

Feb. 7, 1950

A. TELLIER
WORLD CLOCK

2,496,826

Filed Nov. 1, 1946

2 Sheets-Sheet 1

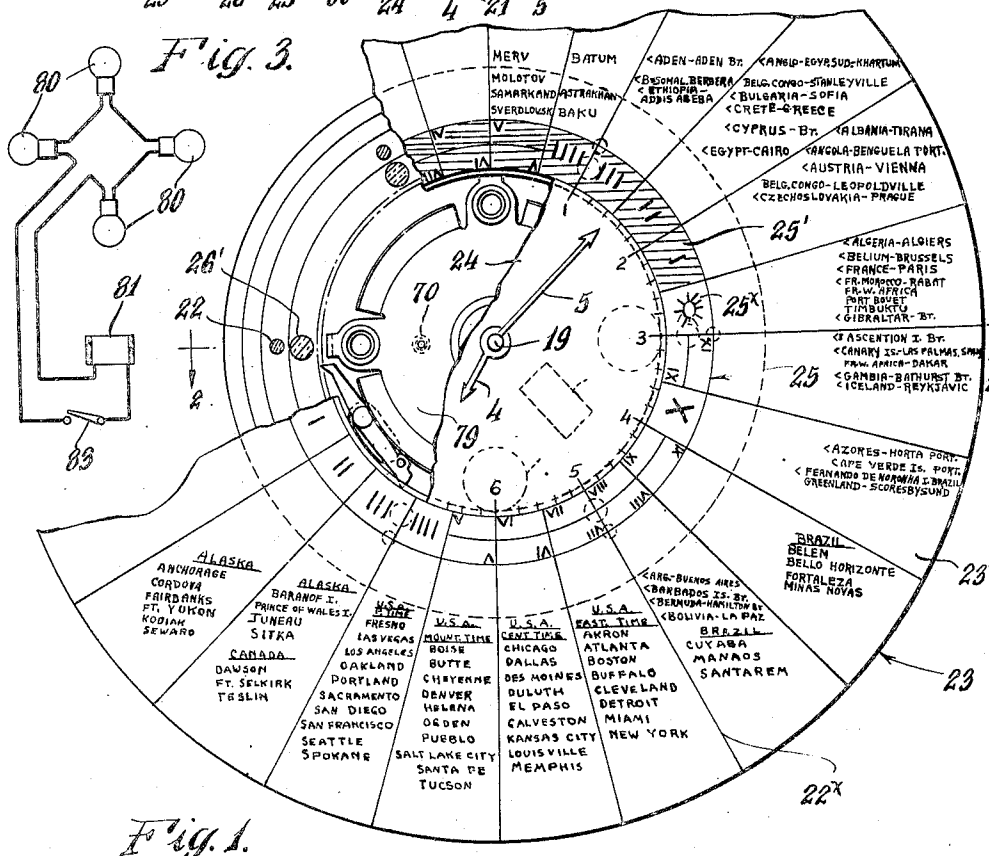
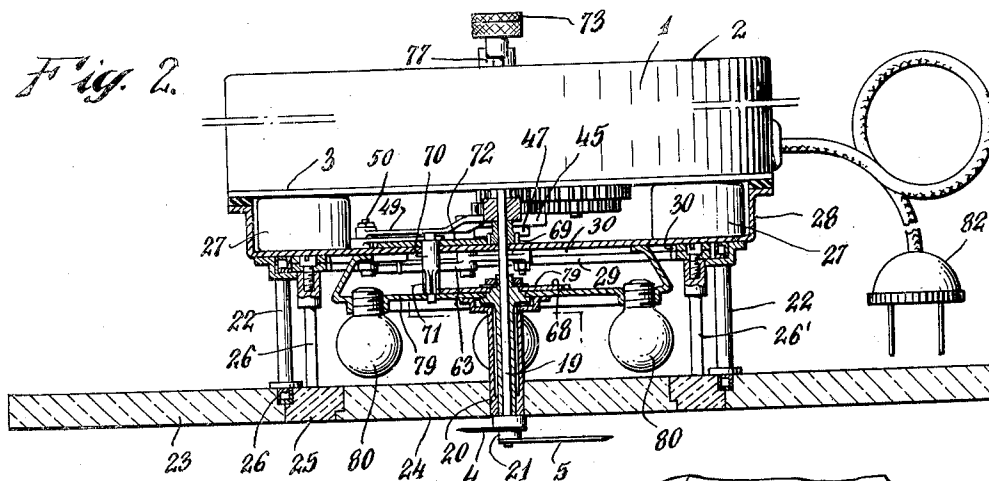


Fig. 1.

INVENTOR.
Andre Tellier
BY
Edw. S. Higgins
ATTORNEY.

Feb. 7, 1950

A. TELLIER
WORLD CLOCK

2,496,826

Filed Nov. 1, 1946

2 Sheets-Sheet 2

Fig. 4.

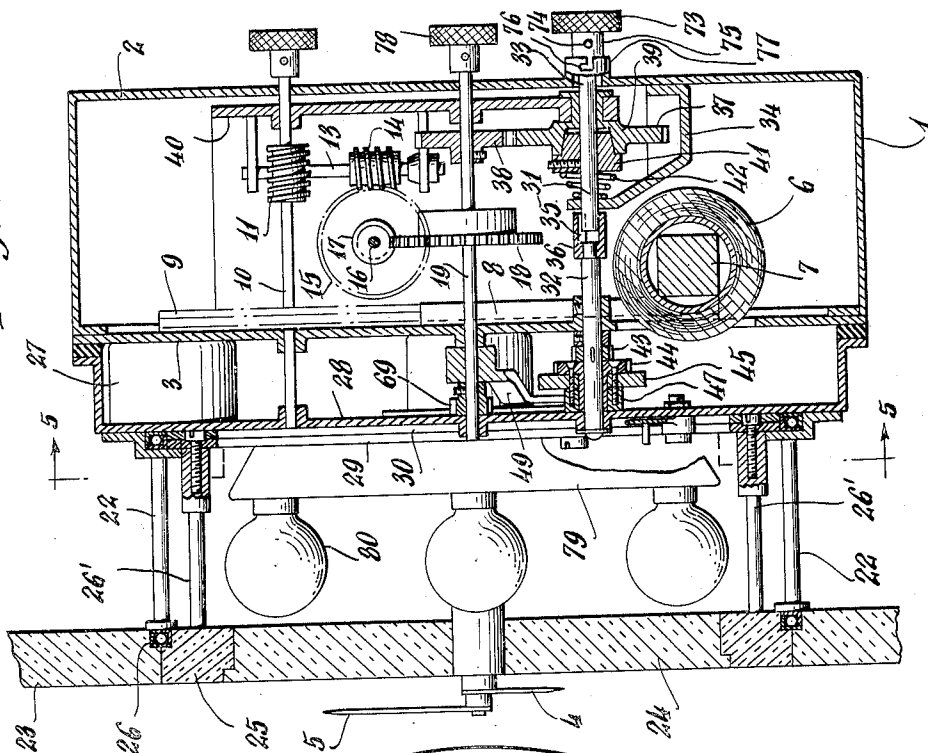
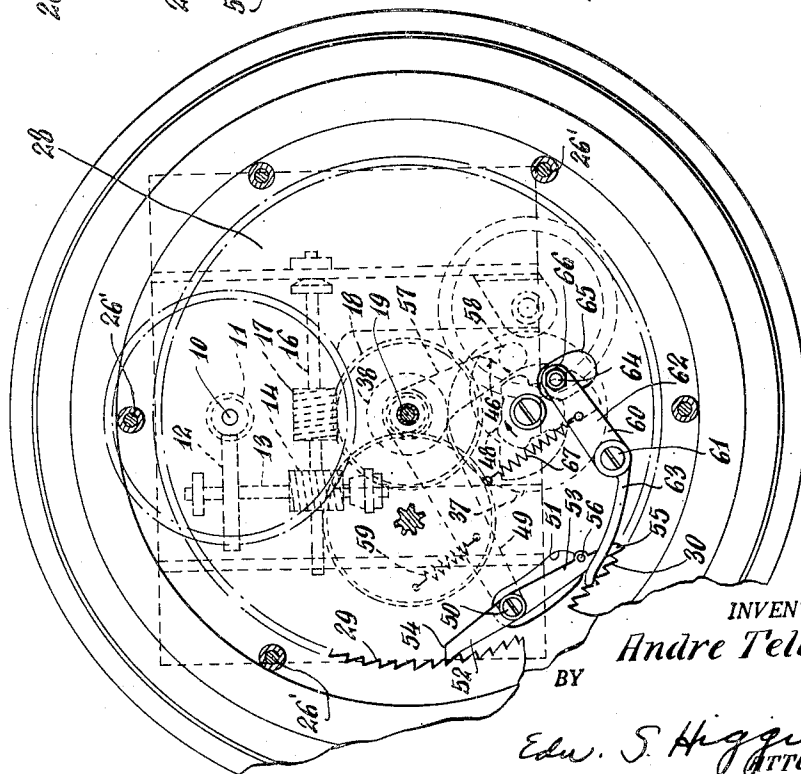


Fig. 5.



INVENTOR.

Andre Tellier

BY

Edu. S. Higgins
ATTORNEY.

UNITED STATES PATENT OFFICE

2,496,826

WORLD CLOCK

Andre Tellier, New York, N. Y.

Application November 1, 1946, Serial No. 707,261

1 Claim. (Cl. 58—43)

1

This invention relates generally to clocks and more particularly to a clock which will serve not only for the purpose of telling local time but also to indicate the time at selective zones and cities throughout the world.

A primary object of the invention is to provide a clock which will indicate to the observer the time of day or night in any other zone or section of the world which corresponds to the prevailing local time.

Another object is to provide a clock of this kind with means for illuminating the face of the clock.

A further object is to provide a clock of this kind that is simple in construction, inexpensive to manufacture and highly efficient in use.

Other objects and advantages of the invention will be apparent from the description thereof to follow taken in connection with the accompanying drawings in which—

Fig. 1 is a front view of a clock embodying my invention, parts being broken away and parts shown in section.

Fig. 2 is a sectional view taken on the plane of the line 2—2 of Fig. 1.

Fig. 3 is a diagrammatic view showing the wiring for the lamps.

Fig. 4 is a vertical sectional view of the clock.

Fig. 5 is a sectional view taken on the plane of the line 5—5 of Fig. 4.

Referring to the drawings in detail, a casing 1 including a rear wall 2 and a front wall 3 supports and houses the clock mechanism for rotating the hour and minute hands 4 and 5, respectively. This mechanism is the conventional electric clock mechanism and forms no part of the present invention and only a part thereof is illustrated including a magnetic coil 6 which is connected to the motor (not shown). When the coil is energized, its core 7 transmits impulses to armature members 8 connected thereto which impulses are transmitted by said armature members to a laminated disc member 9 positioned between them whereby said disc member is rotated. Disc member 9 is fastened to a shaft 10 carrying a worm 11 which meshes with a gear 12 on a shaft 13 disposed at right angles to shaft 10. Shaft 13 carries a worm 14 which meshes with a gear 15 on a shaft 16 disposed at right angles to shaft 13. Shaft 15 carries a worm 17 meshing with a gear 18 fastened to a shaft or arbor 19 for driving the hour and minute hands. The hour hand 4 is fastened to a bushing or sleeve 20 loosely mounted on the arbor 19 adjacent its outer end, and the minute hand 5 is secured to a bushing 21 fastened to the outer end of the arbor.

2

Supported forwardly of the casing by means of posts 22 is a disc member 23 and suitably supported on the sleeve 20 is the clock face or dial 24, disposed on the same plane as the disc. Interposed between the inner periphery of the disc 23 and the clock face is a ring member 25. This ring member 25 rotates on a ball bearing device 26 interposed between the disc member and ring member. The ring member 25 is divided into twenty-four sections 25' representing the twenty-four hours of the day and this ring member moves only one-twenty-fourth as fast as the minute hand 5 of the clock.

The sections of the ring member are marked to indicate the hours of the day. The hour of midday or noon is marked with the representation of the sun as indicated at 25x and the hour of midnight may be marked with the representation of the moon (not shown). Reading anti-clockwise from noon as viewed in Fig. 1, the sections 25' representing the hours of one o'clock P. M. to four o'clock P. M. inclusive are marked with the numerals "I," "II," "III" and "IIII," and the sections representing the hours from five o'clock P. M. to eleven o'clock P. M. inclusive are marked by the Roman numerals "V" to "XI" inclusive, midnight being represented by the representation of the moon (not shown). The sections representing the hours from twelve o'clock to four o'clock A. M. are marked with the numerals "I," "II," "III" and "IIII." The sections representing the hours from five o'clock A. M. to eleven o'clock A. M. are marked with the Roman numerals "V" to "XI" inclusive, said sections with the exception of the section representing the hour of ten o'clock A. M. and P. M. being divided into outer and inner sections by a line running across the center of said sections, with the Roman numerals appearing above and below the lines in reversed positions as seen in Fig. 1. The sections 25' representing the P. M. hours are also divided into outer and inner sections the same as A. M. The P. M. numerals are black on blue background and the A. M. numerals are black on white background for night and day, respectively.

Disc member 23 is divided into twenty-four sections or segments 23' by radial lines 22x in line with the sections 25' and form continuations thereof. The segments bear the names or initials of the countries, principal cities and islands of the world located in the same time belt or zones, for example, "Batum," "Astrakhan" and "Baku" etc. The segments bear only a portion of such names as it is believed that this is sufficient for illustration purposes.

The mechanism for rotating the ring member 25 at the calculated speed will now be described. Supported on the front wall 3 of the casing spaced therefrom by spacers 27 is a plate member 28. Rotatably mounted on the plate 28 is an internal gear member comprising an outer ring member with teeth 29 on its inner periphery and an inner ring member with teeth 30 on its inner periphery. A shaft 31 is journaled in the walls of the casing parallel to the arbor 19 and is divided into a front shaft section 32 rotatably mounted in the front wall 3 and a rear shaft section 33 slidably and rotatably mounted in the rear wall of the casing and in the wall of a bracket 34 secured to the rear wall. The inner end of the shaft section 33 has a keyway coacting with a key 35 on a coupling member 36 fastened on front section 32 whereby the sections 32 and 33 are connected for rotation in unison. Loose on shaft 33 is a gear 37 meshing with gear 38 on shaft 19. Gear 37 has a wedge-shaped socket portion 39 supported by a U-shaped plate or support 40 secured in the casing. Fastened to the shaft section 33 adjacent the gear 37 is a clutch member 41 shaped to conform to the shape of the socket portion and movable into and out of engagement with said socket portion whereby said gear 37 is made fast and loose respectively on said shaft section 33. A coil spring 42 urges the clutch member 41 into engagement with the socket portion 39. A pinion or gear 43 is fastened to the front shaft section 32 between the front plate 3 of the casing and the plate 28, and loosely mounted on said shaft section in front of the gear 43 is a gear 44 having an elongated hub portion extending toward the outer end of the shaft section. Fastened to one face of the gear 43 is a large cam member 45 having three working faces 46, and in front of said cam member 45 is another smaller cam member 47 fastened to the larger cam member, said smaller cam member 47 having three working faces 48. The gear 44 and the cam members rotate in unison loosely around the shaft section 32 inside the plate 28.

Pivotally mounted on arbor 19 inside of plate 28 is a bell crank lever, the long arm 49 of which carries a pivot pin 50 which extends outwardly through a slot 51 in the plate 28. On the outer end of the pin on the outside of the plate 28 are opposed pivoted pawl members 52 and 53, the nose portion 54 of pawl member 52 engaging the teeth 29 of the outer ring member of the internal gear for moving said gear clockwise as viewed in Fig. 5, and the nose portion 55 of pawl member 53 engaging the teeth 30 of the inner ring member for holding the internal gear member against rotation. Nose portion 55 of pawl 53 carries a protruding pin 56. On the outer end of the short arm 57 of the bell crank lever is a roller 58. A spring 59 having one end fixed to the plate 28 and its other end fixed to the long arm 49 of the lever urges the bell crank lever in a clockwise direction as viewed in Fig. 5.

Another lever member 60 is pivotally supported at its center on the outside of the plate 28 by means of a pivot pin 61 mounted on the plate. This lever comprises a wide flat arm 62 extending in the direction of the cam members and a narrower arm 63 extending in the opposite direction toward the pawl members. On the outer free end of arm 62 is a pin 64 extending inwardly through a slot 65 in the plate 28 into the inside thereof and mounted on the pin inside of the plate is a roller 66 engaging the small cam member 47. Arm 63 engages the pin 56 on the nose 55 of the

pawl member 53. A spring 67 has one end fixed to the plate 28 and its other end fixed to the arm 62 of the lever 53 for urging said lever in a counterclockwise direction as viewed in Fig. 5.

Referring to Figs. 2 and 4, when the arbor 19 is rotated by the clock mechanism, its drive is carried to shaft 31 by means of the meshing gears 38 and 37. When shaft 31 rotates it carries the cam members 45 and 47 around with it in the direction of the arrow in Fig. 5. Small cam 47 will engage roller 66 on arm 62 of lever member 60 and thereby rock said lever member clockwise on its pivot so that its arm 63 will lift the nose 55 of pawl member 53 up out of engagement with the teeth 30 of the inner ring member of the internal gear member, thus permitting the bell crank lever to be rotated. Cam member 45 following will engage the short arm 57 of the bell crank lever rocking said lever in a counterclockwise direction as viewed in Fig. 5 thereby dragging the nose portion 54 of pawl member 52 downwardly over the teeth 29 in a counterclockwise direction as viewed in Fig. 5. When the working face 48 of the cam member 47 is moved away from the roller 66 on the short arm 57 of the bell crank lever, the spring 59 pulls the bell crank lever in a clockwise direction and the nose portion 54 of the pawl member 52 in engagement with the teeth 30 of the outer ring member rotates the internal gear member and attached ring member 25 clockwise as viewed in Fig. 1. When the working face 48 of the small cam member 47 moves away from the roller 66 on the arm 62 of lever 60, the spring 67 pulls said lever 60 in a counterclockwise direction moving the arm 63 away from pin 56 permitting the nose portion 55 of the pawl member 53 to drop into engagement with the teeth 30 of the inner ring member to prevent rotation of the internal gear member until the next working face of the cam member 47 engages the roller 66 again. Plastic posts 26' connect the internal gear to ring member 25 for moving the latter.

The drive is brought to the hour hand 4 by means of a gear 68 fastened to bushing 21 and a gear 69 fastened to the arbor 19. Supported by the plate 28 and extending forwardly thereof is a stub shaft 70. Adjacent one end of the shaft are teeth 71 engaging with the teeth of gear 68. The other end of the shaft 70 supports a gear 72 which meshes with gear 69 on the arbor 19.

For adjusting the hands of the clock, shaft 31 is first disconnected from arbor 19 by sliding the shaft section 33 inwardly by means of a knob 73 on its outer end. This will move the clutch member 41 away from the socket portion 39 of the gear 37. The shaft section 33 is held in its inward unclutched position by means of a pin 74 on the sleeve portion 75 of the knob 73 engaging in a bayonet slot 76 formed in the hub portion 77 of the opening in the rear wall of the casing through which the shaft extends. Arbor 19 is then rotated by means of a knob 78 on its outer end turning gear 69 which in turn rotates gear 72 and stub shaft 70 carrying teeth 71. Teeth 71 rotates gear 68 which rotates the bushing 21 supporting the hour hand 4 thereby turning the same for adjustment.

The present invention is concerned with means for illuminating the clock dial and outer disc and ring member 25 of the clock. Supported by a bracket 79 fixed to and extending from plate 28 in the space between the plate 28 and the clock dial are a number of lamps 80 which are in circuit with a source of electric power such as a battery 81 shown diagrammatically in Fig. 3. A plug 82

5

is shown connected to the casing 1 for connecting the clock to a source of power and a switch 83 may be conveniently mounted for controlling the lamp circuit. It will be seen that the lamps illuminate the face of the clock, the rotatable ring member and the fixed disc member so that the indicia thereon will be readily seen. These members may all be formed of transparent plastic material.

I claim:

A clock of the character described including a casing containing clock mechanism, an arbor member driven by said mechanism, a sleeve surrounding said arbor member, posts projecting from said casing, a stationary transparent dial plate having a local time-indicating dial shown thereon at the outer end of said sleeve, means movable over said dial for indicating the local time, a transparent rotatable ring member around the outer periphery of said dial plate in the same plane therewith and operatively connected to the arbor member for rotation thereby and in calculated timed speed therewith, said ring member being divided into a plurality of sections in annular series thereon and arranged concentrically outside of the peripheral range of the local time-indicating dial on the dial plate of the clock, a

6

transparent stationary disc member around the outer periphery of said ring member in the same plane therewith, said disc member being divided into a plurality of sections corresponding to the sections on said ring member, said ring member and disc member having correlated and coindicative indicia displayed in their various sections indicating the time at various global zones and in coordinated and calculated proportionate time indications in relation to the time indicated on the local time-indicating dial of the clock, and means for illuminating said transparent dial plate, ring member and disc member, including a bracket supported forwardly of the clock mechanism and lamps supported by said bracket between the casing and the dial plate and operatively connected to a source of electric power.

ANDRE TELLIER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
614,937	Dietz	Nov. 29, 1898
693,953	Davis	Feb. 25, 1902