J. STINSON.

2 Sheets—Sheet 1.

Altitude Instrument.

No. 13,584.

Patented Sept. 18, 1855.

Fig. 1

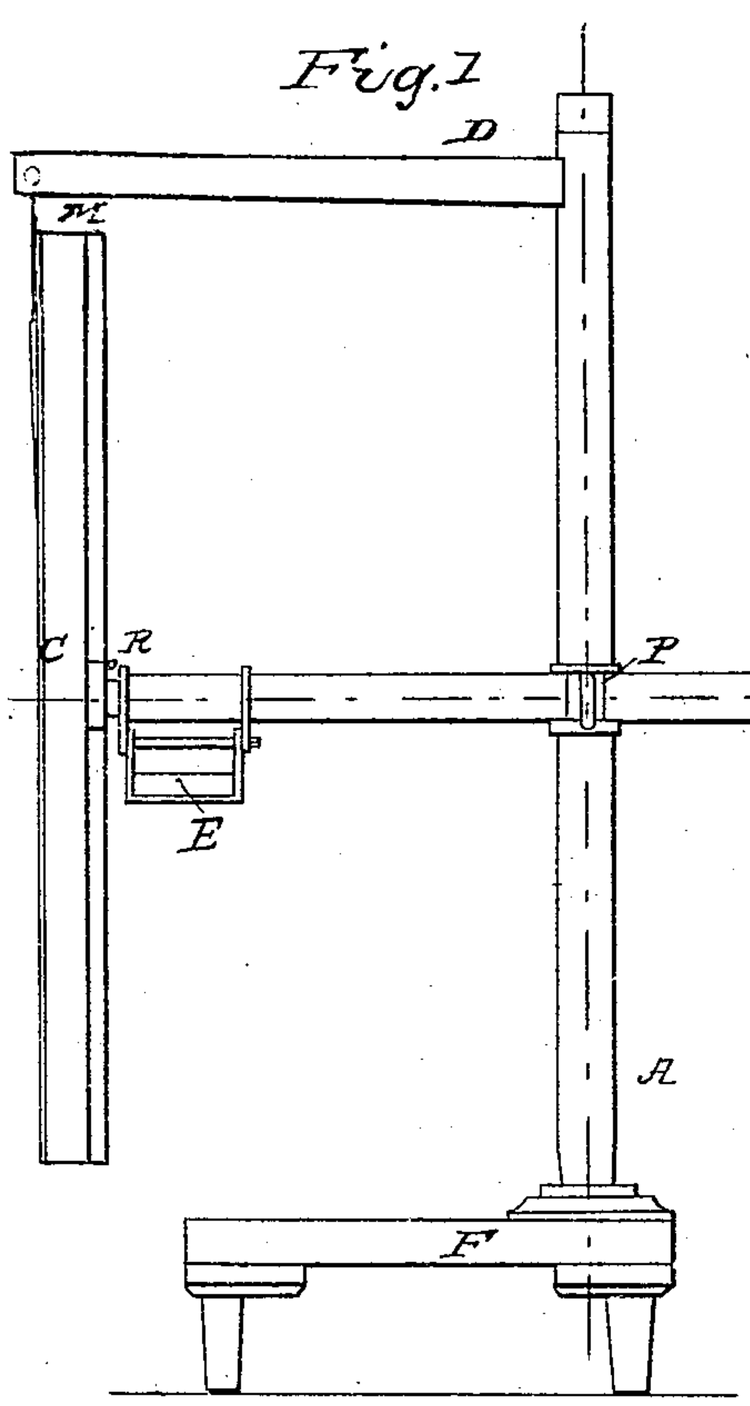


Fig. 2

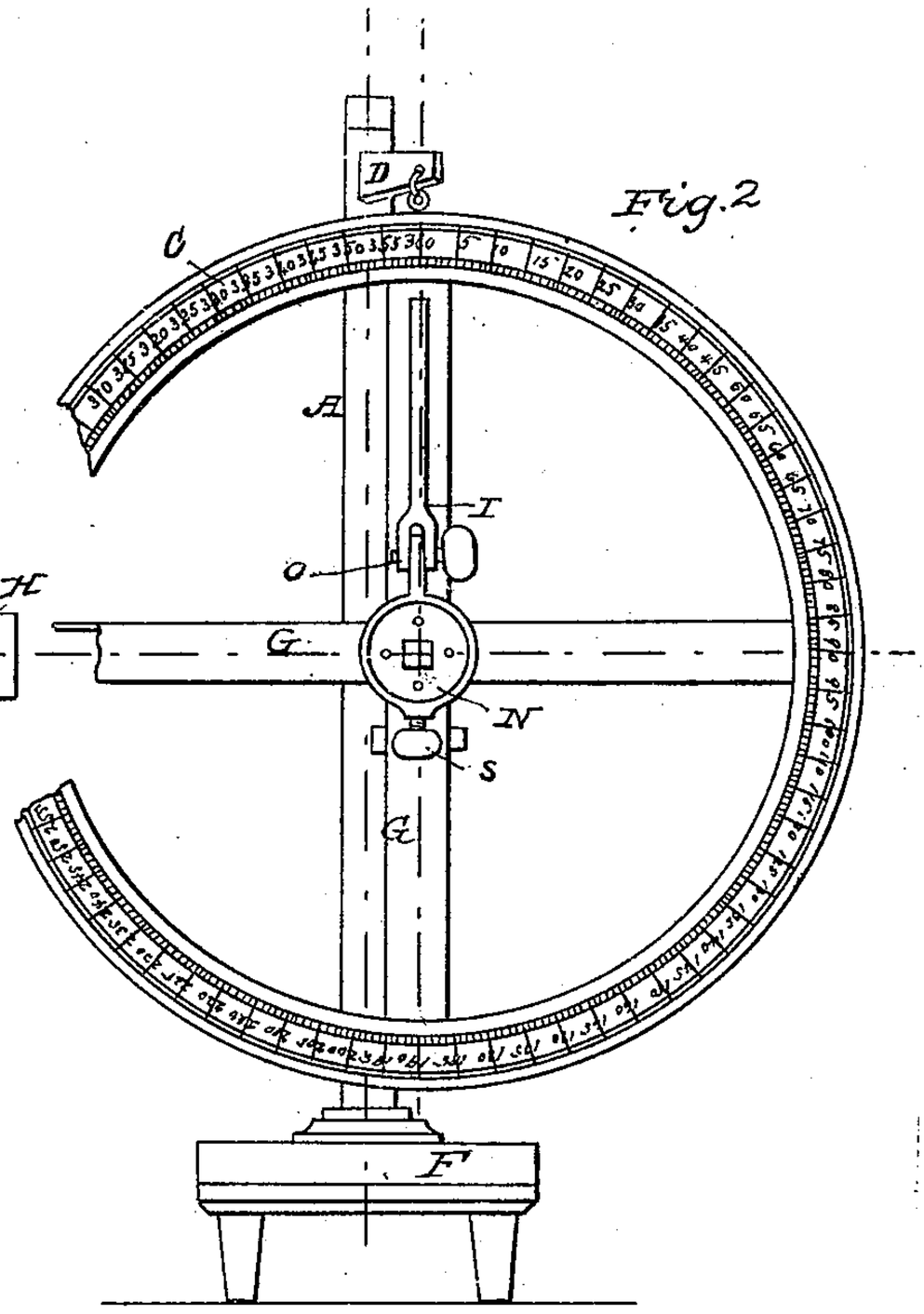


Fig. 3

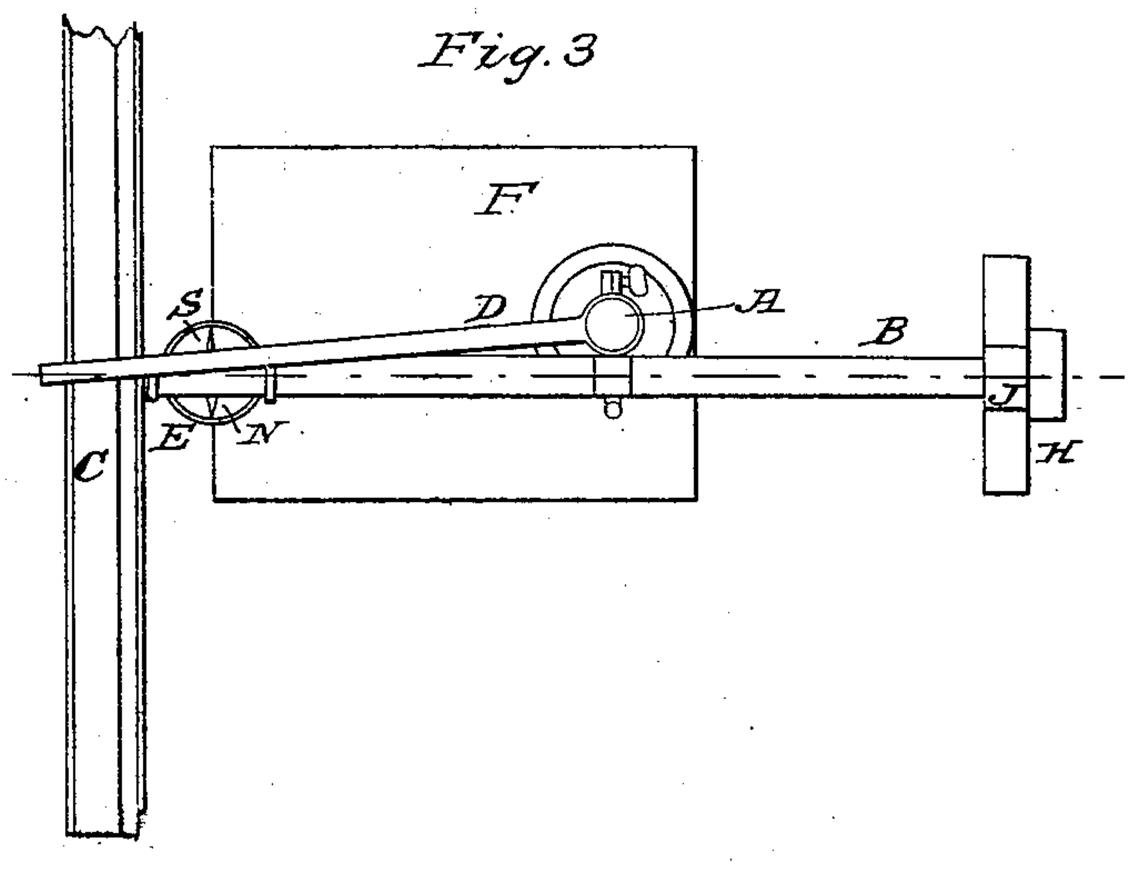
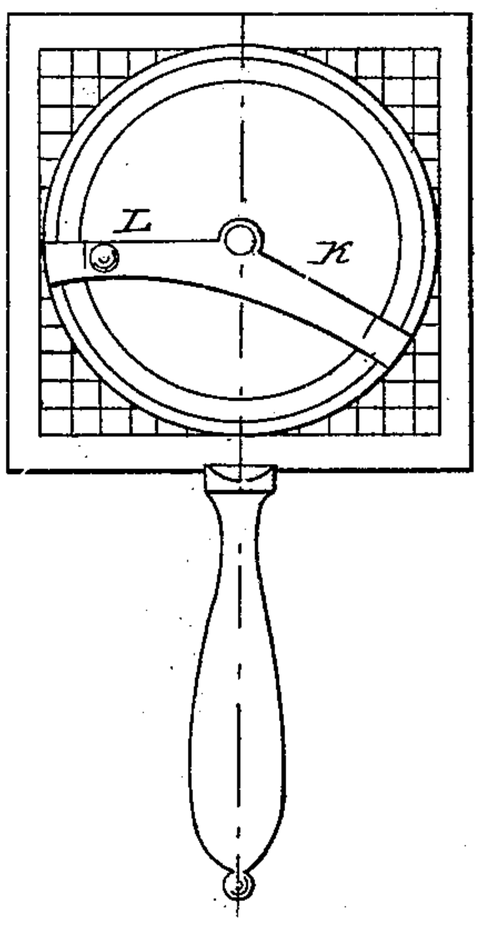


Fig. 4

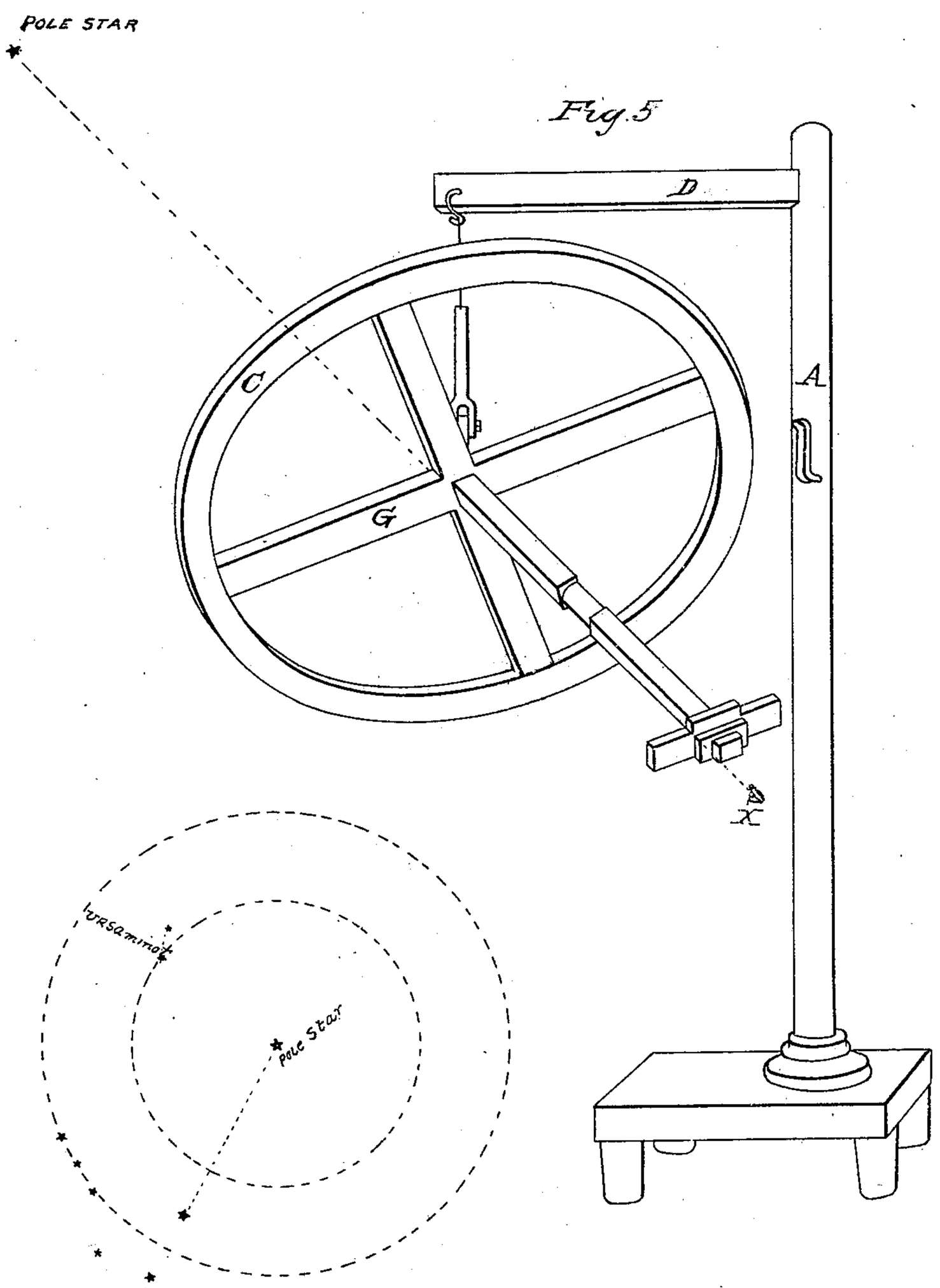


2 Sheets—Sheet 2.

J. STINSON.

Altitude Instrument.

No. 13,584. Patented Sept. 18, 1855.



N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN STINSON, OF DANVILLE, NEW JERSEY.

INSTRUMENT FOR DETERMINING LATITUDE AND LONGITUDE.

Specification of Letters Patent No. 13,584, dated September 18, 1855.

To all whom it may concern:

Be it known that I, JOHN STINSON, of Danville, Warren county, New Jersey, have invented an Instrument to Get the Latitude and Longitude at Sea by the Stars or the Sun, and it is called the "Pole-star."

To enable others to make and use my invention I proceed to describe its construction and operation; reference being had to the drawings hereunto annexed and making part of this specification.

Figure 1 is a side elevation of the instrument; Fig. 2, face elevation of the same; Fig. 3, birds' eye view; Fig. 4, the face of the hand dial; Fig. 5, the instrument elevated; Fig. 6, map of the stars to be observed.

First I construct a bench, F, two feet long, eight and a half inches high and eighteen inches wide. There is a socket in this bench at one end, in which I erect an upright post, A, an inch and a half diameter—or two inches—five feet eight and a half inches high, above the bench, made to turn freely in the socket—with a wedge to secure it if required. At the top of this upright post I insert an arm (D) two feet three and a half inches long. There is a circle (C) suspended by the arm (D). This circle is four feet in diameter and the rim about an inch thick and an inch and three eighths wide—with a brass face marked with degrees. There are upon the face three hundred and sixty degrees. The hub is of brass, and contains upon it, on the face side a ring, N, on which it will turn when the bearing is to be obtained and having a thumb screw which will secure it. The circle is suspended by a rod (M) containing a joint, O, by which it can be thrown in a diagonal direction. The axis of this circle is called a handle, (B). It is about an inch square and four feet and one inch long. This handle is set firm in the hub, at right angles with the plane of the circle. In the middle of the handle there is a journal adapted to a hook (P) to keep the handle in a horizontal position. On the end there is a cross piece H ten inches long and two inches wide, and an offset, J, of two inches, as shown in the drawing. It lies parallel with the tube. There is also suspended to the handle, near the circle, a surveyor's compass, E.

I proceed now to describe the use of the machine to get a longitude. In case the observation is to be taken from the stars, the handle, B, is taken from the hook P, and the face of the circle is pointed to the polar star until the sight is taken at the angle of the cross arm (G′) and the angle at the hub for the purpose of getting the meridian. Then the circle is turned until the arm (G′) draws a parallel from the pole star, to the star in Ursa Minor which is nearest the pole star, and when that is obtained the thumb screw (S) is fastened to maintain that bearing. See Fig. 5, for the manner of elevating the instrument. In high latitudes it requires that the one taking the observation shall recline upon his hip and his elbow, but in low latitudes he might sit in a chair. See also a diagram, Fig. 6, for the star to be observed. This instrument can be made smaller in its dimension, but the proportions should be observed. Upon land its size may even be increased with advantage, but upon the sea a large instrument would be inconvenient. The handle is then replaced upon the hook and the wire (M) by which the circle is suspended will mark the degree of the bearing of the star.

To get the latitude I direct the tube (R) to the pole star. This gives its altitude. The instrument is also used to get the latitude and longitude by the sun, in place of the ordinary sextant.

Suppose a forenoon observation. The altitude of the sun is got by the instrument from the rational horizon without bringing the sun's image down to the ocean. The altitude is obtained by turning the circle until the sun shines through the tube, this is known by the ray falling upon the hand or upon any plate which may be held at the periphery of the circle. Suppose the altitude to be 55°. The sun then passes the meridian and descends to the same altitude. Then this calculation can be made in the ordinary manner.

In order to get the variation of the needle. Suppose the sun's altitude to be 55° a. m. and the compass bears 61° southeast. The sun passes the meridian and descends to the same altitude. The compass then bears 70° southwest. Then 61° from 70° leaves 9, half of which is 4° 30′, the variation of the needle, west of the meridian.

To balance the weight of the apparatus a weight of about 30 pounds is placed upon the bench.

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

The use of the circle (C) with its shaft or handle provided with the cross piece (G) and the cross piece (H) or their equivalent, the whole being suspended from at or near the center of the circle by means of the plumb wire and rod (I) which rod is jointed so as to move freely in a frame passing through the axis of the circle the whole being for the purpose above described.

JOHN STINSON.

Witnesses:
BREEN G. WARREN,
JACOB PRICE.