May 10, 1927. 1,627,895

A. H. HANDLAN

SIGNAL LANTERN AND LENS THEREFOR

Filed Jan. 15, 1925

FIG. I

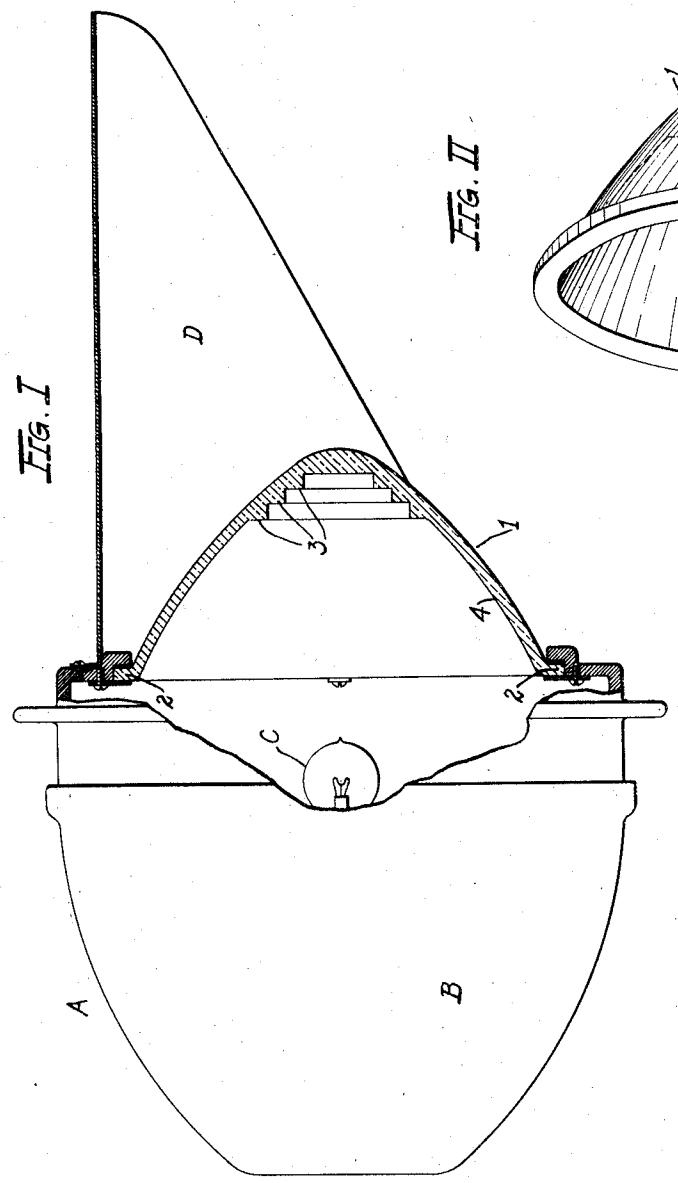
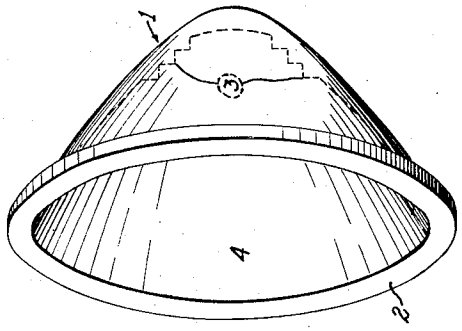


FIG. II



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Patented May 10, 1927. 1,627,895

UNITED STATES PATENT OFFICE.

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SIGNAL LANTERN AND LENS THEREFOR.

Application filed January 15, 1925. Serial No. 2,618.

This invention relates generally to signal lanterns, and more particularly to a signal lantern which is provided with a lens so constructed and arranged that a signal being given by said signal lantern may be observed even though the eye of the observer is located immediately beneath or above or to one or the other side of said signal lantern.

Prior to this invention much inconvenience and annoyance were occasioned, particularly in connection with signal lanterns of the types used on railroads and for controlling traffic at street intersections where said signal lanterns were elevated above the heads of the persons whose movements were controlled by said signal lanterns, due to the fact that it was practically impossible for an observer to see the signal given by the signal lantern when he was immediately beneath said signal lantern, or approximately in line with said signal lantern in a direction transverse to the direction of the beam of light cast thereby. The signal lanterns in question were so arranged that the lamp filament was concentrated as much as possible in the principal focal point of the lens, which lens was usually of such character as to convert the light falling thereon from the light source into a beam which was projected toward the zone of observation. Such a beam, however, did not provide for close indication, that is, indication to one immediately beneath or above or to one or the other side of it, and at points close to the signal lantern. It frequently happened, therefore, that when a person had moved to a point beneath the signal lantern, or to a point where he was approximately in line with it in a direction transverse to the direction of the beam of light cast thereby, he was unable to tell whether or not the desired signal was being flashed by the lantern.

The main purpose of my invention, therefore, is to produce a signal lantern which is provided with a lens so constructed and arranged that a signal given by said lantern may be observed even though the observer is out of the zone of observation of the beam of light cast by said signal lantern in a direction transverse to the direction of said beam of light but has not passed entirely beyond the signal lantern.

A distinct advantage of my improved lens over those heretofore used has to do with the testing of signal lanterns. The control mechanisms associated with these lanterns are usually located at the base of the standards by which said lanterns are supported, and heretofore it was necessary for the maintenance man in testing the lanterns to manipulate the controlling mechanism and then walk some distance outwardly until he could see whether or not the signal was lighted. With my improved lens the maintenance man may remain at his position at the base of the standard, as it is possible for him to see the signal from that point.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. I is a view, partly in side elevation and partly in vertical section, showing a signal lantern provided with my improved lens.

Fig. II is a perspective of the lens shown in Fig. I.

In the drawing, A designates a signal lantern of the type commonly used on railroads, said lantern comprising a housing B within which is located an incandescent lamp C. The lantern A is provided with a hood D which extends outwardly from the lamp housing, as shown in Fig. I.

1 designates the lens of the lantern illustrated in Fig. I, said lens being provided with an annular flange 2 which is gripped by suitable fastening devices associated with the lantern housing whereby said lens is secured to said lantern housing. By referring to Figs. I and II it will be seen that the lens 1 is in the form of a hollow conoid and that said lens extends some distance outwardly from the adjacent marginal edge of the lantern housing. It will also be observed by referring to Fig. I that the lens 1 has prismatic zones 3 disposed on its inner face adjacent to the outermost end thereof, which zones are so formed and are in such positions relative to the source of light as to concentrate the light falling thereon from said light source into a beam which is projected toward the zone of observation.

Interposed between that portion of the inner face of the lens which is provided with

the prismatic zones 3 and the inner edge of the lens, said inner face of said lens is provided with a smooth skirt portion 4, said skirt portion 4 being annular in formation and being arranged immediately adjacent to the wall of the lantern housing, as shown clearly in Fig. I.

In the use of a signal lantern provided with one of my improved lenses, light falling on the prismatic zones 3 of said lens will be converted into a beam of light which has all of the intensity of the beams projected by signal lanterns heretofore used and in addition to this a close-up signal is flashed which may be observed by a person who is immediaately beneath or above the signal lantern, or to one or the other side thereof. The flashing of these so-called close-up signals is rendered possible because the lens is in the form of a hollow conoid which is extended outwardly beyond the lantern housing, and because of the presence of the smooth skirt portion of the lens 1, for it is plain that when the incandescent lamp C is intensified the interior of the hollow lens will be flooded with light, and this light will be radiated from said interior of said lens through the smooth annular skirt portion 4 thereof, whereby a subdued indication is provided which may be seen by one immediately beneath, above, or to one or the other side of the signal lantern. It is apparent, therefore, that the smooth skirt portion of the lens constitutes a very important feature of my invention, as it permits of a clear close-up signal being flashed which is not unduly dulled as it would be if the prismatic zones were disposed on the entire inner face of the lens.

An important feature of my improved lens when used with railroad signal lanterns results from the fact that a very strong beam of light will be cast toward the zone of observation where said beam may be "picked up" by the engineer of an approaching train, and because of the distance between the signal lantern and the engineer at this time he may look directly toward the lantern without being temporarily blinded by the intense light. As the engineer moves toward the signal lantern the intensity of the light, in so far as its effect on his eyes is concerned, is gradually dimished, due to the fact that he is moving out of alinement with the beam of light. The gradual diminishing of the intensity of the light continues until the engineer is in line with the smooth skirt portion 4 of the lens, when he may look directly into the signal lantern without ill effects, due to the absence of prismatic zones on the skirt portion of the lens which would tend to intensify the light coming from the lantern. It is seen from this that a gradually subdued indication of the same color is obtained as the engineer moves from the point of greatest intensity of the light to a point relatively close to the signal lantern.

I claim:

1. A lens for traffic control signal lamps comprising a transparent member in the form of a hollow conoid having beam-forming elements on a face of said conoid near the apex thereof, and a skirt portion designed for diffusing light extending rearwardly from said beam-forming elements to the rim portion of said lens.

2. A lens for traffic control signal lamps comprising a transparent member in the form of a hollow conoid having beam-forming elements on a face of said conoid near the apex thereof, and a skirt portion designed for diffusing light extending rearwardly from said beam-forming elements to the rim portion of said lens, said skirt portion being of greater area than the portion occupied by the beam-forming elements.

In testimony that I claim the foregoing I hereunto affix my signature.

ALEXANDER H. HANDLAN.