

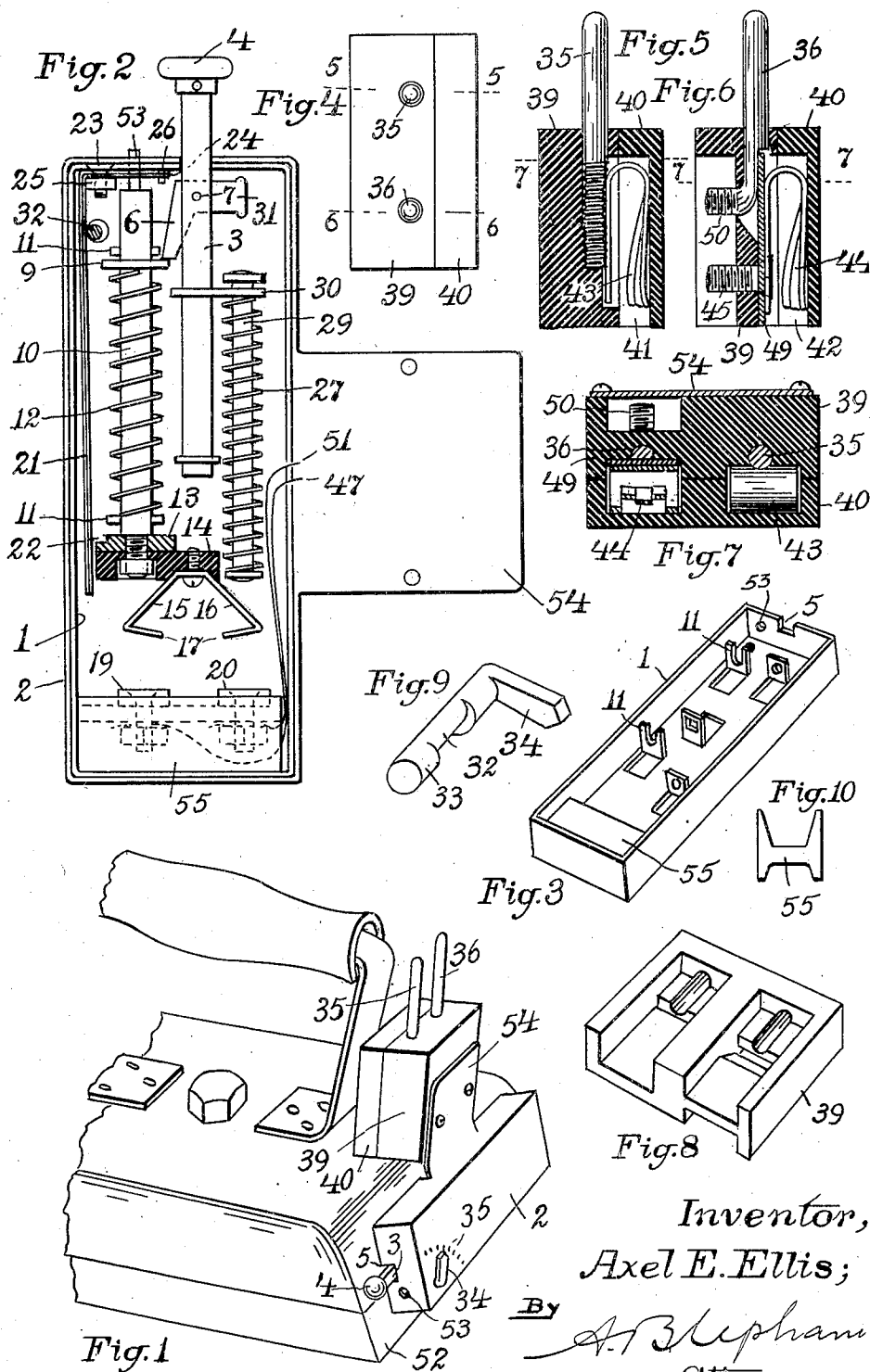
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THERMOSTAT

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UNITED STATES PATENT OFFICE

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THERMOSTAT

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Flatirons, if left for too long a time with the current turned on, are subject to the danger of becoming overheated and thereby either scorching the garments being ironed, or even setting the table and the house afire. The object of this invention is the construction of a thermostat which can be instantly attached to any well known form of electric flatiron having spaced terminal pins.

In the drawings forming part of this specification, Fig. 1 is a perspective view of a thermostat embodying my invention and mounted upon an electric flatiron. Fig. 2 is a plan view on an enlarged scale of the operative portions of the thermostat. Fig. 3 is a perspective view of the base unprovided with the operative parts. Fig. 4 is a plan view of the member by means of which the thermostat is attached to the terminal pins of a flatiron. Fig. 5 is a section on the line 5—5 in Fig. 4. Fig. 6 is a section on the line 6—6 in Fig. 4. Fig. 7 is a horizontal section partly on the line 7—7 in Fig. 6, and 7—7 in Fig. 5. Fig. 8 is a perspective view of one of the two sections composing the attaching block. Fig. 9 is a perspective view on an enlarged scale of the eccentric device for adjusting the heat controlled element of the thermostat. Figure 10 is an end view of the insulating block shown in Figs. 1 and 3.

The base 1 of the thermostat carries all the operative parts, the latter being supported in bearings struck up from the bottom plate of the base, as shown in Fig. 3, the open top being closed by a cover 2 telescoping thereon. The operative parts include a stem 3 having a button 4 and slidable through a notch 5 in an end of the base. This stem bears a pawl 6 pivoted thereto at 7, which pawl is designed to engage a shoulder 9 on the shank 10 slidably supported in bearings 11, 11, a helical spring 12 pressing against the shoulder 9 and bearing 11 serving to push the shank in opposition to the urging of the button 4.

To the end of the shank 10 is attached a cross head 13 and an insulating block 14, as shown in Fig. 2, bearing contact fingers 15, 16, preferably consisting of a single length of spring metal bent into an inverted V and having in-turned terminals 17. When the

button 4 is pressed inward to its limit, the terminals 17 are put into touch with the contacts 19, 20 and thereby made to complete a circuit connected therewith. For retaining these terminals or circuit closing element in operative position, a spring detent 21 is provided which engages the small shoulder 22 in the cross head 13, provided the temperature is sufficiently low, the same being composed of two unequally expanding metals, as brass and steel, in a well known manner. The foot of this detent 21 is bent at right angles to the main body, and attached to the base 1 by a screw 23 passing through the end of the base and the foot 24 into a nut or block 25. A pin 26 provides additional security for the same.

For returning the stem and button 3, 4 to their normal position, a helical spring 27 mounted on a pin 29 and bearing against a shoulder 30 on the stem, serves the purpose. The pawl 6 is provided with a tail 31 so proportioned that when the stem and button have been pushed inward to the limit and the detent 21 has engaged the shoulder 22, the tail 31 comes against the end of the pin 29 and thereby forces the pawl 6 out of its engagement with the shoulder 9. The spring 27 then throws the stem and button to their outward limit. At this limit the tail 31 meets the end wall of the base 1 and thereby swings the pawl 6 into position to engage the shoulder 9 when the parts 10, 13 and 14 are released by the detent 21.

To adjust the detent for different degrees of temperature, I provide a cam 32 formed by suitably reducing an intermediate section of a round rod 33 whose upper part is bent over and shaped into an indicator finger 34 designed to co-operate with markings on the exterior of the cover 2, as at 35. By turning the finger 34, the detent 21, which rests against the cam portion 32, has its resilient pressure against the end of the shoulder 22 increased or diminished as desired. So long as the detent rests against the reduced portion of the cam, the detent acts as a lock to prevent the withdrawal of the cam-member, but when it is turned to the position illustrated in Fig. 2, the cam-member can be removed if desired.

The means for attaching this thermostat

to a flatiron preferably consists of a two-part block of insulating material, bearing terminal pins 35, 36, the part 39 receiving the pins, and the part 40 having recesses 41, 42 for holding spring sockets 43, 44 into the grip of which the terminal pins of the flatiron are to be inserted. The spring socket 44 is held in place by a screw 45 which penetrates a partition 46 of the block-section 39, and becomes a binding post for one of the lead wires, as 47, running to the contact 19. An insulating plate 49 separates the spring socket 44 from the terminal pin 36, which is partially cut away for the purpose, and is bent at right angles and threaded to form a second binding post 50 to which the lead wire 51 is attached.

The other spring socket 43 is held in place by the engagement therewith of the threaded section of the terminal pin 35, as shown in Fig. 5. As shown in Fig. 7, both spring sockets are laterally enlarged to enable terminal pins of different distances apart to be inserted therein, different diameters of pins being taken care of by the resilience of the sockets.

When the bridging switch 15, 16 has closed the circuit by being put in touch with the contacts 19, 20 as above described, and the terminals of a source of current have been engaged with the pins 35, 36, the current passes from the pin 35 to the spring socket 43 and thence to one of the terminal pins of the flatiron, through the heater elements in the flatiron and back to the other terminal pin of the flatiron. From the latter, the current passes to the spring socket 44, to the binding post 45, through the wire 47 to the contact 19, through the bridge 15, 16 to the contact 20, from the latter through the wire 51 to the binding post 50, terminal pin 36 and back through the applied leading wire to the current-source.

As shown in Fig. 1, the base 1 is suspended in contact with the heel of the section 52 of the flatiron which contains the heating elements, thereby transmitting the heat to the thermostat from the hottest portion of the flatiron.

To render it visually evident that the thermostat circuit is closed, the end of the shank is prolonged in a pin 53 which, when the cross head and shank 13, 10 are in their retracted position and the circuit is broken, protrudes through a hole in the end of the base and cover 1, 2, as shown in Fig. 2. Hence whenever the pin 53 is visible the operator can know the circuit is broken, and when the pin is out of sight, the circuit is closed.

As shown in Fig. 10, the insulating block 55 is channelled on two opposite sides, the shallower channel being for the reception of the contacts 19, 20, and the deeper one for the nuts of the screws which hold the contacts in

place and which serve as the binding posts for the lead wires 47, 51. This channelling of the insulating block is by far the most economical method of manufacturing such a block in providing it with recesses for the contacts and binding posts and nuts, since the same can be produced in long strips and cut off at desired lengths.

As shown in Figs. 1 and 2, the cover 2 is formed with a leaf 54 by means of which the united cover and base are attached to the two-part block 39, 40, this leaf serving also to cover the recess in which are the binding posts 45, 50.

In the event that the detent 21 does not engage the shoulder 22 owing to the fact that the temperature of the thermostat is high enough to bend the detent out of reach of the shoulder, then the spring 12 pressing against the shoulder 9 instantly forces back the shank 10 and breaks the circuit at 19, 20.

What I claim is:

1. A thermostat comprising a slidable circuit closing device, a push button having a detent adapted to be engaged with said device, a spring for returning said device to normal, and a heat controlled device adapted when cool to engage said circuit closing device and to retain it in its circuit closing position, said detent being adapted to release said device when the push button reaches the limit of its circuit closing position.

2. A thermostat comprising a slidable circuit closing device, a slidable stem having a push button, a slender rod slidably supported bearing circuit closing means, a spring for returning the latter to its normal position, a heat controlled detent for retaining said circuit closing means in their circuit closing position when at a predetermined temperature, a pawl carried by said stem and adapted to engage said slender rod, and means for tripping said pawl when said slender rod has been pushed to its limit.

3. A thermostat comprising a slidable stem, a spring for its retraction, a slender rod bearing circuit closing means, a spring for returning said rod to its normal position, heat controlled means for retaining said circuit closing means in its closing position, and a pawl carried by said stem and adapted to be engaged with said rod, said pawl having a tail adapted to throw the pawl into and out of said engagement at the respective ends of said rod's travel.

4. A thermostat comprising a case, a slidable stem, a spring for its retraction, a slender rod bearing circuit closing means, a spring for returning said rod to its normal position, and heat controlled means for retaining said circuit closing means in its closing position, said case having a hole in line with said rod, and the latter having a pin projecting therefrom through said hole when in its normal position.

5. A thermostat comprising a case, a slidable stem operative from outside said case, a spring for its retraction, a slender rod bearing circuit closing means, a spring for returning said rod to its normal position, and
5 heat controlled means for retaining said circuit closing means in its closing position, said case having a hole through its wall, and said rod having means coacting with said hole
10 for visually showing when said rod is in its normal position.

6. In a thermostat having a case and a thermostatic element therein, a cam for the adjustment of the latter consisting of a round
15 pin having an intermediate portion cut away to form a cam surface bearing against the said element, and a handle fixed on the outer end of said pin; the said case having bearings rotatively receiving said pin; whereby the
20 latter can be introduced through said bearings from the outside of said case, and by the engagement of its cut-away portion with said element is held against removal.

In testimony that I claim the foregoing invention, I have hereunto set my hand this
25 6th day of February, 1923.

AXEL E. ELLIS.

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