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COMBINED ALARM CLOCK AND ARTICLE HEATER

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2 Sheets—Sheet 2
To all whom it may concern:

Be it known that I, ARISTIDE ARIDOVINO, a subject of the King of Italy, residing at Traversa, Santa Maria Appartante, Naples, Italy, have invented a new and Improved Combined Alarm Clock and Article Heater, of which the following is a full, clear, and exact description.

An object of the invention is that of providing an alarm clock with improved means adapted to close an electrical circuit relative to one or more devices when the alarm is started.

Another object is that of providing means to be associated with an alarm clock adapted to close an electrical circuit when the alarm is started and to open the circuit after a period of time determined by one cycle of operation of apparatus in the circuit.

A further object is that of providing a clock having means adapted to give an alarm at a set hour, close an electrical circuit to a lamp and to an article heater, and open said circuit when an article has been heated and again give a second alarm after the article has been heated.

Further objects and the nature of the invention and its distinguishing features will appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Fig. 1 is a front elevation of the clock and the article heater together with a lamp to be lighted by the clock.

Fig. 2 is a side elevation of the clock, the article heater and the lamp.

Fig. 3 is a rear view of the clock, with the cover removed, and showing the mechanism for closing or opening an electrical circuit.

Fig. 4 is a longitudinal section taken on line 1—1 of Fig. 3, and showing the interior of the circuit closing mechanism and the interior of the article heater.

Figs. 5, 6 and 7 are views of the circuit closer operated by an alarm mechanism of the clock, Figures 5 and 7 being in section.

Fig. 8 is a diagram of the electrical connections.

Fig. 9 is a sectional view of the base of the clock taken on line 9—9 of Fig. 2 and showing the joining of said connections with the supply circuit.
Fig. 7 to be defined by an embedded L-shaped contact 34. Diagonally opposite contact 34 is a second contact 36; the two contacts being bridged by a conductor 37.

Loose on shaft 31 and loosely swingable in pocket 32 is a gravity-responsive plate 38. This plate is thus loosely hung so that when the hook 122 of lever 22 is depressed as shown in Fig. 7, further turning of the drum 33 in the direction of the arrow beyond the point illustrated will result in a trailing behind of plate 38 until the rear wall of the pocket is moved sufficiently toward plate 32 to pick up the latter. The outer curved face of plate 38 is eccentric to both the different curves making up the curved periphery of drum 33, as will be seen from a comparison of Figs. 5 and 7, to the end that when the parts are arranged as shown in Fig. 7 the plate 38 will present a projecting shoulder at its forward end as indicated at 39. The function of the plate 38 will be clearly understood from the description of operation toward the end of the specification.

A bar 39, pivoted at 40 and 41, at the latter point to the post 10, is provided merely to insure parallel movements of tray 11 up and down. It may be explained at this point that, a cup 45 having been placed on the tray as shown in Fig. 2, and having been automatically filled to the predetermined extent with coffee 65' dispensed from kettle 2 as prepared at the hour set pursuant to the provisions described below, the cup and its contents then overbalance weight 13 on the frame 12 of Fig. 3 and tray 11 descends with its burden to elevate frame 12; and of course when the cup of coffee is removed the tray is caused to rise again by such weight.

The kettle 2 comprises a casing 42 having spaced inner and outer walls to provide an annular chamber for a heating coil 43. The casing 42 takes a water receptacle 44, having at its top a cup-flange 45 holding a ring internally threaded at 47. These threads coat with an externally threaded basal ring forming a reduced bottom for a second receptacle 48 to be mounted on the water receptacle 44 as shown. A liftable cover 49 overlies the top of receptacle 48. A sleeve 51 rising from the bottom wall of the receptacle 44, is spaced around the upper portion of a tube 52, which may be screwed in place as shown. Tube 52 is closed at its upper end and there threaded as at 53. To the tube 52, below the threads 53, a percolator casing 54 is welded, or otherwise secured, said casing having the usual foraminous bottom 55, and adjacent the bottom of the casing 54 tube 52 is perforated as at 56. The percolator casing 54 is provided with a cover 56, flanged as at 57, and having a central threaded bore 58 engaging the threaded end 53 of the tube 52. The receptacle 48 is further provided with a spout 60, which inwardly of the receptacle 48 presents a tubular U-shaped section 61 with its free end extending downward to a point slightly above the bottom of the receptacle 48 as shown at 62.

As shown in Figs. 1 and 2, the tray 11 may mount, if desired, a plate 63 for receiving the cup 65 and its saucer 64.

Examine now Figure 9, which shows the base of the clock casing 1, and also Fig. 8. The casing carries insulated from the casing and from each other, plug terminals 70, 71, 72 adapted to receive plugs 73, 74 and 75, which are connected by means of conductors 76, 77 and 78 with a supply plug 79. The terminal 70 leads by means of a conductor 80 to pivotal member 21 on which lever 22 is mounted, and so to the hook 122 of Fig. 8. From the terminal 71 extends a conductor 81 which is connected to socket 82 on the cover 8 of the clock casing. Terminal 72 leads to a conductor 83, which beyond the clock casing 1 extends through one of the arms of fixture 3 as shown in Fig. 2 to lamp 4. A second socket 84 is also on the cover of the clock casing, and a conductor 85 leads therefrom to a binding post 86 inside the clock. A wiper-contact 87 for drum 33 is secured to such post; and a conductor 88 also branches off from the post to extend through the other arm of fixture 3 to the lamp. The heater element 45 is wired at opposite ends to suitable plugs (one of which is shown at 90 in Fig. 4), to be received in the socket terminals 82 and 84. A manual switch 91 is connected by means of suitable conductors (marked 92 and 93 in Fig. 9) to the terminal 70 and the conductor 83 as shown in Fig. 8. The switch 91 when closed closes the circuit to the lamp and the heater collectively or separately as either or both the plugs 74 and 75 of Fig. 9 are connected up independently of any operation of the drum 33.

The rear of clock casing 1 has a bottom hinged cover 101 shown swung down to condition in Fig. 9, and this cover has an opening 200 for viewing the indicating disc 20, or the disc 25 if overlapping the first disc. This cover also has a slot 240 through which projects a stud 241 carrying an operating knob 24, as shown in Fig. 4. Across the slot and on the inside of the cover is mounted a pivoted element 190 as shown in Figure 3 and manually movable by the knob to swing the member 19 to disengage lever 22 from latch 20.

The operation of the device is as follows:

The clock is set to sound the alarm at a set hour by means of an adjuster 100 of the familiar type. If it is desired that on the sounding of the alarm at such hour, both the light 4 and the heater 43 are to...
be actuated, the plugs 73, 74 and 75 are connected to the terminals 70, 71 and 72.

Assume that lever 22 has its head 23 engaged over latch 20. By means of the pivotal element last mentioned, the member 19 is manually moved to release lever 22 to cause the hook 122 to advance toward drum 23 and positively to throw T-rocker 28 to the position illustrated in Fig. 3. It will be noted, however, that the hook 122 (contrary to the illustration of Fig. 3, which shows the parts as relatively located on the occurrence of a later event in the cycle) could not possibly yet hold the drum 33 as shown. This is the required condition now, otherwise the hook 122 would preclude subsequent rotation of the drum and a sounding of the clock alarm when the hour set by the adjuster 100 is reached. For a full understanding of the means for thus precluding a premature detonation engagement of hook 122 with drum 33, Figs. 5 and 7 should be momentarily examined; in connection with which it is pointed out that should the lever 22 ever be manually released as above, to swing the hook 22 upward while the drum happens to be so disposed that the hook could engage the shoulder at contact 34, the plate 38 would already have been dropped by gravity to the position illustrated in Fig. 7.

Thus at the hour set, the shaft 31 rotates to sound the alarm as usual, and the drum meanwhile rotates with the said shaft, for a full revolution or less, and in a clockwise direction as viewed in Fig. 3, until the hook intercepts shoulder 35a of plate 38 and holds the drum against further rotation, thus to dispose plate and drum as shown in Figs. 3 and 5.

With the parts thus arranged, the circuits for heater 43 and lamp 44 are closed by way of conductor 37 of Fig. 7 as shown in Fig. 8. Thus at the instant the alarm first sounds, at the set hour, the lamp 40 is lighted, and the heater 43 begins to heat the water in receptacle 44. Shortly after such water reaches the boiling point, particles thereof are blown up the tube 52 and discharged from the upper end thereof to percolate through the ground coffee in the cage 54, and drops of coffee begin falling toward the bottom of receptacle 48. Coffee in the latter receptacle, upon reaching a pre-determined level, discharges itself through tube 61 by well-known siphon action and into cup 65 on tray 11.

When the cup 65 is about full of coffee, the weight of the cup and the coffee contents thereof are such, in accordance with the design of the apparatus, that the weight 13 is overbalanced, and the lever 15 is rocked to elevate frame 12.

As the frame 12 rises, the head 16 is carried upward on the upper end of standard 15 and rocks lever 22 to depress hook 122 to free the latter from plate 38 of drum 23. At the same time the insulated head 23 of the lever snaps over latch 20, thus overlapping the indicating disk 26 by the indicating disk 26 of a different color. Simultaneously, and due to the descent of hook 122 to the position shown in Fig. 7, the circuits for the lamp 4 and heater 43 are opened, and the drum is free for further rotation, which rotation continues, accompanied by a sounding of the clock alarm, until the alarm spring is totally unwound or until the alarm is manually shut off.

When, now, the filled cup 65 is removed from tray 11, the weight 13 moves the frame downward and elevates the tray.

As to the parts 29 and 14, that is to say, to explain the purpose of mounting the T-rocker 28 for limited swinging movement in one direction only relative to lever 22, as hereinabove mentioned, it may first be again pointed out that pins 30 engage the upper and lower edges of lever 22 in such a way that when said lever is rocked upward to engage the same over latch 20, upon cup 65 being sufficiently filled with coffee to overbalance weight 13 and so cause frame 13 to rise, T-rocker 28, due to its loose pivotal mounting and weight bins, swings with lever 22 to dispose finger 29 in vertical alignment with catch 14. This is for the purpose of interposing the finger in the path of upward movement of the catch should the frame be accidentally forced upward due to an unintended pressure on tray 11 at any time. Nevertheless, such trailing movement of the T-rocker relative to the lever 22, will not prevent weight 13 from dropping the frame 13 and head 16 to the positions shown in Fig. 3, as soon as the filled coffee cup 65 is removed from the tray, because during such return movement of the frame the catch 14 may nose past finger 29 due to the fact that T-rocker 28 may be forced to swing against its weight in a clockwise direction relative to lever 22 now engaged by latch 20.

Thus, briefly, if the apparatus is to be used for preparing and dispensing a cup of coffee at any desired hour set by the adjuster 100, it is only necessary, after setting such adjuster, manually to disengage the insulated head 23 of lever 22 from latch 20; and as a result at the appointed hour the alarm of the clock sounds, the lamp is illuminated, and the preparation of the coffee is started and continues until the cup 26 is filled with the coffee so prepared; whereupon the percolator ceases operation, the light of the lamp goes out, the alarm is sounded a second time, and the indicating disk 25 becomes the one visible through the appointed opening in rear cover 101.

It is clear that with the indicating disks 25 and 26 of different colors, say one red.
and one white, an inspection at the opening last mentioned will show the setting of lever 22, and so indicate whether or not the mechanism is so set as to close the heater and lamp circuits and otherwise perform as described following a sounding of the alarm at a desired hour to which the same has been set.

It will of course be understood that the mechanism is capable of other selected operations, such, for instance, as causing the heater 43 to function alone, or the lamp 4 alone, according as one or the other of the plugs 74 or 75 of Fig. 9, corresponding to the terminals 71 or 72 of Fig. 8, is disengaged.

Also, of course, the lamp or the heater, or both, may be caused to function at any time, irrespective of the operation of the alarm mechanism or of the drum 33 and cooperating parts, merely by closing the switch 91 and connecting up either or both of the plugs 74 and 75.

Further, the alarm clock may be used in the usual way, by disconnecting all the plugs 76, 77 and 78 of Fig. 9.

The cover 101, slightly above the slot in which the knob 24 is arranged, is provided with an opening through which one of the sections 26 and 27 may be viewed. The section 26 is, for convenience, painted red and the section 27 white. When the head 23 is in engagement with the latch 20, the section 27 is viewed through the opening in question, indicating that the mechanism for closing the circuits is not set for operation. On the other hand, when the head 23 is made to disengage the latch 20 the section 26 appears in the rear of the opening, indicating that the mechanism is set to close the circuits when the alarm goes off.

It is understood that the invention is not limited to a lamp and a heater circuit, since any number of circuits can be placed in parallel relation with the two circuits described.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since, manifestly, the same can be considerably varied without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In combination, an alarm clock and an article heater, an electrical circuit for said heater, a movable frame, a drum having a pair of spaced but bridged contacts and adapted to be turned by the alarm mechanism of the clock, a lever formed at one end with a hook adapted to engage one of said contacts to close said circuit and at the other with a latch element adapted to engage said frame thereby to cause disengagement of the hook from the last-mentioned contact to open said circuit upon a movement of said frame, and means for automatically moving said frame after heating said article.

2. In combination, an alarm clock, an article heater, an electrical circuit for said heater, a movable frame, a rotor having a pair of spaced but bridged contacts and adapted to be turned by the alarm mechanism of the clock, one of said contacts forming a shoulder, a lever carrying a hook adapted to engage such contact-shoulder to close said circuit and halt operation of the alarm mechanism, a latch for holding the lever so engaged and means on the frame adapted for releasing the latch from the lever when the frame is moved.

3. In a combined alarm clock and article heater, means adapted to close an electrical circuit at a set hour, an article heater and a lamp in said circuit, and means responsive to the weight of the heated article to open said circuit after the article has been heated.

4. In a combined alarm clock and article heater, means associated with the alarm mechanism of the clock adapted to close an electrical circuit, an article heater and a lamp in said circuit, means in said article heater to cause the article after it has been heated to flow outwardly of the heater, a receptacle to receive said heated article, a lever carrying at one end the said receptacle and at the other means adapted to open said circuit when the article has been heated.

5. In an alarm clock, a drum mounted to operate with the shaft actuating the alarm mechanism thereof, a contact on said drum, a circuit closer adapted to engage said contact member, a pivoted member adjacent said drum presenting an outer edge projecting beyond the periphery of said drum and to permit an engagement of said circuit closer with said contact only when the drum is rotating.

6. In an alarm clock, a drum mounted on the shaft actuated by the alarm mechanism of the clock, a pair of contacts positioned on the periphery of said drum, a circuit closer adapted to engage one of said contacts and thereby to detain the drum, a gravity-responsive member adjacent the drum and having a curved outer edge projecting beyond the periphery of the drum, said member being adapted to prevent said circuit closer from engaging said contact when the drum is not rotating.

7. In an alarm clock, a drum mounted on the shaft actuating the clapper of the alarm mechanism of the clock, said drum being slotted in its own plane, and recessed at spaced points in its circumference, a contact embedded in each recess, one of said contacts having a shouldered portion adapted to engage the end of a circuit closer, and a member pivoted on said shaft and arranged in
said slot in the drum, said member having a curved outer edge adapted to protrude beyond the periphery of the drum to prevent said circuit closer from engaging said shouldered contact when the alarm mechanism is not in operation.

8. In an alarm clock, a drum mounted on a shaft actuating the clapper of the alarm mechanism of the clock, said drum having a slot in its own median plane and extending substantially to the center of said drum, a member pivoted to said shaft arranged in said slot, said member being swingable from one end of the slot to the other and provided with a curved outer edge extending beyond the periphery of the drum, a contact in the periphery of the drum, a circuit closer adapted to engage said contact, said member preventing said circuit closer from contacting with said contact when the contact occupies a position in the path of movement of the circuit closer.

9. In an alarm clock, a drum mounted to rotate with a shaft actuating the alarm mechanism of the clock, an electrical circuit, spaced electrical contacts on the periphery of said drum, a lever having one end adapted to engage one of said contacts, a contact adapted to touch the other of said drum-contacts when the lever engages the first-mentioned contact whereby to close the circuit, and automatic means for moving said lever to cause it to disengage said first-mentioned contact after a predetermined period of time.

10. In an alarm clock, a pivoted lever insulatedly mounted on the frame of the clock, a spring-actuated latch normally engaging the lever, a knob to move said latch from engagement with said lever, an electrical circuit including said lever, and means actuated by the alarm mechanism of the clock and engageable with the lever to close said circuit when said latch is disengaged from the lever.

11. In an alarm clock, an electrical circuit, a lever interposed in said circuit, a moveable frame, a latch normally engaging said lever, a projection at the other end of said lever, means actuated by the alarm mechanism of the clock engageable by said projection to close the electrical circuit, means on the moveable frame adapted to engage said lever to move the same and cause said projection to disengage the means first mentioned to open said circuit, and means in said circuit to automatically cause a movement of said frame after a predetermined period of time.

12. In a clock of the class described, an electrical circuit for a lamp and an electrical circuit for a heater, means actuated by the alarm mechanism of the clock to close either or both of said circuits, means actuated by the heater to open said heater circuit, and a hand-switch for opening or closing the lamp circuit independently of the alarm mechanism and the means actuated by the heater.

13. In a clock of the class described, a lamp, a heater, a circuit for the lamp and a circuit for the heater, a plurality of plugs to connect said circuits to a supply of electricity, one of said plugs being connectible to one side of both circuits, the other sides of said circuits being each provided with an independent plug whereby to permit the circuits to be connected or disconnected individually or collectively, and means actuated by the alarm mechanism of the clock to close said circuits.

14. In an alarm clock of the class described, an electrical circuit, means actuated by the clock to close said circuit, a device actuated by a closing of said circuit, means actuated by said device to open the circuit after a predetermined operation of said device, and a hand switch in shunt with the clock-actuated means to open or close said circuit independently of the clock means.

15. In an alarm clock of the class described, an article heater including an electrical coil, an electrical circuit, means actuated by the alarm mechanism of the clock adapted to close said circuit, a water receptacle heated by said coil, a percolator, a tube to communicate said percolator with said receptacle, a discharge spout to conduct water from the percolator into a cup, a lever supporting at one of its ends said cup, and means at the other end of said pivoted lever for opening said circuit to said coil when the cup has been substantially filled.

16. In an alarm clock of the class described, an article heater including an electrical coil, an electrical circuit therewith, means actuated by the alarm mechanism of the clock adapted to close said circuit, a water receptacle heated by said coil, a percolator, a tube to deliver the percolated contents of said percolator to said receptacle, a second receptacle in which said percolator is arranged, a U-shaped tube having one end adjacent but spaced from the bottom of said second receptacle and the other extending outwardly of said second receptacle and in the form of a spout, said U-shaped tube being adapted to conduct the water within the second receptacle outwardly thereof into a cup, a lever supporting at one of its ends said cup, and means at the other end of said pivoted lever for opening said circuit to said coil when the cup has been substantially filled.

17. In an alarm clock of the class described, an electrical circuit, a plurality of electrically-operated devices in said circuit,
means actuated by the alarm clock for closing said circuit, one of said devices comprising a heater, an article heater served by said heater, means in said article heater to cause an automatic discharge of the heated article, a lever, a receptacle carried by said lever for receiving the discharged article, a frame connected to said lever, and means associated with said frame for opening said electrical circuit when said receptacle has been substantially filled.

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