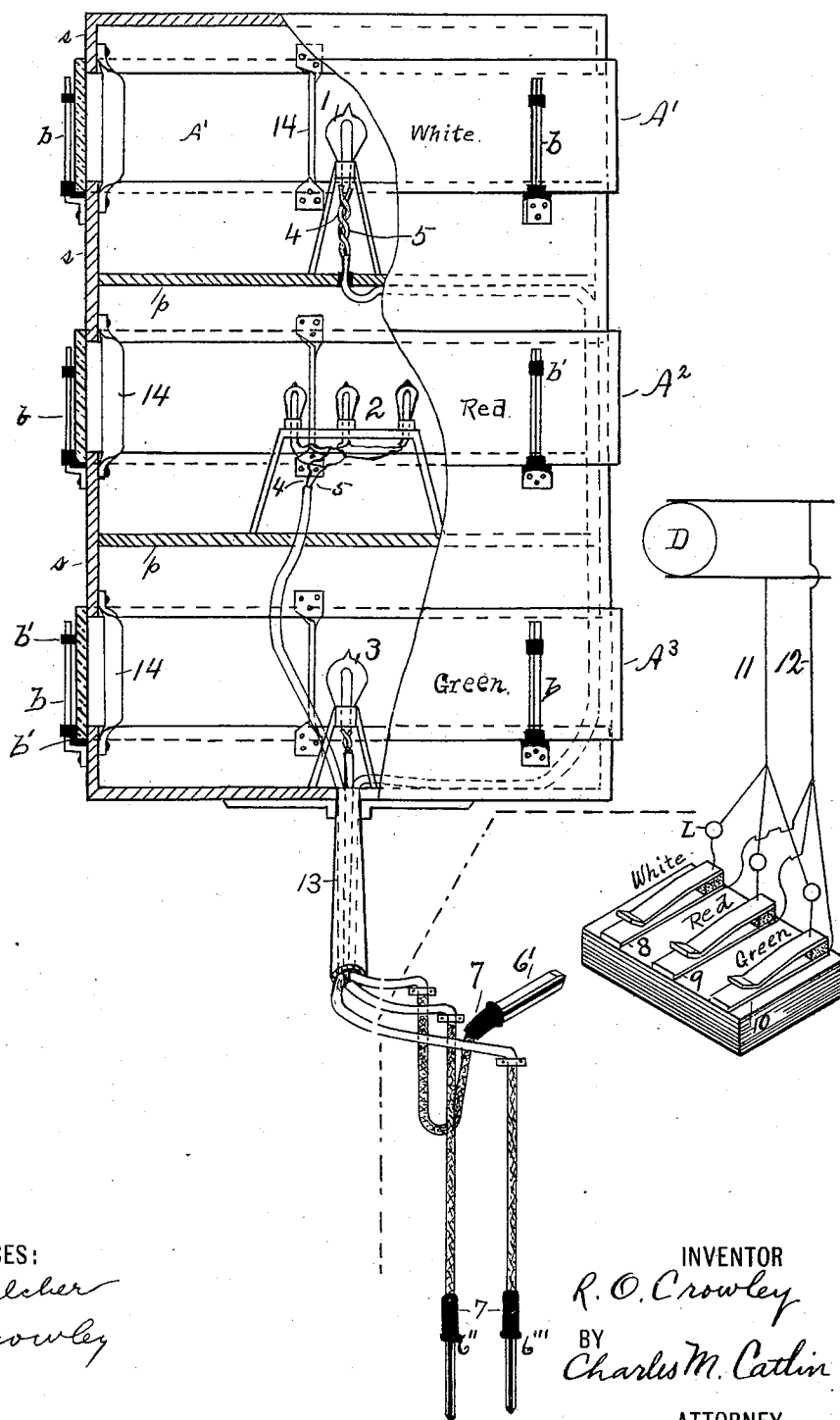


(No Model.)

R. O. CROWLEY.
NIGHT SIGNALING.

No. 568,838.

Patented Oct. 6, 1896.



WITNESSES:

C. L. Belcher

R. O. Crowley

UNITED STATES PATENT OFFICE.

ROY O. CROWLEY, OF ELIZABETH, NEW JERSEY.

NIGHT SIGNALING.

SPECIFICATION forming part of Letters Patent No. 568,838, dated October 6, 1896.

Application filed December 12, 1895. Serial No. 571,896. (No model.)

To all whom it may concern:

Be it known that I, ROY O. CROWLEY, a citizen of the United States, and resident of Elizabeth, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Night Signaling, of which the following is a specification.

This invention relates to signaling apparatus employing suitably-controlled lights behind colored glass, whereby signals made up of different-colored flashes can be made.

The main object of the invention is to provide an improved apparatus adapted for all-around and long-distance signaling at night.

In the accompanying drawing the figure represents a hollow case, preferably cylindrical or octagonal in shape, and with openings extending entirely around, and having fixed in these openings strips or bands of glass or thin porcelain, each band being of a different color from the others. The figure also shows circuit connections.

Bands of glass $A^1 A^2 A^3$ are loosely fitted on brackets or supports $b b$ on the outside of a divided cylinder or case, one above the other, and at a distance of a foot or more apart, and are so arranged that when broken or damaged they may be easily removed and new ones inserted. Within each subdivision of the cylinder one or more electric lamps are fixed, as at 1, 2, and 3, on planes level with the glass bands. Between each pair of bands of glass, on the inside of the cylinder, are fixed partitions $p p$ to prevent light from either lamp shining on the glass band above or below it. The electric lamps are connected by double insulated wires 4 5 to wedges $6^1 6^2 6^3$ with insulated handles 7, these wedges being freely movable and convenient to the point or station from whence they control the electric lights, for example, at the bridge of a ship, and each wedge may be designated by a mark or color corresponding to the color of the signal made by the lamp and glass band in the cylinder brought into use thereby. At the station, adjacent to the wedges, are arranged a series of spring-jacks 8, 9, 10, one for each wedge, which may also be designated by marks or colors corresponding to the signals. These spring-jacks are connected by insulated electric wires 11 12 with the dynamo D or other electric power on board a ship or

in a fort or other place of use. When the wedges are inserted in the spring-jacks, the electric current is sent to the lamps in the cylinder having the bands of glass. Thus when the wedge 6^1 is inserted in the spring-jack 8 it will cause the electric lamp (or lamps) 1 to shine on the white glass band A^1 , producing a long broad white signal, which in my method of signaling, corresponds to the "dot" of the Morse telegraphic alphabet. So, also, when the wedge 6^2 is inserted in the spring-jack 9 it will cause the electric lamp or lamps at 2 to shine on the red glass band A^2 , producing a red signal, which in my method corresponds to the "dash" of the Morse alphabet, and when the wedge 6^3 is inserted in the spring-jack 10 it will cause the electric light at 3 to shine on the green glass band A^3 , producing a green signal, corresponding to the "space" in the Morse telegraphic alphabet. In a similar manner the numerals may be produced by a combination of different-colored signals, and other combinations may be effected, as found desirable, enabling ships to communicate with each other at night in a language unknown to an unfriendly observer.

Additional bands of glass of other colors, with lamps and correspondingspring-jacks or switches to control them, may be used, but for all practical requirements three bands are considered sufficient.

The cylindrical case may be made movable, so that it can be hoisted to the masthead of a ship at night and let down during the day, or it may be permanently fixed on a mast 13. The case may also be made polygonal, with any suitable number of sides, instead of being made round. This construction permits the use of uncurved plates of glass. The glass bands extending all around the case, when illuminated, will appear to observers with equal distinctness in all directions and give an all-around signal which will be visible several miles away.

The non-transparent parts of the case are held together by bars or strips of iron 14 on the inside, so placed as not to offer any material obstruction to the light.

The apparatus being all arranged for operation and it being desired to transmit a signal or message from one ship to another or

to several ships simultaneously, the operator begins by inserting the wedge 6''' in the spring-jack 10, thereby displaying a band of green light as a preliminary signal to the other ship to prepare to receive a message. This signal should in turn be repeated by the other ship, provided with a similar system, to signify their readiness to receive the message. Wedge 6''' is then withdrawn and the signaling begins. Suppose it is desired to transmit the word "Fox," which in a secret code may mean "Prepare to lift your anchor." The operator inserts the wedge 6' in the jack 8 to make a signal, which in my method is understood to mean a "dot" of the Morse alphabet, (that is, a long and broad band of white light,) and at the same time or immediately afterward inserts the wedge 6'' in jack 9, which is understood to mean a "dash" of the Morse alphabet. The operator then withdraws the wedge 6'' and leaves wedge 6' in position. He has thus made a "dot," "dash," "dot," standing for the letter "F." Then, after a brief interval, wedge 6' is withdrawn. He then makes the letter "O" by inserting simultaneously the wedges 6' and 6'', giving a dot and space, and then withdraws the wedge 6'' and leaving the wedge 6' in position. Then, after a brief interval, the wedge 6' is withdrawn. The letter "X" is made by first inserting wedges 6' and 6'', forming a dot and dash, then withdrawing wedge 6'', and leaving 6' in position a few seconds, then withdrawing it and reinserting it for the second dot, thus completing the word "Fox." In this way any word can be spelled out with rapidity after a little practice, and such words may be made to conform to secret-code sentences in any language capable of being interpreted by the Morse telegraph-alphabet.

In order that the operator may be sure what signal is given when he inserts a plug, a lamp L is preferably connected in the branch leading to each spring-jack, and these lamps are colored like the glass to be illuminated by insertion of the corresponding plug.

Instead of white, red, and green glass bands other colors may be used, it being only necessary that the sending-operator and those who are to receive the signals should understand which color indicates the space, the dot, and the dash, respectively. The large glass bands are visible farther in all directions than

the lamps themselves would be without the bands and appear of the same length from whatever direction seen. Instead of the plugs and jacks other forms of switches for connecting and disconnecting the lamps in any desired order may be used.

I am aware that previous to this invention it has been proposed to flash colored lights for various purposes and to use electric switches for the purpose of governing the signals; but such signals have been of quite restricted visibility, being only visible from certain sides or for only a short distance, owing to the tendency of a multiplicity of lights of different colors, especially when of small size, to blend with each other, whereas by flashing only one or two lights at a time, and those greatly enlarged by the interposition of long wide bands of colored glass forming a circle, (which appear as straight bars of light of a length equal to the diameter of the case from whatever side seen,) makes the signals visible without confusion all around and at great distances.

I claim—

1. The combination, in a signaling apparatus, of several separate chambers, each having an all-around opening, differently-colored stationary glass coverings for the several openings, cooperating electric lights in the chambers, and means for controlling the lights to illuminate the colored glasses in the desired order.

2. The combination, in a signaling apparatus, of non-transparent sections *s*, *s*, and partitions, *p*, with openings between the sections, extending all around the sections, the differently-colored stationary glass bands A' , A^2 , A^3 , also extending all around the sections, over the openings, and supporting-brackets *b* therefor.

3. The combination, in a signaling apparatus, of non-transparent sections *s*, *s*, and partitions, *p*, with openings between the sections, extending all around the sections, bars *l* holding the sections the proper distance apart, and glass bands A' , A^2 , A^3 also extending all around the sections, over the openings.

Signed this 10th day of December, 1895.

ROY O. CROWLEY.

Witnesses:

CHARLES M. CATLIN,
P. D. CROWLEY.