

H. HIGHTON.

Electric-Telegraphs.

No. 134,140.

Patented Dec. 24, 1872.

Fig. 1.

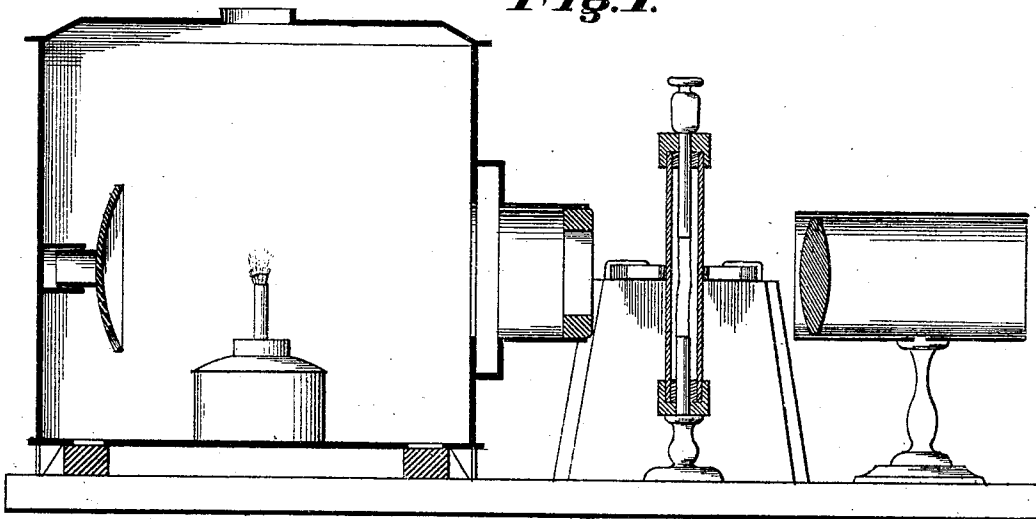
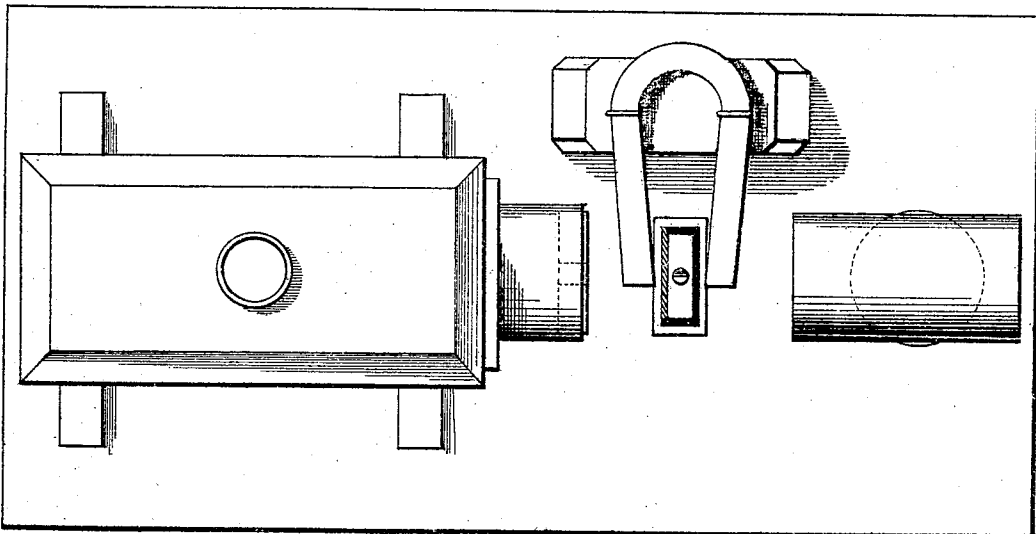


Fig. 2.



Witnesses.

G. Warren.
Wilmer M. Harris.

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UNITED STATES PATENT OFFICE.

HENRY HIGHTON, OF PUTNEY, ENGLAND.

IMPROVEMENT IN ELECTRIC TELEGRAPHS.

Specification forming part of Letters Patent No. 134,140, dated December 24, 1872.

To all whom it may concern:

Be it known that I, HENRY HIGHTON, of Putney, in the county of Surrey, England, have invented or discovered new and useful Improvements in Electric Telegraphs; and I, the said HENRY HIGHTON, do hereby declare the nature of the said invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

The object of this invention is to convey intelligence by means of submarine and other lines, which, from injury or defect, are so imperfectly insulated that the instruments ordinarily employed are not readily available, or where, in consequence of imperfect construction, it is desirable, in order to prevent mischief to a cable, to use currents of smaller intensity than are suitable for other instruments. I use for this purpose a thin slip of gold-leaf, through which the feeble telegraphic current is caused to pass. This slip of gold-leaf hangs vertically and loosely between two metallic conductors, the one at the top and the other at the bottom of it, and is in metallic connection with both. These conductors are adjustable to and from each other, so that the gold-leaf may have just that amount of slackness which is calculated to give it the requisite freedom of motion. The length of the gold-leaf may conveniently be about one inch and a half, and its breadth about one-tenth of an inch. The leaf should be the thinnest that can be obtained. The leaf is protected by flat glasses. I prefer to make a case of four strips of glass cemented together with Canada balsam. The case should be about half an inch wide from back to front. Close to the glass on either or both sides, about midway of the length of the gold-leaf, I place one or both poles of a powerful magnet. I prefer an electro-magnet operated by a special local battery. The gold-leaf, being thus situated in

an intense magnetic field, is moved even when a very feeble current is sent through it. A beam of light is thrown upon the gold-leaf by means of a lamp and condensing-lens, and by means of another lens an enlarged image of the gold-leaf is thrown upon a screen at a distance of some feet. The magnified image will be very easily observed, even when the motion of the gold leaf is too small to be otherwise appreciable. The magnet is in such a form and in such a position as not to interfere with the passage of the light to and from the gold-leaf, or at least some part of it, and should be so placed as to cause the gold-leaf to move in a plane perpendicular to the direction of the beam of light.

The great advantage which this instrument has over all others, when combined with a line in which the insulation is defective, arises not only from the great sensitiveness of the instrument, but also from the small amount of resistance which it offers to the passage of the telegraphic current. Feeble currents of low intensity are able to traverse the gold-leaf, and can be appreciated, whereas by an instrument offering a large resistance, such currents would be almost completely arrested, and in the division of the current between the faults in the line and the instrument a smaller portion is lost at the faults and a larger portion traverses the instrument than where instruments of a larger resistance are used.

What I claim is—

A telegraph receiving apparatus consisting essentially of a strip of gold-leaf connected with two metallic conductors and arranged within the influence of a magnet, substantially as before set forth.

HENRY HIGHTON.

Witnesses:

G. F. WARREN,

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Both of No. 17 Gracechurch Street, London.