

Dec. 11, 1945.

J. R. AUFIERO

2,390,634

LAMP

Filed March 16, 1943

2 Sheets-Sheet 1

Fig. 1

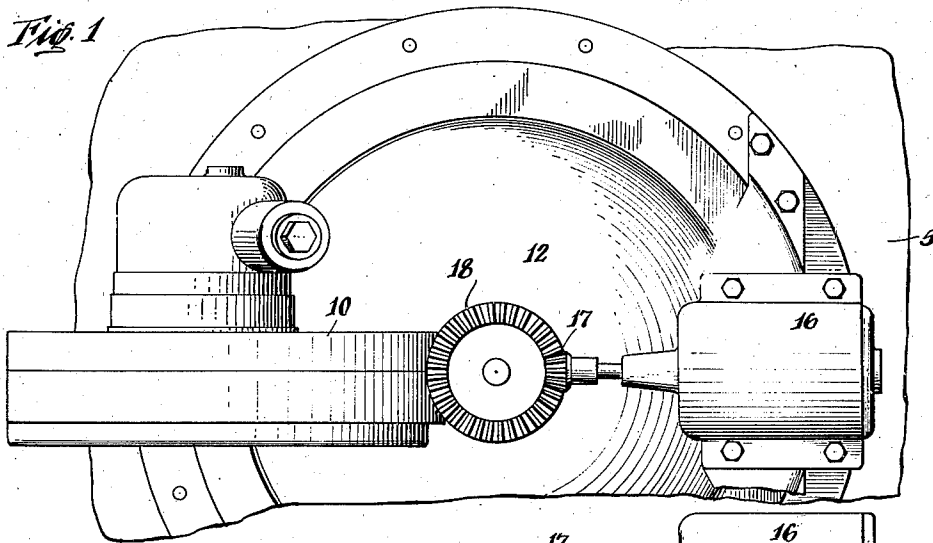


Fig. 2

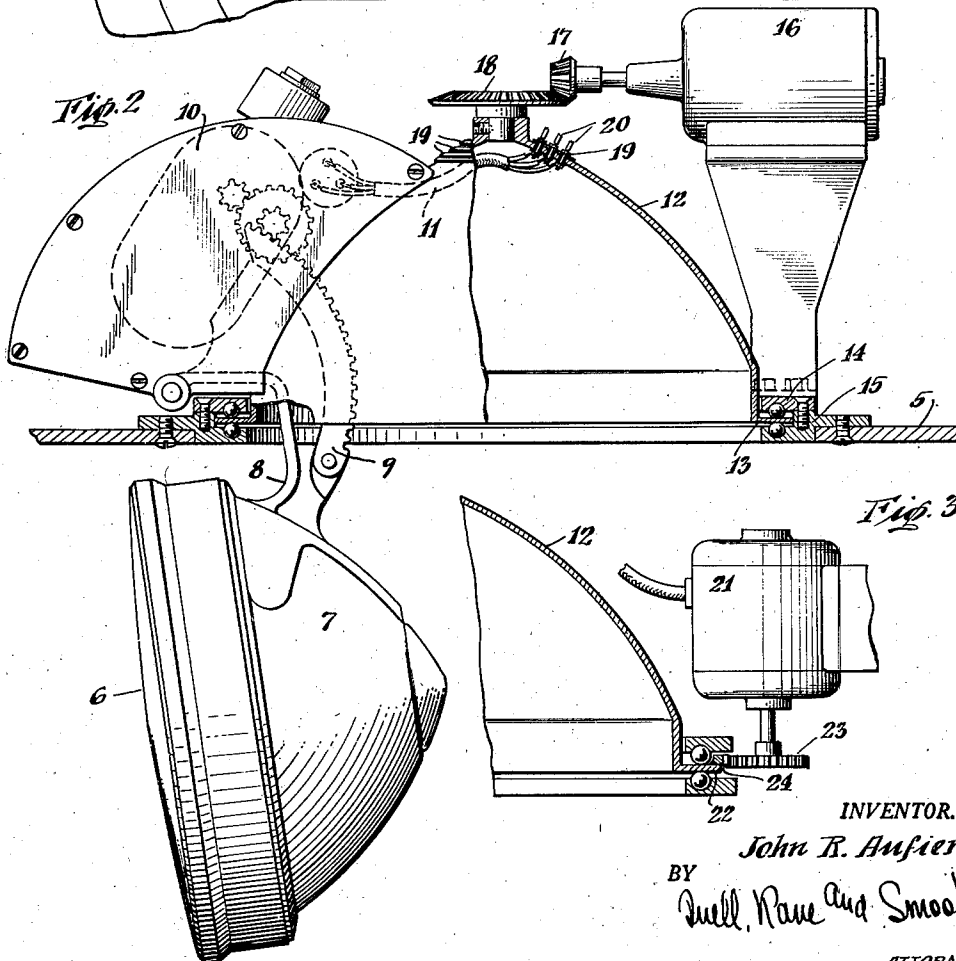
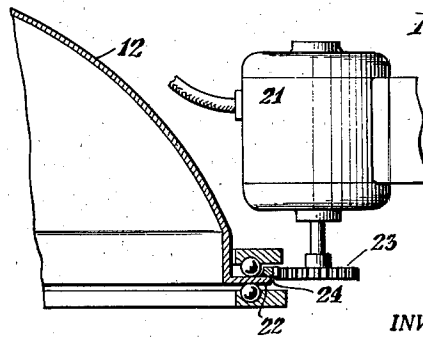


Fig. 3



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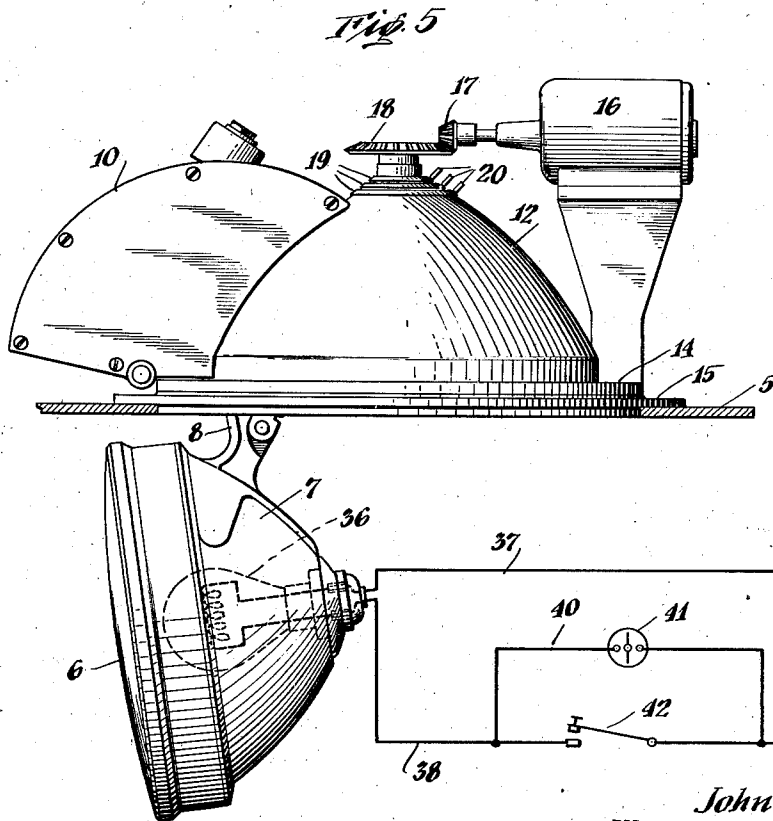
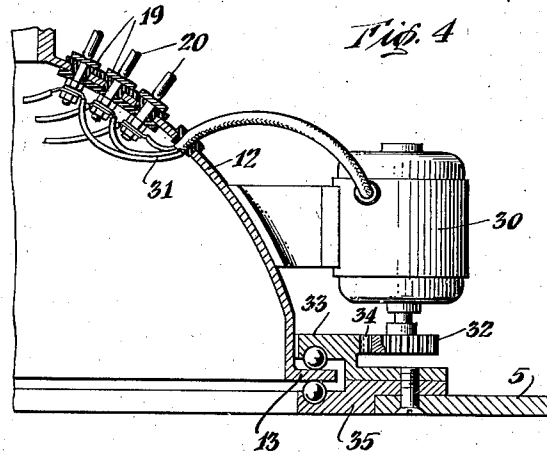
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,390,634

LAMP

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Application March 16, 1943, Serial No. 479,329

4 Claims. (Cl. 240—7.7)

This invention relates to a functionally and structurally improved lamp unit and more particularly an apparatus which is capable of use in aircraft, although it might be advantageously employed in other associations.

It is an object of the invention to provide in association with a lamp of the projectable and retractable type a mechanism whereby that lamp may be traversed around an axis parallel to the plane of projection and retraction.

Thus, a mechanism is furnished which, if mounted in aircraft, will enable the pilot to not alone—and in the usual manner—create beams of light useful in connection with landing and take-off operations, but also will provide him with a dirigible mechanism such that the beams of light may be directed to port or starboard or even to the rear of the aircraft.

A further object is that of furnishing an assembly of this type and in which the beam or beams of light may not alone be traversed in a plane generally parallel to the plane of movement of the vehicle with which they are associated but in which these beams may be inclined, if desired, and so as to extend obliquely in any given direction.

Another object is that of furnishing a lamp mechanism in which the foregoing results may be achieved by a relatively simple structural assembly and which may, accordingly, be produced to achieve the desired novel functions without materially increased manufacturing expense.

An additional object is that of providing a lamp structure which may be employed for signalling purposes and, if desired, be aimed in the direction of the person who is to receive such messages.

With these and other objects in mind, reference is had to the attached sheets of drawings illustrating practical embodiments of the invention, and in which:

Fig. 1 is a fragmentary plan view of the mechanism;

Fig. 2 is a partly sectional side view thereof;

Fig. 3 is a fragmentary view similar to Fig. 2 but showing a slightly different form of unit;

Fig. 4 shows a further form of mechanism; and Fig. 5 is a view similar to Fig. 2 and diagrammatically showing the wiring circuit.

A mechanism of this general character is shown, for example, in the prior United States Grimes Patents 2,124,346 of July 19, 1938, and 2,244,535 of June 3, 1941; it being, however, understood that these are referred to merely in an illustrative rather than in a limiting sense. Accordingly, alternative forms of mechanism might be em-

ployed and subject only to the coverage outlined in the annexed claims.

Thus, the reference numeral 5 indicates the skin or panel with which the lamp structure is associated and which is furnished with an opening through which the lamp may be projected and retracted. The lamp may include—as shown especially in Fig. 2—a structure provided with a lens or other transparent body 6. It may, moreover, include a reflector shell 7 which is pivotally mounted by means of a bracket 8. In order to effect a swinging movement of this assembly, an arcuate rack 9 may be utilized and which is driven by a motor 10; the current supply thereto flowing through leads 11 from a control (not shown).

A housing 12 may be mounted within the space defined by the surface 5. Contrary to conventional construction, however, this housing is rotatable within that space. Conveniently, the housing may be formed with an outwardly extending flange 13 supported between anti-friction assemblies 14 so as to be freely rotatable. These assemblies may in turn be supported by mounting rings 15 secured against movement with respect to the surface or panel 5.

A motor 16 serves to drive a pinion 17, the teeth of which mesh with a gear 18 secured to the housing 12. Accordingly, when the motor 16 is energized through leads and controls (not shown), the housing 12 will be rotated. Such rotation may be solely in one direction or, if desired, in opposite directions according to the type of motor and controls which are utilized. In any event, the pivot for bracket 8 being supported for rotation by the housing 12, it is obvious that as the latter rotates the entire lamp will be swung about the axis of the housing.

In order that no interruption to current flow to leads 11 will occur, these leads may be connected to contact rings 19. The latter are supported by and rotate with the housing 12. They are engaged by brushes or contact elements 20 so that current may be supplied to the motor 10 regardless of the position to which the housing 12 has been rotated.

As will be apparent, any number of different mechanisms might be employed to effect rotation of the housing or to otherwise traverse the partially or wholly projected lamp assembly. For example, as in Fig. 3, a motor 21 may be mounted adjacent the mounting-ring assembly 22. A pinion 23 driven by the motor may have its teeth in mesh with teeth 24 which extend from or are secured to the periphery of the housing 12. Again

in this form of mechanism, it will be apparent that the desired results are achieved.

The same is true of the structure shown in Fig. 4 in which the numeral 33 indicates a mounting ring provided with teeth 34. The motor 30 is in this instance supported by the housing 12. A pinion 32 is driven by this motor and has its teeth in mesh with teeth of gear 34. Consequently, when the motor 30 is energized through leads 31 the housing, together with its associated parts, is rotated.

Thus, it is obvious that if the mechanism is applied, for example, to an airplane, the pilot may, in the usual manner, partially or wholly project the lamp or lamps upon the panel 5 for the purpose of take-off, landing, signalling, or general observation. Additionally, however, he may, by simply energizing the traversing motor, cause the beam from each lamp to be traversed. Accordingly, the terrain below and partially or wholly to either side of the ship will be illuminated. Also, as afore brought out, the lamps may be swung in a rearward direction to throw their beams accordingly.

In many instances, it might be desired to utilize a lamp of this type for signalling purposes. Such a lamp need not necessarily be of the rotatable type. This thought is illustrated in Fig. 5, in which the numerals 37 and 38 indicate leads which may be independent of or common with the leads 20 (if the lamp be rotatable). Current is supplied to these by a source 39, and a shunt circuit 40 with controller 41 may normally be employed to energize the lamp bulb 36 and/or the controlling motor or motors. A key 42 may be utilized independently of this shunt circuit to cause energization and de-energization of the lamp bulb filament. By means of this key, circuit interruptions may be provided for such that the lamp may be utilized for signalling purposes.

From the foregoing, it will be appreciated that among others the several objects of the invention as specifically afore noted have been achieved. Obviously, numerous changes in construction and rearrangements of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. A lamp including in combination a housing having an opening, flange means secured to said housing, bearing means for engaging and confining said flange means for rotation thereof, a reflector shell pivotally supported with respect to

said housing and adapted for retraction into or projection from said housing, means for projecting and retracting said projector shell with respect to said housing, a drive wheel fixed to said housing and power driven means coupled with said drive wheel whereby said housing may be rotated in said bearing means.

2. A retractable lamp comprising, in combination, a housing having a flange extending outwardly therefrom and defining the desired arc of rotation of the lamp, fixed bearing means engaging said flange at its upper and lower surfaces and supporting the same for rotation in the plane thereof, a drive wheel secured to said housing, means engageable with said drive wheel to rotate the same, and a lamp-containing shell mounted by said housing and retractable within and projectable beyond said housing to extend at an angle with respect to the latter.

3. A lamp including in combination a conical lamp housing, an outwardly extending flange for said housing and adjacent the base thereof, means to rotatably support said flange, an electric motor connected to said supporting means, means for connecting said motor with said housing whereby, as the former operates, the latter will be rotated with respect to said supporting means, a lamp shell pivotally secured to said housing adjacent the periphery thereof and whereby, with said shell projected from said housing, said shell will have imparted to it an arcuate movement as said housing rotates, and a separate electric motor connected to said housing and said shell for projecting and retracting the latter within the former.

4. A lamp including in combination a conical lamp housing, an outwardly extending flange for said housing and adjacent the base thereof, means to rotatably support said flange, an electric motor connected to said supporting means, a gear carried by said housing adjacent its apex, a gear connected to said electric motor and meshing with the gear carried by the housing whereby, when said motor operates, said housing will be rotated with respect to said supporting means, a lamp shell pivotally secured to said housing adjacent the periphery thereof and whereby, with said shell projected from said housing, said shell will have imparted to it an arcuate movement as said housing rotates, and a separate electric motor connected to said housing and said shell for projecting and retracting the latter within the former.

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