

Sept. 16, 1924.

1,508,528

W. E. PORTER

TIMING MECHANISM

Filed Feb. 11, 1924

2 Sheets-Sheet 1

Fig. 2.

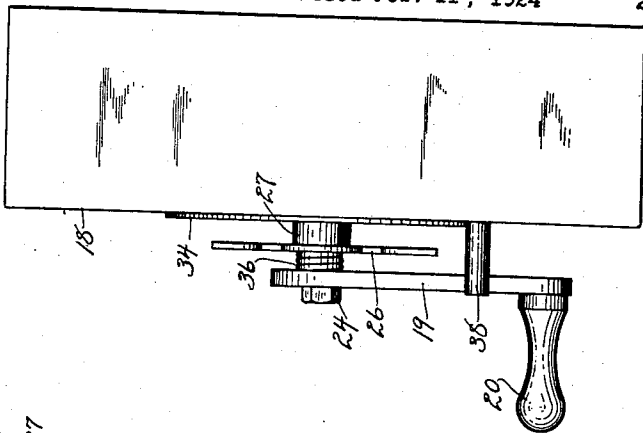


Fig. 3.

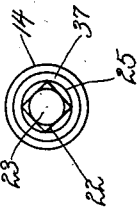


Fig. 6.

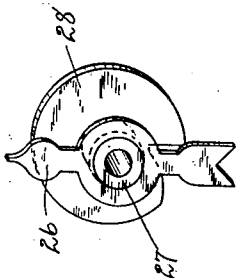


Fig. 7.

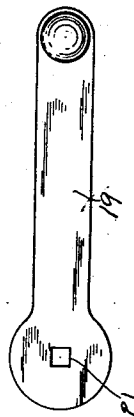
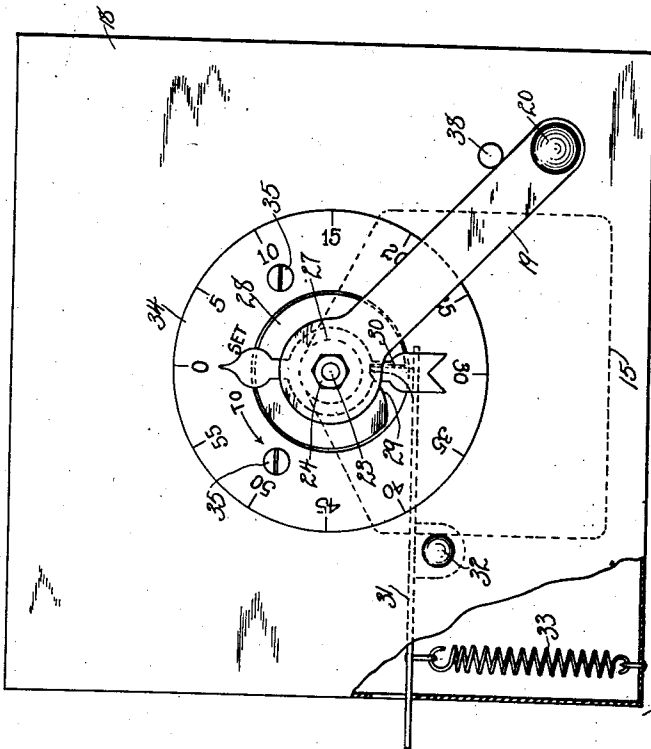


Fig. 1.



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Fig. 4.

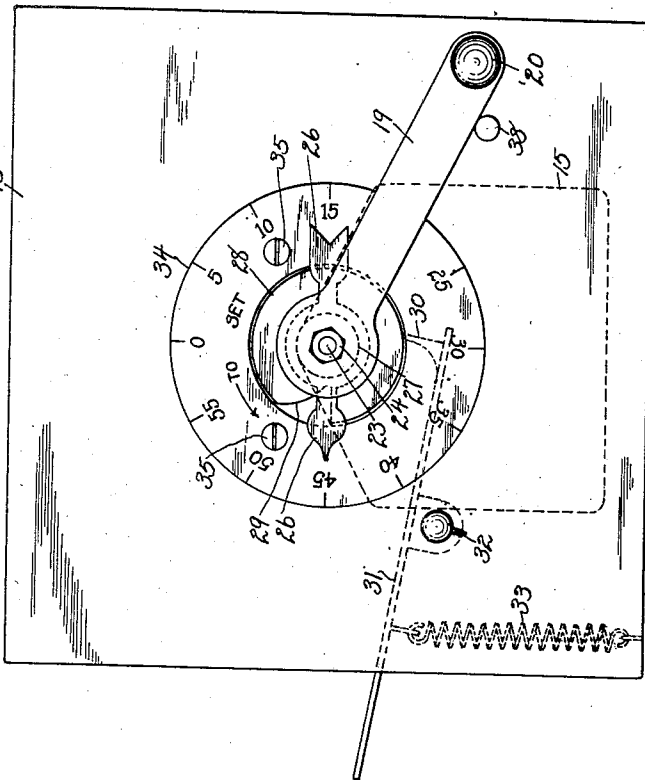
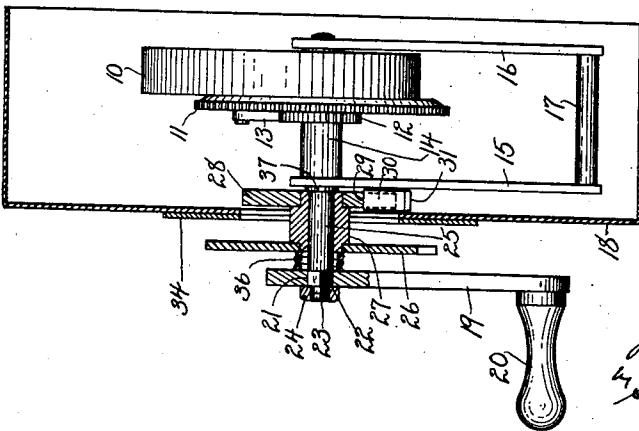


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILSON E. PORTER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO NEW HAVEN
CLOCK CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

TIMING MECHANISM.

Application filed February 11, 1924. Serial No. 691,972.

To all whom it may concern:

Be it known that I, WILSON E. PORTER, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Timing Mechanisms; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Fig. 1 a view in front elevation of a timing-mechanism embodying my invention.

Fig. 2 a view thereof in side elevation.

Fig. 3 a view thereof in vertical central section.

Fig. 4 a view corresponding to Fig. 1 but showing the mechanism as wound and set.

Fig. 5 a detached view in front elevation of the winding-arbor.

Fig. 6 a detached, perspective view of the operating-unit.

Fig. 7 a detached face view of the winding-lever.

My invention relates to an improvement in timing-mechanisms designed to function after the lapse of a predetermined time to positively or permissibly operate another mechanism, such as to shut off the heat in an automatic cook-stove, or to shut off or to turn on an electric current, etc., the object being to produce a simple and reliable timing-mechanism of the character described, in which provision is made for changing the predetermined interval after it has been initially set.

With these ends in view, my invention consists in a timing-mechanism characterized by having its setting-manual and its operating-cam rotatable together and frictionally coupled with the winding-arbor for normal rotation therewith. My invention further consists in a timing-mechanism having certain details of construction as will be hereinafter described and pointed out in the claims.

In carrying out my invention, I may employ any approved time-train, sufficiently indicated herein for the purposes of description and illustration, by a main-spring 10, a main-wheel 11, a ratchet-wheel 12, a pawl

13 co-acting therewith, and a winding-arbor 14, these parts being mounted in movement-plates 15 and 16 united by pillars 17. The particular character, however, of the train forms no part of my present invention. As shown, the train is housed in a rectangular case 18. For winding the main-spring 10, I employ a winding-lever 19 having a handle 20 at its outer end and provided at its inner end with a squared opening 21 fitting over a square section 22 of the forwardly-projecting end of the arbor 14, the extreme forward end of which is threaded, as at 23, for the application of a nut 24, by means of which the lever is held in place upon the arbor.

For setting the mechanism, I employ an operating-unit frictionally mounted upon the shank 25 of the arbor and comprising, as shown, a setting-manual 26 in the form of an arrow, staked upon the outer end of a hub 27 having a running fit upon the said shank 25, and having staked upon its rear end a disk-shaped cam 28 having a drop-off notch 29. The said cam co-acts with the finger 30 of a lever 31 rocking upon a pivot 32 and having its said finger maintained in engagement with the periphery of the cam by a helical spring 33. The outer end of this lever is connected, according to circumstances, with the mechanism to be operated, whatever the character of that may be. The setting-manual 26 aforesaid is located directly in front of and sweeps over a dial 34 concentric with the arbor 14, and fixed to the front of the case 18 by screws 35, or in any other convenient manner.

For frictionally coupling the operating-unit with the main-arbor, so as to cause it to normally turn therewith, I employ a short, helical compression-spring 36 encircling the forward end of the shank 25 of the arbor, and interposed between the inner face of the inner end of the lever 19 and the front end of the hub 27, upon which the setting-manual 26 and the cam 28 are staked, as has been described. The action of the spring 26 is to force the hub 27 from front to rear, so as to jam its rear end against a shoulder 37 of the arbor, the said shoulder being located between the main body of the arbor and the rear end of the shank 25 thereof.

A stop-pin 38, projecting from the front

of the case 18, limits the sweep in either direction of the lever 19 to one full revolution, minus the width of the lever itself.

In the use of my improved mechanism, the lever 19 is grasped by its handle 20 and swung clockwise from the position in which it is shown in Fig. 1 to the position in which it is shown in Fig. 4, whereby the main-spring is wound. The setting-manual 26 is now grasped by the fingers of the operator and turned counter-clockwise until its pointer registers on graduations of the dial the time-interval which it is desired shall elapse before the timing-mechanism releases the lever 31 to the action of the spring 33, the finger 30 of which has, by the act of setting just described, been raised out of the notch 29 of the cam 28 upon the periphery thereof. Thereafter, the action of the time-train, in rotating the main-arbor 14, will slowly turn the cam 28 anti-clockwise, until its notch is brought into position to permit the finger 30 of the lever 31 to drop from the periphery of the cam into it and permit the spring 33 to rock the lever 31 for the positive or permissive operation of the device with which the mechanism is used. Now if at any time after the initial setting of the mechanism, it is designed to shorten or to lengthen the time-interval, the setting-manual 26 is grasped by the fingers and turned in either direction as required, without disturbing the winding-arbor upon which it is mounted, the effort required to so turn the setting-manual overcoming the friction developed by the spring 36, which normally causes the operating-unit to turn with the arbor.

I do not broadly claim a timing-mechanism having a setting-device frictionally coupled with the winding-arbor thereof, but I claim:

1. In a timing-mechanism, the combination with a time-train having a winding-arbor, of a winding-lever for rotating the said arbor, means for securing the said lever against outward displacement on the said arbor, a setting-manual, a plate-cam rotating therewith as a unit, an indicator for co-operation with the setting-manual, and means interposed between the said winding-

lever and setting-manual for frictionally coupling the said manual and cam with the arbor for normal rotation therewith.

2. In a timing-mechanism, the combination with a time-train having a winding-arbor, of a winding-lever for rotating the said arbor, means for securing the said lever against outward displacement on the said arbor, an operating-unit mounted upon the arbor and comprising a setting-manual and a plate-cam, a fixed graduated dial over which the setting-manual sweeps, and means interposed between the said winding-lever and setting-manual for frictionally coupling the operating-unit with the main-arbor with which it normally turns.

3. In a timing-mechanism, the combination with a time-train having a winding-arbor, of a winding-lever for rotating the said arbor, means for securing the said lever against outward displacement on the said arbor, a hub mounted upon the arbor, upon which it has a running fit, a setting-manual and a plate-cam carried by the said hub and revolving as a unit therewith, a compression-spring interposed between the said winding-lever and the setting-manual for frictionally coupling the hub with the arbor, and a dial located in position for the setting-manual to sweep over it.

4. In a timing-mechanism, the combination with a time-train having a winding-arbor, of a winding-lever for rotating the said arbor, means for securing the said lever against outward displacement on the said arbor, an operating-unit mounted upon the said arbor and comprising a pointer-like setting-manual and a plate-cam, a fixed concentric dial located behind the said manual, which sweeps over it, and means interposed between the said winding-lever and setting-manual for frictionally coupling the said operating-unit with the main-arbor with which it normally turns.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILSON E. PORTER.

Witnesses:

FREDERIC C. EARLE,
MALCOLM P. NICHOLS.