May 17, 1927. 1,629,238

S. TERRAZ

SUN DIAL

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Fig. 1.

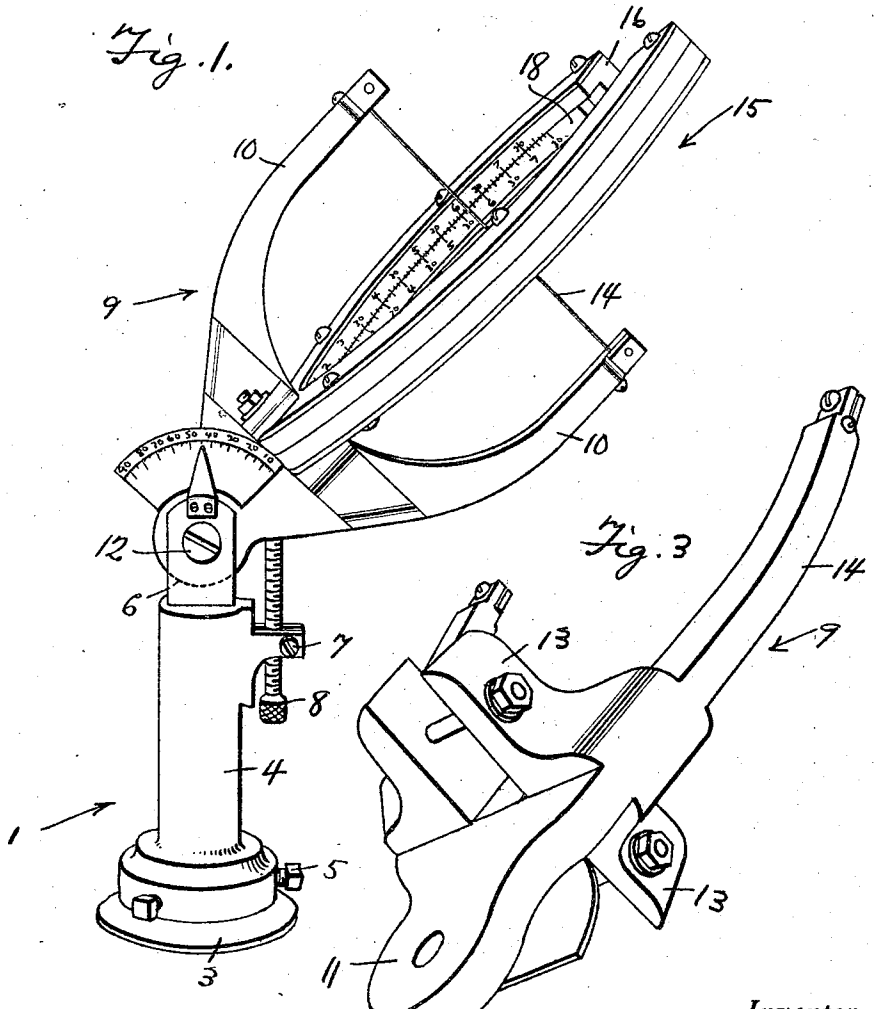


Fig. 3

Inventor

Symphorian Terraz

By Clarence O'Brien

Attorney

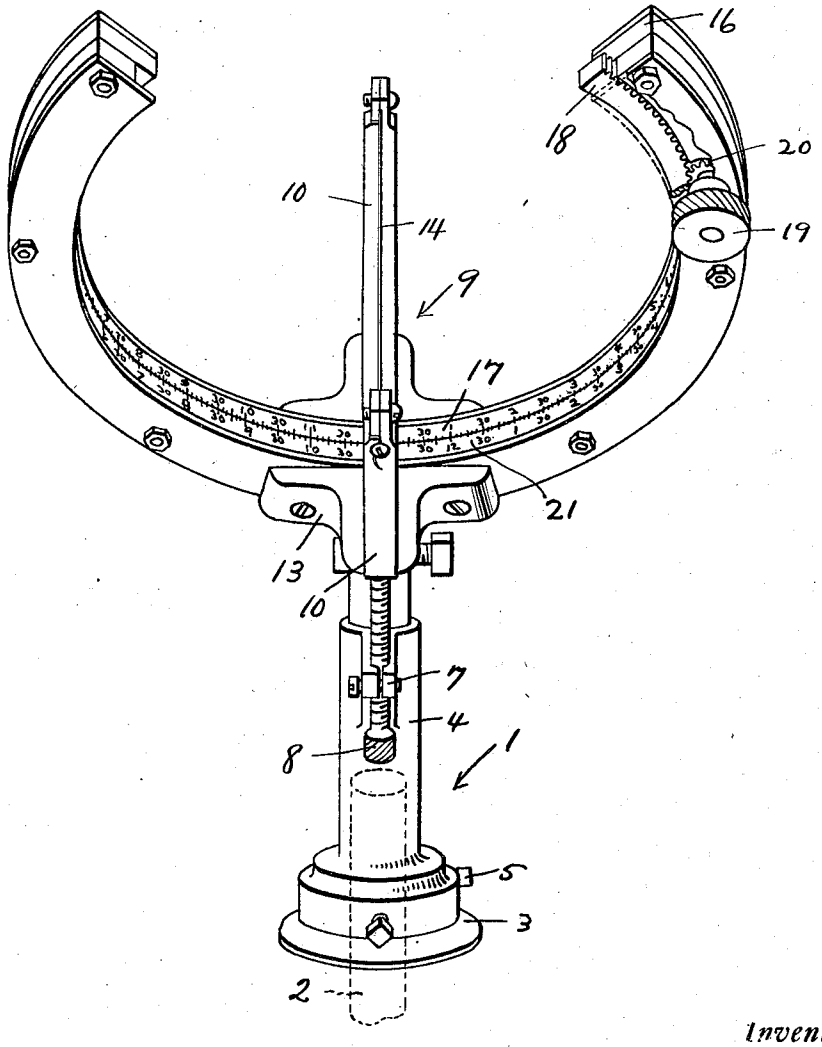
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Fig. 2.



Inventor

Symphorien Terraz

By Clarence O'Brien

Attorney

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UNITED STATES PATENT OFFICE.

SYMPHORIAN TERRAZ, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE TRUSTEES OF ASSUMPTION COLLEGE, OF WORCESTER, MASSACHUSETTS.

SUNDIAL.

Application filed September 7, 1926. Serial No, 134,104.

The present invention has reference to an improved sun dial and it has more particular reference to one of the well known equinoctial type.

The present invention is built upon what is believed to be an entirely new principle and it includes means not to be found in ordinary instruments of this class, the means being such as to provide both the time of the sun and the corresponding time indicated upon mechanical clocks, to the nearest minute, for all days of the year and any latitude, on either of the two hemispheres.

The construction for accomplishing the desired method of reading the time will become apparent from the accompanying drawings, in which:—

Figure 1 is a perspective, looking at one side of the improved structure.

Fig. 2 is a perspective view, looking at the front of the structure.

Fig. 3 is a perspective view of one of the details hereinafter referred to as the equinoctial dials.

Briefly, the invention comprises four parts, a base, a fork adjustably mounted upon the base, a special latitude dial, and a calibrated horal receptive head of segmental formation.

The base, which is represented generally by the reference character 1, is composed of a sturdy bronze column formed integral with a circular bottom. The structure is centrally bored for slidable reception of a vertical iron rod 2 which is previously set in a cement anchor and extends upwardly through the bore in the circular bottom 3 and a tubular standard 4, set screws 5 being employed to maintain these parts in adjusted position. The top of the standard is bifurcated and the furcations are represented by the reference character 6. On one side just below these furcations are outstanding parallel ears 7 constituting a mounting for an adjusting set screw 8.

The fork, as the name implies, is generally designated by the reference character 9 and this includes opposed arms 10 connected with a special casting including a plate-like portion 11 disposed for movement between the furcations 6 and connected thereto by a pivot and adjusting screw 12. The casting is provided with outstanding spaced lugs 13 which serve a purpose to be hereinafter described and the free ends of the arms are provided with indicating wire 14.

The fork is connected to the head generally designated by the reference character 15. This head is of segmental formation, being approximately three-quarters of a circle. The inner peripheral face of the stationary part 16 is provided with properly arranged graduations 17 with which the shadow cooperates. The inner face of this part 16 is constructed to accommodate a segmental relatively adjustable rack 18 movably mounted in the guide channel or groove shown in the drawing.

A knob 19 is provided and this knob is in turn provided with a pinion 20, the teeth of which mesh with the teeth on the rack, whereby it may be bodily adjusted with respect to the relatively stationary part 15. The inner peripheral face of this rack is provided with complemental graduations 21 to ocooperate with the graduations 17 for computation of time. In connection with the graduated horal receptive surfaces, of the relatively movable parts 16 and 17, it is to be stated that graduations 17 of the part 16 represent sun time by the other graduations 21 clock time.

When the adjustable part together with an indicator rod passing through their common centers and projecting its shadow on both of them simultaneously, the setting of a common clock by sun shine is comparatively easy. Indeed, in whatever locality the new sun dial may be used, if once and for all, it is correctly adjusted to the local meridian of that particular latitude, the correct clock time may be obtained to a very minute degree by merely turning the movable dial a given number of minutes either to the right or left of the fixed dial, according to the directions of the local chart of equation of time. As explained, this chart must be so computed as to combine the general delays or advances between the sun and the clocks on the different seasons of the year. It must moreover, combine the difference of latitude between a given place and the central meridian, setting the standard time of the time belt. Then too, the local chart of the equation must eventually take into the account of day-light saving, adopted in many States during the summer months.

With a little care and patience, any one

can compute a correct chart of the equation of time adapted to a given locality. Once this chart has been calculated, it will serve as an indispensable and reliable guide whenever it is desired to set a watch or clock by the sun time. By considering the chart for a given day of the year, the chart will indicate that on a particular day when it is noon time by the sun, the clock or watch should indicate, for instance, 12.15 o'clock.

By moving the adjustable part of the apparatus, fifteen minutes to the right of the fixed dial, the position of the shadow cast on the movable dial will show the correct clock time any moment of the given day for several days in succession without further adjustment of the dial.

The dial represents the fourth part of the circumference and is graduated from 0 to 90. As it is fixed to the handle of the fork, and as the fork may be moved up and down by means of the pin on which it turns, and which is set at the top of the pedestal, any motion of fork causes the latitude dial to turn, and the number of degrees it turns is shown by means of the fixed pointer. When the fork is raised so as to give the steel wire, or rod, a horizontal position, the latitude dial indicates 0, which is the latitude of the equator. If the fork is lowered so as to bring the steel wire into a vertical position, the latitude dial points to 90 which is the latitude of the earth's pole.

It is believed that by considering the description in connection with the illustration made in the drawings, a clear understanding of the invention and its advantages will be had. Consequently, a more lengthy description is thought unnecessary.

Minor changes coming within the field of invention claimed may be resorted to if desired.

Having thus described my invention, what I claim as new is:—

1. In a sun dial, a base, a standard, a fork adjustably mounted upon a horizontal pivot at the upper end of the standard, the arms of the forks being disposed opposite each other and being swingable in a vertical plane about said pivot, an equinoctial dial structure disposed centrally between and in a plane transverse to the plane of the arms of the fork and secured thereto, said structure including a channel-shaped arcuate fixed part, a rack of a shape corresponding to said part, and mounted for movement circumferentially in said channel, means for adjusting the rack, both of said parts being provided on their inner surfaces with cooperating graduations, and there being an indicator mounted on and between the free end portions of the fork cooperable with said graduations.

2. In an equinoctial sun dial, a base, a standard rising from said base, a horizontal pivot at the top of the standard, a fork mounted on the horizontal pivot, said fork including spaced arms at the outer ends of and extending between which is mounted an indicator, a head, and means for mounting the head in and transverse to said fork, said head including concentric arcuate parts, one of which is fixed to said fork and the other one of which is relatively movable with respect to the fixed part about their common center, said parts being provided with graduations for operation of said indicator in a sun dial.

In testimony whereof I affix my signature.

REV. SYMPHORIAN TERRAZ, A. A.