

C. C. HARTUNG.  
CURVILINEAR PRISMATIC GLASS.

APPLICATION FILED OCT. 18, 1900.

NO MODEL.

FIG. 1.

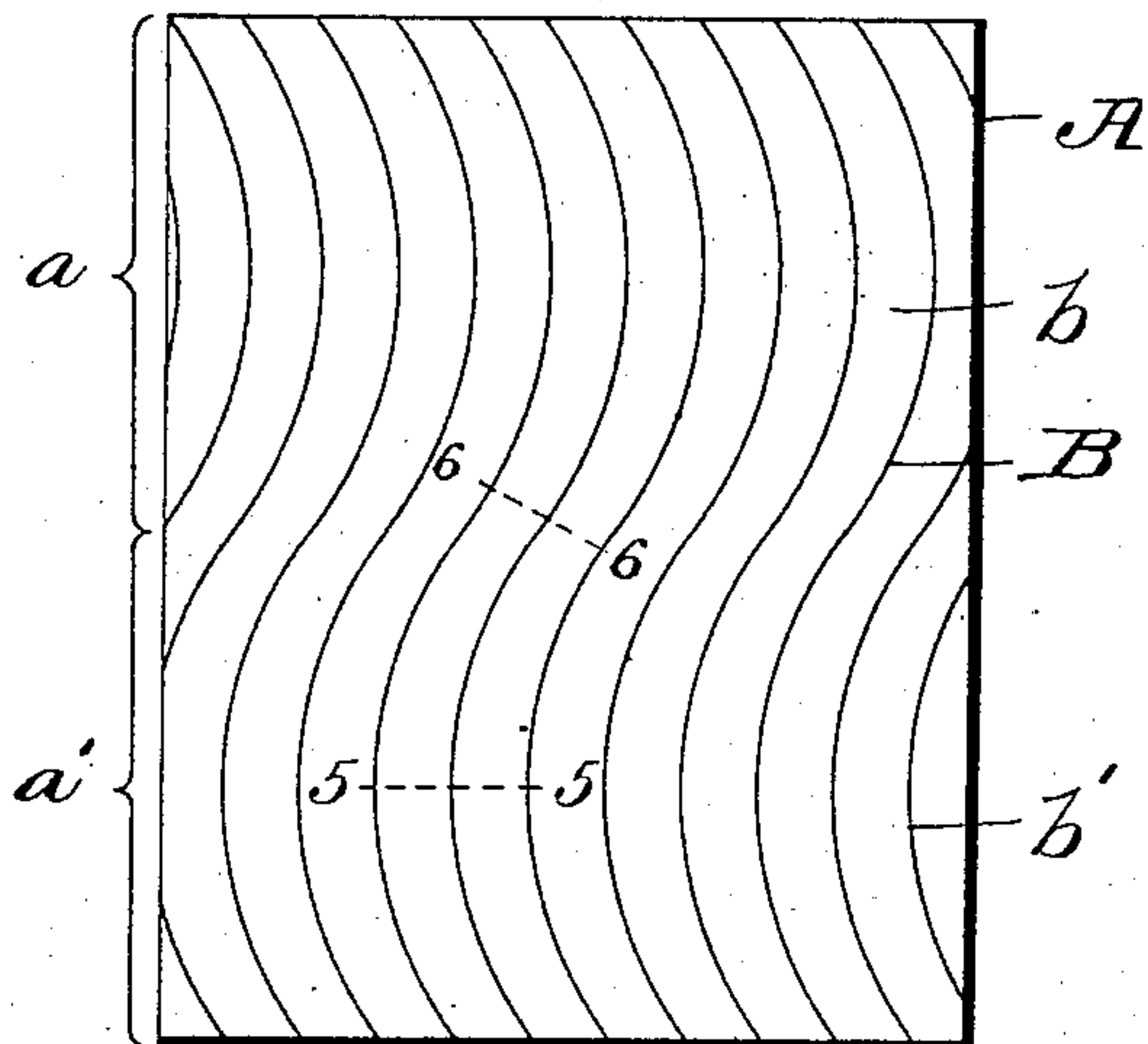


FIG. 2.

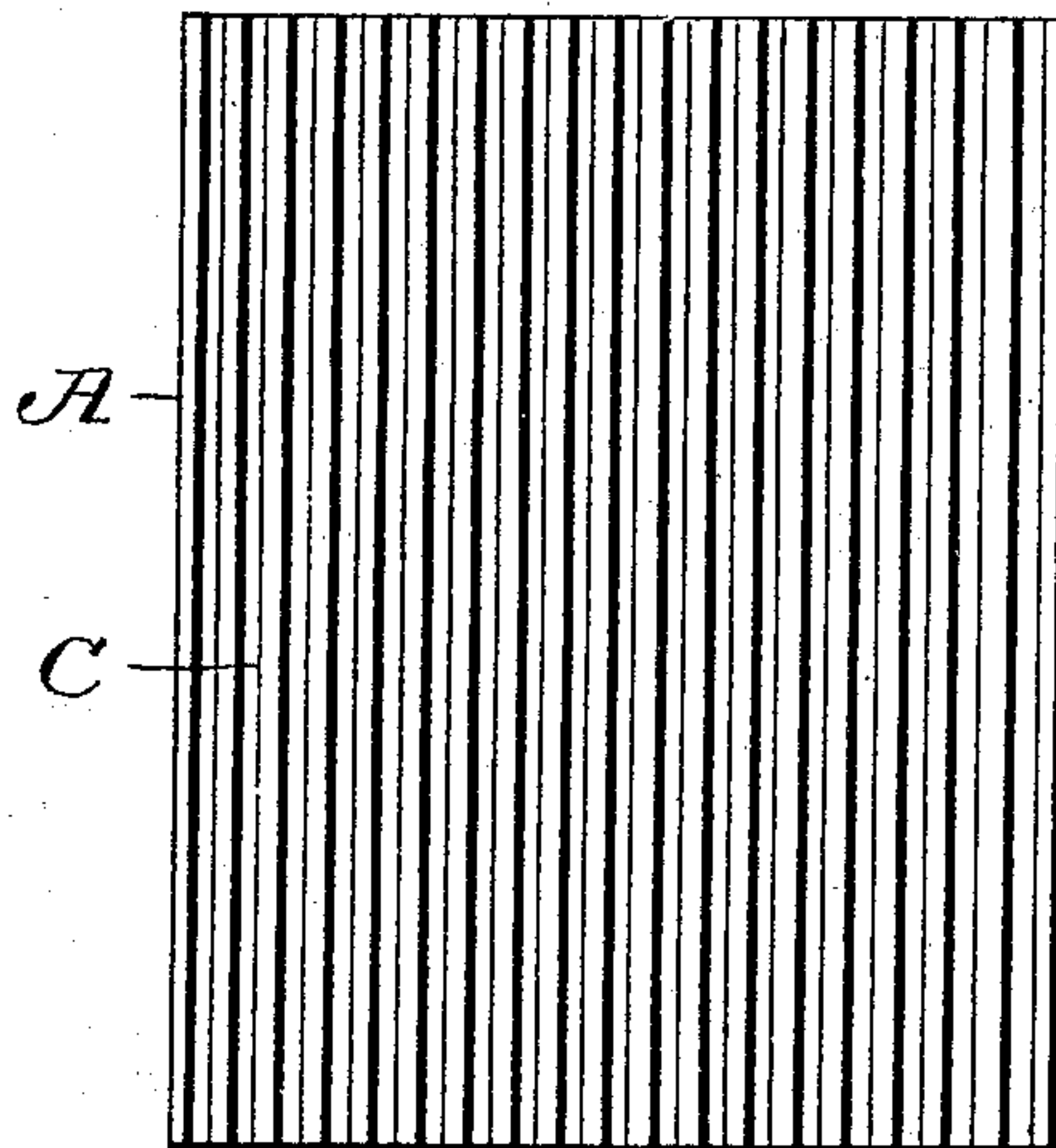


FIG. 3.

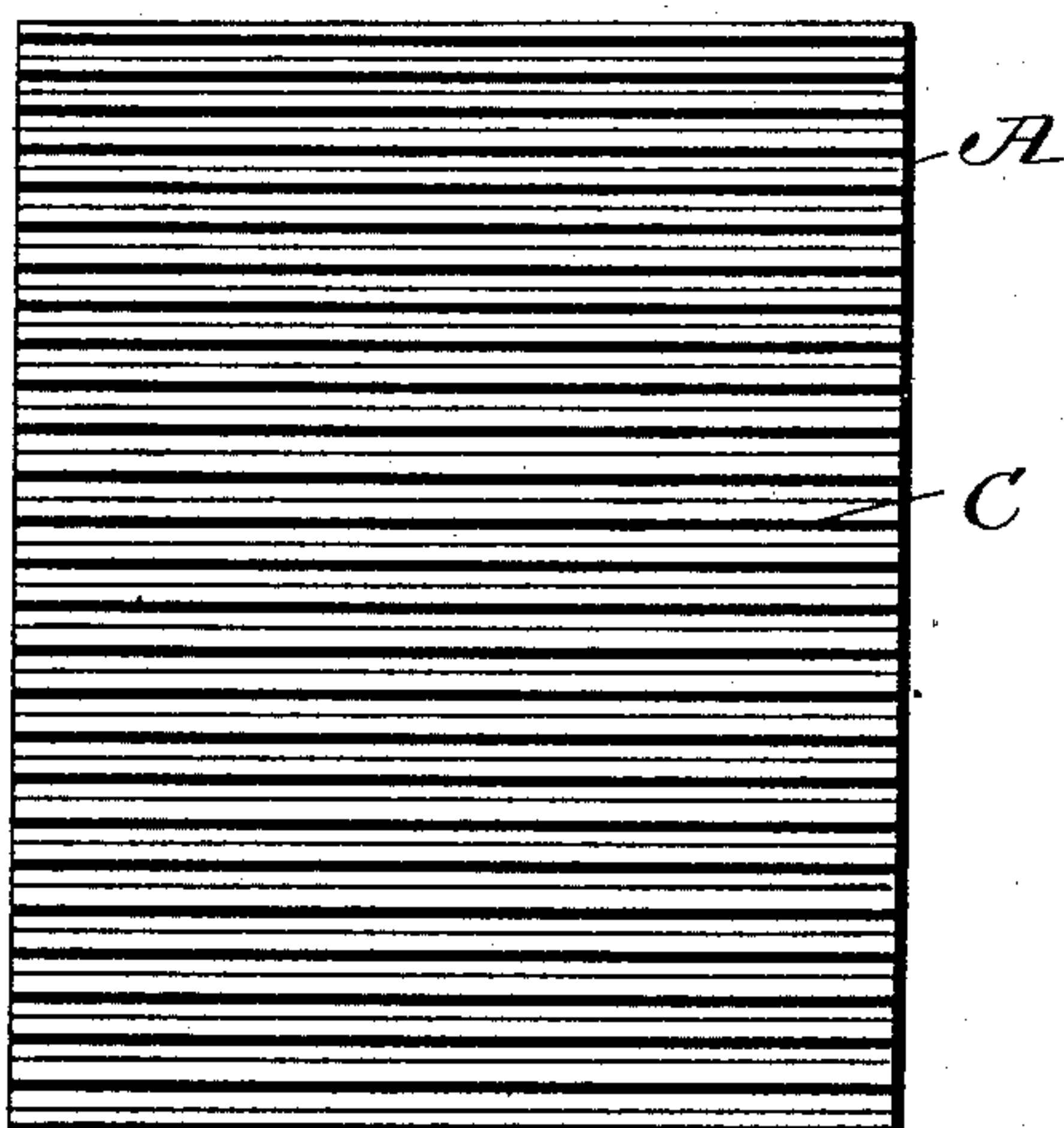


FIG. 4.

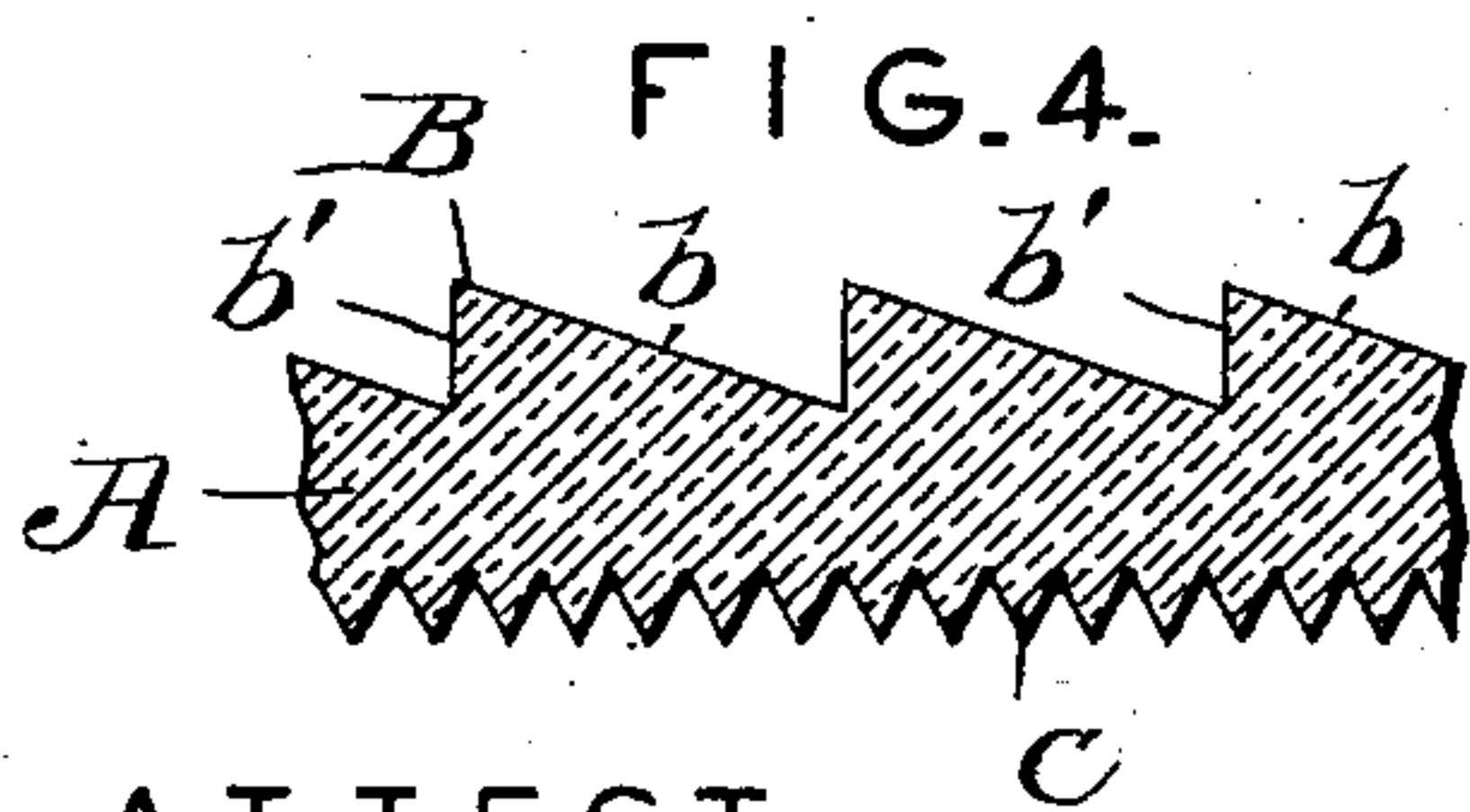


FIG. 5.

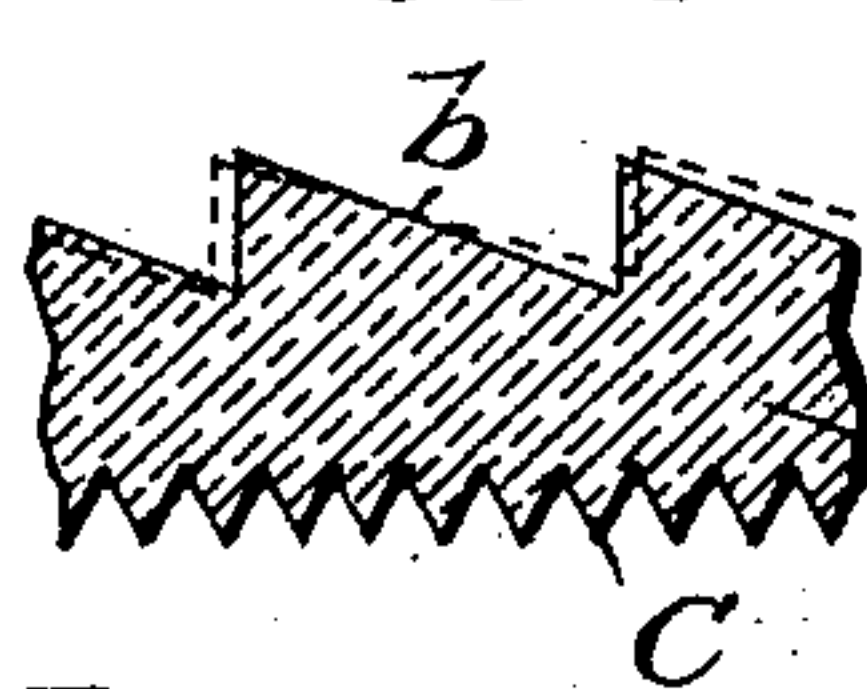
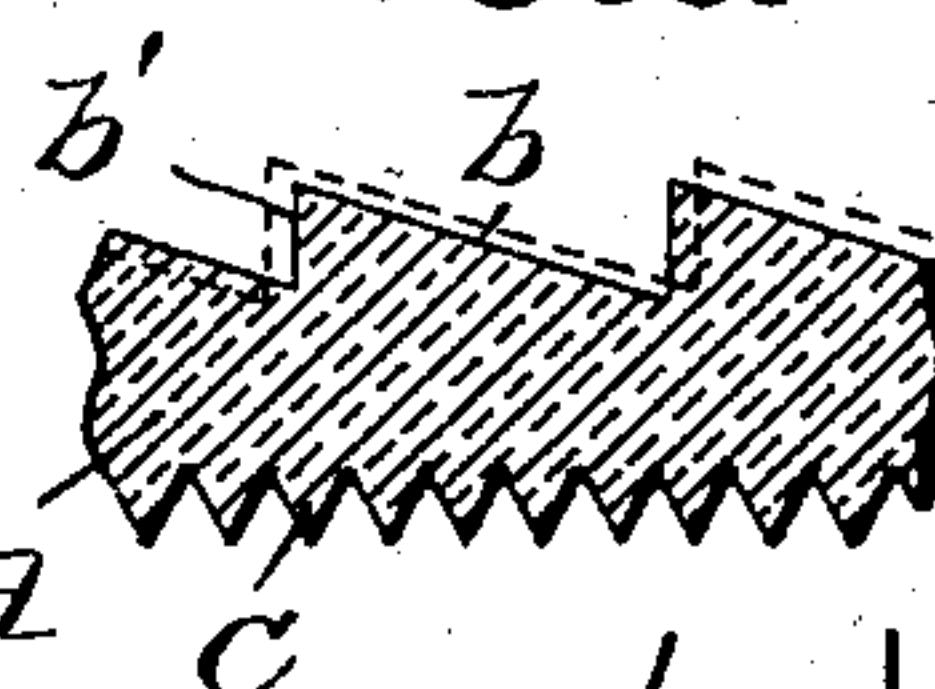


FIG. 6.



ATTEST.

FIG. 7.



INVENTOR.

Harry L. Amer. *[Signature]*

Charles C. Hartung.

By *[Signature]* Attys.



# UNITED STATES PATENT OFFICE.

CHARLES C. HARTUNG, OF ST. LOUIS, MISSOURI, ASSIGNOR TO EDWARD WALSH, JR., OF ST. LOUIS, MISSOURI.

## CURVILINEAR PRISMATIC GLASS.

SPECIFICATION forming part of Letters Patent No. 720,138, dated February 10, 1903.

Application filed October 18, 1900. Serial No. 33,461. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES C. HARTUNG, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Curvilinear Prismatic Glass, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and useful improvement in curvilinear prismatic glass of that type wherein one surface is configured with curvilinear prisms—such, for instance, as illustrated in United States Patent No. 655,401, granted August 7, 1900, to Edward Walsh, Jr., my assignee, while the other surface is provided with straight-faced prisms relatively smaller and of greater number than the curvilinear prisms. These relatively small prisms may be arranged parallel to each other and extend in the general direction of the curvilinear prisms, or they may extend at an angle thereto, or said smaller prisms may extend in diverse directions and grouped to form some design.

The object of my present invention is to roll the curvilinear prismatic glass into large sheets, which may be cut into the size required, the receiving-face thereof being provided with relatively small and numerous prismatic faces, while the transmitting or deflecting face is provided with curvilinear prisms eccentrically arranged with relation to each other, so that the inclined faces of said curvilinear prisms are arranged at various angles of inclination, so as to more generally diffuse the light.

With these objects in view the invention consists in providing a sheet of glass with curvilinear prismatic faces on one side and relatively smaller and more numerous prismatic faces on its opposite side, all as will hereinafter be described, and afterward pointed out in the claim.

In the drawings, Figure 1 is a face view of a portion of a sheet of glass illustrating the curvilinear prismatic surface thereof. Fig. 2 is a similar view of the opposite side of the

sheet of glass formed with relatively small and numerous rectilinear prisms arranged parallel to each other and extending in the general direction of the curvilinear prisms. Fig. 3 is a similar view showing the rectilinear prisms extending approximately at right angles to the curvilinear prisms. Fig. 4 is an enlarged sectional view on line 5 5, Fig. 1. Fig. 5 is an enlarged sectional view on line 6 6, Fig. 1, showing the shoulders of the same height and the change in the angle of the inclined faces. Fig. 6 is a similar view showing the shoulders of different heights resulting from maintaining a given angle throughout the inclined faces, and Fig. 7 is a sectional view illustrating a slightly-modified form.

In the drawings, A indicates the body portion of a sheet of glass, on one face of which is arranged a series of ratchet-like ribs or projections B, said ribs being shown as having inclined faces *b* and perpendicular shoulders *b'*. It will be understood, however, that this special form of rib may be changed—that is, the perpendicular shoulder may be dispensed with and made inclined instead—and, further, that instead of the rib terminating in an apex a flat portion may be left at the surface, when the structure might then be more properly described as having grooves instead of projections. Ribs B, as shown in Fig. 1, are arranged in curvilinear form, the curved lines thereof being eccentric to each other. The curved lines embraced within the bracket *a* are all described from different centers with the same radii, so that each line, as the top and base lines of each rib, is eccentric to the other line or lines of the same rib and also to the corresponding lines of the other ribs, while those comprehended within the bracket *a'* are likewise described from centers and preferably with the same radii, which, however, may be greater or less than that employed with relation to the curves embraced by the bracket *a*. Two curved lines having the same radii, but described from different centers, will form a crescent if continued a sufficient distance. I make this statement merely to illustrate the fact that curved lines having the same radii and sometimes with different radii if struck from dif-



ferent centers will not at any point be parallel to each other, and I take advantage of this in the formation of my curvilinear prismatic glass to accomplish a diffusion in the transmitted rays of light.

In Fig. 4 I have shown an enlarged sectional view through a point in a sheet of glass where the apices of two ribs are most widely separated from each other, while in Fig. 5 I have shown an enlarged sectional view through a point on the sheet of glass marked line 6 6, Fig. 1, where the apices of two ribs most nearly approach each other. Assuming that the perpendicular faces  $b'$  are of the same height throughout, it follows that if the angle of the inclined face on the line 5 5 is any given degree—say fifteen degrees—when said vertical faces are placed at the same height nearer together a line drawn from the top of one to the bottom of the other will exhibit a greater inclination or an increased angularity, depending upon the amount of such approach. A sheet of glass made with its perpendicular faces  $b'$  in curved lines, substantially as shown in Fig. 1, will if said shoulders are the same height throughout exhibit a difference in the inclination of the faces between said shoulders proportional to the distance between the perpendicular faces, the angle of such inclination gradually increasing from the point where two shoulders are most widely separated to a point where said two shoulders most nearly approach, resulting by such change of inclination in the production of wavy lines in the inclined faces, the crowns of which are approximately at points between the nearest approach of any two perpendicular faces or shoulders to each other. On the other hand, assuming that the degree of inclination of all the faces  $b$  is maintained throughout, a wavy line will be produced along the apex of each rib—that is, the perpendicular face  $b'$  will be highest where the distance is greatest between any two shoulders and the height of said vertical face will be least at the point where said two shoulders most nearly approach each other. This being true it follows that any rays of light trans-

mitted to said inclined faces will be deflected in different directions, or, in other words, diffused to a greater extent than if said inclined faces were parallel to each other. On the opposite face of the sheet of glass I arrange a system of parallel prisms of relatively smaller size and greater number than the curvilinear prisms on face  $b$ , before described. The prisms on face C may, as shown in Fig. 2, be parallel to each other and extend in the general direction of the curvilinear prisms B, or, as shown in Fig. 3, the parallel prisms may extend approximately at right angles to the curvilinear prisms. In any event the face opposite the curvilinear prisms is composed of closely-arranged prisms of relatively small size and numerically greater than the curvilinear prisms B in a given area.

It is obvious that various degrees of inclination may be employed in the prismatic faces herein shown and described, and said prisms may be arranged relatively different without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The herein-described sheet of glass, the same having serpentine ribs extending entirely across its face, angular in cross-section, which ribs are eccentric with each other and have apices projecting to substantially the same plane away from the body of said sheet of glass, the degree of inclination of said angular faces varying from a point where said shoulders are most widely separated to a point where said shoulders most nearly approach each other, and the opposite side of said sheet of glass being provided with parallel straight-faced prisms extending entirely across the sheet of glass; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 5th day of October, 1900.

CHARLES C. HARTUNG.

Witnesses:

F. R. CORNWALL,  
WM. H. SCOTT.