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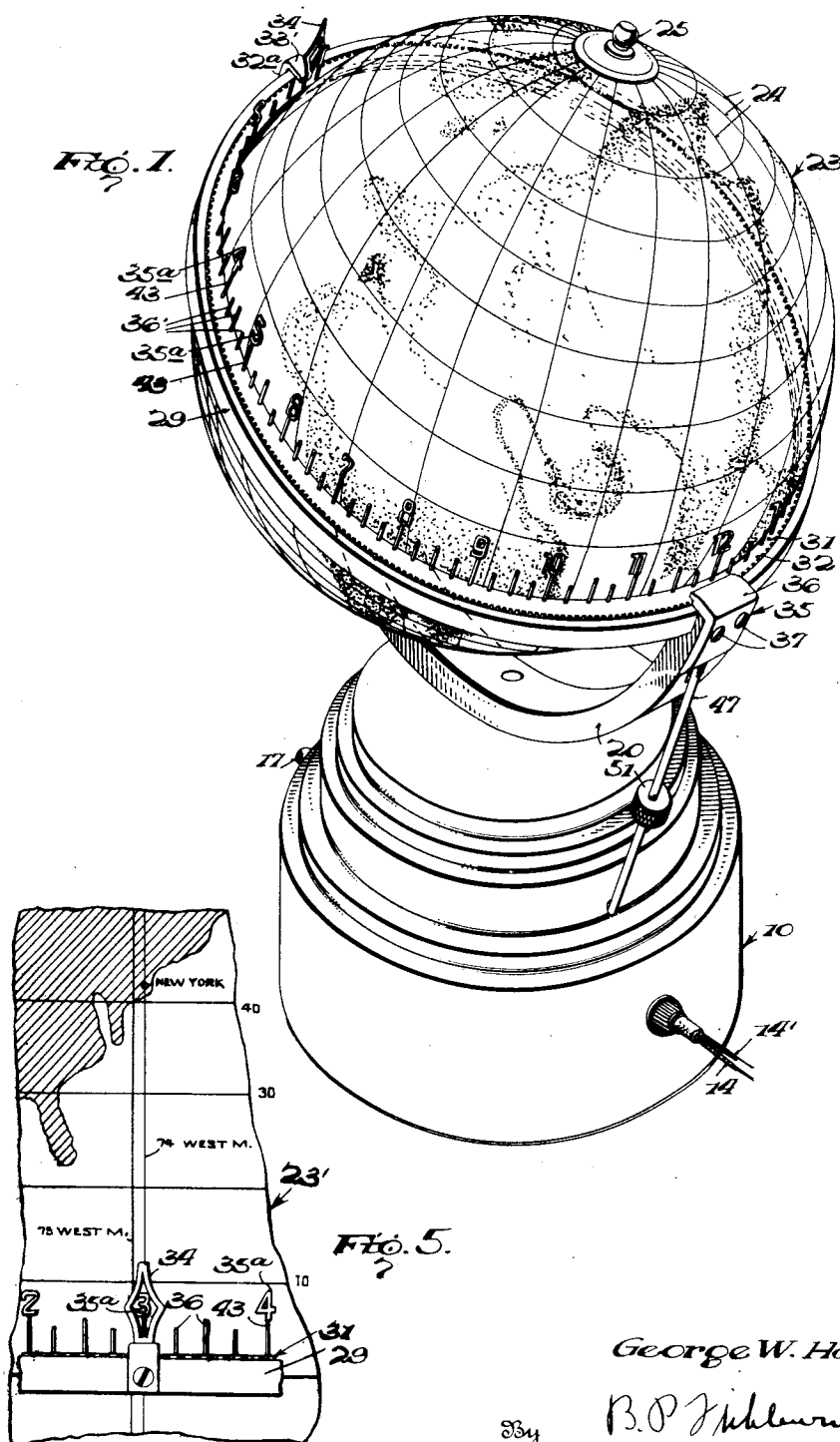
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2,099,518

GLOBE CHRONOMETER

Filed April 28, 1937

3 Sheets-Sheet 1



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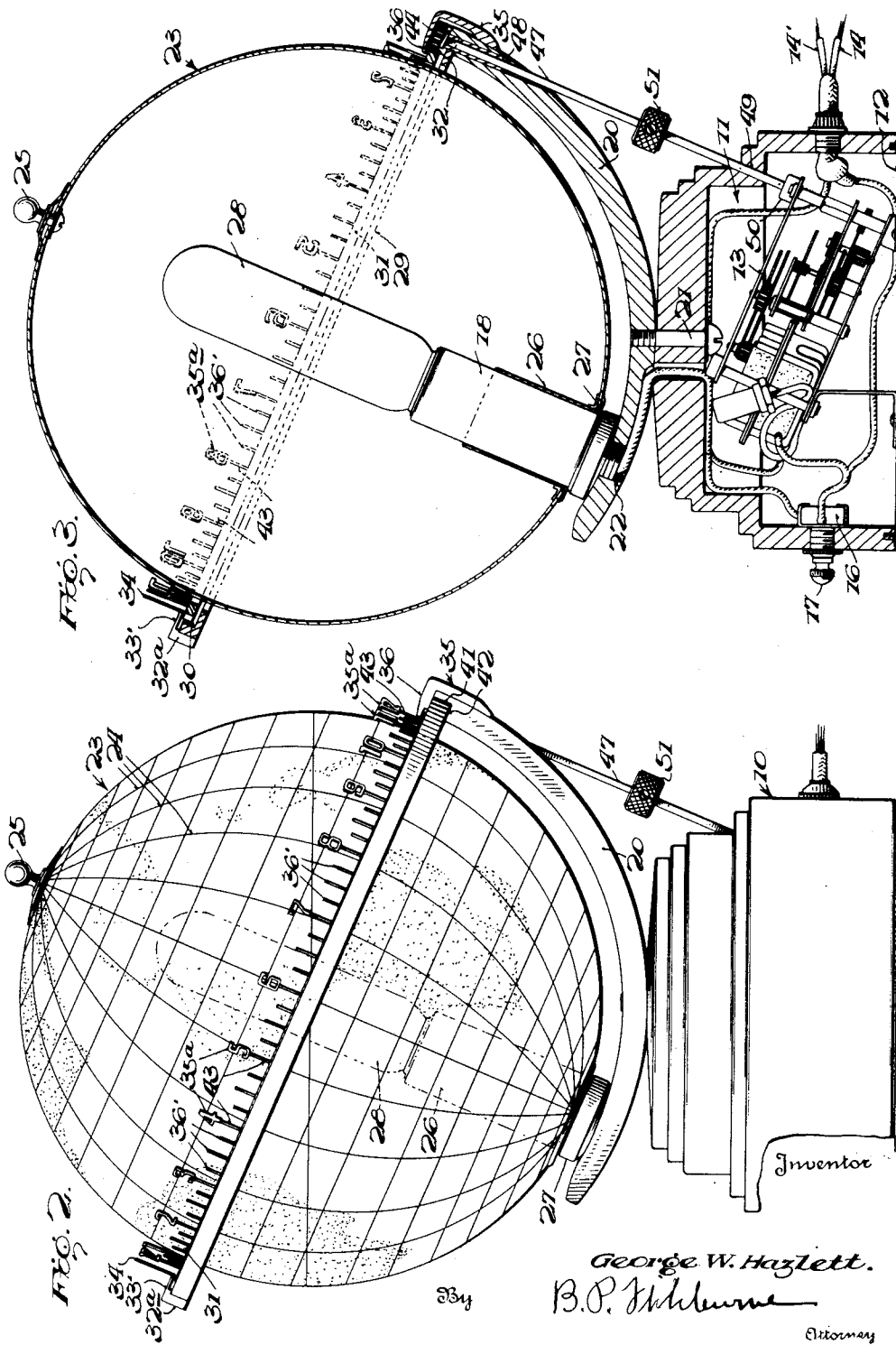
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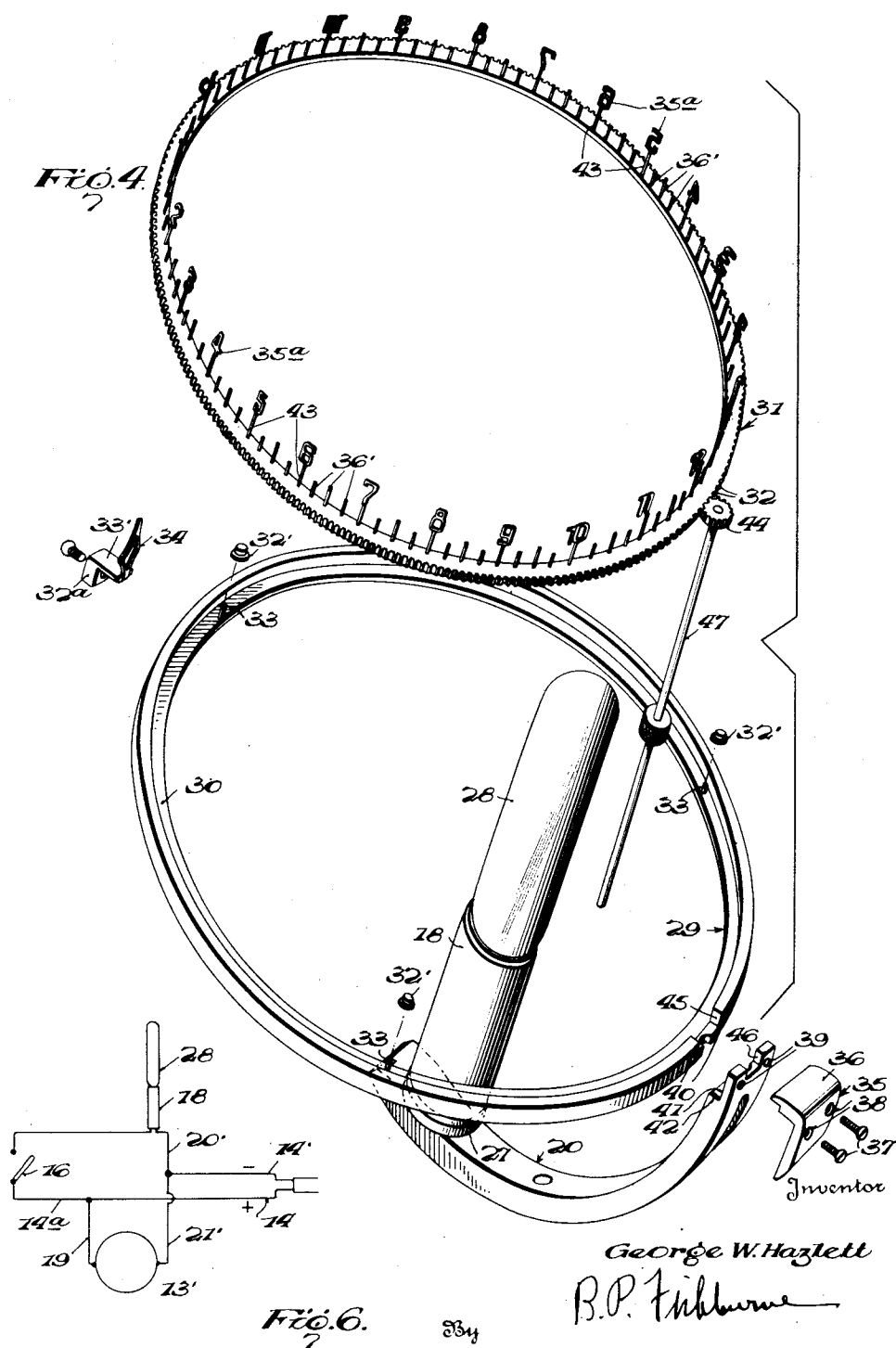
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UNITED STATES PATENT OFFICE

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GLOBE CHRONOMETER

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11 Claims. (Cl. 58—44)

My invention relates to globe chronometers.

Important objects of the invention are: to provide an accurate timepiece whereby the various times throughout the globe may be readily ascertained; to provide means whereby the face of the globe is not marred or obstructed; to provide means whereby there are no moving parts within the globe, leaving its surface free for perfect and unobstructed illumination from the interior; to provide means whereby the globe may be readily removed from its support for access to the bulb therein; to provide means whereby the globe may be turned for adjusting the same with respect to a given pointer; to provide means whereby the traveling time indicating element may be manually adjusted with respect to the globe and pointer; to provide means whereby the globe is supported upon its axis of rotation having the proper inclination; to provide means for driving the time indicating element, which driving means is positioned exteriorly of the globe for convenient access in adjustments; and to provide apparatus of the above mentioned character which is extremely simple in construction and reliable in operation.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective view of a globe chronometer embodying my invention,

Figure 2 is a side elevation of the same,

Figure 3 is a central vertical section through the same,

Figure 4 is an exploded perspective view of the various elements of the device,

Figure 5 is a fragmentary plan view of the globe and pointer, and

Figure 6 is a diagrammatic view of the circuit included in the device.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a hollow base, having a chamber 11, the lower open end of which is covered by a removable plate 12. Mounted within this chamber 11 is clock works 13, preferably electrically operated. Current is supplied to this electrically operated clock works by wires 14 and 14', and a switch 16, of the off and on type is connected in the circuit, and is opened and closed by a rotary knob 17, arranged exteriorly of the base 10. The wire 14 is connected with a wire 14a, having the switch 16 connected therein, and the wire 14a is connected with one terminal of the electric bulb

socket 18, the other terminal of which is connected with a wire 20', connected with the wire 14'. A wire 19 is connected with the pole of a motor 13' of the clock works and the opposite end of the wire 19 is connected with the wire 14a. The opposite pole of this motor is connected with a wire 21', connected with wire 14'.

Arranged above and centrally of the top of the base 10 is a curved bracket or support 20, which is rigidly attached to the base by a screw 21 or the like, arranged centrally of the top of the base. The socket 18 is rigidly attached to the lower end portion of the curved bracket or support 20, and the wires 14a and 20' pass through an opening 22 in this bracket or support. The socket 18 is elongated, cylindrical, and its outer surface is preferably smooth. The socket 18 is inclined with respect to the perpendicular, corresponding to the inclination of the axis of the earth.

The numeral 23 designates a globe, having an accurate map of the world formed thereon embodying the various continents, oceans, etc., and the meridian lines 24 which are designated in the usual manner. This globe is preferably light transmitting and may be translucent or transparent. The globe is preferably provided at its north pole with a knob 25, for convenience of handling. Arranged within the globe 23, at its south pole, is a cylindrical sleeve 26, rigidly attached thereto, and this sleeve is removably mounted upon the socket 18 and is free to turn thereon. The downward movement of the sleeve 26 is limited by the base or projection 27 of the socket 18. The sleeve 26 is also adapted to be passed over an electric bulb 28, mounted within the socket 18, with its terminals in contact with the terminals of the sockets, as is well known. The diameter of this bulb does not exceed the diameter of the socket 18, so that the sleeve may be passed over the bulb, as stated. The longitudinal axis of the socket 18 is in alignment with the north and south poles of the globe and this longitudinal axis is inclined to coincide with the axis of rotation of the globe, which is inclined to correspond to the actual inclination of the axis of rotation of the earth. Particular attention is called to the fact that there are no operating or driving parts within the globe 23, whereby the globe may be illuminated interiorly, in the uniform and proper manner. The ready removal of the globe from the socket 18 renders it convenient to have access to the bulb 28, to renew the same, when desired.

Preferably arranged at the equator of the globe

23 is a race band or stationary supporting element 29, which is preferably annular and slightly larger in diameter than the globe at the equator, so that there is a space between the same.

5 This race band has its plane parallel with the plane of the globe at the equator, and the plane of the race band 29 is perpendicular to the central longitudinal axis of the socket 18. This race band has its upper surface grooved to form an annular recess 30, receiving an annular rotatable equatorial ring gear 31, or time indicating element.

10 This ring gear is provided with gear teeth 32 upon its outer side or periphery and the ring gear is free to turn within the recess 30 and is guided by the race band. The interior diameter of the ring gear 31 is also slightly larger than the diameter of the globe at the equator, to provide a space between the same. The ring gear rests upon horizontally rotating rollers 32', rotatably

15 mounted upon pins 33, fixed to the race band 29 and arranged within the recess 30. Any other suitable form of anti-friction means may be employed for supporting the ring gear 31, if desired. At the high end of the race band 29 is a bracket 32a, rigidly secured thereto, having a horizontal arm 33', which overhangs the ring gear 31. This bracket carries an upwardly projecting pointer 34. A bracket 35 is arranged at the low portion of the ring gear 31 and has a horizontal lip 36 overhanging the ring gear, and the bracket 35, curved support or bracket 20, and race band 29 are all rigidly connected by means of screws 37. These screws extend through openings 38 and 39 and have screw threaded en-

25 gagement within openings 40. The race band 29 engages within a recess 41 providing a shoulder 42, engaging the bottom of the race band. The brackets 32a and 35 are diametrically oppositely arranged and hold the ring gear against upward

30 displacement.

The ring gear is therefore rotatably supported at the equator of the globe in a plane parallel with the plane of the equator and the plane of the ring gear is at a right angle to the central longitudinal axis of the socket 18. It is thus

35 seen that the globe 23 may be turned with relation to the race band 29 and the ring gear may be turned with relation to the race band and also with relation to the globe. The ring gear or time indicating element is provided with two sets of pins or points 43. Each set of pins or points carry numerals 35a running from 1 to 12 inclusive and increasing in value in the same direction and the "1" of one set of numerals being

40 arranged next to the "12" of the other set. One set of numerals is black to designate the P. M. time and the other set of numerals white to designate the A. M. time. The "1" of the A. M. numerals is arranged next to the "12" of the P. M. numerals, and vice versa. The numerals in each set are of course equi-distantly spaced and designate hours and they divide the ring gear into 24 hour spaces of equal length. The spaces between each pair of numerals are further

45 divided by pins 36', designating time intervals of 15 minutes, each hour being divided into four 15 minute intervals, although other time intervals may be used for each hour. The pointer 34 is arranged to coact with the numerals 35a and

50 points 36', as is obvious.

The numeral 44 designates a small pinion or gear, operating beneath the lip 36 and within recesses 45 and 46, Figure 4, and this pinion is in permanent mesh with the gear teeth 32. The

55 pinion or gear 44, is rigidly mounted upon the

upper end of an upwardly projecting inclined drive shaft 47, which is parallel with the central longitudinal axis of the socket 18. The upper portion of this drive shaft is journaled in a bearing 48 formed in the upper end of the support 20.

5 The lower end of this drive shaft 47 extends through an opening or bearing 49 and has a frictional connection with a rotating part 50 of the clock works 13, preferably by telescoping therewith. The shaft 47 is driven by the clock works, but by virtue of its frictional connection with the clock works, the shaft may be turned by means of a wheel or knob 51 rigidly secured thereto, without driving the clock works. The ratio of the gear 44 with respect to the ring gear 31, and the speed of rotation of the rotatable part 50 of the clock works are so adjusted that the gear 44 will turn the ring gear 31 for a complete rotation for each 24 hours.

The operation of the apparatus is as follows.

If the apparatus is being used in New York city, the globe 23 would be turned until the 75 W. meridian was near the pointer, since New York city has a longitude of 74 W. The correct time at New York being for example 3:00 P. M., the

10 operator would turn the knob 51 to bring the ring gear to such a position that the white "3" carried by the ring gear would be opposite the pointer, and as the clock works continue to operate, the ring gear would turn clockwise indicating the

15 change in time in New York city. To ascertain the time at any other place in the world, the longitude of such place is located and then the "black" or "white" number 35a next to the meridian line which is adjacent to such ascertained

20 place, will indicate the time at such place. For instance, if it is 3:00 P. M. in New York city it will be found to be about 8:15 P. M. at Paris, France, and about 6:00 A. M. at Sydney, Australia.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred embodiment of the same and the various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. A globe chronometer comprising a support, a globe mounted upon the support, a race band secured to the support and arranged exteriorly of the globe to surround the same, a ring gear surrounding the globe and carried by the race band, said ring gear having means to indicate time, and means arranged wholly exteriorly of the globe to drive the ring gear.

2. A globe chronometer comprising a support, a globe rotatably mounted upon the support, a race band secured to the support and arranged exteriorly of the globe to surround the same, a ring gear surrounding the globe and carried by the race band, said ring gear having means to indicate time, a gear arranged exteriorly of the globe to drive the ring gear, means to drive said gear, and a pointer for coaction with the globe.

3. A globe chronometer comprising a support, a socket mounted upon the support to receive an electric bulb, a race band secured to the support, a globe having a part removably mounted upon the socket with the globe arranged within the race band so that the globe may be separated from the socket without disturbing the race band, a time indicating element mounted upon the race band to travel thereon, and means arranged ex-

teriorly of the globe to drive the time indicating element.

4. A globe chronometer comprising a support, a socket mounted upon the support to receive an electric bulb, a light transmitting globe having a sleeve slidably mounted upon the socket, a race band surrounding the globe in spaced relation and attached to the support, a ring gear mounted upon the race band and having time indicating means, and means arranged exteriorly of the globe to drive the ring gear.

5. A globe chronometer comprising a hollow base, a support mounted upon the base, a socket mounted upon the support for receiving an electric bulb, a light transmitting globe removably mounted upon the socket, a race band secured to the support and surrounding the globe, time indicating means movably mounted upon the race band, driving means arranged within the hollow base, driving connecting means extending between the driving means and the time indicating means and arranged exteriorly of the globe and being manually adjustable.

6. A globe chronometer comprising a support, a base, an inclined socket carried by the support to receive an electric bulb, a light transmitting globe removably mounted upon the socket, a race band secured to the support and having its plane arranged substantially at a right angle to the longitudinal axis of the socket, a ring gear mounted upon the race band and having means to indicate the time, a pointer carried by the race band, driving means carried by the base, and driving connecting means between the driving means and the ring gear and arranged exteriorly of the globe.

7. A globe chronometer comprising a relatively stationary support, a socket mounted upon the support, a light transmitting globe provided near its lower pole with a bearing for insertion upon the socket, an electric light bulb carried by the socket, a time indicating band surrounding the globe, and means separate and apart from the

socket and arranged wholly exteriorly of the globe to turn the band.

8. A globe chronometer comprising a relatively stationary support, an upstanding element carried by the support, an electric light bulb mounted upon the element, a light transmitting globe provided near its lower pole with an opening for the passage of the element and the bulb, the element serving as the sole supporting means of the globe so that its upper portion is uncovered, a time indicating band surrounding the globe, and means separate and apart from the element and arranged exteriorly of the globe to drive the band.

9. A globe chronometer comprising a globe having a sleeve at its lower pole, a bulb socket upon which the sleeve is removably mounted, a bulb carried by the socket, a support for the socket, a time indicating element arranged to travel longitudinally of the equator of the globe, and means arranged exteriorly of the globe to operate the time indicating element.

10. A globe chronometer comprising a light transmitting globe having a sleeve at its lower pole, a bulb socket upon which the sleeve is adjustably and removably mounted, an electric bulb carried by the socket, a support for the bulb socket, a time indicating element arranged exteriorly of the globe to travel longitudinally of the equator of the globe, and means to operate the time indicating element.

11. A globe chronometer comprising a light transmitting globe having an opening at its lower pole, an upstanding bracket arranged exteriorly of the globe and extending through and confined within substantially 90° of the globe, a pivot element secured to the lower end of the bracket and extending into the opening at the lower pole of the globe, a guide arranged exteriorly of the globe and extending longitudinally of the equator of the globe, a time indicating element carried by the guide, and means to operate the time indicating element.

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