

(No Model.)

R. O. CROWLEY.  
SIGNALING APPARATUS.

No. 539,421.

Patented May 21, 1895.

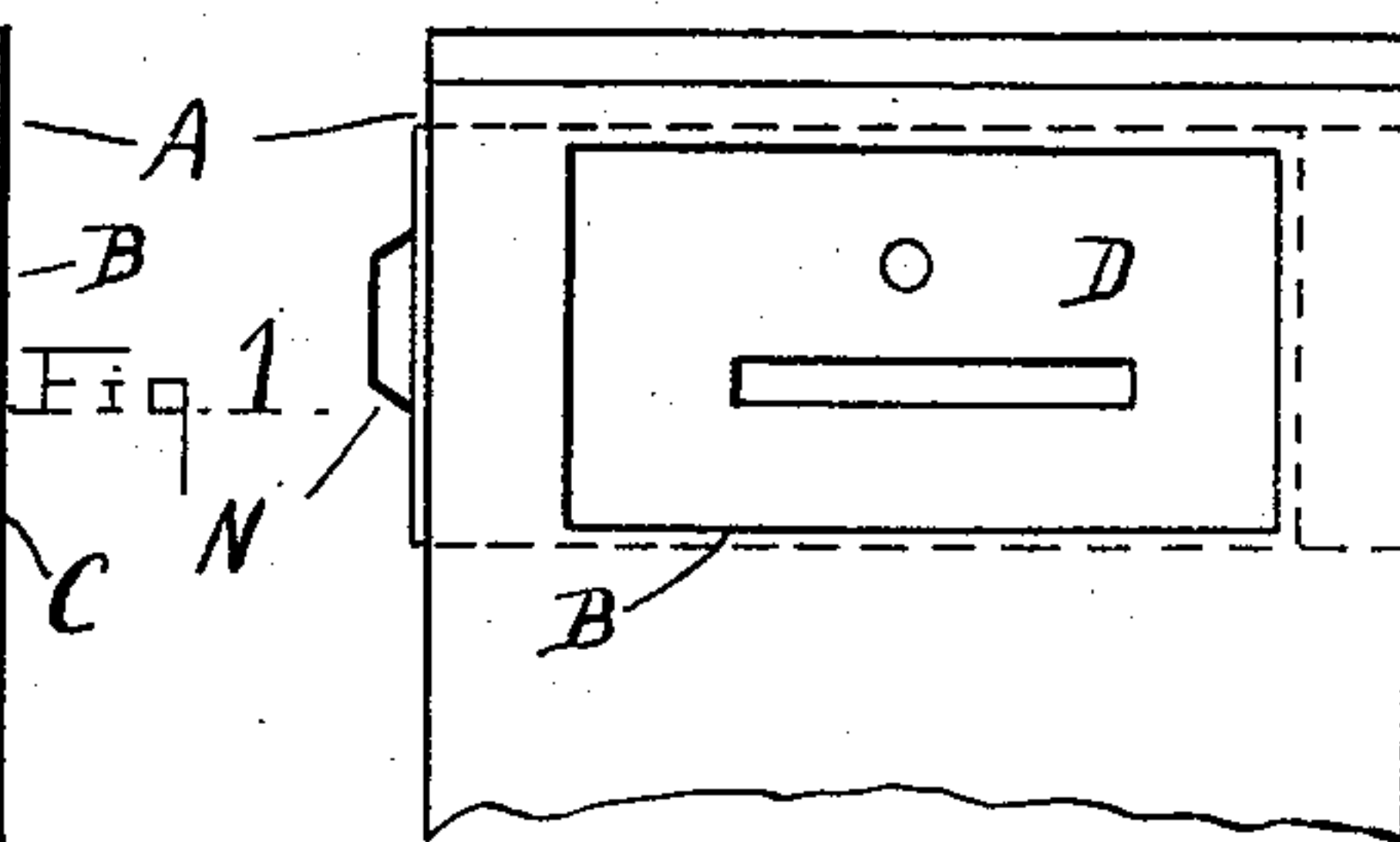
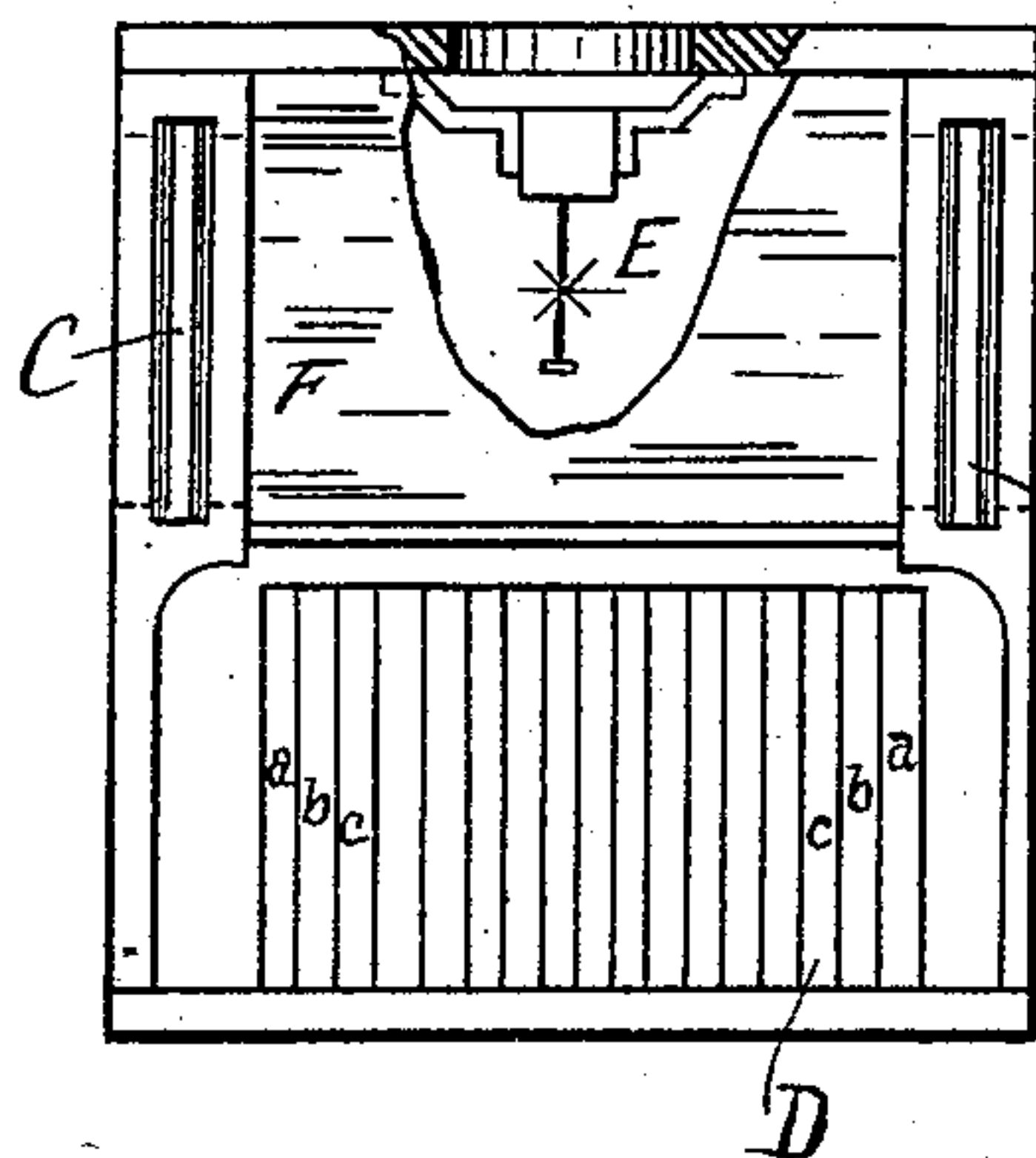


Fig. 3.

a	—
b	—
c	..
d	—
e	.
f	÷
g	==
h	....
i	..
j	÷
k	—
l	—
m	==
n	—
o	..
p	....
q	÷
r	..
s	...
t	—
u	÷
v	...
w	==
x	÷
y	..
z	...

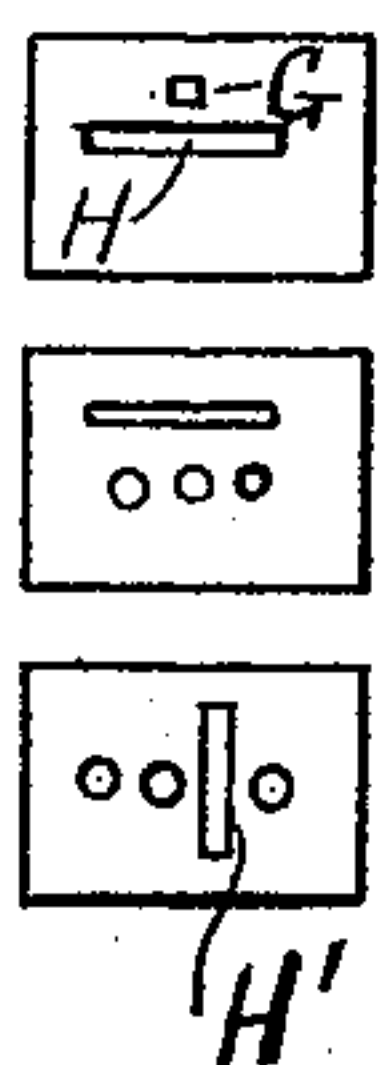
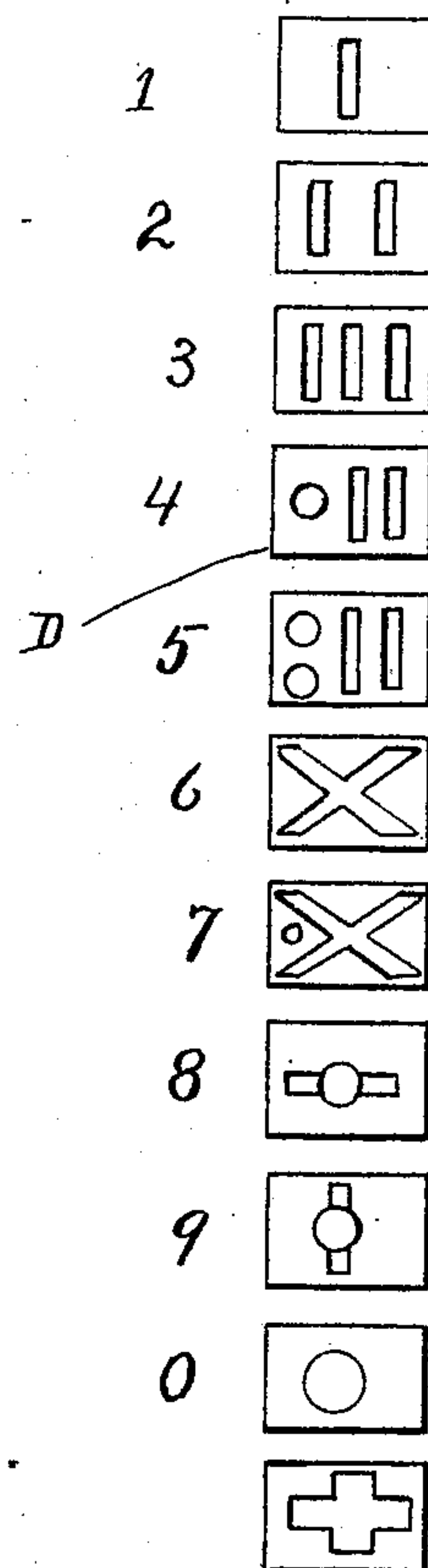


Fig. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 539,421, dated May 21, 1895.

Application filed July 2, 1894. Serial No. 516,273. (No model.)

*To all whom it may concern:*

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

The present invention relates to means for signaling, and consists in signal screens with improved signal characters adapted to be clearly visible at long distances at night, as hereinafter described.

In the accompanying drawings, Figures 1 and 2 are front and side views, with parts broken away, of the preferred form of signal-cabinet. Fig. 3 shows the improved signal-alphabet. Fig. 4 shows signal-screens for displaying the letters of the alphabet. Fig. 5 shows similar screens for signaling numerals.

In signaling, for example, between ships at sea, or between a ship and a fort or station on shore, I use a suitable case or cabinet A, in one or both sides of which is or are a transverse opening or transverse openings B, and a longitudinal slot or slots C, adapted to receive signal frames or screens D. The ends of the cabinet may be closed with any suitable material, but one end is preferably closed with ground glass F, or other semi transparent material so that light will be emitted to enable the operator to select the screens which are preferably placed below the light chamber in the cabinet, as shown. The opposite end of the cabinet may, if desired, be left open, so also may the top of the cabinet. Within the upper chamber of the cabinet is located any suitable source of light, such as one or more oil, or electric lamps, a single electric arc lamp being shown at E for purpose of illustration. In some cases, where electricity is not available, oil lamps would be more convenient.

The signal screens D, above referred to, are of any suitable opaque material, perforated in such manner as to show the desired signals. In general the signals are spelled out by an alphabet. I find that the ordinary Morse telegraph alphabet has some objections when used for night signaling by flashes of light, as I propose, especially in signaling long distances or under unfavorable conditions. One

objection is that the letters are made so long by the end to end arrangement of the elements (dots and dashes) employed in the telegraph alphabet that they cannot be placed on my signal screens without making the openings indicating dots and dashes too small for practical use, or, second, requiring the screens to be so long as to be unwieldy. Another objection is that when the dots and dashes are on the same line there is danger that at a distance these elements will seem to coalesce, thus giving a wrong signal.

All of the above and certain other objections are overcome in the following manner: I modify the telegraph alphabet by making certain generic changes. Instead of placing the dot or dots in a letter before and in the same line with the dash or dashes I place the dots above the dashes; and instead of placing the dots in a letter after the dashes, I place the dots below the dashes. These changes are shown, for example, in Fig. 3, at *a* and *b*. The effects of these changes are to make the dots and dashes more distinct from each other than in the old arrangement, and also to allow the openings in the signal screen to be larger than would otherwise be practicable.

G, H, are, respectively, dot and dash openings in a screen. When a letter is composed of dots, and a space occurs between some of them I insert a line, similar to a dash but arranged vertically or nearly so in said space to more clearly show the fact that there is a space. This is illustrated in Fig. 3 at *c*.

In Fig. 4, H' is the opening in a screen corresponding to said upright line. When a character has more than one dash or line I place them side by side instead of end to end. See *g* and *m*, and 2 and 3. The letters which are composed wholly of dots not divided into groups by a space, as *h*, *i*, and *p*, I use without change.

To still further distinguish the dots from the dashes in the same letter, I propose to place in the dot openings G glass of one color, as white or blue; and in the dash or line openings glass of another color, as red. This reduces the danger of error.

The form of the numerals is shown by the openings in the screens in Fig. 5. The upright openings (including the diagonal open-



ings at 6, 7), will be provided with glass of a certain color, and the circular openings with glass of a different color. In the numerals 8, 9, the line opening is divided, and the circular opening with differently colored glass is interposed. The circular opening for the zero may be made larger than that for the letter e and that for the period, although these characters will ordinarily be distinguished by their location. The lower screen in Fig. 5 is designed to be used between numbers in signaling.

The mode of signaling with the screens shown in Figs. 4 and 5, and the cabinet shown in Fig. 1, is to take the screens one at a time in the proper order, inserting them in slot C on the side toward which the signal is to be directed, or on both sides if desired, so that beams of light will flash out through the openings or the transparent glass therein, clearly showing the signal character to a great distance. The screen is then withdrawn and another inserted, and so on until the signal is spelled out. By duplicating the screens and slots C, the same or different signals can be given simultaneously in different directions. The screens are plainly marked on their ends for identification, as shown at *a*, *b*, *c*, Fig. 1, and may have handles *N*, Fig. 2, for convenience of handling.

It is proposed that a preliminary signal be given to notify the distant observer to pre-

pare to receive signals. This may be made with a slide of blue or other colored glass.

In signaling imperforate screens may be used during the insertion and withdrawal of the signal screens to prevent the signal light being seen by the distant observer.

I claim—

1. A signal screen having openings arranged in the form of signal characters made up of dots and dashes, or lines, the openings, corresponding to dots in the character on the screen, being covered with transparent material of one color, and the openings corresponding to the dashes or lines of the same character being of another color.

2. A signal screen having openings in it arranged to form a signal character made up of dots and dashes, or lines, side by side, but not in line lengthwise of the dashes.

3. A signal screen having openings in it arranged to form a signal character made of dots and dashes, the dots which come before the dash, in reading the letter, being above the dash, and the dots which come after the dash being below it, as and for the purpose described.

Signed this 30th day of June, 1894.

ROY O. CROWLEY.

Witnesses:

P. D. CROWLEY,  
C. L. BELCHER.