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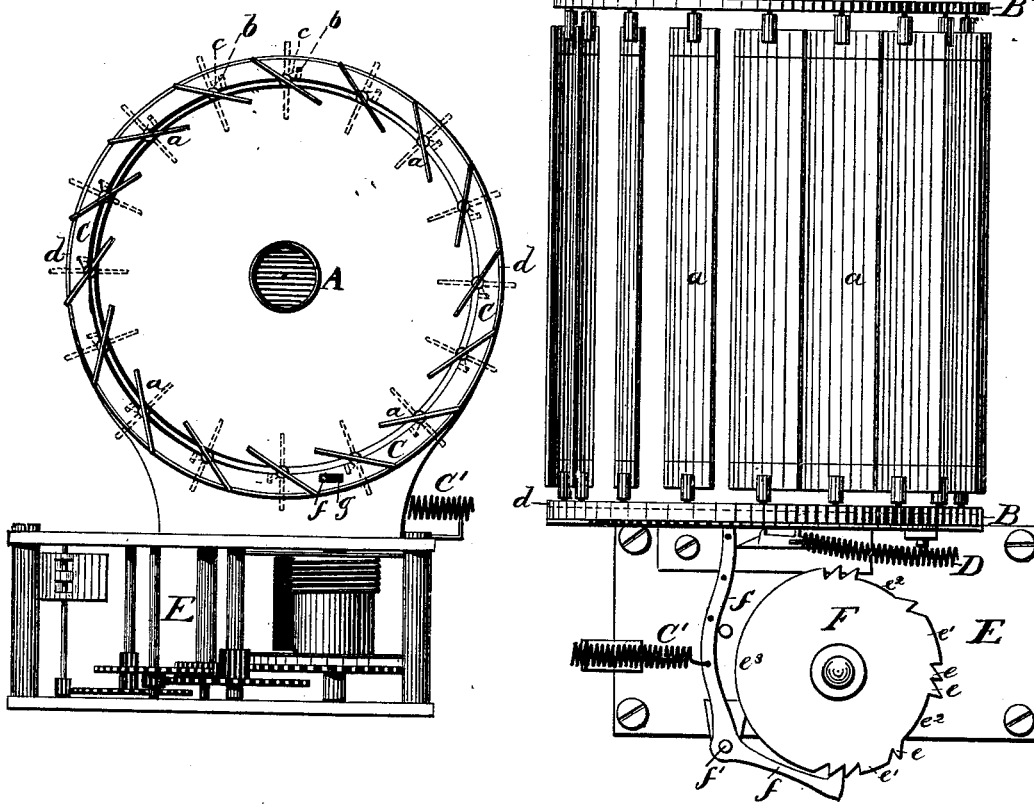
LIGHT HOUSE SIGNALING APPARATUS.

No. 188,700.

Patented March 20, 1877.

Fig. 2.

Fig. 1.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN LIGHT-HOUSE SIGNALING APPARATUS.

Specification forming part of Letters Patent No. **188,700**, dated March 20, 1877; application filed November 2, 1876.

*To all whom it may concern:*

Be it known that I, CHARLES GUSTAVE VON OTTER, of the city of Stockholm, Sweden, have invented certain new and useful Improvements in Signal Apparatus for Light-Houses, Fog-Horns, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a front elevation of my invention as applied to a light-house. Fig. 2 is a top plan of the same.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object the construction of a device applicable to light-houses or fog-horns, by means of which, through a series of flashes or sounds, the name of the light-house or fog-horn station may be given out at regular intervals for the guidance of navigators, substantially in the manner which I shall now proceed more fully to describe.

It has been attempted before, by means of lights of various colors, to indicate the names of light-houses; or, rather, lights of various colors have been so distributed that navigators, by the aid of their charts, have been enabled to surmise, with a degree of certainty, their location. This system, however, is open to a great many objections. Foremost among these is the fact that by the use of colored lights nearly two-thirds of their lighting capacity is wasted. Thus a light which, when plain, is capable of being seen at a distance of six miles, is, when obscured by red or green screens, not visible at a distance exceeding two miles. Again, the red, green, or glaring white lights have frequently been mistaken for the side or top lanterns of passing vessels, and instances are on record where such mistakes have resulted in serious disasters.

In order to illustrate my invention I have, in the drawings hereto annexed, shown it applied to a light-house, of which A is the lamp. B B' are two metallic rings, of which one, B, is arranged below the lamp, and the other, B', above it, as shown. Between the two rings

are pivoted a series of metallic or colored glass plates, *a a*, forming, when closed, a complete screen for the light issuing from the lamp, while, when opened, the light appears perfectly unobscured. Each of the plates *a* has, at its lower end, a bent or hook-shaped projection, *c*, engaging with corresponding slots *b* in a plate, C, fitting on top of plate B, which latter has a rim or flange, *d*, for keeping plate C in position. Thus, when the plate C is operated, the plates *a* are all opened or closed simultaneously and instantly, according to the direction in which plate C is operated.

D is a spring, operating plate C in such a manner as to keep the plates *a* constantly and automatically open, unless impelled by the machinery for closing them. This consists of a clock-work, E, operated either by weights or springs. F is a disk operated by clock-work E, and making, say, one revolution per minute. This disk has a series of projections, *e*, arranged as hereinafter described. *f* is a bent lever pivoted at *f'*, one end of which engages with projections *e* upon disk F, and the other with a perforation, *g*, in ring C. C' is a spring, somewhat stronger than spring D. It acts upon lever *f* in such a manner as to cause it to keep plates *a* automatically closed, unless when thrown out of operation by the projections upon disk F. Whenever this occurs the spring D comes into play and instantly opens all of the plates *a* to the position shown in dotted lines in Fig. 1, in which they remain until closed again by lever *f*.

The disk F has, as before stated, a series of teeth or projections, *e*. These projections are so arranged as to form symbols corresponding with those forming the letters of the Morse telegraphic alphabet; and may thus form either the entire name, the abbreviated name, or the initial letters of the light-house or fog-horn station. Thus, for instance, supposing my invention to be applied to the "Pater Noster" light-house, the initial letters P N are, in Morse's alphabet, composed of one dot, two dashes and one dot, and one dash and one dot, respectively. The dots are, upon the disk F, indicated by short, ratchet-shaped teeth, and the dashes by ratchet-shaped, but longer, projections *e*<sup>1</sup>. Between the letters are open spaces *e*<sup>2</sup>, and one very long projec-

tion,  $e^3$ , occupies one-half or nearly one-half the periphery of the disk. Now, supposing the mechanism to be started at the beginning of the letter P, the plates  $a$  are, by the action of the first tooth upon the lever  $f$ , thrown open, but instantly closed again, the tooth being a short one. The flash thus emitted corresponds with a dot in the Morse alphabet. The plates remain closed but a moment; and when opened again by the next longer tooth, they stay open long enough to signify a dash. In this way it continues until the entire P N has been spelled out. The long projection  $e^3$  is now reached, and serves to keep plates  $a$  open for half a minute, more or less, until the beginning of the letter P is again reached.

The method of applying my invention to fog-horns is, in every respect, the same. The toothed disk bearing the name of the station (or an abbreviation thereof) is made to operate, through an intermediate lever, the sounding apparatus of a fog-horn, thus emitting a short sound for every dot, and a protracted one for every dash. In this manner the name of the station is readily and unfailingly communicated.

The operation and advantages of my invention will be readily understood from the foregoing description and require no reiteration. But it is obvious my method of signaling or communicating the names of light-house or fog-horn stations is liable to a variety of minor changes without affecting the principle of my system. Thus may, in the day-time, a semaphore be substituted for the panes or plates  $a$  at light-houses. The plates may be closed instead of open, to signify the dots and dashes, and the sound system at fog-horns may be

similarly reversed, or any other changes of a similar nature may be made.

I am aware that a principle similar to mine has been applied to fog-horns before this, and I therefore do not claim it broadly; but

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a light-house lantern the pivoted plates  $a$  of colored glass or metal disposed around the lantern of the light, and arranged to be operated by suitable opening and closing mechanism, for the purpose of transmitting signals for navigators, substantially as herein shown and described.

2. The combination, with a light house lantern, of the rings B B', pivoted plates  $a$ , ring C, clock-work E, springs D C', lever  $f$ , and toothed disk F, the teeth or projections upon the latter being arranged in such a manner as to cause certain signals to be given at regularly-recurring intervals, after the Morse telegraphic alphabet code, all in the manner and for the purpose substantially as herein shown and specified.

3. The combination with a light or sound signal, adapted to be operated as described, of the clock-work E, springs C' D, lever  $f$ , and disk F, substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in the presence of two witnesses.

CHARLES GUSTAVE VON OTTER.

Witnesses:

J. C. HOLM,  
R. SÖDERSTRÖM.