April 30, 1929. G. W. UFFORD ET AL 1,710,955

THERMOSTATIC PLUG

Filed May 19, 1927

Fig. 1.

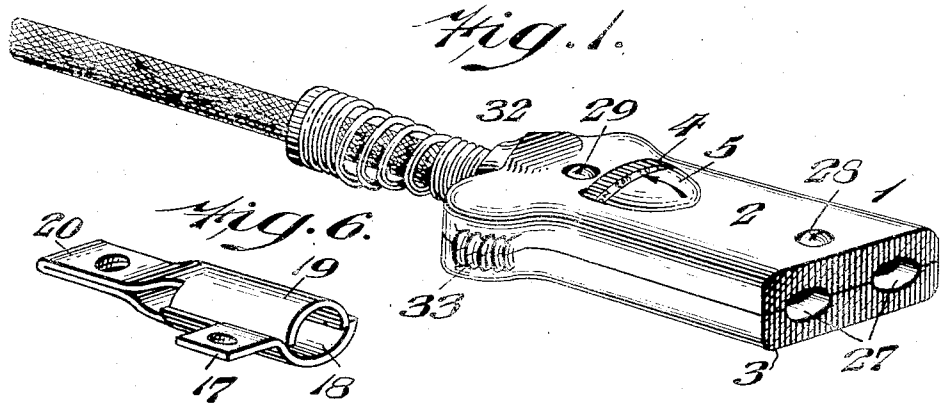


Fig. 6.

Fig. 2.

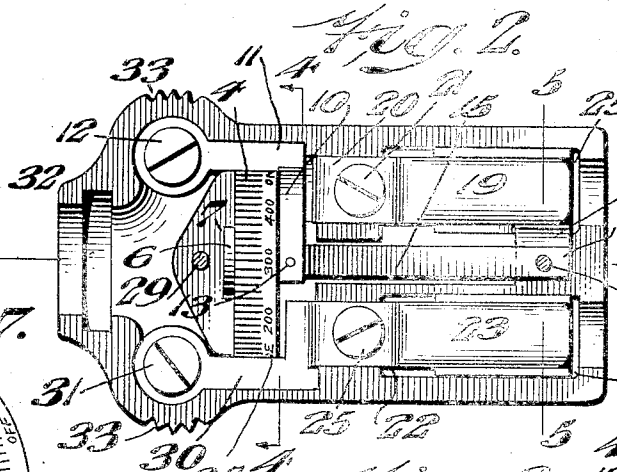


Fig. 7.

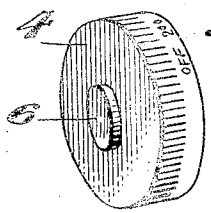


Fig. 8.

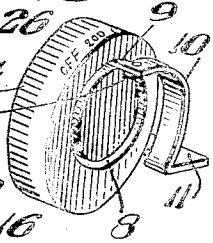


Fig. 3.

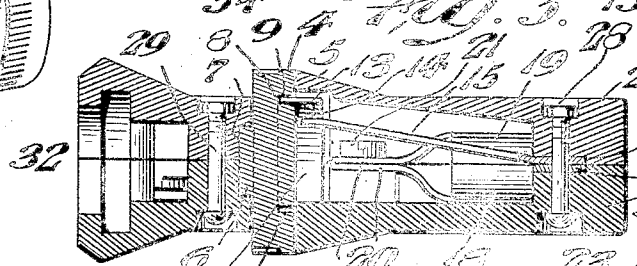


Fig. 4.

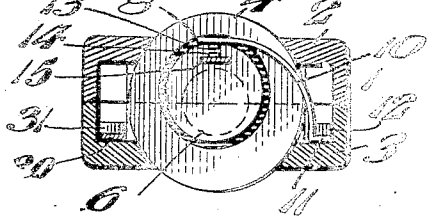
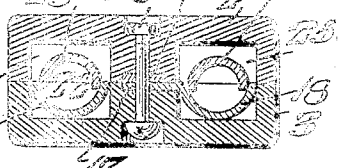


Fig. 5.



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UNITED STATES PATENT OFFICE.

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THERMOSTATIC PLUG.

Application filed May 19, 1927. Serial No. 192,765.

Our invention relates to a novel construction of a thermostatic plug, which is adapted to be attached to an electrical flat iron, or any other electrical heating appliances using alternating current, whereby a novel heat control is readily and instantaneously attained by the rotation or adjustment of a rotatable disc positioned in substantially the longitudinal median line of the plug housing in such a way that its periphery protrudes from the top and bottom thereof, so as to be readily manipulated, said disc having an eccentric groove cut in a wall or face thereof and provided with indicia or graduations on its periphery graduated to the number of degrees Fahrenheit which the operator wishes the heating appliance to retain.

By our novel device the heat emanating from the appliance through the pilots thereof acts upon the thermostatic metal located in the center of the plug and attached to one of the contact clips which is a whole component, and attached to the thermostatic metal.

Our invention further consists of a plurality of contact points, one of which is carried by the thermostatic metal and is juxtaposed to an upper contact point which is carried by a member actuated by the eccentric groove of said rotary disc in such a manner that a wiping motion is given across the surfaces of the contact points, thereby keeping them clean, said contact points being made from a non-magnetic, and nonfusible material.

Our invention further consists of a novel construction of a contact clip having an integral portion, which is in direct contact with an end of the thermostatic metal, the contacting portions of said thermostatic metal and the extension of said contact clip being held in assembled position by one of the fastening devices which secure the housing sections together, the thermostatic metal being so positioned in the center of the plug that it derives the heat from both the contact clips, and when the appliance is cold, the disc is set to "off" position, thereby allowing the circuit to be broken, and when one sets the graduated disc to a certain number of degrees the appliance receives that designated heat and the groove within the disc is set so that it will hold the circuit complete until it receives that amount of heat before the thermostatic metal deflects from its point of contact which breaks the circuit.

Our invention further consists of a novel construction of a sectional housing having a centrally disposed transverse recess in said housing members and a bearing in which is seated the hub of the rotatable disc having on its opposite wall an eccentric groove, said rotatable disc being axially revoluble on about the longitudinal median line of the plug housing, so that all the parts have a symmetrical, well-balanced, and pleasing appearance, and said disc is readily manipulated by a thumb and finger of the operator.

To the above ends, our invention consists of a novel construction of a thermostatic plug, composed of two housing sections within which is contained and mounted the centrally disposed rotatable adjusting disc having indicia on its outer periphery, said disc being provided with an eccentric groove engaging a member carrying a contact point, which is juxtaposed in proximity to a contact point carried by the thermostatic material which is in electrical contact at all times with one of the contact clips.

It further consists of other novel features of construction and advantage, all of which will be hereinafter pointed out in the specification and claims appended hereto.

For the purpose of illustrating our invention we have shown in the accompanying drawings one form thereof which is at present preferred by us, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which our invention consists can be variously arranged and organized and that our invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Figure 1, represents a perspective view of a thermostatic plug embodying our invention.

Figure 2, represents a plan view of the bottom member of the plug with the cover removed.

Figure 3, represents a longitudinal section on line 3—3 of Fig. 2, the cover or cap being also in section.

Figure 4, represents a transverse section on line 4—4, Fig. 2.

Figure 5, represents a transverse section on line 5—5, Fig. 2.

Figure 6, represents a perspective view of one of the contact clips detached showing the

lateral extension which contacts with the thermostatic metal.

Figures 7 and 8, represent perspective views of the rotary disc in detached position viewed from opposite sides thereof.

1 designates our novel construction of thermostatic plug, the same comprising a cover or cap member 2 and the bottom or body portion 3, which constitutes the plug housing, which is provided with a rotary disc 4 positioned at about the center of the longitudinal median line of said housing, its outer periphery being substantially flush with a top boss 5, as seen in Figs. 1 and 3, and being also flush with the bottom of said housing whereby a neat and finished appearance is given to the device. The rotary disc 4 is provided with a centrally disposed hub 6, which has its bearing in the seat or recess 7 formed in the two members 2 and 3, as will be understood from Figs. 2 and 3. On the wall of the rotary disc 4 opposite to the hub 6 is formed a groove 8, which is eccentric to the hub 6 and to the axis of rotation of said disc and in said groove 8 is positioned the lateral extension 9 of the spring arm 10, whose lower end is deflected as indicated at 11 and held in position by the screw 12, which is threaded into the body portion 3, as will be understood from Fig. 2. The lateral member 9 carries the contact 13, which is juxtaposed to or in vertical alignment with the contact point 14 carried on the thermostatic arm 15, which may be of any thermostatic metal or metal which is affected by variations of temperature. The terminal 16 of the thermostatic arm 15 is in contact with the portion 17 of the contact clip 18, the portions 17 and 18 being integral or in one piece as will be understood from the right of Fig. 5, and from Fig. 6. Above the trough shaped member 18 is the correspondingly shaped integral resilient member 19, which is formed in one piece with the bottom portion of the clip as will be understood from Fig. 6, the contiguous bent portions being indicated at 20 and being secured in position by the screw 21, as seen in Figs. 2 and 3.

The foregoing description applies to the right hand contact clip seen in Fig. 5, and to the upper contact clip seen in Fig. 2, said clip being seen in detached position in Fig. 6. The left hand contact clip 22, seen in Fig. 5 and at the lower portion of Fig. 2 is of conventional construction and comprises the two resilient trough shaped members 23 and 24 of the usual construction, whose rear ends are deflected in the same manner as already described with reference to Fig. 6 and are retained in the bottom housing member by the screw 25. The contact clips as seen in Fig. 5 are positioned in recesses 25 and 26 in the housing 1, which are provided with the openings 27 for the reception of the pilots or heating appliances to which the device is attached. The sections 2 and 3 which comprise the housing 1, are secured together by screws, bolts or other fastening devices 28 and 29, the fastening device 28 passing through the terminal portions 16 and 17 and serving to secure them in contact at all times. The strip 30 is at all times in contact with the contact clip 22, being held in position by the screw 31, so that the current is at all times passing through 30 and 22. The left hand or top portion 32 of the housing is adapted for connection with a source of electrical supply and the housing at its sides is provided with a circular, ratchet knurled portion 33 for enabling the operator readily to attach or detach the device to the electrical heating appliances. The top periphery of the disc 4 is provided with numerals ranging from "off" to 500 as indicated at 34 in Fig. 2, and has a straight ratchet knurl as will be understood from Figs. 1 and 2, so that it can be readily manipulated.

The operation is as follows:—

When the device is in use, the heat emanating from the appliance through the pilots of the same, acts upon the thermostatic metal 15 located in the center of the plug and attached to one of the contact clips, which is a whole component, and attached to the thermostatic metal 15. Since the thermostatic metal 15 is located in the center of the plug, it derives the heat from both the contact clips in their entirety and when the appliance is cold the graduated disc 4 is set to the "off" position, thereby allowing the circuit to be broken and when said disc 4 is set to a certain number of degrees, the appliance receives that designated heat and the eccentric groove 8 within the disc is set, so that it will hold the circuit complete until it receives that amount of heat before the thermostatic metal 15 deflects from its point of contact which breaks the circuit. The revolving of the adjusting disc 4 with its groove in practice gives a wiping motion across the surfaces of the juxtaposed contact points 13 and 14, thereby keeping them clean at all times, said contact points being made from non-magnetic and non-fusible material. The contact clips may be constructed so as to receive square or round pilots, and are interchangeable. The plug sections or housing are made of black bakelite and the adjusting disc 4 of red bakelite.

Our novel device, which can be attached to electric flat irons or any other heating appliance using alternating current, controls the heat by adjusting the revolving disc 4, whose periphery protrudes beyond the sides of the plug housing and as stated is graduated to the number of degrees Fahrenheit the operator wishes the heating appliance to retain.

Our novel plug is interchangeable since it can be put on the appliance either side up and can be detached instantly and comfortably by reason of the circular, ratchet knurls 33

on the sides of the housing, which enable the operator firmly to grasp or grip the plug to detach it from the appliance.

It will now be apparent that we have devised a novel and useful construction of thermostatic plug which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while we have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A thermostatic plug, comprising a housing, contact clips therein, one of said clips having a lateral, integral, extension terminating at about the center line of said housing, a thermostatic member having one end in contact with said lateral extension and the other end provided with a contact point, a resilient arm having a contact point juxtaposed thereto, a rotatable disc mounted in said housing and having an eccentric groove therein, and an extension on said arm engaging the walls of said eccentric groove.

2. A thermostatic plug, comprising a sectional housing, contact clips arranged in parallelism therein, one of said clips having a lateral, integral, extension terminating at about the central median line of said housing, a thermostatic member having one end in contact with said lateral extension and the other end provided with a contact, a resilient arm having an upper contact juxtaposed in alignment to said first mentioned contact, and a rotatable disc mounted transversely of the longitudinal median line of said housing and having an eccentric groove on the inner face thereof and graduations on its periphery, there being an extension on said resilient arm engaging the walls of said eccentric groove, adapted to be raised and lowered by the rotation of said disk.

3. A thermostatic plug, comprising a sectional housing, contact clips therein, one of said clips having a lateral, integral, extension terminating at about the central longitudinal median line of said housing, a thermostatic member having one end in contact with said lateral extension and the other end provided with a contact, a resilient arm having a contact juxtaposed thereto, a transversely arranged rotatable disc mounted centrally of said housing and having an eccentric groove therein, and an extension on said resilient arm engaging the walls of said eccentric groove, for the adjustment of said contacts by the rotation of said disc, the latter having a central hub located thereon oppositely to said groove.

4. A thermostatic plug, comprising a sectional housing, contact clips therein, one of said clips having a lateral, integral, extension terminating at about the central longitudinal median line of said housing, a thermostatic member having one end in contact with said lateral extension and the other end provided with a contact, a resilient arm, having a contact juxtaposed thereto, a transversely arranged rotatable disc mounted centrally of said housing and having an eccentric groove therein, an extension on said resilient arm engaging the walls of said eccentric disc, for the adjustment of said contact upon the actuation of said disc, the latter having a central hub located thereon oppositely to said groove and fastening devices for the housing sections, one of said fastening devices passing through said thermostatic member to secure it to the extension of said contact clip.

5. A thermostatic plug, comprising a housing, contact clips therein, one of said clips having a lateral, integral, extension terminating at about the center line of said housing, a thermostatic member having one end in contact with said lateral extension and the other end provided with a contact point, a resilient arm having a contact point juxtaposed thereto, and a cam device engaging said arm to move said contact points towards or away from each other.

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