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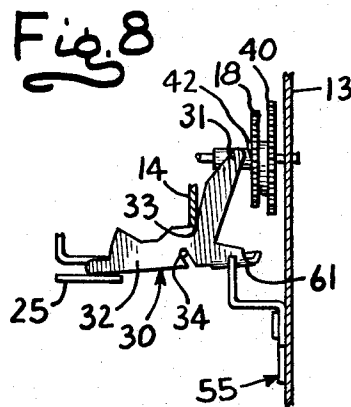
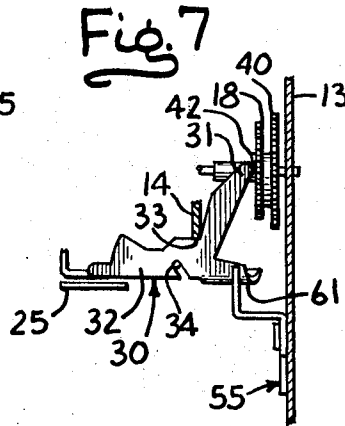
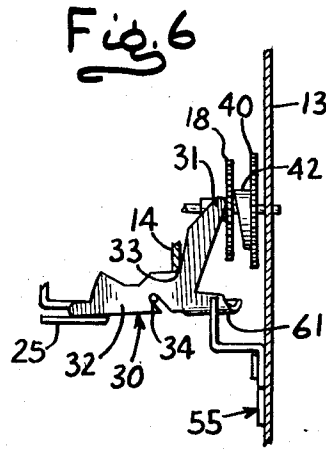
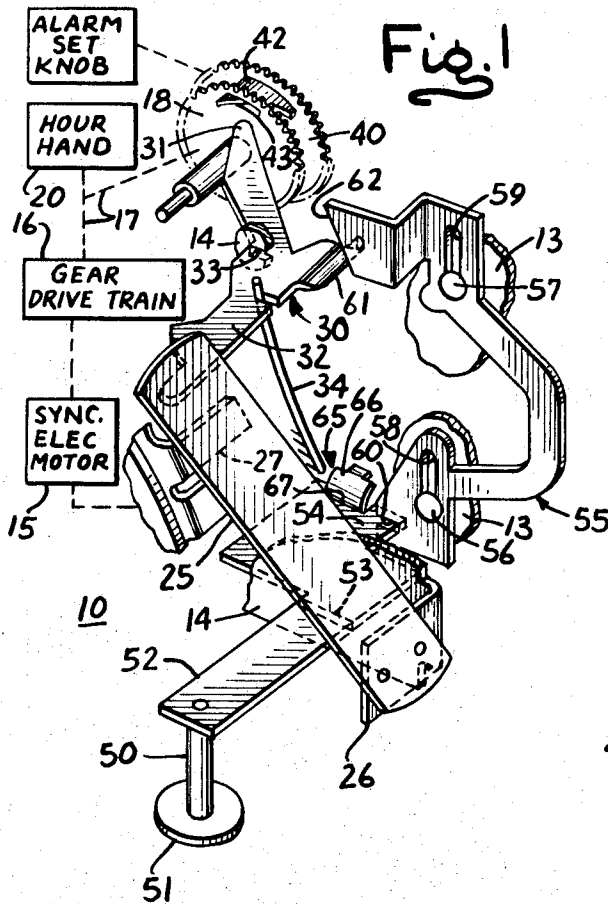
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3,371,478

ALARM CLOCK HAVING TOUCH TYPE SHUT-OFF

Filed Nov. 10, 1966

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

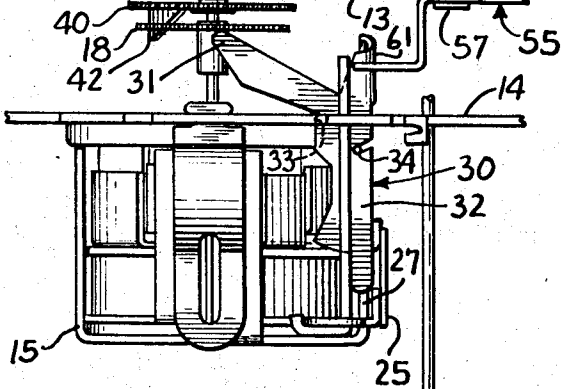
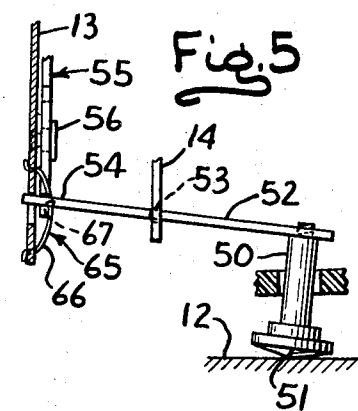
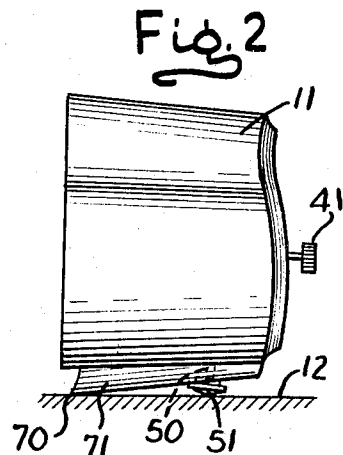
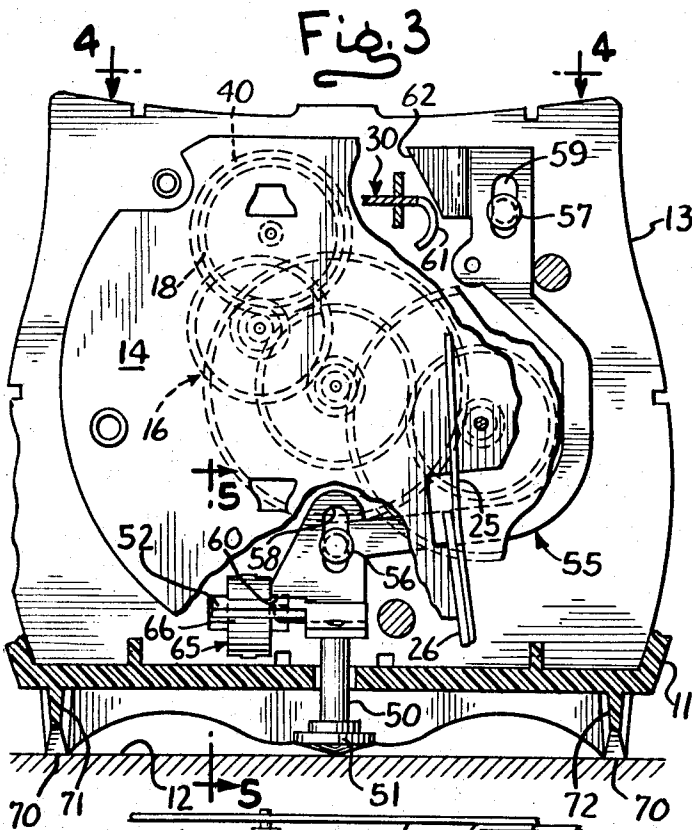


Fig. 4

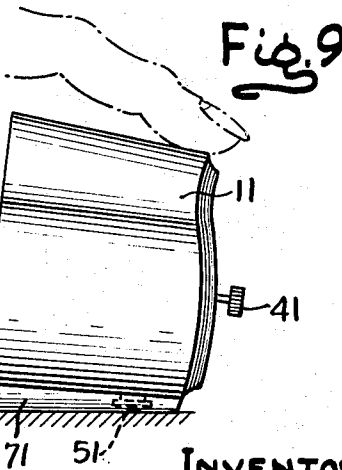


Fig. 9

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**ALARM CLOCK HAVING TOUCH
TYPE SHUT-OFF**

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ABSTRACT OF THE DISCLOSURE

An electric alarm clock including a shut-off arrangement in which slight downward pressure on the housing actuates a blocking lever which coupled to a vertical slide and an alarm control lever shuts off the alarm.

It is an object of the invention to provide an alarm clock having a "top touch" feature in which the alarm is shut off by pressing down on the clock housing but in which the clock nevertheless appears at all times to be firmly seated on the supporting surface, thus providing a more pleasing appearance than prior clocks of this type. It is a related object to provide a touch-controlled alarm clock which utilizes a conventional alarm mechanism having a front plate and in which novel linkage is used to convert downward movement at the rear of the clock to alarm-disabling movement at the front plate and which utilizes space available in conventional alarm clock mechanisms. It is a further object of the invention to provide a touch-responsive mechanism which is economical and fool-proof, ideally suited to quantity production line manufacture.

Other objects of the invention will become apparent upon reading the attached detailed description and upon reference to the drawings in which:

FIGURE 1 is a simplified perspective view of the pertinent portion of an alarm clock mechanism embodying the present invention, with the alarm set and triggered to respond;

FIG. 2 is a side elevation of a clock employing the mechanism of FIG. 1 in the set condition;

FIG. 3 is a back view of the clock mechanism with portions broken away to show the profile of the shut-off slide;

FIG. 4 is a fragmentary top view looking along the line 4-4 of FIG. 3;

FIG. 5 is a fragmentary side view looking along the line 5-5 in FIG. 3;

FIGS. 6, 7 and 8 are a series of fragmentary stop motion views showing the alarm mechanism set, triggered, and shut off respectively; and

FIG. 9 is a side elevation similar to FIG. 2 but showing the clock pressed for shut-off.

While the invention has been described in connection with a preferred embodiment, it will be understood that the invention is not limited to the particular embodiment shown, and that I intend, on the contrary, to cover the various alternative and equivalent constructions included within the spirit and scope of the appended claims.

Turning now to the construction shown in the drawings, the clock mechanism 10 is mounted in a housing 11 seated on a supporting surface 12. The clock frame includes

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front and back frame plates, portions of which have been indicated at 13, 14 respectively. Since electric alarm clock mechanisms are well known in the art, elements common to all such clocks have been purposely omitted or shown simply diagrammatically. Thus the clock includes a small synchronous motor 15 and a gear drive train 16 mechanically coupled via a connection 17 to an hour wheel 18. The hour wheel is coupled to an hour hand 20 which will be understood to have an associated minute hand (not shown) geared to it.

For the purpose of sounding the alarm a buzzer blade 25 is provided in the usual form of a length of spring metal anchored to the clock frame upon a bracket 26 and cooperating with an auxiliary pole 27 formed as part of the pole structure of the motor 15. For enabling and disabling the buzzer blade, an alarm control lever 30 is employed having a first arm 31 and a second arm 32 centrally pivoted at a notch 33 formed in the frame plate 14. The lever is biased clockwise as shown in FIG. 1 by means of a biasing spring 34.

For normally disabling the buzzer blade 25 while triggering it for release at the pre-set time, a gear or index wheel 40 is used concentric with and adjacent to the hour wheel 18, the index wheel being settable in its phase position by an alarm set knob 41. To secure relative axial movement between the two wheels when the hour wheel 18 comes into register with the index wheel 40, a cam 42 is secured on the index wheel capable of registering with a complementary slot 43 in the hour wheel. When the cam and slot are not in register, the cam serves to press the hour wheel 18 away from the index wheel. This causes the alarm control lever 30 to be rocked in the counterclockwise direction (as viewed in FIG. 1) causing the arm 32 of the lever to press against the buzzer blade to prevent the blade from vibrating—in short, the alarm remains turned off.

However, at the pre-set time the slot 43 in the hour wheel rotates into register with the cam so that drop-off occurs, permitting the lever 30 to rock clockwise under the urging of the biasing spring 34, thus freeing the buzzer blade to sound the alarm.

In accordance with the present invention, a shut-off member or plunger is provided which extends downwardly from the clock housing adjacent the rear edge thereof and which is internally connected to a slide member at the front of the clock, the latter being disablingly coupled to the buzzer blade. More specifically in accordance with the invention, a rockable edge is provided along the front edge of the clock housing in constant engagement with the supporting surface, and the shut-off member, which is located rearwardly thereof serves to support the rear of the clock in slightly elevated position so that a light touch applied to the top of the clock housing serves to rock the housing rearwardly to press the shut-off member inwardly and thereby to turn off the alarm. Still further in accordance with the invention movement is transmitted from the shut-off member to the slide at the front of the clock via a coupling lever which extends generally horizontally within the housing.

Thus, referring to the drawings, I provide a shut-off plunger 50 which extends downwardly through the housing and which terminates in a button 51 engaging the supporting surface 12. At its upper end the plunger is con-

nected to a lever 52 which is centrally pivoted at 53 in the frame plate 14 and which has a front end 54. Coupled to the front end of the lever is a shut-off slide 55 which is vertically slidable against the front plate 13. Rivets 56, 57 registering with slots 58, 59 serve to hold the slide captive while permitting vertical movement thereof. Conveniently, the front end of the lever may be coupled to the lower end of the slide by forming a receiving notch 60 in the latter.

For engaging the upper end of the slide, the alarm control lever 30 preferably has an integral extension forming a cam follower surface 61, while the end of the slide is angled to form a downwardly facing camming surface 62. When the plunger is in its downwardly projecting position, the surfaces 61, 62 are out of engagement so that the alarm mechanism is free to sound, but when the plunger is pressed inwardly, the rocking of the lever 52 causes the slide to be drawn downwardly so that the cam 62 on the slide rides against the cam follower surface 61 to rock the alarm control lever 30 into counterclockwise disabling position. For defining the "abling" and "disabling" positions of the plunger, a simple form of frictional detent 65 is used consisting of a bowed spring 66 (FIG. 5) secured to the frame plate 13 and bearing against the root of a registering notch 67 formed in the front end of the lever.

For supporting the front edge of the clock housing for rocking movement, a base is provided on the housing having a rockable edge 70 defined by two short downwardly extending side supports or legs 71, 72. When the plunger is pulled downwardly into its projecting position to set the clock, it not only supports the rear of the clock in a slightly elevated position as shown in FIGS. 2 and 3 but it also forms a tripod-type of support providing a high degree of stability even though the clock is upraised from its usual base.

While the operation will be apparent to one skilled in the art from the foregoing description, it may be helpful to summarize a typical alarm sequence in connection with the stop motion views shown in FIGS. 6, 7 and 8. Assuming that the alarm setting knob is set to the desired wake-up time, the plunger 50 is pulled to its projecting position as shown in FIG. 2. The detent force is sufficient to maintain the plunger extended, supporting the weight of the rear portion of the clock housing. As time passes, the hour wheel rides around on the tip of the cam 42 as shown in FIG. 6, maintaining the control lever 30 pressed counterclockwise to disable the buzzer blade. When the pre-set time is reached as shown in FIG. 7, drop-off occurs and the lever 30 is released so that the buzzer blade 25 is free to buzz in response to the alternating magnetic field of the auxiliary pole 27 under the motor structure.

Sounding of the alarm continues until fingertip pressure is applied to the top of the clock as shown in FIG. 9, rocking the clock housing backwardly around the front edge 70 and causing the plunger 50 to be thrust inwardly. This produces rocking of the motion transmitting lever 52 so that the front end of the lever rides over the detent spring, drawing down the slide 55 so that the cam surface 62 thereon rides against the cam follower 55 surface on the control lever 30. The control lever 30 is thus rocked counterclockwise as shown in FIG. 8, back to its original disabling position, engaging the buzzer blade 25 and thus shutting off the alarm.

As stated, it is one of the features of the present construction that the front edge of the clock remains in contact with the supporting surface at all times. The amount of elevation of the rear portion of the clock with the plunger in its set, projecting position, is so slight that it is not apparent to the casual observer. Thus there is no apparent indication that the clock is being "held up in the air" so that the appearance is improved, and indeed, is the same as clocks which do not possess the touch control feature.

It is one of the further features of the construction that alarm clock mechanisms of conventional design may be utilized, with the touch feature being added with minimum modification and at minimum expense. Only two moving parts are necessary, the shut-off plunger with its associated lever and the vertical slide with its associated cam surface. The lever occupies a normally unused position at the bottom of the mechanism and the slide occupies unused space adjacent the front frame plate. For the purpose of providing clearance for the train of gears and setting gears which normally form a part of the alarm clock mechanism, the slide is formed into offset or "C" shape as shown in profile in FIG. 3.

To facilitate assembly, the plunger 50 may be screwed into the lever 52. Thus, after the clock frame is slipped into the housing, the plunger is simply inserted in the opening provided at the bottom of the housing and its threaded tip screwed tight. The procedure is reversed for disassembly.

While the invention has particular utility in an electric clock, it will be apparent to one skilled in the art that the invention is not limited to an electric clock and that, if desired, the shut-off means at the upper end of the slide may be disablingly coupled to a clapper, or clapper controlling element in a clock of the manually-wound type.

I claim:

1. In an electric clock the combination comprising a clock frame having a frame plate, a housing enclosing the frame and having a rockable front edge for engaging a supporting surface, an A.C. motor having an auxiliary pole and an associated buzzer blade, a clock mechanism drivingly connected to the motor and having an hour wheel, a settable index wheel adjacent thereto, means for producing relative axial movement of one of the wheels from a first to a second position as the hour wheel is rotated into register with the index wheel, means for coupling the said one wheel and the buzzer blade so that when the one wheel is in its first position the buzzer blade is disabled and so that when the one wheel moves into its second position the buzzer blade is released for sounding the alarm, a flat vertically reciprocating slide arranged closely adjacent the frame plate and disablingly coupled to the buzzer blade, a touch-responsive shut-off member connected to the slide and extending downwardly from the housing for engagement with the supporting surface at a point rearwardly spaced from the rockable front edge, said shut-off member being movable between (a) a downwardly projecting position and (b) an inwardly pressed position in which the buzzer blade is disabled to shut off the alarm, said shut-off member having frictional means for normally holding the same in its projecting position for holding the rear portion of the housing slightly elevated from the supporting surface while permitting inward movement of the member upon application of a light downward touch to the top of the clock housing.

2. The combination of claim 1 in which the slide is offset forwardly from the shut-off member and is formed in C shape for clearance of components secured to the frame plate.

3. In an alarm clock the combination comprising a clock frame, a housing enclosing the frame and having a base for engaging a supporting surface, a clock motor having an associated alarm device, a clock mechanism drivingly connected to the motor and having an hour wheel, a settable index wheel adjacent thereto, means for producing relative axial movement of one of the wheels from a first to a second position as the hour wheel is rotated into register with the index wheel, means including a link for coupling the said one wheel and the alarm device so that when the one wheel is in its first position the alarm is disabled and so that when the one wheel moves into its second position the alarm device is released for sounding the alarm, and means including a shut-off member extending downwardly for engagement with the supporting surface, said shut-off member being mova-

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ble between a downwardly projecting clock supporting position and an inwardly pressed position, means including a slide member reciprocating in a vertical plane immediately adjacent the front frame plate of the clock and disabingly coupled to the alarm device, a horizontally-extending lever rigidly coupled to the shut-off member and the slide member so that the alarm device is disabled when the shut-off member is in its inwardly-pressed position, and shut-off member having means for holding the same in its projecting position for supporting the housing slightly elevated from the supporting surface while permitting inward movement of the shut-off member upon application of a light downward touch to the top of the clock housing to shut off the alarm after it has sounded.

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