(No Model.)

A. C. DUNN.

TELEMETER.

No. 559,689. Patented May 5, 1896.

Fig. 1.

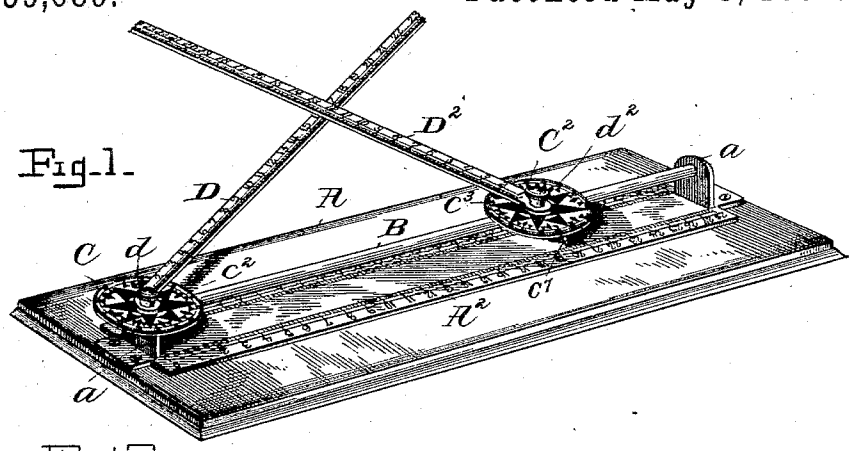


Fig 2

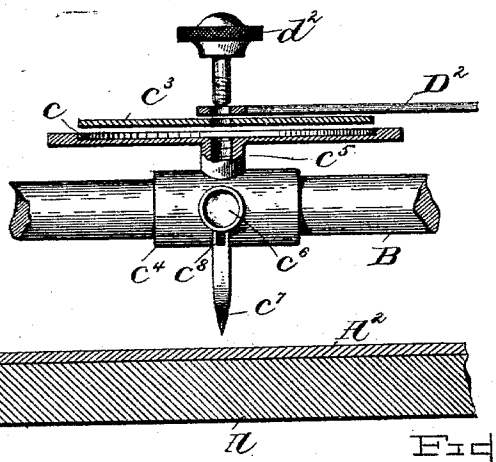


Fig 3.

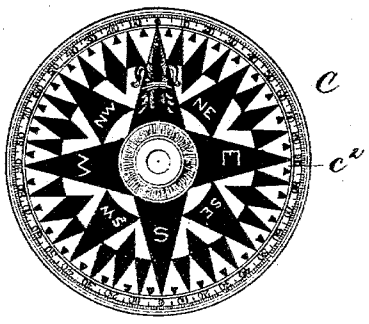
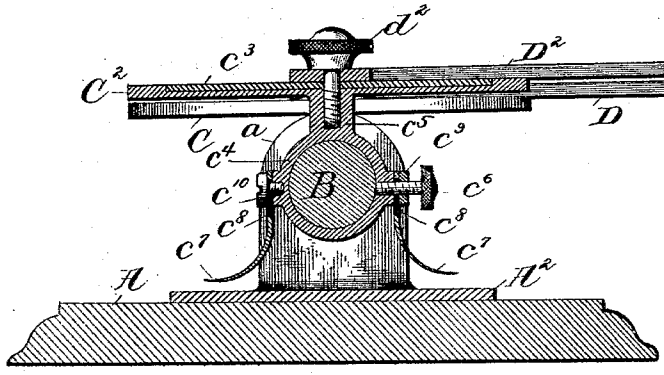


Fig 4.



Witnesses
Paul W. Steere
David H. Mead.

Inventor:
Ambrose C. Dunn,
by R. S. Dykenforth,
his Attorney.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

UNITED STATES PATENT OFFICE

AMBROSE CONSTANTINE DUNN, OF NEW YORK, N. Y., ASSIGNOR TO THE LOWRY MANUFACTURING COMPANY, OF NEW JERSEY.

TELEMETER.

SPECIFICATION forming part of Letters Patent No. 559,689, dated May 5, 1896.

Application filed August 17, 1892. Serial No. 443,355. (No model.)

To all whom it may concern:

Be it known that I, AMBROSE CONSTANTINE DUNN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Telemeters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to telemeters.

The purpose is, mechanically, to ascertain the distance of a stationary object from two points of observation also the course of a vessel.

The principle upon which the invention is based is that if in any triangle two angles and their included side are known the other two sides may be determined.

With these objects in view the invention consists, essentially, in a graduated base-plate upon which is secured a guide-rod having mounted on it two graduated disks, one of which is stationary and the other capable of a longitudinally-sliding movement, each disk having a graduated arm pivoted at one end to its center and thus adapted to radiate at any angle from it and with relation to the other; furthermore, in a graduated base-plate, a guide-rod supported centrally above and parallel with the base-plate and having at one end a fixed disk and upon its body a movable disk adapted to slide to and from the fixed disk and be set at any point upon the guide-rod, both of the disks being graduated circumferentially to indicate degrees and each bearing a revoluble compass-card and a graduated arm pivoted at the center of its disk and so adapted to be set radially at any angle therefrom; and, finally, the invention consists in a base-plate graduated upon two opposite edges, a guide-rod supported centrally above and parallel with the base-plate and having a stationary and a movable disk mounted on it, the disks being capable of being rocked laterally and of horizontal adjustment and bearing compass-cards capable of circular adjustment, and two graduated arms pivotally secured to them and adapted to radiate from the disks to any angle with relation to each other.

In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, Figure 1 is a perspective view of the entire distance instrument. Fig. 2 is a longitudinal sectional view taken from one side of the movable disk, a portion of the device being shown in side elevation. Fig. 3 is a detached plan view of one of the disks, showing the compass-card countersunk therein and the rim provided with degree-marks; and Fig. 4 is a central transverse sectional view through the movable disk, showing the movable disk overlapping the stationary disk, the stationary disk being in side elevation.

In the drawings, A represents a base-board upon which is supported a base-plate A^2, graduated similarly upon two opposite edges thereof, the numbers of the graduations being inverted with relation to each other to facilitate their being read from either side of the instrument.

B is a guide-rod supported in brackets *a* above the base-plate and parallel thereto.

C C^2 are two disks having each a circular recess *c* to hold compass-cards c^2 c^3 free to revolve in the recesses, the disks at the edges being conveniently divided into quadrants from zero to ninety degrees, the zero-marks being in alinement with the guide-rod B. The disk C is stationary upon a round guide-rod B with relation to the disk C^2, or may be permanently located at one end thereof, while the disk C^2 is movable. The means for supporting the disk C^2 and, if desired, also the disk C consist of a collar c^4, encircling the guide-rod B, and of a downward projection c^5 from the disk integral with the collar. The disk may be secured at any point on the rod by a set-screw c^6 passing through the collar and bearing against the rod. Carried centrally on each side of the collar are vertically-adjustable pointers c^7, the outer ends of which register with the graduations on each side of the plate A^2. These pointers have vertical slots c^8 in their upper ends, through one of which passes the horizontal screw c^6, and on

this screw is a jam-nut c^9 to bear against the base of the pointer, the other pointer being held by a set-screw c^{10}.

D D^2 are two arms having a series of graduations thereon corresponding to the graduated scales on the base-plate A^2. These arms are respectively pivotally secured at one end in the center of the disk C and the disk C^2, and are adapted to be radiated at any angle from the disks and then to be secured rigidly by thumb-screws d d^2. The zero-points of the graduated scales on the arms D D^2 correspond with the pivotal points thereof. Both disks may be rocked over to one side or the other, and the circular adjustment of the compass-cards c^2 c^3 is the same for each; but only the disk C is generally capable of longitudinal adjustment. The rocking adjustment of the disks is to enable the arms D D^2 to be brought into direct line with any object which may be above or below the level of the instrument, and thus insure greater accuracy.

In operation the base-board is secured firmly in position, as upon the rail of a vessel, with the guide-rod in the line of direction of movement of the vessel or other moving object between the two points of observation. The compass-card of the stationary disk is then turned so that the points thereof will register with the state of the ship's compass at the time of taking the initial observation. The outer end of the pivoted arm of the stationary disk is then brought into line with a stationary object, such as a lighthouse, the disk being rocked up or down as the object is high or low, and is then fixed in position, marking an angle on the disk. After the vessel has pursued a straight course for some time the number of miles is determined, and the movable disk is then adjusted on the rod at a point opposite the number on the base-plate corresponding with the number in miles traveled, the compass-card is set to accord with the direction of the ship's compass at the time, and the pivoted arm of the movable disk is adjusted and fixed as the arm of the stationary disk was adjusted and fixed in the initial observation. The arm of the stationary disk is thus crossed by the arm of the movable disk, and the numbers on the arms at the crossing indicate, respectively, the distance between the vessel and the object at the initial and final points of observation, while by comparison of the state of the compass at the initial point of observation with its state at the final point of observation the course of the vessel between the two points is determined and may be marked on the chart.

With this instrument recognition of a vessel's exact position may be determined by a person of ordinary intelligence. The instrument may be used with equal accuracy on land.

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

1. In a telemeter, the graduated base-plate, graduated disks mounted on the base-plate, one of which is stationary and the other movable horizontally and both of which are capable of rocking movement, and the pivoted graduated arms, substantially as described.

2. In a telemeter, the graduated base-plate, graduated disks mounted thereon, each of which has a countersunk compass-card therein, one of which disks is stationary and the other movable, and the pivoted graduated arms, substantially as described.

3. In a telemeter, the graduated base-plate, graduated disks mounted thereon each of which has a countersunk compass-card therein, one of which disks is stationary and the other horizontally movable, and both of which are capable of rocking movement, and the pivoted graduated arms, substantially as described.

4. In a telemeter, the graduated base-plate, graduated disks mounted thereon, one of which is stationary and the other horizontally adjustable, and both of which are capable of rocking movement, compass-cards secured on the disks and adapted to revolve thereon, graduated arms pivoted at one end centrally one upon each disk, and binding-screws for securing the arms at any degree of angle, substantially as described.

5. In a telemeter, the graduated base-plate, the round guide-rod secured thereon, the stationary disk having the pivoted arm and the movable disk having the collar inclosing the rod, a set-screw for retaining the collar in place, and a pivoted arm attached to the disk, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

AMBROSE CONSTANTINE DUNN.

Witnesses:
WILLIAM MAUERSBERG,
A. R. AUTEN.