

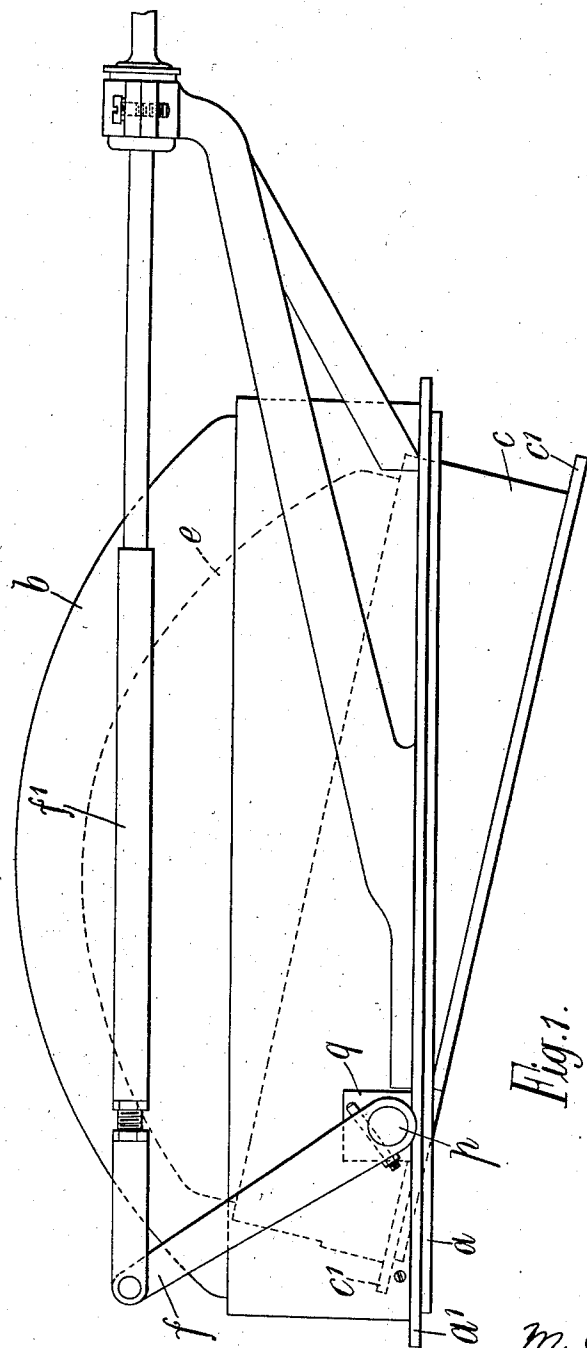
Feb. 21, 1939.

M. C. HARLEY
ILLUMINATING DEVICE

2,148,198

Filed Dec. 27, 1937

3 Sheets-Sheet 1



M. C. Harley,
INVENTOR

By: Glascock, Downing & Seibold
ATTYS.

Feb. 21, 1939.

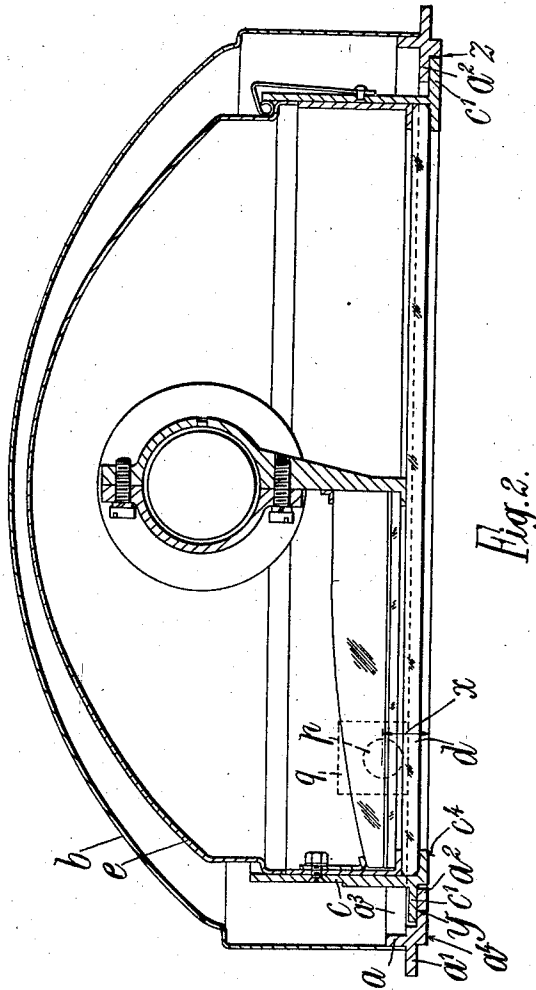
M. C. HARLEY

2,148,198

ILLUMINATING DEVICE

Filed Dec. 27, 1937

3 Sheets--Sheet 2



M. C. Harley
inventor

By: Glascok Downing & Seabell
Attys.

Feb. 21, 1939.

M. C. HARLEY
ILLUMINATING DEVICE
Filed Dec. 27, 1937

2,148,198

3 Sheets-Sheet 3

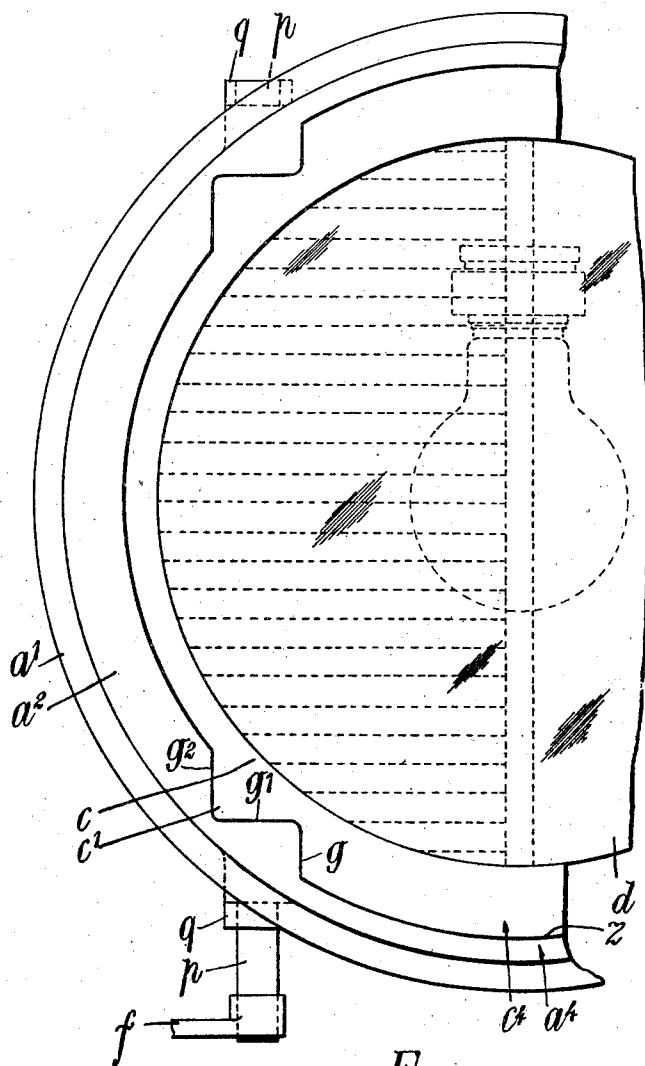


Fig. 3.

M. C. Harley
Inventor

By Glascock Downing & Seabold
ATTYS.

UNITED STATES PATENT OFFICE

2,148,198

ILLUMINATING DEVICE

Maldon Cavendish Harley, Harlington, Hayes,
EnglandApplication December 27, 1937, Serial No. 181,936
In Great Britain November 13, 1936

2 Claims. (Cl. 240—7.7)

This invention relates to illuminating devices more especially of the projecting lamp type for aircraft or like purposes, and it has for its general object to provide a lamp of such type mounted for movement between operative positions and a concealed position.

The invention comprises a projecting lamp, for example an aircraft landing and take-off lamp, having any or all of the following features:—

(a) A pivotal movement about an axis forming a chord with a front ring or body portion of the lamp;

(b) An associated fixed housing or container to which the lamp proper is pivoted;

(c) A flanged front ring or body portion, the flange of which is adapted to engage flange means of a housing and/or mounting in a substantially weather-tight flush joint;

(d) A relatively short axial dimension or depth compared to the diameter, obtained as by mounting the lamp bulb otherwise than by means adjacent the reflector vertex;

(e) A housing comprising a circular ring of substantial construction, providing substantial bearings for pivoting the lamp proper in accordance with (a) above, and having an internal edge contour providing for complementary reception of a front flange of the lamp;

(f) Pivot pins of stout construction, preferably integral with a front ring or body portion and/or used for angularly moving the lamp.

The invention also consists in improvements in retractable lamps substantially as hereinafter indicated.

Referring now to the accompanying drawings:—

Figure 1 is a side elevation of a retractable lamp according to this invention and particularly constructed for aircraft use, i. e. as a landing and take-off lamp;

Figure 2 is a longitudinal section,

Figure 3 being an inverted plan view.

According to the convenient construction shown in the drawings, the unit comprises a lamp, preferably embodying constructional features substantially in accordance with one or other of my earlier British patent specifications Nos. 372,285, 430,421, 436,571 and 453,940, and a mounting adapted to be set into the underside of a wing or other aerofoil (not shown) to provide a housing therein, into which the lamp proper is retractable.

The housing, see Figures 1 and 2, comprises a stout ring *a* comprising outwardly and inwardly turned flange portions *a*₁, *a*₂ and an axially di-

rected portion *a*₃ to which is secured a light substantially hemispherical body or case *b* which forms the housing proper. The latter is set into a circular opening in the wing or the like and secured with its ring *a* flush with the wing under-surface.

The lamp itself comprises a deep front ring *c* for carrying the front lens or glass system generally shown at *d*, to which ring *c* the lamp reflector *e* is secured conveniently, and which has an outwardly turned flange *c*₁ of a diameter sufficiently large to overlap the intumed flanges *a*₂ of the housing ring *a*. In such position the back portions of the lamp are fully concealed within the housing.

The attachment between lamp and housing is by pivots *p*, *p* the common axis of which lies parallel to the front flange *c*₁ of the lamp and a short distance *x* behind it; this axis also is set as a chord parallel or substantially parallel to what is (when the lamp is in working position) the horizontal diameter of the lamp front *d* and situated considerably nearer to the upper or forward border of the latter than to the lower or rearward border, assuming the lamp is in normal, generally forwardly projecting, position.

The pivot pins *p*, *p*, which are preferably of stout construction and, say, cast integral with the lamp ring *c*, are received in substantial bearings *q*, *q* constructed also, as far as practicable, integral with the housing front ring *a* having due regard to the manner in which the pins have to be inserted. A convenient bearing arrangement is shown.

The angular movement of the lamp into and out of its housing is preferably effected through about 90°, and by means of one or more bell-cranks as *f*, and rod *f*₁ or other device operating upon one or both of the pivot pins *p*.

It will be understood that the generally outward movement of the lamp about its pivots (as may be assumed to have occurred between Figures 1 and 2) retracts the upper and forward portion into the housing, while lowering the other and greater portion out of the housing. The closure of the two flanges accordingly takes place in opposite senses. To provide for such movement and ensure a peripherally continuous, flush and practically weather-tight closure with the lamp in fully retracted position the inwardly directed flange *a*₂ of the housing ring *a* is set or checked axially inwards from the outer face of the latter as at *z* by a distance equal to the thickness of the mating part *c*₁ of the lamp ring flange, from the region of one of the pivots, around the

larger arc to near the other pivot; whilst the (short arc) remainder of the said flange a_2 lies flush to the outside; and over that shorter arc the lamp front flange c_1 is checked back as at y to engage it from the inside.

In front view, see Figure 3, the two rings when closed together meet in the region of each of the pivots in three pairs of complementary straight edges constituting two oppositely directed right angles g , g_1 , g_2 , the middle limb g_1 of which lies in a plane normal to the pivotal axis and is of a length practically equal to twice the dimension x noted above. The front faces a_4 and c_4 of these rings thus lie completely flush and complementary when the lamp is in fully retracted position; a good weather-tight joint being formed and any added wind resistance avoided.

The whole construction, naturally made of light material such as an aluminium alloy, can furthermore be made compact in depth, so as to be accommodatable in a reasonable space, if the lamp itself is made to present, as shown, a smooth, clean and projection-free rear portion, e. g. by using a plain or imperforate reflector e and mounting the bulb within it, for example, as set forth in my copending British application No. 30,063/36 and U. S. A. Serial No. 179,991 filed Dec. 15, 1937.

The arrangement also lends itself particularly well to embodiment of a front lens system of the character set forth in my aforesaid earlier patents, because the projected beam may thus ordinarily be of a downwardly directed or depressed character, unaffected by the retracted condition of the upper or forward part of the lamp, as above described, when the latter is in normal operative position.

The mode of mounting provides also for a

partial balancing of wind pressure on the greater part of the lamp front when lowered from the housing, by pressure upon the remainder of the front, which lies above the pivotal axis.

Modifications and additions may be introduced within the scope of the invention, the foregoing description of an aircraft lamp being by way of example only.

I claim:

1. In a retractable lamp adapted to be mounted on aeroplanes, a housing having a ring member for supporting an opening in the housing flush with the surface of the aeroplane, a lamp including a reflector mounted for swinging movement within the housing, an annular member providing a support for the reflector, aligned pivot pins integrally formed from the annular member mounted to turn in bearing carried by the ring member so as to provide a pivot axis passing through a chord of the ring and the annular member, a flange carried by the annular member adapted to engage the interior of the ring member along the short arc of the chord, and a flange member carried by the annular member extending over the long arc of the chord, said last mentioned flange member engaging the outer surface of the ring member when the lamp is retracted in the housing to provide a weather-tight joint.

2. In a lamp mounting according to claim 1 wherein the flange carried by the ring member and the flange carried by the annular member are provided with complementary pairs of straight edges one pair being arranged adjacent each pivot pin and formed to meet in a plane normal to the pivoting axis to complete the weather-tight joint.

MALDON CAVENDISH HARLEY.