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MEANS FOR OBSERVING AND SIGNALING BETWEEN SHIPS IN FOG.

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1,184,783.

Patented May 30, 1916.

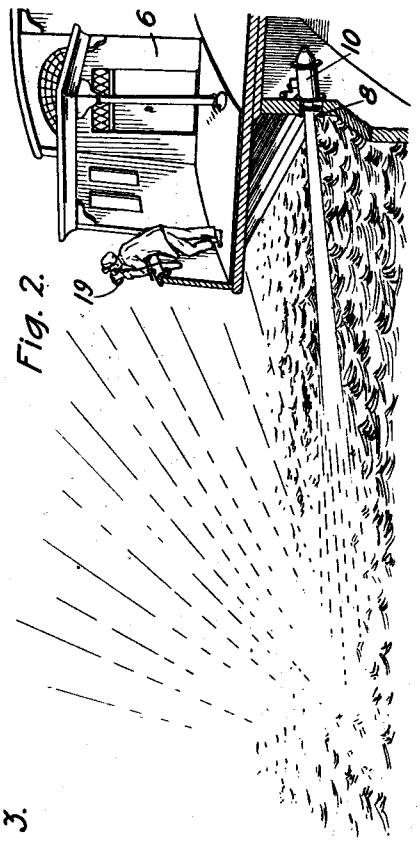

Fig. 2.

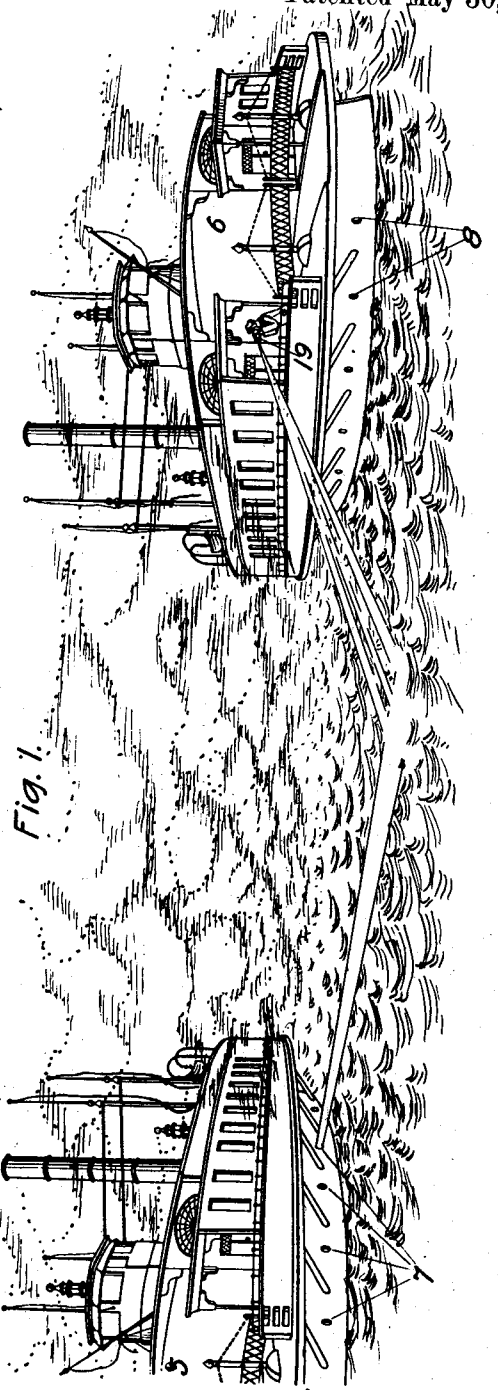

Fig. 1.

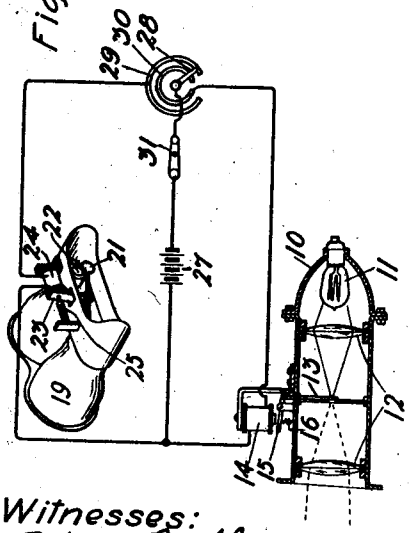

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES BUCKNER SPEED, OF WEST NEW BRIGHTON, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTERN ELECTRIC COMPANY, INCORPORATED, A CORPORATION OF NEW YORK.

MEANS FOR OBSERVING AND SIGNALING BETWEEN SHIPS IN FOG.

1,184,783. Specification of Letters Patent. Patented May 30, 1916.

Application filed September 4, 1914. Serial No. 860,182.

To all whom it may concern:

Be it known that I, JAMES BUCKNER SPEED, a citizen of the United States, residing at West New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Means for Observing and Signaling Between Ships in Fog, of which the following is a full, clear, concise, and exact description.

This invention relates to observing and signaling between ships in fog, and its object is to provide a new and improved means for this purpose, by the employment of which collisions between vessels can be effectively prevented.

It has been observed that fog close to the water is much more transparent than fog several feet above the water. This phenomenon is often so pronounced that there is a thin stratum of moderately clear air in contact with the water.

It has also been found that an attempt in fog to use lights such as searchlights located on the upper works of a ship is futile, owing to the fact that such lights merely illuminate the fog and reflect from it and do not penetrate it to any considerable extent.

The present invention is based upon an appreciation of the two phenomena above mentioned, and it utilizes the first and avoids the difficulties presented by the second.

In general, my invention contemplates the intermittent projection of light outwardly from points near the water line of a ship; and the use of a device such as shutter spectacles operated in synchronism with the projection of light, which permits an observer located near the water line of the ship to observe the effect of light from other ships similarly equipped, only while no light is being projected from the ship upon which he is located.

The invention may be carried out with many forms of apparatus, one of which is illustrated in the accompanying drawing, wherein:

Figure 1 represents two vessels equipped with signaling and observing devices in accordance with this invention; Fig. 2 represents more in detail the observing and signaling equipment of a vessel; and Fig. 3 represents the electrical connections between the observing and signaling apparatus.

Referring to the drawing, Fig. 1 shows two ferry-boats 5 and 6 equipped with the invention. Port-holes 7 and 8 located near the water line in both vessels are provided with suitable sources of illumination which intermittently project light outwardly over the surface of the water. These sources of intermittent illumination may comprise merely incandescent lamps which are periodically lighted and extinguished, or may comprise constantly lighted lamps, the rays of which in their projection from the port-holes are controlled by suitable periodically operated shutters. The last mentioned arrangement is the one shown in detail and more or less diagrammatically in Fig. 3. It comprises a casing 10, which may be of the general form shown, at one end of which is mounted an incandescent lamp 11. Located within the casing are suitable lenses such as 12 which properly control the rays of light from the lamp and cause their proper projection from the port-hole. Also mounted within the casing is a suitable shutter mechanism 13 for controlling the projection of the lamp's rays. In the particular arrangement shown, this shutter mechanism is controlled by a magnet 14 which when energized attracts an armature 15 attached to the shutter. The armature 15 is biased to the position shown in any suitable manner, as by a spring 16, and when in its normal position, the shutter is open. When the magnet 14 is energized, it attracts this armature 15 and the shutter closes, as will be obvious from the drawing.

In order that the observer, who as explained above should be located on the vessel as near the water line as possible, may not be dazzled by the reflection from the fog due to the light from his own vessel, shutter spectacles 19 are provided. As shown in Fig. 3, these spectacles may take the general form of field glasses, and are provided with a shutter operated in synchronism with the port-hole shutters. As shown in Fig. 3, the spectacle-shutter may consist of a lever 21 at each end of which is a disk adapted to cover the opening or glass 22 of the spectacles. This lever may carry an armature 23 adapted to coöperate with

an electromagnet 24 and normally held away from said magnet by a spring 25. The circuit for the control of the spectacle and port-hole shutters is indicated in Fig. 3, it being understood that a plurality of either of these devices can be controlled from the same circuit. In Fig. 3, a battery 27 is indicated as supplying current to the circuits of the shutter magnets 14 and 24, under the control of a brush 28 which moves over the surface of a commutator having sections 29 and 30. As shown, the brush 28 is connected to one pole of the battery, the commutator section 29 is connected to one terminal of the magnet 24, and the other commutator section 30 is connected to one terminal of the other shutter magnet 14; the other terminals of the shutter magnets 24 and 14 being connected to the other pole of the battery. The length of the commutator segment 30 is such that the interval of time during which the port-hole shutters 13 are allowed to remain open, is short as compared with the period during which said shutters are closed; and the length of the segment 29 and its arrangement with reference to the segment 30 are such that the closing of the spectacle-shutter 22 takes place just before the opening of the port-hole shutter 13, and such that the opening of the former does not occur until a little after the closing of the latter. There is, therefore, no opportunity for an observer to be dazzled by the signal lights from his own vessel. A switch 31 may be interposed in the battery circuit for the purpose of starting and stopping the operation of the system; and the brush may be driven over the commutator by any suitable mechanism not shown.

With the arrangement of apparatus described, it is evident that an observer stationed near the water line of a vessel can detect on the surface of the water, light projected from another vessel equipped as described, provided the two vessels are in dangerous proximity.

In other words, by my invention, the diameter of the circle within which the proper lookout can be kept during a fog is greatly increased over what is possible by the methods of observation and signaling heretofore employed.

What is claimed is:

1. Means for signaling and observing between ships in fog comprising means carried by each ship for projecting light outwardly from the ship near the surface of the water; means for intermittently cutting off projection of said light; and means, operating in synchronism with said last mentioned means, for preventing an observer located on a ship near the surface of the water from observing the effect of light from other ships except during the intervals when the projection of light from his ship is cut off.

2. Means for signaling and observing between ships in fog comprising sources of signal light located on each ship near the water line and arranged to project light outwardly; shutters for periodically obscuring said light; and shutter spectacles, operated in synchronism with said light shutters, for preventing observation of the surface of the water except during the intervals when said light shutters are closed.

3. Means for signaling and observing between ships in fog comprising sources of signal light located on each ship near the water line and arranged to project light outwardly, electromagnetically operated shutters coöperating therewith, electromagnetically operated shutter spectacles for use in observing the effect of light from other ships, and a switching device for operating said shutters oppositely and synchronously.

In witness whereof, I hereunto subscribe my name this 1st day of September A. D. 1914.

JAMES BUCKNER SPEED.

Witnesses:
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