(No Model.) 2 Sheets—Sheet 1.

F. C. SOPER.

LENTICULAR WINDOW LIGHT.

No. 595,273. Patented Dec. 7, 1897.

FIG. 1.

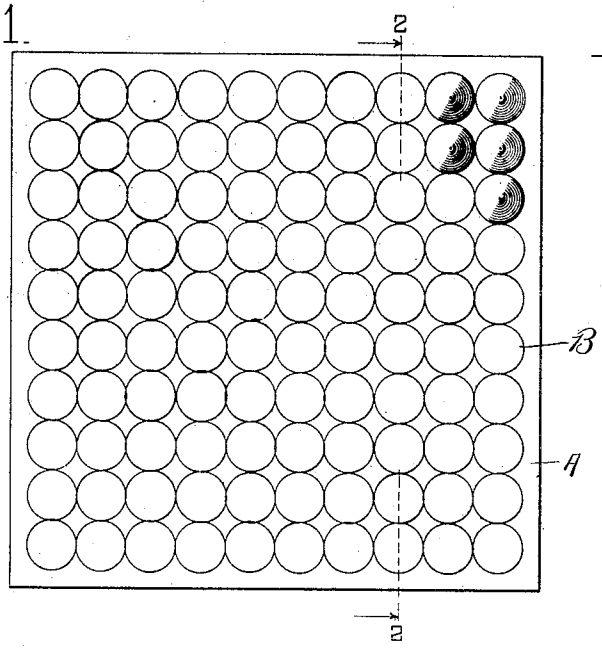


FIG. 2.

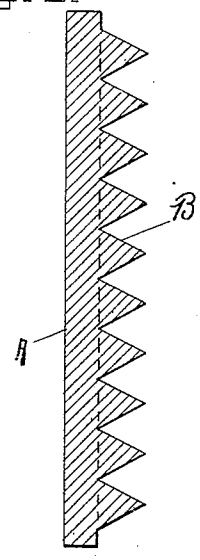


FIG. 3.

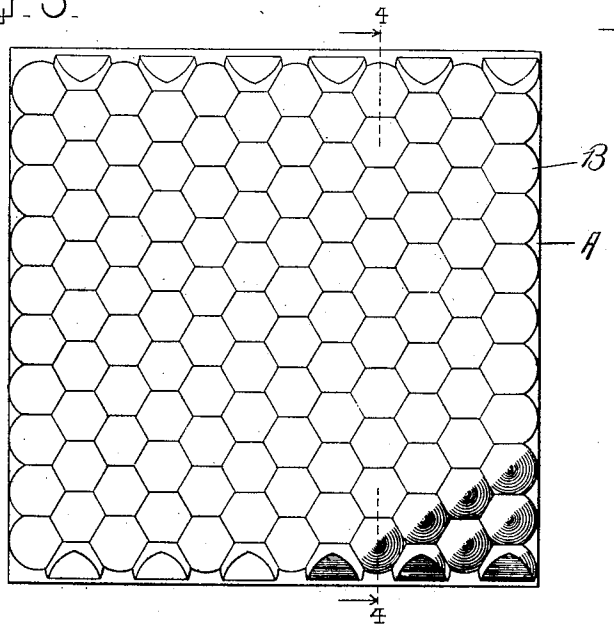
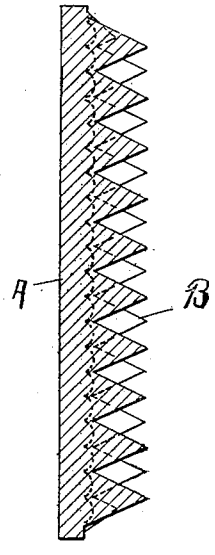


FIG. 4.



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

(No Model.) 2 Sheets—Sheet 2.

F. C. SOPER.

LENTICULAR WINDOW LIGHT.

No. 595,273. Patented Dec. 7, 1897.

FIG. 5

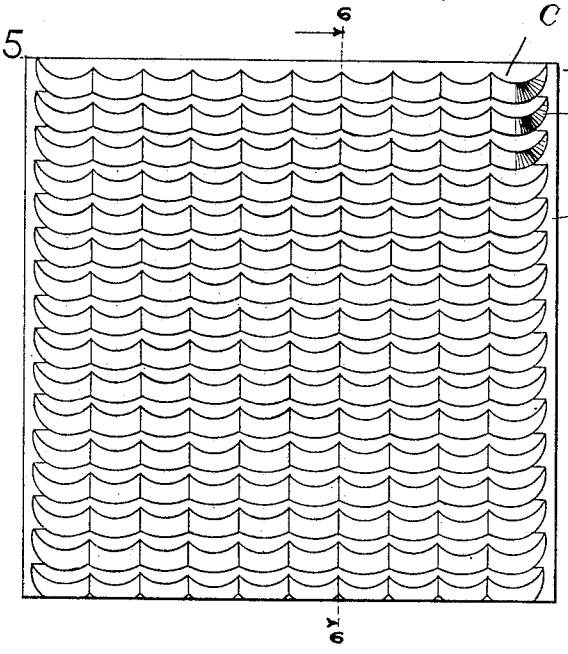


FIG. 6

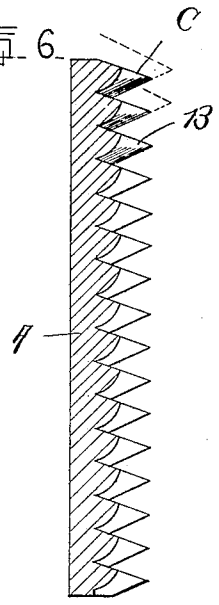


FIG. 7

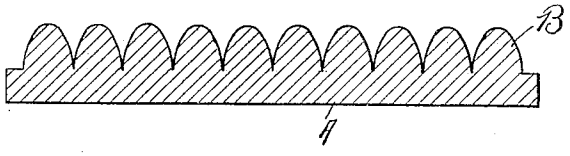


FIG. 9

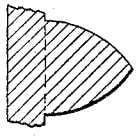
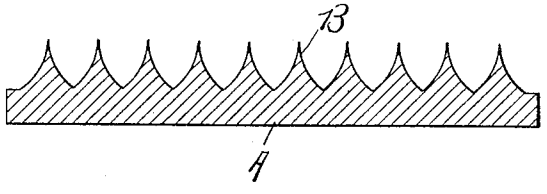


FIG. 8



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UNITED STATES PATENT OFFICE.

FRANK C. SOPER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE LUXFER PRISM PATENTS COMPANY, OF SAME PLACE.

LENTICULAR WINDOW-LIGHT.

SPECIFICATION forming part of Letters Patent No. 595,273, dated December 7, 1897.

Application filed October 4, 1897. Serial No. 653,940. (No model.)

To all whom it may concern.

Be it known that I, FRANK C. SOPER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lenticular Window-Lights, of which the following is a specification.

My invention relates to lenticular window-lights and the like, and has for its object to provide a new and improved window-light of this description.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan or face view of a window-light embodying my invention. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a view similar to Fig. 1, with the projecting lens-like parts placed more closely together. Fig. 4 is a section on line 4 4, Fig. 3. Fig. 5 is a view showing a modified construction. Fig. 6 is a section on line 6 6, Fig. 5. Figs. 7, 8, and 9 are sections through modified constructions.

Like letters refer to like parts throughout the several figures.

The ordinary prism-light, having prisms extending across one face thereof, is commonly designed to receive the light from a constant or unvarying source and direct it into a given apartment.

One of the objects of my present invention is to provide a device to receive the light and direct it into an apartment, said device so constructed that the source of light may vary in position and most of the rays of light still be successfully utilized in lighting the apartment.

Referring now to the drawings, Fig. 1 shows a section or plate A, of glass or other transparent material, provided with a series of projecting lenses B. These lenses may be of any suitable construction and are preferably, at least in part, surfaces of revolution. As shown in Figs. 1 and 2, these lenses consist of simple cones.

In Figs. 3 and 4 I have shown the lenses B placed closer together, so as to intersect each other at the base, thereby enabling me to use more lenses in a given area than if they were positioned as shown in Fig. 1. When the lenses are made in the shape of cones, they may be cones having straight-line elements, as shown in Figs. 1 and 2, or they may be surfaces of double curvature having curved-line elements, as shown in Fig. 9.

In Figs. 5 and 6 I have shown a series of what may be called "mutilated" lenses, the upper part of the lenses being removed, so as to form the inclined planes C. The lower surfaces of these mutilated lenses are preferably surfaces of revolution.

In Figs. 7 and 8 I have shown modified constructions embodying my invention.

It is of course evident that other constructions than those herein shown may be used, and I have not attempted to show all the forms of my device, but have confined myself to a few constructions, which I consider sufficient to make my invention clear.

When my invention is used in connection with a moving source of light—as, for example, when it is placed in a window exposed to the sun—the rays of light from the sun are acted upon by the lenses in all the various positions of the sun, where such rays fall upon the window, and are directed into the apartment, so as to produce an increased illuminating effect. This same result is produced even when the sky is clouded, for the reason that the part of the sky in which the sun is located is lighter than the other parts and acts in the same manner as the sun. By means of my construction the dazzling effect produced by the ordinary prism-light when the sunlight falls upon it is also obviated.

In prism-lights which are provided with prisms as distinguished from the projections, which I have here called "lenses," it is found that the rays from the bright or principal source of light, to give effective service, must be within a certain angle of the principal plane of the prism, and by the "principal plane of the prism" I mean the plane perpendicular to the axis of the prisms. When prisms having the average refracting-angles are used, the rays of light which make an angle with this principal plane greater than forty-five degrees, instead of passing through the prism-plate into the apartment, are reflected externally, and hence are wholly lost. It will thus be seen that when the sun, for example, is acting upon the ordinary prism-plate the prisms cease to give any very valuable result

from the direct rays when the sun has descended so that these rays make an angle with the principal plane of the prism-light greater than forty-five degrees. With the lenses as herein shown the rays from the sun or bright source of light will pass through the plate and be directed into the apartment throughout the entire range of the sun or bright source of light, and hence these rays may be successfully utilized during all the various positions of the bright source of light, provided, of course, the rays strike the window containing the lenses.

I claim—

1. As a new article of manufacture, a window-light or the like, comprising a substantially flat relatively thin body portion of transparent homogeneous material provided on one side with a substantially flat surface and on the other with a series of cone-like projecting lenses systematically arranged so as to produce an increased illuminating effect and placed so that the lines of their bases intersect each other, thus to cover substantially all of such surface with such cone-like projections.

2. As a new article of manufacture, a window-light or the like, comprising a substantially flat relatively thin body portion of transparent homogeneous material provided on one side with a substantially flat surface and on the other with a series of cone-like projecting lenses systematically arranged so as to produce an increased illuminating effect and placed so that the lines of their bases intersect each other, thus to cover substantially all of such surface with such cone-like projections, the upper side of each of said cones cut away, substantially as shown and described.

FRANK C. SOPER.

Witnesses:
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HOMER L. KRAFT.