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PATENTED JAN. 6, 1903.

F. L. O. WADSWORTH.
ILLUMINATING STRUCTURE.

APPLICATION FILED APR. 9, 1898.

NO MODEL.

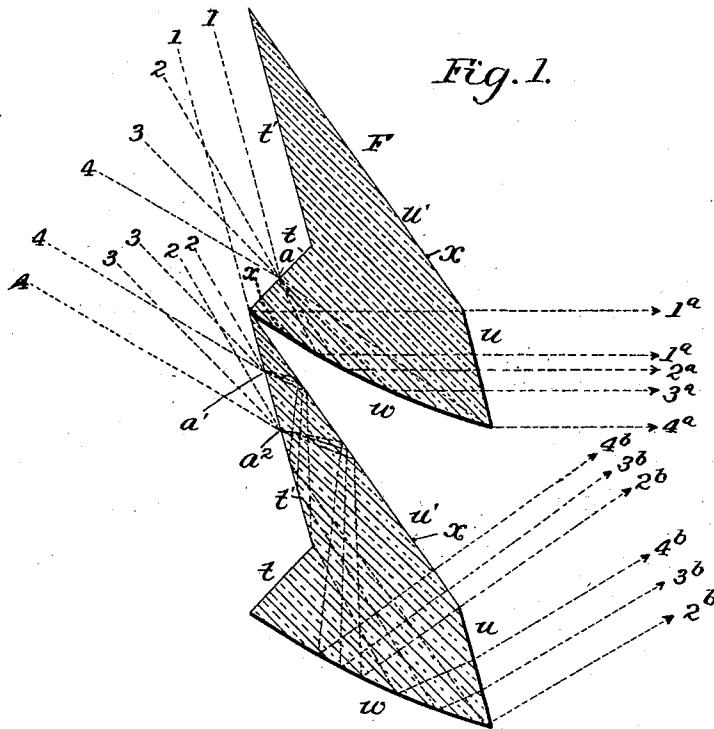
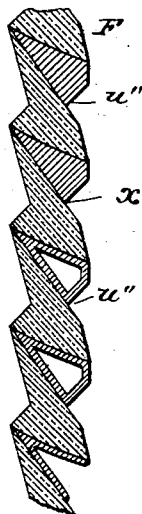


Fig. 2.



Witnesses

J. Hinkel
Lawrence Shaw

Inventor
F. L. O. Wadsworth

by

Lucas Freeman
Attorneys

UNITED STATES PATENT OFFICE.

FRANK L. O. WADSWORTH, OF WILLIAMS BAY, WISCONSIN, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO PRESSED PRISM PLATE GLASS COMPANY, A
CORPORATION OF WEST VIRGINIA.

ILLUMINATING STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 717,782, dated January 6, 1903.

Application filed April 9, 1898. Serial No. 677,073. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. O. WADSWORTH, a citizen of the United States, residing at Williams Bay, in the county of Walworth and State of Wisconsin, have invented certain new and useful Improvements in Illuminating Structures, of which the following is a specification.

My invention relates to illuminating structures; and it consists in constructing the illuminator-bars and in arranging the same to form a panel, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a cross-sectional view illustrating the arrangement of two illuminator-bars embodying my improvement. Fig. 2 illustrates in section a series of bars with intervening filling material.

Each reflector-bar *F* has an outer or light-receiving surface composed of two faces *t t'*, a lower deflecting-face *w*, and a rear surface composed of two faces *u u'*. The faces *u u'* meet at an obtuse angle. The two faces *t t'* meet at a reëntrant angle, the lower face *t* being shorter and being inclined at such an angle with respect to the deflecting-face *w* as to receive the light from the principal direction 1 very nearly perpendicular, under which circumstances very little of the entrance light will be lost by external reflection. The deflecting-face *w* is curved to correspond with a portion of a parabolic curve whose vertex is at *x* and has the property, as pointed out in my application Serial No. 675,587, of directing all rays that pass through the middle point *a* of the face *t* into the room in substantially horizontal directions, as at 1^a 2^a 3^a 4^a, &c. The other face *t'* may be arranged at any suitable angle to the face *t*, but is preferably made substantially parallel to the direction of the main incident light 1. Its function is to receive that portion of the light 2 3 4 which comes from a direction lower down than the principal direction 1 and direct it by refraction, as at the points *a' a''*, upon the face *u'*, whence it is reflected downward upon the

face *w* and thence upward again toward the ceiling of the room, as at 2^b 3^b 4^b, &c. As some of these rays meet the face *w* at more than the critical angle of internal reflection and would therefore pass out of this surface, (if the same were a plain glass surface,) I prevent this by silvering or coating the said face *w* externally, thus forming a total reflecting-surface for rays meeting it at any angle. As the rays are all reflected from the inner face of the coating, any dust or dirt which collects upon the exterior of this silvered surface will be without effect upon its efficiency. It may also be desirable under certain circumstances to prevent any rays from passing out of the upper part of the face *u'* by silvering the same down to about a point *x'*, Figs. 1 and 2. In order to form an illuminating structure, these separate prism-blocks may be placed one above the other and the interstices between them to the points *x'* filled with cement or with metal blocks *u''* cut of the proper shape or in any other suitable manner, as illustrated in Fig. 2, the whole, if desired, forming a panel adapted for use in a window or other opening through which the light is to be admitted. In some cases the filling between the blocks may be omitted and the bars suitably secured in position.

While I have shown a structure having a curved reflecting-face *w* and with faces *u u'* of a certain relative angle and proportions, these features may be altered while preserving the benefits of a reëntrant outer face to the bar.

Without limiting myself to the precise form of bars shown, I claim—

1. An illuminating-bar of transparent material having a reëntrant outer surface, and with faces *w, u, u'*, at angles to each other, the faces *w, u'*, at different angles to the reëntrant surfaces, substantially as described.

2. An illuminating-bar of transparent material having a reëntrant outer surface, and with an inner surface with faces *u, u'*, and a bottom curved face *w*, substantially as described.

3. An illuminating-bar of transparent material having a reëntrant outer surface and with inner faces u , u' , and with a bottom face w corresponding to portion of a parabolic curve, substantially as described.

4. An illuminating-bar of transparent material having a reëntrant outer surface, and with inner faces u , u' , at an obtuse angle to each other, and a lower reflecting-face w , substantially as described.

5. An illuminating-bar of transparent material having a reëntrant outer surface and with inner faces u , u' , and with a bottom face w coated to secure a total reflecting-surface, substantially as described.

6. An illuminating-bar of transparent material having a reëntrant outer surface and with inner faces u , u' , and bottom face w , the latter and the upper portion of the face

u' coated to secure a total reflecting-face, substantially as described.

7. An illuminating-panel consisting of a series of bars each with two reëntrant outer faces and with a lower curved reflecting-face and inner faces u , u' , said bars arranged one above the other, substantially as described.

8. An illuminating-panel consisting of a series of bars each with rear faces u , u' , bottom face w and reëntrant outer face, and with filling material entering between the faces u' , w , substantially as described.

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

FRANK L. O. WADSWORTH.

Witnesses:

HARRY E. HAY,
W. CLARENCE DUVAL.