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J. D. KENNELLY

2,486,853

SEARCH AND WARNING LIGHT

Filed March 30, 1948

2 Sheets-Sheet 1

*Fig. 1*

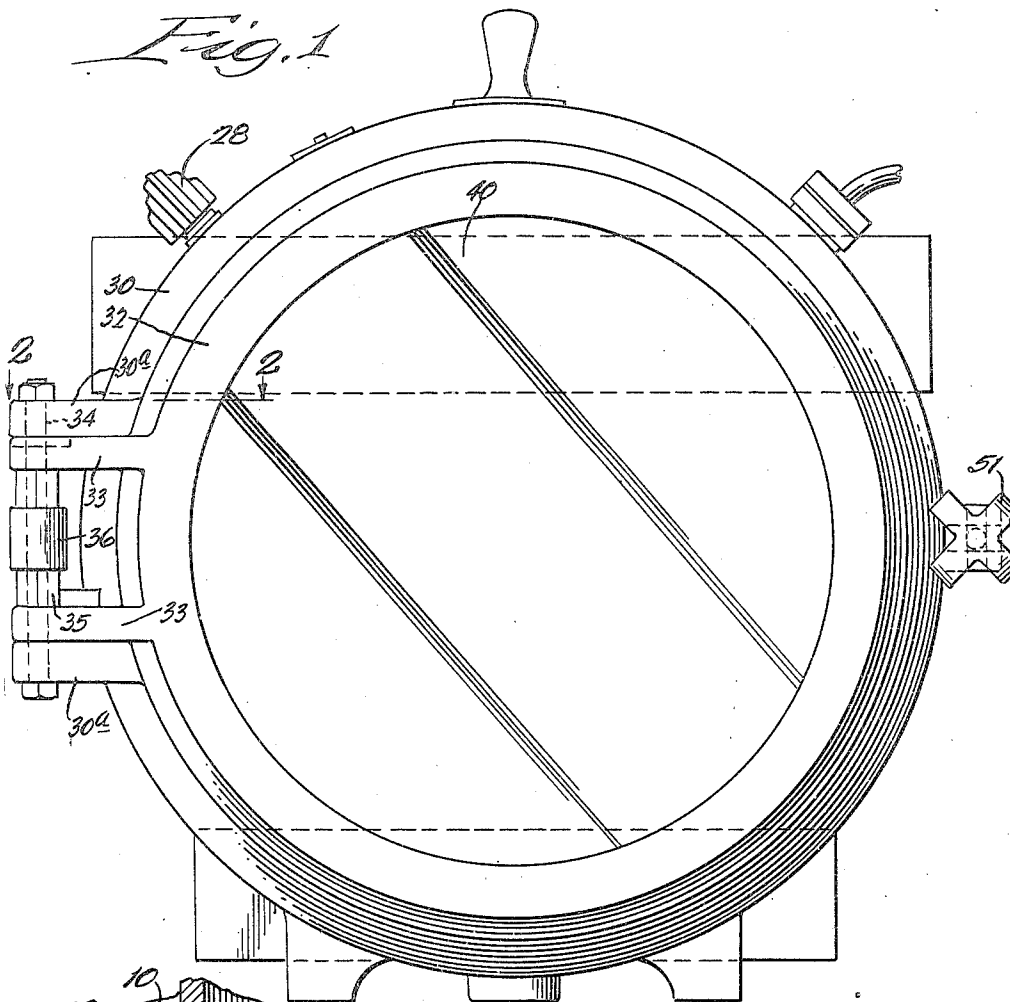
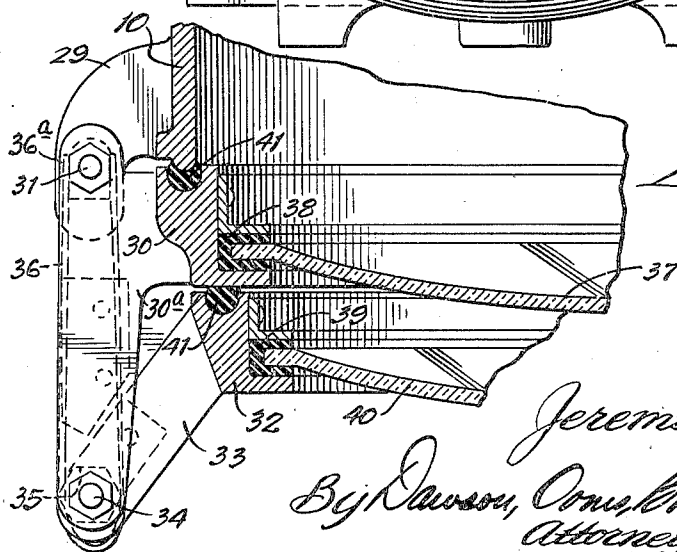


*Fig. 2*



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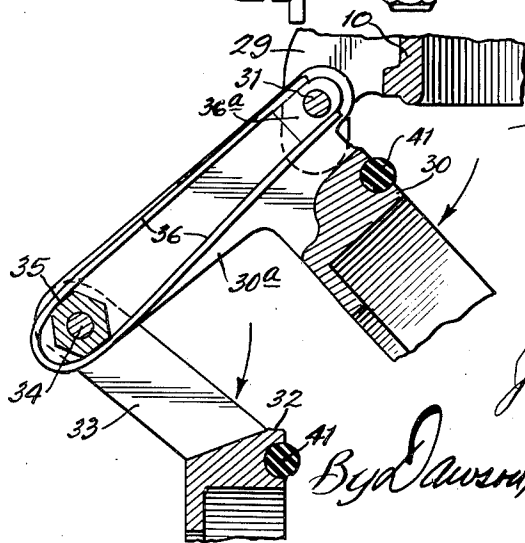
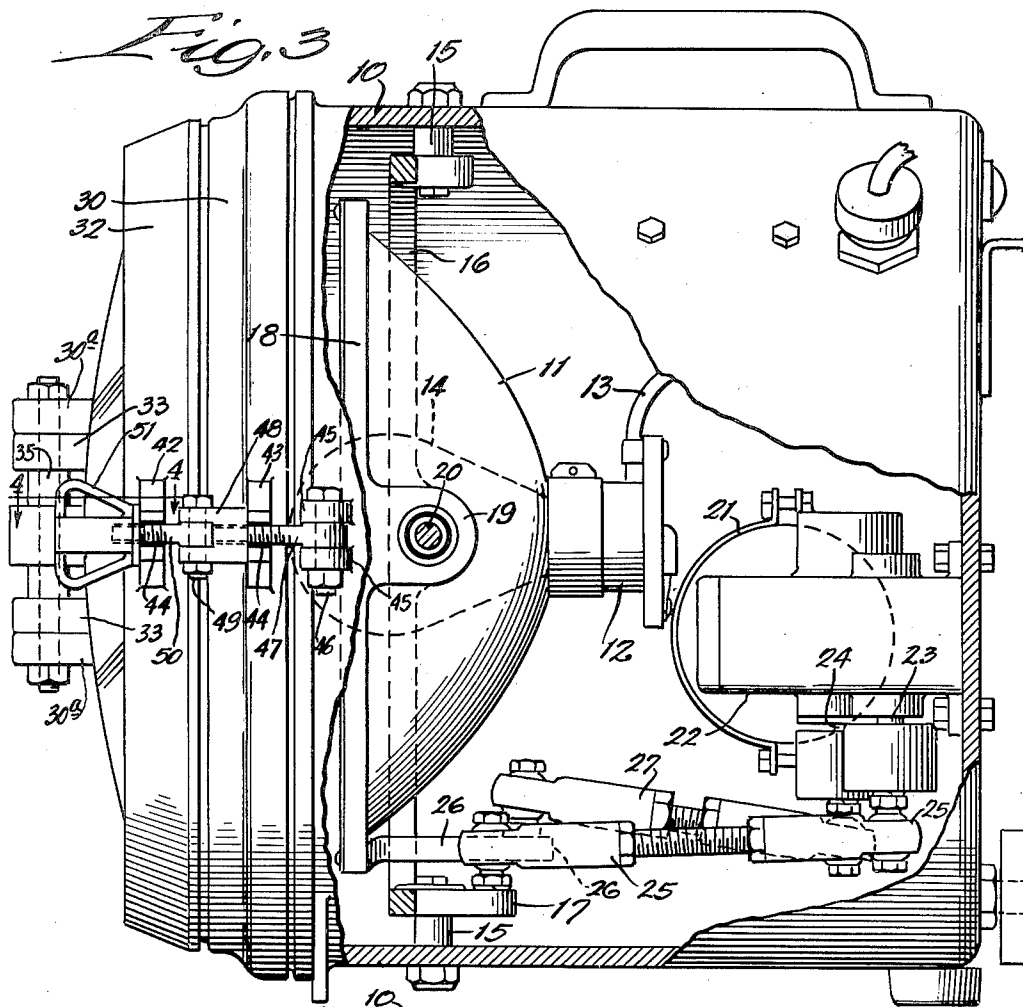
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## UNITED STATES PATENT OFFICE

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## SEARCH AND WARNING LIGHT

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5 Claims. (Cl. 177—329)

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This invention relates to signal light apparatus and is particularly useful in connection with a vehicle with which it is desired to employ both search light mechanism and warning light mechanism. The invention may be employed with locomotives, trains, airplanes, vessels, emergency vehicles and other vehicles.

An object of the invention is to provide apparatus which may be effectively employed as a search light or as a warning light, simple mechanism being provided for changing the structure from one use to the other. A still further object is to provide light projecting equipment in which by a few changes, moving warning beams may be projected or stationary illumination beams may be projected. A still further object is to equip a light projecting device with a plurality of lenses which may be selectively opened for producing different lighting effects. Yet another object is to provide light projecting apparatus provided with means for oscillating a warning light and a switch means for maintaining the light in a stationary position, separable lenses, at least one of which is colored, being provided for changing the lighting effects. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a single embodiment, by the accompanying drawings, in which:

Fig. 1 is a front view in elevation of apparatus embodying my invention; Fig. 2, a detail sectional view, the section being taken as indicated at line 2 of Fig. 1; Fig. 3, a side view in elevation, a portion of the apparatus being shown in vertical section; and Fig. 4, a detail sectional view, the section being taken as indicated at line 4 of Fig. 3.

In the illustration given, 10 designates a casing which is closed at its rear and opened at its forward end.

Supported within the casing for both stationary use and for movement is a reflector 11 equipped with a socket 12 to which light current is supplied by an electrical conduit 13. Mounted in the socket member 12 is a light bulb 14.

Any suitable means for movement in the casing 10 may be provided. In the specific illustration given, I provide inwardly extending studs 15 on the top and bottom of the casing 10 and upon the studs 15 is rotatably mounted a ring 16. On one side, the ring 16 is provided with a rearwardly extending actuating arm 17.

The reflector 11 is provided with a ring frame 18 equipped at its opposite sides with rearwardly extending arms 19 equipped with pivot pins 20

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engaging the ring 16. By this structure, the reflector 11 may be oscillated separately while the ring 16 is being moved.

Any suitable means may be provided for separately oscillating the frame ring 16 and the reflector ring 18. In the illustration given, a motor 21 is supported in the casing and drives through reducing gears contained within housing 22 a pair of shafts 23 and 24. Eccentrically mounted upon shaft 23 is an arm 25 which is pivotally connected to the actuating arm 17 as shown best in Fig. 3. Similarly, a second arm 27 is pivotally connected to an arm 26 fixed to the reflector ring 18 and extending rearwardly therefrom, as shown best in Fig. 3. The pivotal connections may be made by any suitable means but in the illustration given, I provide the pivot pins with balls which are received within sleeves carried by the arms 25 and 27. If desired, the arms 25 and 27 may be formed of sleeve members connected by screws.

The means for oscillating the ring 16 and reflector 11 are set out merely as illustrations of any means for moving the reflector, or the light source, or both.

It will be understood that the reflector or the light bulb may be moved in a variety of different ways and by different types of mechanism and the purpose of the foregoing description is merely to set out one means of movement.

I prefer to equip the mechanism with a switch member 28 which provides accurate control of the reflector moving mechanism so that the reflector can, when desired, be stopped at a central position in which it effectively serves as a stationary search light or in a set angular position in which it again serves as a search light for illuminating a selected portion of the track or roadway or a portion of the terrain to the right or left of such track or roadway, etc.

In carrying out the present invention, I prefer to equip the casing 10 at its forward end with a plurality of lenses, one of which is preferably colored. It will be understood, however, that the lenses may be of any desired type or kind and may be equipped with prisms or be clear, may be colored red as a warning light or any other desired color. In the specific illustration given, the casing 10 is equipped with a bracket member 29 upon which are mounted two lens frame members. The lens frame 30 is supported by pivot pin 31 upon the bracket member 29. The forward lens frame 32 is equipped with extension arms 33 mounted upon an extension 30a of the lens frame 30. The pivot pin 34 is preferably equipped with

a hexagonal cam 35 about which is tightly secured a spring loop member 36. The free ends of the member 36 are secured to member 36a, which pivots about pin 31 on bracket member 29, by welding or by any other suitable means.

The lens supporting frame 30 is provided with a lens 37, the edge of the lens being preferably secured within a resilient ring 38, as shown more clearly in Fig. 2. Similarly, I provide a resilient ring 39 for supporting within the lens frame 32 an outer lens 40. By way of example, the outer lens 40 may be colored red and the inner lens 37 may be clear. Each of the frames 30 and 32 may, if desired, be provided with resilient sealing members 41 of rubber or other suitable material.

Any suitable means for locking the frames 32 and 30 may be employed. In the specific illustration given in Figs. 1 and 3, I equip the frame 32 with a laterally slotted plate 42 and the frame 30 with a similar plate 43. Each of these plates has a lateral slot 44 opening outwardly and adapted to receive locking bolts. Fixed to the frame 30 are the spaced lugs 45 through which extends a pin 46 upon which is pivotally mounted a screw member 47. The screw member which may swing laterally through the slot 44 of the member 43 which is fixed to frame 30, is adapted to threadedly engage a socket member 48 having arms connected by a pin 49 to a second screw 50. The second screw 50 is also adapted to swing through the slot 44 of the member 42 fixed to the frame 32 and its upper threaded end is adapted to be clamped by a wing nut 51. It will be understood that any suitable means for locking the frame members 32 and 30 to each other and to the casing 10 may be provided.

#### Operation

In the operation of the structure, if it is desired to operate the light as a search light, the multiple switch 28 is manipulated to bring the reflector 11 in the desired position within the casing 10 so as to project light beams along a stationary path forward of the vehicle. The nut 51 may then be unscrewed and the screw 50 swung outwardly to release the locking lug 42. The outer frame 32 is thus released and may be swung outwardly to one side of the lens frame 30. In the latter position, the loop spring 36, by engagement with the hexagonal cam 35, holds the lens frame 32 in such lateral position. The light now serves as a search light and the light rays passing through the clear lens 37 illuminates the path ahead.

If it is desired to enter the casing for repair, cleaning, etc., the threaded member 48, which also serves as a nut, may be unscrewed to release the screw 47 and this may be swung laterally to release the locking plate 43. The inner lens frame 30 may then be swung to clear the front end of the casing, as illustrated more clearly in Fig. 4.

When it is desired to employ the light as a warning light, the lens frames are swung to closed position, as shown in Fig. 3, and the nuts 49 and 51 are rotated to clamp the locking members in operative position. Switch mechanism may then be turned to start the motor 21 for oscillating

the ring member 16 and the lens frame member 18. Oscillation of these two members simultaneously is designed to give a "figure 8" pattern that is highly effective as a warning signal. The light rays projected by the moving reflector or light source pass through the colored outer lens 40 and thus give a warning effect.

The apparatus may be employed in a variety of ways. Various switch arrangements may be employed controlling the mechanism and permitting the interchangeable use of the apparatus for search light or illumination light purposes and for warning purposes.

While in the foregoing specification, I have set forth one specific structure for the purpose of illustrating a single embodiment of the invention, it will be understood that the details of such structure may be varied widely by those skilled in the art without departing from the spirit of my invention.

#### I claim:

1. In signal light apparatus, a casing having an open end, a plurality of lenses hingedly supported upon the casing, one of said lenses being colored, a light source movably mounted in said casing, means for moving said light source within said casing to provide a changing pattern of light, and means for locking said lenses in closed and open positions.

2. In signal light apparatus, a casing having an open end, a bracket secured to the open end portion of said casing, a lens frame mounted upon said bracket and equipped with an extension arm, and a second lens frame pivotally mounted upon said extension arm, lenses carried by said frame members, one of said lenses being colored, a polygonal nut carried by the outer lens frame, and a flat spring fixed to said bracket and looped about said polygonal nut to adjustably hold said outer frame in its adjusted outer positions.

3. Apparatus according to claim 1 wherein control means are provided for the light-moving means operable to move said light source to a selected stationary position.

4. Apparatus according to claim 2 wherein said casing is provided with a light source mounted for movement and means for moving the same to form a predetermined moving pattern of light.

5. Apparatus according to claim 2 wherein said casing is provided with a light source mounted for movement, means for moving said light source to form a predetermined moving pattern of light, and control means for the last-mentioned means operable to move said light source to a selected stationary position.

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