

# **EXHIBIT 5**



US007159789B2

(12) **United States Patent**  
**Schwendinger et al.**

(10) **Patent No.:** **US 7,159,789 B2**  
(45) **Date of Patent:** **Jan. 9, 2007**

(54) **THERMOSTAT WITH MECHANICAL USER INTERFACE**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 210 days.

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(21) Appl. No.: **10/873,562**

(22) Filed: **Jun. 22, 2004**

(65) **Prior Publication Data**

US 2005/0279840 A1 Dec. 22, 2005

(51) **Int. Cl.**  
**F24F 11/53** (2006.01)  
**G05D 23/00** (2006.01)  
**G05D 23/12** (2006.01)

(52) **U.S. Cl.** ..... **236/1 C**; 236/47; 236/78 D; 236/94; 388/824

(58) **Field of Classification Search** ..... 236/1 C, 236/47, 78 D, 94; 388/824  
See application file for complete search history.

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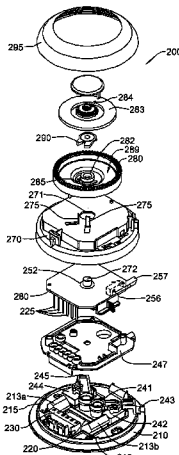
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(57) **ABSTRACT**

A thermostat having a thermostat housing and a rotatable selector disposed on the thermostat housing. The rotatable selector adapted to have a range of rotatable positions, where a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions. The rotatable selector rotates about a rotation axis. A non-rotating member or element, which may at least partially overlap the rotatable selector, may be fixed relative to the thermostat housing via one or more support member(s). The one or more support member(s) may be laterally displaced relative to the rotation axis of the rotatable selector. The non-rotatable member or element may include, for example, a display, a button, an indicator light, a noise making device, a logo, a temperature indicator, and/or any other suitable device or component, as desired.

**30 Claims, 11 Drawing Sheets**



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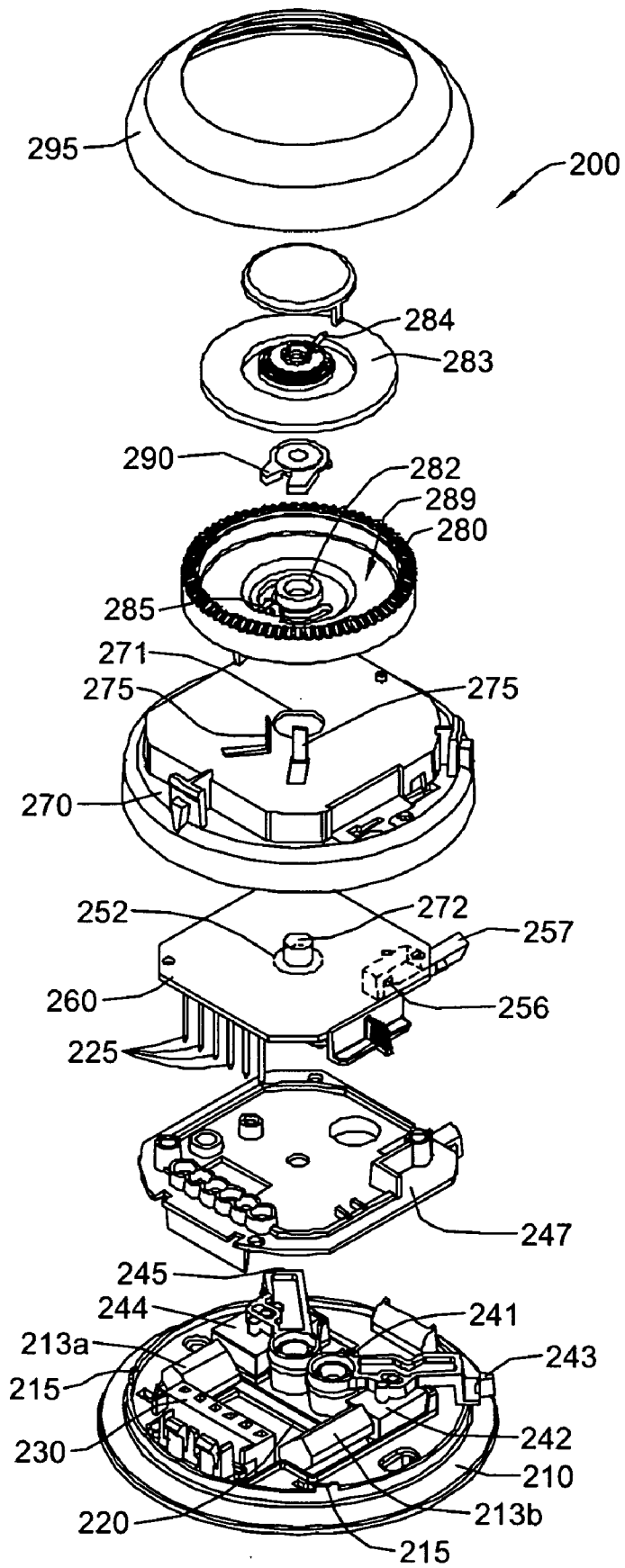
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Figure 1



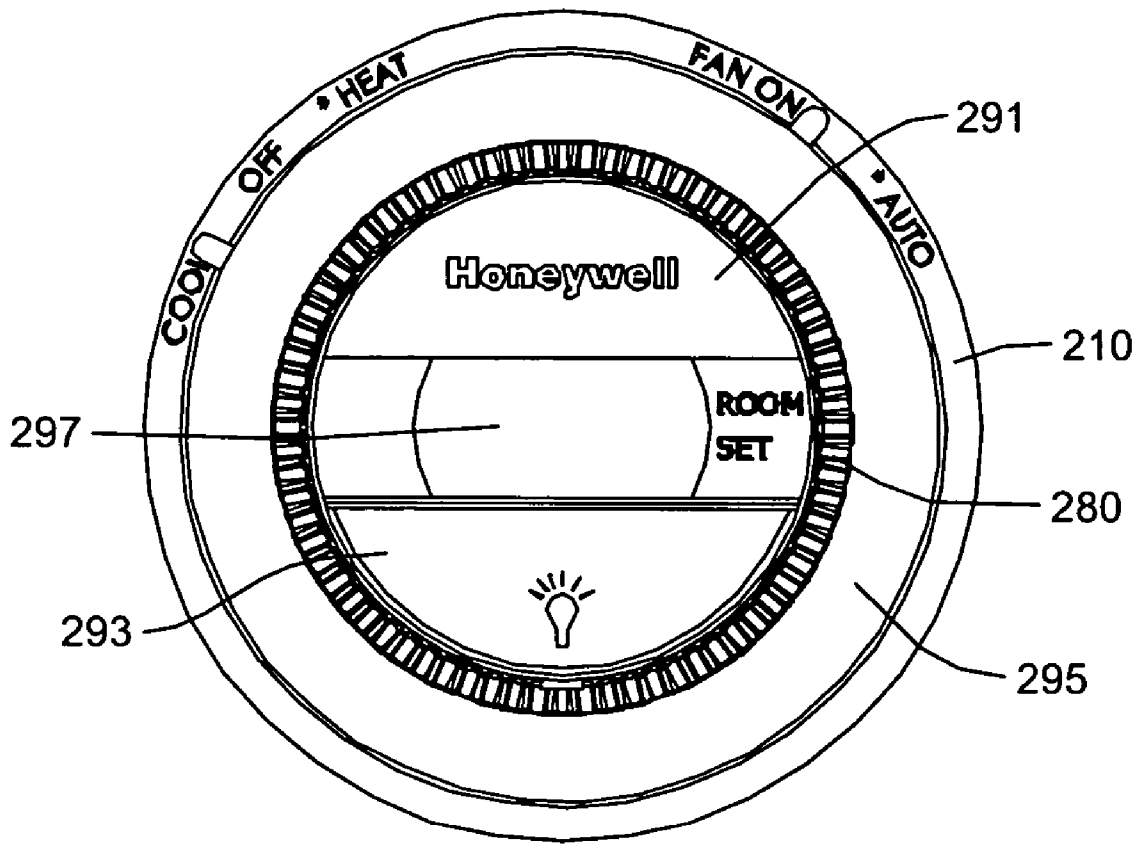


Figure 2

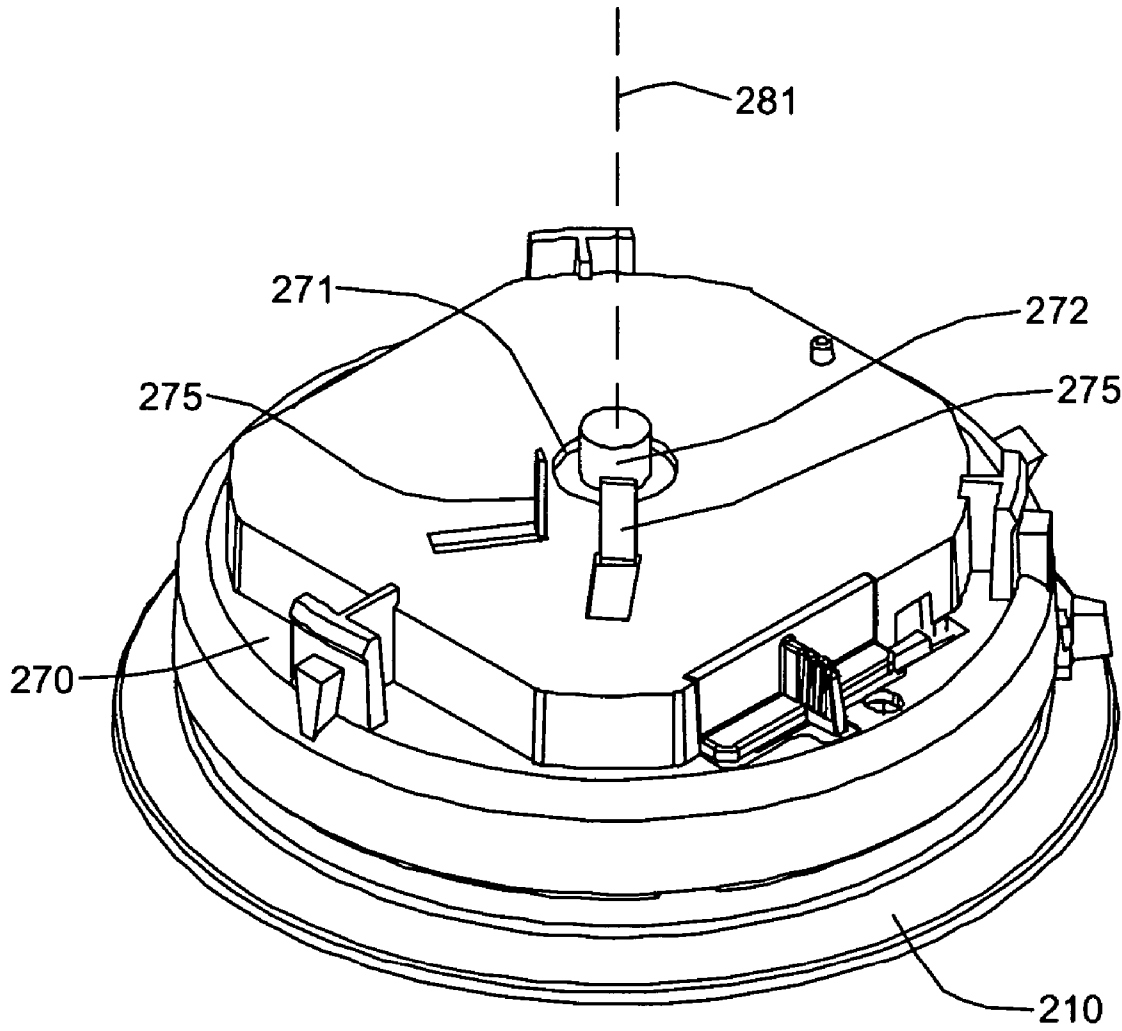


Figure 3

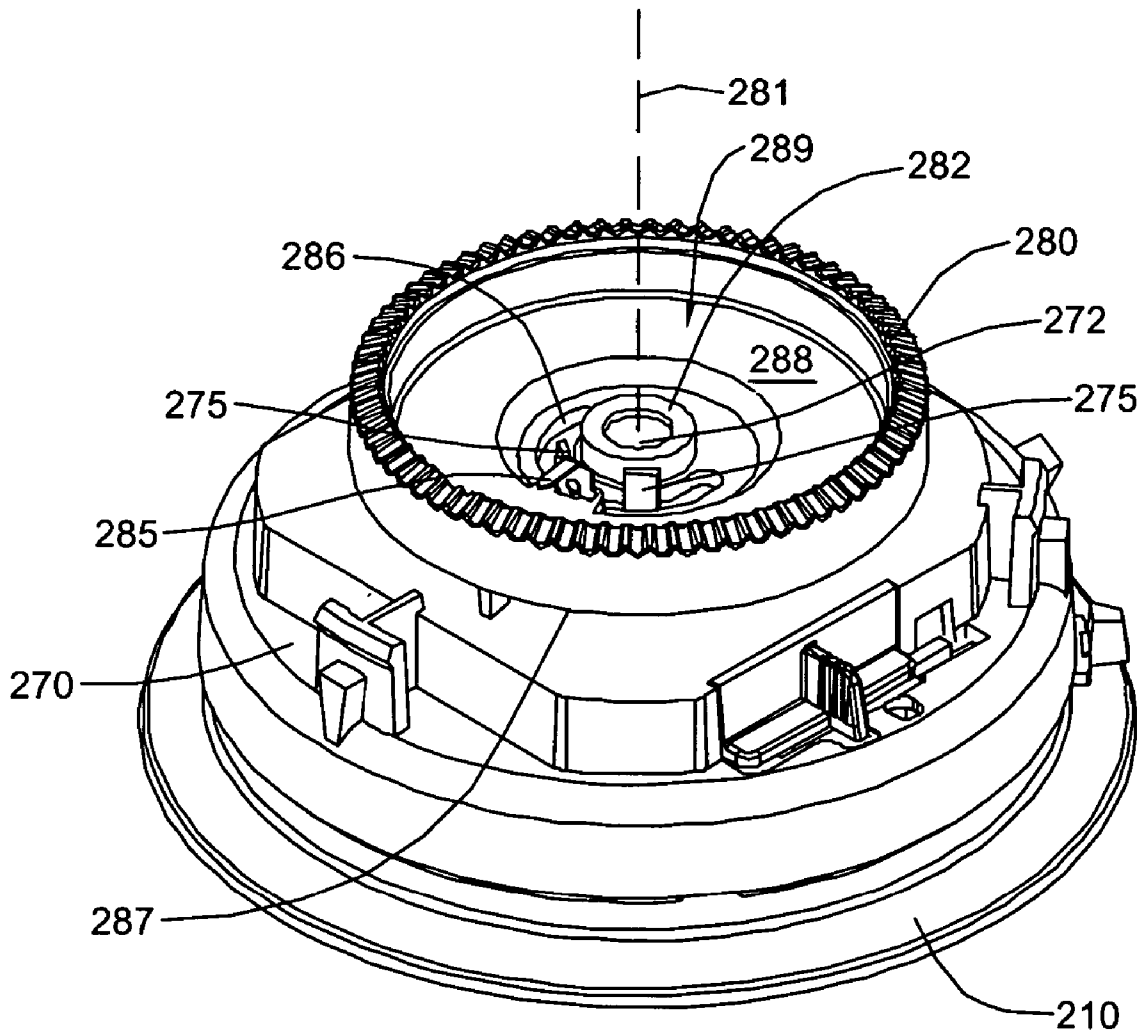


Figure 4



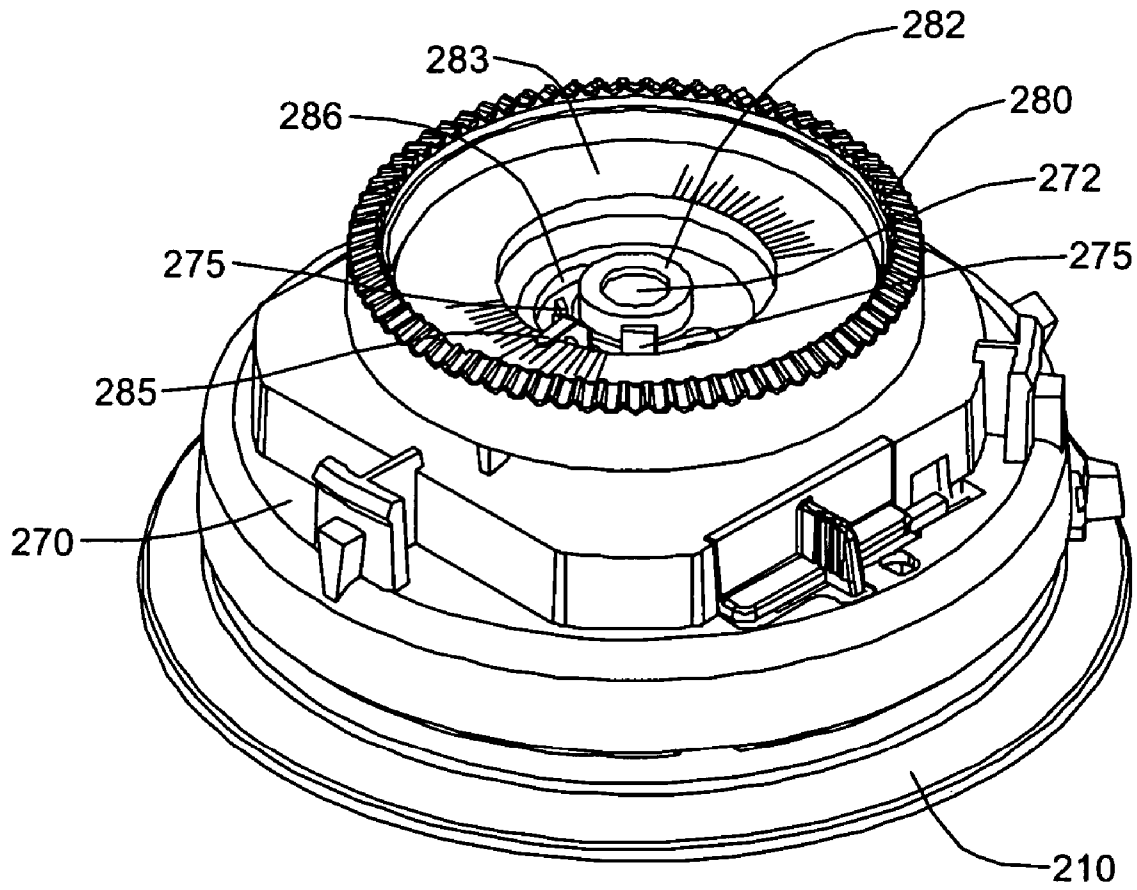


Figure 5

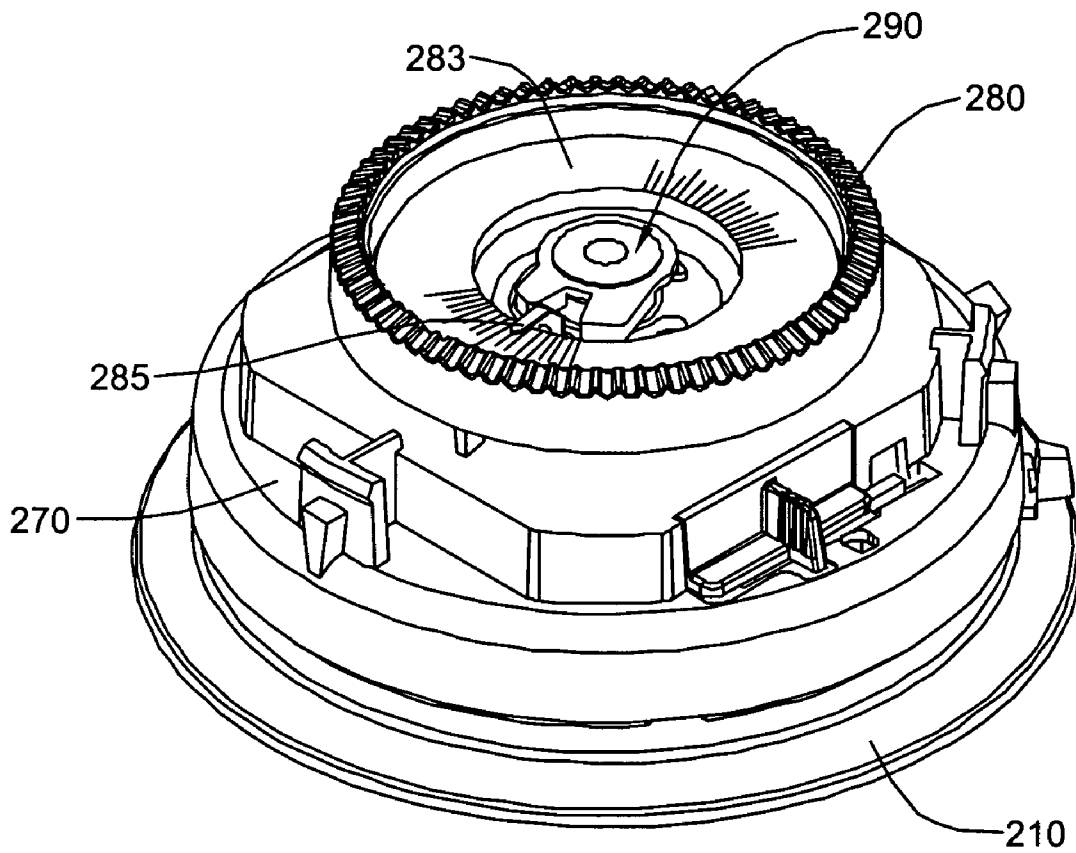


Figure 6

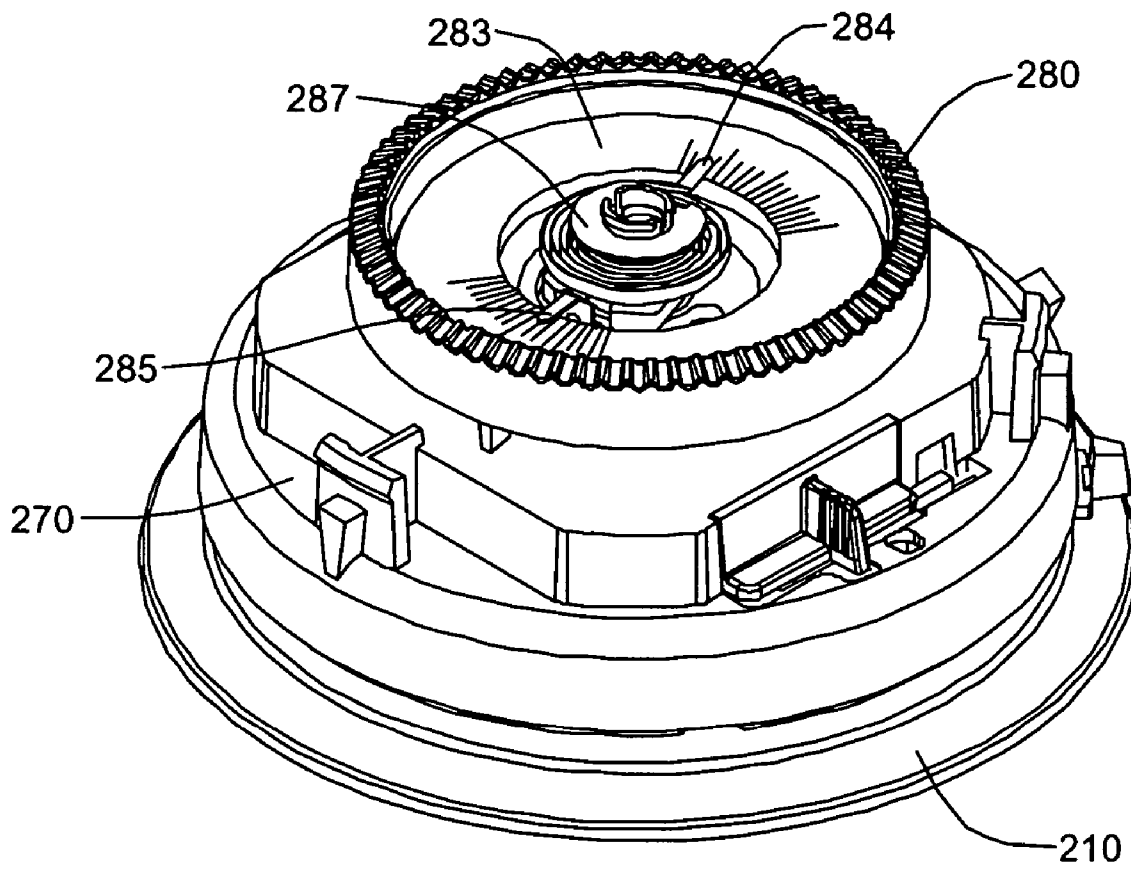


Figure 7

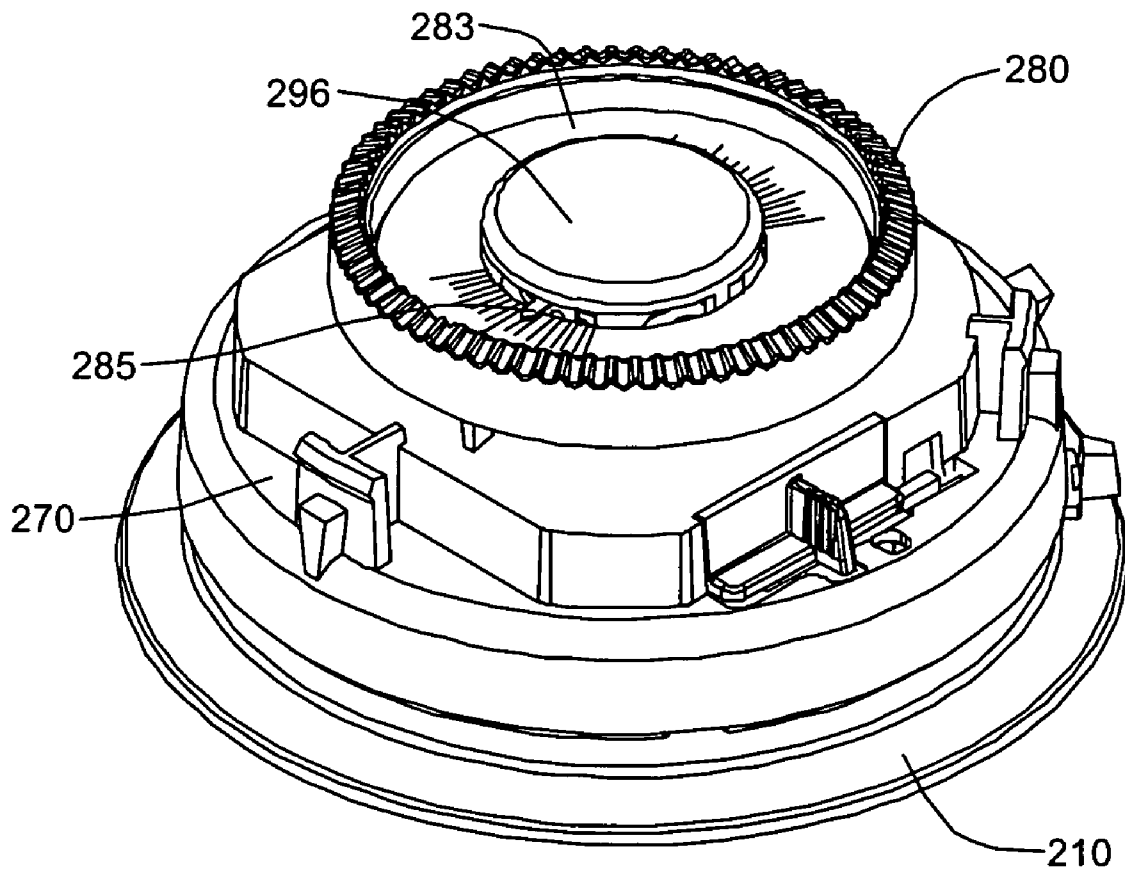


Figure 8

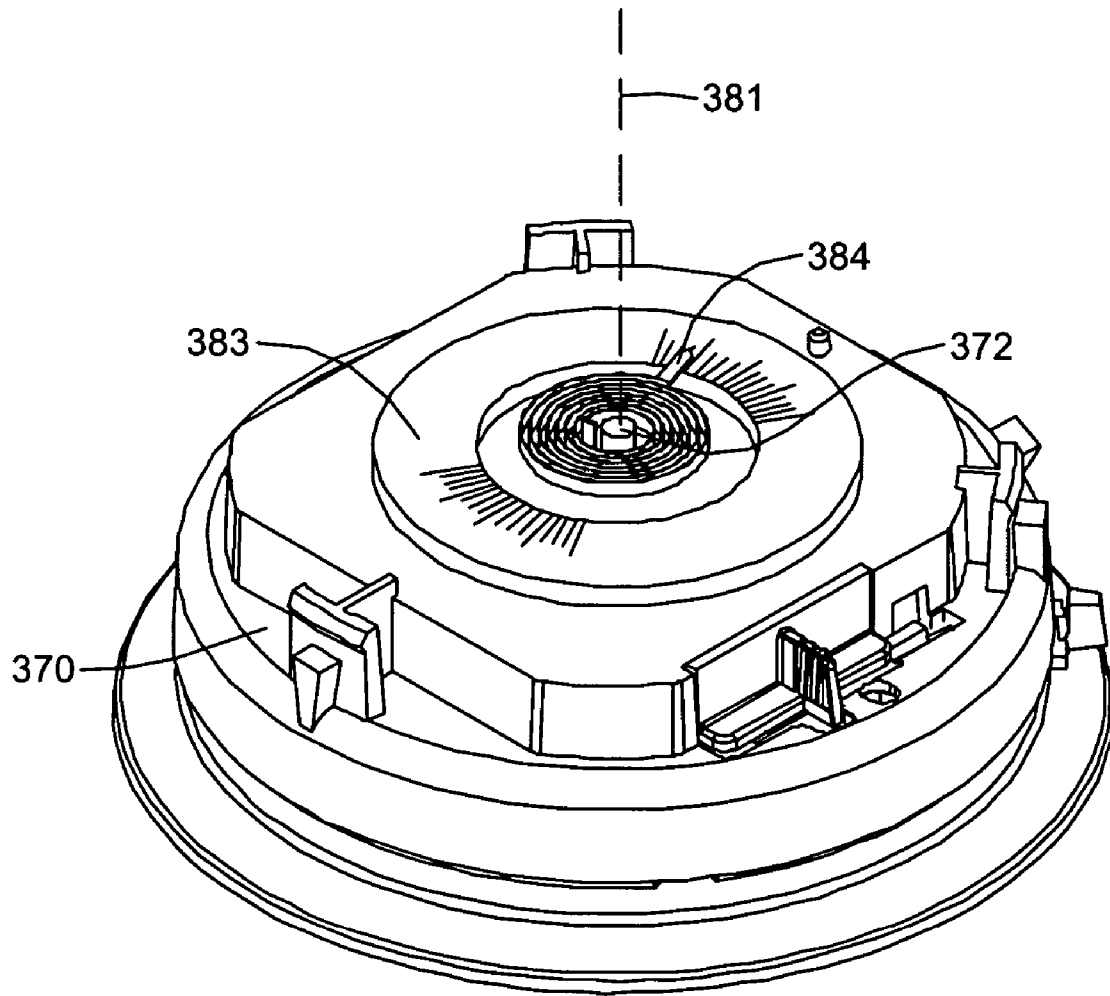


Figure 9

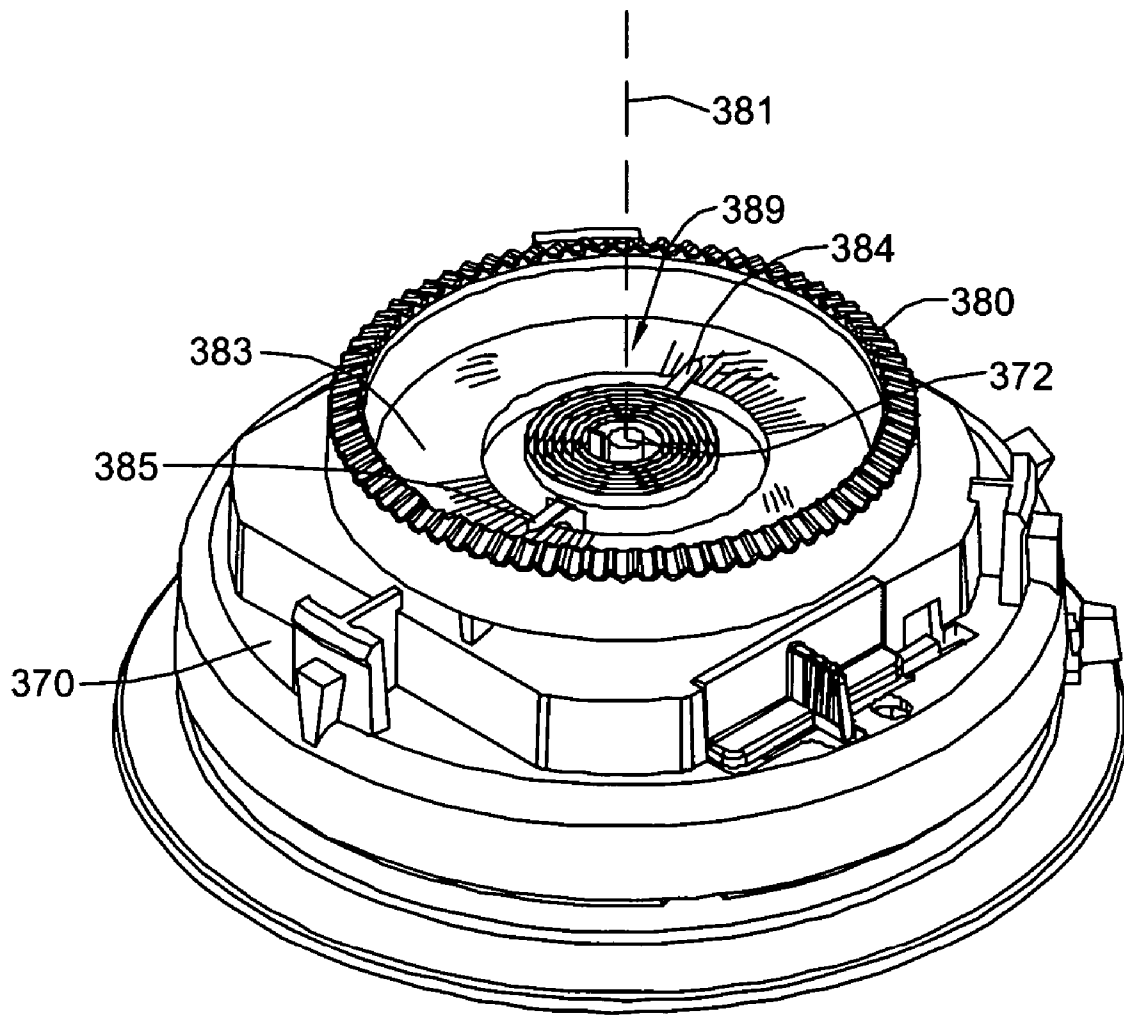


Figure 10

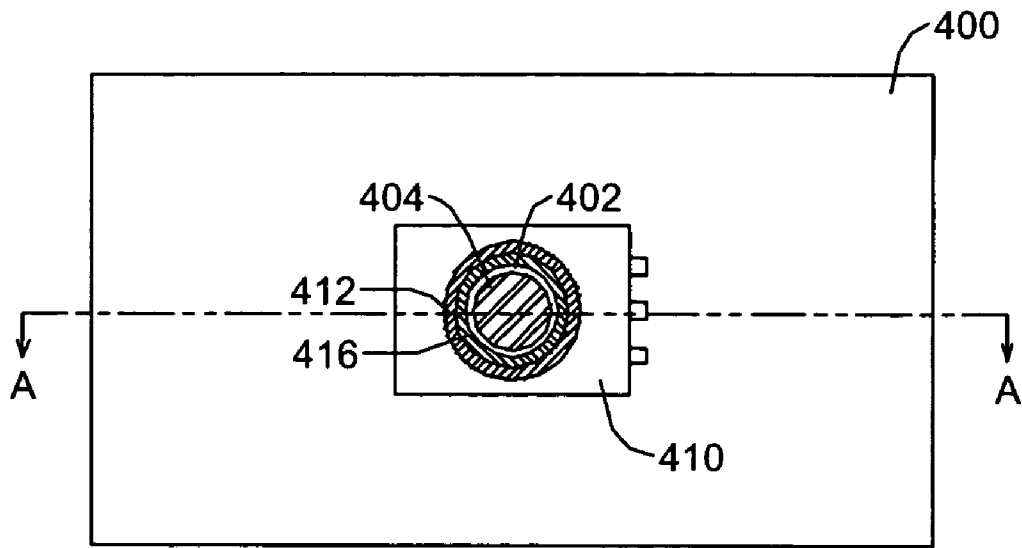


Figure 11

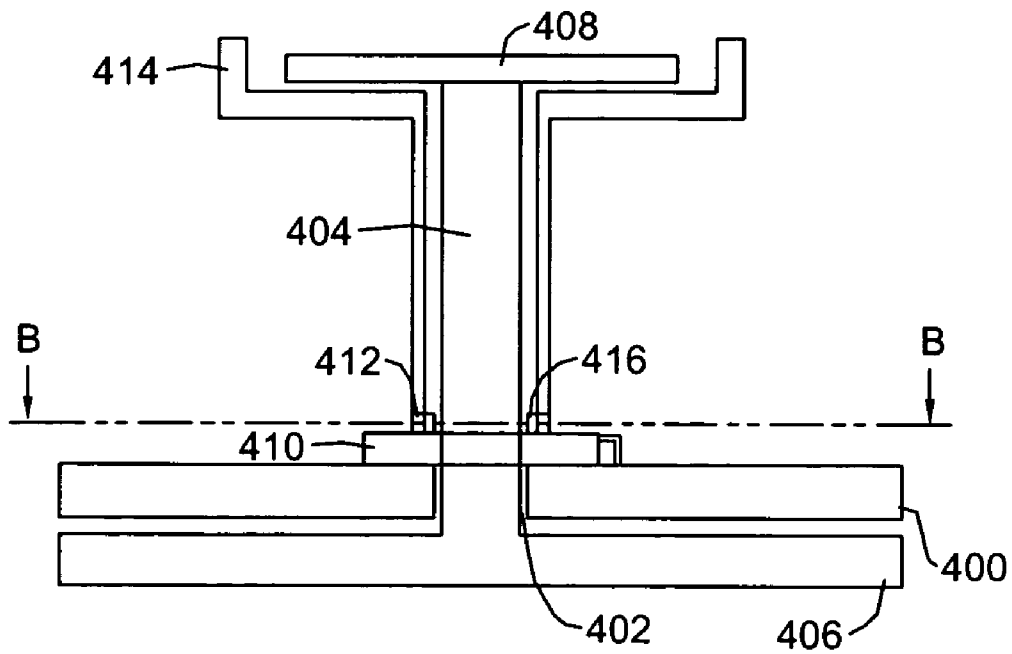


Figure 12

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## THERMOSTAT WITH MECHANICAL USER INTERFACE

### BACKGROUND

Thermostats are widely used in dwellings and other temperature-controlled spaces. In many cases, thermostats are mounted on a wall or the like to allow for the measurement and control of the temperature, humidity and/or other environmental parameter within the space. Thermostats come in a variety of shapes and with a variety of functions. Some thermostats are electromechanical in nature, and often use a bimetal coil to sense and control the temperature setting, typically by shifting the angle of a mercury bulb switch. These thermostats typically have a mechanical user interface, such as a rotating knob or the like, to enable the user to establish a temperature set point. More advanced electronic thermostats have built in electronics, often with solid state sensors, to sense and control various environmental parameters within a space. The user interface of many electronic thermostats includes software controlled buttons and/or a display.

It has been found that while electronic thermostats often provide better control, thermostats with a mechanical user interface can often be more intuitive to use for some users. Many users, for example, would be comfortable with a rotating knob that is disposed on a thermostat for setting a desired set point or other parameter. However, to provide increased functionality and/or user feedback, it has been found that locating non-rotating parts such as displays, buttons, indicator lights, noise making devices, logos, temperature indicators, and/or other suitable devices or components near and/or inside the rotating knob or member can be desirable. The present invention provides methods and apparatus for locating a non-rotating part or parts near or inside of a rotating knob or member, while still allowing the rotating knob or member to set and/or control one or more parameters of the thermostat.

### SUMMARY

The present invention relates generally to an improved thermostat that includes a rotatable user interface selector. In one illustrative embodiment, the rotatable selector has a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions. The rotatable selector may rotate about a rotation axis. A non-rotating member or element, which may at least partially overlap the rotatable selector, may be fixed relative to the thermostat housing via one or more support member(s). The one or more support member(s) may be laterally displaced relative to the rotation axis of the rotatable selector. The non-rotatable member or element may include, for example, a display, a button, an indicator light, a noise making device, a logo, a temperature indicator, and/or any other suitable device or component, as desired.

In some embodiments, the rotatable selector includes a shaft, or is attached to a shaft, that extends along the rotation axis. The rotatable selector may be coupled to a mechanical to electrical translator, such as a potentiometer. The mechanical to electrical translator may translate the mechanical position of the rotatable selector to a corresponding electrical signal that can be used by the thermostat.

In some illustrative embodiments, the rotatable selector may include an elongated opening or slot. The elongated opening or slot may, for example, extend in an arc about the

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rotation axis. The one or more support member(s), which fix the non-rotating member or element relative to the thermostat, may extend through the elongated opening or slot. In some embodiments, as the rotatable selector is rotated about the rotation axis, the one or more support member(s) move along a length of the elongated opening or slot.

In some embodiments, the non-rotating member is adapted to overlap a front and/or back face of the rotatable selector. For example, and in one illustrative embodiment, the non-rotating member overlaps at least a portion of the front face of the rotatable selector, and in some cases, overlaps to an extent that at least a portion of the non-rotating member intersects the rotation axis of the rotatable selector.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective exploded view of an illustrative thermostat in accordance with the present invention;

FIG. 2 shows a front perspective view of an illustrative thermostat that includes a display;

FIG. 3 through FIG. 8 are perspective views of various components of the illustrative thermostat of FIG. 1;

FIG. 9 and FIG. 10 are perspective views of various components of another illustrative thermostat mechanical interface in accordance with the present invention;

FIG. 11 is a top schematic view of another illustrative embodiment of the present invention, looking down plane B—B of FIG. 12; and

FIG. 12 is a partial cross-sectional side view of the illustrative embodiment of FIG. 11 taken along line A—A of FIG. 11.

### DETAILED DESCRIPTION

The following description should be read with reference to the drawings, in which like elements in different drawings are numbered in like fashion. The drawings, which are not necessarily to scale, depict selected embodiments and are not intended to limit the scope of the invention. Although examples of construction, dimensions, and materials are illustrated for the various elements, those skilled in the art will recognize that many of the examples provided have suitable alternatives that may be utilized.

FIG. 1 is a perspective exploded view of an illustrative thermostat **200** in accordance with the present invention. The illustrative thermostat includes a base plate **210** which is configured to be mounted on a wall by any suitable fastening means such as, for example, screws, nails, adhesive, etc. The illustrative base plate **210** has a circular shape, however the base plate **210** can have any shape, as desired. In an illustrative embodiment, the base plate has a diameter in the range of 8 cm to 12 cm.

The base plate **210** can include a printed circuit board **220**. In the embodiment shown, the printed circuit board **220** is affixed to the base plate **210**. One or more wires may be used to interconnect a remote HVAC system (e.g. furnace, boiler, air conditioner, humidifier, etc.) to the base plate **210** at terminal blocks **213a** and **213b**.

In this illustrative embodiment, a variety of switches are disposed on the base plate **210** and in electrical connection with the printed circuit board **220**. A fuel switch **241** is shown located near the center of the base plate **210**. The fuel switch **241** can switch between E (electrical) and F (fuel). A FAN ON/AUTOMATIC switch **242** and corresponding lever **243** is shown disposed on the base plate **210**. The FAN ON/AUTOMATIC switch **242** can be electrically coupled to



the printed circuit board **220**. A COOL/OFF/HEAT switch **244** and corresponding lever **245** is shown disposed on the base plate **210**. The COOL/OFF/HEAT switch **245** can be electrically coupled to the printed circuit board **220**.

The printed circuit board **220** can be electrically coupled to a second printed circuit board **260** by a plurality of pins **225** that are fixed relative to the second printed circuit board **260**. The plurality of pins **225** may extend through a PCB shield **247** before sliding into a connector **230** on the first printed circuit board **220**.

The second printed circuit board **260** can be disposed adjacent to the base plate **210**. In the illustrative embodiment shown, a potentiometer **252** is disposed on (the opposite side shown) and electrically coupled to the second printed circuit board **260**. While a potentiometer **252** is shown, it is contemplated that any mechanical to electrical translator may be used. In the illustrative embodiment, the potentiometer **252** is positioned at or near a center of the second printed circuit board **260**, but this is not required. In the illustrative embodiment, the potentiometer **252** is coupled to a controller (not shown) on the second printed circuit board **260**, which provides one or more control signals to a remote HVAC system.

A temperature sensor, or in the illustrative embodiment, a thermistor (not shown) is disposed on and electrically coupled to the second printed circuit board **260**. In one embodiment, the temperature sensor or thermistor can be located near an edge of the second printed circuit board **260**, however it is contemplated that the thermistor can be located at any position on or near the second printed circuit board **260**, or elsewhere, as desired.

A light source **256** is also shown disposed on and electrically coupled to the second printed circuit board **260**. The light source can be, for example, an LED. In the illustrative embodiment, the light source **256** is shown positioned adjacent to a light guide **257**. The light guide **257** is shown extending away from the second printed circuit board **260**, and may extend through an intermediate housing **270** for viewing by a user of the thermostat, if desired.

The intermediate housing **270** is shown disposed over the second printed circuit board **260** and base plate **210**. In the illustrative embodiment, the intermediate housing **270** includes one or more support members **275** that are laterally offset from a center **271** of the intermediate housing **270**, and extending up and away from the intermediate housing **270**. In one illustrative embodiment, the center **271** of the intermediate housing **270** is disposed along a rotation axis of a rotatable selector **280**, but this is not required.

A potentiometer shaft **272** is shown extending from the potentiometer **252** and through the intermediate housing **270**. In one embodiment, the potentiometer shaft **272** may be disposed along the rotation axis of the rotatable selector **280**, which may or may not correspond or be near the center or centroid of the intermediate housing **270**. The rotatable selector **280** can then be disposed about and/or coupled to the potentiometer shaft **272**.

The illustrative rotatable selector **280** is shown having a circular shape, however, any suitable shape may be used. In some embodiments, the rotatable selector **280** can include a planar portion **289**, and a sleeve **282** disposed along the inner edge of the planar portion **289**, if desired. The sleeve **282** is shown extending up and away from the planar portion **289** about the rotation axis of the rotatable selector **280**. The sleeve **282** can be configured to engage the potentiometer shaft **272** so that the potentiometer shaft **272** rotates as the

rotatable selector **280** rotates. The sleeve **282** may provide additional support to the rotatable selector **280** near the potentiometer shaft **272**.

In one illustrative embodiment, the support member **275** (one or more as desired) can extend through an opening or slot in the rotatable selector **280** as shown. In some embodiments, the opening or slot may extend in an arc about the rotation axis of the rotatable selector **280**. The opening or slot is shown as an elongated hole that extends through the rotatable selector **280**. However, it is contemplated that the opening or slot may be defined by the shape of the rotatable selector **280**. That is the opening or slot may extend all the way to an outer or inner perimeter of the rotatable selector **280**, if desired.

In the illustrative embodiment, an interface support **290** is fixed to the support member(s) **275**. The interface support **290** can overlap the rotatable selector **280**, and in some cases, may intersect the rotation axis of the rotatable selector **280**. A scale plate **283** is disposed adjacent the planar portion **289** of the rotatable selector **280**, and in some cases, may be fixed to the interface support **290**. The scale plate **283** can include indicia such as, for example, temperature indicia for both a current temperature and a set point temperature. A current temperature indicator **284** can also be fixed to the interface support **290**, and in some cases, can be formed of a bimetal coil. A set point temperature indicator **285** can be fixed to the planar portion **289** of the rotatable selector **280**. Thus, in this illustrative embodiment, the rotatable selector **280** and set point temperature indicator **285** may rotate relative to the interface support **290** (and thus the intermediate housing **270** and base plate **210**) when the rotatable selector **280** is rotated. The current temperature indicator **284** may be fixed to the interface support **290**. An outer housing **295** can be disposed about the intermediate housing **270**. The illustrative embodiment shows the outer housing **295** having an annular shape, however the outer cover **295** may have any shape, as desired.

In some embodiments, a display (e.g. LCD display), one or more buttons, indicator lights, noise making devices, logos, and/or other devices and/or components may be fixed to the support member(s) **275**, if desired, wherein the rotatable selector **280** may rotate relative to these other devices and/or components. For example, FIG. 2 shows an illustrative thermostat that includes a display **297**, which is fixed relative to the support member(s) **275**, sometimes via the interface support **290**, wherein rotatable selector **280** may rotate about the display **297**. In some illustrative embodiments, a desired parameter value (e.g. temperature set point) is displayed on the display **297**, and in some cases, the desired parameter value that is displayed on the display **297** changes as the rotatable selector **280** is rotated. In some embodiments, the current temperature and/or the temperature set point may be displayed on the display **297**, as well as other information as desired. The illustrative thermostat of FIG. 2 also shows a logo region **291** and a back light button **293**, both of which may also be fixed relative to the support member(s) **275**, wherein rotatable selector **280** may rotate about the logo region **291** and back light button **293**.

FIG. 3 through FIG. 8 are perspective views of various components of the illustrative thermostat of FIG. 1. Referring to FIG. 3, the intermediate housing **270** is fixed relative to the base housing **210**. As noted above, the potentiometer shaft **272** may extend from a potentiometer **252** (FIG. 1) through the intermediate housing **270**, as shown. While a potentiometer is used in this illustrative embodiment, it is contemplated that any mechanical to electrical translator may be used to translate the position of the rotatable selector

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**280** to a corresponding electrical signal that can be used by the thermostat controller (e.g. an encoder or other sensor).

The one or more support members **275** are shown extending up and away from the intermediate housing **270**. The one or more support members **275** are laterally offset from the rotation axis **281** of the rotatable selector **280**. In some embodiments, one or more of the support members **275** extend orthogonally away from the intermediate housing **270**, but this is not required in all embodiments.

FIG. **4** shows the illustrative embodiment of FIG. **3** with the rotatable selector **280** connected to the potentiometer shaft **272**. In the embodiment shown, the rotatable selector **280** has a circular shape, but it is contemplated that rotatable selector **280** may have any suitable shape as desired. As noted above, the rotatable selector **280** has a rotation axis **281** that extend through the sleeve **282**. In the illustrative embodiment, the sleeve **282** is coupled to the potentiometer shaft **272**. In one embodiment, the potentiometer **252** (FIG. **1**) is positioned below the rotatable selector **280** and along the rotation axis **281**. The rotation axis **281** may be disposed along the intermediate housing **270** centroid, but this is not required. A set point temperature indicator **285** is shown fixed to the rotatable selector **280**. In one embodiment, the rotatable selector **280** and set point temperature indicator **285** rotate together.

A support member aperture, opening or slot **286** is shown extending through the rotatable selector **280**. In the illustrative embodiment, the support member aperture **286** extends in an arc about 180 degrees around the rotation axis **281** of the rotatable selector **280**, and is laterally offset from the rotation axis **281**. The support member aperture, opening or slot **286** can extend any number of degrees about the rotation axis **281**, and can be continuous or discontinuous, as desired. In one illustrative embodiment, the support member aperture, opening or slot **286** defines a range of rotatable positions for the rotatable selector **280**. The support member **275** may move along the length of the support member aperture, opening, or slot **286**, as the rotatable selector **280** is rotated through the range of rotatable positions.

In the illustrative embodiment, the rotatable selector **280** may have a planar portion **289** having a front surface **288** and an opposing back surface **287**. Non-rotating elements can at least partially overlap the front or back surface **288** of the rotatable selector **280**.

FIG. **5** shows a scale plate **283** disposed on or adjacent to the rotatable selector **280**. The scale plate **283** can be fixed to the support member **275** and/or interface support **290** shown in FIG. **6**, and thus may not rotate with the rotatable selector **280**. Referring to FIG. **6**, the interface support **290** may be fixed to the support member **275**. In some embodiments, the interface support **290** extends orthogonally from the support member **275**, and in some cases, may overlap and intersect the rotation axis **281** of the rotatable selector **280**. In one illustrative embodiment, the scale plate **283** is fixed to the interface support **290**.

FIG. **7** shows a current temperature indicator **284** fixed to the interface support **290**. In the illustrative embodiment shown, the current temperature indicator **284** is formed of a bimetal coil, but this is not required. For example, and as shown in FIG. **2**, the temperature indicator can be displayed on a display **297**. A monogram support **287** can fix the current temperature indicator **284** to the interface support **290**. FIG. **8** shows a monogram logo element **296** disposed over the current temperature indicator **284** and can be fixed to the scale plate **283**, monogram support **287**, interface support **290**, and/or support member **275**, as desired. Thus, in at least one illustrative embodiment, the monogram logo

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element **296**, current temperature indicator **284**, scale plate **283**, monogram support **287**, interface support **290**, and support member **275** do not rotate with the rotatable selector **280**, while the set point temperature indicator **285** does rotate with the rotatable selector **280**.

FIG. **9** and FIG. **10** are perspective views of various components of another illustrative thermostat mechanical interface in accordance with the present invention. FIG. **9** shows a scale plate **383** disposed on or adjacent to the intermediate housing **370**. A potentiometer shaft **372**, or any other suitable mechanical to electrical translator, can be disposed along a rotation axis of the rotatable selector **380** (FIG. **10**). The scale plate **383** is shown spaced from the rotation axis of the rotatable selector **380**. A current temperature indicator **384** can also be provided, and may also be spaced from the rotation axis **381** of the rotatable selector **380**.

FIG. **10** shows a rotatable selector **380** coupled to the potentiometer shaft **372** along the rotation axis **381** of the rotatable selector **380**. Like above, and in the illustrative embodiment, the rotatable selector **380** can include a planar portion **389** disposed above and adjacent to the scale plate **383**. The planar portion **389** can, for example, be formed of a transparent material that allows a user to view the scale plate **383** through the rotatable selector **380**. In another embodiment, the planar portion **389** can have an opening (not shown) that allows a user to view the scale plate **383** through the rotatable selector **380**.

FIG. **11** is a top schematic view of another illustrative embodiment of the present invention, looking down plane B—B of FIG. **12**. FIG. **12** is a partial cross-sectional side view of the illustrative embodiment of FIG. **11** taken along line A—A of FIG. **11**. FIGS. **11–12** show a printed circuit board **400** with an aperture **402** formed therethrough. Extending through the aperture **402** is a support member **404**. The support member **404** may extend up from a housing **406**, through the aperture **402** in the printed circuit board **400**, and may support one or more non-rotating elements **408**. The one or more non-rotating elements generally shown at **408** may include, for example, a scale plate, a temperature indicator (e.g. bi-metal coil), a display, a button, an indicator light, a noise making device, a logo, and/or any other suitable device or component, as desired.

In the illustrative embodiment, a potentiometer, encoder or other suitable device **410** that includes an aperture extending therethrough can be fixed relative to the printed circuit board **400**, as shown. The aperture in the potentiometer, encoder or other suitable device **410** can be aligned with the aperture **402** in the printed circuit board **400**. The potentiometer, encoder or other suitable device **410** may include a rotatable element **412**, which may be coupled to a rotatable member **414**. The rotatable member **414** may extend around and rotate about the support member **404**. In some cases, the potentiometer, encoder or other suitable device **410** may include a non-rotatable element **416** adjacent the rotatable element **412** to provide additional support to the rotatable element **412**. Illustrative potentiometers and encoders include, for example, center space rotary potentiometers having model numbers EWVYE, EWVYF, EWVYG, and center space rotary encoders having model number EVQWF, all commercially available from Panasonic Matsushita Electric Corporation of America, Secaucus, N.J.

During use, the rotatable member **414** may be rotated by a user about the support member **404**. The support member **404** may support one or more non-rotating elements **408**. The potentiometer, encoder or other suitable device **410** may translate the mechanical position of the rotatable member to

a corresponding electrical signal, which can then be provided to a controller on the printed circuit board 400, if desired.

Having thus described the several embodiments of the present invention, those of skill in the art will readily appreciate that other embodiments may be made and used which fall within the scope of the claims attached hereto. Numerous advantages of the invention covered by this document have been set forth in the foregoing description. It will be understood that this disclosure is, in many respects, only illustrative. Changes may be made in details, particularly in matters of shape, size and arrangement of parts without exceeding the scope of the invention.

What is claimed is:

1. A thermostat having a thermostat housing, comprising: a rotatable selector having a front face, and further having a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector being rotatable about a rotation axis; a potentiometer coupled to the rotatable selector; and a non-rotating element at least partially overlapping the front face of the rotatable selector, the non-rotating element fixed relative to the thermostat housing via one or more support member, the one or more support member being laterally offset relative to the rotation axis of the rotatable selector.
2. A thermostat according to claim 1, wherein the potentiometer is disposed along the rotation axis of the rotatable selector.
3. A thermostat according to claim 1, further comprising a circuit board that is fixed relative to the thermostat housing, and wherein the potentiometer is mounted to the circuit board.
4. A thermostat according to claim 1, wherein the non-rotating element intersects the rotation axis of the rotatable selector.
5. A thermostat according to claim 4, wherein the non-rotating element comprises a scale plate.
6. A thermostat according to claim 5, wherein the scale plate includes a temperature scale.
7. A thermostat according to claim 6, wherein the rotatable selector includes a pointer.
8. A thermostat according to claim 7, wherein the non-rotating element comprises a temperature indicator.
9. A thermostat according to claim 8, wherein the temperature indicator includes a pointer.
10. A thermostat according to claim 9, wherein the temperature indicator includes a bi-metal thermometer.
11. A thermostat according to claim 9, wherein the non-rotating element includes a logo region with a logo provided thereon.
12. A thermostat according to claim 1, further comprising a housing ring having an aperture therein, wherein the aperture is adapted to accept the rotatable selector.
13. A thermostat having a selected temperature set point and a temperature sensor, the temperature sensor providing a temperature indicator and the thermostat providing a control signal that is dependent at least in part on the selected temperature set point and the temperature indicator, the thermostat comprising:
  - a thermostat housing;
  - a rotatable selector having a front face, and further having a range of rotatable positions, wherein a set point is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector rotatable about a rotation axis;

a potentiometer coupled to the rotatable selector and disposed along the rotation axis of the rotatable selector; and

a non-rotating element at least partially overlapping the front face of the rotatable selector, the non-rotating element fixed relative to the thermostat housing via one or more support member, the one or more support member being laterally offset relative to the rotation axis of the rotatable selector.

14. A thermostat according to claim 13, wherein the one or more support member extends through an opening or slot in the rotatable selector.

15. A thermostat according to claim 13, wherein the one or more support member extends through an elongated opening in the rotatable selector that extends in an arc about the rotation axis of the rotatable selector.

16. A thermostat according to claim 13 wherein the thermostat housing defines a housing cross-sectional surface area, and wherein the housing cross-sectional surface area has a housing centroid, and wherein the rotation axis of the rotatable selector is at or substantially at the housing centroid.

17. A thermostat having a thermostat housing, comprising:

a rotatable selector having a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector being rotatable about a rotation axis;

a potentiometer coupled to the rotatable selector; and a non-rotating element at least partially overlapping the rotatable selector, the non-rotating element fixed relative to the thermostat housing via one or more support member, the one or more support member being laterally displaced relative to the rotation axis of the rotatable selector.

18. A thermostat according to claim 17, wherein the rotatable selector includes a shaft or is coupled to a shaft that extends along the rotation axis.

19. A thermostat according to claim 17 wherein the rotatable selector has a front face and a back face, and wherein the non-rotating element overlaps at least a portion of the front face of the rotatable selector.

20. A thermostat according to claim 19, wherein the non-rotating element overlaps the rotatable selector to an extent such that at least part of the non-rotating element intersects the rotation axis of the rotatable selector.

21. A thermostat according to claim 17 wherein the rotatable selector has a front face and a back face, and wherein the non-rotating element overlaps at least a portion of the back face of the rotatable selector.

22. A thermostat having a thermostat housing, comprising:

a rotatable selector having a front face, and further having a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector being rotatable about a rotation axis; and

a non-rotating element at least partially overlapping the front face of the rotatable selector, the non-rotating element fixed relative to the thermostat housing via one or more support member, the one or more support member being laterally offset relative to the rotation axis of the rotatable selector, wherein the one or more support member extends through an opening or slot in the rotatable selector.

23. A thermostat according to claim 22, wherein the rotatable selector rotates in an arc about the rotation axis of the rotatable selector.

24. A thermostat having a thermostat housing and a user interface, wherein the user interface is adapted to allow a user's hand to adjust at least one parameter value of the thermostat, the thermostat comprising:

a rotatable selector having a front face, and further having a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector being rotatable about a rotation axis; and

a non-rotating element at least partially overlapping the front face of the rotatable selector, the non-rotating element fixed relative to the thermostat housing via one or more support member, wherein the rotatable selector is accessible and rotatable directly by the user's hand.

25. A thermostat according to claim 24, wherein the non-rotating element comprises a temperature indicator.

26. A thermostat according to claim 25, wherein the mechanical to electrical translator is a potentiometer.

27. A thermostat according to claim 26, wherein the potentiometer is disposed along the rotation axis of the rotatable selector.

28. A thermostat according to claim 26, further comprising a circuit board that is fixed relative to the thermostat housing, and wherein the potentiometer is mounted to the circuit board.

29. A thermostat according to claim 24, wherein the rotatable selector is coupled to a mechanical to electrical translator.

30. A thermostat having a thermostat housing, comprising:

a rotatable selector having a front surface and a back surface, and further having a range of rotatable positions, wherein a desired parameter value is identified by the position of the rotatable selector along the range of rotatable positions, the rotatable selector being rotatable about a rotation axis;

a non-rotating element at least partially overlapping the back surface of the rotatable selector, the non-rotating element fixed relative to the thermostat housing, the non-rotating element having one or more support members extending through an opening or slot in the rotatable selector; and

a housing having an aperture therein, wherein the aperture is adapted to accept the rotatable selector.

\* \* \* \* \*