

(No Model.)

E. BISSON.
MARINER'S COMPASS.

No. 341,125.

Patented May 4, 1886.

Fig 1.

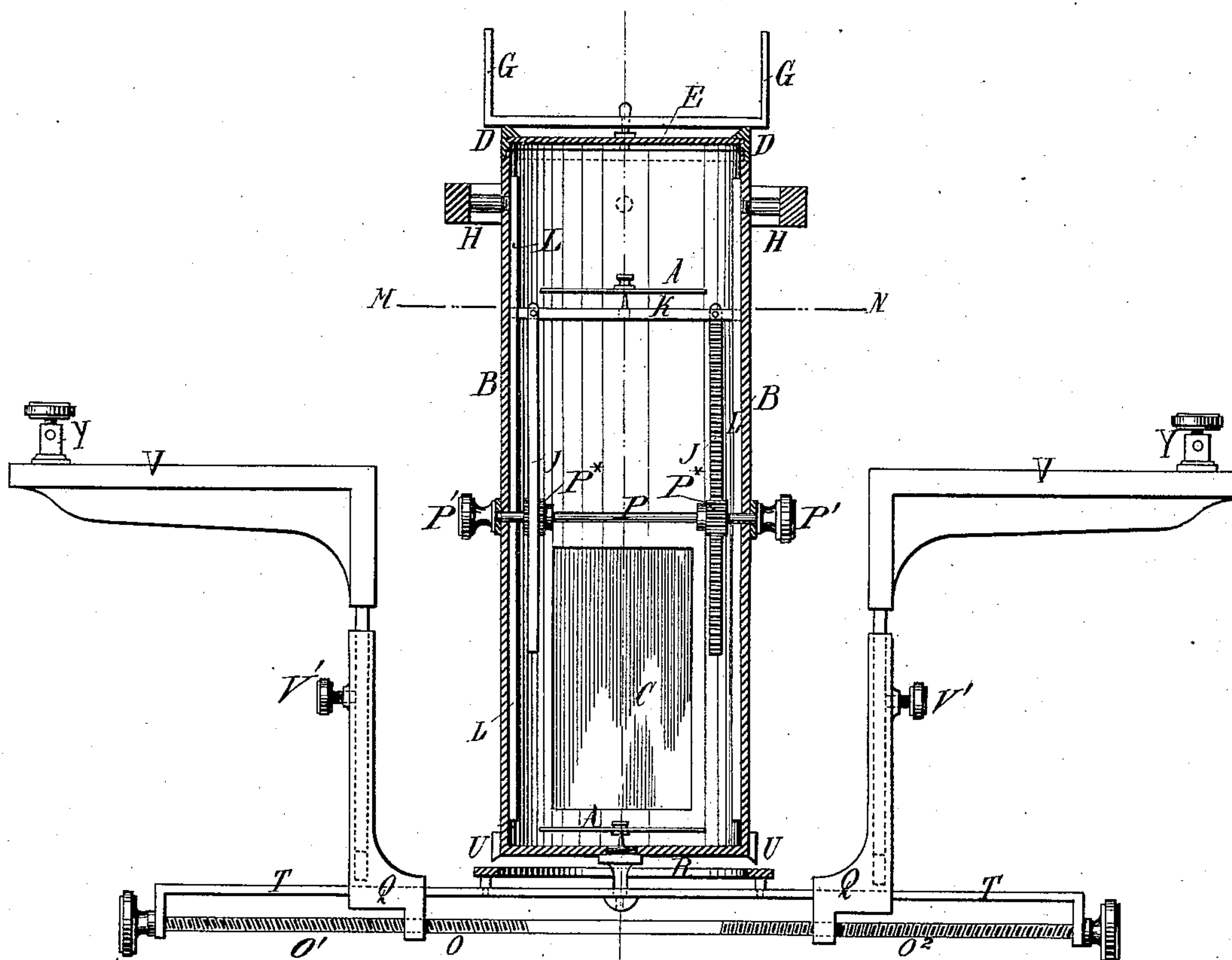
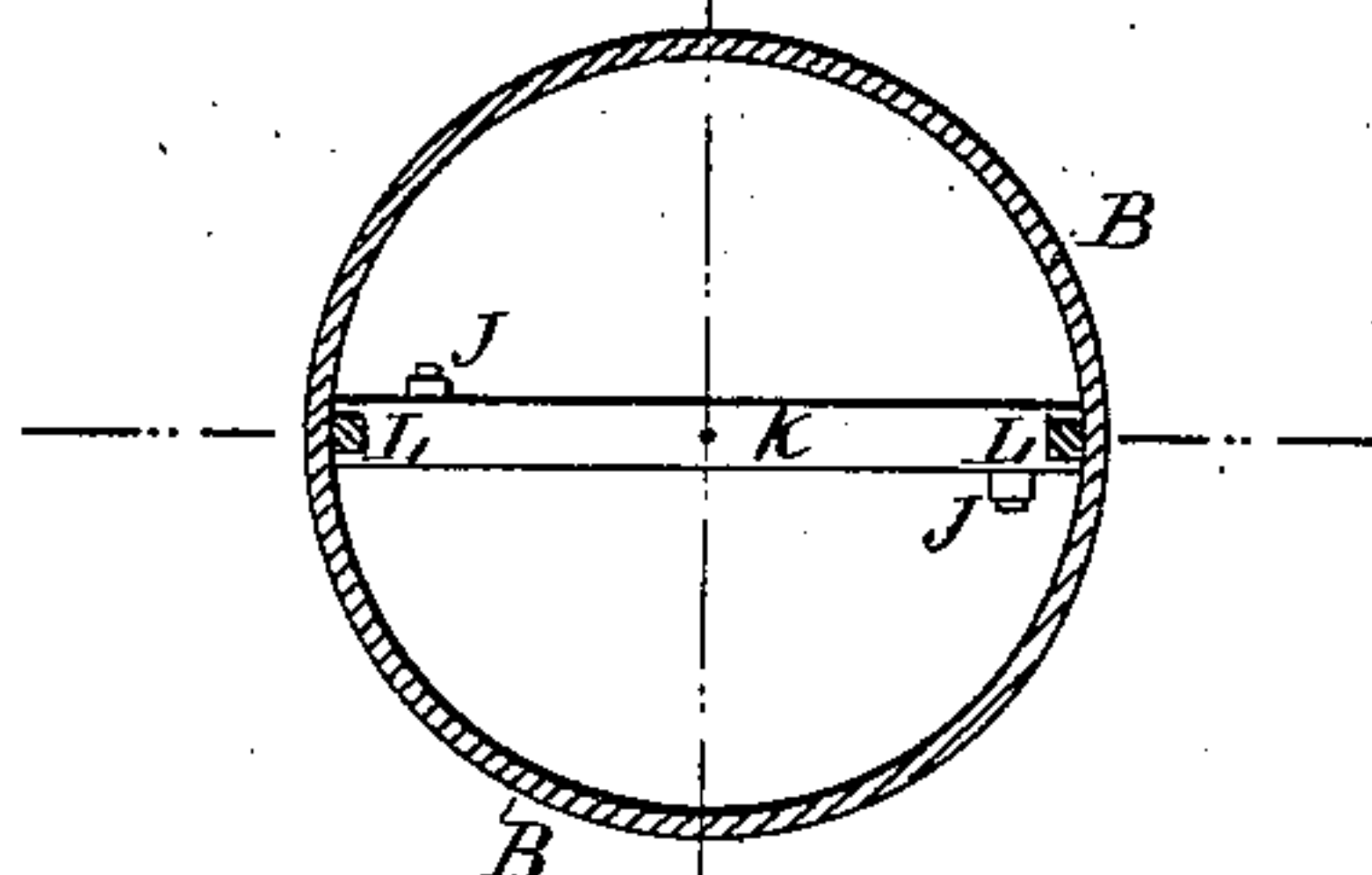


Fig 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

ERNEST BISSON, OF PARIS, FRANCE.

MARINER'S COMPASS.

SPECIFICATION forming part of Letters Patent No. 341,125, dated May 4, 1886.

Application filed February 13, 1886. Serial No. 191,790. (No model.)

To all whom it may concern:

Be it known that I, ERNEST BISSON, a citizen of the Republic of France, residing at Paris, in said Republic, have invented a new and useful Improvement in Mariners' Compasses, of which the following is a specification, reference being had to the accompanying drawings.

This invention consists in certain means, hereinafter described and claimed, whereby the direction of the magnetic meridian may be determined upon a ship whatever may be the cause of deviations which occur therein.

Figure 1 represents an axial vertical section of a compass and its appurtenances, illustrating my invention; and Fig. 2 is a horizontal section of the binnacle just above the support of the upper compass-needle.

Similar letters of reference designate corresponding parts in both figures.

A A designate two compass-cards supporting magnetic needles; B, the binnacle, made of copper, and having in one or more sides a window or windows, C, for lighting the lower part of its interior.

D designates the removable cover of the binnacle, having in it a glass, E, for lighting the upper part of the binnacle, and furnished with a handle, G, for its removal.

H designates the gimbal, on which the entire instrument is supported.

K is the cross-piece supporting the pivot of the upper needle, movable up and down by means of two toothed racks, J, along vertical guides L, secured within the binnacle.

P is a shaft passing through the binnacle, and having bearings in the sides thereof, furnished with pinions P*, gearing with the racks J, and furnished also outside the binnacle with knobs, for the purpose of turning it to produce by the pinions and racks the upward and downward adjustment of the cross-piece K and upper needle within the binnacle.

T designates a horizontal bar, on which are fitted to slide two standards, Q, and in the ends of which are the bearings for the shaft O, on one part of which is a right-hand screw-thread, O', and on the other part a left-hand screw-thread, O'', the said screw-threads fitting, respectively, two corresponding female screw-threads, provided one in each of the standards Q. The said shaft is provided at its ends with knobs, by which to turn it to pro-

duce, by means of the right and left screw-threads, the movement of the standards Q toward and from each other along the bar T. To the center of the length of this bar the bottom of the binnacle is attached by a central pivot, S, about which the bar and attachments are capable of turning horizontally.

R designates a graduated circle firmly secured upon the bar T, rotated with it, and permitting, by means of fixed indexes U, the direction of the bar T to be seen.

The standards Q are fitted with arms V, which are capable of being raised and lowered therein, and secured at desired elevations by means of set-screws V', the said arms V always pointing in the same horizontal direction as the bar T. These arms are furnished near the ends thereof with binding-screws Y, to receive magnetized bars.

The bar T, standards Q, arms V, and screw-shaft O constitute what is hereinafter termed the "transom."

This compass is particularly characterized, first, by the employment of two magnetic needles of the same dimensions having their centers placed in the same vertical axis at variable distances, but such that in their greatest proximity neither will be able to exert any action on the other one; second, by the employment of a transom capable of horizontal rotation, armed with two magnetized bars, which are capable of occupying different horizontal planes between the two needles and at the same time capable of being brought nearer to or farther from the said vertical axis.

The following conditions are to be observed in the construction of the instrument:

I. *The needles.*—The two needles should be of small dimensions, to avoid as much as possible all action of one upon the other, and in order not to require too great proportions for the arms of the transom which carry the magnetized bars. These dimensions need not exceed the tenth part of the maximum vertical distance at which the needles may be placed apart—that is to say, that if the maximum of separation of the needles is forty-five (45) centimeters their length should not exceed four and one-half (4½) centimeters. The upper needle should be capable of being lowered and the lower one capable of being raised, but independently of each other, by the aid of racks

or in any other manner, equal to half of the maximum separation or twenty-two and one-half (22½) centimeters, if the greatest distance is forty-five (45) centimeters. A graduated scale placed vertically will show the different distances of the places occupied by the needles. Two needles may be inclosed in the same binnacle or in two binnacles attached by a rigid stem. In either case the whole apparatus is supported by a gimbal. The two needles may be left fixed by employing a third one placed between the two others on the same vertical axis, the third one being capable of being raised or lowered at will. In this case, if the three needles are not placed in a single binnacle the binnacle containing the third needle should be capable of being raised or lowered between the two others which would be in fixed positions. I, however, consider that in all cases the single binnacle is preferable, as simpler of construction and operation.

II. *The transom.*—The transom should be constructed in such way that its two arms V may be raised or lowered and brought nearer to or farther from the center. This double effect may be obtained in many ways, notably by means of racks or of right and left screws. The transom should be capable of making complete horizontal revolutions about the vertical axis in which are placed the pivots of the needles, and should be furnished with a divided circle permitting its orientation with relation to the needles to be readily seen. The

arms of the transom will be graduated vertically in accordance of the point of departure with the scale which indicates the separation of the needles. The lower transom, T O Q V, may be secured to the cross-piece K, which carries the pivot of the upper needle, A, instead of (as shown in the drawings) to the bottom of the binnacle, where the lower needle is permanently supported. In such case the bases and arms Q V should be inverted from the position in which they are represented.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, in a mariner's compass with two magnetic needles arranged on the same vertical axis, and means, substantially as herein described, of supporting and adjusting the same at different distances apart, of a transom composed of a bar, a supporting-pivot for the same in the same vertical axis with the needle-pivots, two arms attached to said bar, and means, substantially as described, of adjusting the said arms on the said bar at different distances from said axis and at different heights, as herein set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ERNEST BISSON.

Witnesses:

CH. CRÉMERS,

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