

Nov. 23, 1943.

S. HERMANN

2,334,765

SYSTEM AND DEVICE FOR SIGNALING PURPOSES

Filed May 10, 1941

Fig. 1.

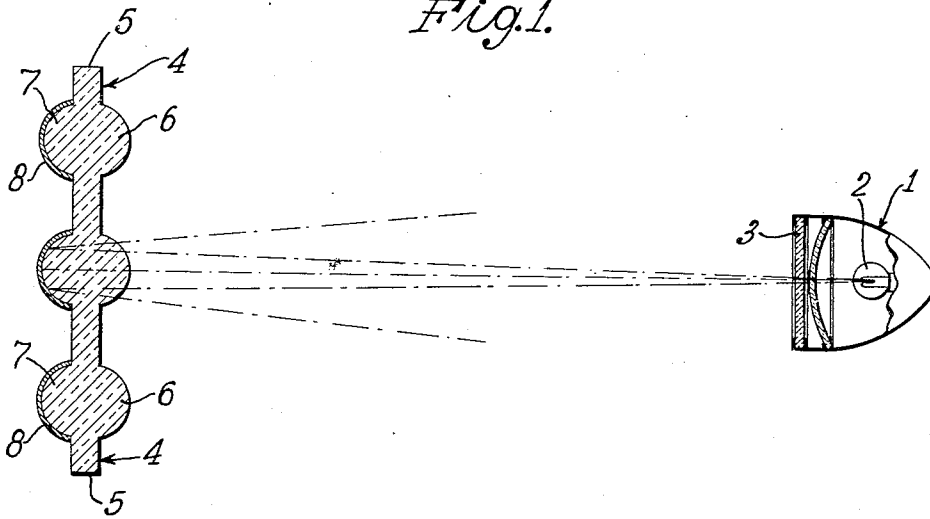


Fig. 3.

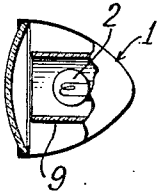


Fig. 2.

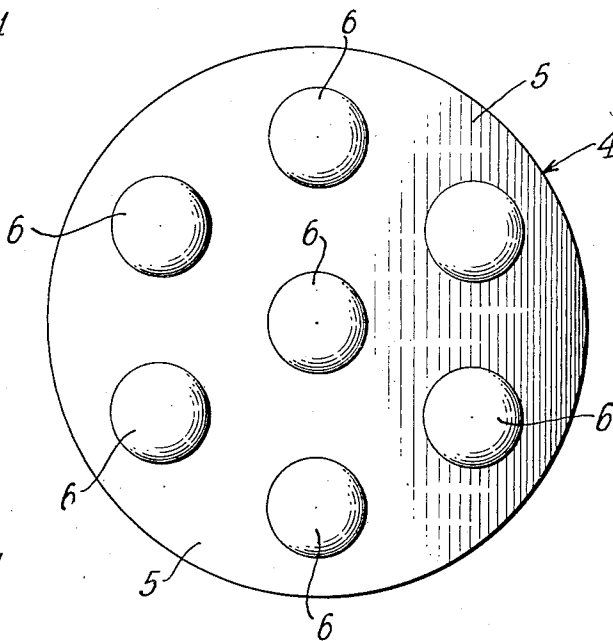
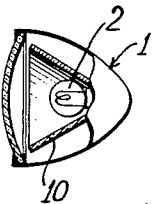


Fig. 4.



INVENTOR
Siegwart Hermann
BY *Ernest E. Mettrey*
ATTORNEY

UNITED STATES PATENT OFFICE

2,334,765

SYSTEM AND DEVICE FOR SIGNALING PURPOSES

Siegwart Hermann, New York, N. Y.

Application May 10, 1941, Serial No. 392,911

4 Claims. (Cl. 250-77)

This invention relates to a system and devices for signaling purposes and more particularly to a signaling system to be used in the dark.

One of the objects of the invention is to provide a system which enables the user to give a kind of light signal by luminescence, fluorescence or phosphorescence. The light signals, according to this invention, are not perceivable by third persons from any considerable distance.

Another object of the invention is to insure that these faint signaling light spots generated by my system are visible only in one direction.

This system will be of importance, e. g., for the maintenance of traffic during blackouts inasmuch as the light signals given by, or to, cars cannot be realized from airplanes flying overhead. In times of war, military units using the signaling system, according to this invention, may be moved without disclosing their position.

The examples given are but two out of a considerable amount of other uses.

The system, according to this invention, comprises a special device for sending the signals and a special device for receiving the signals and rendering them perceivable, namely a special kind of reflector.

In the sending device normal light sources are used, such as ordinary electric bulbs as common on vehicles, or the light sources of normal flashlights. These lights, according to my invention, are covered by a screen of special glass which is very dark. Light beams of normal wave length cannot penetrate this kind of glass; only the dark rays having a wave length of 3,000 to 4,500 Å. are able to pass through this screen. When these rays fall onto the reflector, luminescence of this reflector will occur, but it will be perceivable in only one single direction.

As to the screen to be used, according to this invention, I am aware that the so-called Wood glass has been used in connection with ultraviolet rays which cause luminescence, fluorescence or phosphorescence in meeting certain objects. However, beams originating from ordinary bulbs do not penetrate Wood glass sufficiently to generate luminescence of appropriate objects. Now I have discovered that it is possible to produce a kind of special glass which permits the rays generated in ordinary electric bulbs having a wave length of, e. g., 3,000 to 4,500 Å. to penetrate it, but not the light beams of normal wave lengths.

The glass, according to my invention, is made by adding oxide of nickel and oxide of copper to silica, borax, potash, possibly borate of potassium,

to which substances is also added a small amount of nitrate of potassium.

The amount of oxide of nickel and oxide of copper and the proportions of each of these substances give the possibility of rendering the glass permeable to rays of certain wave lengths.

Example 1

The basic material contains

	Parts
Silica	580
Boric acid	20
Potassium carbonate	220
Borate of potassium	60-80

In order to obtain permeability for wave lengths of 3,100 to 4,200 Å., 7 parts of oxide of nickel and 0.5 part of oxide of copper are added.

Example 2

In order to obtain permeability for wave lengths of 3,300 to 4,200 Å., 8 parts of oxide of nickel and 5 parts of oxide of copper are added to the basic material described in Example 1.

Example 3

In order to obtain permeability for wave lengths of 3,400 to 4,000 Å., 14 parts of oxide of nickel and 4 parts of oxide copper are added to the basic material described in Example 1.

The permeability in all examples is measured with the spectrograph of Féry; plates are of 3 mm. thickness; exposure is 15 seconds.

The receiving device of the signaling system, according to my invention, comprises a reflecting part which is provided with well-known agents luminescent, fluorescent or phosphorescent when met by rays having a wave length of 3,000 to 4,500 Å., e. g. with fluorescein, uranine, sulfide of zinc, etc.

In the drawing the reference characters in the various figures denote like parts:

Fig. 1 is a diagrammatic section through a system, according to my invention.

Fig. 2 is a plain view of the reflecting device.

Fig. 3 shows a special construction of a sending device.

Fig. 4 is another special construction of a sending device.

The light source 1 comprises an ordinary light bulb 2 provided with a screen 3 composed of dark glass as above described.

No special screen will be necessary when the glass of the bulb consists of a dark glass as above described.

The construction, according to Fig. 3 comprises a tubular shaped screen 9 and, according to Fig. 4, a funnel shaped screen 10. Both of them are open at the front, protecting the light beams from reaching the reflector of the sending device.

The reflecting device 4 comprises a base plate 5 and calottes 6 and 7 arranged on both sides of the base plate. The calottes on the back are provided with an agent 8, luminescent when met by the waves originating from the light source. The calottes 6 and 7 are arranged on the front and back of base plate 5 in a corresponding manner so as to insure that reflection will take place in only one direction, namely a direction directly opposite the light source.

I have described preferred embodiments of my invention, but it is understood that changes may be made without departing from the spirit of my invention.

What I claim is:

1. In a signaling system for observable utilization of invisible rays consisting of a projecting and rejecting device, said projecting device comprising a reflector, a normal electric light source and means protecting said light source, the use of one single protecting screen or filter for the light source consisting of a special glass containing oxide of nickel together with oxide of copper and the use of a reflecting device consisting of calottes of transparent material arranged on both sides of a transparent base plate, said calottes being

provided on the back with an agent, luminescent, when met by the waves originating from the light source and said calottes being arranged on the front and on the back of the base plate in a corresponding manner so as to insure that reflection will take place in only one direction, namely a direction directly opposite the light source.

2. In a signaling system for observable utilization of invisible rays the use of a screen consisting of a special glass comprising a basic material containing silica, potash, borate of potassium, and a mixture of 7 parts of oxide of nickel and 0.5 part of oxide of copper, said glass being permeable for a wave length of 3,100 to 4,200 Å.

3. In a signaling system for observable utilization of invisible rays the use of a screen consisting of a special glass comprising a basic material containing silica, potash, borate of potassium, and a mixture of 8 parts of oxide of nickel and 5 parts of oxide of copper, said glass being permeable for a wave length of 3,300 to 4,200 Å.

4. In a signaling system for observable utilization of invisible rays the use of a screen consisting of a special glass comprising a basic material containing silica, potash, borate of potassium and a mixture of 14 parts of oxide of nickel and 4 parts of oxide of copper, said glass being permeable for a wave length of 3,300 to 4,400 Å.

SIEGWARD HERMANN.