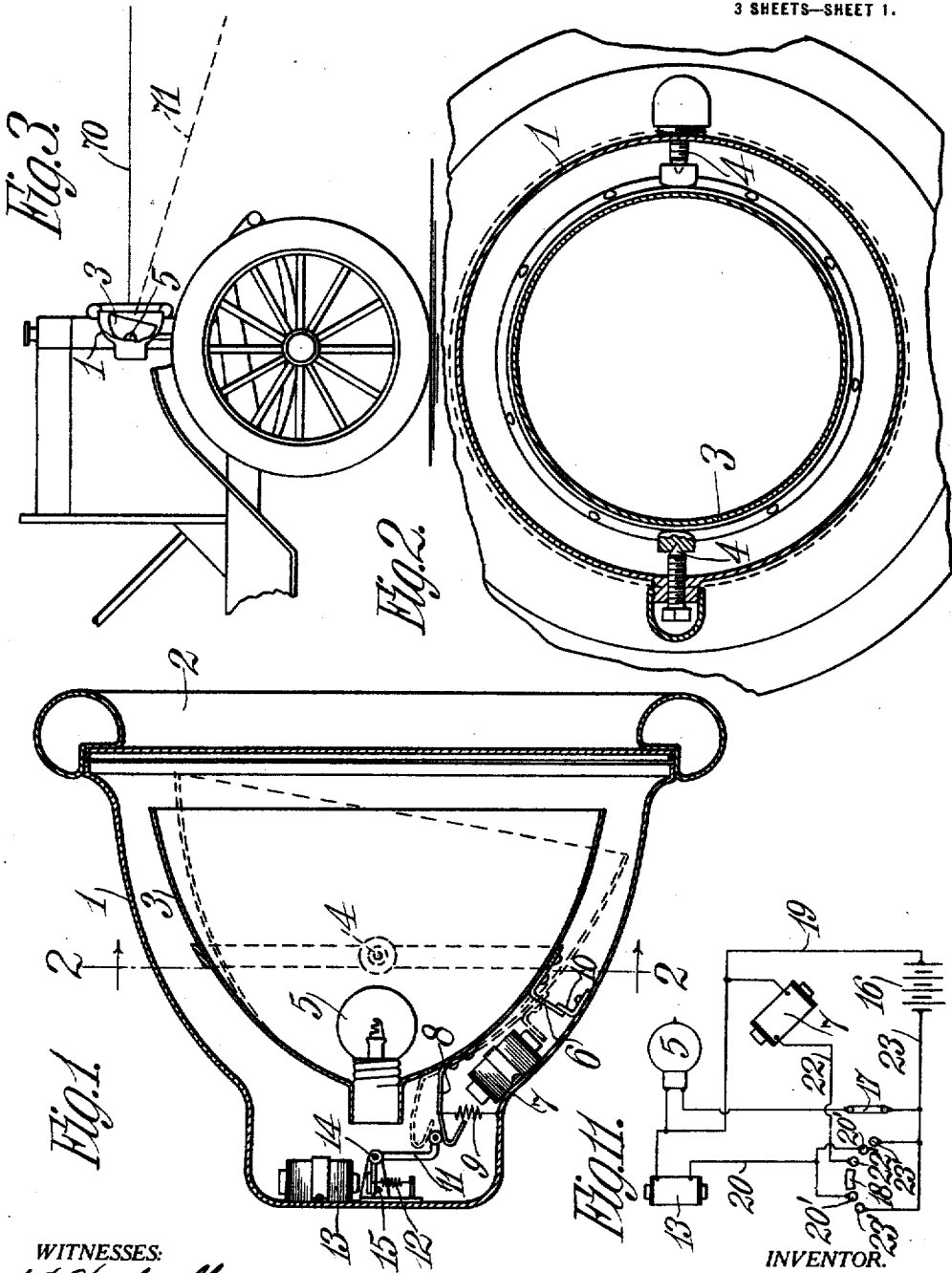


H. CAVE.
 LIGHT DEFLECTING APPARATUS.
 APPLICATION FILED DEC. 24, 1914.

1,321,418.

Patented Nov. 11, 1919.
 3 SHEETS—SHEET 1.



WITNESSES:
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Edith M. Carter

INVENTOR.
Henry Cave.
 BY *Chapin & Co.*

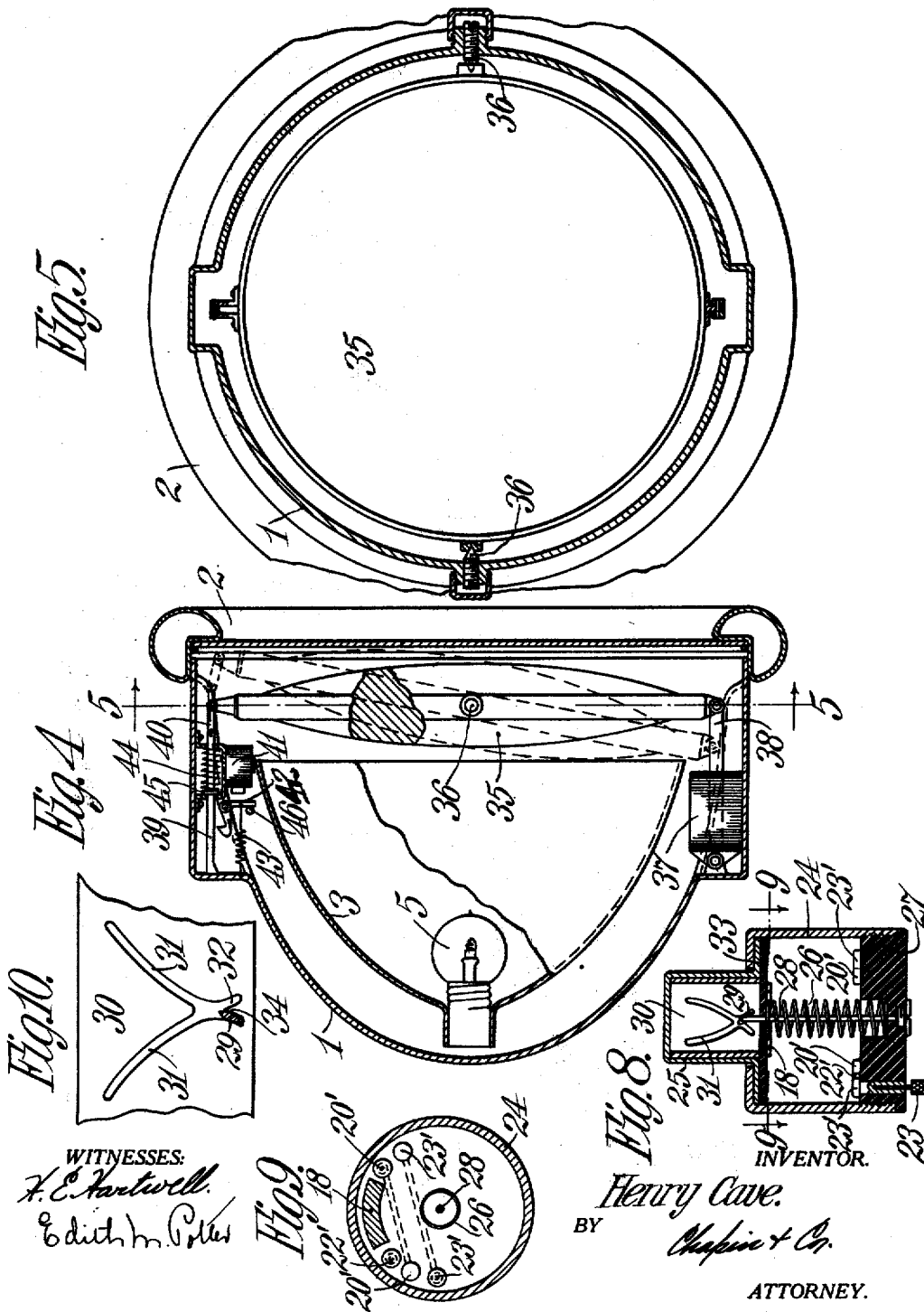
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3 SHEETS—SHEET 2.



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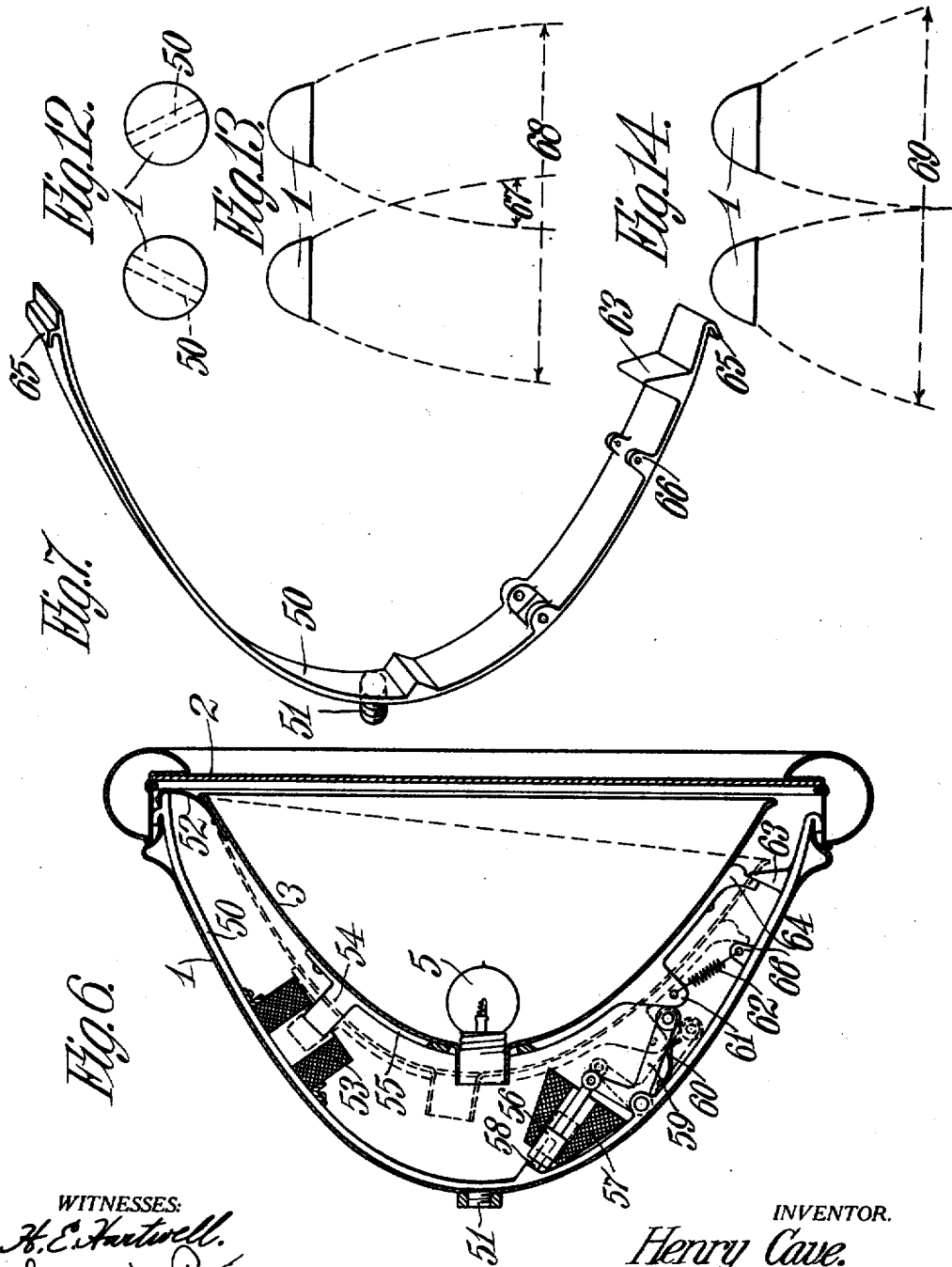
Fig. 9.
 20' 21' 22' 23' 24' 25' 26' 27' 28' 29' 30' 31' 32' 33' 34' 35' 36' 37' 38' 39' 40' 41' 42' 43' 44' 45'

Fig. 8.
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 3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY CAVE, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ADAMS-BAGNALL ELECTRIC COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

LIGHT-DEFLECTING APPARATUS.

1,321,418.

Specification of Letters Patent.

Patented Nov. 11, 1919.

Application filed December 24, 1914. Serial No. 878,904.

To all whom it may concern:

Be it known that I, HENRY CAVE, a citizen of the United States of America, and residing in Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Light-Deflecting Apparatus, of which the following is a specification.

This invention relates generally to headlamps, such as are used for automobiles and other vehicles. More particularly, however, it has to do with improved shiftable reflectors for headlamps, whereby the point of intersection of the light rays with the roadway may be changed, as desired.

Dirigible headlamps and shiftable reflectors have been patented before, but the lamps of this class, disclosed in the prior art, possess many disadvantages, which I seek to overcome by my invention. For example, many of these devices operate to move or deflect the entire lamp, and the deflecting mechanism must needs be located outside the lamp casing. This arrangement, at best, presents an ungainly and unattractive appearance to the structure, which is usually elaborate and complicated. Other devices have been used wherein the reflector alone is moved, but the operating devices have to large extent been placed without the lamp casing. Moreover, in lamps wherein the reflector itself is movable, the source of light has not been arranged to move therewith. In consequence, since there is but one correct focal location for the light source with respect to the reflector, diffusion of the light rays results when the reflector is moved or deflected. These and other difficulties I avoid in my improved headlamp.

An object of the invention is to provide a headlamp wherein the light rays may be deflected to change the point of intersection thereof with the roadway.

Another object is to provide, in such a device, means for moving the reflector and the source of light together, whereby the correct focal relation, between the reflector and the source, is always maintained.

Another object is to provide a device of the class described wherein the operating mechanism is located entirely within the lamp casing of the reflector and wherein only the controlling device for said mechanism remains without the casing.

Another object is to provide means positively to lock the reflector both in its normal position and in its moved or deflected position.

A further object is to provide deflecting mechanism for the reflector of a headlamp, which is applicable to existing lamps and does not require a specially formed lamp casing.

Other objects will appear in the detailed description to follow and in the annexed claims.

In the accompanying drawings is shown preferred forms of the invention for the purposes of illustration:—

Figure 1 is a sectional elevation of a headlamp showing one form of my invention applied thereto;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a side elevational view of the front portion of an automobile showing the application of my invention thereto;

Fig. 4 is a sectional elevation of a headlamp illustrative of a modification of my invention;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 1 showing a preferred form of my invention;

Fig. 7 is a perspective view of a removable frame shown in Fig. 6 on which the operating mechanism is mounted;

Fig. 8 is a sectional elevation of the switch for operating the deflecting apparatus;

Fig. 9 is a cross-sectional view taken on the line 9—9 of Fig. 8 and looking in the direction of the arrows;

Fig. 10 is a detail of a portion of the device shown in Fig. 8;

Fig. 11 is a diagrammatic view showing the electrical connections for the apparatus; and

Figs. 12, 13, and 14 are diagrammatical views illustrative of a novel result obtainable from the structure shown in Figs. 6 and 7.

Referring particularly to Figs. 1 and 2: The usual headlamp casing is shown at 1, which is normally closed by a hinged door 2 carrying the usual glass or lens. Within the casing is a parabolic reflector 3, which carries therein a lamp 5. This reflector 3 is

pivotally mounted at 4, by means shown in Fig. 2, and is movable from the position shown by full lines to that shown by dotted lines.

5 The means for moving the reflector will now be described. Fastened to the reflector in any suitable manner is a depending member 6 of magnetic material. An electro-magnet 7 is secured to the inner surface of
10 the casing 1 and is arranged when energized to attract the member 6 to the position indicated by dotted lines. Secured to the reflector 3 and above the electro-magnet 7 is a rearwardly extending arm 8 which has its
15 outermost end bent into V-form. This arm 8 is provided with a spring 9 secured to the casing 1, which serves normally to force the armature member 6 against a stop 10 fastened to the casing 1. At the rear portion of
20 the latter, a second electro-magnet 13 is mounted which, when suitably energized, attracts one arm of a bell-crank 11. This bell-crank is pivoted at 14 on a frame secured to the casing 1 and has a depending arm
25 on the end of which a roller is mounted. A spring 12 normally retains the bell-crank 11 in the position shown in Fig. 1, where the upper arm abuts a stop 15.

The roll on the member 11 is shown in engagement with the upper portion of the V-shaped end of the arm 8, and it should be noted that the reflector 3 is thereby positively
30 locked in its horizontal position. Movement of the reflector in one direction is prevented by the stop 10 and in the other direction by the roll on the bell-crank 11. The magnet 13 is arranged to operate every time the reflector 3 is moved, and the magnet 7 to
35 operate only when the reflector is moved downwardly by means to be described. Thus, to move the reflector to the position indicated by dotted lines, both magnets are simultaneously energized. The magnet 13 releases the
40 roll from engagement with the arm 8, and the magnet 7 thereafter attracts the armature member 6, whereby the reflector 3 is turned on its pivots 4. The energization of these magnets is momentary, and, as the arm 8 passes upwardly, the roll on the bell-crank 11
45 is caused to engage the under portion of the V-shaped end of the arm 8. Therefore, it will be seen that the reflector 3 is also positively locked in its deflected position.

The electrical connections for the apparatus just described have been omitted from Fig. 1 for the sake of clearness. They are, however, clearly shown in diagrammatic form in Fig. 11 and will now be described. One terminal of each of the magnets 7 and
60 13 and one terminal of the lamp 5 are connected to a common return wire 19 which leads to a suitable source of electrical energy 16. The other terminals of the magnets 7 and 13 are connected by wires 22 and 20, respectively, to an operating switch, and the
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other terminal of the lamp 5 is connected by a wire 21 to the usual lamp switch 17, which leads by a wire 23 to the source 16. The operating switch is shown in Figs. 8, 9, and 10 and will be later described in detail. 70 For the present purposes, however, it is sufficient to state that it comprises an oscillatory plate 18, which is adapted to move alternately to the right and left as viewed in Fig. 11. On each of these movements, a
75 series of buttons are electrically connected together. On each side of the member 18 are buttons 23' connected to the battery wire 23 and also other buttons 20' connected to the wire 20 of the magnet 13. On one side 80 only of the plate 18 in its inoperative position is a button 22' which is connected to the wire 22 leading to the magnet 7. When the member 18 moves to the right, the buttons 20', 22', and 23' are electrically connected and current from the source 16
85 then flows by the wires 20 and 22 to the magnets 13 and 7, respectively. Thus, both magnets are energized to produce the result already described of rocking the reflector. 90 The next time the switch is operated, the member 18 is automatically caused to move in the opposite direction to the left, which connects only the magnet 13 to the source 16 and permits the reflector to assume the
95 horizontal position.

The structure of this operating switch will now be described, and reference will be made to Figs. 8, 9, and 10. The buttons 20', 22', and 23' are suitably mounted in an insulating member 27, as clearly shown in
100 Figs. 8 and 9. Secured to the latter member is a casing 24 in which a plate of insulation 33 is mounted. This plate 33 is depressible by a button 25 which extends through the casing 24, against a spring 26
105 seated in the base 27. The plate 33 carries the oscillatory contacting member 18 previously described. A rod 28 fixed in the base 27 extends upwardly within the hollow operating button 25 and pivotally supports a
110 member 29. Fixed to the interior of the button 25 is a sleeve 30 with oppositely arranged cam paths 31 formed therein. The member 29, hereinafter designated as the traveler, engages in these paths to cause the
115 contact 18 to turn in alternate directions, from its central position shown in Fig. 9, each time the button is pushed downwardly.

Fig. 10 shows a "developed" view of a portion of the sleeve 30 and clearly shows the form of the traveler 29 and the paths 31. The latter intersect and below this intersection are shorter paths 32, wherein the traveler 29 normally rests. Each path 32
125 is designed to so turn the traveler that it is directed to the path 31 opposite from the one from whence it came. Thus, when the button 25 is depressed, the traveler 29 will pass up the right hand path 31 shown in
130

Fig. 10. When it is returned by means of the spring 26, the end of the traveler 29 will strike a projection 34 and be turned into the right hand path 32. This action directs the traveler 29 so that, on the next depression of the button 25, it will ride in the left-hand path 31. It will, therefore, be seen that this switch is so arranged that the operator has nothing to do but press the button 25. The mechanism within the casing automatically makes the necessary connections alternately to raise and lower the reflector 3.

If convenient or desirable for any reason, I may, instead of rocking the reflector, rock a lens or glass. Such a modification of my invention is shown in Figs. 4 and 5. The casing, lamp, door, and reflector are similar to those shown in Fig. 1 except that the reflector is fixed in any suitable manner to the casing. The glass shown in the form of a lens is represented by 35 and is pivotally mounted at 36, as clearly shown in Fig. 5. Pivotaly secured to the lower portion of the casing is a solenoid 37, which has a plunger 38 pivotally connected to the lower portion of the lens. This solenoid corresponds to the magnet 7 already described and is adapted to move the lens 35 from the position shown in full lines to that shown in dotted lines Fig. 4. At the upper part of the casing, a rod 39 is slidably mounted in a bracket secured to the casing and is connected by a link 40 to the upper portion of the lens 35 in the manner shown. Fixed on this rod is a collar 45 and acting between the latter and one wall of the bracket is a compression spring 44 which tends to retain the parts in the relative positions shown in full lines. An electro-magnet 41, also fastened to the bracket, is arranged to attract, when energized, a pivoted bell-crank 42 in a manner identical with that already described in connection with Fig. 1. A spring 43 retains the bell-crank 42 in the position shown, where one arm thereof abuts a fixed stop 46. The other arm of the member 42 has a latch, which, when the lens is deflected, engages a lug on the end of the rod 39, whereby the lens is held in deflected position. Normally, the end of the rod 39 engages the casing 1 and this lug in cooperation with the spring 44 retains the lens 35 in the full line position shown. It is necessary for the operation of this device to energize each magnet alternately, which may be accomplished in a manner similar to that already described.

Referring now to Figs. 6 and 7, which show the preferred form of my invention: 50 represents a narrow curved frame which is bent to conform with the interior surface of the casing 1. This frame is clearly shown in perspective in Fig. 7 and has fixed thereto a stud 51 which is adapted to

pass through the rear of the casing 1 and be secured thereto by the nut shown in Fig. 6. The two ends of this frame are formed with hooks 65, which, when the frame is forced into the casing 1, engage with the peripheral edge of the latter, as indicated in the drawing. Thus, the frame may be firmly secured to the casing 1 by the cooperation of these hooks with the nut and stud 51. A similar curved frame 55 is secured to the rear of the reflector 3.

The reflector is supported from the frame 50 by a strip of spring material 52 which forms a pivotal connection therefor. Mounted on the frame 50 is a solenoid 53, which, when energized, is adapted to attract a plunger 54 secured to the frame 55, whereby the reflector 3 may be moved in an obvious manner to the position indicated by dotted lines in Fig. 6. A second solenoid 57, also secured to the frame 50, has a plunger 56, which is slidably mounted on a pin 58, fixed in the frame. This plunger is operatively connected to one arm of a bell-crank 59 which is pivoted to the frame 50. The other arm of the member 59 bears at its end a roller, which engages one side of a lug 61, integral with the frame 55. A spring 62, mounted between the lug 61 and the lug 66 on frame 50 tends to hold the reflector 3 in the full line position shown, where a lug 64 on the frame 55 abuts a stop 63 integral with the frame 50. The bell-crank 59 is normally kept in the position shown in Fig. 6 by a flat spring 60 fastened to the frame 50.

The solenoids 53 and 57 correspond to the magnets 7 and 13, respectively, heretofore described in connection with Fig. 1. The electrical connections for these solenoids are identical with those shown in Fig. 11, and the solenoids may be operated by the switch shown in Fig. 8. Furthermore, the solenoids function in a similar manner to those described in my first modification. The solenoid 57 and bell-crank 59 form a locking device and serve to positively hold the reflector 3 both in its normal and deflected positions. In the normal position of the reflector 3 indicated by full lines in Fig. 6, the engagement of the members 63 and 64 restrains movement in one direction, and the engagement of the bell-crank roll with one side of the lug 61 prevents movement in the other direction. When both solenoids are energized, the reflector moves to the position indicated by dotted lines, and the bell-crank 59 is forced downwardly to its dotted line position to permit such a movement. When the current is disconnected from the solenoid 57, the spring 60 forces the bell-crank upwardly so that the roll thereon engages the right-hand side of the lug 61. The lug 64 also engages a second stop 66 on the frame 50 when the reflector moves

to its deflected position, whereby the reflector is positively held in its deflected position.

An important advantage of the frame structure shown in Fig. 6 lies in the ease with which the entire operating mechanism, except the controlling element, may be assembled and adjusted prior to its insertion into the casing 1. Every part of the mechanism is conveniently accessible, and the arrangement permits accurate adjustment of the parts relative to the movable reflector. After suitable adjustments have been made, the frame 50, the stud 51, and the reflector 3 may be placed as a unit within the casing 1 and secured quickly and easily by the simple means already described.

Fig 3 illustrates the application of my device to a vehicle and shows in conventional form only a headlamp applied to an automobile. The normal direction of the light rays from the parabolic reflector 3 is indicated at 70, and this direction may be altered by the apparatus just described to the position indicated at 71 by dotted lines. When the light rays are deflected, as shown at 71, the intersection thereof with the roadway is much nearer the vehicle, and the excessive glare to one coming toward the lamps 5 is avoided. However, where a pair of lamps are used, as is the usual custom, the illuminated areas from each lamp overlap when the light rays therefrom are deflected. This condition is diagrammatically shown in Fig. 13 where the dimension 67 indicates the width of the overlapping areas. The dimension 68 indicates the total width of the combined areas illuminated by each headlamp.

This overlapping illuminated area may be eliminated, if desired, by a simple adjustment of the frame 50. The latter is normally set into the casing 1 to lie in a vertical plane as shown in Fig. 6. However, by the adjustable mounting of these frames 50, they may be moved from their vertical positions to the inclined positions shown in Fig. 12, or in fact to any other desired rotary position since the reflector and the solenoids in each casing are all carried by the curved frame 50 which is pivotally secured axially of the casing by means of the clamping nut 51. With the reflector in its normal undeflected position, the light rays therefrom are not altered in direction from that already described, when the frames 50 are vertically disposed, and the illuminated area from the lamp is also the same. When the reflector is deflected, as described, it will be seen that the rays are inclined not only downwardly but outwardly due to the inclined mounting of the members 50. This condition is shown in Fig. 14, and it will be evident from the diagram there shown that the width of the illuminated

area indicated at 69 is broader than that shown at 68 in Fig. 13. Moreover, the overlapping areas are eliminated by this arrangement of the frames.

It should also be noted that the preferred structure illustrated in Fig. 6 can be applied to an existing headlamp without any modification of the lamp casing. Moreover, the lamp retains the same external appearance as before, since the entire operating mechanism is within the lamp, and the only visible difference is the addition of two extra wires, which lead to the controlling apparatus. The latter is designed to place a minimum of effort upon the operator, as it requires simply the depression of a button to move the reflector from one position to another. This controlling apparatus, since it is connected to the operating mechanism by flexible wires, may be located at any desired point and may conveniently be placed upon the steering wheel of an automobile. With this arrangement, there is an entire absence of operating mechanism (except the controlling device) without the lamp casing such as the levers, links, cords, and pulleys commonly employed.

Thus, I have provided a headlamp with means to change the direction of the light rays therefrom. Moreover, the lamp is not different in external appearance to an ordinary lamp due to the location of the operating devices, and the latter can be conveniently applied to any existing lamp. The deflecting mechanism is arranged to be controlled in a convenient manner and with a minimum of effect. Furthermore, the focal relation of the source of light with the reflector remains unaltered during the movement of the reflector to prevent diffusion of the light rays from the lamp.

It is recognized that many changes may be made in the specific structure described without departing from the scope of my invention which is defined in the appended claims.

What I claim is,—

1. A headlight comprising a casing having a glass, a shiftable reflector mounted within the casing back of the glass and shiftable to project the full beam of light downwardly on to the road without cutting off any part thereof and thereby prevent the glare of the light, light creating means co-operating with said reflector, and electrical actuating means located directly between the rear wall of the shiftable reflector and the casing for shifting said reflector into different positions in a vertical plane.

2. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of

light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, and means effective to lock the reflector when shifted to prevent the glare of the light.

3. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, and means for locking the reflector when in its normal position.

4. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, and means for locking the reflector in both its normal position and when shifted to prevent the glare of the lamp.

5. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, and means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp.

6. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit

only leading from said casing for controlling the operation of said means, means effective to lock the reflector when shifted to prevent the glare of the light, and means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp.

7. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, means for locking the reflector when in its normal position, and means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp.

8. A headlight comprising a casing, a shiftable reflector therein, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of the light, means located wholly within the casing for shifting said reflector and having an electrical conduit only leading from said casing for controlling the operation of said means, means for locking the reflector in both its normal position and when shifted to prevent the glare of the lamp, and means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp.

9. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, and means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented.

10. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable

movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, and means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented and comprising electrically operative means.

11. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented, and means for locking said reflector in one of its shifted positions.

12. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented and comprising electrically operative means, and means for locking said reflector in one of its shifted positions.

13. In a headlamp, the combination with a casing, of a frame curved to fit the interior of said casing, means to removably secure said frame to the latter, a reflector pivoted to said frame, a source of light in the reflector and movable therewith, actuating means supported by said frame to move said reflector from a normal position to a second position through a definite angle, a second frame curved to fit the rear of the reflector and secured thereto, said second frame having a part thereon to cooperate with said means, locking mechanism mounted on the first-named frame, and devices on the second frame to cooperate with said locking mechanism to positively hold the reflector in each of its positions and prevent movement thereof in either direction, said frame with the actuating means, reflector and locking mechanism mounted thereon in cooperative

relation, being conveniently removable from the casing as a unit.

14. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented and comprising electrically operative means, and means for positively locking said reflector in its different shifted positions.

15. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp and comprising a shiftable frame carrying said reflector and connected with said casing, and means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented.

16. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp and comprising a shiftable and removable frame carrying said reflector and connected with said casing, and means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented, said frame being removable and replaceable in said casing with the source of light and the reflector as a unit.

17. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp and

comprising a shiftable frame carrying said reflector and connected with said casing, and means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented, said frame comprising a relatively narrow curved member.

18. A headlight comprising a casing, a parabolically formed and shiftable reflector mounted within said casing for shiftable movement upwardly and downwardly only when set in its normal position, a source of light carried thereby and movable therewith, means for so supporting the reflector within the casing that the reflector may be adjusted relatively to its casing thereby to prevent any substantial overlapping of the rays of light with a companion lamp, means for shifting said reflector upwardly and downwardly only whereby the glare of the light will be prevented, and a switch constructed and arranged so that successive operations thereof cause the alternate raising and lowering of the reflector.

19. A headlight comprising a casing, a shiftable parabolically formed reflector carried thereby, a source of light within the

reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of light, means for shifting said reflector, and means located within the casing for locking the reflector when shifted into its downward position.

20. A headlight comprising a casing, a shiftable parabolically formed reflector carried thereby, a source of light within the reflector, said reflector being supported for movement upwardly and downwardly whereby the point of intersection of the rays from the source of light with the roadway may be changed as desired so as to prevent the glare of light, means for shifting said reflector, and means within the casing for locking the reflector in either its upward or downward position.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."