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3,430,433

CLOCK WITH AN ILLUMINATED DIAL

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FIG. 1.

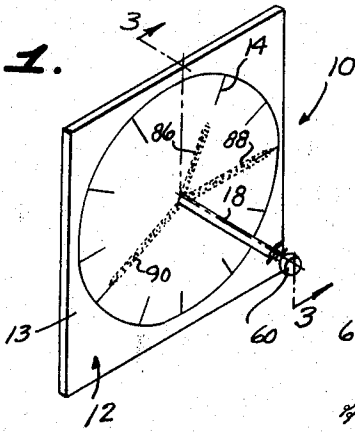


FIG. 2.

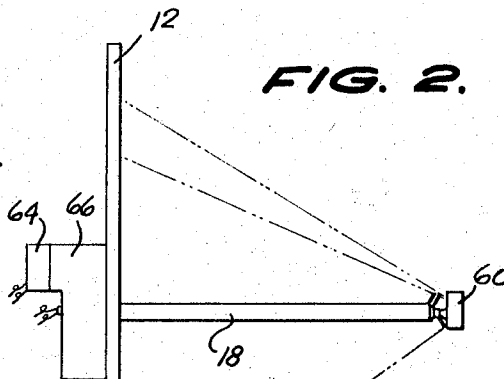


FIG. 4.

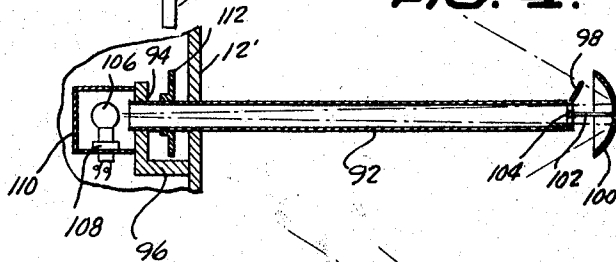
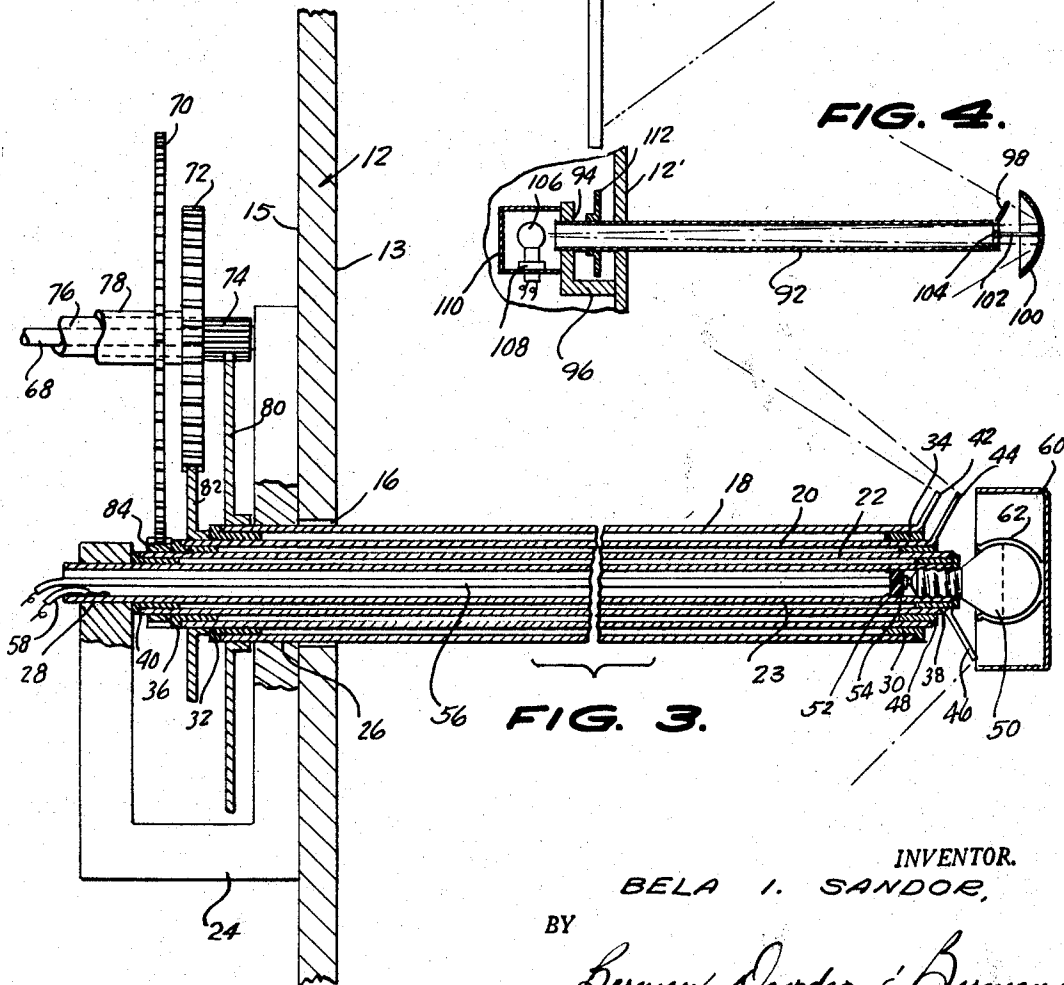


FIG. 3.



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CLOCK WITH AN ILLUMINATED DIAL

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5 Claims

ABSTRACT OF THE DISCLOSURE

A decorative clock and lighting fixture. The hands of the timepiece are hidden from view, but their relative positions are indicated by casting their shadows upon an illuminated dial face.

This invention generally relates to a decorative timepiece.

An object of this invention is to provide a clock of unusual design for use as a conversation piece.

A further object of this invention is to provide a decorative clock characterized by the absence of standard hands for indicating time.

A still further object of this invention is to provide a decorative clock whose hands are hidden from view, but whose images are projected onto a dial face to reveal their relative positions and indicate the time.

Yet another object of this invention is to provide a combination timepiece and lighting fixture.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawing, wherein:

FIGURE 1 is a perspective view of the clock comprising the subject matter of the present invention;

FIGURE 2 is a side view in elevation of the clock shown in FIGURE 1;

FIGURE 3 is an enlarged cross-sectional view of the clock as seen along the plane indicated by line 3—3 of FIGURE 1; and

FIGURE 4 is a view similar to FIGURE 3, but illustrating a slightly modified form of the clock comprising the subject of the instant invention.

Referring now to the drawing wherein like numerals indicate like elements throughout the several views, the clock of the present invention is generally indicated in FIGURE 1 by the numeral 10.

The clock 10 includes a dial face 12, which can be of any desired geometric shape. Indicia 14 is provided on the front surface 13 of dial face 12 to represent the standard hour and minute divisions of time.

The center of dial face 12 has an annular opening 16. A series of concentric tubes 18, 20, 22 and 23 project through opening 16 and are supported on a generally U-shaped bracket 24 secured to rear surface 15 of dial face 12. Outer tube 18 is rotatively supported in bore 26 in one leg of bracket 24, while the innermost tube 23 is supported in bore 28 in the other leg of bracket 24.

The tubes are adapted to rotate relative to each other. Outer tube 18 is rotatively mounted on Teflon bearings 30 and 32, at its forward and rearward ends, respectively. Bearings 30 and 32 are secured to tube 20. Similarly, tube 20 is rotatively mounted on Teflon bearings 34 and 36, at its forward and rearward ends, respectively. Bearings 34 and 36 are secured to tube 22. Tube 22 is rotatively mounted on Teflon bearings 38 and 40 at its forward and rearward ends, respectively. Bearings 38 and 40 are mounted on tube 23.

At its forward end, tube 18 is provided with an integral finger 42, which constitutes the hour hand of clock 10. Finger 44 is integrally connected to the forward end of tube 20, and comprises the minute hand of the clock.

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The finger 46, integrally secured to the forward end of tube 22, provides the second hand.

Tube 23 of electrical conducting material, has its interior threaded at its forward end 48 to form a socket for reception of the threaded end of light bulb 50. A terminal block 52, having an electrical contact 54 is secured to the interior of tube 23 immediately behind its threaded end 48. An electrical conduit 56 is connected through terminal block 52 to contact 54 and emerges from the rear of tube 23 for connection to a standard male electrical plug. An electrical conduit 58 from the male plug is secured to the wall of tube 23, and completes a series circuit through the wall of tube 23, the threaded end of bulb 50, contact 54 and conduit 56.

A light reflector 60 is provided with a spring clip 62 secured to bulb 50. As shown in FIGURE 3, reflector 60 is of a dimension to hide fingers 42, 44 and 46 from view, when looking at the front surface 13 of dial face 12.

The mechanism for rotating the clock hands and the various tubes is driven by an electric motor 64 secured to a housing 66 which encloses the mechanism and bracket 24. The housing 66 is secured to rear surface 15 of dial face 12.

As illustrated in FIGURE 3, motor shaft 68 drives three gears 70, 72 and 74. Gear 74 is mounted directly on motor shaft 68, while gear 72 is mounted on concentric sleeve 76, and gear 70 on concentric sleeve 78. Sleeve 76 is keyed to motor shaft 68 and sleeve 78 is keyed to sleeve 76.

Gear 74 meshes with gear 80 secured to the rear end of tube 18. Gear 72 is in mesh with gear 82 secured to the rear end of tube 20. Tube 22 is rotated by gear 84, fixed to its rear end and in mesh with gear 70.

In operation, actuation of motor 64 will rotate gears 70, 72 and 74. These gears in turn will rotatably drive tubes 22, 20 and 18 through the medium of gears 84, 82, and 80. Rotation of tubes 22, 20 and 18 will cause the fingers 46, 44 and 42 to rotate as the hands of clock 10.

The gears of the drive mechanism are calibrated so that tube 22 rotates sixty times as fast as tube 20, which in turn, rotates sixty times faster than tube 18.

When light bulb 50 is actuated, light will be reflected from reflector 60 past rotating fingers 42, 44, 46, and the light will fall upon and illuminate the front surfaces 13 of dial face 12. The relative positions of fingers 42, 44 and 46 will be cast as shadows 86, 88 and 90 on dial face 12 adjacent indicia 14 to indicate the time.

Since hands or fingers 42, 44, and 46 are concealed by reflector 60 an air of mystery is created by the projection of images 86, 88, and 90 onto dial face 12. Further, the illuminated dial face 12 and shadows provide a pleasing decorative effect, as well as providing light.

In the modified form of the invention illustrated in FIGURE 4, a single tube 92 passes through the center of dial face 12' and is supported at its rear in an L-shaped bracket 96. A single finger 98 is integrally secured to the front end of tube 92.

A parabolic reflector 100 is supported by a rod 102 secured to a transparent base plate 104 fixed to the front of tube 92.

Light is furnished by a bulb 106 threaded in a socket 108 within housing 110 connected to the upstanding leg of bracket 96. Rotation of tube 92 is accomplished through the medium of gear 112 fixed to the rear end of tube 92. An electric motor 66 and housing 68 are also provided as shown in FIGURE 2, and the shaft of the motor carries a drive gear in mesh with gear 112.

The operation of the embodiment of the invention shown in FIGURE 4 is substantially identical to that shown in FIGURES 1-3.

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Light is transmitted by bulb 106 to reflector 100 through the interior of tube 92. The light is reflected by reflector 100 onto dial face 12' casting the shadow of finger 98.

The clock shown in FIGURE 4 is in the nature of a sun dial which provides it with further appeal and decorative effect. Gear 112 can be calibrated so that finger 98 moves through $\frac{1}{12}$ of 360° every hour, or any predetermined fraction of 360° depending upon the unit of time to be measured.

I claim:

1. A clock comprising a dial face provided with indicia to indicate increments of time, support means projecting forwardly from said dial face, at least one clock hand fixed to said support means in front of said dial face, drive means operatively connected to said support means for rotating it, a light source, and means in front of said support means normally concealing said clock hand when viewing said dial face in front elevation for reflecting the light from said source past said clock hand onto said dial face, thereby illuminating said dial face and casting the shadow of said clock hand on said dial face adjacent the indicia thereon.

2. A clock in accordance with claim 1 wherein said support means includes four concentric tubes mounted on each other for relative rotation, a clock hand fixed to each of three of said tubes in front of said dial face, and said drive means being operatively connected to said three tubes for rotating them at different speeds.

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3. A clock in accordance with claim 2 wherein said light source is threadedly connected to the end of said fourth tube and extends forwardly of said clock hands, means in said fourth tube for establishing an electrical circuit through said light source, and said light reflecting means being mounted on said light source.

4. A clock in accordance with claim 3 wherein each tube is rotatively mounted on Teflon bearings secured to the tube therebeneath.

5. A clock in accordance with claim 1 wherein said support means includes a tube, means for mounting said light source on the rear surface of said dial face in line with one end of said tube, and means mounting said light reflection means on the other end of said tube in front of said clock hand.

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