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SNOW GUARDS FOR SIGNAL LENSES

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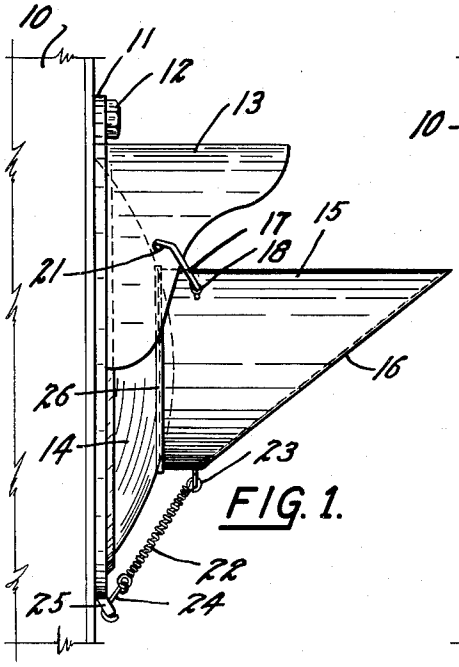


FIG. 1.

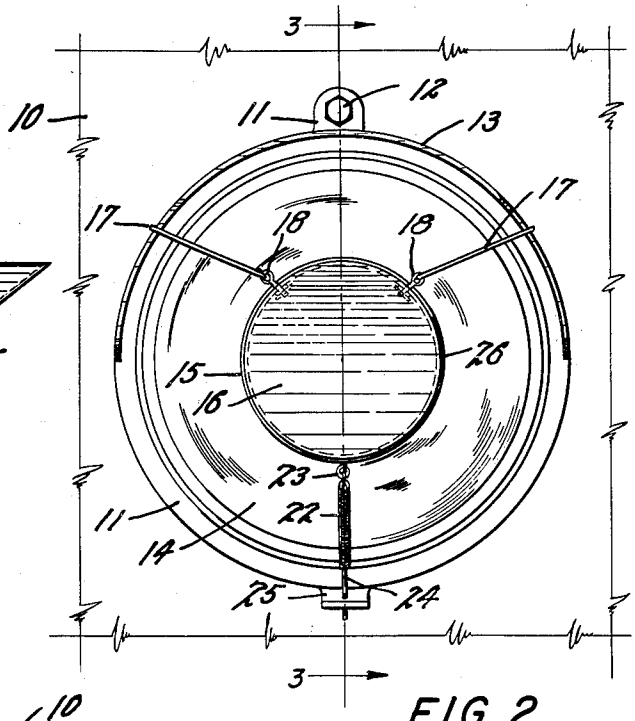


FIG. 2.

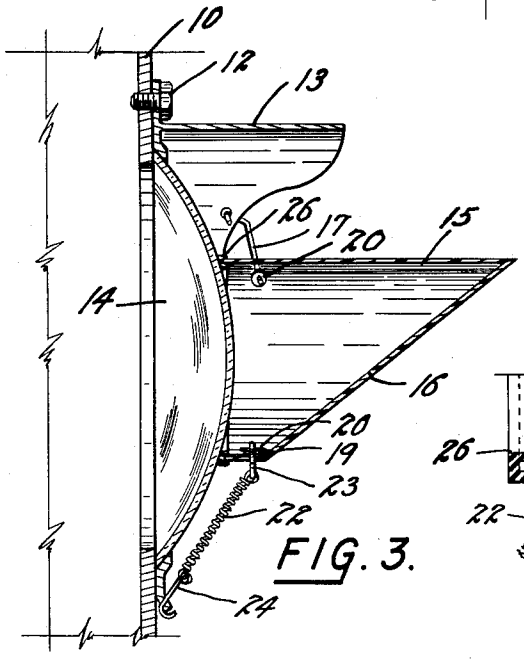


FIG. 3.

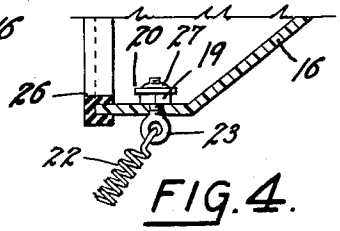


FIG. 4.

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SNOW GUARDS FOR SIGNAL LENSES

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5 Claims. (Cl. 240—46.53)

This invention relates to a snow guard for railway and traffic signal lenses. During the winter season snow and ice driven by the wind will pack into the hoods about signal lenses and onto the surface of the lenses to a thickness sufficient to obscure the light through the lens. Obscured railway signal lights can be an exceedingly dangerous hazard.

The principal object of this invention is to provide a simple, highly efficient, and inexpensive device which can be quickly and easily applied to any signal lens, and which will permanently prevent the major portion of the lens from becoming obscured by driven snow and ice.

Another object of the invention is to so construct the improved snow guard that it will not in any way interfere with the visibility of the signal light under normal conditions, and which will greatly increase the visibility thereof under storm conditions.

While the invention will be herein described as more particularly applied to railway signal lenses, it will be of value on any type of lens, for instance, the lenses of street traffic signal lights, where it is desired to prevent the signal from being obscured from wind blown snow and ice.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a side view of the lens portion of a conventional railway signal light with the improved snow guard in place thereon;

Fig. 2 is a front view of the lens portion of the signal light with the snow guard in place;

Fig. 3 is a vertical cross-section, taken on the line 3—3, Fig. 2; and

Fig. 4 is an enlarged fragmentary detail section through the lower portion of the improved guard, illustrating an attachment device therefor.

In the drawing, a signal lamp housing is indicated at **10**, with its lens retaining ring at **11**, lens ring cap screws at **12**, and shielding hood at **13**. The lens ring **11** supports a conventional colored signal lens **14** in place. This invention is designed to be applied to the signal lens **14**.

The improved guard consists of a cylindrical tube **15** formed of suitable transparent material. It is preferred to use "Lumarith" or similar non-metallic, light-weight, transparent, light-conducting material. The rear extremity of the tube **15** lies in a plane at right angles to the axis of the tube and is completely open. The forward extremity of the tube is cut on an angle to the axis of the tube, and this forward extremity is closed by

means of an inclined front plate **16** of transparent plastic or similar material. It has been found that an incline or angle of substantially 40° for the front plate **16** is very satisfactory.

The front plate may be an oval-shaped plate cemented to the inclined front extremity of the tube **15** by any of the usual plastic cements. However, the complete unit of the tube **15** and the front plate **16** could be molded from plastic or glass as a single integral piece.

The open rear extremity of the tube **15** is designed to fit snugly against the lens **14**, with the longer side of the tube upwardly so that the front plate **16** will incline rearwardly and inwardly. The diameter of the tube **15** is preferably less than the diameter of the signal lens **14**. Satisfactory results have been obtained on an eight-inch signal lens by having the diameter of the tube four inches.

The tube may be held in place on the lens in any desired manner. A simple and efficient means for attachment is illustrated in the drawings and comprises two upper hooks **17** which are hingedly attached to the tube **15** by means of screw eyes **18** which extend through the plastic tube and terminate in suitable nuts **19** and retaining washers **20**. The retaining washers **20** may be soldered to the screw eyes to permanently prevent withdrawal. The two hooks **17** are hooked into receiving openings **21** formed in the two sides of the lens hood **13** and are of the proper length to center the tube **15** on the lens **14**.

The tube **15** is clamped in place on the lens by means of a tension spring **22** secured to the bottom of the tube **15** by means of a screw eye **23** which is attached to the tube **15** similarly to the screw eyes **18** and which terminates in an attachment hook **24**. In some installations, the hook **24** is hooked through an ear **25**, with which some lens rings **11** are provided, and in other installations is attached beneath a cap screw, which is occasionally employed for holding the lower extremity of the lens ring **11** in place.

The length of the spring **22** is such that it will be under tension when the tube **15** is in its proper position so as to hold the latter resiliently against the forward face of the lens **14** to maintain a tight joint regardless of thermal expansion and contraction and inaccuracies of manufacture.

It is preferred to place an annular, grooved gasket **26** around the inner extremity of the tube **15** to form a weather-tight seal with the lens **14**.

Let us assume that the wind is blowing snow against the lens **14**. This snow will strike the inclined plate **16** and be blown rearwardly and downwardly therealong assisted by gravity. The snow may build up on the exposed border of the lens **14**, but the core of the lens, enclosed by the tube **15**, will be always clean and clear of snow. The light emitted through this core will illuminate the transparent snow guard so that the signal color will always be visible, even though a considerable depth of snow builds up on the lens beneath the hood **13**.

Due to the transparency of the entire guard, the light rays from the lens in any direction are not interferred with and the entire lens is visible from all angles unless snow-covered. When covered with a depth of snow, the colored light rays are still visible at all times both from a position directly ahead and at angles to the axis.

Transparent plastics, such as "Lumarith," have ability to conduct light throughout their lengths. Therefore, the lens light will be conducted forwardly to illuminate the entire forward edge of the tube **15** and the front plate **16**.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the

appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A snow guard for use on a round convex signal lens of the type used on railway signal devices comprising: a hollow cylindrical tube of less diameter than said lens and having an open rear extremity positioned against the forward convex surface of said lens; an inclined forward extremity on said tube member; an inclined, transparent front plate closing said inclined forward extremity; and means for resiliently maintaining the open rear extremity of said tube against the convex surface of said lens.

2. A snow guard as described in claim 1 having an annular resilient gasket positioned and clamped between the convex surface of said lens and the rear extremity of said tube.

3. A snow guard for signal lenses as described in claim 2 in which the means for supporting comprises: two hooked members hingedly secured to said tube and extending upwardly and rearwardly therefrom; a single resilient tension member hingedly secured to said tube and extending rearwardly and downwardly therefrom; and means for securing said hooked members and said resilient tension member to a supporting structure for said signal light lens.

4. In a railway signal light the combination of a round signal lens having a convex forward face; a hollow cylindrical tube of less diameter than said lens and having an open rear extremity surrounded by an annular rear edge lying in a plane at right angles to the axis of said tube, and a closed forward extremity lying in a plane inclined to the axis of said tube, said tube and said closed forward extremity being formed of light-transmitting material; and means concentrically supporting said tube on the convex forward face of said lens so that an annular beam of light will pass through said lens about said tube and an axial beam of light will pass through the hollow center of said tube and through the inclined closed forward extremity thereof.

5. In a railway signal light the combination of a round signal lens having a convex forward face; a hollow cylindrical tube of less diameter than said lens and having an open rear extremity surrounded by an annular rear edge lying in a plane at right angles to the axis of said tube, and a closed forward extremity lying in a plane inclined to the axis of said tube, said tube and said closed forward extremity being formed of light-transmitting material; means concentrically supporting said tube on the convex forward face of said lens so that an annular beam of light will pass through said lens about said tube and an axial beam of light will pass through the hollow center of said tube and through the inclined closed forward extremity thereof, and a third beam of light will be transmitted longitudinally through the light-transmitting walls of said tube to provide annular illumination about the inclined closed forward extremity of said tube; and means for sealing the annular rear edge of said tube to the convex forward face of said lens.

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