Aug. 15, 1933. D. W. DRISCOLL 1,922,572

AUTOMATIC CALL MECHANISM

Filed Sept. 28, 1927 3 Sheets-Sheet 1

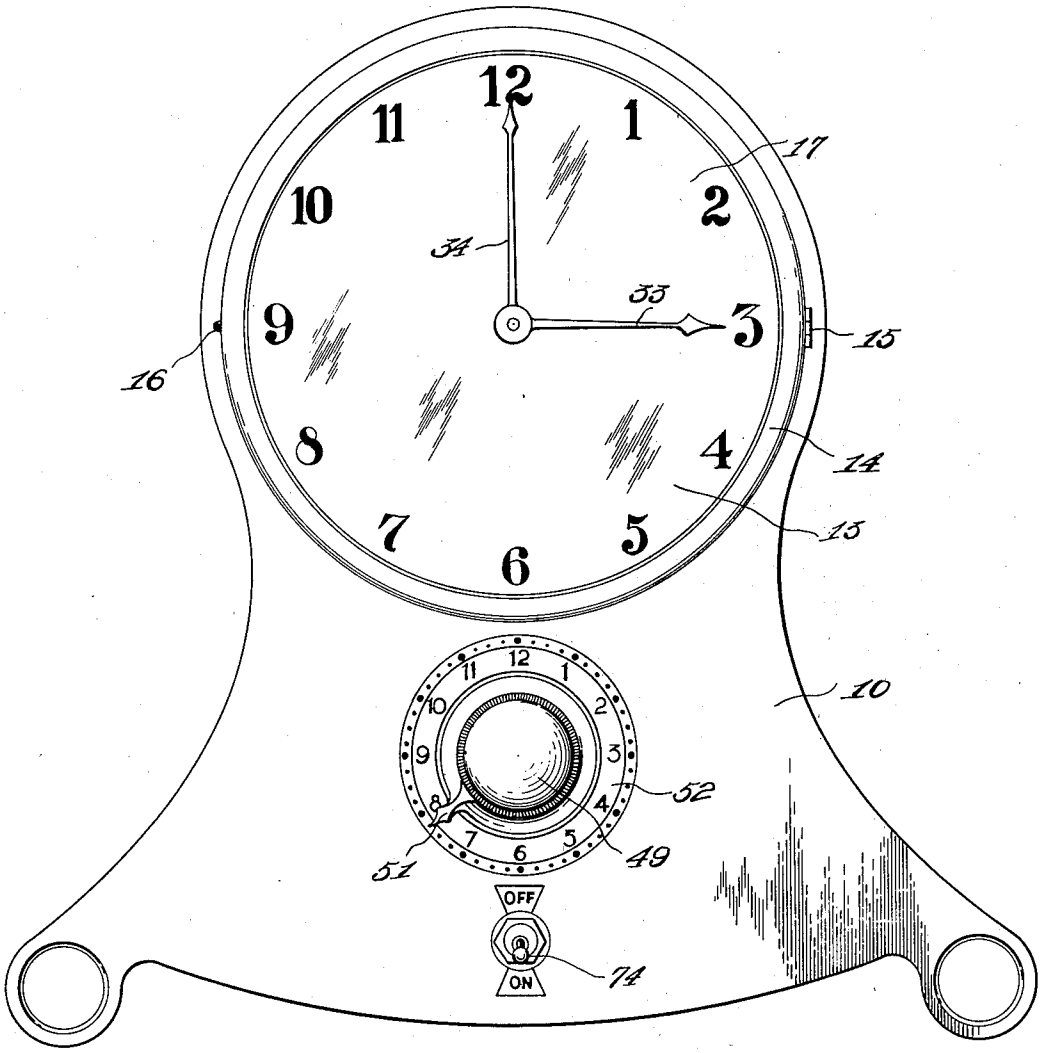


Fig. 1

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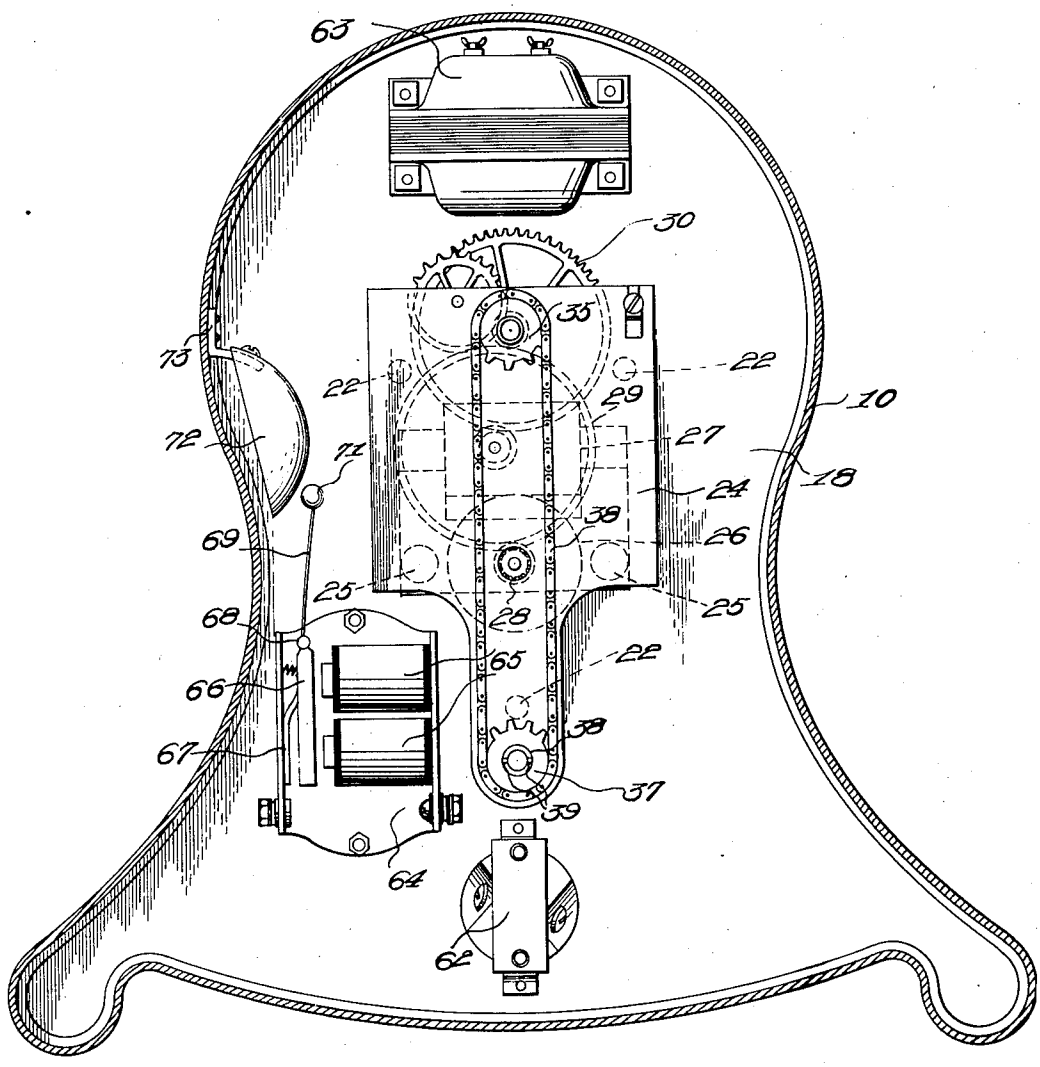


Fig. 2.

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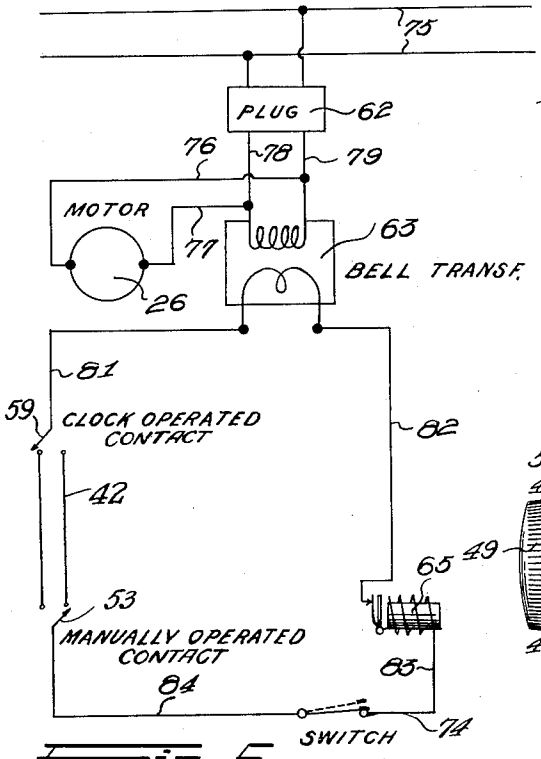


Fig. 5

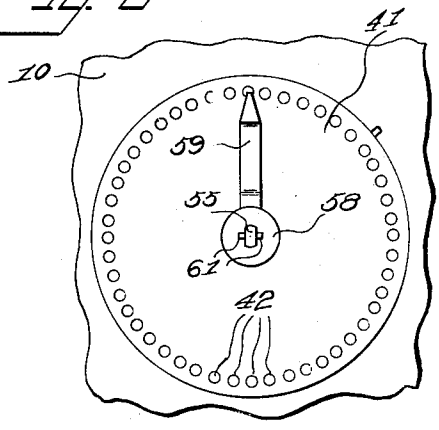


Fig. 4

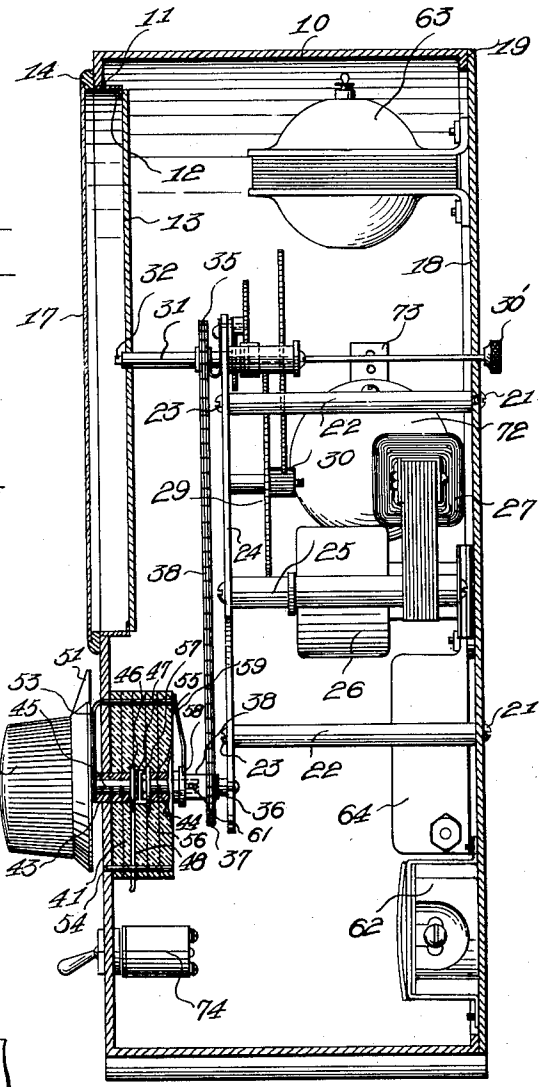


Fig. 3

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UNITED STATES PATENT OFFICE

1,922,572

AUTOMATIC CALL MECHANISM

Daniel W. Driscoll, Villanova, Pa.

Application September 28, 1927
Serial No. 222,590

5 Claims. (Cl. 200—37)

The present invention relates to automatic call mechanisms, and more particularly the invention relates to combined electrical call and time mechanisms which may be set to give an alarm signal at predetermined times.

A primary object of my invention is the provision of novel call mechanisms of compact and simple construction and reliable in operation which may be set to give an alarm at predetermined time intervals, and which may be constructed at comparatively low cost.

Another object of my invention is the provision of a combination electric call and time mechanism the operation of which is continuous when once connected with an electric circuit thus eliminating the necessity of periodical winding.

Still another object of my invention is the provision of an electric call mechanism provided with manually adjustable means to predetermine the sounding of an alarm at a desired time.

A further object of the invention is the provision of a combination electric call and time mechanism compactly arranged in a case which will be both ornamental and attractive in appearance and useful.

Other objects of the invention will appear as the description thereof proceeds with reference to the accompanying drawings in which,

Figure 1 is a front view of a preferred embodiment of my invention.

Figure 2 is a vertical sectional view looking toward the back of the mechanism shown in Figure 1.

Figure 3 is a vertical sectional view taken at right angles to the section of Figure 2.

Figure 4 is a fragmental end view showing the control contact arrangement for the alarm mechanism.

Figure 5 is a wiring diagram showing the connections between the different elements entering into the invention.

Referring to the drawings by reference characters in which like characters designate like parts, 10 designates a case which may be formed of any desired material as well as in any desired form, but as shown, is so formed or shaped as to compactly receive the clockwork as well as to present a neat appearance for a household or desk clock.

Case 10 in the front thereof is provided with a circular opening 11 in which is supported a flanged ring member 12 to the flange of which a dial 13 is secured. Surrounding the opening 11 is a circular door frame 14 which is hinged at 15 to the case and diametrically opposite the hinge is provided with a suitable catch 16, the door frame supports the customary glass or crystal 17.

Case 10 is provided with a detachable back 18 which is detachably secured to a flange 19 extending inwardly from the back of the edge surfaces of the case. Secured to back 18 by means of screws 21 are a plurality of posts 22 which extend inwardly of the case and are detachably secured by means of screws 23 to a supporting plate 24. Secured to and supported by plate 24 by means of a pair of posts 25 is a synchronous electric motor 26, preferably of the type known commercially as a Telechron motor, provided with field magnet 27 and other parts well known in the construction of such motors.

The motor shaft carries a pinion 28 which meshes with the gear wheel 29 of the clock works 30 which are of any well known construction and provided with the setting knob 30'. The motor thus drives the clock works continuously in a properly timed rate regulated by the frequency of the A. C. supply source instead of being dependent upon the commonly employed spring which necessitates a periodical winding and in the use of which the clock often loses time when the spring is nearly expanded its full limit.

Extending forwardly through the plate 24 and continuously driven by the clock works is the tubular hour hand driving shaft 31 within which is supported and continuously driven by the clock works, the minute hand shaft 32. Shafts 31 and 32 extend through the dial 13 and have attached thereto the hour and minute hands 33 and 34 respectively. Keyed to shaft 31 is a sprocket wheel 35 and suitably journaled on a support 36 attached to the plate 24 is a sprocket wheel 37. The sprocket wheels 35 and 37 are preferably arranged in vertical alignment as shown in Figures 2 and 3 and the movement of the sprocket 35 is communicated to the sprocket 37 by means of a sprocket chain 38' which embraces the two sprockets 35 and 37. The sprockets 35 and 37 are of equal diameter in order that shafts 31 and 38 will rotate at the same speed.

Supported and driven by sprocket 37 is short tubular shaft 38 provided with diametrically opposite slots 39 (Figure 2) extending inwardly from the end thereof. Suitably secured to the inside of the front of the case is an insulation block 41 which as shown in Figure 4 is preferably circular in form and extending through the block adjacent the periphery thereof and through the front of the case is a circular series of contact pins 42.

Extending through the case and into the block

41 centrally thereof is a sleeve 43 and in alignment therewith extending into the opposite side of the block is a sleeve 44. Extending through the sleeve 43 is a shaft 45 which is retained in the sleeve by means of a washer 46 and a nut 47. Integrally connected wtih the washer 46 is a suitable metallic conducting member 48 which extends through and terminates beyond the edge of the insulation block 41 as shown in Figure 3. Secured to the outer end of the shaft 45 is a suitable adjusting knob 49 provided with an index finger 51. The front of the case is provided with a suitable dial 52 in register with the ends of the pins 42 which extend through the case. Dial 52 is provided with time markings outward of the pins 42, pins 42 being within the margin of member 49.

Fixed to shaft 45 between the case and member 49 and directly under the index finger 51 is a spring contact arm 53, the outer end of which is adapted to engage the ends of the pins 42 upon rotation of the member 49. The ends of pins 42 are adapted to be engaged by the contact arm 53 and are preferably slightly recessed as indicated at 54 so that the end of the arm will snap into the recesses to locate the arm.

Extending through the sleeve 44 is a shaft 55 which is retained within the sleeve by means of a washer 56 and nut 57 and secured to shaft 55 adjacent the inner surface of the block 41 is a collar 58 to which is integrally secured a spring contact arm 59. The free end of the shaft 55 is provided with the oppositely extending projections 61 which nest in slots 39 of the tubular shaft 38 connecting the shafts 38 and 55 for simultaneous rotation.

Pins 42 are arranged within the block 41 to correspond with certain time intervals. As disclosed the pins are 48 in number, thus corresponding to 15 minute intervals and the indices on the time dial 13 and indicating dial 52 as shown in Figure 1 are arranged in similar order and it will be observed from Figure 1 that the indices on the dial 52 corresponding to the hours of the day, register with certain pins with three other pins between each two corresponding to certain hours.

Supported within the detachable back 18 adjacent the bottom thereof is a receptacle 62 by means of which the clock is connected with an electric circuit, and secured to the inner face of the back 18 is a bell transformer 63 proportioned to step down the voltage of the usual commercial lighting current supply a value suitable for the operation of an ordinary low voltage electric bell mechanism.

Mounted on the inner face of back 18 is a channel shaped metallic frame 64 in which is supported bell or buzzer electro-magnets 65 adapted in well known manner to act upon armature 66 which is provided with the frame engaging spring 67. Armature 66 is pivoted at 68 and carries a rod 69 supporting at the free end thereof the hammer 71 adapted to intermittently engage bell 72 suitably secured to the case by means of a bracket 73. Supported within the front of the case adjacent the indicating member 49 is a switch 74 by means of which the bell can be thrown out of circuit and the alarm stopped.

Referring to Figure 5 in which the wiring connections are diagrammatically illustrated, 75 designates the line circuit which through receptacle 62 is directly connected with the motor 26 through the conductors 76 and 77, and receptacle 62 is connected through the connections 78 and 79 with the step down bell transformer 63. Extending from the transformer 63 to the clock operated side of the block 41 is a conductor 81, and conductor 82 connects the transformer with the magnet 65 which is connected to switch 74 by a conductor 83. Switch 74 is connected with the manually operated side of the block by a conductor 84.

Operation

The clock is set to the proper time by adjustment of knob 30' and is connected into a commercial A. C. electrical circuit through the receptacle 62 which is accessible from the back of the clock and the motor 26 is thereby put into operation and through its connection by means of the meshing pinion 28 and gear wheel 29 drives the clock works 30, which through the shafts 31 and 32 drives the hour and minute hands 33 and 34 respectively of the clock. The motor is driven synchronously and at a rate accurately timed by the governing devices of the generator supplying power thereto and the clock will continue to run as long as power is supplied to the motor.

Shaft 31 through the sprocket connections will drive shaft 38 at the speed of the clock hour hand and shaft 38 through its pin and slot connection with shaft 55 will cause the contact arm 59 to revolve about the inner surface of the block 41 coincident with the revolution of the hour hand 33 of the time clock. The contact arm 59 will thus engage the exposed inner ends of pins 42 successively at intervals of 15 minutes. When it is desired to be called or to give an alarm at a certain time, say for example 7:45, the indicating member 49 is rotated until the index finger 51 thereof is aligned with the marking radially outward of the pin corresponding to 7:45 as indicated in Figure 1 and as the contact arm 53 is in alignment with the index finger the end of the arm will spring into the recessed end of and engage the pin 42 in radial alignment with the index finger. As the contact arm 59 continues to revolve it will, due to its simultaneous movement with the hour hand 33 engage the opposite end of the pin 42 indicated by the index finger 51 which will result in closing a circuit through the transformer, relay, and opposite sides of the insulation block 41 provided the switch 74 is closed or in the position marked On in Figure 1 which will result in energizing the bell magnet and operation of the bell 72 in well known manner. Operation of the bell will continue until the contact member 59 moves out of contact with the particular pin or until the switch is thrown open or to the position marked Off in Figure 1.

When it is desired to set the alarm for a certain time as a precautionary means, it is well to turn the member 49 until the index finger 51 points to the pin corresponding to the present time and if the alarm sounds all connections are in order and then the member 49 can be turned until the index finger points to the pin corresponding to the time it is desired to have the alarm sounded.

While a chain and sprocket drive connection has been shown between the clock work and the time indicating hands it will be understood that other drives are contemplated as within the scope of the invention, the type of drive used being a matter of choice depending upon the desired

relative position of the clock work and the time dial. For example, bevel of spur gear drives may be used in which universal joints may be interposed to transmit the motion of the clock work to the indicating hands which may be located at desired relative angular positions. It will also be understood that the time indicating dial and hands need not be located in the same case with the switching mechanism and clock work but may be a desired distance apart. Also it will be obvious that the bell or signalling mechanism need not be in the clock work casing but may be located remotely therefrom, and that a plurality of bells or signals at different points may be connected in series to give a simultaneous alarm for example, in different rooms of a house or halls of a dormitory, all controlled from a single switch and clock mechanism conveniently located.

It will thus be seen that novel call mechanisms and combination electrical call and time mechanisms are provided which is compact, neat in appearance and reliable in operation, the details of which may be widely varied without departing from the spirit of my invention as set forth by the terms of the appended claims. Accordingly, having set forth one of the preferred embodiments of my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an electric call mechanism, circuit closing means comprising a plurality of spaced conducting members and a pair of rotatable shafts insulated from each other, an indicating member carried by the outer end of one of said shafts, and a contact arm supported by the same shaft adjacent said indicating member revolvable therewith and adapted to engage the ends of said conducting members, and a contact arm supported by the outer end of the outer of said shafts adapted to engage the other ends of said conducting members to complete a signalling circuit.

2. In an electric call mechanism, an insulation block; a plurality of spaced conducting members extending through said block in a circular series; sleeves extending into said block from opposite sides thereof centrally of said series of conducting members; a shaft rotatably mounted in each of said sleeves and insulated from each other; an indicating member carried by one of said shafts; a contact arm supported by said one of said shafts for engagement with an end of any one of said conducting members upon rotation of said indicating member; and a contact arm supported by the other of said shafts adapted to engage the opposite end of said conducting member engaged by said first contact arm to complete a signalling circuit.

3. In an electric call mechanism, alarm circuit controlling means comprising a series of conducting members corresponding to successive time intervals, an insulating block, said conducting members being disposed in a circular series in said block, a contact member adapted to be driven in synchronism with a clock hour hand for successively and directly engaging said conducting members; and a manually operable contact member for directly engaging any one of said conducting members whereby a circuit is closed for sounding an alarm at any predetermined time interval upon said first contact member engaging the conducting member engaged by said last contact member and in which said contact members are carried by rotatable shafts disposed in said block concentric to said conducting members and insulated from each other.

4. A selector switch for an electric call mechanism comprising a clock driven shaft; a manually rotatable shaft co-axial with said first shaft and insulated therefrom; said last shaft adapted for connection in an electrical circuit for sounding an alarm; a series of conducting members surrounding said shafts and insulated therefrom; a contact member carried by said first shaft for successively engaging corresponding ends of said conducting members; and a contact member carried by said last shaft for contact with the corresponding end of any one of said conducting members whereby upon said first contact member engaging the conducting member engaged by said last contact member a circuit will be closed for sounding an alarm.

5. The combination defined in claim 4 in which said last shaft is provided with a pointer for cooperation with a dial corresponding to a time indicating dial for accurately positioning said last contact member for sounding an alarm at any desired time.

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