No. 734,361. PATENTED JULY 21, 1903.

A. B. PORTER.

ANGULAR DECORATED SURFACE.

APPLICATION FILED MAY 22, 1903.

NO MODEL.

Fig. 1.

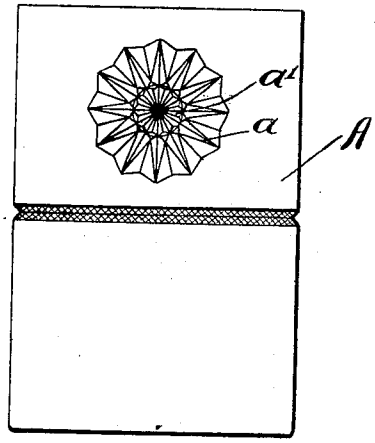


Fig. 2.

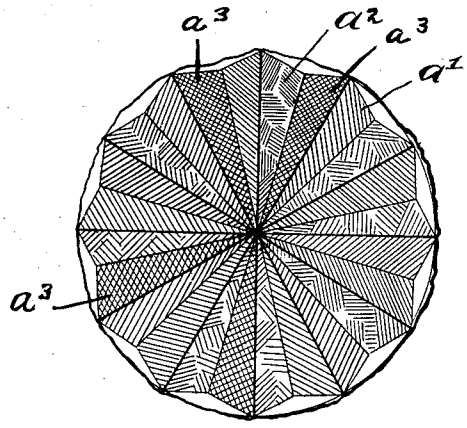
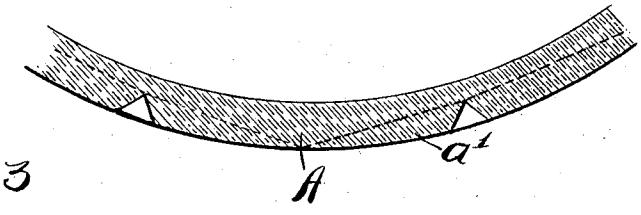


Fig 3



Witnesses:
J B Weir
Robert J. Weir

Inventor
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by Henry M Porter Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 734,361. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

ALBERT B. PORTER, OF EVANSTON, ILLINOIS.

ANGULAR DECORATED SURFACE.

SPECIFICATION forming part of Letters Patent No. 734,361, dated July 21, 1903.

Application filed May 22, 1903. Serial No. 158,340. (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 Angular 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 pointed out in my concurrent application, Serial No. 158,339, 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.

The present invention involves a further carrying out of the same general idea of producing decorative effects by the use of diffraction-gratings and contemplates the application of such diffraction-gratings to roughened and angular surfaces, such as the ornamental surfaces of cut-glass ware, in which case the varying angularities of the adjacent portions of the diffraction-surfaces will cause the light to be diffracted in different directions, so as to produce on the eye different effects of variegated colors.

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 is a side elevation of a cut-glass tumbler ornamented in accordance with the present improvement. Fig. 2 is an enlarged detail of the principal cut figure on said tumbler. Fig. 3 is an enlarged sectional detail assumed to have been taken on a plane extending transversely across the tumbler.

The nature of the figure cut upon the glass which is to be decorated in accordance with the present improvements is quite immaterial, so long as it presents adjacent surfaces arranged at varying angles with each other, as is almost universally the case with cut work in glassware. As herein shown, a star-pattern a is cut in the tumbler A, this star being provided with a central rose a'. The facets a^2 of this ornamentation, whatever its nature, are provided with diffraction-rulings consisting of closely-adjacent parallel lines, usually several thousand to the inch. These may be applied in spots over the facet-surfaces, or the different facet-surfaces may be provided with uniform rulings, either single or crossed. The rulings of the several spots or of the facet-surfaces will preferably differ from each other; but in any case the light will be differently diffracted from the rulings on the different facets owing to their different angular positions relative to the source of light and to the eye. Thus some of the facets will show a more brilliant display of spectrum colors than others, and some of them are liable not to show any color at all, for the reason that the directions of the rulings, together with the angularity of the facet, may cause the light to be diffracted away from the eye. This failure to show color is, however, less liable to occur with crossed rulings, such as are shown at a^3, Fig. 2. As a whole, however, the cut-glass ornamentation will appear brilliantly tinged with spectrum colors, which will vary in appearance and effect in the different parts of the ornamentation and with every movement of the light, the utensil, or the point of view.

It will be understood that the term "rulings" as used herein is intended to be generic to diffraction-gratings consisting of closely-adjacent parallel lines, straight or curved, without regard to the manner in which said

lines may be applied to the decorated surface, whether mechanically, photographically, or otherwise.

I claim as my invention—

1. As a new article of manufacture, glass, pottery, and metal ware, having facets whose adjacent faces are angularly disposed with reference to each other in cross-section and are decorated with closely-adjacent parallel lines forming diffraction-rulings, substantially as described.

2. As a new article of manufacture, glass, pottery, and metal ware, having facets whose adjacent faces are angularly disposed with reference to each other in cross-section and are decorated with crossed sets of closely-adjacent parallel lines forming diffraction-rulings, 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.