Feb. 18, 1941. H. L. LOGAN 2,232,543

STORE LIGHTING APPARATUS

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Fig. 1.

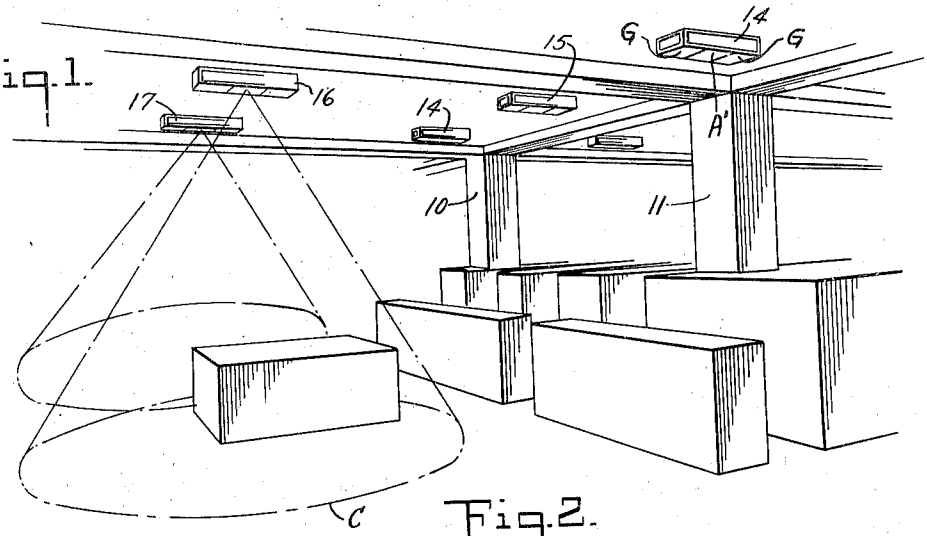


Fig. 2.

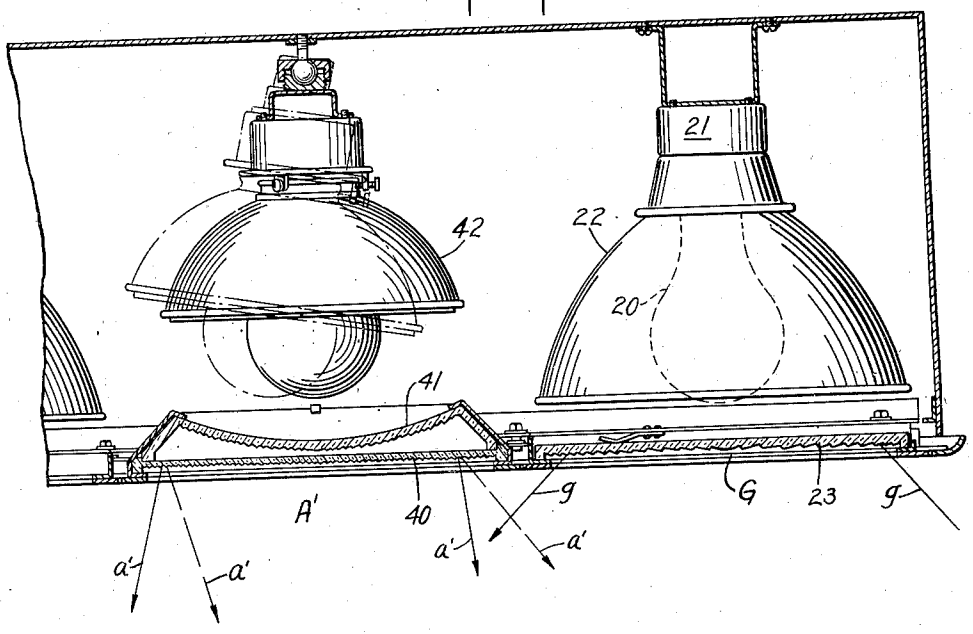
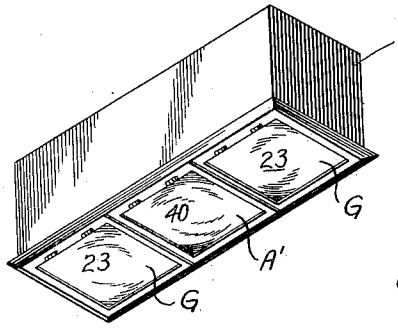


Fig. 3.



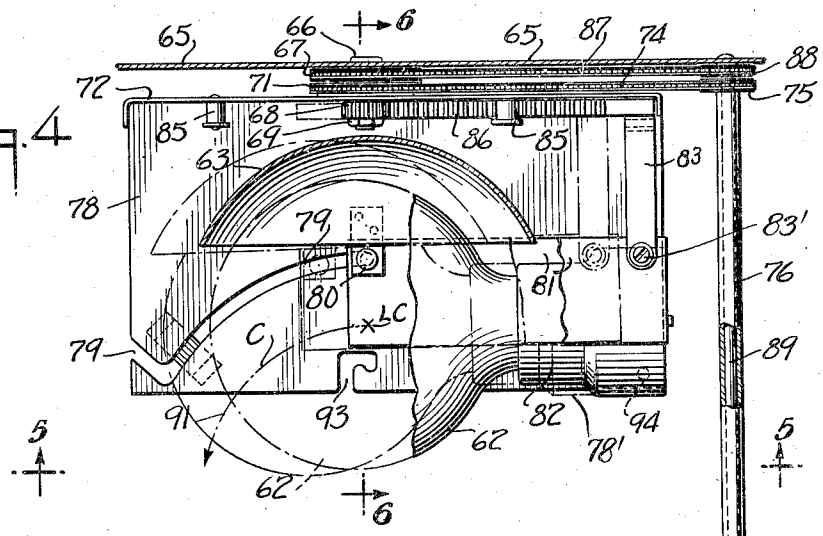
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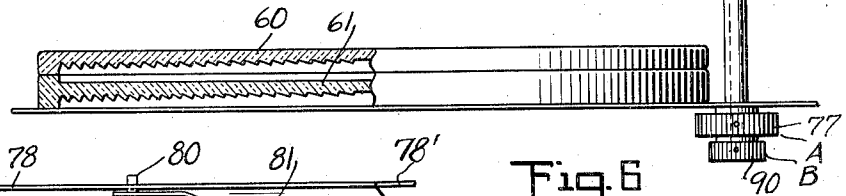
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STORE LIGHTING APPARATUS

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Fig. 4





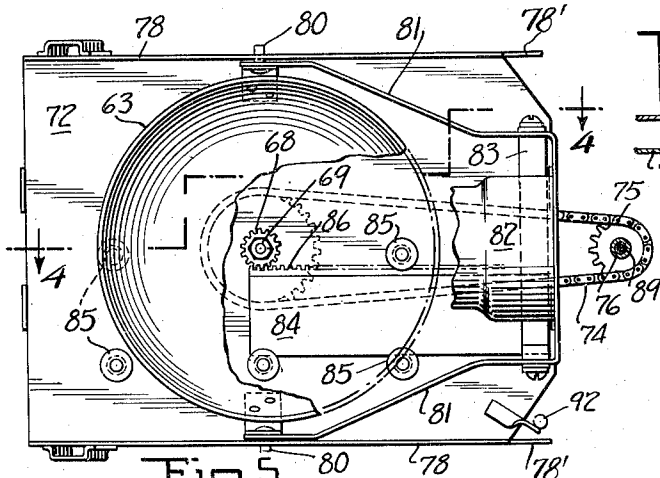
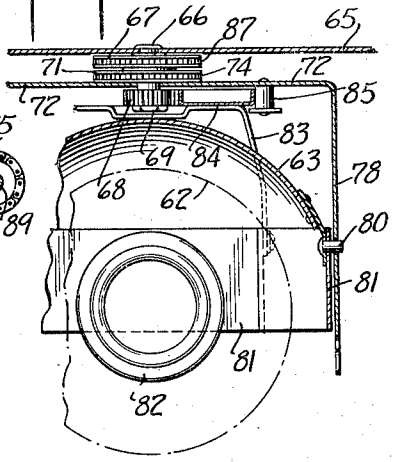


Fig. 5

Fig. 6



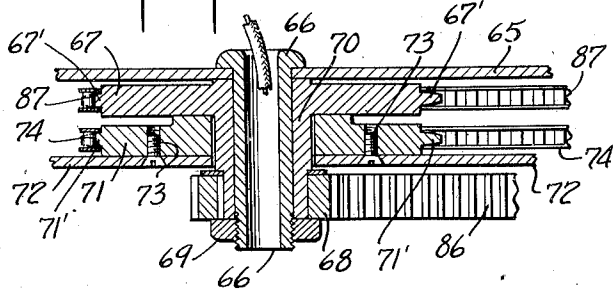


Fig. 7

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UNITED STATES PATENT OFFICE

2,232,543

STORE LIGHTING APPARATUS

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Application March 3, 1938, Serial No. 193,634

9 Claims. (Cl. 240—9)

The present invention relates to store lighting apparatus, and is more particularly directed to lighting apparatus arranged to facilitate lighting of merchandise on display.

It is customary to light large areas, where merchandise is on display for sale, by suitably placed ceiling supported luminairs which give a reasonably uniform intensity of light throughout the area. These luminairs have a fixed location and light distribution and do not provide a flexible lighting scheme whereby specific displays may be subjected to a more intense lighting to make them more attractive to the customer. To obtain this effect, it has heretofore been necessary to install lamps on counters, or spot lights supported from the ceiling, from columns, or any other accessible place. Such installations have many undesirable features such as the expense of permanent wiring, or the unsightliness of temporary wiring, and the conspicuous nature of the spot lights which do not fit into the architectural design of the store. Furthermore the observant customer is almost always conscious of the effort to direct attention to the high lighted display.

The present invention contemplates that there shall be incorporated in a single piece of apparatus the equipment necessary for general lighting as well as for display lighting. Such a unitary piece of apparatus may have an appropriate ornamental appearance without its display lighting feature being obvious. The wiring and switching may be installed and completely concealed and adequate flexibility of operation obtained.

In carrying out the objectives of the present invention, it appears most convenient to employ a single comparatively large box which receives the light sources and light directing means, such as reflectors, lenses, screens, mechanical parts and the like.

The accompanying drawings show for purposes of illustration a typical store lighting layout embodying apparatus suitable for the purpose, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a perspective view of one bay of a department store with lighting apparatus installed;

Figure 2 is a longitudinal sectional view of one form of dual purpose lighting apparatus;

Figure 3 is a perspective view of the same;

Figure 4 is a sectional view (taken on the line 4—4 of Figure 5) through the optical system for a display lighting unit showing externally operable mechanism for effecting adjustments;

Figure 5 is an inverted plan view of the structure of Figure 4, parts being omitted;

Figure 6 is a sectional view taken on the line 6—6 of Figure 4, parts being in elevation; and

Figure 7 shows a detail.

Figure 1 shows a typical section of a store, the two rear columns being indicated at 10 and 11. For the general illumination of this area four lighting units may be required, these being placed at or near the ceiling and adjacent the columns. In the drawings four of the dual purpose units are indicated at 14, 15, 16, 17. Each of these units has two optical systems, one, such as G, designed for general direct lighting with such spread and intensity as conditions require, and the other optical system, such as A, designed for display lighting. The latter provides beams of light which may be directed toward the desired displays in various locations with a cone such as C. Two such cones are shown.

Figures 2 and 3 show a lighting apparatus having two optical systems G for general lighting and one optical system A' for display lighting. Each general lighting optical system employs a lamp bulb 20 supported from a socket 21, a reflector 22, preferably prismatic, and a lens plate 23 having annular prisms. For smaller units only one general lighting system need be used. The design of the reflector and plate will effect the desired distribution of light for general lighting, as shown by the rays *g*, *g*. The display lighting system A' employs two fixed lenses 40 and 41, the upper one being dished, and a movable lamp and reflector assembly 42 whereby the light source and reflector may be adjusted relative to the lens so that the emitted beam may be oriented in the desired direction. The spread of the beam is indicated by the rays *a'*, *a'*. A mechanism for orienting the beam is illustrated at 43 in the form of a ball and socket joint. Here the entire unit is in the form of a box 44 adapted to be recessed into the ceiling.

In the arrangement shown in Figures 4 to 7, inclusive, the optical system for display lighting includes a pair of square lens plates 60 and 61, a lamp bulb 62 whose light center is indicated by the letters LC, and a reflector 63. The top of the box which encloses the lighting apparatus is indicated at 65. It is provided with an aperture in line with the lens axis to receive a downwardly extending tubular coupling member 66 which revolubly carries a sleeve 67 keyed or otherwise secured to a gear 68 and a nut 69. The

outside of the hub 70 of the sleeve 67 revolvably carries a second sleeve 71 which is secured to a plate 72 by screws 73. These sleeves may be rotated independently by any suitable externally operable mechanism. According to one convenient arrangement illustrated, the lower sleeve 71 has sprocket teeth 71' connected by a chain 74 with a sprocket wheel 75 carried on a tube 76 which extends down through the bottom of the housing to an operating knob indicated at 77. Turning the knob 77 will therefore turn the sleeve 71 and parts carried thereby, including the plate 72.

The plate 72 has downwardly extending side members 78 provided with slots, one of which appears at 79. These slots are adapted to be traversed by pins 80 carried by a radially shiftable carrier 81 for the socket indicated at 82. This socket carrier is moved back and forth by downwardly extending arms 83 which are connected to a reciprocatory slider 84 carried in guides 85 and provided with a rack 86 in mesh with the pinion 68. The reflector 63 is secured between the two straps 81. The pinion 68 is actuated by the sleeve 67 which is provided with sprocket teeth 67' in mesh with a chain 87 operated by a sprocket wheel 88 and connected to a shaft 89 which is operable by a thumb wheel 90 below the box.

If it be assumed that the parts are in position shown in full lines in Figures 4, 5, 6 and 7, it will be apparent that turning the lower knob or thumb wheel 90 will rotate the pinion 68, and this will rotate the sleeve 67 and pinion 68 to effect a radial movement of the slider 84. This will shift the lamp socket, lamp bulb and reflector to the left causing the pins 80 to traverse the slots 79, so that the light center LC will travel along the line indicated at 91. Turning on the thumb wheel 77 will impart rotation to the sleeve 71 and will revolve the plate 72 and all the mechanism supported by it, so that it will be possible to swing the light center about the axis. This will effect an orientation of the beam whose obliquity is determined by the amount of offset from the lens axis. To limit the turning movement a stop is provided, as indicated at 92.

When it is desired to use the same lens system, light source and reflector for general lighting, the screws 83' which secure the right-hand end of the yoke to the straps 83 are removed to disconnect the yoke 81, the pins 80 are slipped out of the slots 79 and are then inserted into bayonet slots 93 at a lower level. The end of the yoke is then secured to the side plates 78 by placing longer screws 83' in holes 94 in the lower portions 78' of plates 78. Moving the lamp bulb down to the lower position will bring about a wider distribution of light transmitted through the plates.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular forms shown are but a few of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

I claim:

1. A luminair comprising a light source, an enclosing housing having an opening closed by a light concentrating lens, the light source being normally in the axis of the lens so that a symmetrical beam is projected along the lens axis, and externally operable means for shifting the light source out of the lens axis and for angularly turning it about the lens axis for controlling the obliquity of the beam and orienting it, the shifting means being effective upon the shift of the light source away from the lens axis to cause the light source to approach the lens.

2. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement whereby the light source in the bulb can be offsetted relative to the lens axis, and externally accessible means for rotating the first member and shifting the second member.

3. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement whereby the light source in the bulb can be offsetted relative to the lens axis, an externally accessible shaft rotatably mounted in the housing and drivingly connected to the first member for turning it, and an externally accessible means for radially shifting the second member.

4. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement whereby the light source in the bulb can be offsetted relative to the lens axis, externally accessible means for rotating the first member, and an externally accessible shaft rotatably mounted in the housing and drivingly connected to the second member to radially shift it.

5. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement whereby the light source in the bulb can be offsetted relative to the lens axis, an externally accessible shaft rotatably mounted in the housing and drivingly connected to the first member for turning it, and an externally accessible shaft rotatably mounted in the housing and drivingly connected to the second member to radially shift it.

6. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a cam carried by the member, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement and movable by the cam, whereby the light source in the bulb can be offsetted relative to the lens axis and the spacing of the light source from the lens is a function of the amount of offset, and externally accessible means for rotating the first member and shifting the second member.

7. Apparatus for general lighting and display lighting in stores and the like, comprising two closely adjacent luminairs each having a light source, a downwardly acting reflector and a prismatic lens plate, the plates being in a common horizontal plane, one luminair being adapted to produce a downward beam of wide spread light symmetrical about a vertical axis for general illumination, the other being adapted to produce a narrow concentrated beam for special or display lighting and having means to shift the source and reflector so that the angular position of the beam may be adjusted and variably placed displays lighted at high intensity, the lens plates being of similar appearance when the luminairs are not lighted and having light scattering characteristics so as to produce a similar luminous appearance at wide angles when the luminairs are lighted, and an enclosure which conceals the sources and reflectors so that the apparatus presents the appearance of a single lighting unit.

8. A luminair comprising an enclosing housing having an opening closed by a light concentrating lens, a member supported for rotation about the lens axis, a second member supported by the first member for radial movement relative to said axis, a lamp socket and bulb supported by the second member to partake of both rotary and radial movement whereby the light source in the bulb can be offsetted relative to the lens axis, and means for guiding the second member in its radial movement so that as the light source is shifted away from the lens axis it is moved closer to the lens.

9. A luminair such as claimed in claim 8, having a reflector about the source opposite the lens and secured to the second member to move therewith.

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