May 7, 1940. J. W. CLARK 2,200,021

ELK CLOCK

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Fig. 1.

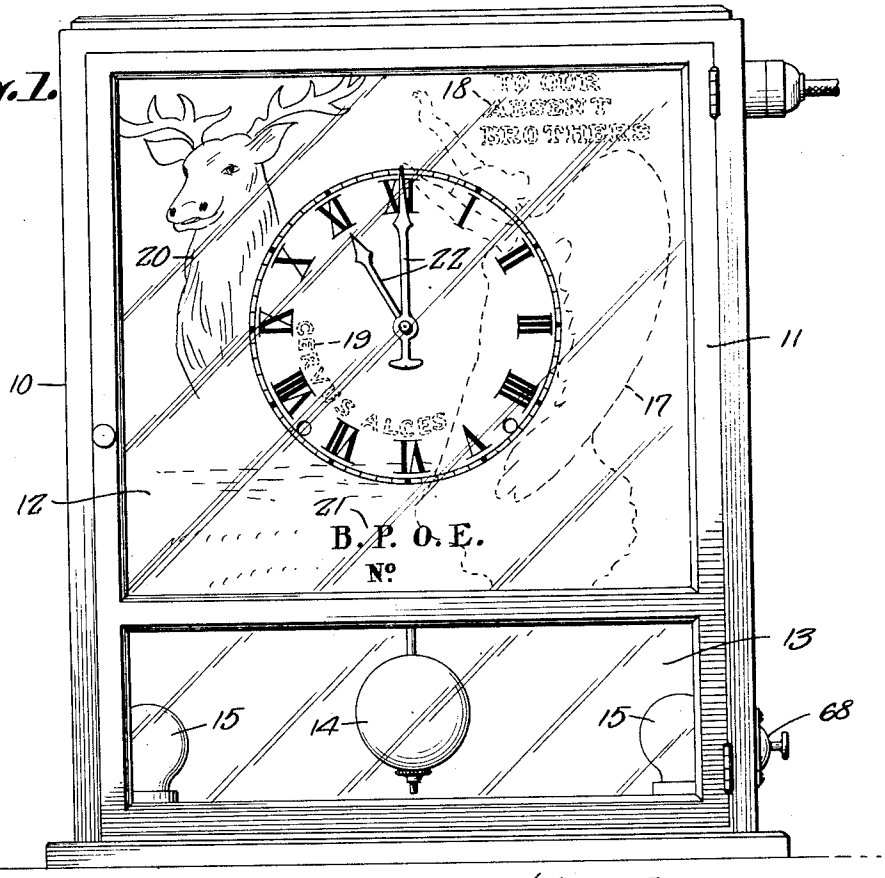


Fig. 4.

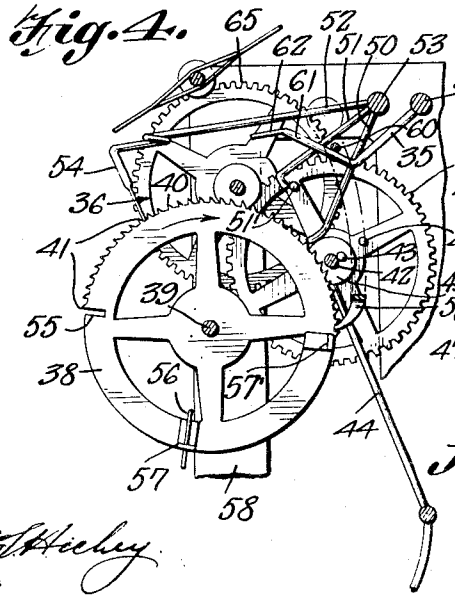
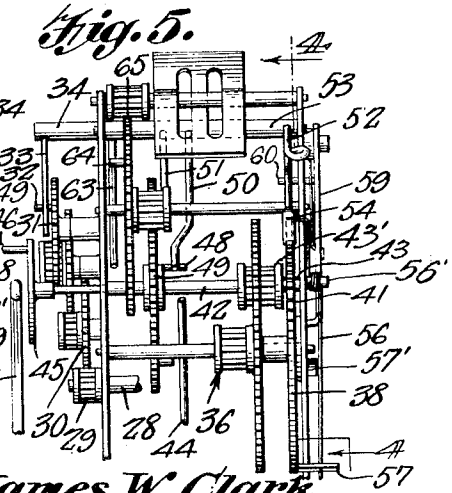


Fig. 5.



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Fig. 2.

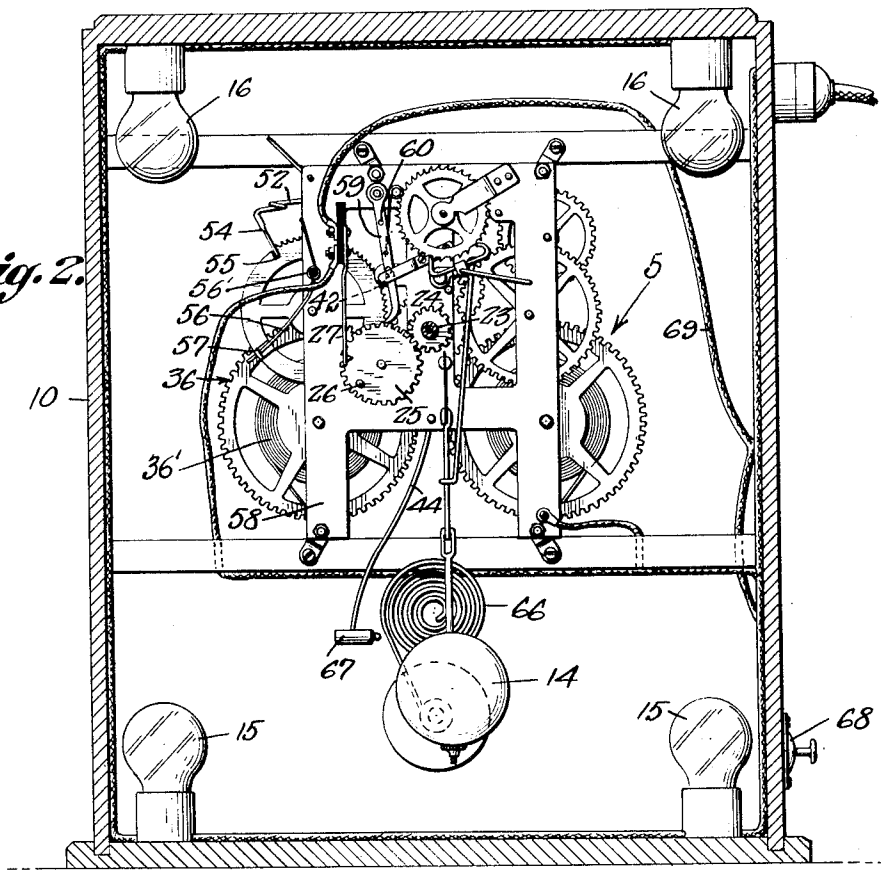
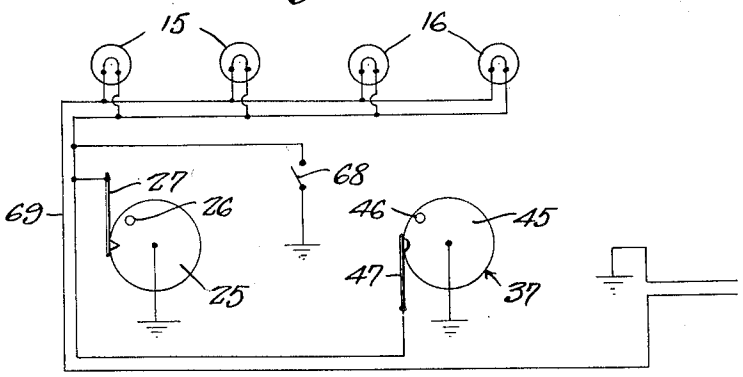


Fig. 6.



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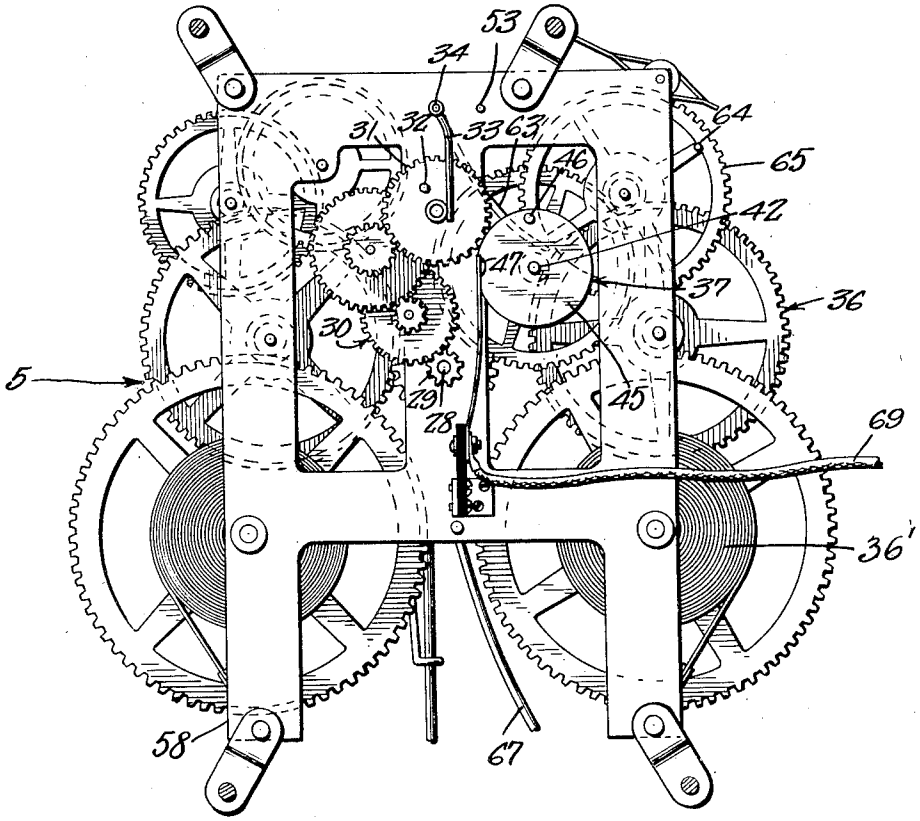
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ELK CLOCK

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Fig. 3.



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2,200,021

ELK CLOCK

James W. Clark, Bristol, Pa.

Application July 7, 1937, Serial No. 152,443

1 Claim. (Cl. 58—50)

This invention relates to an elk clock and has for an object to provide a clock face or dial bearing a memorial picture which will be visible only upon the illumination of the dial.

A further object is to provide an elk clock having a clockwork controlled switch for turning on the lamps for a fifteen minute time period ending at 11 o'clock P. M. once in every twenty-four hours.

A further object is to provide an elk clock having a clockwork controlled switch for flashing the lamps eleven times simultaneously with the striking of the clock gong at the hour of 11 o'clock P. M. once in twenty-four hours.

A further object is to provide an improved elk clock which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification,

Figure 1 is a front elevation of an elk clock constructed in accordance with the invention.

Figure 2 is a vertical sectional view through the clock casing looking toward the front of the clock.

Figure 3 is a rear elevation of the clockwork mechanism showing the flasher switch that flashes the lamps eleven times simultaneously with the striking of the hour of eleven o'clock P. M.

Figure 4 is a detail vertical sectional view taken on the line 4—4 of Figure 5 and showing the rack wheel and parts for controlling the wheel and flasher switch to flash the lamps at each tooth advance of the wheel.

Figure 5 is an end elevation of the parts shown in Figure 4 looking toward the right.

Figure 6 is a diagrammatic view of the electrical connections of the lamps, flasher switch and fifteen minute illuminating switch.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, 10 designates a clock casing having a door 11 provided with an upper dial pane 12 and a lower sight pane 13 which latter exposes the pendulum 14 and two lower lamps 15 of the clock, there being also two upper lamps 16 in the casing back of the dial pane, as best shown in Figure 2.

The dial is preferably transparent and is provided with a symbolic picture indicated at 17 and also may bear legends 18 and 19 of a memorial character and may also bear a picture of an elk indicated at 20, as well as elk letters B. P. O. E. indicated at 21. The pictures and legends may be inscribed on a translucent sheet placed between two transparent panes so as to be visible only upon illumination of the dial pane. The clock hands 22 are exposed in front of the dial pane in the conventional manner.

Referring now to Figure 2 it will be seen that the hour hand arbor 23 is provided with a pinion 24 which makes one revolution every twelve hours. The pinion meshes with a gear 25 having twice as many teeth as the pinion so that the gear rotates once in every twenty-four hours. The gear 25 is equipped with a contact pin 26 which engages a spring switch contact 27 once in every twenty-four hours and maintains contact therewith for a fifteen minute period to close the lighting circuit at 10:45 each night and maintain the same closed until eleven o'clock when the pin 26 will ride off of the contact 27 and open the lighting circuit. Thus the pictures and insignia on the dial pane 12 will be illuminated for a fifteen minute time period beginning at 10:45 each night and at no other time.

Referring now to Figure 3 it will be seen that the minute hand arbor 28 is provided with a pinion 29 which makes one complete revolution each hour. A reduction gear train indicated in general by the numeral 30 meshes with a gear 31 and rotates this gear one revolution each twenty-four hours. This gear controls the flasher switch and is provided with a pin 32, which, near the end of the dial illuminating period, rides against and dislodges a trip lever 33 which is attached to a shaft 34, best shown in Figure 4. The shaft 34 is provided with an angularly bent cam rod 35 which controls both the gong ringing mechanism indicated in general by the numeral 36 in Figure 3 and the flasher switch mechanism indicated in general by the numeral 37 in the same figure, as will now be described.

Referring to Figures 2 and 4 it will be seen that a gong ratchet wheel 38 is loosely mounted on a shaft 39 and is provided with a rack 40 on the periphery, the initial eleven teeth indicated at 41 being the timing teeth for the ringing of the gong eleven times, the remainder of the teeth being combined ratchet teeth and feeder teeth.

The flasher switch shaft 42, which is a shaft in the gong ringing mechanism is equipped with a gear 43' which is turned by the gong ringing mechanism and is equipped with a pin 43 which engages in the feeding teeth of the ratchet wheel at each revolution of the shaft and advances the wheel one step. After the pin 43 advances the wheel, another pin 48 on a gear 49 mentioned below impinges against the gong striker 44 to sound the gong.

At the moment the gong is sounded the lights are flashed on and for this purpose the shaft 42, as best shown in Figures 3 and 5 has fixed thereto a flasher disc 45 having a pin 46 which rides against a spring switch contact 47 and momentarily closes the lighting circuit to flash the lamps as the gong is being struck by the striker.

For controlling movement of the gong ratchet wheel a pin 48 is disposed on a gear 49 which is fixed to the flasher shaft 42. This pin lifts a unit of three levers 50, 51 and 52 that extend radially from an idle shaft 53, at each rotation of the gear 49. The lever 52 is bent terminally to provide a dog 54 which, in the normal position of the parts will be engaged in a slot 55 formed radially in the periphery of the ratchet wheel, as best shown in Figure 2.

When the dog is lifted out of the slot by advance of the pin 48 against the lever 50 to turn the shaft 53, as best shown in Figure 4, a spring 56 coiled about a stationary pin 56' on the frame, as shown in Figure 2, moves the ratchet wheel 38 in a counter-clockwise direction until a right angle stop 57 on the ratch wheel, best shown in Figure 2, engages the frame 58 of the clockwork mechanism, as best shown in Figure 4, in which position of the parts the dog 54 is lodged in rear of the initial tooth corresponding to the first stroke of the eleven strokes to be sounded at 11 P. M. and is ready to begin ratchet action on the wheel when the wheel is rotated in the direction of the arrow. The spring 56 is tensioned during movement of the wheel in this direction to return the wheel, which is loose on the shaft 39, to initial position such position of the wheel 38 being shown in Figure 4. A right angular stop 57' on the ratchet wheel engages the frame to limit movement of the ratchet wheel in the direction of the arrow.

To free the wheel for this movement a pawl 59, shown best in Figures 4 and 5, and which is pivoted at the upper end on the frame, is dislodged from the ratchet teeth of the ratchet wheel by a pin 60 shown best in Figure 4, on the pawl, being moved laterally by the angularly disposed end 61 of the beforementioned lever 35 when the shaft 34 is rocked by the pin 32, see Figure 3, engaging the lever 33. When the pawl 59 is in normal position engaging the teeth of the ratchet wheel 38 it serves to prevent rotation of the wheel under action of the spring 56 when the dog 54 is raised. Simultaneously with this release of the dog a flattened extremity 62 on the same lever 35 impinges against and lifts the lever 52 to dislodge the dog 54 from the slot 55. The ratchet wheel is now free to be given a step actuation by the pin 43 on the flasher shaft 42 engaging the teeth of the ratchet wheel as previously described.

The dog 54 is bodily lifted up and placed in rear of the next succeeding tooth each time the pin 43 advances the ratchet wheel a step, by means of the pin 48 lodging against the beforementioned lever 50 to rock the shaft 53 as it will be seen by referring to Figure 4.

When the dog 54 has dropped into the slot 55 in the ratchet wheel 38, the lever 51, which has a hooked end drops into the path of a pin 51' on the gear 49 and locks the mechanism against further movement.

The pin 32 controls the entire striking operation and as the hour of 11 o'clock P. M. approaches the pin will ride into contact with the lever 33, best shown in Figure 3, and rock the shaft 34 to which is attached a lever 63 against which a stop pin 64 on a gear 65 engages to lock the mechanism stationary at the same time the ratchet wheel 38 has been released to fly back to its starting position and present eleven teeth in front of the dog 54. This locking mechanism 63—64 serves temporarily to lock the gong ringing mechanism until the arm 33 is released by the pin 32 and while the lever 51 is raised from the pin 51'. As the pin 32 continues to advance it rides over the end of the lever 33 allowing the lever to drop back and allowing the lever 63 to drop back of the path of the pin 64 so that the gear 65 will start rotating and actuate the striker.

Each time the gong 66 is struck by the striker 67 the pin 46 on the flasher switch 45 will engage the spring contact 47 and close the circuit to the lamps 15 and 16 to momentarily flash the lamps as the gong sounds. At the end of eleven strokes the dog 54 will have advanced off the teeth of the ratchet wheel and again become lodged in the notch 55 in the ratchet wheel 38 until the approach of the next 11 o'clock P. M. whereupon the above described cycle of movements is repeated.

As shown diagrammatically a manually operable switch 68 is disposed in the lamp circuit 69 to connect the source of power direct to the lamps, around the flasher switch and the fifteen minute illuminating switch. The purpose of this is to permit visitors to see the illumination of the figures on the dial at any time.

In operation, the pin 32 on the gear 31, Figure 5, engages the trip lever 33 on the shaft 34 and rocks the cam rod 35, Figure 4, to release the pawl 59, through the medium of the pin 60 on the pawl riding against the angular portion 61 of the cam rod. Upon further movement of the rod 35 the flattened end 62 engages the lever 52 which lifts the dog 54 and releases the ratchet wheel 38, allowing the ratchet wheel to be returned by the spring 56, Figure 5, to its initial position. Simultaneously therewith the lever 63, Figure 5, rises into the path of the pin 64 of the gear 65 and holds the gong ringing mechanism against movement. When the pin 32 rides beyond the end of the trip lever 33 the lever 63 will be released and fall out of the way of the pin 64 thus releasing the gong operating mechanism. During rotation of the gong mechanism the pin 43, on the gear 43', Figure 4, will engage the feeding teeth of the ratchet wheel 38 and advance the ratchet wheel successive steps at each rotation of the gear 43'. The pin 48 on the gear 49, Figure 4, lifts the lever 50 and also lifts the lever 52, integral therewith. The dog 54 from then on has ratchet action on the timing teeth of the ratchet wheel while the gong 66 is being sounded once for every rotation of the gear 49. When the ratchet wheel 38 has advanced through an angular distance of eleven teeth the dog 54 drops into the notch 55 of the ratchet wheel 38 and locks the wheel stationary. At the same time the lever 51 drops into the path of the pin 51' on the gear 49 and locks

the gong ringing mechanism stationary. It remains in this condition until the next time the pin 32 comes around twenty-four hours later when the cycle is repeated.

It will be understood that the hour and minute hand arbors are driven from the usual clock work mechanism designated generally by reference numeral 5. The gong ringing mechanism 36 is driven by a spring 36' similar to the clock mechanism spring.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

In an elk clock, a transparent clock dial, an electric lamp back of the dial for illuminating the dial, a circuit for the lamp, a clockwork alarm mechanism, a spring pressed mutilated wheel normally held in neutral position, said wheel having a series of eleven successive teeth, a dog engaged in a notch in the wheel at one end of the series of teeth and holding the wheel stationary against the tension of its controlling spring, means operated by said mechanism to lift the dog out of said notch and permit the wheel to be moved by its spring so that the dog is pushed over the initial tooth for engaging by step movement each tooth successively, a flasher switch disc geared to the alarm mechanism to be rotated one revolution at each step movement of the wheel, a contact pin on the disc, and a spring switch contact engageable by the contact pin simultaneously with step movement of the dog to close said lamp circuit and flash the lamp at each step advance of the wheel past the dog.

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