

(No Model.)

L. B. FAVOR & C. A. JACOBS.

ELECTRO MAGNETIC LOG.

No. 326,207.

Patented Sept. 15, 1885.

Fig. 2.

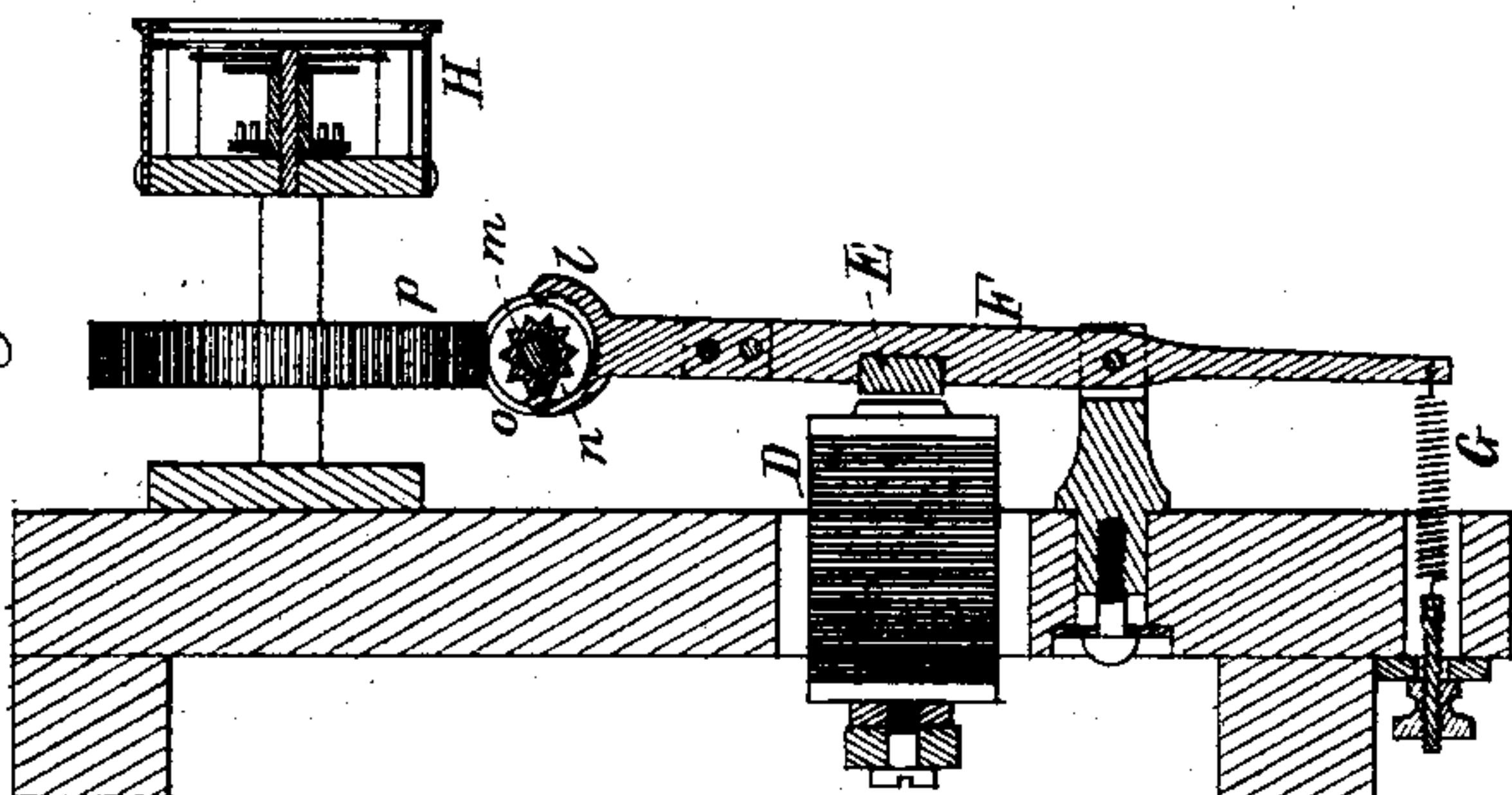
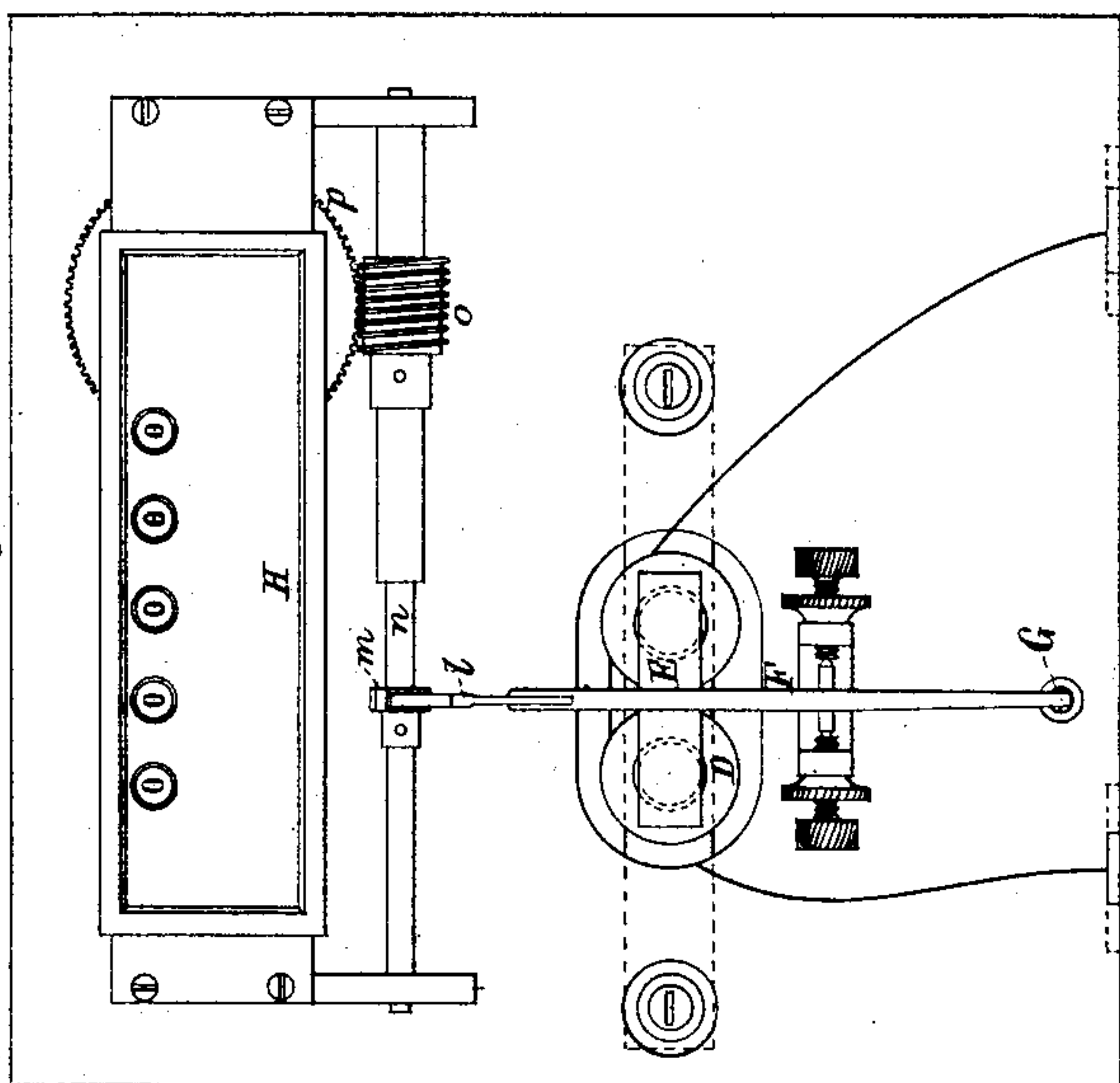


Fig. 1.



Witnesses.

S. N. Piper.
Ernest Schmitt.

Fig. 4. Fig. 5

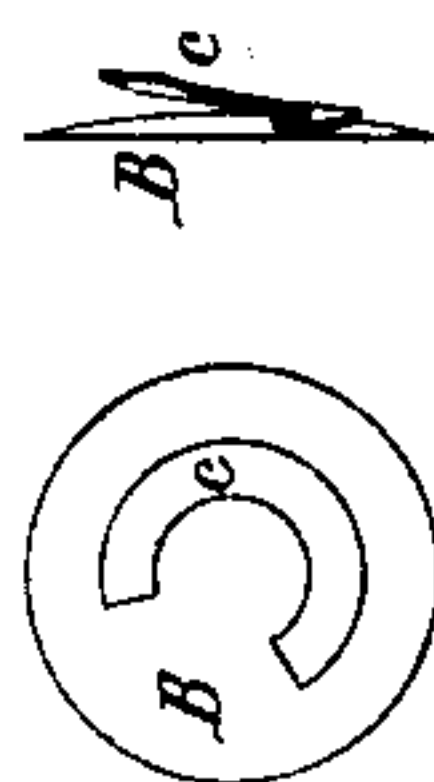
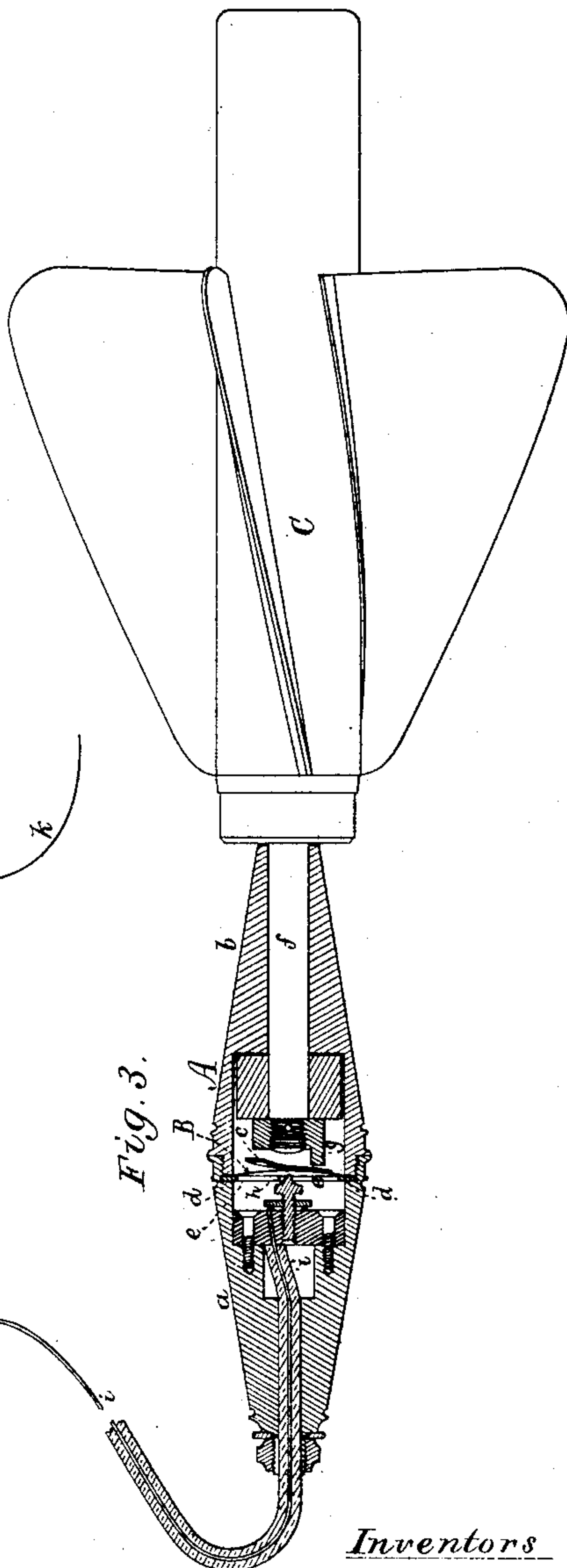


Fig. 3.



Inventors

Lorenzo B. Favor.

Charles A. Jacobs.

by R. U. Eddy att'y.

UNITED STATES PATENT OFFICE.

LORENZO BRAGG FAVOR AND CHARLES AUGUSTUS JACOBS, OF GLOUCESTER, MASSACHUSETTS.

ELECTRO-MAGNETIC LOG.

SPECIFICATION forming part of Letters Patent No. 326,207, dated September 15, 1885.

Application filed November 17, 1884. (No model.)

To all whom it may concern:

Be it known that we, LORENZO B. FAVOR and CHARLES AUGUSTUS JACOBS, of Gloucester, in the county of Essex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Electro-Magnetic Logs for Navigable Vessels; and we do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is an elevation of a log embracing our invention, the nature of which is defined in the claims hereinafter presented. Fig. 2 is a vertical and transverse section taken through the escapement lever and wheel. Fig. 3 is a longitudinal section of the propeller-supporting case and its circuit breaking and closing devices. Fig. 4 is a side view, and Fig. 5 an edge view, of the electric diaphragm and spring of the circuit closer and breaker.

Our present invention relates to that class of electro-magnetic logs in which a screw-propeller, a registering-instrument, and an electro-magnet and circuit are constituents, the revolutions of the propeller while it is overboard being indicated by the registering-instrument, in order to show the rate of speed or distance run of a navigable vessel from time to time.

In the drawings, A represents a hollow case in two separate conical parts, *a* and *b*, connected at their larger bases by one being screwed into the other, and against a thin metallic partition or diaphragm, B, which has projecting from one side of it a flat or curved spring, *c*, that at one end is fixed to the diaphragm, such spring being curved to the arc of a circle, or thereabout, and gradually diverges or increases in distance from such diaphragm, as represented.

Between the diaphragm and an annular shoulder, *d*, in the part *a* is a flat annulus or washer, *e*, of leather or a properly water-proof material, which, when the parts *a* and *b* are screwed together, serves to make a water-tight joint, so as, with the electric diaphragm, to prevent water from passing from the part *b* into the part *a*.

There is pivoted to the part *b* a screw-propeller, C, whose spindle *f* has a bearing in the said part *b*, and at its inner end is provided

with a cam or stud, *g*, to revolve with it and against the curved spring. In revolving, the cam moves along the outer face of the spring, and by pressing the spring toward the disk or diaphragm causes the diaphragm to spring back at its central part against a metallic point, *h*, which is the terminus of the circuit-wire *i*, such wire being electrically insulated from the metal of the part *a*, and constituting part of an electrical cable or rope extending from the navigable vessel, and supporting the propeller and the parts *a* and *b* when they are overboard. The said cable or rope is connected with the circuit-wire of an electro-magnet, D, from which a circuit-wire, *k*, extends to the water, or is electrically connected therewith. The armature E of the said magnet is at its middle fixed to a lever, F, to whose tail or lower arm a spring, G, is applied to move the lever, so as to draw the armature away from the magnet. The other arm of the lever has projecting from it an escapement-fork, *l*, to intermittently revolve by the vibrations of the lever an escapement-wheel, *m*, fixed upon a shaft, *n*. This escapement-wheel has ten teeth. On the shaft *n* is a worm or screw, *o*, that engages with a worm-gear, *p*, having one hundred teeth and fixed on the main or driving arbor of a register, H, of a suitable kind to indicate from time to time the number of revolutions of the propeller, or the distance in miles run by the vessel, while the propeller may be drawn by it through the sea, and such propeller be revolving.

In each revolution of the propeller the electric diaphragm will be borne against the point *h*, and will spring away therefrom, the circuit being closed while the point and the diaphragm may be in contact, and open or broken when they may not be touching each other, such causing the magnet D and the spring G to produce vibrations of the lever F and the escapement-fork *l*, whereby an intermittent revolution of the escapement-wheel will be produced, so as to correspondingly revolve the shaft *n* and the worm *o*.

In the above-described electro-magnetic log, we claim—

1. The propeller-supporting case A, provided with the electric diaphragm B and its spring *c*, and the metallic point *h*, as described,

in combination with the propeller C, having to its spindle *f* the stud *g*, to operate with the spring, substantially as set forth.

5 2. The propeller-supporting case A, constructed in two tubular parts, *a* and *b*, screwed together, and having held by and between them, as specified, an electric water-proof diaphragm provided with a spring or its equivalent, to be moved by a cam or stud on the

propeller-spindle while such may be in revolution, all being substantially and for use as set forth. 10

LORENZO BRAGG FAVOR.
CHARLES AUGUSTUS JACOBS.

Witnesses:

BENJ. H. CORLISS, Jr.,
CYRUS STORY.