

No. 825,319.

PATENTED JULY 10, 1906.

E. G. HEWITT.
SUN DIAL.

APPLICATION FILED APR. 20, 1905.

Fig. 1

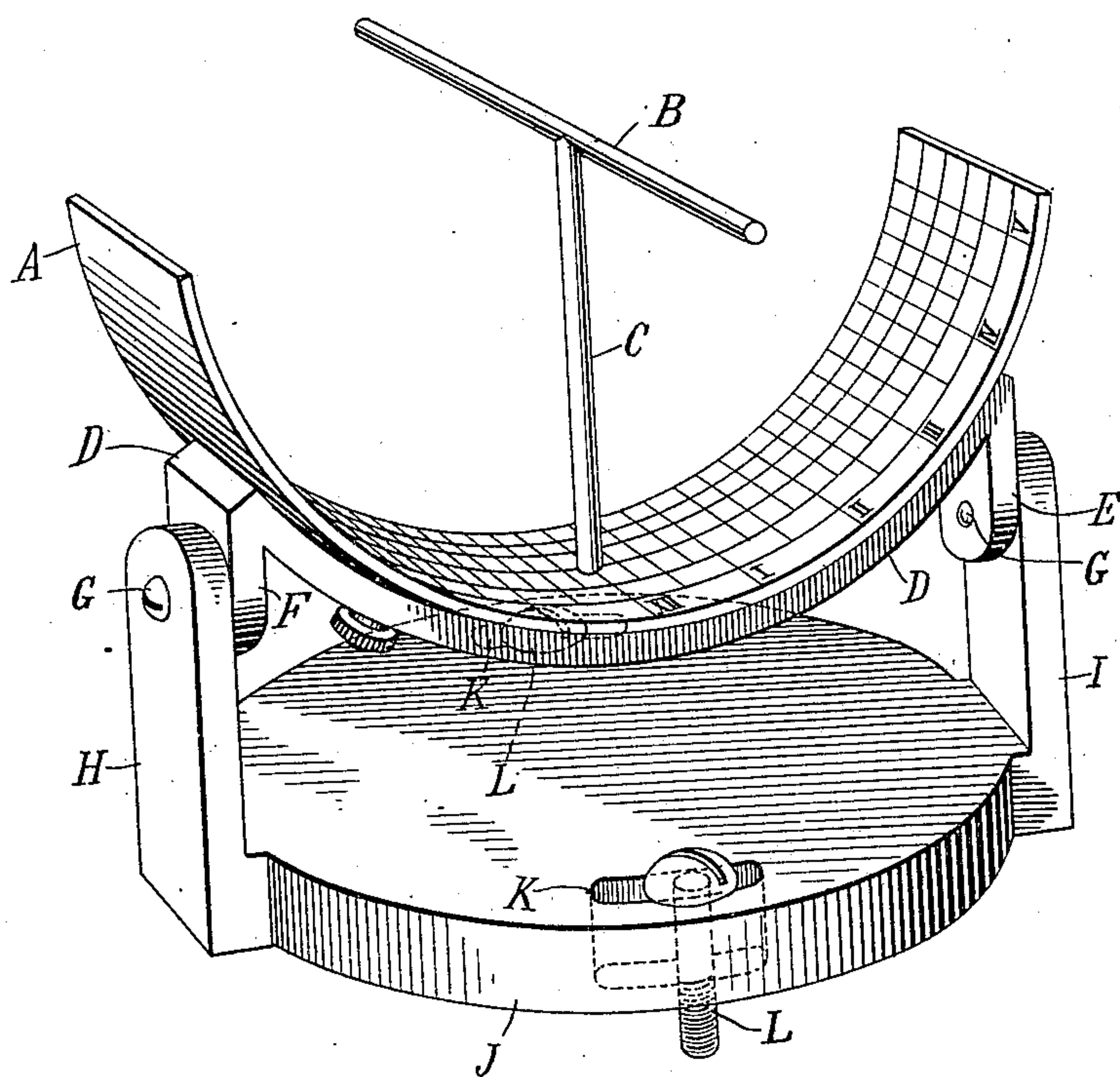
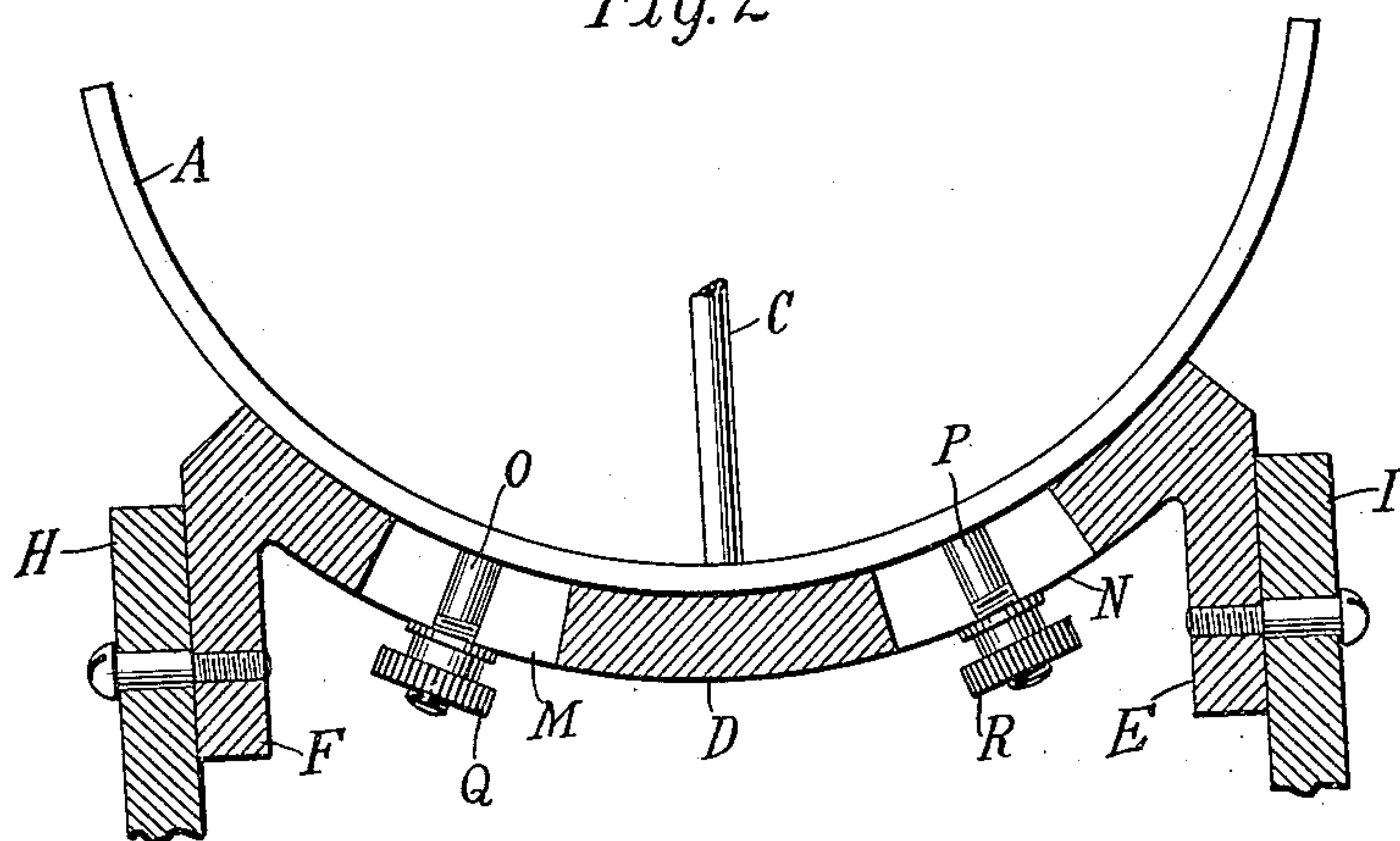


Fig. 2



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EDWARD G. HEWITT, OF NEW YORK, N. Y.

SUN-DIAL.

No. 825,319.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed April 20, 1905. Serial No. 256,650.

To all whom it may concern:

Be it known that I, EDWARD G. HEWITT, a citizen of the United States, residing at New York, in the county of Kings, State of New York, have invented certain new and useful Improvements in Sun-Dials, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

My invention relates to sun-dials, and has for its object to provide a timepiece of that kind which shall be capable of such adjustment as will enable its use in any locality, irrespective of the latitude of the place, and also adjustable in such manner that the dial will indicate any desired kind of time, such as local sun time or "standard" time.

In carrying out my invention in its preferred form I employ a dial member consisting of an arc-shaped piece having an inner cylindrical surface on which is marked graduations corresponding to the desired divisions of time which the device is to indicate. Suitably supported at the axis of this cylindrical surface is a gnomon, preferably consisting of a cylindrical rod, which casts a shadow on the time graduations. This gnomon may be supported in its proper position by any convenient means, as by a stem extending radially inward from the arc-shaped member. The arc-shaped dial member is mounted on a similarly-curved carrier, so that the dial member may be revolved thereon about its axis. Means are provided for clamping the dial member in any position on its carrier. The dial is in use arranged with the gnomon parallel with the axis of the earth, so that by shifting the dial member east or west the graduations which indicate the divisions of time may be advanced or retracted so as to indicate time, either fast or slow, as the case may be, of local sun time. For the purpose of adjusting the device for latitude the carrier on which the dial member is secured is mounted pivotally so that it may be swung in the plane of the meridian, thereby altering the angle which the gnomon makes with the horizon. By this adjustment the gnomon may be brought into parallelism with the earth's axis no matter in what locality the device may be set up, assuming, of course, that the pivot or pivots of the carrier lie in the east and west plane, so that the gnomon changes its position relative only to the horizon and not in the plane of the meridian. For more readily

positioning the gnomon in the plane of the meridian the base to which the carrier is pivoted may be provided with means to permit a lateral adjustment thereof in a horizontal plane with devices for securely clamping the base in position when proper adjustment has been made.

It will be clear, of course, that the invention as above briefly described may be embodied in a variety of different forms; but in order to enable others to construct the same I have described hereinafter the preferred form of the invention and have illustrated the same in the accompanying drawings, in which—

Figure 1 is a view showing the device in perspective, and Fig. 2 is a transverse section of the same through the pivots on which the dial-carrier is mounted.

The arc-shaped dial member, having a cylindrical inner surface bearing time graduations, is indicated by A. It will of course be understood that the divisions on the dial member correspond to hours, halves, quarters, &c., beginning at the middle of the curved surface and running in both directions.

B indicates the gnomon, which in the present instance is a cylindrical rod. It is supported at the axis of the dial member on a stem C, rising radially from the dial and secured to the latter in any convenient manner.

D is the carrier, curved to fit the outer surface of the dial member and provided with depending ears E F. The latter are secured by screws G, constituting pivots, to standards H I, rising from a circular base J. On each side of the base, preferably midway between the standards H I, is a curved slot K, through which may pass devices, as the screws L, for securing the base to a support.

In setting up the instrument the base is placed on a suitable support and arranged tentatively with the standards H I in the east and west plane. The screws L are then inserted and the base more accurately adjusted by turning it to the right or left, as may be required, after which the screws are set up, thus clamping the base securely in the proper position. The next adjustment is for the purpose of making the instrument agree with the latitude of the place in which it is set up, and to secure this result the carrier D is turned on its pivots until the gnomon points exactly to the celestial pole. This

may be ascertained by sighting the instrument after night or by actual measurement of the angle which the gnomon makes with the horizon or by a comparison of the shadow of the pole with the graduations on the dial. 5 The shadow cast by the gnomon is of course parallel with the graduation-marks when the instrument has been properly adjusted. If the instrument is set up with the meridian 10 passing through the gnomon and "XII," the reading given will be local sun time. If it is desired that the instrument should give mean solar time in the particular locality, the dial member A may be adjusted from time to time 15 to compensate for the difference between the local and mean solar time. To permit such adjustment, the carrier is provided with slots M N, and the dial is provided with screws O P, rigidly secured thereto, extending through 20 the slots just mentioned. The screws are provided with nuts Q R, so that after the dial has been rotated on the carrier about the gnomon B as an axis it may be securely clamped in its adjusted position by 25 tightening up the nuts before mentioned.

By the adjustment just described the instrument may be made to give standard time, and for this purpose it is merely necessary to ascertain the difference between the local sun time of the place and 30 standard time and correct therefor by shift-

ing the dial to the east or west, as the case may be. If standard time is faster than local sun time, the dial will be shifted to the east, and to the west if standard time be 35 slower, as will be readily understood.

Having now described my invention, what I claim is—

In a sun-dial, the combination of a horizontal base having means for securing it to a 40 support and permitting partial rotation of the base in a horizontal plane, standards at opposite sides of the base, a slotted, arc shaped carrier, having ears depending from its ends and pivoted to the standards where- 45 by the carrier may be adjusted in the plane of the meridian to correct for latitude, an arc-shaped dial member loosely mounted in the carrier and provided with clamping screws extending through the slots in the 50 carrier, whereby the dial member may be rotatively adjusted about its axis and clamped in adjusted position, to correct for longitude or equation of time, and a gnomon supported at the axis of the dial member, 55 substantially as shown and described and for the purposes set forth.

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Witnesses:

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