A. Y. DARCHE.

REMINDER CLOCK.

APPLICATION FILED JUNE 26, 1916.

1,233,559.

Patented July 17, 1917.

FIG. 1.

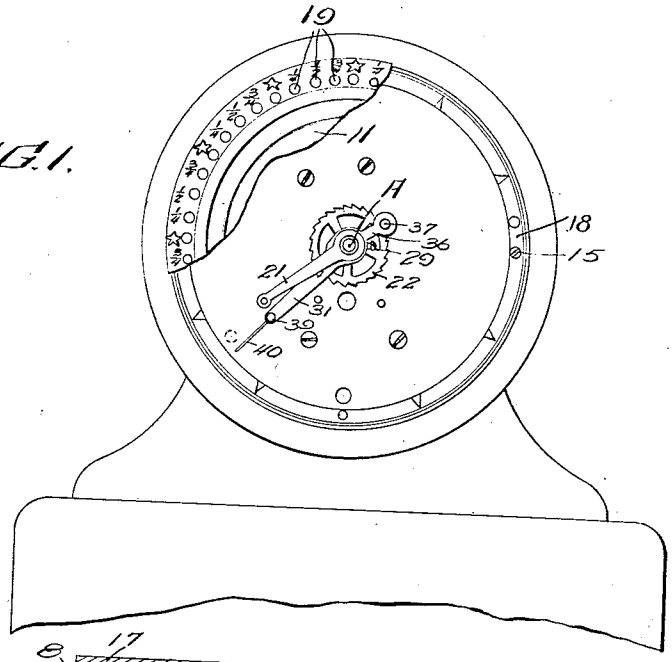


FIG. 2.

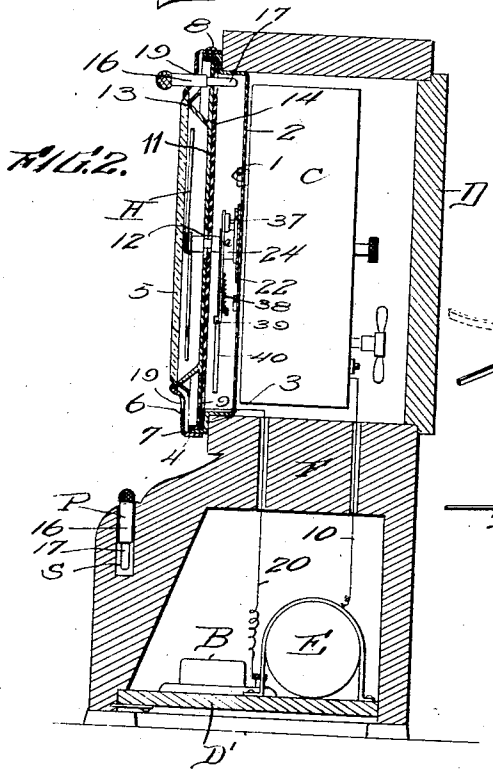


FIG. 4.

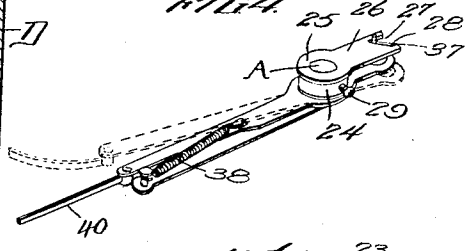
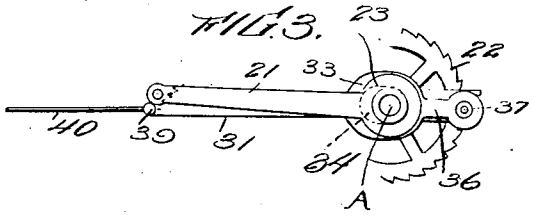


FIG. 3.



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REMINDER-CLOCK.

1,233,559. Specification of Letters Patent. Patented July 17, 1917.

Application filed June 26, 1916. Serial No. 106,031.

To all whom it may concern:

Be it known that I, AUGUSTA Y. DARCHE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reminder-Clocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to time controlling mechanism, and more especially to annunciators having an adjustable pin; and one object of the same is to produce a reminder clock whose hour hand arbor carries a contact arm adapted to close a circuit through an alarm by coming in contact with a pin selectively set by the operator when the alarm is desired.

Another object is to produce improvements in the structure of the contact and in the means for giving it a step by step movement at quarter-hour intervals.

Another object is to produce improvements in means for insulating the dial from the remainder of the clock.

With these objects in view the invention consists in the details described below and shown in the drawings wherein:—

Figure 1 is a front elevation of this clock with most of the dial and its retaining ring and both of the hands removed.

Fig. 2 is a central vertical section.

Fig. 3 is an enlarged front elevation of the contact arm, and Fig. 4 is a perspective detail of said arm from the rear.

In the accompanying drawings I have shown my invention as applied to a clock which may be of any suitable type, and is adapted to actuate an alarm which is herein shown as a bell within the frame of the clock but which may also be of any suitable type and location. I do not wish to be limited in these particulars, and I have used reference letters for those elements which form no part of the present invention. That is to say the frame F carries the clock mechanism C and has a rear door D permitting access to said mechanism for winding, setting, etc. The frame F also has another door D′ giving access to a chamber containing a source of electricity E such as a battery, and an alarm mechanism such as a bell B. The frame F may also have a series of sockets S for pins P whose use is described below. This specification is not concerned with the structure of the clock excepting its hour hand H and the arbor A thereof.

The clock C is here shown as attached by screws 1 to a plate 2 which is fitted nicely within the upper portion of the frame F, has an annular shoulder 3, and a forwardly projecting flange 4 surrounding it. The glass 5 is carried within a circular frame 6 which has a rearwardly projecting flange 7 inclosing said flange 4 and removably attached thereto by suitable means such as screws 8, and this frame has through it forty-eight holes 9 disposed one opposite each number on the dial or opposite the even hours, and three between each two members so as to be opposite the quarter hours. One side of the battery E is connected by a wire 10 with the clock C, and therefore it is in electric connection with the plate 2 and frame 6, and of course also with the arbor A and hand H.

The dial 11 has a large central hole 12 freely surrounding the arbor, and this dial itself has an annular frame 13 which, however, is separated from the frame 6 by the glass 5. A sheet 14 of insulation is placed behind the dial so that it cannot come into contact with any other mechanism. It is held in place by screws 15 as best seen in Fig. 1, and these pass through a ring 18 of insulation between the dial and the shoulder 3 of the plate 2, and extend into the frame F which will probably be of wood, so that as a result the dial is entirely insulated. Around its periphery it is provided with holes 19 registering with those numbered 9 in the frame 6, but somewhat smaller. The pins P have insulated bodies 16 and bare tips 17, the latter being of a size to pass into the holes 19 and project for some distance through them, whereas the insulated bodies are of a size to rest in the holes 9 but the pins will be out of metallic contact with the frame 6 and any portion of the clock mechanism. When the pins are not being used they are placed in the sockets S as seen in Fig. 2. A wire 20 leads from the battery E to the alarm B in the frame F, and is connected with the dial 11 which—with any pin or pins in use—therefore becomes one terminal.

Rigidly carried by the plate 2 is a ratchet wheel 22 having forty-eight teeth facing in the direction best seen in Fig. 3 which is to

the left or the reverse of the direction in which the hands move. The arbor A of the hour hand carries the contact hand or arm which, as seen in Fig. 2, stands between the front plate 2 of the clock and the dial 11, or between said plate and the sheet of insulation 14, and therefore it is not only out of sight but is housed behind the dial and in a chamber where it can touch nothing but the tips of such pins as are in use. Said contact hand or arm is of metal and comprises a body 21 enlarged at its inner end into a ring 23 behind which is a hub 24, and behind the hub in turn is another ring 25 carrying a short arm or "stub" 26 standing about in alinement with the body and on the opposite side of the hub 24 therefrom. In the outer end of said stub is formed a notch 27 whose bottom is inclined, or eccentric to the arbor, so as to constitute a cam 28. The opening through the hub and both rings is of a size to pass over the arbor A, on which it is held by suitable means such as a set screw 29.

The contact arm also includes a finger 31 underlying the body 21, having a ring 33 at its inner end standing next under the ring 23 and provided with an oval hole 34 loosely embracing the hub, and beyond the latter this finger is continued into a "stub" 36 which carries a pin 37 projecting to the rear into the notch 27. A contractile spring 38 connects the finger with the outer end of the body 21 and draws the former normally outward on said body so as to hold the pin in contact with the cam 28; and a pin or stop 39 at the outer end of the finger normally rests against one side of the outer end of the body under the tension of this spring, so that with the parts at rest they stand as seen in Fig. 3, or in full lines in Fig. 4.

When this contact arm is applied to the arbor A it is preferably set in parallelism with the hour hand H and as the latter makes its rotation the contact arm turns with it. As the contact arm turns, its body 21 moves with the arbor whereas the pin 37 engaging a tooth of the ratchet 22 prevents the finger 31 from turning with the arbor so long as this engagement continues. The movement of the body, however, moves its stub 26, and as the cam 28 moves under said pin the latter is pressed farther and farther from the axis of the ratchet wheel until eventually it disengages the tooth therein—the spring 38 meanwhile being put under slight tension. The result is that every fifteen minutes when the finger is released, it moves forward until its stop 39 contacts with the body 21. In other words the construction is such that by the movement of the cam the pin 37 is lifted over one tooth of the ratchet 22 and permitted to engage the next.

When now it is desired to set the device so as to use it as a reminder clock (which in the present illustration is carried out by sounding the bell at B) the operator takes one of the pins P and inserts it opposite the hour or the quarter hour indicating the time at which he is to be reminded of something or to be awakened for instance. The tip 17 of the pin fits into and projects through a hole 19 in the dial 11, whereas the insulated body 16 of the pin rests in the hole 9 in the frame 6 so that the pin stands on a line parallel with the axis of the arbor and is held at two points while it makes metallic contact only with the dial and its tip stands in the chamber between said dial and the front plate of the clock mechanism. Thereafter as the body member of the contact hand makes its rotation along with the hour hand, the outer end of its finger (which is preferably provided with a flexible tongue 40) eventually comes into contact with the tip 17 of the pin. This closes a circuit from the battery E through wire 10, clock C, arbor A and the contact arm; to the pin P, dial 11, wire 20, bell B, and back to the battery. The alarm will therefore be sounded whether it be located within the clock or elsewhere, and it will continue to sound until the contact arm slips off the pin which it must do in fifteen minutes at any rate, or will do so sooner if the tongue 40 is sufficiently flexible. It is quite possible that the user may set another pin, say one hole farther forward, so as to remind him again fifteen minutes later, in case he cannot be aroused easily; and it is obviously possible that the device has a wide variety of uses which need not be explained herein. The inclination of the cam 28 at the bottom of the notch 27 serves two purposes. First it causes the automatic disengagement of the pin 37 from the ratchet 22 at regular intervals when the alarm mechanism is not set, and permits the finger 31 to jump with an intermittent movement forward as first described above. Second, when the alarm is set and the tongue 40 comes in contact with the pin P, as the finger 31 is swung away from the body 21 by such contact the cam 28 retracts or draws said finger inward (as the oval hole 34 in its ring 33 permits) and shortens the period through which the alarm will be sounded at B, rather than sounding the alarm for fully fifteen minutes.

What I claim is:

1. In a reminder clock, the combination with the clock mechanism and casing, a face plate thereon having a shoulder and flange, the glass, and an annular frame therefor having a flange engaging that of the face plate; of a disk-like metal dial having a central hole loosely surrounding the hand-arbor, the edge of the dial overlying said shoulder, insulation between the latter and the dial, a dial-frame engaging said

glass, the frames having registering holes, pins for selective insertion through the latter, a contact arm loosely mounted on the arbor behind the dial and having a tip adapted to engage said pins, and an electric alarm having one terminal connected with the clock mechanism and the other with the dial, and means for imparting to said arm an accelerated intermittent movement.

2. In a reminder clock, the combination with a clock mechanism, a toothed wheel fixedly mounted around its arbor, a dial insulated from the clock casing and having holes corresponding with the teeth in said wheel, pins for selective insertion in said holes, and an alarm mechanism whose terminals are respectively connected with the clock mechanism and dial; of a contact arm comprising a body fast on the clock arbor and carrying a cam eccentric thereto, a finger movably mounted on the body, a pin on the finger projecting across and constantly engaging the cam and normally engaging the teeth of said wheel, the outer end of the finger adapted to contact with a pin in one of said holes, and a spring connecting the body and finger, for the purpose set forth.

3. In a reminder clock, the combination with a clock mechanism, a toothed wheel fixedly mounted around its arbor, a dial insulated from the clock casing and having holes corresponding with the teeth in said wheel, pins for selective insertion in said holes, and an alarm mechanism whose terminals are respectively connected with the clock mechanism and dial; of a contact arm comprising a hub rigidly mounted on the clock-arbor, a body fast on and projecting in one direction from the hub and having a stub projecting in the opposite direction therefrom and provided with a notch having a cam in its bottom, a finger having a ring with an oval hole loosely engaging said hub and a stub overlying that of the body and carrying a pin projecting through said notch, a stop on the finger alongside said body, and yielding means connecting these elements and drawing the stop normally into contact with the body and the pin normally against the cam and toward said teeth.

4. In a reminder clock, the combination with a clock mechanism, a toothed wheel fixedly mounted around its arbor, a dial insulated from the clock casing and having holes corresponding with the teeth in said wheel, pins for selective insertion in said holes, and an alarm mechanism whose terminals are respectively connected with the clock mechanism and dial; of a contact arm comprising a hub rigidly mounted on the clock-arbor, a body fast on and projecting in one direction from the hub and having a stub projecting in the opposite direction therefrom and provided with a notch having a cam in its bottom, a finger having a ring with an oval hole loosely engaging said hub and a stub overlying that of the body and carrying a pin projecting through said notch and engaging said notched wheel, a stop on the finger alongside said body, and a contractile spring connecting a point on the body with the outer end of the finger and normally drawing the stop against said body and sliding the ring over the hub so as to draw said pin against the cam and into engagement with the toothed wheel, for the purpose set forth.

5. In a reminder clock, the combination with the clock mechanism and its arbor, a dial having holes around the figures, pins for selective insertion in said holes, and an electric alarm mechanism; of a contact arm including a hub fast on said arbor provided with a cam, a finger loosely mounted on said hub and having a stub provided with a pin projecting across said cam, the finger adapted to contact with said selectively-set pin, and a spring holding the pin normally at the low point of the cam but permitting its movement over said cam and the movement of the finger as the same engages said selective pin.

6. In a reminder clock, the combination with the clock mechanism and its arbor and casing, a dial insulated from the latter and having holes around the dial-figures, pins for selective insertion in said holes, and an alarm mechanism whose terminals are connected respectively with the clock mechanism and the dial; of a contact arm comprising a hub fast on said arbor and rigidly carrying a body and a stub, the latter provided with a cam, a finger loosely mounted on said hub and having a stub provided with a pin projecting across said cam, the finger adapted to contact with said selectively-set pin, and a spring connecting the body and finger and holding the pin on the latter normally at the low point of the cam but permitting its movement over said cam and the movement of the finger as the same engages said selective pin, and means for retarding the forward movement of the finger and intermittently releasing it for accelerated movement by said spring to insure instantaneous contact against the contact pin.

7. In a clock of the class described, the combination with the arbor, and a non-rotary toothed wheel around it; of a hub fast on the arbor and carrying a stub provided with a cam overlying and eccentric to the teeth of said wheel, a finger slidably mounted on said hub and carrying a stub overlying said first stub, a pin in the second stub projecting across the cam, yielding means holding the pin normally at the low point of the cam and engaged with said teeth, and means for interrupting the forward swing of the finger.

8. In a clock of the class described, the combination with the arbor, and a non-rotary toothed wheel around it; of a hub fast on the arbor and carrying a stub provided with a cam overlying and eccentric to the teeth of said wheel, a finger having a ring-shaped hub provided with an oval hole slidably mounted on said first hub and carrying a stub overlying said first stub, a pin in the second stub projecting across the cam, and yielding means holding the pin normally at the low point of the cam and engaged with said teeth.

9. In an intermittent hand-moving mechanism for a timepiece, the combination with a non-rotary toothed wheel surrounding the arbor; of a hub fast on the arbor, a cam carried by the hub and eccentric to the teeth of said wheel, a finger mounted for longitudinal reciprocation and for oscillation on the arbor, a pin on the finger projecting across the cam and the teeth, and a spring between the hub and finger and moving the latter to hold the pin normally at the low point of said cam and engaged with said teeth but permitting it to be moved out of such engagement as the cam advances.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTA Y. DARCHE.

Witnesses:
H. CANFIELD,
N. W. EVANS.