

A. H. WELKER.
 STARTING AND STOPPING DEVICE FOR MOTOR MECHANISMS.
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1,032,094.

Patented July 9, 1912.

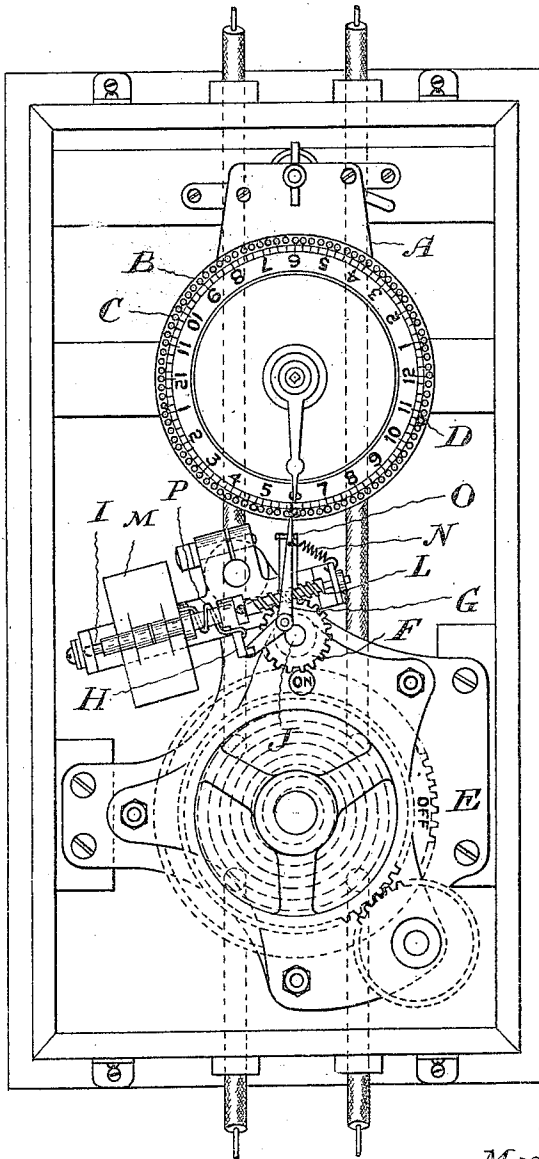


Fig. 1

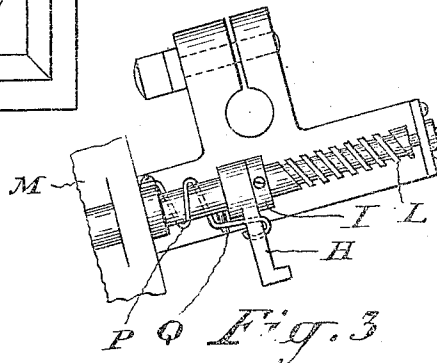
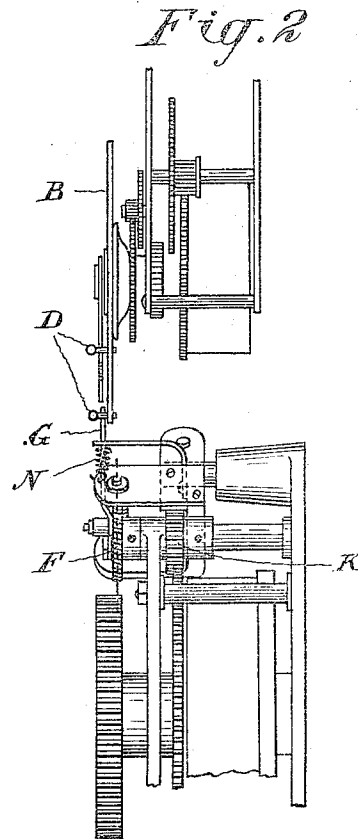


Fig. 3

WITNESSES:

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ALEXANDER H. WELKER, OF BERLIN, ONTARIO, CANADA.

STARTING AND STOPPING DEVICE FOR MOTOR MECHANISMS.

1,032,094.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed July 14, 1911. Serial No. 638,486.

To all whom it may concern:

Be it known that I, ALEXANDER H. WELKER, of the town of Berlin, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Starting and Stopping Devices for Motor Mechanisms, of which the following is a specification.

This invention relates particularly to clock-controllable starting and stopping devices particularly adapted for use with clock work motor devices for actuating electric switches, fluid valves and the like at predetermined times and my object is to construct a device of that kind which will be entirely mechanical, accurate, reliable and yet simple and cheap in construction.

I attain my object by employing as the starting and stopping element proper a lever which is rockable by the controlling clock to release the controlled mechanism and which is then bodily withdrawn from normal position by the controlled mechanism and then by the continued movement of such mechanism returned to its normal position to stop further movement of the controlled mechanism, substantially as hereinafter described and illustrated in the accompanying drawings in which—

Figure 1 is a front view showing my invention as applied to an electric time switch. Fig. 2 is a side elevation of part of the same. Fig. 3 is a front elevation of the driving spindle and the spring cushioned arm carried thereby.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A represents a time clock of any suitable construction and B is a rotary dial driven thereby and provided around its edge with a series of holes C in which pins D may be inserted. All this is, of course, old in the art.

E represents clock-work mechanism of any suitable kind, which may be adapted to actuate an electrical switch or other part. Such devices are also well known. The parts immediately concerned of my invention are the constructions by which the pins on the dial control the starting and stopping of the clock-work motor mechanism.

From the clock-work mechanism E a rotary stop arm carrier F is driven. This stop arm carrier F is secured to a spindle J

journaled on the frame of the apparatus and provided with a pinion K meshing with any suitable gear of the clock-work mechanism E. On this rotary stop arm carrier F the stop arm G is eccentrically fulcrumed. The upper end of this arm normally lies in the path of the pins D and its lower end in the path of an arm H carried by the rotary driven spindle I. This spindle may be driven in any suitable manner from the clock-work motor mechanism, but is preferably provided with a worm L, and this worm is driven by the rotary stop arm carrier F, the rim of which is formed as a worm wheel for this purpose. The spindle I is preferably provided with a fly M to control its rate of movement.

The coil spring N secured at one end to a stationary part and at the other end to the stop arm G tends to maintain it in position to engage the arm H. A stationary stop O limits its movement to insure that its lower end will be accurately in the path of the end of the arm H. This arm is preferably loose on the spindle I and is secured to one end of the coil spring P the other end of which is secured to the spindle. This spring is under tension and provides a yielding backing for the arm to ease the jar when the arm H strikes the stop arm G. A pin Q or any other suitable means engaging the end of the coil spring keeps the latter in a state of tension.

The operation of the device is substantially as follows: When by the movement of the rotary dial B a pin D engages the upper end of the stop arm G it gradually moves the latter until its lower end releases the arm H. The clock-work mechanism is now free to rotate. At the same time the rotary stop arm carrier F is rotated and draws down the stop arm G until its upper end disengages from the pin. By the continued rotation of the stop arm carrier F the stop arm G is returned to its normal position, but its upper end will now be behind instead of in front of the pin by which it has just been engaged. As soon as the arm H re-engages the stop arm G the clock-work mechanism is stopped, but sufficient movement has been permitted to allow it to fulfil its function. No further movement takes place until the next pin in the rotary dial B engages the upper end of the stop arm G. It is evident that the time at which the

mechanism is allowed to operate depends on the position in which the pins are placed on the dial.

From the above description it will be seen that this stopping and starting mechanism will satisfactorily fulfil the objects of my invention as set out in the preamble to this specification.

What I claim as my invention is:—

10 1. In starting and stopping mechanism the combination of a rotary driven part; a rotary stop arm carrier geared with the driven part; a stop arm eccentrically pivoted on the said rotary carrier and adapted when
15 in normal position to be engaged by the rotary driven part to prevent the rotation of the latter.

2. In starting and stopping mechanism the combination of a rotary driven part; a
20 rotary stop arm carrier geared with the driven part; a stop arm eccentrically pivoted on the said rotary carrier and adapted when in normal position to be engaged by the rotary driven part to prevent the rota-
25 tion of the latter; and a stop engageable by the stop arm to prevent the latter from rocking on its pivot in the opposite direction to that in which it is movable to disengage it from the driven part.

30 3. In starting and stopping mechanism the combination of a rotary driven part; a rotary stop arm carrier geared with the driven part; a stop arm eccentrically pivoted on the said rotary carrier and adapted
35 when in normal position to be engaged by

the rotary driven part to prevent the rotation of the latter; a stop engageable by the stop arm to prevent the latter from rocking on its pivot in the opposite direction to that in which it is movable to disengage it
40 from the driven part; and a spring tending to maintain the stop arm in contact with said stop.

4. In starting and stopping mechanism the combination of a driven spindle; a
45 spring cushioned arm yieldingly carried thereby; a rotary stop arm carrier geared with the driven spindle; a stop arm eccentrically pivoted on the said rotary carrier and adapted when in normal position to be
50 engaged by the aforesaid arm to prevent the rotation of the spindle.

5. In starting and stopping mechanism the combination of a rotary driven part; a rotary stop arm carrier geared with the
55 driven part; a stop arm eccentrically pivoted on the said rotary carrier and adapted when in normal position to be engaged by the rotary driven part to prevent the rotation of the latter; a rotatable disk; and a
60 pin carried by said disk adapted to engage and rock said stop arm to free the driven part.

Signed at Berlin, Ont., this 13th day of June 1911.

ALEXANDER H. WELKER.

Signed in the presence of

J. J. A. WEIR,
A. B. POLLOCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."