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OR 34,623

COLVIN & GARDNER.

Light Telegraph.

No. 34,623. Patented March 11, 1862.

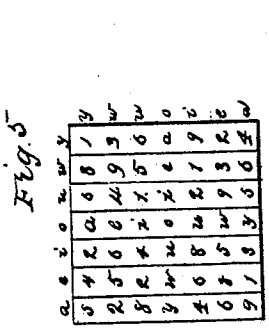


Fig. 5

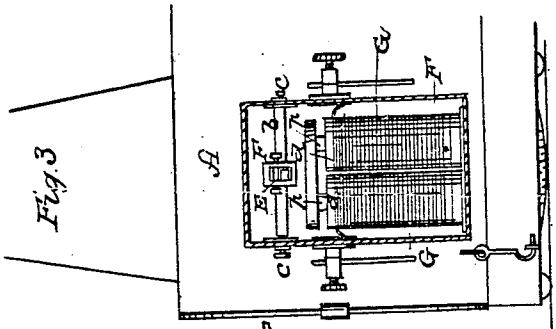


Fig. 3

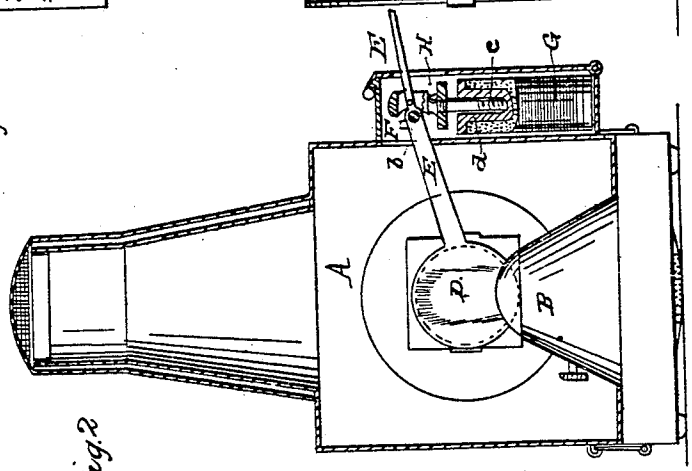


Fig. 2

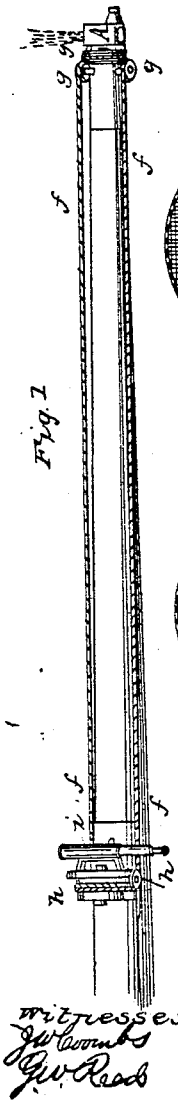


Fig. 1

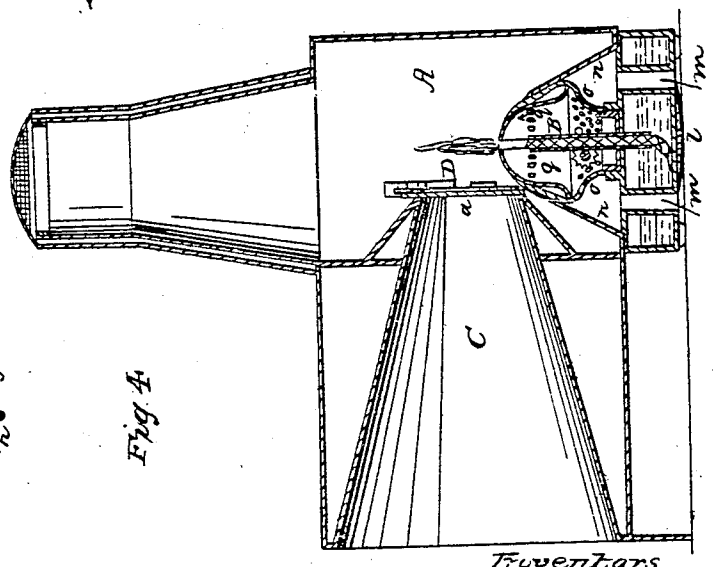


Fig. 4

Witnesses
J. W. Coombs
G. W. Read

Inventors
L. O. Colvin
G. P. Gardner
per Munn & Co.
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

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UNITED STATES PATENT OFFICE.

L. O. COLVIN AND G. H. GARDNER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TELEGRAPHING BY LIGHT.

Specification forming a part of Letters Patent No. **34,623**, dated March 11, 1862.

To all whom it may concern:

Be it known that we, L. O. COLVIN and G. H. GARDNER, both of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Apparatus for Telegraphing by Light; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical sections of the apparatus at right angles to each other. Fig. 3 is a side view of the same with a portion of the casing removed to show the interior. Fig. 4 is an elevation of a ship's mast or other pole to which the apparatus is applied.

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

The object of this invention is to telegraph by night, either at sea or on land, by means of a lantern or other illuminating apparatus with an alphabet represented by combinations of flashes of longer and shorter duration; and to this end it consists in so combining a lantern, a shutter to shut off the light thereof, and an electro-magnet that an operator at any distance from the light may, by opening and closing the circuit in which the magnet is placed, cause the said shutter to alternately expose and conceal the light and so produce the flashes of which the signals are composed.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A is the lantern, made dark on all sides but the front, where it is fitted with a glass *a*, through which to exhibit the light from the lamp B. Outside of this glass there is placed a reflector C of the form of a frustum of a cone, the truncated end of which fits closely to the glass *a*. The light falls on this reflector, which, it may be observed by reference to Fig. 1, is entirely in front of the light in such manner as to be reflected in a forward direction to a great distance.

Inside of and close to the glass *a* there is arranged the shutter D, made of metal or other opaque material, said shutter being attached to a lever E, which works through a slot in one side of the lantern. This lever is secured to a rock-shaft *b*, which works between centers *c c*, secured in the sides of a small box F, which is secured to one side of the lantern, the said centers constituting the fulcrum of the lever.

Within the box F is arranged the electro-magnet G, whose armature H is suspended from the lever E on the opposite side of the rock-shaft to that on which the shutter is attached, the said armature being so arranged that when it is as close as is permitted to the poles of the magnet the shutter is above the glass *a* and the light of the lantern is exposed. The shutter, however, just so much overbalances the armature that it will remain down in front of the glass *a*, and when the circuit in which the magnet is placed is open. The armature has attached to it two brass pins *p p*, which enter holes drilled in the cores *d d* of the magnet, and under these pins there are placed in the said holes light india-rubber springs *e*, for the purpose of throwing up the armature quickly when the circuit in which the magnet is placed is first opened after having been closed.

The lantern thus constructed may be placed on the top of a mast I, or any pole or elevated structure, in such manner as to be capable of turning around to show the light in different directions, as may be desired, and when so arranged it may be combined by belts or chains *f f* and pulleys *g h* with a telescope *i*, arranged at a convenient distance from the deck or the ground in such a manner that by turning the telescope the lantern will turn also, and that by adjusting the telescope to bear on any point to which it is desired to telegraph the light from the lantern may also bear upon that point. The battery or other electrical apparatus employed in connection with the electro-magnet, and the operator who works the telegraph by opening and closing a key, as is done in the Morse and other systems of telegraphing, may be situated at any convenient distance—a few feet or many miles—from the lantern, the proper connections with the magnet being made by conducting-wires in the usual manner.

The operation of telegraphing by this apparatus is as follows: While the circuit is open the shutter D remains closed; but as soon as the circuit is closed by the key the armature is attracted toward the magnet and the shutter is raised from before the glass *a*, and the light exposed. When the circuit is again opened, the armature is raised quickly by the springs *e* to commence the opening of

the shutter, which is completed by the shutter overbalancing the armature. The movement of the shutter thus effected by electro-magnetism is much quicker than can be effected by any simple mechanical means. By keeping the circuit closed a longer or shorter time the light is exposed a longer or shorter time, or, in other words, longer or shorter flashes are produced. The shorter flashes may be made to represent dots and the longer ones dashes, as in Morse's alphabet, and a similar alphabet of letters and numerals, or ones composed of different combinations of dots and dashes, may be used.

In order to make the alphabet secret, that the messages may not be understood by any persons but those intended to receive them, I propose to substitute for the vowels of the alphabet the combinations used for the numerals, making such changes as may be necessary in the arrangement of the numerals representing the several vowels; also, to use in some instances one vowel for another. For instance, the table represented by the vowels may be represented by the figures and letters in any of the horizontal or vertical lines commencing at the right or left hand or at the top or bottom. Further secrecy may be obtained by substituting for the first letter of every word the next or the second, third, or fourth preceding or succeeding letter, as may be arranged between those sending or those receiving the message.

The light may be produced by an ordinary oil-lamp or by the calcium or any other kind of light. The lamp represented is admirably adapted for the purpose, as it provides for a copious and steady supply of air to the burner. The air is all admitted through a perforated screen *l* under the bottom, and from thence passes through tubes *m m* into a cone *n* surrounding the upper portion of the lamp, and from the interior of this cone is supplied around the burner through perforated screens *o* and *q*.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination of a lantern or other illuminating apparatus, a reflector, a shutter, and an electro-magnet to operate substantially as and for the purpose herein specified.

L. O. COLVIN.
G. H. GARDNER.

Witnesses:
JOHN THOMPSON,
WM. I. SMITH.