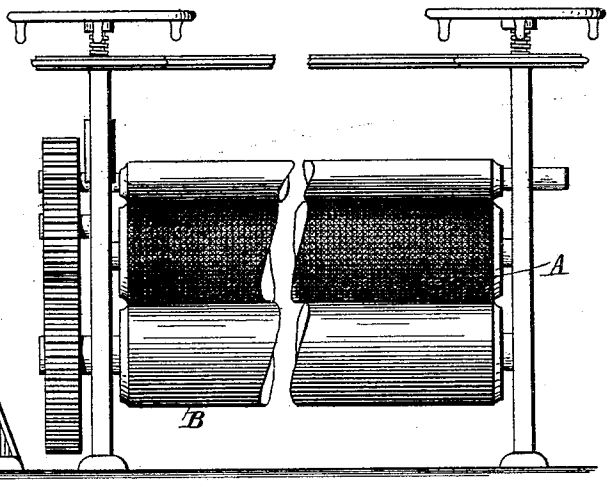


Fig. 3.

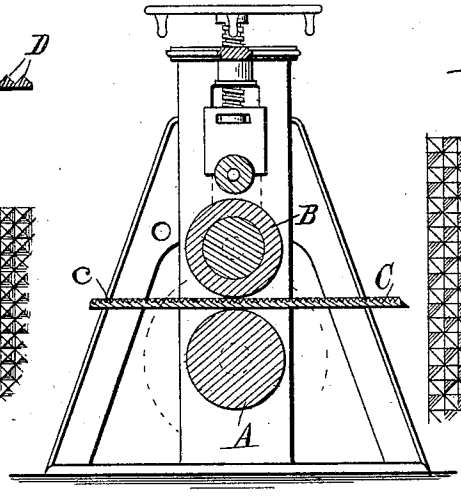


Fig. 4.

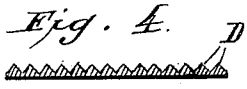


Fig. 5.

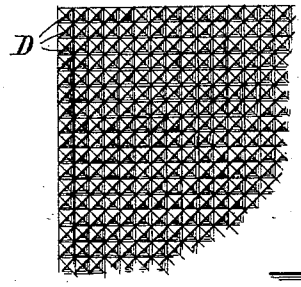
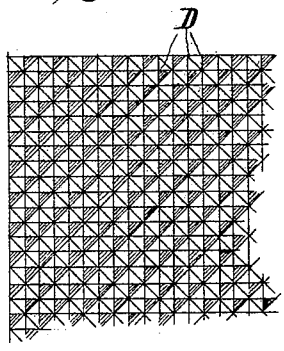


Fig. 6.



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UNITED STATES PATENT OFFICE.

CARL SCHAEUFFELEN, OF HEILBRONN, GERMANY.

DRAWING-PAPER.

SPECIFICATION forming part of Letters Patent No. 500,081, dated June 20, 1893.

Application filed September 9, 1891. Serial No. 405,210. No specimens.)

To all whom it may concern:

Be it known that I, CARL SCHAEUFFELEN, a subject of the King of Würtemberg, residing at Heilbronn, Würtemberg, in the German Empire, have invented new and useful Improvements in Drawing-Papers, of which the following is a specification.

The object of my present invention is to produce a grained paper which completely answers the highest requirements of artistic design in lead pencil and pen and ink and is adapted for use in preparing lithographic drawings in crayon and ink for direct transfer.

The grained papers hitherto manufactured are almost always objectionable in possessing an irregular grain, which latter has the form of the frustum of a pyramid of irregular base or presents the appearance of a minute hill. My paper is distinguished from this in substance in that its grain possesses a perfect pyramidal form and in that these pyramids (whose bases may be of any desired shape, but preferably in the form of a regular polygon or a circle) are arranged at perfectly equal distances from each other. According to the fineness of the grain, a square centimeter contains one thousand, fifteen hundred, two thousand, two thousand five hundred, &c., of these pyramids. This paper may be produced by passing the same between a smooth roller and a roller having pyramidal depressions, or by any suitable means. The paper thus produced is flat or smooth on its one side or bottom and on its face is provided with the regularly arranged projections. The advantage of a paper so grained particularly for drawing purposes consists especially in the fact that the drawing really takes place only upon the vertices of the pyramids, so that the finest gradation in shading may be obtained by flattening the pyramids more or less by a greater or lighter pressure of the pencil upon the vertices of the pyramids, resulting in heavier or finer lines. The valley between the pyramids at the same time appears narrower or wider, that is to say, a narrower or broader white interval is made to appear between the pyramids (grain). By making the paper perfectly flat or smooth on one side there is no liability of injuring the pyramids composing its grain, by collapsing them by the pressure of the pencil or crayon, and the amount of shade or half-tone produced in the drawing is accurately proportional to the pressure of the pencil or crayon employed by the artist in making the picture. The entire picture hence, will comprise a group of blackened vertices of pyramids rising above the base of the paper of various degrees of flatness, between which the valleys or depressions appear in the original color of the paper. It is manifest that when lithographic crayon or ink is employed, such a relief picture may be directly transferred and transfers which are exact facsimiles of the original may be obtained, as readily as from a drawing made and etched on stone.

My novel grained paper is also eminently adapted for drawings for technological purposes and made with the ruling-pen in india ink and colors. The lines become sharper than in the grained papers heretofore used, and the colors are easily applied thereto and spread.

In the accompanying drawings Figure 1 represents a vertical transverse section of a calendering machine adapted to produce my novel paper; Fig. 2, a front elevation thereof; Fig. 3, a transverse vertical section of a modified form of calendering machine for the same purpose; Figs. 4 and 5, a transverse section and plan, respectively, on a highly enlarged scale, of the paper embodying my invention, and Fig. 6 a plan also on an enlarged scale of a piece of paper embodying my invention in which the pyramidal projections are arranged somewhat differently.

The pyramidally-grained paper which forms the subject-matter of this application, may be made by a machine such as illustrated in Figs. 1 and 2, which differs from the ordinary calendering machines in having one roller A, not smooth as usually, but provided on its entire surface with pyramidal depressions. The roller, B, however is smooth as usual. In Fig. 3 the machine for this purpose is somewhat modified, and consists of two smooth rollers in combination with a flat plate, C, of steel, having its upper face, *c*, provided with the pyramidal depressions.

In Figs. 4 and 5 I have illustrated one form of paper embodying the product of this machine. In this case it will be noted, that the surface of the paper is made up of contiguous

pyramids, D, whose bases are all squares of equal area and whose altitudes are equal and which are arranged side by side so that the distance from apex to apex of the adjoining pyramids is equal over the entire sheet.

In Fig. 6 is represented a sheet of paper whose pyramidal projections also have square bases, but which are arranged somewhat differently, that is to say, diagonally.

The grained paper heretofore used known as "egg-shell" paper and other grained papers differ essentially from mine in that the grain is irregular and consists of recesses instead of projections and that the artist cannot hence calculate the effect of his pencil and accordingly regulate the amount of pressure to be brought on the drawing surface to produce such effect. Moreover, none of the grained papers heretofore used possess a perfectly smooth bottom surface, but their lower surfaces are formed with recesses which seriously interfere with a nice calculation of the effect by the artist for the reasons above stated.

I claim—

1. As a new article of manufacture, a grained paper, provided with regular pyramidal projections, whose apexes are arranged at equal distances from each other, substantially as set forth.

2. As a new article of manufacture, a grained paper flat on its bottom surface and provided on its face with regular pyramidal projections whose apexes are equidistant from each other, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CARL SCHAEUFFELEN.

Witnesses:

AUGUST B. DRAUTZ.

CARL DUSSMANOT.