

# UNITED STATES PATENT OFFICE.

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## PYROTECHNIC SIGNALING.

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*To all whom it may concern:*

Be it known that I, NICHOLAS J. HALPINE, of the United States Navy, have invented a new and Improved System of Signaling, of which the following is a full, clear, and exact description.

My invention relates to improvements in long distance signaling at night between vessels at sea.

Up to the present time there has not been found any system of night communication between vessels at sea, at long distance, that has not serious disadvantages; to overcome which is the object of the present invention.

No international system of night signaling has yet been adopted, on account of the complexity or difficulty of using the present methods.

My improved system consists in projecting above the sender a single star, which by its successive change of color, will represent a numeral or letter, my new system being thus adapted for use in connection with the ordinary international and military codes.

The common method of signaling at night by means of colored lights is objectionable, as the frequency of electric lighting along the deck of the vessel prevents the distinguishing of lights or groups of lights, and these signals are likewise of necessity, from their character, limited in range. The method of signaling by displaying fires of different colors, from on board the vessel is objectionable, especially for war ships, because it reveals the position of the ship for such a length of time that with the rapidity of fire of machine or rapid fire guns, the signaling of itself becomes a danger. The method at present used in the navy, requires four stars each showing only one color, and limited to red and green for each code number. This method requires much time for signaling, is expensive and liable to error. It would be difficult to represent the eighteen different flags of the international code by using separate stars showing only one color, and the difficulties are exaggerated when such method is applied to a numeral code.

In my improved system of signaling, each

star represents a single letter or number, the changes in the coloring of the stars taking the place of the numerous stars heretofore required to represent a single letter or number.

In projecting the stars of my improved system it is not claimed that they will show their color from the instant they are projected, but that during a continuous interval in their trajectory, they will show in succession the colors which represent their corresponding numeral or letter. For instance, to exemplify its adaptation for signaling purposes, we will assume that it is desired to make international signal "H. B," meaning "we require immediate assistance." The "attention" star is projected first, which when answered will be followed by a single star that will burn first red, then green, then white, signifying "H," followed by a star that will first burn green, then red, then white, signifying "B," then the "end of message" star is projected.

The arrangement of colors and stars is a matter in which I do not restrict myself; as such arrangement may be varied as required.

By means of this system, I am enabled to establish a method of night communication for vessels, which will be applicable to the international code of day signals now in use, and thus supply a long felt want, which up to this time has been limited to signals of distress of a more or less crude nature.

One mode of carrying out my invention is to provide a suitable fire-arm, and cartridge shells loaded with gunpowder in the ordinary manner. Into these loaded shells I drop one of my pyrotechnic stars and discharge the arm. The star is made in the usual manner, and so composed that when the star rises high in the air, it will burn with successive colors; for example, first with red light, then green, then white, which will indicate the international signal, of "H" for example, and thus by the successive firing of single stars, which may be done with much rapidity, I am enabled to make signals and convey intelligence with great precision and economy. These signals will be visible at great distances, owing to their height, but they will

not in the night time, reveal the position of the vessel from whence they are discharged.

Having thus fully described my invention, I claim as new and desire to secure by Letters  
5 Patent—

The herein-described method of aerial signaling, which consists in projecting above the

sender a single star which, by its successive changes of color, represents a code character.

NICHOLAS J. HALPINE.

Witnesses:

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