G. E. ELLIOTT.

MARINERS' LOG.

No. 170,720. Patented Dec. 7, 1875.

Fig: 1.

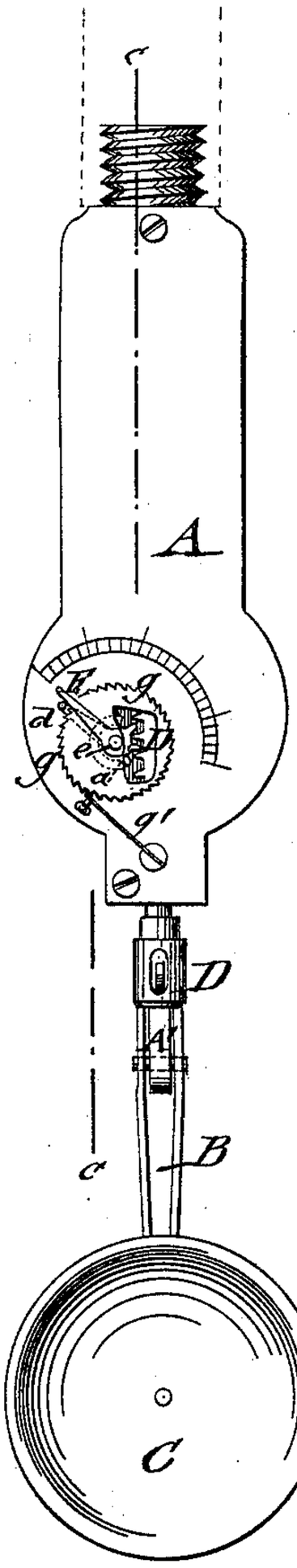

Fig: 2.

WITNESSES:

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GEORGE E. ELLIOTT, OF ST. ANDREWS, CANADA.

IMPROVEMENT IN MARINERS' LOGS.

Specification forming part of Letters Patent No. **170,720**, dated December 7, 1875; application filed November 6, 1875.

To all whom it may concern:

Be it known that I, GEORGE E. ELLIOTT, of St. Andrews, in the Province of New Brunswick and Dominion of Canada, have invented a new and Improved Mariners' Log, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a front view of my improved mariners' log; and Fig. 2 is a vertical central section of the same on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to an improved mariners' log, which registers correctly the speed of a vessel without requiring any particular skill in its use or special calculations. The log may be used without the cumbersome reel and line by being lowered into the water at any suitable part of the vessel by a handle or float, being very convenient and reliable in its application.

The invention consists of a concave disk or drag, that acts with greater or lesser force, according to the speed of the vessel, on a rack-bar and spring, which moves, by suitable actuating gearing, the index-hand along a face-dial. The index-hand is retained by a ratchet and pawl, for reading off the log, and returned to its position by a tension-spring on releasing the pawl.

In the drawing, A represents a hollow casing, of non-corrosive metal, which is firmly attached at one end to a float or handle, by which it is lowered into the water, and provided at the other end with a strong arm, A′, to the outer end of which the bell-crank lever B is fulcrumed at its angle part. The outer end of bell-crank lever B carries a concave disk or drag, C, at slight inclination to the direction of the current, the concavity of which produces a uniform pressure at different angles to the current. The arms of the bell-crank lever B are of equal length to approximate more nearly to the strength of the springs used, and work smoothly and with little friction. The end of bell-crank lever B, near to casing A, enters the recessed outer end of a sliding rack-bar, D, that is guided by its round part in a closely-fitting perforation of the casing, to prevent the entrance of water to the interior of the same. The inner end of rack-bar D is attached to a suitable spiral **V**-shaped or other spring, E, that is fastened with its opposite end to the casing. The rack E gears with a pinion, *a*, of a hollow sleeve, *b*, that passes to the outside of casing A, and carries a dog or carrier, *d*, with bent-up end, for engaging the index-hand F.

The action of the current on the disk actuates the spring-governed rack, and thereby the carrier *d*, whose position varies according to the speed of the vessel, the same being instantly returned as soon as the log leaves the water.

A spindle, *e*, passes inside of hollow sleeve *b*, and is governed at the inside of casing A by a spiral watch-spring, *f*, and provided at the outside with the index-hand F and a ratchet-wheel, *g*, and spring-pawl *g′*. The carrier *d* forces the index-hand F around the ratchet to the extreme position reached by the pressure of the current on the disk, where the index-hand is retained by the pawl and ratchet mechanism, indicating on a dial of the casing the speed of the vessel, which is read off and registered on the withdrawal of the log.

The resistance of the tension-spring of the spindle gives the hand a steady uniform movement, takes up all slack motion, and prevents it effectually from indicating too much.

The separate action of the carrying-arm and index-hand renders the main spring more durable, without liability to "set," and admits the return of the hand to its normal position on the release of the pawl from the ratchet.

The dial and hands may be protected against mechanical injury by floating débris, &c., and against the entrance of water, by a glass front, and the log be used at the bow or other part of a vessel, so as not to be affected by the additional suction or other currents at the stern. It may also be used for determining the velocity of the current of a stream or canal by being introduced from the banks of the same.

The log is simple, durable, and reliable, and allows the direct reading off and registering of the speed without requiring special skill or calculation.

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

In mariners' logs, a sliding spring-governed rack, actuated by a concave pressure-disk, and combined, by transmitting-gear and carrier-dog, with a separately-turning and spring-acted index-hand, provided with retaining-pawl and ratchet mechanism, for registering speed of vessel on dial of casing, substantially in the manner and for the purpose set forth.

GEORGE EDMUND ELLIOTT.

Witnesses:

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