

Sept. 1, 1931.

C. R. GAINS

1,821,628

REMINDER CLOCK

Filed April 25, 1929

2 Sheets-Sheet 1

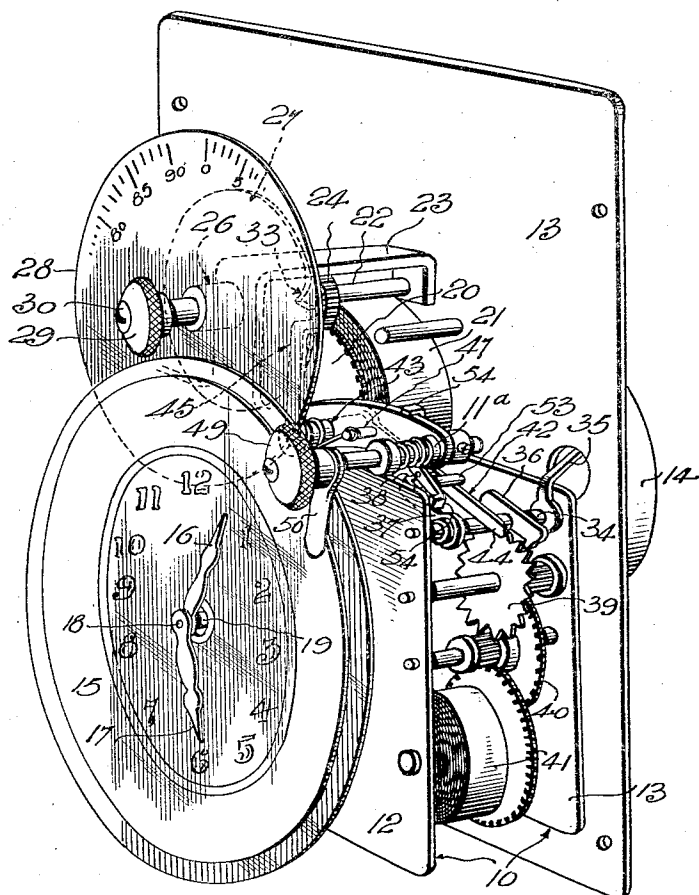


Fig. 1

Witnesses
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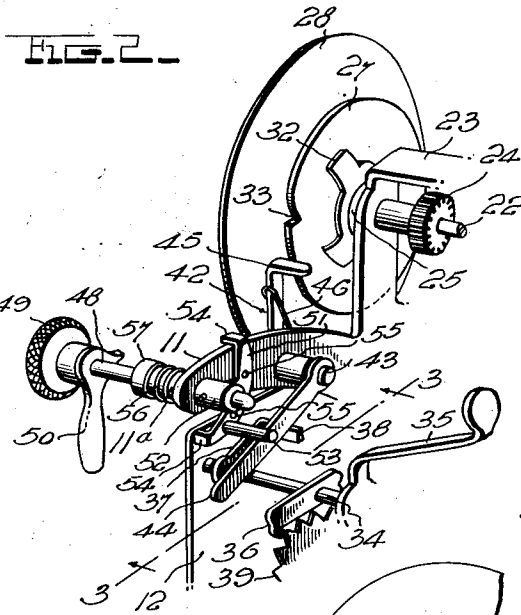
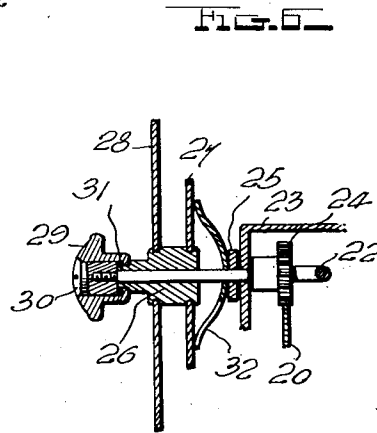
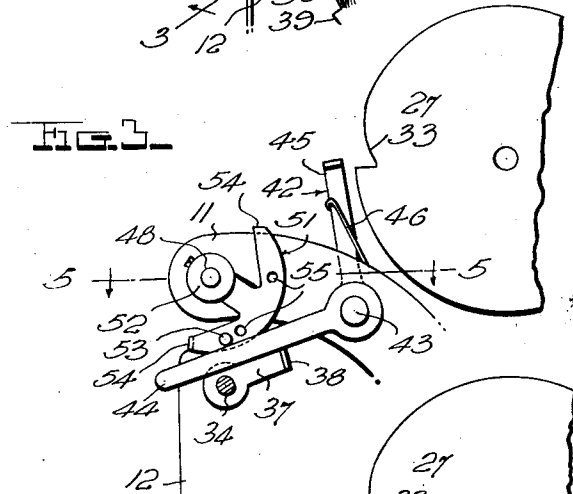
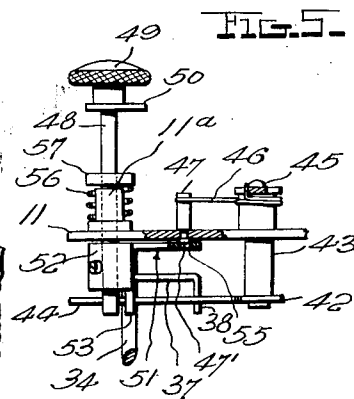
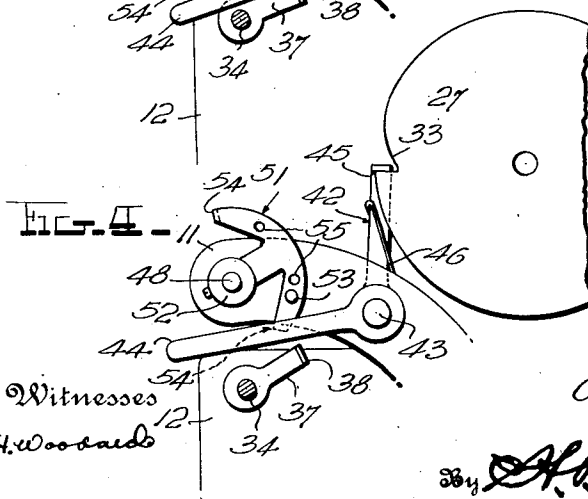
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REMINDER CLOCK

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2 Sheets-Sheet 2



Witnesses
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UNITED STATES PATENT OFFICE

CHESTER R. GAINS, OF MUSCATINE, IOWA

REMINDER CLOCK

Application filed April 25, 1929. Serial No. 358,087.

The invention relates to reminder or alarm clocks in general and has specific reference to a clock in which a setting dial visible at the front of said clock, is manually rotated to set the alarm-controlling means for bringing the alarm mechanism into play at the expiration of any desired interval of time.

It is one object of the invention to provide a new and improved construction and relation of parts in which the upper portion of the setting dial is visible above the usual time dial and in which said setting dial is set by means of a knob at the front of the clock axially alined with and rotatable bodily with said setting dial, providing not only a better arrangement of parts but a simplification over such clocks as that shown in my U. S. Patent No. 1,620,455 of March 8, 1927.

The alarm-controlling means herein disclosed embodies a bell crank having one arm which prevents oscillation of an alarm-operating shaft until a driven control disk which co-operates with the other arm of said bell crank, permits movement of the latter under the influence of a spring, to a shaft-releasing position, and a further aim is to provide a novel construction in which said one arm of the bell crank directly co-operates with a portion of said alarm-operating shaft to either hold or release the latter.

The above mentioned control disk is set by means of the aforesaid knob and setting dial and after setting, said control disk is driven to release the bell crank at the predetermined time, and a still further object is to provide a single sleeve carrying the control disk, the setting dial and the knob, said disk having a frictional driving connection with a clock-driven shaft. This driving connection effects the necessary driving of the sleeve to turn the control disk but slips and allows manual turning of the sleeve by means of the knob when setting the alarm-controlling means.

Yet another aim is to provide shut-off means directly co-operable with the aforesaid one arm of the bell crank. This shut-off means embodies a shaft turnable to either of two positions, and additional objects are to provide unique means for limiting the turning of this shaft in either direction and for

effectively holding it against accidental movement from the position to which it has been turned.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Fig. 1 is a perspective view of a clock constructed in accordance with my invention, all parts of the casing except the back plate being omitted.

Fig. 2 is a detail rear perspective view of the alarm-controlling means and shut-off means.

Fig. 3 is a vertical sectional view on line 3—3 of Fig. 2 showing the shut-off means in one position.

Fig. 4 is a duplicate of Fig. 3 with the exception that it illustrates the shut-off means in its other position.

Fig. 5 is a horizontal sectional view on line 5—5 of Fig. 3.

Fig. 6 is a detail vertical sectional view through the above mentioned sleeve, the control disk, the setting dial and the setting knob carried by said sleeve, and the frictional driving connection between this sleeve and the driven shaft upon which it is mounted.

The preferred construction has been illustrated and while such construction will be herein specifically explained, it is to be understood that within the scope of the invention as claimed, variations may be made.

In the drawings above briefly described, 10 denotes an appropriate supporting frame for the clock mechanism, most portions of which may be of any desired construction. Attention however is invited to the substantially horizontal arm portion 11 at the upper end of the front plate 12 of said frame, which arm portion carries a horizontal bearing 11^a for a purpose to appear. Suitably secured to the rear of the frame 10 is a back plate 13 of a suitable clock casing, the other portions of which are omitted, and upon the rear of this back plate I have shown an alarm bell 14.

At the front of the frame 10, a time dial 15 is shown, said dial being co-operable with the usual hour and minute hands 16—17

whose carrying shafts are shown at 18 and 19 respectively. A conventional gear train is provided for driving these shafts, the master gear of said train being shown at 20 and its operating spring at 21. Gear 20 is at the upper portion of the frame 10 and extending over this gear and the dial 15, is a shaft 22 which is parallel with the shafts 18—19 and is disposed on a vertical line extending upwardly from the common axis of the latter. The shaft 22 is mounted in bearings in an upper portion 23 of the frame 10 and said shaft is provided with a pinion 24 meshing with the master gear 20, thereby effecting driving of shaft 22 synchronously with the hour and minute hands.

Shaft 22 projects forwardly beyond the frame portion 23 and is provided with a fixed shoulder 25 at the front side of said frame portion. Rotatably surrounding the shaft 22 and spaced forwardly from shoulder 25, is a sleeve 26. A control disk 27 is rigidly secured upon the inner end of this sleeve, a setting dial 28 is secured upon the intermediate portion of said sleeve, and a setting knob 29 is secured upon the front end of said sleeve. The front extremity of shaft 22 is provided with a stop 30 which holds the entire assemblage 26—27—28—29 against forward shifting thereon and in the present showing, this stop is in the form of a tubular screw which also holds the knob 29 upon a squared forward extremity 31 of the sleeve 26. An appropriate spring 32 surrounds the shaft 22, said spring contacting with the control disk 27 and exerting forward pressure upon the latter and the sleeve 26. Spring 32 re-acts against the shoulder 25 and it forms a frictional driving connection whereby shaft 22 will drive the sleeve 26 and the parts carried by the latter. When setting the alarm-controlling means however by turning the knob 29, this frictional driving connection slips and readily permits such setting.

The peripheral edge of the control disk 27 is provided with an acute angular notch 33 and the function of said disk and its notch will be hereinafter explained.

An oscillatory alarm-operating shaft 34 is shown, said shaft being provided with a clapper 35, with a verge 36 and with an inwardly projecting arm 37, the latter having a lateral inner end 38. All of the parts 35—36—37 are rigidly secured to the shaft 34 and the verge 36 is co-operable with a verge wheel 39 having a driving train 40 whose actuating spring is shown at 41.

A bell crank 42 is fulcrumed at 43 to the arm 11 above described. One end 44 of this bell crank normally rests upon the lateral end 38 of the arm 37 and holds the shaft 34 against oscillation. The other end 45 of the bell crank 42 normally engages the peripheral edge of the control disk 27 and hence this bell

crank is normally held in the position at which it in turn holds the arm 37. A spring 46 is provided, said spring exerting a constant force upon the bell crank 42 tending to move it in a direction to release the arm 37. Hence, as soon as notch 33 on the driven control disk 27 reaches the position seen in Fig. 4, spring 46 moves the bell crank 42 to the released position shown in this view, whereupon the verge wheel 39 and verge 36 immediately come into play to oscillate the shaft 34 and the clapper 35.

One end of the spring 46 is anchored to a post 47 which projects forwardly from the arm 11, and for a purpose to appear, the inner end 47' of said post projects a slight amount rearwardly from said arm 11.

A shut-off shaft 48 is rotatably mounted in the above mentioned bearing 11^a, the front end of this shaft being provided with a knob 49 and an indicator 50 while the inner end of said shaft is equipped with a T-shaped plate 51 whose shank is provided with a hub 52 secured upon the shaft 48. A pin 53 projects rearwardly from plate 51 and when the shaft 48 is turned to position said pin against the upper side of the bell crank end 44, this bell crank cannot move under the influence of the spring 46. Moreover, after said bell crank has moved under the action of spring 46, as seen in Fig. 4, turning of shaft 48 in the proper direction will cause pin 53 to force downwardly upon the bell crank end 44, thereby restoring the bell crank to the position at which it holds the arm 37 against movement. Fig. 4 shows the normal position of plate 51 and pin 53 so that said pin will not interfere with automatic starting of the alarm upon shifting of the bell crank 42 by means of the spring 46 when such shifting is permitted by predetermined rotation of the control disk 27. Should it be desired however to prevent such automatic operation of the alarm mechanism, shaft 48 is turned so that pin 53 occupies the holding position shown in Fig. 3. Moreover, as above explained, this same pin serves to shut off the alarm after it has started to operate, if this be desired by the operator.

The ends of the head of the T-shaped plate 51, are bent laterally to provide stops 54 which straddle the arm 11 and are adapted to strike the edges of the latter to limit the turning of the shaft 48 in either direction. This head of the plate 51 is also formed with two spaced openings or other formations 55, either of which is adapted to snap over the rear end 48 of the pin 47 as seen in Fig. 5, thereby yieldably holding the shaft 48 in either position to which it may be turned. Preferably, the entire shaft 48 is urged forwardly under the influence of a spring 56 surrounding the bearing 11^a and abutting a fixed shoulder 57 on said shaft. This spring allows slight forward and rearward yield-

ing of the shaft 48 incident to engagement of the openings 55 with the post end 48 or disengagement of these formations.

The automatic control means for the alarm mechanism is set by means of the knob 29 and the setting dial 28, the numbers at the edge portion of the latter preferably representing minutes and being visible through an opening in the casing front. Setting with zero on the dial, say "five minutes" from a conventional pointer (not shown) spaces the notch 33 "five minutes" from the free end of the bell crank arm 45. Hence, at the expiration of these five minutes, the notch 33 will reach the position shown in Fig. 4 and spring 46 will function to release the bell crank 42 from the arm 37, the result being that the spring-driven verge wheel 39 and the co-operating verge 36, oscillate the shaft 34 and operate the clapper 35. When the alarm is to be shut off, it is simply necessary to turn knob 49 so that pin 53 moves the bell crank 42 again to the position at which it holds arm 37 and shaft 34 against oscillation.

It will be seen from the above that I have produced a generally condensed, simplified and efficient construction which is advantageous from standpoints of manufacture, durability and use. The details disclosed are proving entirely satisfactory and hence are by preference followed. However, attention is again invited to the fact that within the scope of the invention as claimed, variations may be made.

I claim:—

1. In a clock, hand-carrying shafts and a gear train for driving them, an alarm mechanism having a control finger, an additional shaft parallel with the hand shafts, driving means for said additional shaft actuated by said train, a sleeve rotatably mounted upon an end portion of said shaft and having a frictional driving connection therewith, a control disk secured to said sleeve and co-operable with said control finger in controlling the alarm mechanism, a knob secured to the outer end of said sleeve for rotating the latter to set said control disk, and a setting dial secured to said sleeve, said setting dial having numbers for use when setting said control disk.

2. A clock comprising a forwardly-facing time dial and co-operable hands, a gear train for driving said hands, a shaft extending from front to rear above said dial, driving means for said shaft driven by said train, an alarm mechanism having a control finger laterally spaced from said shaft, a sleeve rotatably mounted upon the front portion of said shaft and having a frictional driving connection therewith, a control disk secured to said sleeve and co-operable with said control finger in controlling said alarm mechanism, a knob secured to the front end of said

sleeve for rotating the latter upon said shaft to set said control disk, and a forwardly facing setting dial secured to said sleeve and having numbers for use when setting said control disk, said setting dial having its lower portion disposed behind the upper portion of said time dial.

3. In a clock, an oscillatory alarm-operating shaft, a bell crank fulcrumed on the clock frame and having one end directly co-operable with a portion of said shaft to either hold or free the latter, a spring tending to move said bell crank to the position at which it frees said shaft, a post on the clock frame to which one end of said spring is anchored, driven means directly co-operable with the other end of said bell crank for controlling movement of the latter under the influence of said spring, a shut-off shaft parallel with said alarm-operating shaft and rotatably mounted on the clock frame near said post, said shut-off shaft having means co-operable with said one end of the bell crank to either hold or free the latter, and a plate carried by said shut-off shaft and having two spaced formations either of which is adapted to snap upon an end of the aforesaid post to hold said shut-off shaft in one position or another.

4. In a clock, a frame member having a bearing, a rotatable shaft mounted in said bearing, a plate secured to and disposed in a plane transverse to said shaft, said plate having two spaced recesses, and a stud on said frame member adapted to snap into either of said recesses to hold the shaft in one position or another.

5. A structure as specified in claim 4; together with a spring associated with said shaft for permitting longitudinal shifting thereof incident to engagement of said recesses with and disengagement thereof from said stud.

6. In a clock, a frame member having a bearing, a rotatable shut-off shaft mounted in said bearing, a T-shaped plate having its shank secured to said shaft, said plate being disposed in a plane parallel with said frame member and having two recesses in its head, and a stud on said frame member adapted to snap into either of said recesses to hold the shaft in one position or another.

7. In a clock, a frame member having a bearing, a rotatable shut-off shaft mounted in said bearing, and a T-shaped plate having its shank secured to said shaft, said plate being disposed in a plane parallel with said frame member and having the ends of its head bent laterally and straddling said frame member to limit turning of the shaft in either direction.

8. In a clock, a sleeve having a rigidly attached dial disk between its ends, a rigidly attached alarm trip disk at its rear end and a rigidly attached knob at its front extremity

disposed co-axially with the sleeve, said knob
being provided with a central cylindrical re-
cess opening through its outer end, a gear-
driven shaft having an end portion passing
5 rotatably through said sleeve and extending
into said cylindrical recess, a cylindrical head
secured on the front end of said shaft and
rotatably received within said recess, said
head and knob being the only parts exposed
10 at said front end of the shaft, and a spring
device thrusting outwardly on said trip disk
and inwardly on said shaft.

In testimony whereof I have hereunto af-
fixed my signature.

CHESTER R. GAINS.

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