

G. DALEN & S. A. ESKILSON.
LANTERN.

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1,041,438.

Patented Oct. 15, 1912.

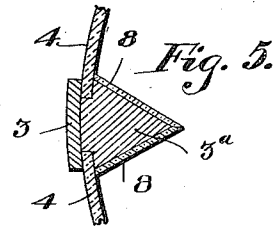
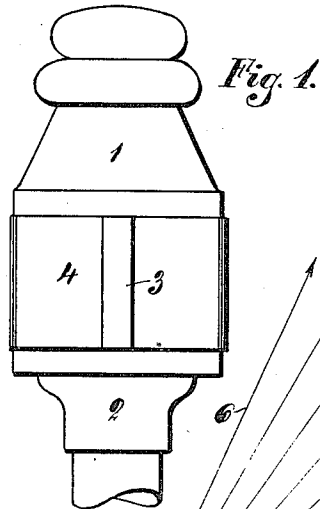


Fig. 2.

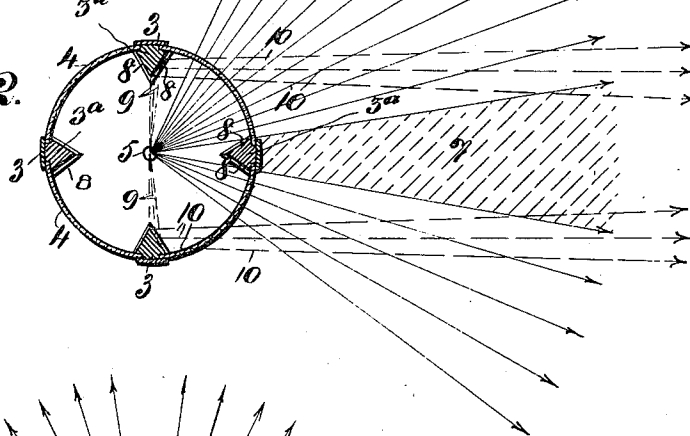


Fig. 3.

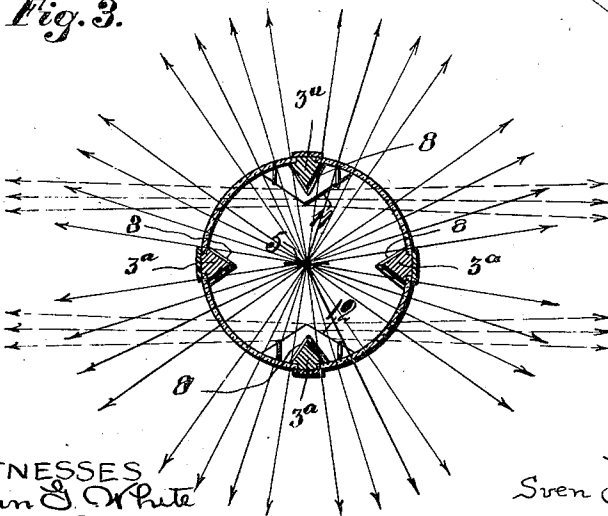
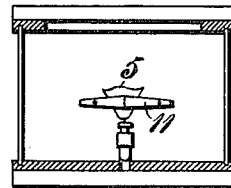


Fig. 4.



WITNESSES
Alvin S. White
W. P. Burke

INVENTORS
Gustaf Dalen
Sven August Eskilson
BY Richard L. ...
ATTYS

UNITED STATES PATENT OFFICE.

GUSTAF DALÉN AND SVEN AUGUST ESKILSON, OF STOCKHOLM, SWEDEN, ASSIGNORS,
BY MESNE ASSIGNMENTS, TO AMERICAN GASACCUMULATOR COMPANY, A COR-
PORATION OF NEW JERSEY.

LANTERN.

1,041,438.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, GUSTAF DALÉN and SVEN AUGUST ESKILSON, both subjects of the King of Sweden, and residing at Stockholm, Sweden, have invented new and useful Improvements in Lanterns, of which the following is a specification.

The present invention relates to improvements in lanterns and has for its object to provide a construction in which the light from the flame will be spread and distributed uniformly in a horizontal direction without hindrance by the bars connecting the upper part of the lantern with the lower part thereof and irrespective of the form of the flame.

The invention is applicable to every kind of lantern although the drawing, for convenience, shows the application of the invention to the lantern of a light buoy only.

Figure 1 of the drawing is a view of the lantern in side elevation; Fig. 2 is a horizontal sectional view of the same; Figs. 3 and 4 are sectional views of a modified construction showing means for compensating the irregular distribution of light caused by a flat flame; and Fig. 5 is a horizontal section of a small portion of the lantern showing more clearly a detail of construction.

In this drawing, 1 indicates the upper part of the lantern, 2 its lower part, 3^a the bars connecting these two parts and 4 the glasses inserted between and held by the bars 3^a and the strips 3, the edges of which overlap the edges of the said glasses 4 to secure them in place against the bars 3^a.

It will be seen that the rays of light from the flame 5 will penetrate the glasses 4 in the direction of the arrows 6, but every bar 3^a will occasion a shadow, as indicated by the dotted lines 7 on the drawing. In addition to the inconvenience of decreasing the light intensity, which, however, is not so material for ordinary lanterns, such shadows occasion very great inconvenience in light buoys; for example, the buoy will not be observed from a ship sailing toward the buoy in such a shadow, and, moreover, the light from the buoy may be taken as a gleaming light if the buoy is swinging when the sea is heavy, the light in this case, being observed only

now and then, viz., when the rays through one of the glasses 4 reach the ship. Now, according to this invention, the said inconveniences are simply obviated by placing mirrors 8 over the cross bars 3^a facing the interior of the lantern and arranging said mirrors at such angles that the rays of light striking said surfaces are thrown out into the shadow of the adjacent cross bar. This shadow is thereby shortened and is limited within an area near the lantern where it does not occasion any inconvenience. The lines 9 and 10 indicate the rays of light from the flame 5 striking the mirrors 8 and reflected by them so as to cut the shadow 7, as shown.

By the employment of the arrangement above described only that light is lost which occurs from incomplete reflection.

In lanterns when the flame 5, as shown in Figs. 3 and 4, has such a shape, for example, when it is a flat flame, that it sends out light with different intensity in different directions, it is possible to adjust for the subsequent irregular distribution of light by means of a suitable arrangement of mirrors. For this purpose additional mirrors 11, 12 may be placed in such a position in relation to the plane surface of the flame 5 that some of the rays from said surface will be reflected in the direction of the plane of the flame so that the light intensity in said direction is increased. The dimension of the mirrors as to height and breadth is determined in such a way that the light intensity, in the direction at right angles to the plane of the flame, is decreased in a required degree and, in the direction of the plane of the flame, is increased in a corresponding degree as indicated by the arrows in Fig. 3.

In all cases where reference has heretofore been made to mirrors and reflecting surfaces, light refractive surfaces such as prisms or lenses may be employed.

Having now particularly described our invention, what we claim is:—

1. In a lantern, the combination of a suitable burner and opaque members supporting the roof or top of the lantern and obstructing the light coming from the flame of the burner with means separate from and overlying the said members for deflecting the

rays of light from the flame of the burner into the planes in which the direct passage of the light is obstructed by such members.

2. In a lantern, the combination of a suitable burner and opaque members supporting the roof or top of the lantern and obstructing the light which radiates from the flame of the burner with light deflecting surfaces formed on members separate from and overlying said opaque members for deflecting the light rays into the planes in which the direct passage of light is obstructed by such members.

3. In a lantern, the combination of a suitable burner and opaque members which support the roof or top of the lantern and which obstruct the light which radiates from the flame of the burner with means interposed between said members and said burner, the said means having light deflecting surfaces for deflecting the light rays from the burner flame to planes in the shadow of the adjacent member.

4. A lantern having a suitable burner and opaque members supporting the roof or top of the lantern and obstructing the light which radiates from the flame of the burner and means separate from and overlying the said opaque members and having deflecting surfaces arranged at angles so as to deflect the light rays which proceed from the flame toward the members into planes into which the direct passage of light is prevented by such members.

5. A lantern having a burner for producing a flat flame and light deflecting members located on the opposite sides of said flat flame, the said members having deflecting surfaces of unequal transverse width whereby the distribution of light resulting therefrom is equalized.

6. In a lantern, the combination with the burner for a flat flame, of deflecting surfaces of unequal transverse width for deflecting part of the light rays from the flame in the direction of the plane of the flame for equalizing the distribution of light.

7. In a lantern, the combination of a suitable burner and opaque members supporting the roof or top of the lantern and obstructing the light which radiates from the flame of the burner with means separate from the said opaque members which means cause the deflecting of the rays of light from the burner flame into the spaces beyond the said opaque members.

8. In a lantern, the combination with a burner for a flat flame and opaque members supporting the roof or top of the lantern and obstructing the light coming from the flame of the burner of means for deflecting the light rays which proceed from the flame to the members into planes into which the

direct passage of light is prevented by the said opaque members and the said means including means for equalizing the irregular distribution of light resulting from the shape of the flame.

9. In a lantern, the combination of a burner adapted to produce a flat flame and means for distributing and equalizing the light emanating from the flame of said burner, the said means comprising groups of deflecting surfaces situated on opposite sides of the plane of said flat flame and the constituent surfaces constituting each group deflecting the light from the flame of said burner along different planes.

10. In a lantern, the combination of a burner and means for distributing and equalizing the light emanating from the flame of said burner, the said means comprising groups of members having light deflecting surfaces, the said deflecting surfaces of the constituent members of a group being of unequal width and height.

11. In a lantern, the combination of a burner and means for distributing and equalizing the light emanating from the flame of said burner, the said means comprising deflecting members having deflecting surfaces and additional deflecting members having deflecting surfaces, the said additional deflecting members being located at points between the first-named deflecting members and the burner.

12. In a lantern, the combination of a burner and means for distributing and equalizing the light emanating from the flame of said burner, the said means comprising deflecting members having deflecting surfaces, and additional deflecting members having deflecting surfaces, the said additional deflecting members being located at points between the first-named deflecting members and the burner and being of less vertical height than the first-named deflecting members.

13. In a lantern, the combination with a burner for a flat flame and opaque members supporting the roof or top of the lantern and obstructing the light coming from the flame of the burner, one or more of the said opaque members being situated in the plane of the said flame and one or more of the said members situated on opposite sides of the said flame, of means for deflecting the light rays proceeding from the flame to the said opposite members into planes from which the direct passage of light is prevented by said members and additional means associated with the means situated on the opposite sides of the plane of the said flame for equalizing the irregular distribution of light resulting from the shape of the said flame.

14. In a lantern, the combination of a

burner for a flat flame, means for deflecting
portions of the light in directions substan-
tially at right angles to the plane of the
said light, means for deflecting portions of
5 the said light in directions slightly inclined
to the plane of the said flame, and means
associated with the last mentioned means
for equalizing the irregular distribution of
light resulting from the shape of the flame.

In testimony whereof we have signed our 10
names to this specification in the presence
of two subscribing witnesses.

GUSTAF DALÉN.

S. AUGUST ESKILSON.

Witnesses:

WALDEMAR BOMAN,
F. EKEBOHM.