June 28, 1938. C. R. GAINS 2,122,057

SELECTED TIME REMINDER

Filed Dec. 17, 1935 4 Sheets-Sheet 1

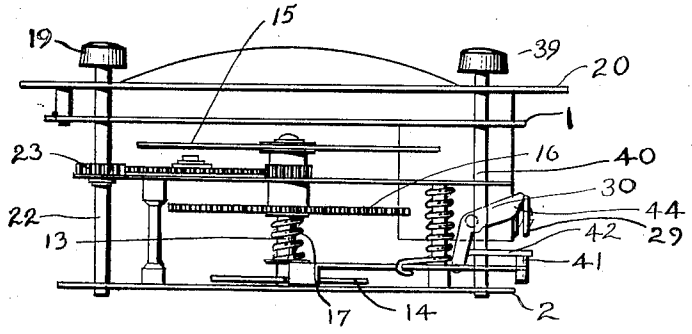


Fig. 1.

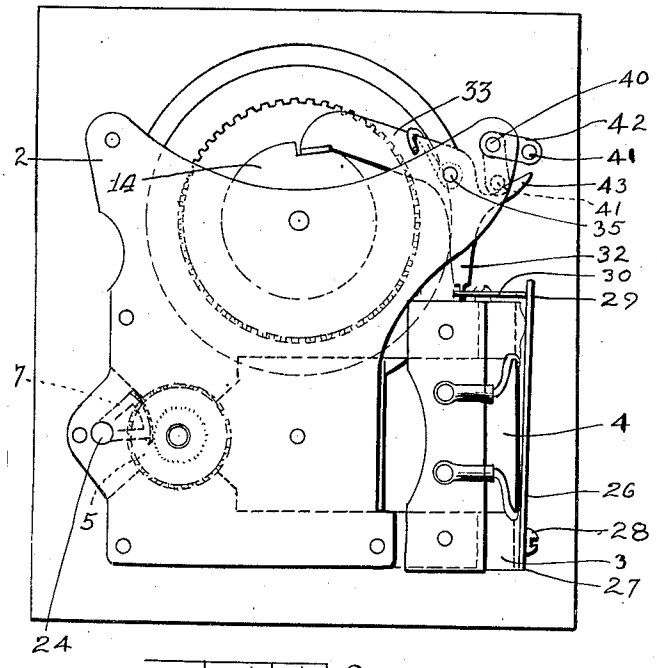


Fig. 2.

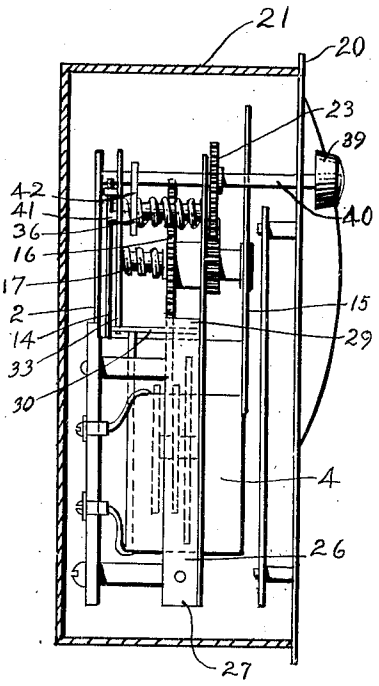


Fig. 3.

Chester R. Gains
INVENTOR.

BY: C. B. McCall.
ATTORNEYS.

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Filed Dec. 17, 1935 4 Sheets-Sheet 2

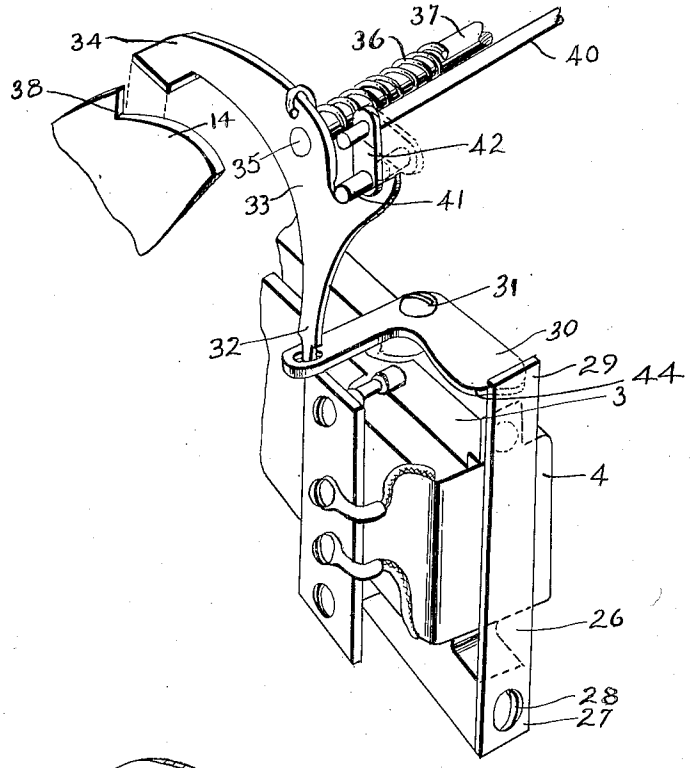


FIG. 6.

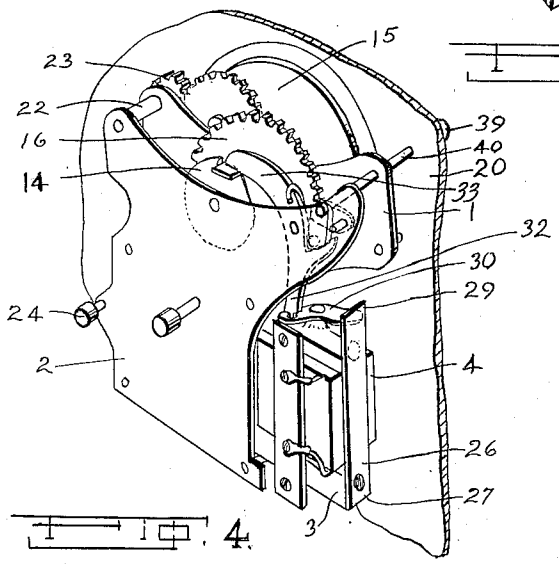


FIG. 4.

Chester R. Gains
INVENTOR.

BY: C. B. McCall.
ATTORNEYS.

June 28, 1938. C. R. GAINS 2,122,057

SELECTED TIME REMINDER

Filed Dec. 17, 1935 4 Sheets-Sheet 3

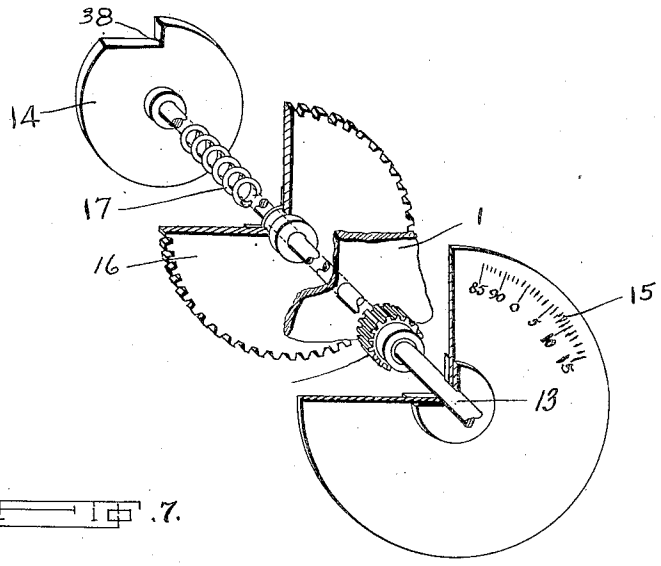


Fig. 7.

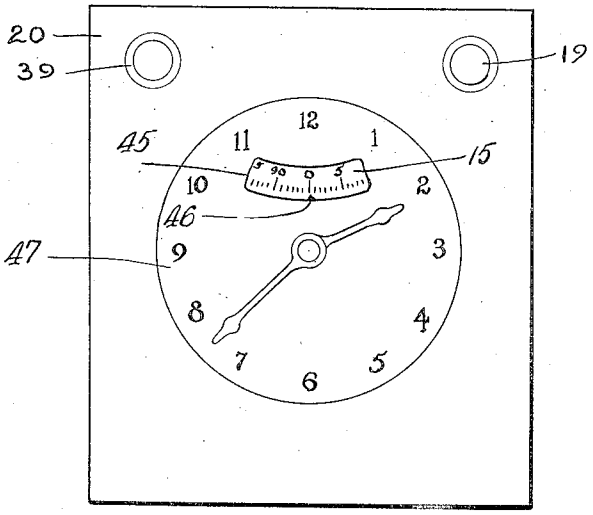


Fig. 5.

Chester R. Gains
INVENTOR.

BY: C. B. McCall.
ATTORNEYS.

June 28, 1938. C. R. GAINS 2,122,057.

SELECTED TIME REMINDER

Filed Dec. 17, 1935 4 Sheets-Sheet 4

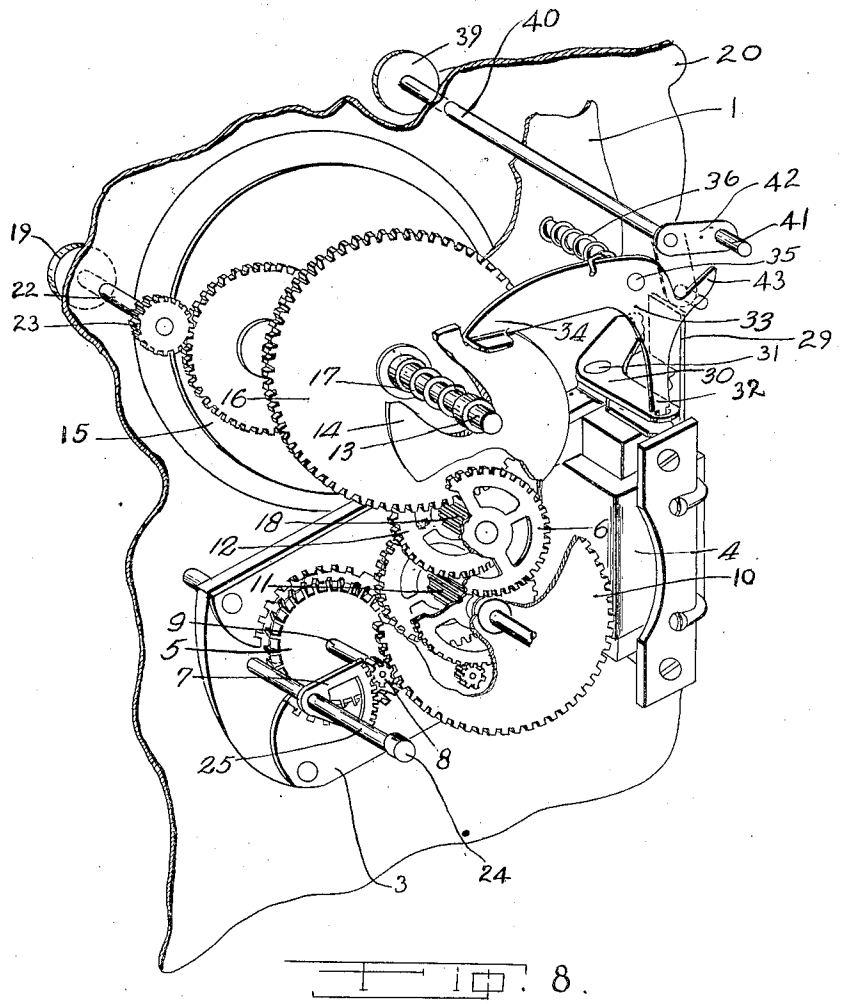


FIG. 8.

Chester R. Gains
INVENTOR.

BY: C. B. McCall.
ATTORNEYS.

Patented June 28, 1938

2,122,057

UNITED STATES PATENT OFFICE

2,122,057

SELECTED TIME REMINDER

Chester R. Gains, La Porte, Ind., assignor to American Timer Corporation, a corporation of Tennessee

Application December 17, 1935, Serial No. 54,865

2 Claims. (Cl. 161—23)

My invention relates to time pieces and more especially to electrical devices for measuring and indicating time intervals, an object being in my invention to provide a selected time reminder wherein one may set the device to sound an alarm, at any desired time ahead, up to a predetermined limit.

A further purpose of my invention is to provide a simple, compact and economical selected time reminder with controls conveniently accessible and with the buzzer or alarm element directly connected with and actuated by the same magnet and coil unit that furnishes the power for the timer movement.

A further purpose of my invention is to provide in an organization wherein the buzzer or alarm element works directly off the same magnet and coil unit used in the power unit for the movement, a movable dial adapted to be selectively adjusted manually from the front of the casing housing the timer, and also automatically rotatable.

Another purpose of my invention is to provide in an economical, compact and simple device for this purpose, an organization, wherein the shaft supporting the movable dial will register within the outline of the view opening on the casing face.

A further purpose of my invention is to provide in operative conjunction with my selected time reminder, a means by which an electric circuit may be connected, a mechanical movement produced or an alarm or light connected in the timer or at any predetermined distance by remote control actuated by my invention simultaneously with the alarm sounded in this device.

I attain the objects of my invention by the device described in the annexed specification, recited in the claims, and illustrated in the drawings wherein like numerals indicate like parts of the invention in the several figures.

Referring to the figures:

Fig. 1 is a top view of the working features of my invention.

Fig. 2 is a rear view of the works in my invention.

Fig. 3 is a side view of the works shown in Fig. 2.

Fig. 4 is a perspective with a cut-away from one corner disclosing some of the working features of my device.

Fig. 5 is a face view of my invention.

Fig. 6 is a perspective of the detailed mounting and control for the buzzer of my invention.

Fig. 7 is a perspective in a one-quarter cut-away disclosing my movable dial, the master gear, and the notched cam, all on the same shaft which is manually adjustable, and

Fig. 8 is an oblique drawing, with a portion of the rear plate removed, showing the connection for the electrical control between the clock movement, and the operating features of my invention.

I am aware that other devices have been designed, made and sold which were adapted to accomplish some of the general purposes of this invention and in fact, I have personally contributed a great deal in the past decade to this art but as I work from time to time in this field, I am prompted to develop inventions that may accomplish the purposes desired, and do so more accurately, with a much smaller number of parts with a mechanical and electrical set-up that defines an entirely new organization that is more convenient to manipulate, more economical to build, simpler to put together and understand and less likely to develop mechanical difficulties than devices for such purposes which I or others may have put on the market before.

It has long been my interest to develop for public use a selected time reminder that would utilize principles in its construction and operation which would show simplicity, economy, convenience, beauty of design and efficiency in its make-up.

I have secured the desired results in a decidedly satisfactory manner in my present invention wherein, I utilize a buzzer blade operatively secured directly to the same U magnet and induction coil that is used in the power unit of the clock movement; while in this same organization, I provide a movable dial for the time settings with access thereto from the front face of the casing in which the mechanism of the device is mounted and I have as a feature of my invention, a movable and a fixed contact point adapted to be connected with a mechanism, a light or a signal for the remote control thereof, simultaneously with the alarm of the buzzer above mentioned.

Referring now to the preferred construction and use of my invention; I derive the power for my selective time reminder from a source of electric energy through a power unit or clock movement operatively connected and including a frame 1 and 2, a U magnet 3, an induction coil 4, a rotor wheel 5, a train of gears 6, and a gear segment 7 for starting the rotor power take-off wheel 5.

The movement or clock power unit for electrical operation is a well known unit and while not a novel feature of my invention yet it provides the power for the desired control of my invention and is of such construction and operation that the salient features of my invention are readily adaptable thereto, as a complete, novel, and practical operating unit as a selected time reminder.

For instance, the reduction gear in the train of gears 6 start with their meshing with pinion 8 on shaft 9 with rotor wheel 5 and connect through a series of gears 10 and pinions 11 until the

lowest rotating movement is found in gear 12 which makes one revolution per hour when running and it is on its shaft that the minute hand is secured, when the movement is used in an alarm clock.

It is to this gear 12 making one revolution per hour that I connect up my control members in a manner and with new operating features which when functioning together and with this clock movement constitutes a new and novel organization.

For the time selecting and setting feature, I provide a shaft 13, that is manually adjustable and supporting a notched cam 14, which is fixed on the shaft 13, a time indicating dial 15 fixed on the shaft and a master gear 16 supported thereby, but independently floating with respect to the shaft.

Gear 16 gets its power to rotate from minute hand gear 12, through pinion wheel 18 and this gear transmits this power to shaft 13 with its fixed cam 14 and dial 15 through spring 17 by the compression force of its friction exerted between gear 16 and the dial or cam as the case may be, that the spring presses up against.

Thus gear 16, when the device is running, causes dial 15 and cam 14 to rotate together since they are fixed on the same shaft, and yet when it is desired to make an adjustment in cam 14's position as may be indicated by the spaced numerals about the periphery of dial 15, the operator will adjust shaft 13 to such position by turning knob 19 which will be most conveniently accessible when registering on the open face 20 of a casing 21 for housing the time reminder. Knob 19 may be directly fixed on shaft 13 for such adjustments or it may be off-set on a shaft 22 and connected with shaft 13 through gears 23.

For instance, when it is desired to adjust my selective time reminder so that the buzzer alarm, which will be described, will go off in fifteen minutes, then the operator will set dial 15 to the numeral 15 shown on the face thereof by turning knob 19 until numeral 15 registers with the marker in the view opening for observing such figures and then the operator will slightly turn knob 24 on shaft 25 causing gear segment 7 to start the rotor power take off wheel 5. When this wheel is started, the device begins to function by electric energy connected therewith through induction coil 4 and U magnet 3 where master gear 16 gets its rotary power from train of gears 6, by which it rotates dial 15 and cam 14 through shaft 13 and compression spring 17.

It will be noted, in the meantime, that master gear 16 is at all times in mesh with the minute hand gear 12 through pinion gear 18 and that this master gear does not rotate when the manual adjustment is made in the position of cam 14 and dial 15.

It will be borne in mind that the zero marking on the dial is in alignment with the notch on the cam and consequently during any selected time interval, the dial 15 and cam 14 will move together as they rotate with shaft 13 and master gear 16. For instance, if the selected time desired to elapse should be forty-five minutes, then the dial setting would be at forty-five, so that when the dial and cam and master gear move through an arc indicated on the dial corresponding to a forty-five minute period the marking on the dial will reach the zero point, at which time the buzzer signal will be made, or the timer will function to open or close an electric circuit.

The mechanism and operating details of the buzzer alarm or other suitable alarm means will now be explained while the explanation will point out the buzzer details in order to disclose the principle of operation involved.

It will be noted that the induction coil 4 is wound about the base end of the U magnet 3 to define the power element in the clock movement in this invention and one of the practical and novel features of this invention is the mechanical arrangement wherein I secure buzzer blade 26 by its fixed end 27 preferably with a screw 28 on U magnet 3 adjacent one end of coil 4 while the free end 29 of buzzer blade 26 registers for vibrating contact with the base end of magnet 3 adjacent the opposite end of coil 4.

This buzzer blade 26 is to be the signal element in my selected time reminder although it is obvious that a bell could be used or light or other suitable signal means as the signal element within the scope of my invention.

This free end 29 of buzzer blade 26 is normally held out of contact with U magnet 3 by lever 30 commonly known as a bell crank lever which is pivotally held in place on frame 1 by a rivet 31. This bell crank lever is operatively controlled by a lever arm 32 of a pivoted trigger 33 which rides the peripheral edge of notched cam 14 with the free end 34 of trigger 33 provided with an integral facing plate to form a wider surface of contact with cam 14. Trigger 33 is pivoted on a screw or pin 35 so that the pivotal movement of this trigger will effect a pivotal movement in bell crank lever 30.

A spring 36 about mounting shaft 37 hooks over trigger 33 and has a tendency to hold the free end 34 of this trigger down against cam 14 while the lever arm end 32 of trigger 33 engages one end of bell crank lever 30 while the other end thereof which contacts with the free end of buzzer blade 26 is shaped to define an eccentric curve which in its movement against the free end 29 of buzzer blade 26, rubs against it with a swiping action when it pushes the blade normally away from contact with U magnet 3.

Thus when the dial movement has reached the zero point the notch in the cam will reach the free end 34 of trigger 33 where this end of the trigger then drops down into notch 38 of cam 14 with the result that lever arm 32 of trigger 33 swings bell crank lever 30 pivotally about releasing the free end 29 of buzzer blade 26 to permit this buzzer blade to be vibrated by U magnet 3 as it drops into contact therewith. When this is done the buzzer blade will continue to vibrate producing a resulting alarm signal or buzzing sound until someone shuts it off by turning knob 39 on shaft 40 to cause shut-off pin 41 on arm 42 to swing down against integral spur member 43 of trigger 33 to lift this trigger at its free end 34 off of cam 14 and at the same time cause the lever arm end thereof to pivotally move bell crank lever 30 where its free cam lever end 44 may force the free end 29 of buzzer blade 26 out again to its normal position away from contact with U magnet 3.

Thus, with this operative arrangement of working parts it will be seen that shaft 13 may be rotatably adjusted by hand with the setting of dial 15 and cam 14 at the same time to the selected time marking without moving the master gear 16 which always meshes with train of gears 6 through pinion 18, and this gear rotates

constantly with the train of gears 6. Thus when the operator makes such an adjustment gear 16 then takes up its control of shaft 13, dial 15 and cam 14 and turns them as it rotates but applies its power to turn them through the clutch action of spring 17 exerting a frictional clutch contact between gear 16, cam 14 and dial 15 or any suitable shoulder, collar or sleeve secured to shaft 13 adjacent gear 16 to receive the rotating clutch driving force thus carried from gear 16 to shaft 13 to turn it with gear 16 and cam 14.

It is thus obvious that regardless of what time it is the dial may be selectively adjusted to start the timer for a selected period of time with the figure on the dial registering at the starting mark, which may be in the center of the dial view opening or to one side if desired, for the selected time to elapse, then the rotor is started and the timer mechanism runs with clock time until the figure on the dial registering "0" at the starting mark when the alarm is sounded, as above explained.

I have thus shown the novel advantage of operatively placing my buzzer blade directly across the induction coil at the base of U magnet 3 which is the same coil and magnet that is used to furnish the operating power for the rotation of the gears in my invention.

Among the other novel features of my invention will be noted that unusual and practical connection of my movable dial in its operative relation to the master gear. For instance, the movable dial and cam each being fixed on their supporting shaft are subject to a selective manual adjustment so that there may be indicated by the dial setting, the number of minutes that it is desired to have elapse before the reminder alarm or signal is made.

However, since master gear 16 is actuated through the train of gears 6 only and since master gear in turn rotates this dial 15, shaft 13 and cam 14 through the clutch action of any suitable form of compression spring 17 when the selective manual adjustment of this dial shaft and cam has been made, it is thus obvious that my dial in its operation is new and novel since it can be selectively adjusted by manual rotation to a selective time setting after which it is released and permitted to automatically rotate with master gear 16.

Another novel feature in this invention is to provide in the organization a movable gear with such a novel operating arrangement in conjunction with a clock face having a face opening therein through which one or more of the selective time interval indicating numerals may be set to register when desired.

The aperture 45 having a central marking 46 is provided in clock face 47 to permit visual access to the time selecting numerals on dial 15.

In a detailed study of the adaptability of this invention, it will be obvious that it will have many uses in the home, about the kitchen and for social purposes. It will be practical and often needed in an office as an appointment reminder. It would be daily needed in a factory and its utility as a means of automatically controlling various manufacturing operations requiring control after the elapse of a predetermined time period is obvious.

Having thus described the nature of my invention, what I claim is:

1. As a new article of manufacture, a selected time reminder comprising in combination a frame, a U-magnet fixed therein, an induction coil wound about the magnet intermediate the ends thereof, a rotary wheel operative between the terminals of said magnet, a vibrator blade disposed across said coil and fixed by one end thereof, a bell crank lever pivoted adjacent the free end of said vibrator blade with its axis parallel to the plane of said blade and its free end contacting the under side of said blade, a notched cam, a dial having a disc form and arcuately spaced numerals indicating intervals of time to be selected, a shaft for the operative support of said notched cam and dial and a second bell crank lever pivoted in its operative position and establishing control connection from the periphery of said notched cam to the first bell crank lever for the control of the latter; means for starting said power unit, means for selectively adjusting said dial and for operating the mechanism for selected time intervals, said first bell crank lever adapted to exert a pressure against said blade away from said coil, said second bell crank lever operatively normally riding the periphery of said notched cam by one end and controllably engaging the end of the first bell crank lever farthest away from said blade by the other end when the free end of said second bell crank lever drops into said notch of the notched cam and means manually acting upon said second bell crank lever and simultaneously lifting the free end thereof pivotally off of said notched cam and effecting a pivotal adjustment of said first bell crank lever for stopping said vibrator blade.

2. In a selected time reminder having a casing, an electric power clock movement, a train of gears connected for control by said power clock movement, a notched control cam, an alarm element fixed at one end, a primary coil across which the alarm element extends, a bell crank lever pivoted adjacent the free end of said alarm element, a second bell crank lever, a horizontal shaft pivotally supporting said second bell crank lever for movement in a vertical plane and said second bell crank lever establishing connection between said notched cam and the first bell crank lever for the operative pivotal control thereof from said notched cam; said first bell crank lever operatively disposed in a position to exert an outward pressure against the free end of said alarm element by pressing up against the bottom surface thereof; said notched cam actuating said second bell crank lever and adapted to hold the said first bell crank lever under said alarm element adjacent the free end thereof until the rotary movement of said notched cam permits the second bell crank lever to drop its free end into said notch releasing a pressure from said first bell crank lever, resulting in shifting the pivotal position of the first bell crank lever and releasing the free end of said alarm element to vibrate freely across said primary coil; said notched cam actuated in its rotation by said clock movement through said train of gears and said first bell crank lever contacting said alarm element by a peripheral cam-shaped end of said first bell crank lever.

CHESTER R. GAINS.