

No. 734,135.

PATENTED JULY 21, 1903.

A. B. PORTER.
DECORATED SURFACE.
APPLICATION FILED MAY 22, 1903.

NO MODEL.

Fig. 1.

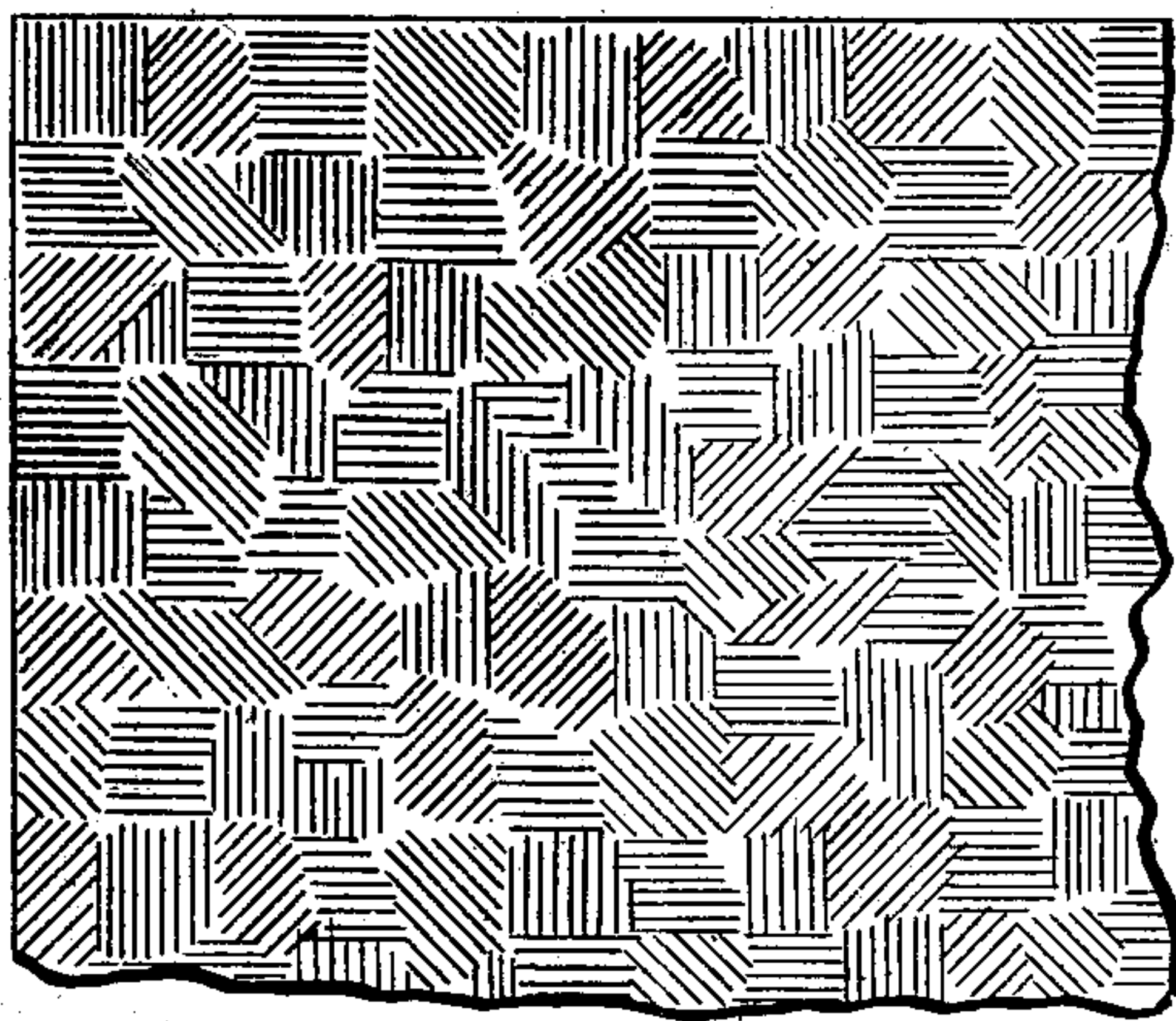


Fig. 2.

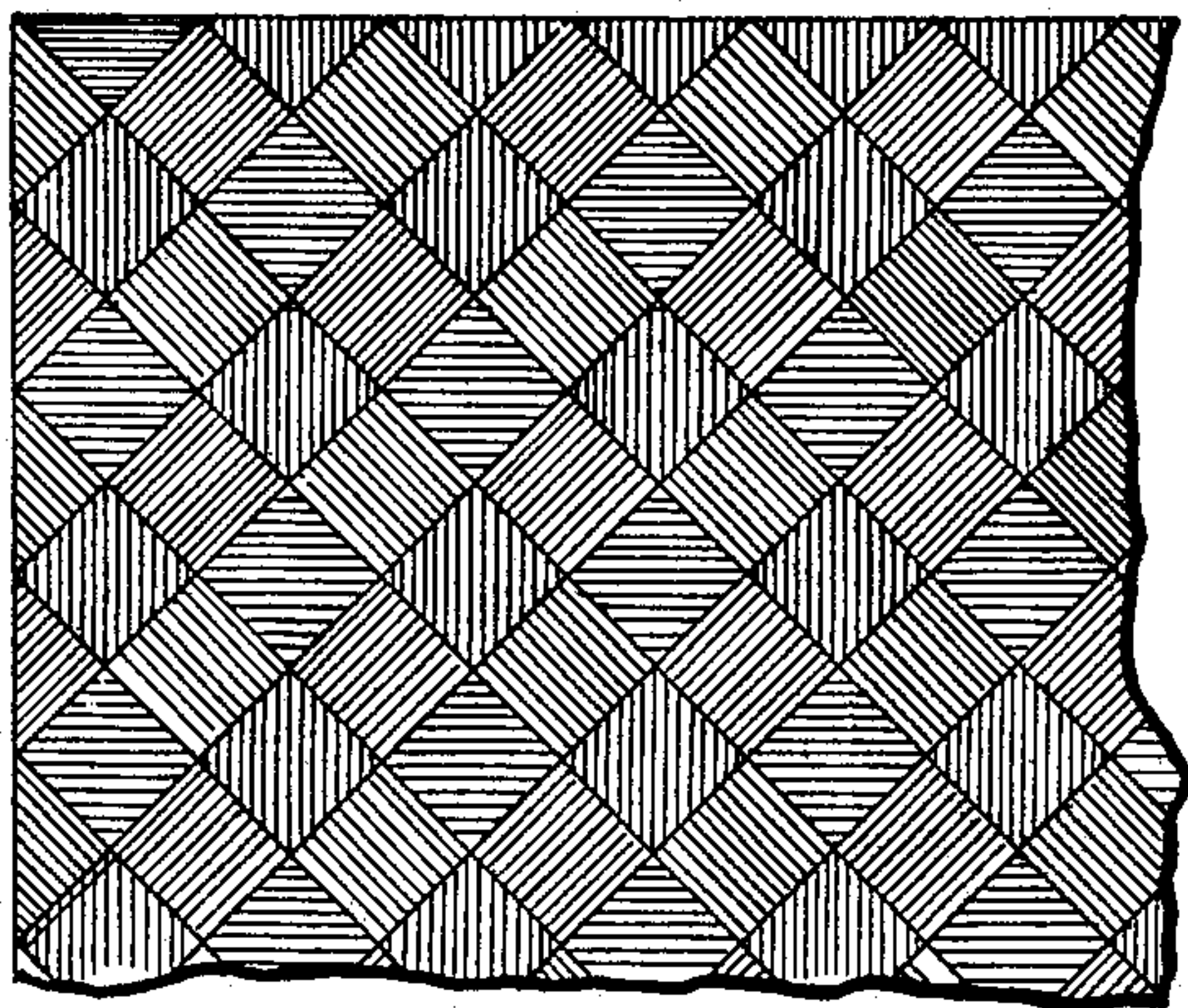
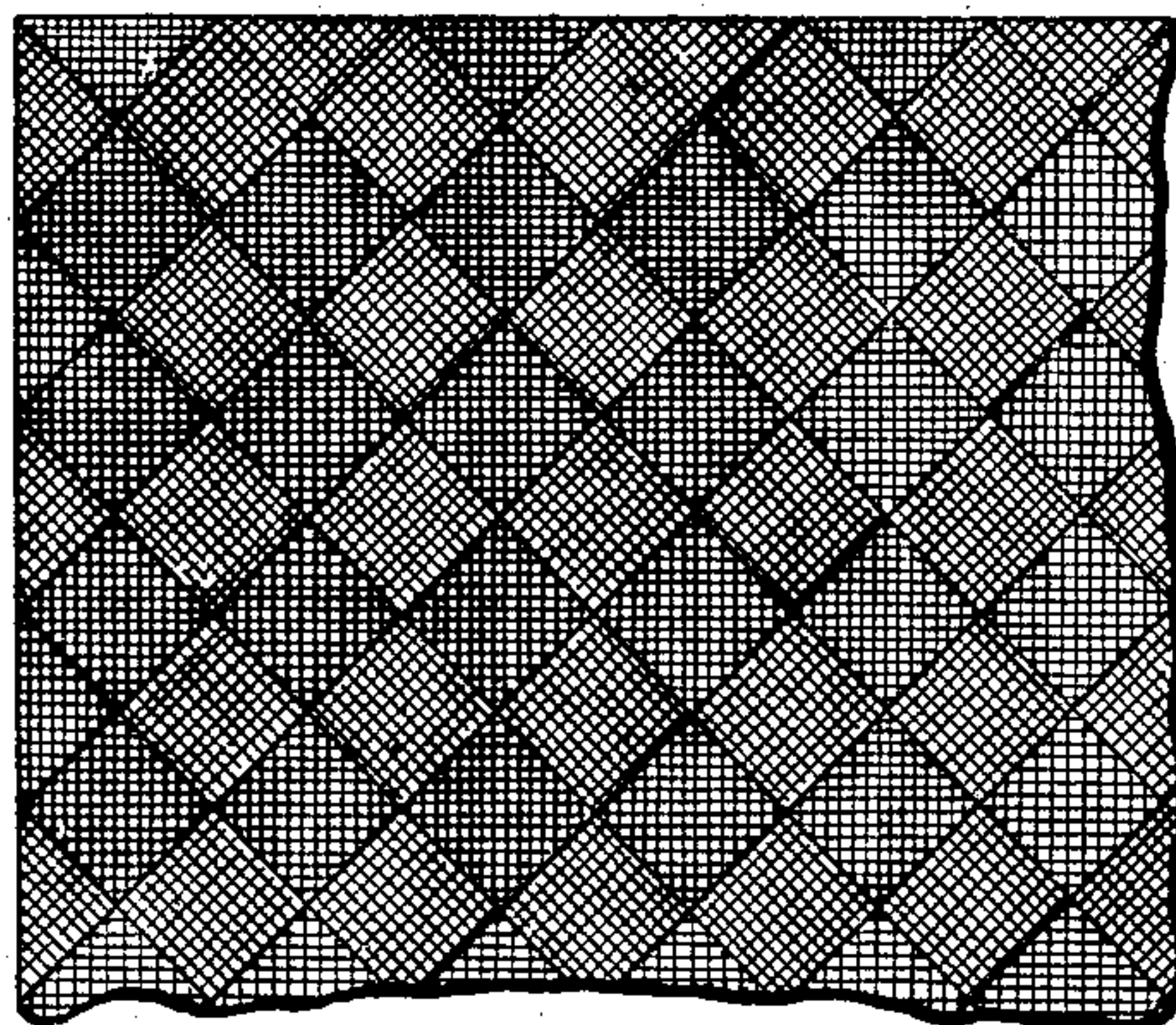


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALBERT B. PORTER, OF EVANSTON, ILLINOIS.

DECORATED SURFACE.

SPECIFICATION forming part of Letters Patent No. 734,135, dated July 21, 1903.

Application filed May 22, 1903. Serial No. 158,339. (No model.)

To all whom it may concern:

Be it known that I, ALBERT B. PORTER, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Decorated Surfaces, of which the following is a specification.

This invention relates more particularly to the decorating of glass, metal, and other ware with diffraction grating-surfaces for the purpose of producing colored-light effects. It is already well understood that a surface provided with a single grating or one consisting of a single set of parallel lines will produce a brilliant display of spectrum colors, and in my companion application, Serial No. 112,780, filed June 23, 1902, I have pointed out that if the grating consists of a plurality of sets of parallel lines crossing each other angularly, so as to diffract the light-rays in different directions, it will produce a highly-colored rainbow appearance, no matter from what direction the surface is viewed. I have also discovered that a somewhat-different but still highly-decorative effect may be produced by providing the surface with rulings which differ in direction in adjacent portions, so that the light is diffracted differently to the eye from these different portions of the decorated surface. In the simplest application of my improvement in this respect single parallel rulings differing in direction will be placed in spots over the surface to be decorated.

More highly developed, the invention contemplates rulings differing in direction in adjacent portions of the decorated surface according to a predetermined arrangement by which the light diffracted by the rulings will produce on the eye the effect of a distinct pattern or figure, and in this case the rulings may consist of either single or crossed sets of lines.

The object of the invention is to provide improved decorative effects for glass, metal, and other ware along the lines above indicated; and it consists in the matters hereinafter set forth, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 shows how the surface may be decorated by single parallel rulings arranged at different angles in different portions of the decorated

surface. Fig. 2 shows a pattern effect produced in a similar manner by varying the directions of the rulings according to some predetermined design. Fig. 3 shows a pattern decoration produced by crossed sets of lines.

As shown in Fig. 1, single diffraction-rulings *a*, consisting of closely-adjacent parallel lines, usually several thousand to the inch, are applied in spots all over the decorated surface *A*, which may be that of glass, metal, pottery, or other material and may be either a flat or curved surface. The rulings of the several spots differ from each other in direction, and as a consequence the light from each source will be differently diffracted from the different portions of the surface and each portion will appear differently to the eye. Thus some of the spots will show a more brilliant display of spectrum colors than others, and some of the spots are liable not to show any color at all, for the reason that the single diffraction-rulings will only diffract the light from each source in a single direction, which may not be in a direction to meet the eye. As a whole, however, the surface will appear brilliantly decorated in colors which will vary in appearance and effect with every movement either of the light, the surface, or the point of view.

In Fig. 2 a distinct pattern effect is shown as produced by applying the different rulings after a predetermined arrangement, which in this instance consists of arranging the rulings in rows and making the directions of the rulings the same in every other spot of each row.

In Fig. 3 an effect similar to that of Fig. 2 is produced by crossed instead of single parallel diffraction-rulings. Where crossed rulings are provided, the number of different directions of ruling employed in the several spots of the surface need not be so great to produce an equally varied effect as where single rulings alone are employed.

It will be understood that the term "rulings" as used herein is intended to be generic to diffraction grating-surfaces consisting of closely adjacent parallel lines, straight or curved, without regard to the manner in which said lines may be applied to the surface, whether mechanically, photographically, or otherwise. Most conveniently such rulings will be applied photographically, and in case a pattern effect such as that shown in

Figs. 2 and 3 is desired it may be produced by using a previously-ruled printing-plate and rotating the same through the requisite angle between the printings of the adjacent spots, which printing will be done or the light for it admitted through an opaque screen having an opening of the form of the desired spots. As shown in Figs. 2 and 3, this opening is assumed to have been a square; but it will be obvious that other shapes of opening may be employed and that the pattern effect given the decorated surface may be varied indefinitely by changes in the screen-opening or differing manipulations of the printing-plate.

I claim as my invention—

1. As a new article of manufacture, glass, pottery, and metal ware, having its surface decorated in separate portions with sets of closely-adjacent parallel lines forming dif-

fraction-gratings, the several sets varying in the directions of their lines, substantially as described.

2. As a new article of manufacture, glass, pottery, and metal ware, having its surface decorated in separate portions with sets of closely-adjacent parallel lines forming dif- fraction-gratings, the several sets of lines varying in direction according to a predetermined arrangement to produce a pattern effect, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 14th day of May, A. D. 1903.

ALBERT B. PORTER.

Witnesses:

HENRY W. CARTER,
K. A. COSTELLO.