United States Patent

Onstott

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[45] **Oct. 24, 1972**

[54] **SEXTANT CLOCK**

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[52] **U.S. Cl.**.....**58/2,** 58/125 C

[51] **Int. Cl.**.....**G04b 45/00,** G04b 19/20

[58] **Field of Search**.....58/3.2, 125, 128, 127, 152 D, 58/152

[56] **References Cited**

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Assistant Examiner—Edith C. Simmons Jackmon

[57] **ABSTRACT**

A time indicating clock incorporating a novel conventional clock design by elimination of a clock face upon a case, the device comprising a configuration of a nautical sextant and which includes numerals indicating hours along an arc and accross which a pivoted arm sweeps, the arm selectively pointing out one of the hour numerals, and the arm carrying a minute indicating mechanism.

1 Claim, 2 Drawing Figures

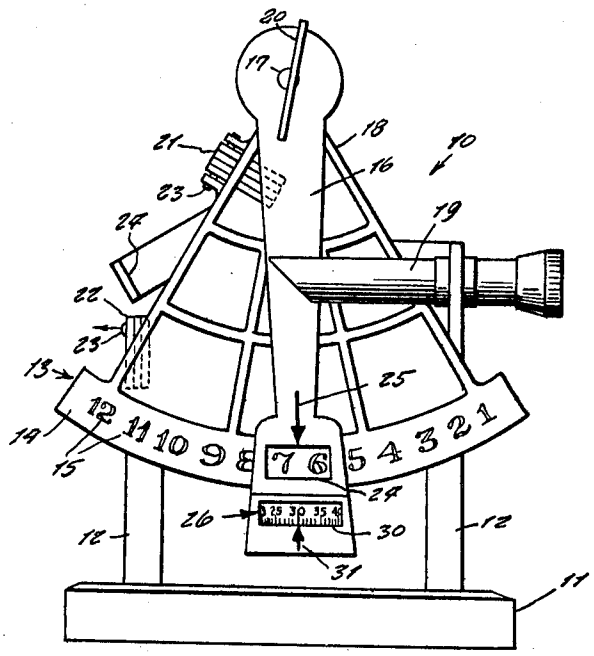
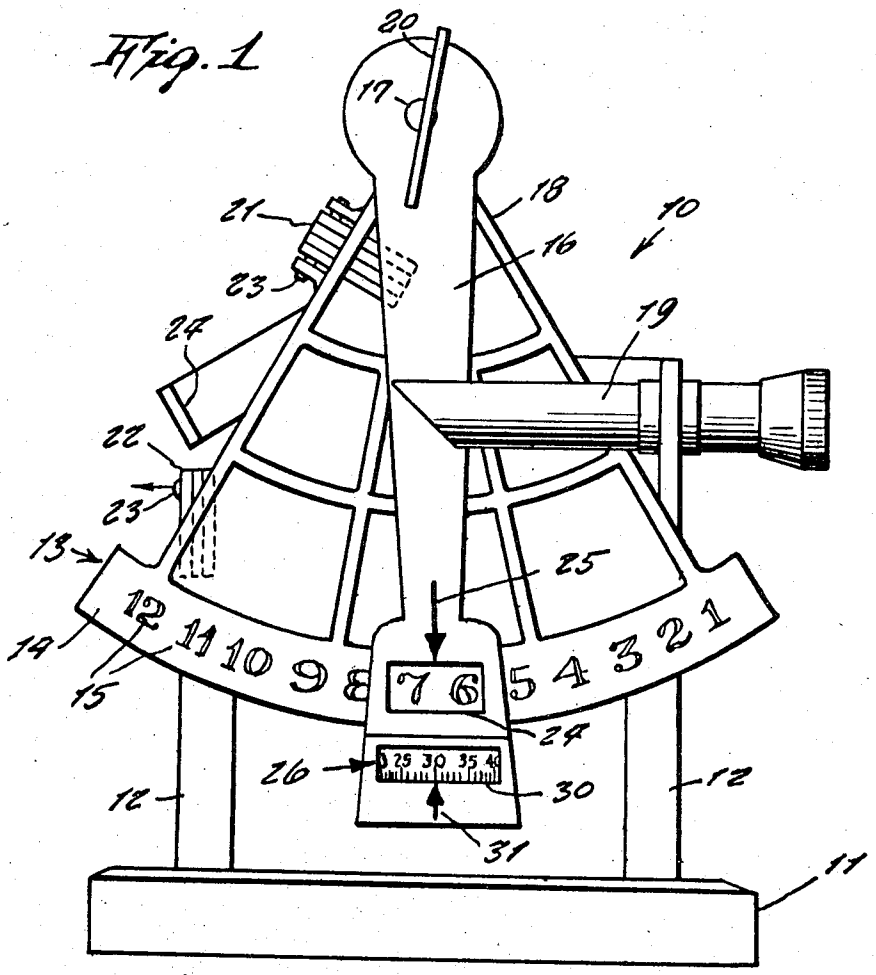


Fig. 1


20
17
18
10
21
16
23
19
24
22
23
13
25
12 11 10 9 8 7 6 5 4 3 2 1
14
15
24
26
25 30 35 40
30
12
12
31
11

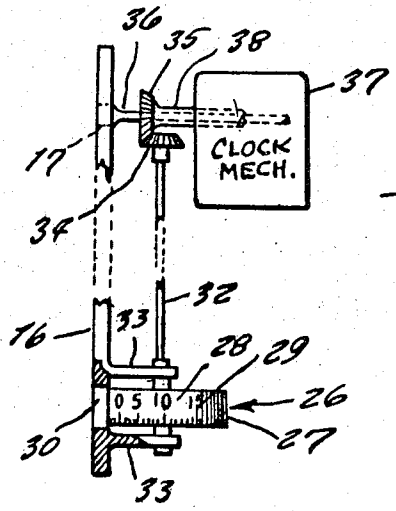

36
35
38
37
CLOCK MECH.
17
34
32
33
16
28
29
0 5 10 15
26
30
27
33

Fig 2

SEXTANT CLOCK

This invention relates generally to time indicating clock.

A principal object of the present invention is to provide a clock that radically differs in design from a conventional CLOck that traditionally has a circular eliptical, square or other shaped clock face upon which one or more indicating hands are used, and wherein the clock face is mounted upon a case containing the clock mechanism.

Another object of the present invention is to provide a sextant clock wherein the clock has the configuration of a well known conventional nautical sextant such as is used in taking the elevation of heavenly bodies.

Still another purpose of the present invention is to provide a sextant clock which indicates the time in minutes and hours.

Other objects of the present invention are to provide a sextant clock w hich is simple in design, inexpensive to manufacture, rugged in construction, easy to use and effecient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawing wherein;

FIG. 1 is a front elevation view of the present invention, and

FIG. 2 is a fragmentary side view of a mechanism between a clock motor and the hour and minute indicating mechanism.

FIG. 3 is an enlargement of FIG. 2 showing component parts and power flow in clock mechanism.

Referring now to the drawing in detail, the reference numeral 10 represents a sextant clock according to the present invention wherein there is a supporting base 11 upon which there are upwardly extending posts 12 and upon which there is secured a sextant configurated design 13. The design 13 includes a sector of a circle, the sector including an arc 14 upon which a plurality of numerical digits 16 are imprinted or engraved, the digits or numerals 15 representing the hours of time, the digits reading from one to twelve such as is employed on conventional clock faces.

An arm 16 is supported on and rigidly attached to a shaft 36 from which protrudes a pin 17 as support for mirror 20. Shaft 36 passes loosely through the apex of a frame 18 of the sextant design 13. In order to complete the illusion of the sextant design fully resembling a nautical sextant, a telescope 19 is secured to the frame 18, a mirror 20 is secured to the arm 16, the face of the mirror passing transversely across the axis of the shaft 36, secured thereto by pin 17, and a plurality of sets of filters 21 and 22. The filters of the sets are individually pivotable about pins 23 so that they may be brought into the position of a line of sight travelling from the telescope 19 to a stationary mirror 24 and then to the mirror 20 that is pivotable by means of the pivotable arm 16. These features serve for effect but are not essential in the operation of a clock mechanism.

The arm 16 is provided with a window 24 within which the numerals 15 may be selectively observed. An indicator arrow 25 engraved or imprinted upon arm 16 serves to precisely indicate the hour time. Thus as the arm 16 sweeps across the arc 14, certain of the numerals 15 can be observed within the window 24 indicating to the observer the hour of time.

The same end of arm 16 further carries a minute indicating mechanism 26. The minute indicating mechanism 26 includes a cylinder 27 having a cylindrical side 28 which comprises a face upon which minutes numerals or digits 29 are imprinted. A second window 30 is formed on the arm 16 and through which the minute numerals 29 may be observed. An indicator arrow 31 upon the arm 16 points precisely to the exact minute of time.

The cylinder 27 is rigidly mounted upon a shaft 32 supported in bearings in brackets 33 formed on the rear side of the arm 16. To properly support shaft 32, the other end is introduced in bearing 39, bored transversely through shaft 36, thereby completing arm 16, minute indicating mechanism 26 and shaft 32 as an integrally pivoting unit about the longitudinal axis of shaft 36. Suitably placed on shaft 32 is bevel gear 34 held in place by setscrew 40. This setscrew also provides rotatable adjustment to provide numerical integrity between minute mechanism 26 and hour sector 14. Once in proper adjustment this integrity is maintained by meshing bevel gear 34 to bevel gear 35, toothed in ratio 1 to 72. Therefore minute indicating mechanism 26 would make one complete 360° revolution for each 5° travel of arm 16, under which sector 14 is mounted on statically mounted frame 13. Since sector 14 is inscribed with hour indicating numerals 15 placed at 5° intervals, and minute indicating mechanism 26 is inscribed with numerals 29 indicating 60 divisions in 360° it follows that window 30 of arm 16 will allow 60 minutes of time to be observed during the passage of each hour numeral 15 on sector 14 as observed through window 24 of arm 16.

Bevel gear 35 is rigidly mounted on bearing 38 which is in turn rigidly mounted on case 37. Case 37 is in turn statically mounted to base 11 through supports 12, as is frame 13 and all of its described appurtances. Suitably supported in bearing 38, shaft 36 next passes through spiral (clock type) spring 41 pinned at its beginning with pin 42 to shaft 36, thence spirally around sufficiently to impart a comparatively constant torque to shaft 36 through 60° or one-sixth turn and ending in hook 43 formed in spring 41 held by pin 44 rigidly mounted in case 37. The purpose of spring 41 is to impart sufficient torque in a counterclockwise direction to shaft 36, which if free to rotate will return arm 16 to point of beginning of clockwise travel wherein the FIG. 1 on hour sector 14 appears at indicia 25 in window 24. Due to proper initial setting of bevel gear 34, the FIG. 0 on minute indicating mechanism 26 will simultaneously appear at indicia 31 in window 30. At this point arm 16 is in a position with respect to frame 13 and hour indicating sector 14 to begin its timekeeping function. This is accomplished by extending shaft 36 to rear of case 37 through bearing 45 and providing a power train which will overpower resistive torque of spiral spring 41 to cause arm 16 to proceed in a clockwise direction. Clock timing motor 46 which may be alternating current synchronous, direct current chronometric or manually wound spring has an output shaft speed of one revolution per 12 hours. Pinion gear 47 mounted rigidly on clock timing motor shaft 48 meshes in a ratio of 1 to 6 with gear 49 idly mounted on shaft 36. The 1 to 6 ratio between pinion gear 47 and gear 49 will impart to gear 49 an effective torque amplification of 6

and a rotational speed of 1 revolution per 72 hours. Gear **49** is held in place longitudinally on shaft **36** on the rear side,and is free to rotate against collar **50** rigidly attached to shaft **36** by setscrew **51**. Power flow proceeds from gear **49** to mechanism labeled "-CLUTCH" in FIG. **3**. This clutch mechanism provides the reciprocating motion imparted to shaft **36** and through it to arm **16**, alternately furnishing drive to arm **16** to perform it's timekeeping function, then releasing shaft **36** and arm **16** to be returned to it's starting point from torque provided by spiral spring **41**. Another function of the clutch mechanism is to provide a release from shaft **36** and arm **16** to permit setting to proper time of day. Setting of the arm **16** to indicate correct time is accomplished by manually rotating minute indicating cylinder **27**, or setting knobs attached to either end of shaft **32**. Interaction of bevel gears **34** and **35** will move arm **16** in either direction and retain integrity of minute scale **29** to hour sector **14**. As in conventional timepieces, no differentiation is made between A. M. and P. M. time.

In this form, the arm is made to travel from right to left in the course of 12 hours, the minute face making a complete revolution each hour, after which the arm will return instantaneously to the extreme right to repeat the cycle. In another form the time-keeping motion could proceed from left to right, hour and minute scales being reversed from first described form and arm returning from right to left to repeat cycle. Another form would register minutes on the sextant sector, the arm returning to its starting point each hour and advancing what was the minute indicator, now inscribed **1** through **12**, one figure for each return of the arm. A nother form of power train would place the clock motor at the bottom of the arm, its pinion engaging a rack formed around the periphery of the circular sector forming the bottom of the sextant frame. By toggle mounting motor and its pinion, release could be affected allowing arm to return to its starting point at which time toggle mount could be made to reengage pinion to rack.

From the preceding paragraph it will be seen that it is not my intention to restrict the invention to the precise details of construction shown in the accompanying drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Thus there is provided through the use of the described arm and its drive, placed on suitable background, a novel sextant clock having no conventional clock face and wherein reading the same is accomplished from scales located as upon original conventional sextants. Not only will it present time with equal accuracy of conventional clocks but its form will be a radical departure from tradition and furnish an educational and interesting conversation piece for those who have an interest, or even a passing interest, in things geographical, seafaring or astronomical.

Having described the invention, and being aware that a clock with a dial of circle sector shape is not new, what I do claim as new and desire to have protected by Letters Patent is:

1. A sextant clock comprising a base, a plurality of upstanding legs on said base, a sextant like configuration comprised of a frame of a circle sector shape incorporating a clock mechanism for indicating the hour and minute of time, said frame having a telescope, a stationary mirror and a plurality of sets of filters mounted thereon, an arm pivotably mounted at one of its ends to said frame, a second mirror comprising a pivotable mirror being mounted upon said arm by means of a pin, the opposite end of said arm being provided with a pair of windows, the first of said windows indicating a selector of said hour and a second of said windows indicating the numerals of minutes of a minute mechanism comprising a rotatable cylinder supported on a rear side of said arm, said minute cylinder and said arm being driven by a clock mechanism, said hours being indicated on an arc mounted on said frame upon which numerical digits are indicated reading from 1 to 12 and are used for indicating the hour being displayed through said first window as said arm traverses said arc, a return spring for returning said arm to said 1 o'clock position after it has reached the 12 o'clock position.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,699,761 Dated October 24, 1972

Inventor(s) EDWARD D. ONSTOTT

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet, below the "Abstract", "1 Claim, 2 Drawing Figures" should read -- 1 Claim, 3 Drawing Figures --.

Add Figure 3 as shown on the attached page.

Signed and sealed this 20th day of November 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

RENE D. TEGTMEYER
Acting Commissioner of Patents

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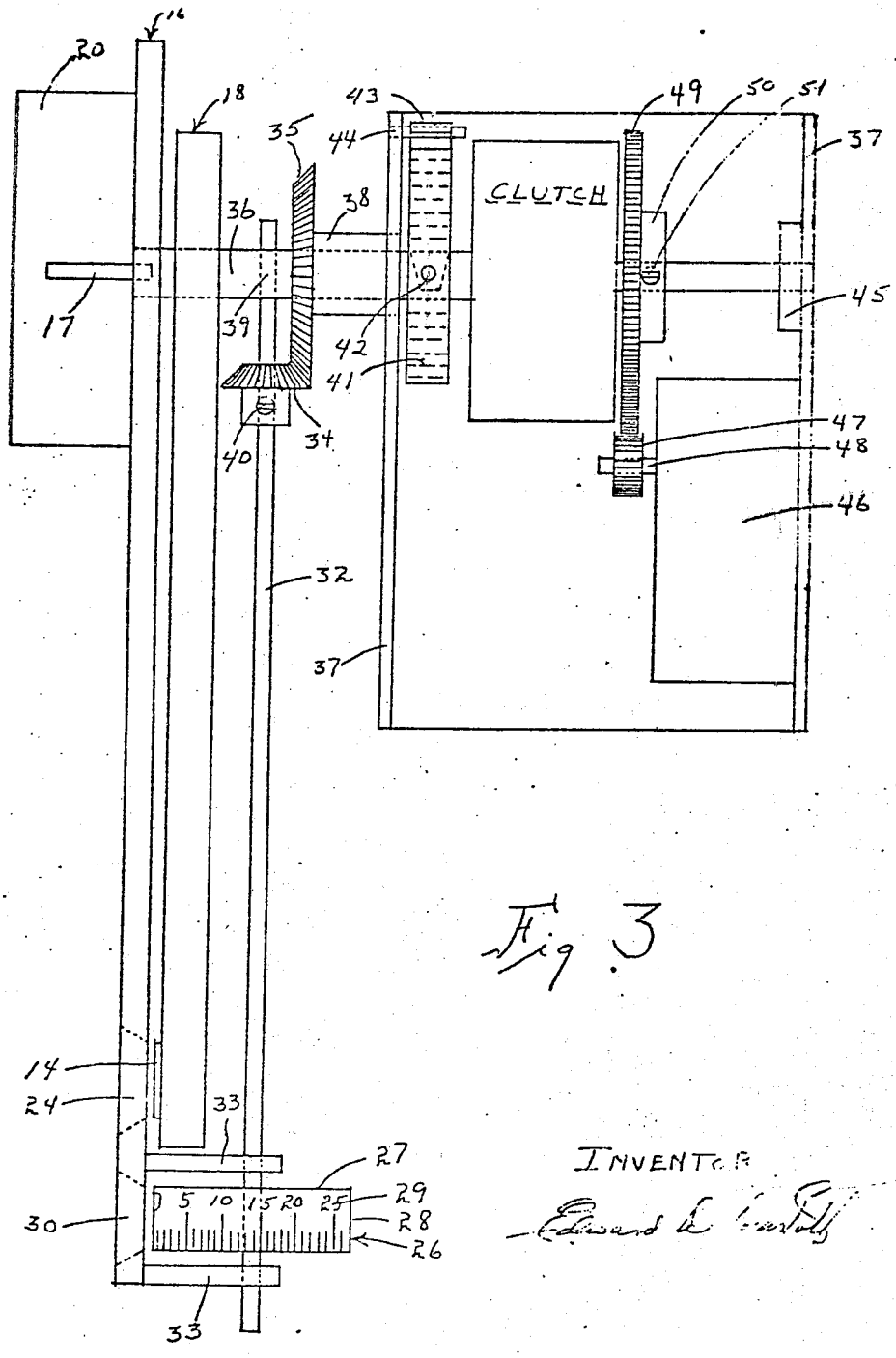


Fig. 3

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