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Farrington

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[54] **STEAM IRON WITH ROTATABLE TEMPERATURE CONTROL**

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[51] **Int. Cl.**[6] **D06F 75/26**

[52] **U.S. Cl.** **38/77.7**

[58] **Field of Search** 38/77.7, 77.8, 38/77.2; 219/250, 254

[56] **References Cited**

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2,655,746	10/1953	McFarland et al.	38/77
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2,871,588	2/1959	Humphrey	38/77
2,887,800	5/1959	Kistner	38/77
2,903,804	9/1959	Kistner	38/77
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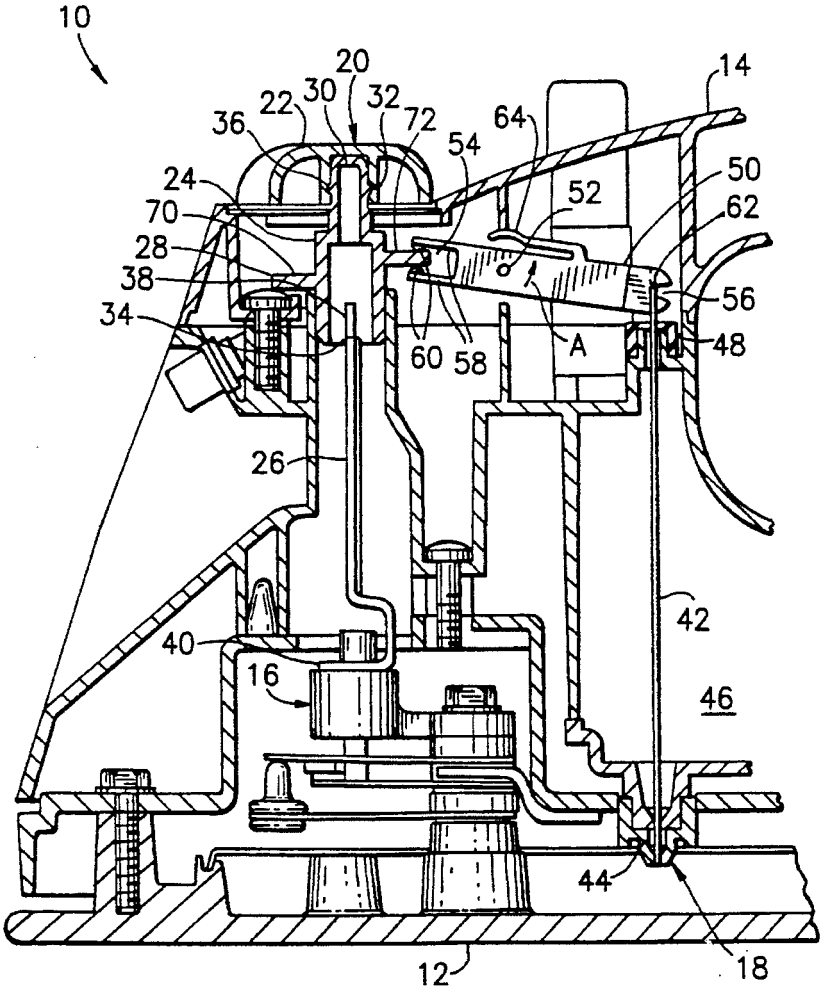
[57] **ABSTRACT**

A steam iron having a thermostat, a steam valve, and a rotatable temperature control. The control has a cam member with an outwardly extending flange having a worm thread section. The cam member operably connects a temperature control knob to the thermostat. A rocker is pivotably connected to the housing of the steam iron and operably connects the cam member to the steam valve.

13 Claims, 2 Drawing Sheets



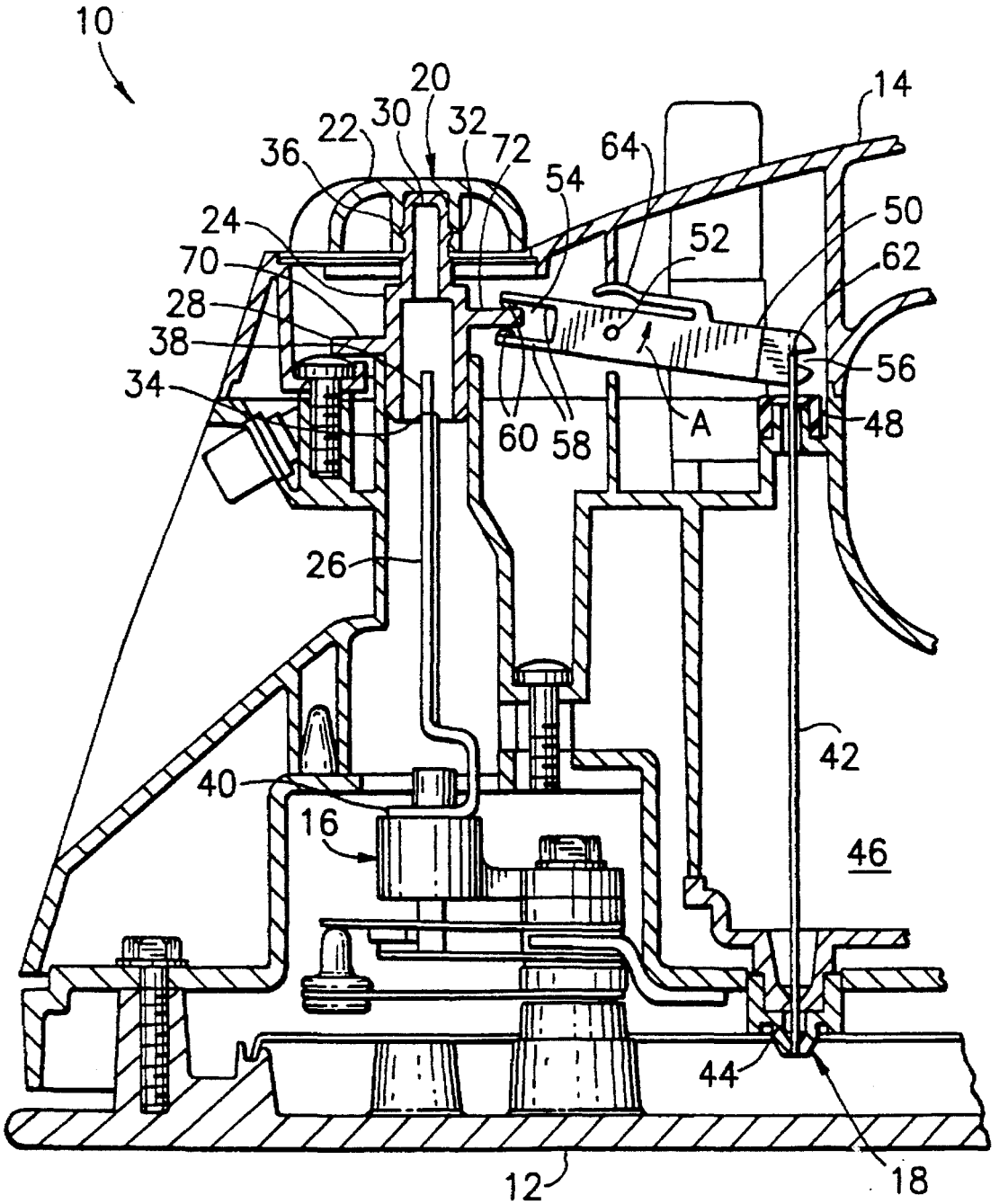

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FIG. 1

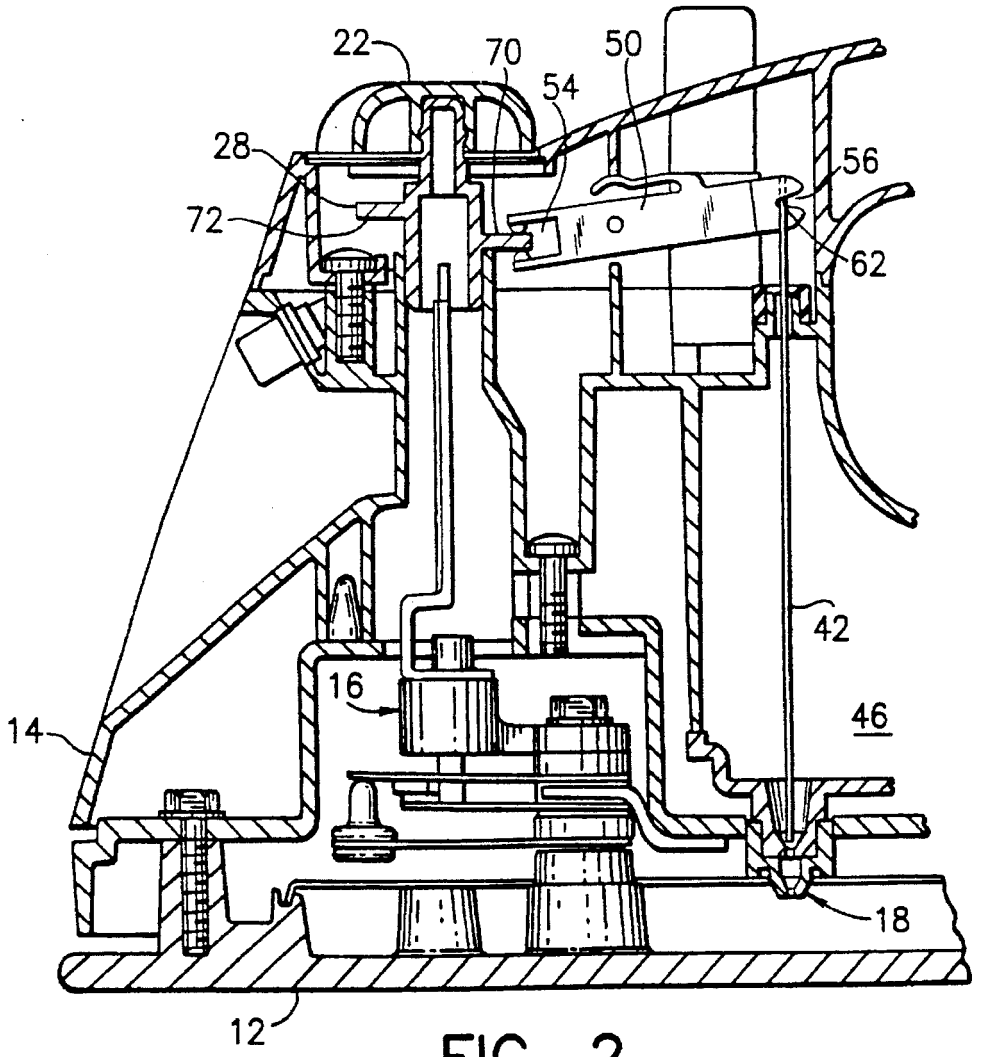

FIG. 2

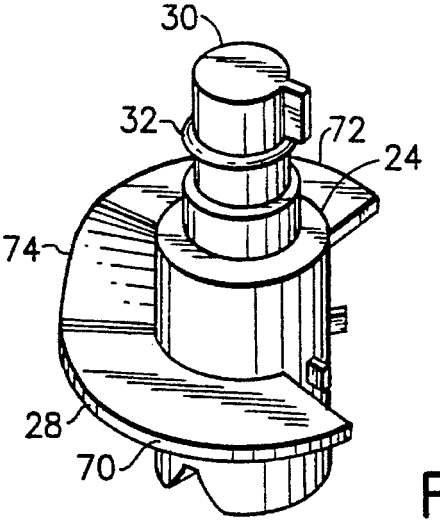

FIG. 3

STEAM IRON WITH ROTATABLE TEMPERATURE CONTROL

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to steam irons and, more particularly, to an iron with a rotatable control.

2. Prior Art

Steam irons may inadvertently cause water spotting and damage to clothes if a user forgets to turn off a steam function when ironing at low temperature settings. In the past, some manufacturers have used a bi-metal member for a steam valve to close the valve when temperatures are too low for good steam production. However, this is relatively costly. U.S. Pat. No. 2,793,449 discloses a steam iron with a temperature control dial with an interior facing cam surface and a steam valve moved by the cam surface. U.S. Pat. No. 2,887,800 discloses a cam member that adjusts a valve setting in a steam iron. Other related U.S. Patents including the following:

U.S. Pat. No. 2,342,716	U.S. Pat. No. 2,655,746
U.S. Pat. No. 2,813,358	U.S. Pat. No. 2,871,588
U.S. Pat. No. 2,903,804	U.S. Pat. No. 2,952,086
U.S. Pat. No. 3,111,780	U.S. Pat. No. 3,368,294
U.S. Pat. No. 3,372,498	

SUMMARY OF THE INVENTION

In accordance with one embodiment of the present invention, in an iron having a steam valve and a rotatable temperature control operably connected to a thermostat, the improvement comprises the rotatable temperature control having a cam member with an outwardly extending flange having a worm thread section. The worm thread section is operably connected to the steam valve by a pivotable rocker. The rocker has a channel with the worm thread located therein.

In accordance with another embodiment of the present invention, in a steam iron having a rotatable temperature control with a cam surface, the rotatable temperature control is operably connected to a steam valve and a thermostat, the improvement comprises a member connecting the cam surface to a steam rod of the steam valve, the member extending from the rotatable temperature control in a general radial direction.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing aspects and other features of the invention are explained in the following description, taken in connection with the accompanying drawings, wherein:

FIG. **1** is a cross-sectional view of a front portion of a steam iron incorporating features of the present invention;

FIG. **2** is a cross-sectional view of the steam iron as shown in FIG. **1** with the temperature control located at a second position; and

FIG. **3** is a perspective view of the cam member used in the iron shown in FIG. **1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1**, there is shown a cross-sectional view of the front portion of a steam iron **10** incorporating features of the present invention. Although the present invention will

be described with reference to the single embodiment shown in the drawings, it should be understood that the present invention can be embodied in various different forms of alternate embodiments. In addition, any suitable size, shape or type of elements or materials could be used.

The iron **10** generally comprises a soleplate **12**, a housing **14**, a thermostat **16**, a steam valve **18**, and a temperature control **20**. The control **20** includes a user actuatable knob **22**, a cam member **24**, and a connecting shaft **26**. Referring also to FIG. **3**, the cam member **24** has a general tube shape with an outwardly extending flange **28**. The flange has three sections; a lower section **70**, an upper section **72** and an angled section **74** between the upper and lower sections. In the embodiment shown, the flange **28** extends about 270° around the cam member **24** and the angled section **74** occupies about 20° around the cam member. However, in alternate embodiments, other suitable angles and dimensions could be provided. A top **30** of the cam member **24** forms a post with an annular raised ridge **32**. The knob **22** is snap-lock mounted to the post **30** with the annular ridge **32** being received in the recess **36**. The knob **22** and cam member **24** are coaxially aligned. The knob **22** is fixedly connected to the cam member **24** such that rotation of the knob **22** axially rotates the cam member **24**. The bottom of the cam member **24** has a receiving area **34** that is suitably connected to the top **38** of the connecting shaft **26** such that axial rotation of the cam member **24** rotates the shaft **26**. The bottom **40** of the shaft **26** is operably connected to the thermostat **16** to vary the setting of the thermostat. The steam valve **18** includes a steam rod **42** and a valve seat **44**. The rod **42** is mounted to the iron for longitudinal movement between its fully closed position shown in FIG. **1** and its fully open position shown in FIG. **2**. Area **46** is a water reservoir to hold water to be passed through the valve **18** and onto the soleplate **12**. The rod **42** passes through a seal **48** located at the top of the reservoir **46**.

A rocker **50** is pivotably mounted to the housing **14** at pivot **52**. The rocker **50** has a front end with a channel **54** and a rear end with a slot **56**. The channel **54** is formed by two deflectable arms **58**. The arms **58** have opposing ribs **60**. A portion of the flange **28** of the cam member **24** is located in the channel **54**. The ribs **60** are located on the opposite top and bottom surfaces of the flange **28**. The top end **62** of the steam rod **42** is located in the slot **56**. The rocker **50** also has an integral spring arm **64** that is biased against the housing **14**. The rocker **50** is arranged such that it extends from the cam member **24** in a general or substantial radial direction; at least in one position or one plane. However, in alternate embodiments the rocker **50** need not be generally radially arranged. For example, the rocker could be generally tangentially arranged relative to the cam member, but still mounted on the flange **28**. The arms **58** need not be flexible. However, this has been found to compensate for tolerance variations. The ribs **60** help to compensate for variations due to angled movement of the rocker **50** relative to the cam member **24**.

Referring to all the figures, when the user rotates the knob **22** from the OFF position shown in FIG. **1** to the desired temperature setting shown in FIG. **2**, the thermostat **16** is moved by the cam member **24** and shaft **26** to that setting. In the OFF position shown in FIG. **1**, the steam valve **18** is closed so no water will enter the steam chamber while the iron is OFF. However, due to the mechanical connection of the steam rod **42** to the cam member **24** by the rocker **50**, when the cam member **24** is axially rotated, the rocker **50** moves the steam rod. More specifically, axial rotation of the cam member **24** causes the flange **28** to move. The front end

of the rocker **50** rides on the flange **28** as it is rotated. The upper section **72** moves through the channel **54** such that the angled section **74** enters the channel **54**. As the angled section **74** moves through the channel **54**, this moves the front end of the rocker **50** from its up position shown in FIG. **1** towards the front down position shown in FIG. **2**. The flange **28** functions similar to a worm thread inside the channel **54**; at least along the angled section **74**. Thus, the angled section is referred to herein as a worm thread section. Because of the pivotal connection of the rocker **50** on the housing **14**, the rocker **50** pivots as shown by arrow A. This moves the rear end of the rocker **50** from its down position shown in FIG. **1** towards the rear up position shown in FIG. **2**. When the rear end of the rocker **50** moves up, the rocker **50** moves the steam rod up because of the interlocking connection of the steam rod top **62** in the rear slot **56**. When the user rotates the knob **22** back towards the OFF position, the cam member **24** pivots the rocker in the opposite direction to move the steam rod **42** back towards its closed position. Thus, rotation of the knob **22** both sets the thermostat **16** and opens the steam valve **18**.

The top section **72** of the flange **28** has virtually no slope to keep the steam valve **18** totally closed at low temperatures. For rotation of the knob **22** to its highest temperature setting, the steam rod **42** is moved to its fully open position by the flange **28** and rocker **50**. This allows the largest amount of flow of water through steam valve **18** at the high temperature setting. In alternate embodiments, the thread section on the cam member could have any suitable type of varied slope or pitch configuration. In another alternate embodiment, the cam member could have a cam slot that a projection from the rocker rides in. The pivot mount of the rocker to the housing could also be moved to one end of the rocker and the steam rod would be connected to and driven by the middle of the rocker. The present invention provides a relatively simple, cost effective, compact and dependable system to set the steam valve while also setting the thermostat which is not driven by thermal properties of the soleplate.

It should be understood that the foregoing description is only illustrative of the invention. Various alternatives and modifications can be devised by those skilled in the art without departing from the invention. Accordingly, the present invention is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

What is claimed is:

1. In a steam iron having a steam valve and a rotatable temperature control operably connected to a thermostat, the improvement comprising:

the rotatable temperature control having a cam member with an outwardly extending flange, at least a portion of the flange forming a worm thread section, the flange being operably connected to the steam valve by a pivotable rocker, the rocker having a channel with the flange located therein.

2. A steam iron as in claim **1** wherein the rotatable temperature control has a user actuatable knob with the cam member being connected to the knob.

3. A steam iron as in claim **2** wherein the knob is snap-lock mounted on a post of the cam member.

4. A steam iron as in claim **3** wherein the knob is co-axially aligned with the cam member.

5. A steam iron as in claim **1** wherein the rotatable temperature control has a shaft that connects the cam member with the thermostat such that rotation of the cam member moves a setting of the thermostat.

6. A steam iron as in claim **1** wherein the rocker extends from the cam member in a general radial direction.

7. A steam iron as in claim **1** wherein the rocker has two deflectable arms that form the channel.

8. A steam iron as in claim **1** wherein the rocker has an integral spring arm that is biased against a portion of a housing of the steam iron.

9. A steam iron as in claim **1** wherein the rocker is connected to a steam rod of the steam valve to longitudinally move the steam rod when the rocker is pivotably moved.

10. In a steam iron having a rotatable temperature control with a cam surface, the rotatable temperature control being operably connected to a steam valve and a thermostat, the improvement comprise:

a member connecting the cam surface to a steam rod of the steam valve, the member extending from the rotatable temperature control in a general radial direction; said cam surface comprising a radially extending flange with a worm thread section, said member having a channel with said flange disposed therein.

11. A steam iron as in claim **10** wherein the member has two opposing deflectable arms that form the channel.

12. A steam iron as in claim **10** wherein the member is pivotably connected to a housing of the steam iron.

13. A steam iron as in claim **12** wherein the member has a slot with a portion of the steam rod therein to longitudinally move the steam rod when the member is pivotably moved.

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