Jan. 7, 1936. G. W. BERGMAN 2,026,770

SIGNAL

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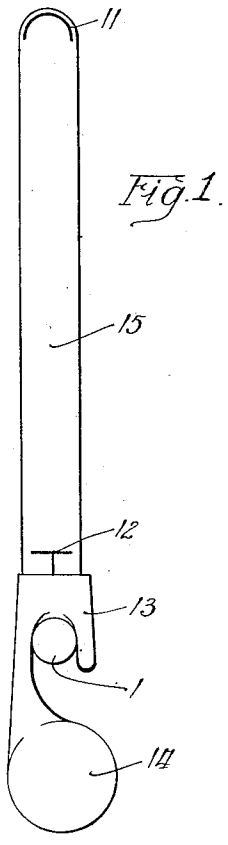


Fig. 1.

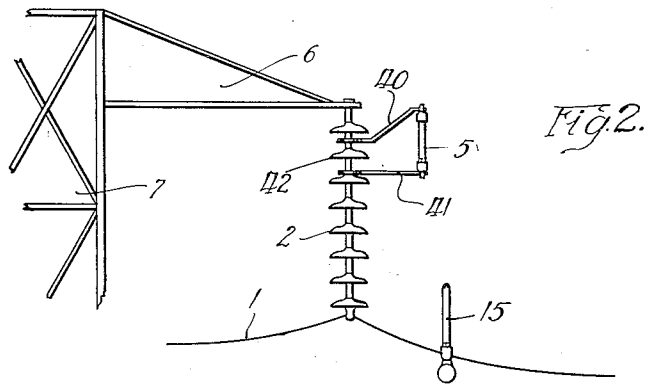


Fig. 2.

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SIGNAL

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1 Claim. (Cl. 177—352)

This invention relates to signals, more particularly to signals for marking the position and condition of a high tension transmission line.

A high tension transmission line leading from one city to another constitutes a path marker or guideway for aviators during the day time, since its towers are visible from great distances and suitable markings make the destination of the line known to the aviator. However, at night and on days when the visibility is poor, the high tension transmission line becomes a hazard to the aviator, rather than a help. The towers of such a transmission line frequently extend to considerable height and are liable to be struck by an aeroplane flying low at times of low visibility.

In my present invention, I provide a signal for marking the position of the transmission line, that signal serving to assist the aviator in locating the transmission line during the night and during foggy weather, when the visibility is very poor.

For this purpose, I provide a luminous signal, which is fastened to the transmission tower, or to the conductors of the transmission line. The signal is lighted by the potential on the transmission line, and serves to indicate the position of the line. Moreover, a signal of this kind constitutes a safety device, in that it will be lighted at all times, if the transmission line is under tension, so that workmen working on the tower supporting the line, or on the line itself, will know definitely that potential is on the line.

In order to keep the cost of operation of a signalling system of this kind down within a reasonable figure, the signals employed should be very low current consumers, and in addition, should be capable of having the relatively high voltage of the transmission line impressed upon them.

I have found that a glass tube filled with neon gas is particularly well adapted for this kind of signalling work. The neon lamp is capable of withstanding high voltage and, in addition, consumes a negligible amount of current. Moreover, as is well understood by those engaged in aviation, the rays from a neon lamp have particular penetrating power, which enables the lamp to be seen at relatively great distances through a thick fog. While I prefer to use a neon lamp, I realize that, in some instances, a low current filament type lamp may be preferable over the neon lamp and I am not, therefore, to be restricted to the use of any particularly form of lamp.

In the drawing, I have shown by simple diagrams two adaptations of the invention to acquaint those skilled in the art with the principles of it.

Figure 1 shows the details of construction of a condenser type lamp; and

Figure 2 shows an application of the condenser type lamp to a transmission line and also a two electrode type lamp connected around an insulator.

The lamp shown in Figure 1 comprises a glass tube 15, which is closed at its upper end and has its lower end sealed into the base 13. This tube is preferably about one inch in diameter and approximately one foot long, although larger or smaller tubes may be used as required. The base 13 is a metallic unitary structure shaped to fit over the transmission line conductor 1, and provided with the counterweight 14, which hangs below the conductor 1 to maintain the lamp in an upright position on the conductor.

Sealed within the lamp tube 15 is a tinfoil plate 11, which is disposed at the upper end of the tube and attached to the inside wall of the tube. An electrode 12 is disposed at the bottom of the tube and electrically connected to the metallic base 13. The space in the tube is first exhausted and then filled with a suitable gas, such as neon or any other gas, which glows under the influence of a very small electric current flowing through it.

The type of lamp shown in Figure 1 is termed a condenser type lamp, since the current used to illuminate the gas in the lamp is that current flowing from the conductor 1 through the electrode 12 and the gas to the condenser plate 11. This plate 11 is not electrically connected to any other conductor.

In Figure 2, I show another modification in which the signal tube, shown in detail in Figure 1, is employed. This tube 15 is of the condenser type and is supported on the potential carrying conductor 1 in the manner shown in Figure 1 and hereinbefore explained. This tube has only one terminal, and is lighted by condenser charging current flowing from the conductor 1 to the plate 11, sealed within the tube. When the tube 15 is supported upon the conductor 1 in the manner shown in Figure 2, it will be necessary to place some kind of a stop or guide upon the conductor to prevent the tube from sliding along it to the lowest point. A clamp, such as a U-clamp, around the conductor, will serve this purpose. Preferably, also, the lamp 15 will be connected to the conductor by a safety chain or similar holding means so that, in case of storm and high wind,

the tube will not fall to the ground even though it be dislodged from the conductor.

In Figure 2, I also show a signal lamp 5 connected across the insulator 42 by mounting brackets 40 and 41.

The potential drop across the insulator 42 is employed to energize the lamp 5. The lamp is a two electrode type lamp. The insulator 42 is preferably an extra insulator inserted in the string 2 and may be of the same type as the others in the string or may be a special insulator designed to have a potential drop which corresponds to the proper potential for the lamp 5. The brackets 40 and 41 are metallic brackets clamped onto the insulator 42 by brackets tailored to fit the insulator, and attached to the end eyelets of the lamp 5 by bolts and nuts. The ends of the brackets 40 and 41 preferably project through these eyelets and are threaded to receive lock nuts which hold the lamp securely on the bracket.

The foregoing illustrations show some of the adaptations of a signal lamp to a transmission tower, these adaptations being shown by way of example only as I do not wish to be limited by the specific disclosure shown. I am aware that there are many other modifications and adaptations of the signal which can be made by one skilled in the art to fit into particular requirements without departing from the teachings of the invention.

Furthermore, although I have described a gas-filled electrotype tube as a signal, I have done so by way of example, as a suitable filament type signal might also be used in any of the adaptations illustrated.

Having thus complied with the statutes and shown and described a preferred embodiment of my invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claim.

What is claimed is:

The combination with a high tension outdoor electric system including supporting towers and a high tension conductor supported therefrom by high voltage insulators, of a visible discharge device of the class described comprising an elongated glass tube of small diameter filled with an inert gas and having a closed upper end, an electrode within the closed end of said tube free of mechanical or electrical connection to any part of said system, a socket for the open end of said tube sealing the same and having a second electrode projecting into said tube and spaced from said first electrode, said socket having an integral portion engaging about a major portion of the lateral periphery of said conductor and having a depending counterweight portion disposed below said conductor diametrically opposite said tube and of sufficient weight to position said socket in vertically extending position to support said tube in upright position above said conductor, said hook portion and socket providing direct electrical connection between said conductor and said second electrode.

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