Oct. 5, 1926. 1,602,260

T. N. HICKS

TIMING DEVICE

Filed Sept. 10 1925

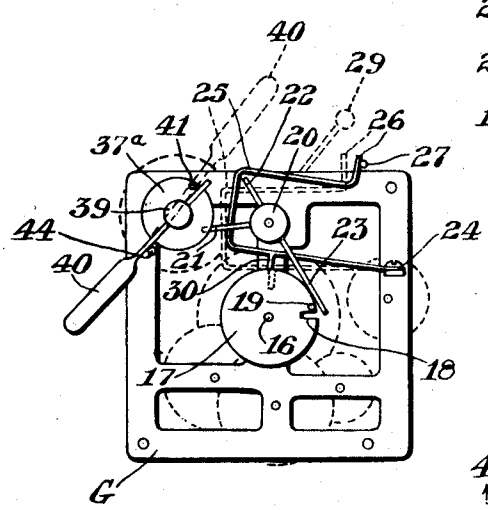


FIG. 2.

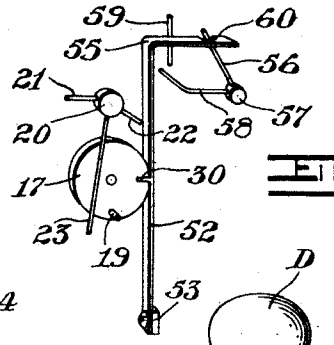


FIG. 5.

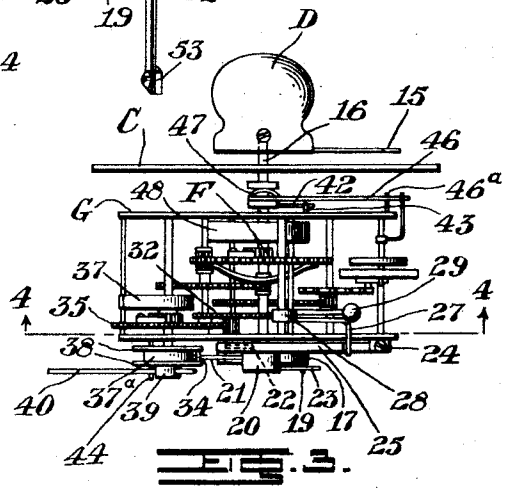


FIG. 3.

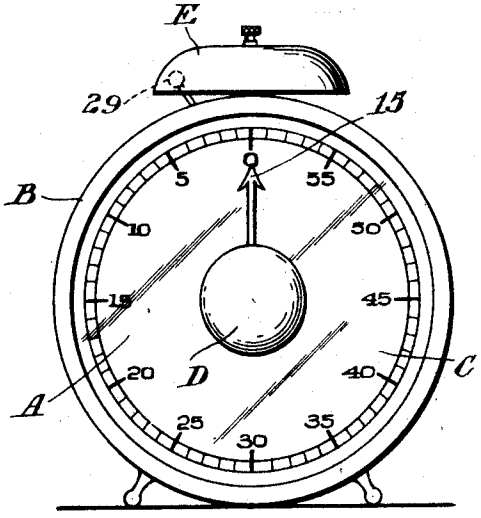


FIG. 1.

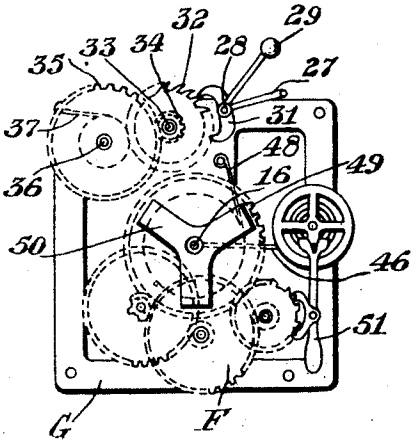


FIG. 4.

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UNITED STATES PATENT OFFICE.

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TIMING DEVICE.

Application filed September 10, 1925. Serial No. 55,519.

This invention relates to improvements in timing devices and more particularly to devices of this character adapted to be set to run for a predetermined period of time and at the end of that period simultaneously stop running and continuously sound an alarm, giving notice that the predetermined interval of time has elapsed.

An object of the invention is to simplify and improve the construction so that the several parts will not be likely to get out of order and will more satisfactorily perform the functions required of them.

Another important object is to provide a device of this character that will perform the functions and will act as a reminder that under different conditions, namely in the office, laboratory, kitchen and household generally.

Yet another object is to provide a simply constructed and efficient device of this character in which the alarm in operation is not limited to a single sound but rings continuously for a short period.

A timing device in which the dial is set as the first operation and then the alarm as a second operation has proven uncertain and therefore unsatisfactory, since as the setting of the dial is the main operation and the one in mind, the setting of the alarm is frequently forgotten. Therefore an important object of this invention is to make it impossible to set the dial until the alarm is set.

A further and final object is to provide a timer that will not easily get out of order and which will be practically fool-proof as far as the operation of setting and winding is concerned.

With the foregoing and other objects in view, the invention consists essentially in the combination, with alarm clock mechanism, of mechanism adapted to be set to run for a predetermined period and to sound the alarm continuously at the end of that period.

Referring now to the drawings in which like characters of reference indicate similar parts in each figure:

Figure 1 is a front elevation of my improved timing device as a whole;

Figure 2 is a rear view of the operating mechanism for timing, with the casing removed;

Figure 3 is a plan view, with the casing removed;

Figure 4 is a view of the back taken on the line 4—4 of Figure 3;

Figure 5 shows a modified form of stop mechanism.

Referring now more particularly to the drawings, A indicates the timing device as a whole, B the outer casing, C the dial face and D the operating handle or knob. The gong or alarm E is also provided, the purposes of which will hereinafter be made clear. The knob D is designed to protrude from the centre of the device and is for the purpose of setting the period for which the mechanism is to run, and for this purpose is provided with an indicator hand 15.

The knob or operating handle D is mounted on the main shaft 16 of the clock mechanism F and on this shaft is also mounted at the outerside of a disc wheel 17 formed with a slot 18 extending inwardly from the periphery thereof, and adjacent the slot a pin 19. Above this wheel and rotatably mounted on the frame G is a hub member 20 provided with a plurality of arms 21, 22 and 23, the arm 23 being substantially longer than the arm 21 which, in turn, is slightly longer than the arm 22, all the arms being spaced from one another and extending substantially at right angles to one another.

Substantially surrounding the hub member and rigidly secured at one end to the frame G as at 24 is a U-shaped member 25 formed of a strip of spring metal, the other end of this member being bent at substantially right angles at 26 to engage with an arm 27; the other end of the arm 27 is connected to the spindle 28 carrying the tongue 29 adapted to engage with the sounder gong E. The U-shaped member 25 is formed with a pin 30 adapted to engage and disengage with the slot 18 in the disc member 17. The spindle 28 is rotatably supported in the frame G and is formed with an engaging member 31 of well known construction to engage with a wheel 32 supported on a spindle 33 parallel with the tongue-carrying spindle and provided with a small gear 34 adapted to mesh with a gear 35 on a shaft 36 parallel with the aforesaid shaft, the tension coil spring 37 being also mounted on the shaft 36.

On the outside of the protruding end of the shaft 36 is rigidly mounted a solid wheel 37[a] formed with spaced flanges 38. The hub 39 of this wheel has an orifice therein through which extends and is rigidly secured a lever-arm 40, whereby the timing mechanism is operated before being set by the rotation of the main shaft 16 through the

operating knob D. The wheel 37ª is also provided with a pin 41 designed to engage with the arm 21 to rotate the hub 20 on the lever 40 being operated to the position shown in full lines in Figure 2.

The operation of the timing mechanism which will be more readily followed by reference to Figure 2 in which the dotted lines indicate the position before setting, is as follows:—

The predetermined period at the end of which the alarm is to be sounded having been ascertained, the lever-arm 40 is moved to the position shown in full lines in Figure 2, causing the wheel 37ª to move from right to left and the pin 41 thereon to engage with the arm 21 of the hub member 20, rotating the latter to cause the arm 22 to press against the U-shaped member 25 lifting the pin 30 out of engagement with the slot 18 in the disc wheel 17 and simultaneously causing the end 26 of the member 25 to contact and exert pressure against the tongue-carrying spindle 27 and thus prevent the tongue 29 from ringing the alarm gong E.

The knob D is then operated anticlockwise, through friction washer 50, setting the hand 15 to the predetermined period of time. This operation causes through the shaft 16 the disc wheel 17 to rotate from left to right, the pin 19 thereon contacting with the arm 23 causing the hub member 20 to rotate, thus disengaging arm 22 from the U-shaped member and allowing pin 30 to ride on the periphery of disc wheel 17 and at the same time, through the arm 46, causing the clock mechanism to start. On ceasing to rotate the knob D, the arm 46 moves quickly backwards to its original position against the pin or stop 46ª, see Figure 3, due to the lost-motion or back lash in clock mechanism, thus causing the escapement 51 to start working and with it the clock movement. Then, as wheel 17 travels back from right to left, the slot 18 will register with the pin 30, allowing the latter to drop thereinto, releasing the pressure on the arm 27 by the bar or member 25, thereby allowing the tongue-carrying spindle to operate the gong E. In the position shown in full lines in Figure 2, the alarm cannot ring.

The normal position of the lever arm 40 is as shown in dotted lines in Figure 2 and in operation this arm is limited in its travel, as indicated by the full lines, by the stop 44 on the frame G.

The starting arm 46 is held in contact with shaft 16 by a friction washer 47 so that the rotation of shaft 16 in setting dial causes arm 46 to press against escapement member 51 moving it to its extreme position. On ceasing to turn shaft 16, arm 46 flies back, due to the backlash in the clock movement, to its original position against pin 46ª thus starting the clock.

In the modified form, as illustrated in Figure 5, the U-shaped member 25 is replaced by a vertical bar member 52 rigidly secured to the frame at its lower end at 53. This bar, as illustrated, is preferably of spring material, the upper end being suitably bent at 55 and having a slot therein, 60, designed to engage with an arm 56 on the hub 57 rotatably mounted on the frame and provided with a second arm 58 adapted to engage and disengage with an arm 59 on the tongue-carrying spindle, whereby the latter is locked and unlocked. The bar member 52 is provided with a stop or catch corresponding to the pin 30 adapted to engage and disengage with the slot 18 in the wheel 17.

The operation of this modified form is as follows: On the mechanism being set and the hub 20 rotated, the arm 22 thereof engages with the member 52 disengaging the pin 30 with the slot 18 in the wheel 17. At the same time the arm 56, in engagement with the slot 60, is moved to the right thereby causing the arm 58 to engage with the arm 59 of the tongue-carrying spindle to lock it. Then, on the predetermined time for which the mechanism is set becoming expired and the rotation of the wheel 17 bringing the slot to register with the pin 30, the member 52 moves from right to left disengaging the arm 58 automatically from the arm 59 of the tongue-carrying spindle and permitting the bell to ring.

The starter arm 46 on the shaft 16 is provided with a friction washer 47, an actuating spring 48, and a loose gear 49 actuated by a friction clutch 50.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings be interpreted in an illustrative and not in a limiting sense.

What I claim as my invention is:—

1. In a timer, the combination with alarm clock mechanism and a main shaft of mechanism comprising a disc-wheel on the main shaft, a hub member rotatably mounted adjacent said wheel, a plurality of spaced arms on said hub member, a U-shaped member of spring material secured to the frame at one end and adapted intermediately to contact with one of said arms, a tongue-carrying spindle rotatably mounted in the frame, an arm connected to said spindle at one end and loose at the other end to engage with the U-shaped member, engaging means on the U-shaped member and receiving means on the disc wheel adapted to engage with one another, a pin on the disc wheel designed to engage with one of the hub arms, a fan

wheel rotatably mounted adjacent the hub member, a pin on said wheel adapted to engage with another of said hub arms, lever-arm means carried by said wheel for operating it, whereby on the wheel being rotated from right to left, the hub member is rotated to cause the arms thereon to engage with the flanged wheel and with the U-shaped member respectively to release the latter out of engagement with the disc wheel and into engagement with the arm of the tongue-carrying spindle, and means for setting the timing mechanism.

2. In a device of the character described, the combination with clock mechanism including an alarm gong and a tongue-carrying spindle, a main shaft, a disc-wheel on the shaft formed with a slot therein and a pin on said wheel, a hub member formed with arms of different length, one of which is adapted to engage with said pin, a second wheel and lever-arm means for rotating said wheel, and means carried by the last-mentioned wheel adapted to engage with an arm of the hub member, a U-shaped member of spring material rigidly mounted at one end on the frame substantially around the hub member and designed to engage with an arm thereon and a pin on the U-shaped member adapted to engage with the slot in the disc wheel, whereby on the lever-operated disc wheel being rotated, the hub member is rotated to raise the U-shaped member out of engagement with the disc wheel on the main shaft, and whereby on the main shaft being operated anticlockwise the pin on the disc wheel engages with an arm on the hub member, an arm on the tongue-carrying spindle adapted to be engaged by the U-shaped member and held inoperative on the U-shaped member being raised, and on the U-shaped member automatically assuming a normal position, to be disengaged to release the tongue-carrying spindle to ring the alarm.

3. In a timer attachment for alarm clocks and the like, a rotatably mounted wheel provided with engaging means, a bar member adapted to engage and disengage with said wheel, a lever-operated wheel provided with engaging means, a rotatably mounted hub member formed with a plurality of arms adapted to simultaneously engage with the wheel and said bar whereby, on the wheel being operated, the bar member is operated to disengage and engage with the disc wheel and means operable by said bar for releasing and locking the alarm.

4. In a device of the character described the combination, with a main shaft having a disc wheel thereon provided with engaging and receiving means, of a lever-operated wheel, a suitably bent bar member adapted to engage and disengage with the disc wheel, a rotatably mounted hub intermediate of the disc wheel and the lever-operated wheel, arms on said hub adapted to engage simultaneously with the disc wheel and with means on the lever-operated wheel and with the bar whereby the bar is operated to release or lock the alarm.

5. In a timing device of the character described, a main shaft, a rotatably mounted hub member intermediate of the main shaft and said wheel, a disc-wheel on the main shaft, a suitably bent bar rigidly mounted at one end and adapted to engage with and retain in silent position the alarm mechanism, a stop on the wheel and the bar and a slot in the disc-wheel, a plurality of arms of unequal length on the hub designed to engage with the bar, the disc-wheel and the lever-operated wheel simultaneously whereby on the lever-operated wheel being moved, the bar is operated to lock the alarm mechanism.

6. In a timing device of the character described, a main shaft, a disc wheel on the main shaft having a slot therein, a rotatably mounted hub having a plurality of arms of different lengths, a stop on the disc-wheel, a suitably bent bar adapted to engage with the alarm mechanism, and with one of the hub arms, a lever-operated stop wheel adapted to engage with another arm of the hub whereby the alarm is set, a stop on the bent arm adapted to engage with the disc-wheel, whereby on the disc-wheel being rotated by the clock movement to engage with said stop the bent arm automatically releases the alarm mechanism.

7. In a timing device, clock mechanism and alarm mechanism, a main shaft, mechanism for locking the alarm and means for starting the clock mechanism simultaneously with the setting of same to a predetermined period of time including an arm or the like on the main shaft whereby, on the main shaft being rotated, the arm engages with the escapement to automatically cause it, through the back lash of the mechanism, to start.

In witness whereof I have hereunto set my hand.

THOMAS NORMAN HICKS.