To all whom it may concern:

Be it known that I, CHARLES LOWELL HOWARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Illuminating Devices, of which the following is a specification:

My invention has for its object to provide an improved device for illuminating flags, banners, signals or other flexible objects when in motion, said device having such characteristics that the illuminating means shall be contained within a hollow body or pole and be capable of reflecting or projecting light through an opening or openings therein upon the flexible object carried.

Prior to my invention such flexible objects have been illuminated by devices exterior of a staff or pole, such as a searchlight, or by means attached to the outside of the pole as described in Patent No. 1,714,917, granted Feb. 15, 1916 to Charles M. Axford; and among the novel features of my invention are such as dispense with all external illuminating means thereby preserving the symmetry of the pole, and protecting the interior illuminating means from the elements or other outside influences which might interfere with their operation.

In the drawing forming a part of this specification, Figure 1 shows in vertical section the upper part of a pole to which my invention in one of its forms is applied, a floating flag or banner being indicated. Fig. 2 is a similar view more especially illustrating means preferably employed for allowing the portion of the staff to which the flag is attached to turn by the action of the wind operating on a vane in such manner as to prevent the twisting of the conducting wires or the disarrangement of the electric circuit. Fig. 3 is a similar section of an enlarged view showing means employed when current is obtained from a battery held within the rotating part to which the flag is secured. Figs. 4, 5, 6, 7, 8, 9 and 11 show modifications or details hereinafter described. Fig. 10 is a view partly in vertical section showing my invention applied to a small pole carrying a flag capable of being borne by hand. Fig. 12 shows a modification of the device of Fig. 10.

Referring to Fig. 1, 1 is the flag staff or pole, and 2 the flag, the latter being linked to the pole at 3, 3, although in the main forms in which my invention is herein shown and described the flag may be strung to the pole in the ordinary manner so that it may be hoisted and lowered. The pole is tubular, a construction which is followed in all the modifications of my invention so far as relates to that part or section of the pole to which the flag is fastened.

4 is a battery, shown as placed within the pole or staff 1 and at or near its base. The top of the pole is closed by a removable cap 5 preferably screwed on as shown, although it may be connected in any known way. The under side of the cap or closure is provided with an eye 6 to which are strung a series of small incandescent light bulbs 8 having suitable connection with the battery 4, and which may be illuminated or darkened through the agency of the switch 7 operative from the exterior of the pole. That portion of the pole immediately behind the inner edge of the flag 2 is furnished with a series of perforations 9, each of which is closed by a bull's eye or lens 10. Each bulb 8 is placed just behind one of the lenses 10, and in the rear of each of the bulbs is a reflector 11, shown of concavo-convex form. The lens or reflector may be of any known or approved description. It is apparent that upon illuminating the bulbs the light from each will be thrown through its confronting lens and projected upon the waving surfaces of the flag thereby effecting a vivid display.

The same arrangement of lamp, lens and reflector is shown in Figs. 2, 3 and 10, but in Fig. 4 the series of reflectors 11 are carried by a door 12 hinged at 12a to the pole, in which is cut an opening 12b of a length equal to the door. Upon closing the door 12 the series of reflectors are brought immediately behind a corresponding series of bulbs 8 each of which in turn has a lens 10 placed directly in front of it. The door 12, 100 apart from serving as a means of carrying the series of reflectors, also allows access to the interior of the pole for the examination, adjustment or repair of the electrical or optical devices. A similar opening and door 105 may be placed at the base of the pole or in the vicinity of the battery whereby the latter may be reached.

In Fig. 5 the reflecting device consists of a curved body 11a arranged concentrically with a portion of the wall of the pole 1, as indicated more particularly in enlarged cross
SE section in Fig. 8, while in the similar section, Fig. 9, the reflecting device 11 is seen attached to the door 12 hinged at 13 to the pole. In each of these figures, viz.: Figs. 5, 8 and 9, the mirror consists of a longitudinally extended entirety, as also does the lens 10. In the use of an elongated reflecting surface in the rear of a unitary elongated lens fewer lights are needed than where a series of reflectors and lenses and a corresponding series of lights are employed.

In Figs. 2 and 3 means are shown whereby the portion or section 1 of the staff or pole may be revolved, under the influence of wind currents acting upon a vane 13, without twisting the circuit wires. In Fig. 2 a contact ring 14 is connected to the interior of the rotating portion 1 of the staff 1 and insulated therewith. Upon this ring a spring contact finger 15 bears, said finger being attached to and insulated from the fixed part of the staff. A wire 16 extends downwardly from the spring contact finger 15 through or at one side of the staff to a binding post 17 on the exterior of the staff. A spring contact finger 18, fixed on the staff 1, bears on the inner surface of the rotating staff portion 1. From this finger a wire 19 parallels the wire 16 to a binding post 31.

Lead wires 32 and 33 from and external and, as may be, distant source of electrical energy are connected to the binding posts. The wires 34 and 35 which supply the electric bulbs 8 are connected, respectively, to the insulated contact ring 14 and to the rotating part 1 of the staff. The current enters through the lead 32 to the binding post 17, thence by the wire 16 to the finger 15, to the ring 14 and through the wire 34 to the lights, returning through the wire 35, the rotating staff portion 1, the finger 18, the wire 19, the binding post 31 and the lead wire 9.

In Fig. 3 the rotating portion 1 of the pole includes a battery 4 from which current is derived, the friction between said rotating part and the stationary portion of the pole 1 being lessened by means of the friction rollers 19. Steadiness and rigidity between the stationary and rotating parts of the pole are attained by means of an elongated pin 18 which extends from the latter into a bore made in the upper end of the former.

Fig. 10 represents a small hollow pole 1 carrying a flag 2 and intended for hand use. When so employed it may be used in political and other processions, theatrical performances, for night signaling uses or identification means on automobiles and otherwise.

In this case a battery 4 is used for furnishing the current which is rendered active or inactive, for the purposes of supplying or cutting off illumination, through the agency of the finger control or switch 19. The arrangement of the lamps or bulbs, the lenses, reflectors and other features with respect to the pole may be in accord with what is shown under any of the modifications hereinafter described. In Fig. 10 the lower portion of the pole is solid, the part to which the flag and the illuminating features are attached being hollow. The switch 19 is placed at or near the portion of the pole grasped by the hand so that the bearer need use but one hand in the illumination and darkening of the flag whereby the intended spectacular effect is produced.

In the use of a battery of greater diameter than is capable of being placed within a pole of convenient size, the battery, as shown in Fig. 12, may be inserted within an enlarged part of the pole forming the handhold, it being understood that in Figs. 10 and 12 the finger control, button, switch, or the like 19 may be operated by the hand in which the pole is grasped.

Fig. 6 shows the lenses 10 arranged in pairs in horizontal alignment, the flag seen in dotted lines being placed between the vertical rows. In Fig. 7 the lenses 10 are staggered, and the flag, also represented by dotted lines, appears in the longitudinal central position. With the lenses shown in Figs. 6 and 7 are also employed mirrors under any form or arrangement herein described.

It is also within my invention to give the lenses and mirrors, or either of them, angular adjustment with respect to their lamps. This may be done by mounting them on vertical pivots 33 and 36 (see Fig. 11) carried in bearings on the interior of the staff 1. The pivots, if desired, may be horizontal. After adjustment the lenses may be permanently secured within their openings. Such angular arrangement is capable of producing novel and pleasing effects in the illumination of the waving flag, and may be employed whether the lens or the mirror be used in series or are of the unitary character before described. The brilliancy and spectacular character of the illumination of the flag (which may be considered as translucent and as lacking the opacity of a rigid signaling device) may be increased and novel varieties in coloring given by an assemblage of lenses having the national colors, red, white and blue.

It is evident that I provide for the ready insertion, withdrawal or adjustment of the illuminating means, and also for quick repair. While a main object is to do away with all illuminating means exterior of the pole, whereby they are less liable to breakage or injury, the pole is rendered more sightly, and advantages in simplicity and effect of construction are obtained. The device is not intended to be confined to outdoor use where the flag is waved by natural currents of air, as it may be employed indoors, artificial currents of air being...
utilized as from an electric fan removed at some distance from the pole.

Having described my invention, I claim:

1. A hollow pole or support having one or more openings therein, a lens closing each opening, an object capable of presenting waving surfaces under the influence of air currents and attached to the exterior of said pole or support in proximity to said lens or lenses, and illuminating means within said pole or support in the rear of said lens or lenses adapted to project rays of light upon said flexible and movable object.

2. A hollow pole or support having a lens system inserted therein, an illuminating system in the rear of said lens system, a reflecting system in the rear of said illuminating system, and an object, attached to the exterior of said pole or support, capable under the influence of air currents of presenting waving surfaces for the action thereon of said illuminating means.

3. A hollow pole or support having a lens system inserted therein, a controllable illuminating system in the rear of said lens system, a reflecting system in the rear of said illuminating system, a flexible object attached to the exterior of said pole or support in proximity to said lens system, and means for allowing the shifting of said pole or support with the wind.

4. A hollow pole or support having one or more openings therein, a lens closing each opening, illuminating means in the rear of each lens, a reflector in the rear of said illuminating means, a flexible object attached to the exterior of said pole or support in proximity to said lens or lenses, a solid base for said hollow pole or support, and means between the latter and said base for permitting rotation of said hollow pole or support under the action of wind currents.

5. A hollow pole or support having a lens system inserted therein, an illuminating system in the rear of said lens system, a reflecting system in the rear of said illuminating system, an object attached to the exterior of said pole or support capable, under the influence of air currents, of presenting waving surfaces for the action thereon of said illuminating system, a source of electrical energy, and electrical connections whereby said illuminating means may be lightened or darkened.

6. A hollow pole or support having one or more openings therein, a lens closing each opening, electric illuminating means within said pole or support and in the rear of said lens or lenses, reflectors also within said pole or support and in the rear of said illuminating means, an object attached to the exterior of said pole or support in proximity to said lens or lenses and capable, under the influence of air currents, of presenting waving surfaces for the action thereon of said illuminating means, a source of electrical energy, and electrical connections whereby said illuminating means may be lightened or darkened.

7. A hollow flag pole or support having one or more openings, a lens closing each of said openings, a removable cap for said pole, incandescent light bulbs, strung from the under part of said cap, in the rear of said lens or lenses, and a flexible object attached to the exterior of said pole or support in proximity to said lens or lenses, the arrangement being such that surfaces of said flexible object having waving movement influenced by air currents shall receive rays of light from said interior illuminating means.

8. A hollow flag pole having one or more openings, a lens closing each of said openings, a removable cap for said pole, a flexible object, capable of being waved by air currents, attached to the pole in proximity to said lens or lenses, incandescent light bulbs, strung from the under side of said cap, in the rear of said lens or lenses, and a reflecting system in the rear of said bulbs, the illuminating and reflecting systems being so spaced as to project rays of light through said lenses to the flexible object or flag when waving or in motion.

9. A hollow pole or support having a lens system inserted therein, and provided with a door opening opposite said lens system, a door for said opening, a reflecting system mounted on the inner side of said door, an illuminating system within said hollow pole or support placed between said lens and said reflecting systems, and a flag or flexible object attached to the exterior of said hollow pole or support in proximity to said lens system.

10. A hollow pole or support having an adjustable lens system inserted therein, a controllable illuminating system in the rear of said lens system, an adjustable reflecting system in the rear of said illuminating system, and a flag or flexible object attached to the exterior of said hollow pole or support in proximity to said lens system.

11. A hollow support forming a continuation of a solid pole or staff, said hollow support having a lens system inserted therein, an illuminating system in the rear of said lens system, a reflecting system in the rear of said illuminating system, a source of electrical energy, as a battery, held within said hollow pole or support, a flag or flexible object attached to the exterior of said pole or support in proximity to said lens system, and electrical connections for supplying the illuminating system and controlling the illumination.

12. A hollow pole or support having a lens system inserted therein, an illuminating system in the rear of said lens system, a reflect-
ing system in the rear of said illuminating system, a flexible object, as a flag, attached to the exterior of said pole or support in proximity to said lens system, a source of electrical energy, as a battery, held within said hollow pole or support, and electrical connections whereby said illuminating means may be lightened or darkened.

13. In a device of the character described, the combination of a rotatable hollow section forming a continuation of a relatively stationary pole or staff, said hollow section carrying incandescent light bulbs and light projecting devices associated therewith and having within it and secured to its interior a contact ring insulated from said section, a stationary spring contact finger bearing upon the inner wall of said contact ring, a wire extending from said spring contact finger through a side of said pole or staff to a binding post on the exterior thereof, a spring contact finger attached to said pole or staff and bearing on the inner surface of the rotating portion, a wire paralleling said former mentioned wire and leading to a binding post, lead wires from a source of electrical energy connected to said binding post, and wires, which supply the incandescent light bulbs, connected respectively to said insulated contact ring and said rotatable section.

14. A hollow flag pole having a lens system therein, an illuminating means therefor, and a flexible translucent object having one marginal portion attached to said pole above and below said system, said system being substantially coextensive with said marginal portion and adapted to project rays of light toward both sides of said flexible translucent object.

15. A hollow flag pole having a series of lenses inserted therein in serially spaced relation thereto, an illuminating system within said hollow flag pole, and a flag or flexible translucent object attached to said pole centrally in line with said serially spaced lenses, said lenses being adapted to project rays of light toward both sides of said flag or flexible translucent object.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES LOWELL HOWARD.

Witnesses:
GILBERT P. BOSSERT,
JAMES L. GOREE.