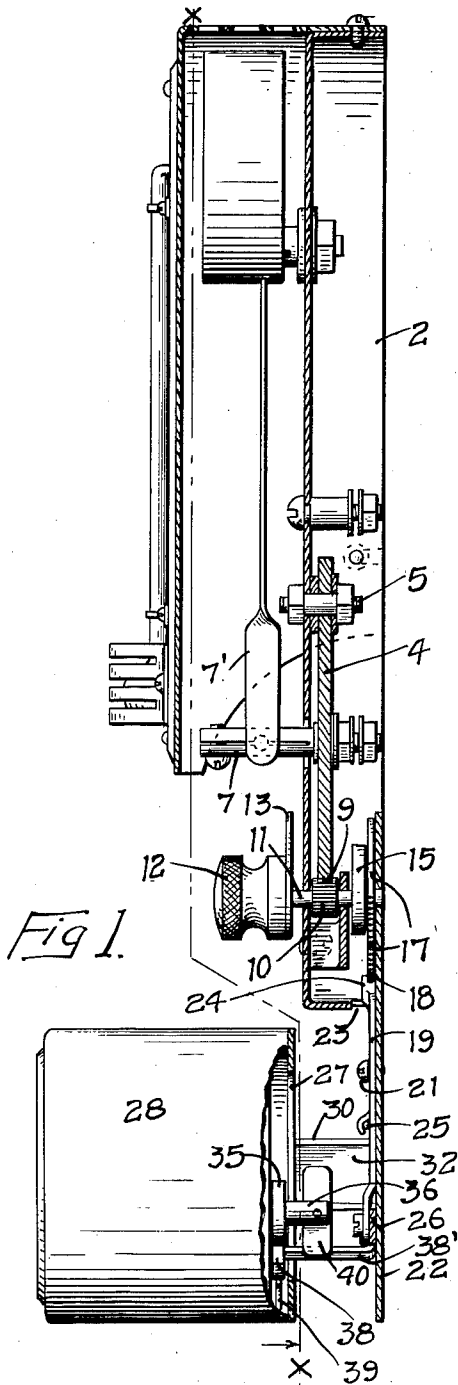


J. C. KERSTETER.
CLOCK ATTACHMENT FOR ELECTRIC THERMOSTATS.
APPLICATION FILED MAY 31, 1910.

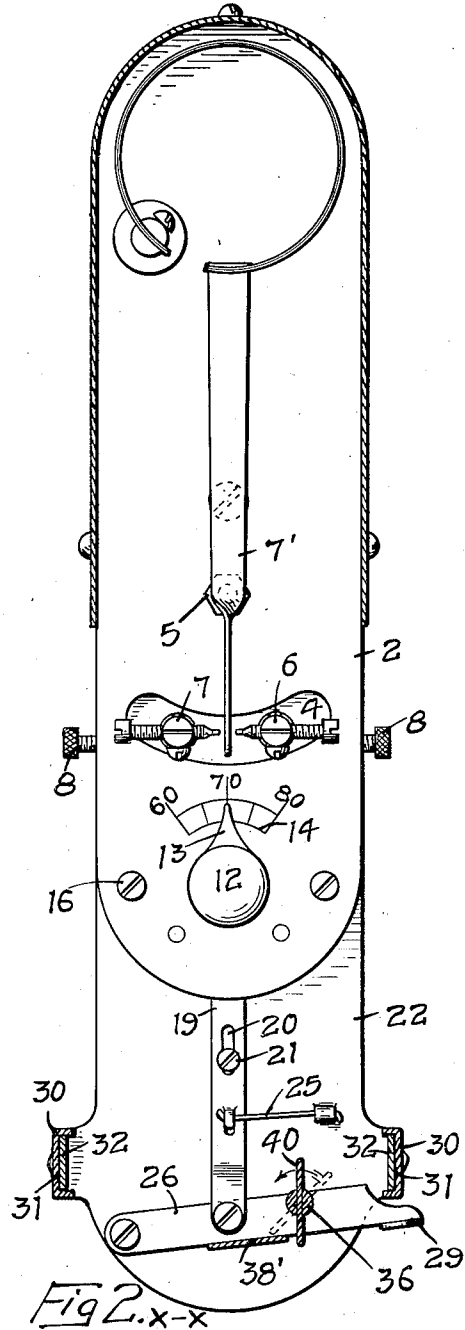
1,012,365.

Patented Dec. 19, 1911.

2 SHEETS—SHEET 1.



WITNESSES
Wm. Whitcomb
J. A. Byrnes



INVENTOR
JOEL C. KERSTETER
BY *Paul & Paul*
ATTORNEYS

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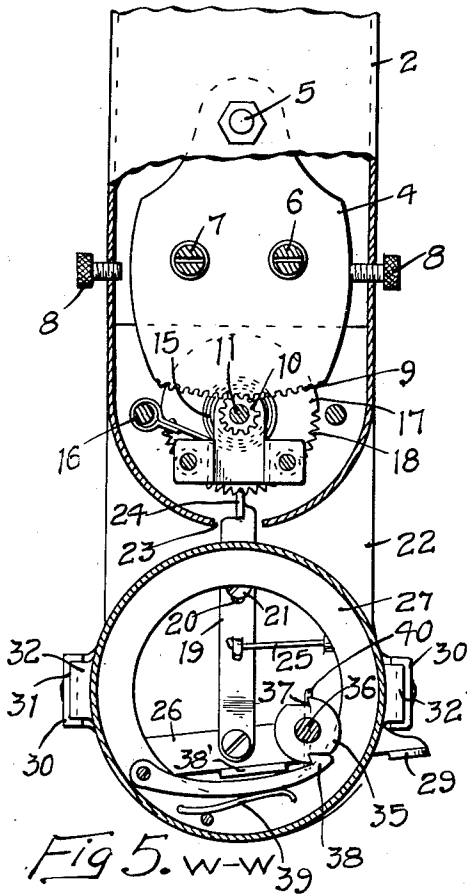


Fig 5. W-W

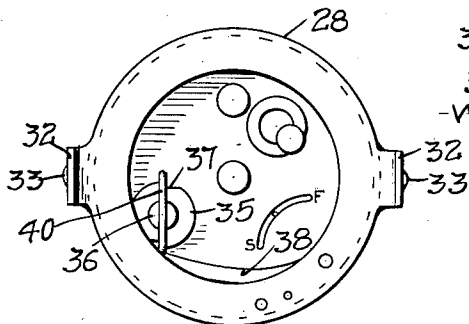


Fig 3.

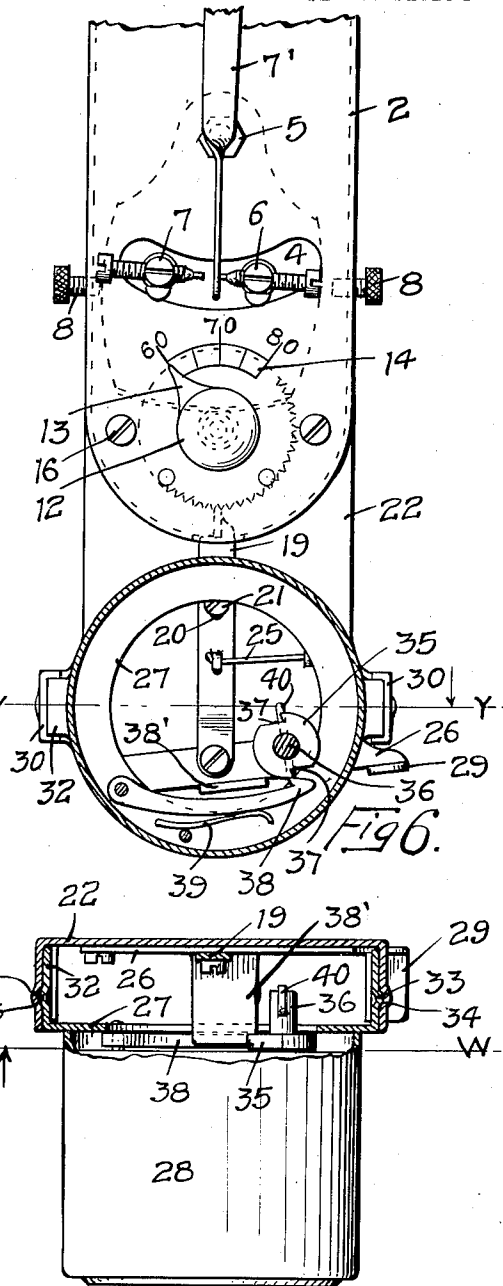


Fig 6.

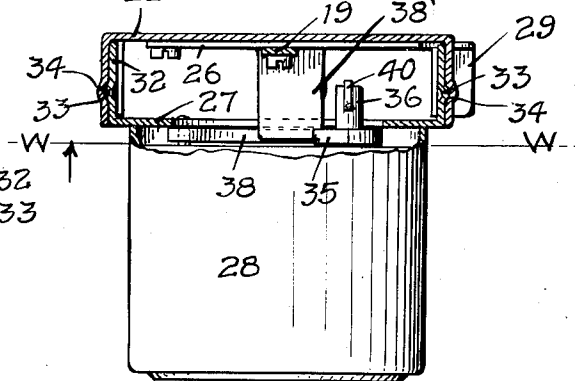


Fig 4. Y-Y

WITNESSES
AM Walstrom
J. A. Byrnes.

INVENTOR
JOEL C. KERSTETER
BY Paul & Paul
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOEL C. KERSTETER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO ELECTRIC HEAT REGULATOR COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION.

CLOCK ATTACHMENT FOR ELECTRIC THERMOSTATS.

1,012,365.

Specification of Letters Patent.

Patented Dec. 19, 1911.

Application filed May 31, 1910. Serial No. 564,171.

To all whom it may concern:

Be it known that I, JOEL C. KERSTETER, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Clock Attachments for Electric Thermostats, of which the following is a specification.

My invention relates to clock or time attachments for thermostats, by means of which a thermostat may be automatically switched at any time, usually early in the morning, from a lower point on the thermostat scale as, for instance, 60 or 65, to 70 or the desired temperature of the house for the day.

The object of my invention is to simplify and improve the mechanisms heretofore employed for this purpose, many of which are more or less complicated and expensive and difficult of access for the purpose of adjustment or repairs.

A further object is to provide a mechanism which will positively lock the thermostat indicator in any position it may be set and permit the movement of said indicator only when the locking device is tripped.

My invention consists generally in a means for supporting the clock on the thermostat which will permit its complete removal from the instrument for the purpose of winding or setting the alarm.

Further the invention consists in a mechanism for positively locking the indicator in any of its adjusted positions, thereby preventing premature and accidental movement.

Further the invention consists in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a side view, partially in section, through the thermostat and clock, Fig. 2 is a sectional view on the line $x-x$ of Fig. 1, Fig. 3 is a rear view of the clock removed from the thermostat, Fig. 4 is a plan view showing the manner of mounting the clock on the thermostat, Fig. 5 is a sectional view on the line $w-w$ of Fig. 4, Fig. 6 is a front view illustrating the mechanism controlled by the clock for releasing the thermostat indicator.

In the drawing, 2 represents the thermostat base, 4 a plate pivoted at 5 on the back side of the thermostat base and carrying the

contact posts 6 and 7 through which the circuit is closed with the thermostat bar 7' in the usual way. Screws 8 are mounted in the side walls of said base in the path of the plate 7', for the purpose of limiting its oscillation, the inner ends of the screws engaging the edge of the plate and said screws being readily adjustable to control the throw or oscillation of the plate. The lower edge of the plate 4 is convex and provided with a series of teeth 9 which mesh with the teeth of a pinion 10 on a post 11 which is journaled in said base and has a finger grip 12 and an indicator 13 that is movable back and forth over a scale 14 on said base. The rotation of the post 10 is for the purpose of oscillating the plate 4 and setting the thermostat for a higher or lower temperature, as may be desired. A spring 15 is attached at one end to a post 16 on said base and at its other end to the post 10, and the tension of this spring normally tends to rotate the post 10 and throw the indicator 13 from the lower to the higher point on the scale. Thus, if the thermostat is switched down at night, the tension of the spring when released will operate to switch the thermostat back to its higher or normal temperature for the day, the travel of the indicator being governed by the adjustment of the screws 8.

For the purpose of locking the thermostat in its "switched down" position, I provide a wheel or disk 17 on the post 10 having a series of teeth 18 on its periphery. A bar 19 is provided with a longitudinal slot 20 through which a screw 21 passes into a plate 22 carried by said base and on which screw the bar 19 is slidable lengthwise through an opening 23 in the lower end of the base. The bar 19 is provided at its upper end with a lug or extension 24 to engage the teeth 18 of the wheel 17 and lock said wheel, the post 10 and the plate 4 against movement in either direction. The bar 19 is held upward in engagement with the teeth of the wheel 17 by a suitable spring, such as 25. This bar locks the indicator post and hand wherever it may be set and positively prevents accidental movement of the post and hand resulting from the jar of passing street cars or the accidental striking of the thermostat in sweeping or dusting the room, and insures the fixed adjustment of the thermostat at any point where it may

be set until such time as the person in charge of it desires to change the temperature of the room.

For the purpose of tripping the locking bar 19 to release the thermostat, I provide a lever 26 pivoted at one end on the plate 22 and a ring 27 is secured by suitable means to the back of an alarm clock 28. This lever has a finger grip 29 projecting beyond the ring and the clock on one side, as indicated in Fig. 5, in position to be conveniently gripped for the purpose of tripping the locking bar 19 and releasing the thermostat indicator. Thus, while the indicator is positively locked in its adjusted position the operator, by depressing the lever 26, may disengage the bar 19 from the toothed wheel and allow the spring to throw the indicator, or the indicator post may be rotated by hand. The thermostat indicator, though normally locked against manual operation, can be made operative by said means upon the tripping of the locking bar 19. The plate 22 has outwardly turned brackets 30 formed thereon, provided with guide-ways 31 which are adapted to receive arms 32 formed on the periphery of the ring 27. The brackets will yield sufficiently to allow the arms 32 to be thrust in between them and each arm is provided with a boss 33 to enter a depression 34 in the bracket and lock the parts together, but permitting them to be separated easily by an outward pull upon the clock. This complete removal of the clock from the instrument is of considerable advantage in case of winding and setting the alarm, as frequently, where the clock is permanently mounted on the instrument and has to be swung to one side for winding purposes, the door casing will obstruct such swinging movement and render it extremely difficult to have access to the back of the clock and the winding post. With my construction all this difficulty is entirely avoided, as the clock can be easily pulled off its supports, wound and adjusted, and replaced in a very short space of time.

For the purpose of operating the indicator from the alarm mechanism of the clock, I provide a disk 35 secured on the alarm post 36 and having notches 37 to receive a dog 38 pivoted at one end of the ring 27 and normally held in engagement with the periphery of said disk by a spring 39. This disk and dog prevent the alarm clock from running down. The dog normally drops into one of the notches 37 in the disk 35 and locks the alarm post against revolution, as indicated in Fig. 5. When the thermostat is switched down, as indicated in Fig. 6, the operator will depress the lever 26 to trip the bar 19 and in doing this the bracket 38, carried by the lever 26, will engage the dog 38 and push it out of its notch in the disk 35, allowing the disk to rotate slightly,

as it will do through the lost motion in the gearing of the clock, so that when the dog returns after the release of the lever 26, it will contact with the periphery of the disk 35, as shown in Fig. 6, and remain in that position until the alarm goes off. When this occurs, the alarm post and the disk 35 will revolve until the dog enters the notch 37 on the other side of the disk, whereupon the revolution of the disk will be stopped and further movement of the alarm mechanism will also be checked until it is again released. Without this device, the alarm mechanism, when released, would run down and it would be necessary to wind the alarm every day, whereas, with this attachment, the winding of the alarm once a week is sufficient. The other end of the alarm post is provided with a finger grip 40 which, in the revolution of the post, contacts with the bracket 38 and trips the lever 26 automatically. The device will thus operate automatically at any predetermined time to trip the locking bar 19 and allow the indicator post spring to return the indicator to any desired point, or at any time by depressing the lever 26, the instrument can be manually set though it is normally positively locked against accidental movement.

I claim as my invention:—

1. The combination with a thermostat, having an adjusting mechanism and means for automatically shifting said adjusting mechanism in one direction, of means for normally locking said mechanism against movement by said shifting means, and a time device arranged to trip said locking mechanism at a predetermined time, said locking mechanism being capable of manual operation at any time to release said adjusting mechanism.

2. The combination with a thermostat, having an adjusting mechanism, and means for automatically shifting said adjusting mechanism in one direction, of means for normally locking said mechanism against premature movement in either direction, said means including a locking bar, and a trip lever connected therewith, and a time device arranged to operate said trip lever at a predetermined time, said lever being capable of manual operation at any time to release said adjusting mechanism.

3. The combination with a thermostat, having an adjusting mechanism, and means for automatically shifting said adjusting mechanism in one direction, of means for normally locking said mechanism, said means including a sliding spring-pressed locking bar and a trip lever connected therewith, and a time device arranged to operate said trip lever at a predetermined time, said trip lever being capable of manual operation at any time to release said adjusting mechanism.

4. The combination, with a thermostat having a manually controlled adjusting mechanism, and a spring put under tension by the movement of said adjusting mechanism in one direction, a stop for limiting the movement of said adjusting mechanism in the other direction, means for normally locking said adjusting mechanism against the tension of said spring, a time device arranged to trip said locking mechanism at a predetermined time, said locking mechanism being capable of manual operation at any time to release said adjusting mechanism, for the purpose specified.

5. The combination, with a thermostat having a manually controlled adjusted mechanism and a spring put under tension by a movement of said adjusting mechanism in one direction, of a plate secured to said thermostat and having forwardly projecting brackets provided with depressions, a clock having arms provided with bosses to enter said depressions and temporarily secure said clock and plate together, said clock having an alarm post provided with a finger piece and a controlling device for said adjusting mechanism mounted on said plate in the path of said finger piece.

6. The combination, with a thermostat having a manually controlled adjusting mechanism and a spring put under tension by a movement of said adjusting mechanism in one direction, of a plate depending therefrom, a locking means for said adjusting mechanism including a toothed disk, a sliding, spring-pressed bar mounted on said plate and arranged to engage the teeth of said disk, a trip lever pivoted at one end on said plate and pivotally connected with said bar, said trip lever having a projecting finger piece at its free end and a bracket intermediate to its ends, and a time mechanism mounted on said plate and having means for engaging said bracket to actuate said trip lever, substantially as described.

7. The combination, with a thermostat having a manually controlled adjusting mechanism, means for automatically shifting said adjusting mechanism in one direction, of means for controlling the movement of said adjusting mechanism, a time device for actuating said controlling means at predetermined intervals, and means for limiting the period of operation of said time device.

8. The combination, with a thermostat having a manually controlled adjusting mechanism, means for automatically shifting said adjusting mechanism in one direc-

tion, of means for normally locking said mechanism, a time device arranged to trip said locking mechanism at a predetermined time, and means for limiting the period of operation of said time device.

9. The combination, with a thermostat having a spring actuated manually controlled adjusting mechanism, of means for normally locking said mechanism, a time device arranged to trip said locking mechanism to allow said spring pressed adjusting mechanism to move automatically in one direction, and means for regulating the period of operation of said time device.

10. The combination, with a thermostat having a manually controlled adjusting mechanism, and a spring arranged to be put under tension by the movement of said adjusting mechanism in one direction, of means for normally locking said mechanism, a time device arranged to trip said locking mechanism at a predetermined time and allow the tension of said spring to move said adjusting mechanism in the other direction, and means for regulating the period of operation of said time device, said means including a notched disk secured to the alarm post of said time device and a spring pressed dog adapted to enter the notches in said disk, said locking mechanism having means for engaging said dog to move it out of its notch when said spring is put under tension by the manual operation of said adjusting mechanism.

11. The combination, with a thermostat having a manually controlled adjusting mechanism, means for automatically shifting said adjusting mechanism in one direction, of means for locking said mechanism against premature movement in either direction, and a time device arranged to trip said locking mechanism at a predetermined time.

12. The combination with a thermostat, having an adjusting mechanism and means for automatically shifting said adjusting mechanism in one direction, of means independent of the shifting means for locking the adjusting mechanism against premature movement in either direction, and a time device arranged to trip said locking mechanism at a predetermined time.

In witness whereof, I have hereunto set my hand this 21st day of May 1910.

JOEL C. KERSTETER.

Witnesses:

GENEVIEVE E. SORENSSEN,
J. A. BYRNES.