J. P. HAINES.

ELECTRIC LOGS.

No. 183,559. Patented Oct. 24, 1876.

Fig: 1.

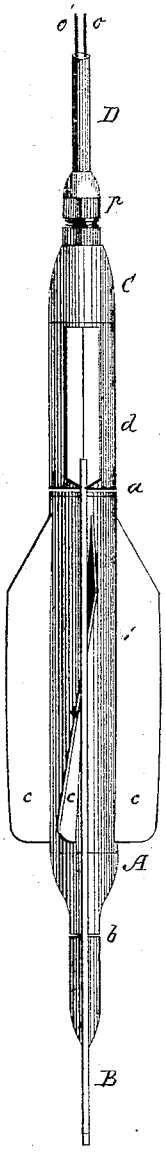


Fig: 2.

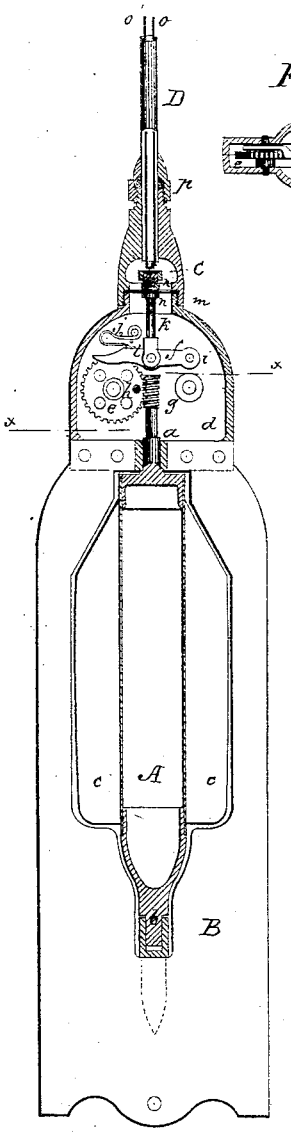


Fig: 4.

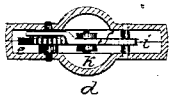
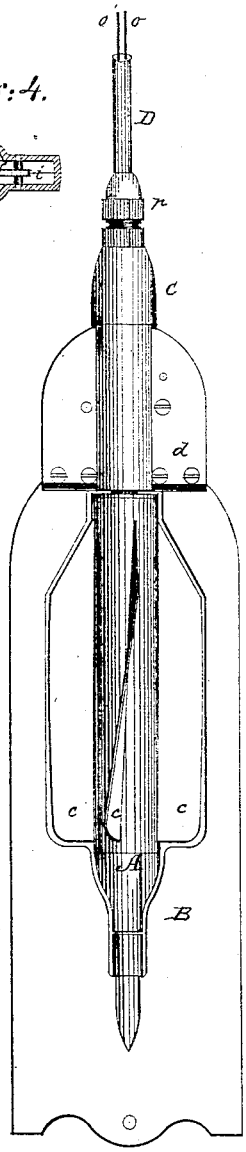


Fig: 3.

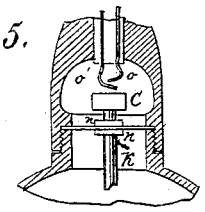


Witnesses:

Chas. Neidig

John Goesdals

Fig: 5.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ELECTRIC LOGS.

Specification forming part of Letters Patent No. **183,559**, dated October 24, 1876; application filed July 22, 1876.

To all whom it may concern:

Be it known that I, JOHN P. HAINES, of the city, county, and State of New York, have invented a new and Improved Electric Log, of which the following is a specification:

Figure 1 is a side elevation. Fig. 2 is a front elevation, in part, in section. Fig. 3 is a front elevation entire. Fig. 4 is a section on line *x x*, in Fig. 2. Fig. 5 is a detail view of the termini of the conducting-wires.

The invention relates generally to the subject of electric logs for measuring the speed of vessels, and consists in the improvement thereof, as hereinafter described.

A is a screw, consisting of a hollow cylinder of metal, having the journals *a b* and the spiral wings *c*. Attached to a vane, B, are boxes for the journals *a b*, and at the top of the vane a chamber, *d*, is attached, in which the worm-wheel *e* and lever *f* are placed. The journal *a* extends beyond its box, and has a screw, *g*, formed on it, which engages with the wheel *e*. *h* is a pin projecting from the side of the wheel *e*, that engages with the lever *f* once at every revolution. The lever *f* is pivoted at *i*, and has a spring, *j*, bearing down on its free end. A rod, *k*, is connected to the lever *f* at *l*, and passes upward through a rubber diaphragm, *m*, which separates the chamber *d* from the chamber that contains the termini of the electrical conducting-wires. Collars *n* are placed on each side of the diaphragm, to prevent the passage of water through it. C is a chamber in which the ends of the conducting-wires *o o'* terminate. The wire *o* is bent over at a right angle, and the wire *o'* is bent so as to overlap it, but does not touch it. The ends of these wires are so arranged that a slight upward pressure of the rod *k* would cause them to come into contact, and thus establish the circuit. The cable D is constructed so that it answers the double purpose of an electrical conductor and of drawing the log through the water. It is securely fastened by passing through a stuffing-box, *p*, at the upper end of the apparatus. The stuffing-box also excludes the water from the chamber C.

The operation of my improvement is obvious. The conducting-wires *o o'* being connected with a battery and an electro-magnetic recording apparatus on board ship, and the log being in the water and drawn after the ship by the cable D, the screw A revolves on its axis, while the transmitting mechanism is prevented from turning by the vane B. The velocity of the screw is proportionate to the speed of the vessel, a given number of revolutions representing a certain distance. The screw *g*, by turning the wheel *e*, causes the pin *h* to raise the lever *f*, bringing the rod *k* against the terminal wire *o'*, pressing it against the wire *o*, completing the circuit, and registering a unit of distance in the apparatus on board the vessel. When the pin *h* leaves the lever the spring *j* causes the lever to regain its normal position, allowing the wires *o' o* to separate, breaking the electrical connection. The diaphragm *m* and stuffing-box *p* effectually exclude the water from the chamber C.

Any of the ordinary forms of electrical recording apparatus may be used in connection with the log.

A single conducting-wire may be used in the cable, and the current allowed to return by the water, if desired.

The log may be used to indicate the velocity of streams or currents of water by connecting the cable with a fixed object, so that the moving water may act upon the screw.

I am aware that it is not new to provide a screw-log with a device for closing and breaking an electric circuit, the same being connected with a registering-instrument by an electric conductor.

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

The combination of the diaphragm *m*, rod *k*, wires *o' o*, and chamber C, substantially as shown and described.

JNO. P. HAINES.

Witnesses:

JAMES H. HUNTER,

ALEX. F. ROBERTS.