March 26, 1929. W. BAUERSFELD 1,707,038

STREET ILLUMINATING APPARATUS

Filed Jan. 26. 1928

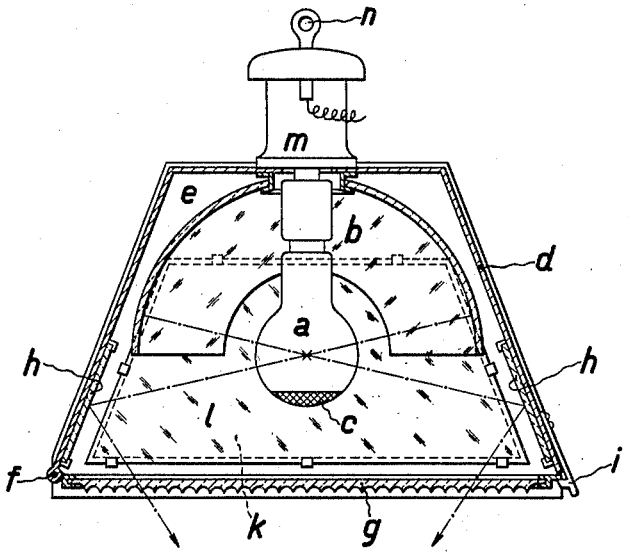

Fig. 1

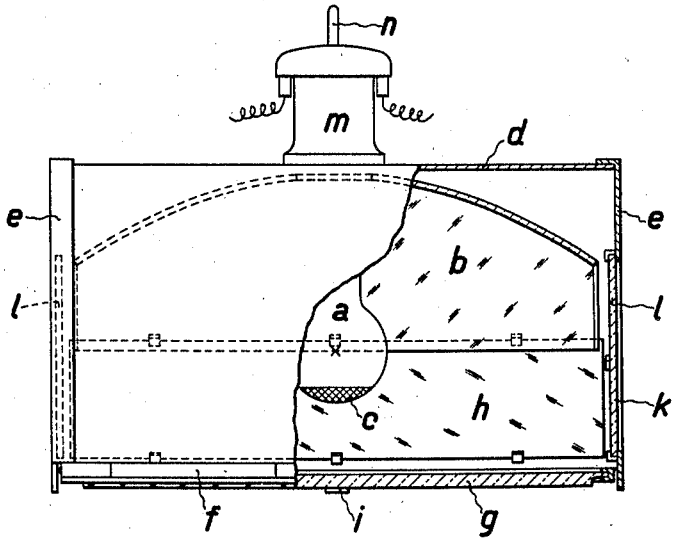

Fig. 2

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UNITED STATES PATENT OFFICE.

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STREET-ILLUMINATING APPARATUS.

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For the illuminating of streets and the like, a concave reflector is in itself very suitable, which forms an approximately semicircular sector of a barrel-shaped, reflecting body. Such a reflector, with its axis disposed horizontally, has an approximately rectangular luminous field, corresponding to the aforesaid purpose. Owing to its angle of the luminous field, embracing about 180°, this reflector, if used by itself, has, however, the drawback that passers-by are liable to be dazzled.

The present invention removes this drawback owing to the fact that besides the concave reflector there are provided two plane reflectors whose planes intersect in a straight line, parallel to the axis of rotation of the concave reflector, i. e. which are so disposed as to cut off the luminous rays, emerging in an only slightly inclined position relatively to the illuminated surface of the street. However, these rays are by no means lost but are transmitted to the surface to be illuminated at an angle causing no dazzling. The surfaces of the plane reflectors may be arranged in such a way as to radiate dispersed or directed light; hence, the reflectors may either be coated with white colour (e. g. enamelled) or reflecting. In the latter case they act in such a way as if the light radiated by them emanated from a source of light which would be located at the locus of the virtual reflected image of the source of light present. Hence it follows that the distance of the straight line of intersection of the two reflector-planes from the axis of rotation and therefore the inclination of these planes to the street surface to be illuminated as well as the width of the reflectors should be so chosen that the passers-by being at a corresponding distance from the illuminating apparatus, when looking at the same, can neither see the source of light nor its virtual reflected image in order not to be dazzled. A particularly suitable arrangement of the plane reflectors is attained if the straight line of intersection of their planes lies on that side of the source of light, which is opposite the ray-exit aperture of the illuminating apparatus. Under certain conditions it may also be possible to divide the reflector surfaces into several partial surfaces inclined to each other or in the extreme case to replace them by correspondingly disposed, continuously curved surfaces.

As a meridional curve of the surface of the concave reflector there is preferably in question a continuously curved curve (e. g. parabola, ellipse or the like) and the concave reflector may, for instance, consist of a complete, barrel-shaped glass body of revolution which is only reflecting on a part of its periphery. The non-reflecting part, i. e. the one coming into question for the traversing of light may then be constructed in such a way as to either radiate directed or dispersed light. It may therefore be made in particular of clear or frosted glass. The angle at the centre of the reflecting sector suitably amounts to about 180° if the source of light lies on the axis of rotation. In order to intensify the illumination of the part, only struck by reflected light, of the surface to be illuminated it is possible to provide the source of light in a well-known way with a counter-reflector.

In the annexed drawing Fig. 1 shows as a constructional example an illuminating apparatus according to the invention in a cross sectional elevation and Fig. 2 a side elevation, partly in cross section. The illuminating apparatus comprises as a source of light, a glow lamp a and a concave reflector b whose reflecting surface forms a sector with an angle at the centre of 180° of a surface of rotation whose meridional curve is a parabola, in the focal point of which lies the source of light a. In the position shown of the illuminating apparatus the axis of rotation of this reflector b lies in a horizontal plane through the source of light a. A spherical cap c of the bulb of the glow lamp a, which is delimited by a circle parallel to the said plane, has a reflecting surface and acts as a counter-reflector for the source of light. The illuminating apparatus has a quadripartite casing whose parts consist of a trapeziform casing d, two side-walls e and a closing disc g, hinged on a joint f. The sides of the trapeziform casing d carry rectangular plane reflectors h, which are so constructed that the rays (see Fig. 1) reflected by the concave reflector b at an angle slightly deviating from the horizontal line, are again deflected.

The ray-exit surface of the illuminating apparatus is composed of the closing disc *g* and the two side walls *e*. A closing disc *g* consists of clear glass and, in order to compensate irregularities of the luminous flux, it is provided with ribs which are parallel to the axis of rotation of the concave reflector *b*. For holding the closing disc *g* in the position shutting off the casing there is used an elastic pawl *i*. The side-walls *e* have trapeziform windows *k*, which correspond to the cross section of the casing and are closed by frosted glass discs *l*. The casing is provided with a rain-proof current supply *m* and a suspension device *n*.

The luminous rays, reflected at the concave reflector *b*, traverse the part formed by the closing disc *g*, of the ray-exit surface of the illuminating apparatus, while the glass-discs *l* disposed in front of the window *k* are generally only traversed by non-deflected luminous rays.

I claim:

1. Street illuminating apparatus containing an approximately punctiform source of light, a concave reflector whose reflecting surface forms a sector of a barrel-shaped surface, and two plane reflectors, disposed at the lower end of the said concave reflector, the planes of these reflectors intersecting in a straight line, which is parallel to the axis of the concave reflector.

2. Street illuminating apparatus containing an approximately punctiform source of light, a concave reflector whose reflecting surface forms a semicircular sector of a barrel-shaped surface, and two plane reflectors, disposed at the lower end of the said concave reflector, the planes of these reflectors intersecting in a straight line, which is parallel to the axis of the concave reflector.

3. Street illuminating apparatus containing an approximately punctiform source of light, a concave reflector whose reflecting surface forms a sector of a barrel-shaped surface, and two plane reflectors, disposed at the lower end of the said concave reflector, the planes of these reflectors intersecting in a straight line, which is parallel to the axis of the concave reflector and lies on the side of the source of light, opposite the ray-exit surface of the concave reflector.

4. In a street illuminating apparatus according to claim 1, the said barrel-shaped surface being a surface of rotation whose meridional curve is a parabola, the focal point of which lies on the axis of rotation and whose axis is perpendicular to the axis of rotation.

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