Sept. 16, 1924. 1,508,529

W. E. PORTER

TIMING MECHANISM

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Fig. 2.

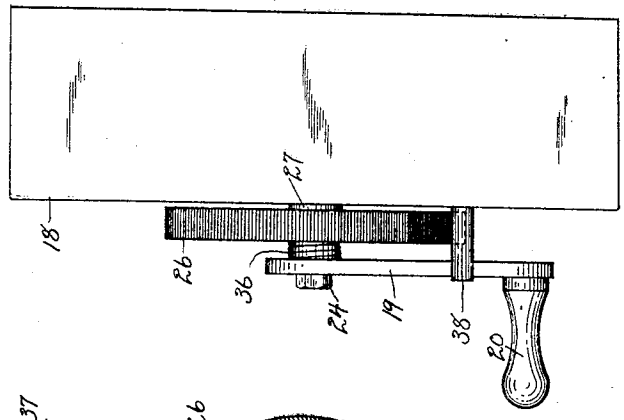

Fig. 5.

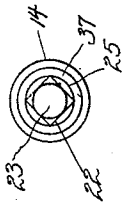

Fig. 6.

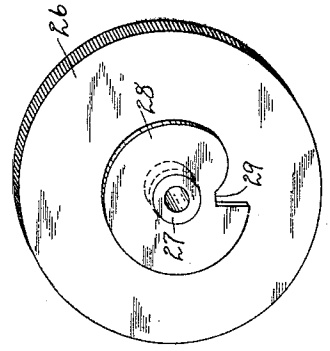

Fig. 7.

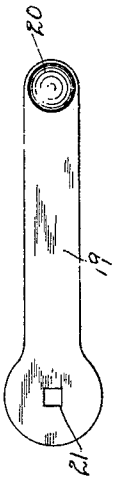

Fig. 1.

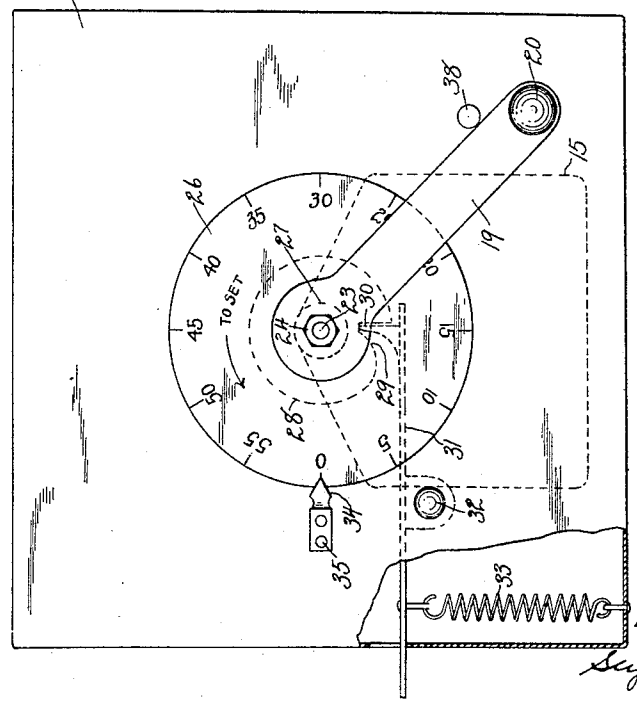

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Fig. 4.

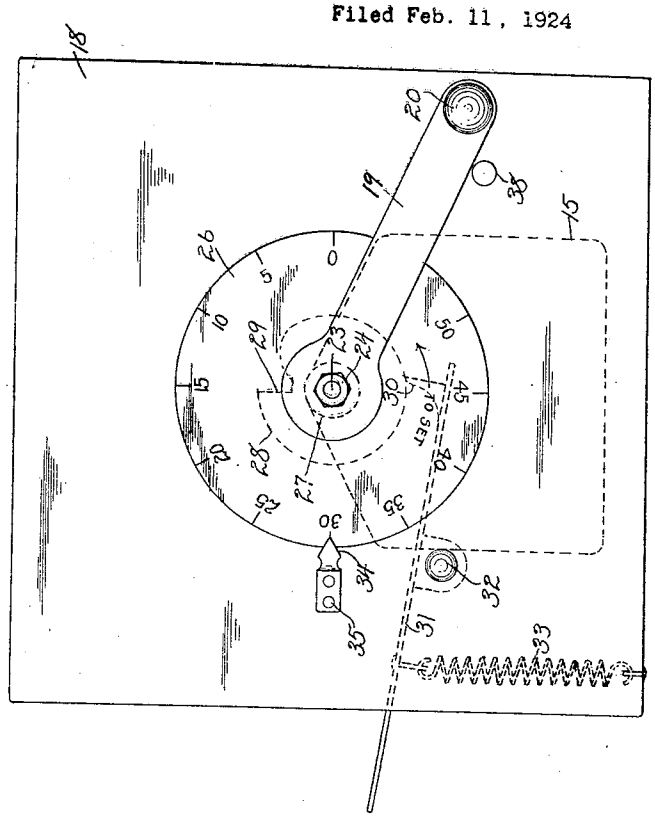
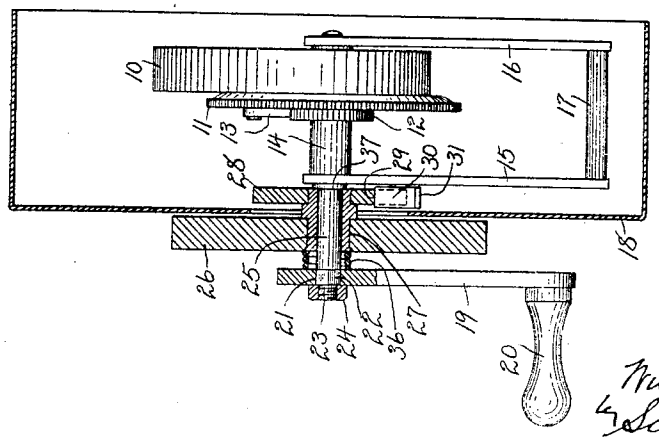


Fig. 3.



Inventor
Wilson E. Porter
by Seymour Pearce
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Patented Sept. 16, 1924. 1,508,529

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. 691,973.

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 as a unit with the winding-arbor for normal rotation therewith, the said manual consisting of a dial. 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 a dial 26 having a milled edge to facilitate grasping it thereby and staked upon the forward end of a hub 27 having a running fit upon the shank 25 aforesaid. The said unit also comprises a cam 28 staked upon the rear end of the said hub and formed with a notch 29 receiving the finger 30 of a lever 31 rocking upon a pivot 32 and having its said finger 30 held in constant engagement with the periphery of the cam 29 by means of a helical spring 33. The outer end of the said lever 31 positively or permissibly co-acts with the mechanism, whatever its character may be, to be controlled by my improved timing-mechanism. The dial 26 co-acts with an indicating-member 34 secured by rivets 35 to the face of the casing 18, the dial being rotated in one direction or the other under the arrow-like end of the member 34. For frictionally coupling the operating-unit described with the winding-arbor, I employ a short compression-spring 36 interposed between the inner face of the handle 19 and the outer end of the hub 27, and operating to crowd the hub rearwardly against a shoulder 37 formed upon the arbor 14 at the inner end of the shank 25 thereof.

A stop-pin 38, projecting from the front of the case 18, limits the sweep of the lever 19 to one revolution in either direction, minus the width of the lever itself.

In the use of my improved timing-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 dial 26 is now grasped by its milled edge and turned counter-clockwise until the graduation upon its face, representing the specific time-interval which it is desired shall elapse before the mechanism releases the lever 31 to the action of the spring 33, is brought into registration with the arrow-like indicating-member 34. The finger 30 of the said lever 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 counter-clockwise, will slowly turn the cam 28 counter-clockwise until its notch 29 is brought into position for the said finger to drop into it and permit the spring 33 to rock the lever 31 for the positive or permissive action of the device with which the mechanism is used. Now, if at any time after the initial setting of the mechanism, as above described, it is desired to shorten or lengthen the time-interval, the milled edge of the dial 26 is grasped by the fingers and the dial turned in either direction, as required, which may be done without disturbing the winding-arbor, upon which the operating-unit is mounted, the effort required to so turn the operating-member overcoming the friction developed by the spring 36, which normally causes the said operating-unit to turn with the arbor.

I am aware that it is old in timing-mechanisms to frictionally couple a setting-mechanism with the winding-arbor of the timing-movement, and do not claim such a structure broadly 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, an operating-unit frictionally mounted upon the arbor and comprising a graduated dial and a plate-cam in fixed relation to each other, a fixed indicating-member adjacent the edge of the dial, and means interposed between the said winding-lever and dial for frictionally coupling the said operating-unit 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 the said arbor, means for securing the said lever against outward displacement on the arbor, an operating-unit frictionally mounted upon the arbor and comprising a graduated dial, a plate-cam, and a hub upon which the dial and cam are rigidly mounted for rotation together, means interposed between the said winding-lever and the dial for frictionally coupling the said operating-unit with the arbor for normal rotation therewith, and an indicating-member having fixed relation to the edge of the dial.

3. In a timing-mechanism, the combination with a time-train having a winding-arbor, of a winding-lever for the said arbor, means for securing the said lever against outward displacement on the said arbor, an operating-unit frictionally mounted upon the arbor and comprising a graduated dial, a plate-cam, and a hub upon which the said dial and cam are mounted in fixed relation to each other, a spring interposed between the said winding-lever and dail for developing the friction required for normally coupling the operating-unit to the arbor, and an indicating-member fixed adjacent to the edge of the dial.

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.