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(54) Service and maintenance guide for appliance

(57) A household appliance such as a refrigerator includes a housing and a user interface operatively connected to the housing. The user interface includes a display and user inputs. The user interface is adapted for showing on the display a part number for a component part, contact information for use in acquiring the component part, and instructions for installing the component part. The contact information may include a phone number. The contact information may include a web site address. The component part may be a replacement part such as a filter or the component part may be an accessory part. The user interface may also be adapted for displaying instructions or service or maintenance tasks.

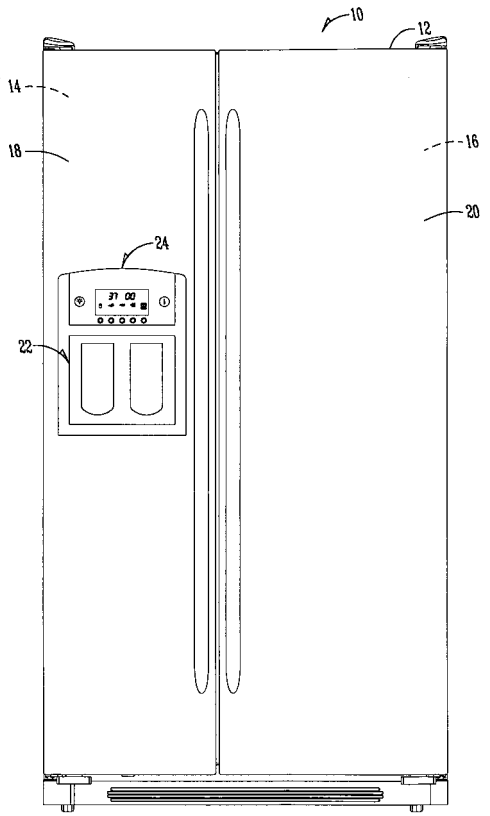

Fig. 1

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Description

[0001] The present invention relates generally to appliances, and will generally be discussed with respect to refrigerators, although the present invention is not necessarily limited to refrigerators but may include other types of appliances or household appliances.

[0002] One of the problems with household appliances or kitchen appliances such as refrigerators relates to the difficulties in service and maintenance. For example, refrigerators with ice makers and/or water dispensers typically have water filters to assist in purifying water. These water filters require periodic replacement. To assist in maintaining the refrigerator, some refrigerators provide feedback to users in various forms to indicate that it is time to replace the water filters. Yet, despite this advance, problems remain. In particular, users may need to consult appropriate instruction manuals or user guides to determine where the water filter is and how to replace it. In addition, the user may need to consult the appropriate instruction manuals or user guides in order to determine the correct part number for a replacement water filter. The user may also need to consult the appropriate instruction manuals or user guides to determine how one obtains a replacement water filter. In some cases, a user may have lost or misplaced his instruction manual or user guide.

[0003] Similar problems exist with other routine service or maintenance activities, such as adjusting a shelf or changing a light bulb. The user often does not have ready access to an instruction manual or user guide.

[0004] What is needed is an improved appliance for addressing these problems.

[0005] Therefore, it is a primary object, feature, or advantage of the present invention to improve upon the state of the art.

[0006] It is a further object, feature, or advantage of the present to provide an appliance which reduces problems associated with service and maintenance.

[0007] It is a still further object, feature, or advantage of the present invention to provide an appliance which provides contact information for obtaining replacement parts for the appliance.

[0008] Another object, feature, or advantage of the present invention is to provide an appliance which provides part numbers associated with replacement parts and/or accessories.

[0009] Yet another object, feature, or advantage of the present invention is to provide an appliance which provides installation instructions for replacement parts and/or accessories.

[0010] A further object, feature, or advantage of the present invention is to provide an appliance which provides instructions for service and maintenance tasks.

[0011] A further object, feature, or advantage of the present invention is to provide an appliance which reduces a user's need for reliance on user's manuals to service and maintain the appliance.

[0012] One or more of these and/or other objects, features, or advantages of the present invention will become apparent from the specification and claims that follow.

[0013] According to one aspect of the present invention, a refrigerator is provided. The refrigerator includes a refrigerator cabinet for enclosing at least one refrigerating compartment, a display operatively connected to the cabinet, and a control unit electrically connected to the display. The control unit is adapted for determining the presence of a condition requiring a replacement part. The control unit is adapted for displaying on the display a visual indicator indicative of the presence of the condition requiring the replacement part. The control unit is adapted for receiving from the user an input requesting additional information about the condition requiring the replacement part. The control unit is also adapted for displaying additional information about the condition requiring the replacement part on the display after receiving the input requesting additional information from the user. The additional information about the condition may include contact information for ordering a part. The contact information may include a phone number or a web site address. The additional information about the condition may include a part number for a replacement part. The replacement part may be a filter such as a water filter. The additional information may include instructions for servicing the refrigerator such as instructions for installing the replacement part. The visual indicator may indicate the presence of the condition requiring the replacement part by blinking or otherwise alerting the user.

[0014] According to another aspect of the present invention, a household appliance is provided. The household appliance includes a household appliance housing and a user interface operatively connected to the housing. The user interface includes a display and user inputs. The user interface is adapted for showing on the display a part number for a component part, contact information for use in acquiring the component part, and instructions for installing the component part. The contact information may include a phone number. The contact information may include a web site address. The component part may be a replacement part, such as a filter, or the component part may be an accessory part. The appliance may be a refrigerator and the household appliance housing may be a refrigerator cabinet.

[0015] According to another aspect of the present invention, a method for providing convenience to a user of a refrigerator such that the user may service the refrigerator without consulting written documentation is provided. The method includes providing the refrigerator wherein the refrigerator includes a housing and a user interface operatively connected to the housing. The user interface includes a display. The method further includes displaying on the display of the user interface of the refrigerator a part number for a component part and contact information for use in acquiring the component part. The component part may be a replacement part, such as a water filter, or an accessory part. The method may further

include displaying on the display of the user interface instructions for replacing a component part. The contact information may include a phone number or a web site address. The method may further include receiving an order for the component part from the user.

[0016] According to another aspect of the present invention, a system for use in a household appliance is provided. The system includes a display, at least one user input associated with the display and a memory storing screen display information including part numbers for component parts, contact information for use in acquiring the component parts, and instructions for installing the component parts. The display is adapted for showing on the display at least one of the part numbers, the contact information, and the instructions. The component parts may be refrigerator parts. The component parts may include replacement parts or accessory parts.

[0017] According to another aspect of the invention, a household appliance is provided, the appliance includes a housing, a user interface operatively connected to the housing and having a display and user inputs. The user interface is adapted for showing on the display instructions for service or maintenance tasks. The instructions may take the form of text, still images, video and combinations of such items with accompanying audio.

[0018] The invention will be further described by way of example with reference to the accompanying drawings, in which:-

FIG. 1 is a perspective view of a refrigerator according to one embodiment of the present invention.

FIG. 2A is display of a user interface associated with a refrigerator according to one embodiment of the present invention with a call service icon flashing.

FIG. 2B is display of a user interface associated with a refrigerator according to one embodiment of the present invention with a replace filter icon flashing.

FIG. 3 is a display of a user interface associated with a refrigerator associated with providing contact information for accessing a web site, calling about general questions, calling about service contracts, and calling about parts and accessories.

FIG. 4 is a display of a user interface associated with a refrigerator for displaying part number information about component parts of the refrigerator.

FIG. 5 is a display of a user interface associated with a refrigerator for displaying ordering information for replacement parts.

FIG. 6 is a display of a user interface associated with a refrigerator for displaying replacement information for a water filter.

FIG. 7 is a display of a user interface associated with a refrigerator for displaying a portion of a picture sequence with instructions for replacing a water filter.

FIG. 8 is a display of a user interface associated with a refrigerator for displaying another portion of a picture sequence with instructions for replacing a water filter.

FIG. 9 is a block diagram according to one embodiment of the present invention.

[0019] FIG. 1 is a perspective view illustrating one embodiment of an appliance. The appliance shown in FIG. 1 is a refrigerator **10.** The refrigerator **10** has a refrigerator cabinet **12** which serves as an appliance housing and encloses refrigerating compartments, including a freezer compartment **14** and a refrigerator compartment **16.** A freezer compartment door **18** is provided as well as refrigerator compartment door **20** for providing access to the respective compartments. An ice dispenser unit **22** is shown on the freezer compartment door. Above the ice dispenser unit **22** is a user interface **24.** The user interface **24** need not be in the location shown, may be incorporated into the ice dispenser **22,** or may be otherwise positioned. The refrigerator **10** shown in FIG. 1 is merely one embodiment of a refrigerator. The refrigerator may be configured differently and need not have multiple compartments or the side-by-side configuration shown.

[0020] FIG. 2A and 2B illustrate the user interface **24** in more detail. The user interface **24** includes a display **26.** The display **26** may be a liquid crystal display (LCD) and may be touch sensitive so as to provide a means for user input. A default screen **28** is displayed on the display **26.** The default screen **28** includes a refrigerator temperature **30,** a freezer temperature **32.** Other information shown includes the lock status **34** of the refrigerator **10,** the quick cool status **36,** the quick freeze status **38,** the ICEMAGIC status **40,** and the filter status **42.** The lock status **34** is indicative of whether the ice dispenser is locked or unlocked. The quick cool status **36** indicates whether the quick cool feature is in use to speed the cooling of large amounts of groceries by temporarily lowering temperatures. The quick freeze status **38** indicates whether the quick freeze feature is in use to speed the cooling of items located in at least a portion of the freezer compartment. The ICEMAGIC status **40** indicates whether the ICEMAGIC system is in use. The ICEMAGIC system is a system for use when heavy ice usage is needed. ICEMAGIC is trademark of Whirlpool. The filter status **42** indicates the condition of a water filter. A bar graph type display is shown for indicating the filter status **42** so that a user can watch the water filter status change over time. Beneath the display **26** are buttons **48, 50, 52, 54,** and **56.** Each of these buttons is aligned with a corresponding indicator. Instead of buttons **48, 50, 52, 54,** and **56** positioned below the display, a touch sensitive display may be used. The display **26** is preferably a touch sensitive display. A light button **44** is shown as well as a temperature adjust button **46.** In FIG. 2A a call service icon **43** is flashing to indicate that there is a condition present which requires service. In FIG. 2B, a replace filter icon 45 is flashing to indicate that the filter needs replaced. Of course, numerous variations in the user interface are contemplated depending upon the type of appliance, the features, of the appliance, and other variations as may be appropriate in particular applications or environments.

[0021] FIG. 3 illustrates a screen display **60** for displaying settings and information. The screen display **60** includes a contact input **62** which may be activated to signal that contact information should be displayed. The screen display **60** includes a parts input **64** which may be activated to signal that parts information should be displayed. The screen display **60** includes an order input **66** which may be activated to signal that ordering information should be displayed. As shown in FIG. 3, the contact input **62,** the parts input **62,** and the order input **66** are inputs associated with the touch sensitive display **26.** The inputs may be areas or regions of the screen display **60** which is displayed on the display **26.** Alternatively, other forms of input may be used. The screen display **60** also includes contact information region **72** which as shown indicates a web site address, a toll-free number for general questions, a toll-free number for service contracts, and a toll-free number for parts and accessories. Also, a back input **68** and an "OK" input **70** are provided as a part of the user interface so that a user may indicate they wish to return to a previous screen by using the back input **68** or indicate that they are finished for now by using the "OK" input **70.** The back input **68** and the "OK" input **70** may also be touch sensitive inputs.

[0022] FIG. 4 illustrates a screen display **74** for displaying additional information about parts. The screen display **74** may be displayed after a user selects the parts input **62.** The screen display **74** includes a parts number region **76** which includes proper and complete part numbers for various replacement parts and accessory parts which a user may require or desire. Examples of replacement parts include water filters, extra bins, shelves, or other parts. Thus, when a user needs information about replacement parts or accessory parts, the user need only access the information from the user interface of the refrigerator without attempting to find manuals and other information that may be lost, misplaced, or difficult to access. In addition, the part information is complete so that a user can correctly order appropriate parts or accessories, without attempting to guess at the part numbers or order based on refrigerator model.

[0023] FIG. 4 includes a forward input **80** and a backward input **82** so that the user can scroll through the numbers of many different types of parts and accessories. The list of parts and accessories may be placed in various orders including by placing the most commonly order parts, such as water filters, at the top of the list. Alternatively, the list may be ordered alphabetically, by part number, or otherwise.

[0024] FIG. 5 illustrates a screen display **84** which includes ordering information **86.** Screen display **84** may be displayed after a user selects the order input **66.** The ordering information may include a phone number to call to place an order, a web site address to visit to place an order, or to indicate that replacement parts are available at retailers, resellers, or elsewhere. Where a phone number is used, preferably the phone number is a toll-free number. The display of ordering information by the refrigerator further provides convenience to a user as a user need not search for contact information or other ordering information.

[0025] FIG. 6 illustrates a water filter screen display **88** for providing information about the replacement of a water filter. A filter status input **90** is provided as well as a water filter order information input **92,** and a water filter replacement information input **94.** A user selects the water filter replacement information input **94** to view the screen display **88** which includes the water filter replacement information **96.** The water filter replacement information **96** provides a user with the information necessary to replace the water filter, including how to remove the filter. Because this information is conveniently accessible by a user, the user need not attempt to find and reference instruction manuals and guides. Although instructions manuals and guides may generally be provided with appliances, users may lose or misplace this information. By making this information available from the user interface of the refrigerator, the user is able to easily and conveniently access this information when needed.

[0026] The instructions for a particular service or maintenance task can be conveyed to the user in a variety of different ways. For example, the instructions for replacing a water filter illustrated on the display **88** in FIG. 6 are in text. The instructions can also take other forms, such as still photos or images, a sequence of photos or images, video materials, or a combination of such items. Audio from a speaker **105** on the user interface **24** may also accompany what is shown on the display 88 to provide further explanation and instruction. FIGS 7 and 8 are exemplary only and show two different still images with pictures and text on display **88** from a sequence of images used to teach the user how to install a water filter. The same could be done for other service or maintenance tasks. Preferably, audio instructions would also be provided from the speaker **105.**

[0027] As an alternative to displaying the information on the user interface **24,** the instructional materials may also be sent in electronic form via a wireless network to the user's cell phone, computer or other consumer electronics device.

[0028] FIG. 9 is a block diagram of one embodiment of a system associated with a refrigerator appliance. The system **100** includes a control unit **102** operatively connected to the user interface **24,** which includes a speaker **105,** a display **26** and one or more user inputs **104.** A memory is also operatively connected to the control unit **102.** The memory **106** may be used to store the screen displays or information presented on the screen displays including part information, contact or ordering information, and installation instructions. As previously discussed, the installation instructions can take a variety of forms, including text, still images and video. Audio information from speaker **105** may also accompany the installation instructions on the display **26.** The control unit **102** may also be operatively connected to one or more sensors which are associated with the refrigerator sys-

tem **108.** The control unit may include one or more processors, microcontrollers, integrated circuits, or other intelligent controls. The control unit **102** communicates with the user input **104** and the display **26** to display appropriate information on the display **26,** including the various screen displays illustrated in FIGS 2A-2B and 3-8. Information regarding the screen displays may be stored in the memory **106.** It is to be understood that the user input **104,** the display **24,** the memory **106,** and the control unit **102** may be integrated in whole or in part. The user input **104** may include touch sensitive inputs associated with the display **26** as well as additional such as, but not limited to buttons.

[0029] In operation the user interface **24** of the refrigerator **10** interacts with a user to report on the state of the refrigerator, including various refrigerator functions or refrigerator features. This includes alerting the user of a condition requiring service or maintenance such as a water filter needing replacement or other condition. To assist the user in servicing or maintaining the refrigerator, the user interface **24** makes additional information available to the user such as part number information, contact information, and instructions for removing or replacing parts. Thus, the user has ready access to information needed from the refrigerator itself without needing to consult additional materials.

[0030] In operation, various methods may be used for providing convenience to a user of a refrigerator such that the user may service the refrigerator without consulting written documentation. The user interface provides relevant information so written documentation does not need to be relied upon. This can include information about a component part such as a replacement part or information about an accessory part. A water filter is an example of a replacement part. A bottle rack is an example of an accessory part.

[0031] An additional benefit of the present invention is that the contact information for obtaining replacement or accessory parts will always be readily available to the user of the refrigerator. When this contact information is used, the replacement or accessory parts is then obtained from an approved source. Thus, the manufacturer of the refrigerator can increase the likelihood that proper replacement parts or accessory parts are used and, if the manufacturer so chooses, that the manufacturer is contacted when replacement parts are needed. Thus, in operation, methods of the present invention may include the step of receiving an order for the component part from the user.

[0032] Although a preferred embodiment has been described in the context of a refrigerator, it is to be understood that aspects of the invention may be used in other types of appliances. In addition, the present invention contemplates numerous variations including variations in the structure and configuration of the appliance, the manner in which information is presented to the user, variations in the user interface including the type of user inputs provided, and other variations. The present invention is applicable to any type of repair, maintenance or service to an appliance performed by the user. The present invention is not to be unduly limited to the specific embodiments described herein as various modifications, options and alternatives fall within the scope of the invention as defined by the appended claims.

Claims

1. A refrigerator, comprising:

a refrigerator cabinet for enclosing at least one refrigerating compartment;
a display operatively connected to the cabinet;
a control unit electrically connected to the display;
the control unit adapted for determining presence of a condition requiring a replacement part;
the control unit adapted for displaying on the display a visual indicator indicative of the presence of the condition requiring the replacement part;
the control unit adapted for receiving from the user an input requesting additional information about the condition requiring the replacement part; and
the control unit adapted for displaying additional information about the condition requiring the replacement part on the display after receiving the input requesting additional information from the user.

2. The refrigerator of claim 1 wherein the additional information about the condition includes contact information for ordering a part.

3. The refrigerator of claim 2 wherein the contact information includes a phone number.

4. The refrigerator of claim 1, 2 or 3 wherein the additional information about the condition includes a part number for a replacement part.

5. The refrigerator of any one of the preceding claims wherein the replacement part is a filter.

6. The refrigerator of claim 5 wherein the filter is a water filter.

7. The refrigerator of any one of the preceding claims wherein the additional information about the condition includes instructions for servicing the refrigerator.

8. The refrigerator of claim 7 wherein the instructions for servicing the refrigerator include instructions for installing the replacement part.

9. The refrigerator of any one of the preceding claims wherein the visual indicator indicative of the presence of the condition requiring the replacement part blinks.

10. A household appliance, comprising:

a household appliance housing;
a user interface operatively connected to the housing;
wherein the user interface comprises a display and user inputs;
wherein the user interface is adapted for showing on the display a part number for a component part, contact information for use in acquiring the component part, and instructions for installing the component part.

11. The appliance of claim 10 wherein the contact information includes a phone number.

12. The appliance of claim 10 or 11 wherein the contact information includes a web site address.

13. The appliance of claim 10, 11 or 12 wherein the component part is a replacement part.

14. The appliance of claim 13 wherein the replacement part is a filter.

15. The appliance of claim 10, 11 or 12 wherein the component part is an accessory part.

16. The appliance of claim 10, 11 or 12 wherein the household appliance is a refrigerator and the household appliance housing is a refrigerator cabinet.

17. A method for providing convenience to a user of a refrigerator, the method comprising:

providing the refrigerator wherein the refrigerator comprises a housing and a user interface operatively connected to the housing and wherein the user interface comprises a display;
displaying on the display of the user interface of the refrigerator a part number for a component part and contact information for use in acquiring the component part.

18. The method of claim 17 wherein the component part is a replacement part.

19. The method of claim 18 wherein the replacement part is a water filter.

20. The method of claim 17 wherein the component part is an accessory part.

21. The method of claim 17 further comprising displaying on the display of the user interface instructions for replacing a component part.

22. The method of any one of claims 17 to 21 wherein the contact information includes a phone number.

23. The method of any one of claims 17 to 22 wherein the contact information includes a web site address.

24. The method of any one of claims 17 to 23 wherein the display is a touch sensitive display.

25. The method of any one of claims 17 to 24 further comprising receiving an order for the component part from the user.

26. A system for use in a household appliance, comprising:

a display;
at least one user inputs associated with the display;
a memory storing screen display information including part numbers for a plurality of component parts, contact information for use in acquiring the plurality of component parts, and instructions for installing the component parts;
wherein the display is adapted for showing on the display at least one of the part numbers, the contact information, and the instructions.

27. The user interface of claim 26 wherein the plurality of component parts are refrigerator parts.

28. The user interface of claim 26 wherein the component parts include replacement parts for a refrigerator.

29. The user interface of claim 26 wherein the component parts include accessory parts for a refrigerator.

30. A household appliance, comprising:

a household appliance housing;
a user interface operatively connected to the housing;
wherein the user interface comprises a display and user inputs;
wherein the display is adapted for showing on the display instructions for performing a service or maintenance task.

31. The household appliance of claim 30 wherein the instructions comprise textual material.

32. The household appliance of claim 30 or 31 wherein the instructions comprise video material.

33. The household appliance of claim 31 or 32 further comprising a speaker operatively connected to the housing and wherein the instructions further comprise audio material.

34. The household appliance of claim 30 wherein the instructions comprise one or more still images with textual material.

35. The household appliance of claim 30 further comprising a speaker operatively connected to the housing and wherein the instructions comprise one or more still images with audio material.

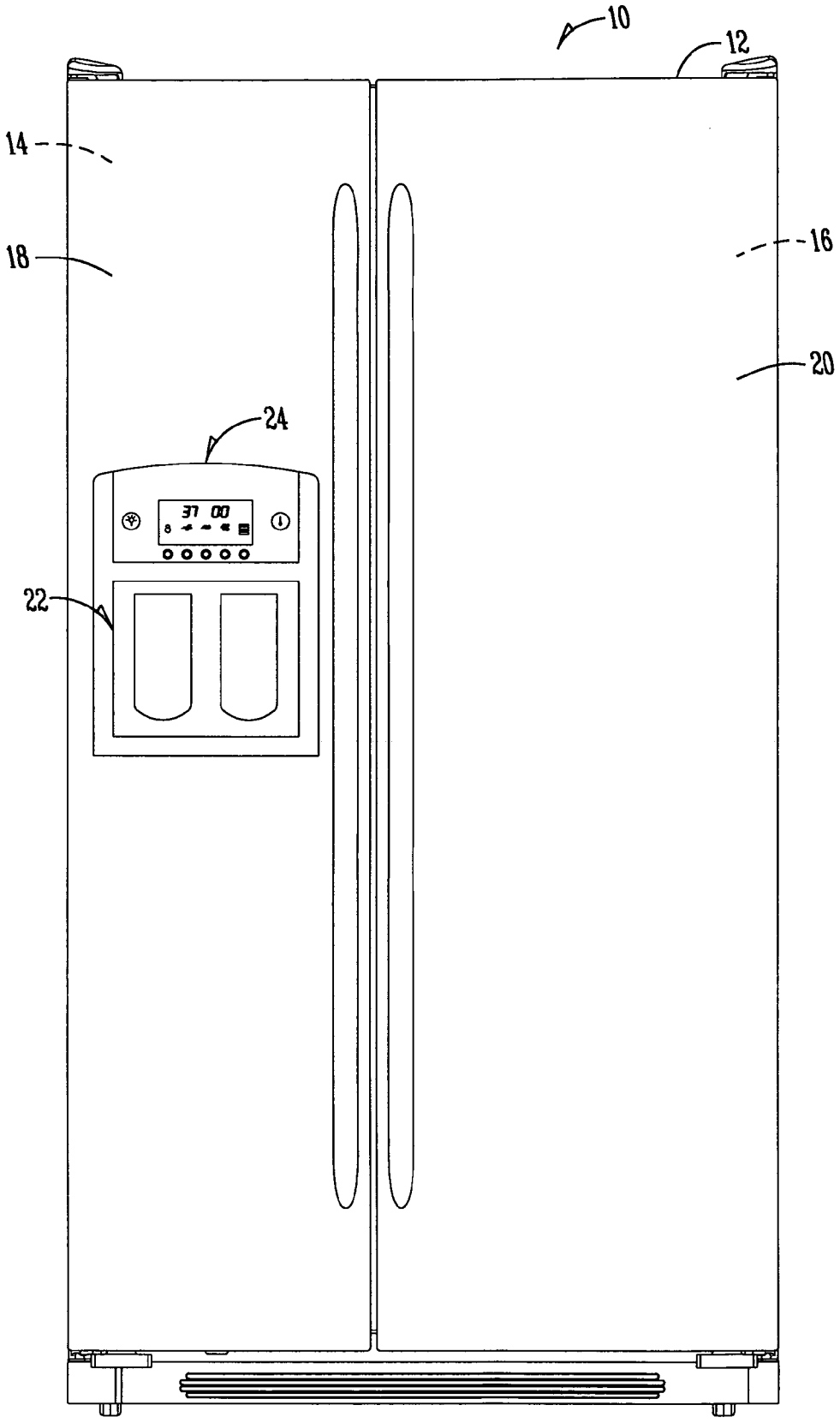

Fig. 1

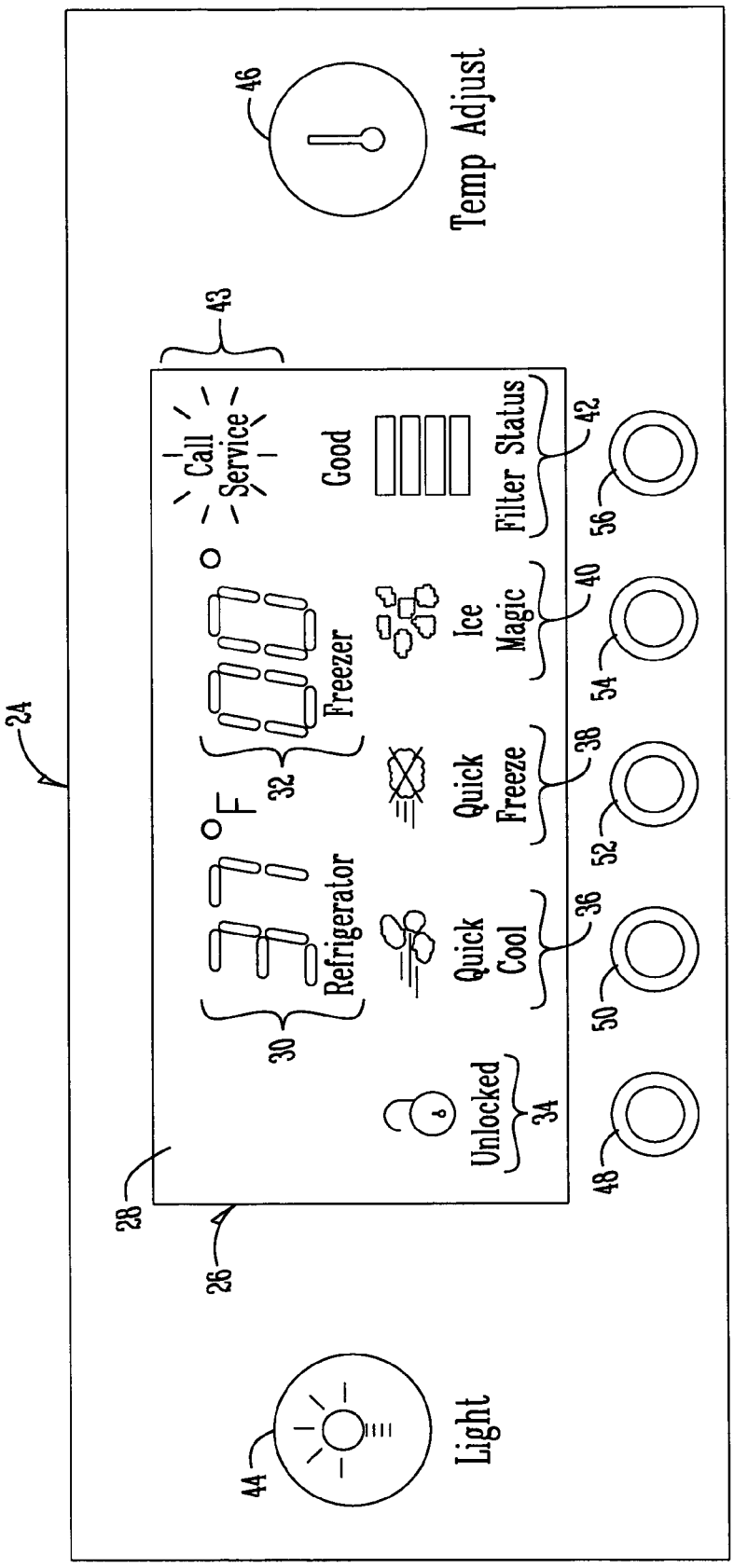
24
26
28
30
Refrigerator
32
Freezer
34
Unlocked
36
Quick Cool
38
Quick Freeze
40
Ice Magic
42
Filter Status
Good
Call Service
43
44
Light
46
Temp Adjust
48
50
52
54
56

Fig.2A

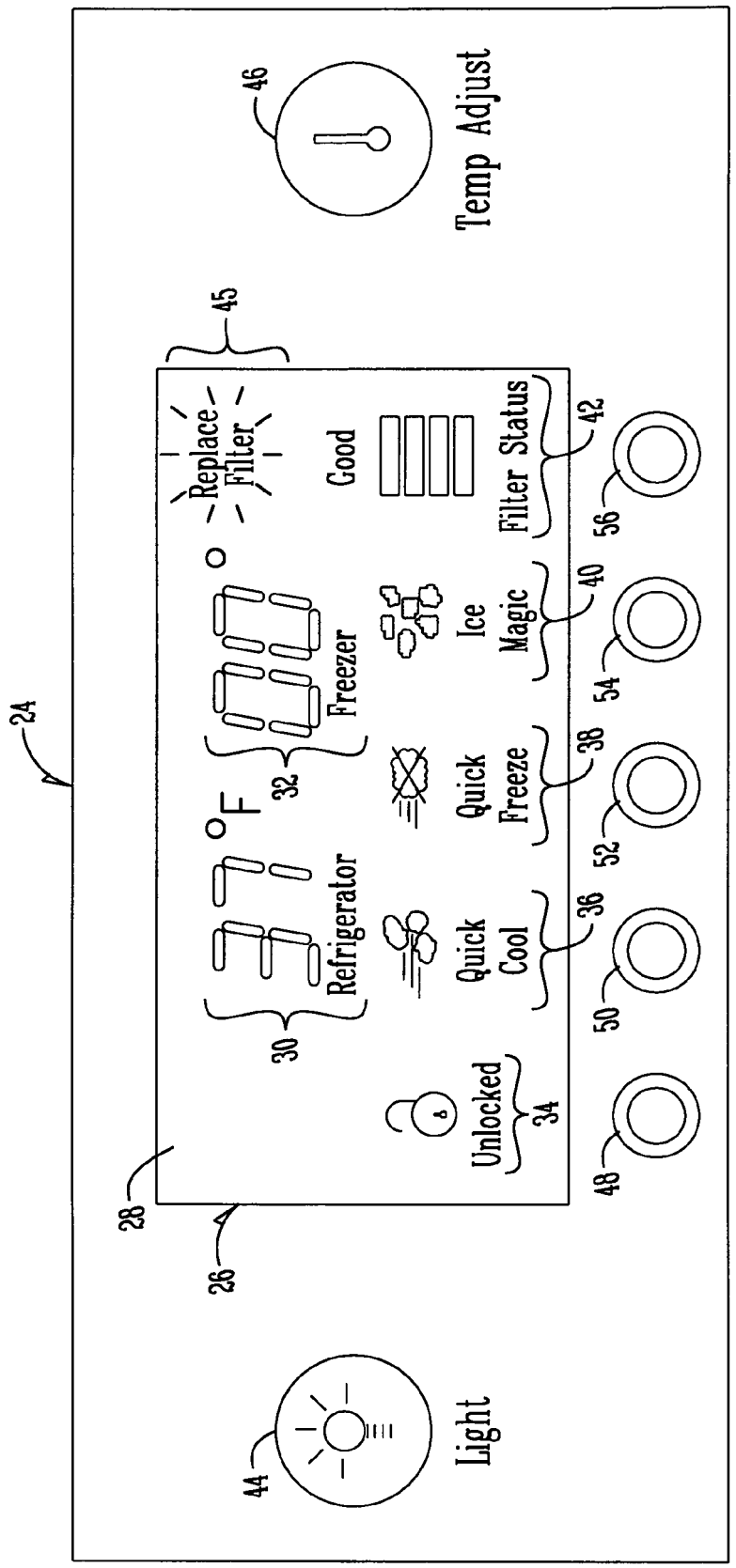
24
26
28
30
Refrigerator
°F
32
Freezer
°
Replace Filter
Good
Filter Status
42
45
46
Temp Adjust
Unlocked
34
Quick Cool
36
Quick Freeze
38
Ice Magic
40
Light
44
48
50
52
54
56

Fig.2B

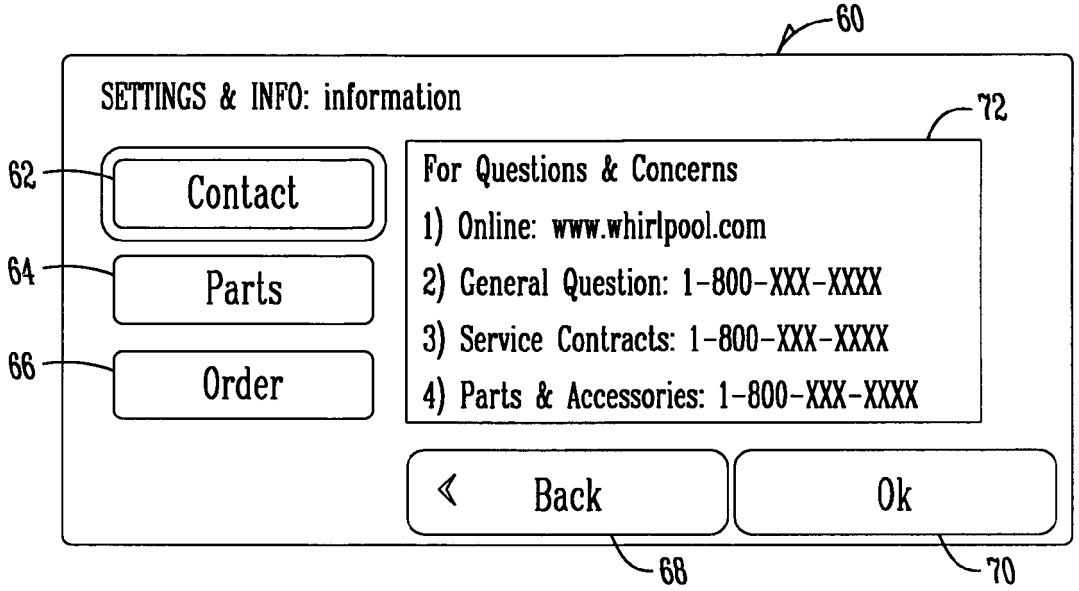
60
SETTINGS & INFO: information
72
62
Contact
64
Parts
66
Order
For Questions & Concerns
1) Online: www.whirlpool.com
2) General Question: 1-800-XXX-XXXX
3) Service Contracts: 1-800-XXX-XXXX
4) Parts & Accessories: 1-800-XXX-XXXX
Back
Ok
68
70

Fig. 3

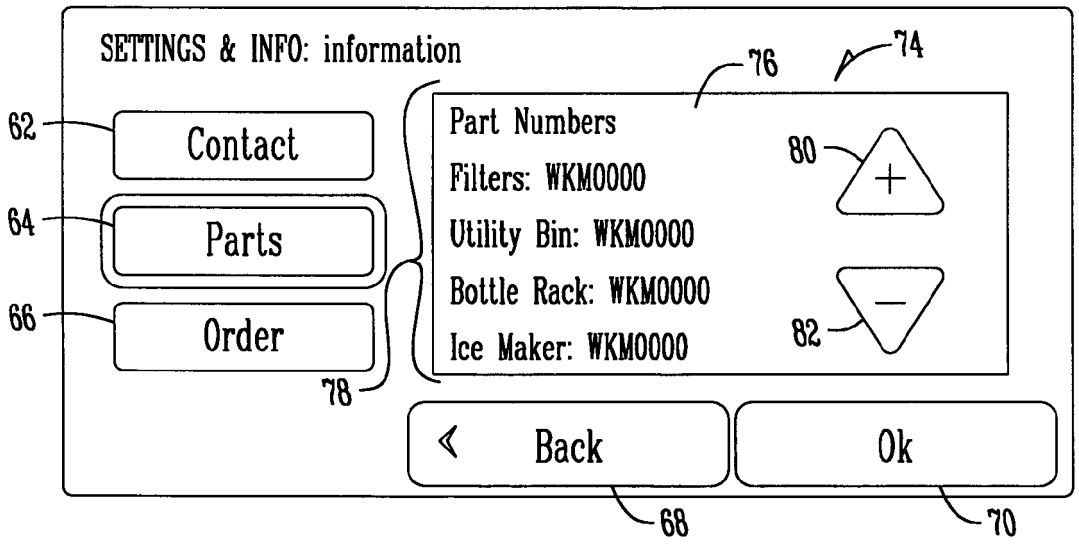
SETTINGS & INFO: information
76
74
62
Contact
64
Parts
66
Order
78
Part Numbers
Filters: WKM0000
Utility Bin: WKM0000
Bottle Rack: WKM0000
Ice Maker: WKM0000
80
82
Back
Ok
68
70

Fig. 4

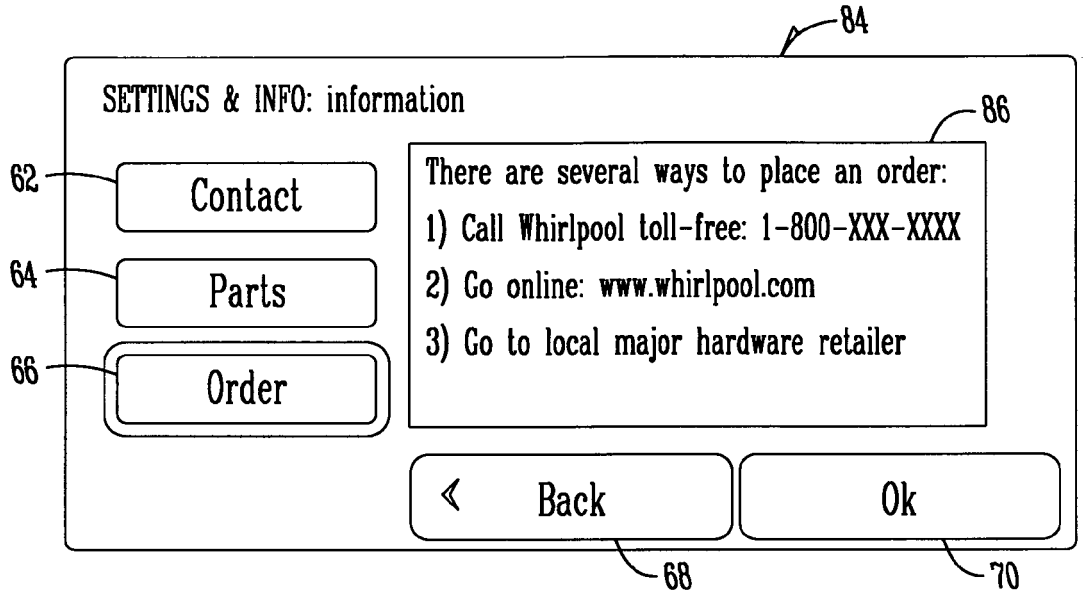
84
SETTINGS & INFO: information
86
62
Contact
64
Parts
66
Order
There are several ways to place an order:
1) Call Whirlpool toll-free: 1-800-XXX-XXXX
2) Go online: www.whirlpool.com
3) Go to local major hardware retailer
Back
Ok
68
70

Fig. 5

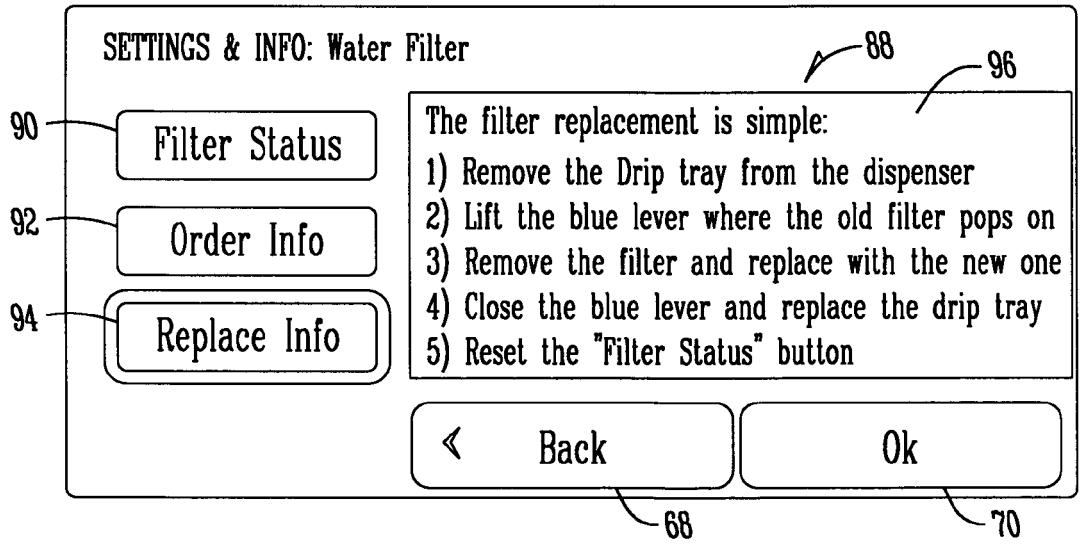
SETTINGS & INFO: Water Filter
88
96
90
Filter Status
92
Order Info
94
Replace Info
The filter replacement is simple:
1) Remove the Drip tray from the dispenser
2) Lift the blue lever where the old filter pops on
3) Remove the filter and replace with the new one
4) Close the blue lever and replace the drip tray
5) Reset the "Filter Status" button
Back
Ok
68
70

Fig. 6

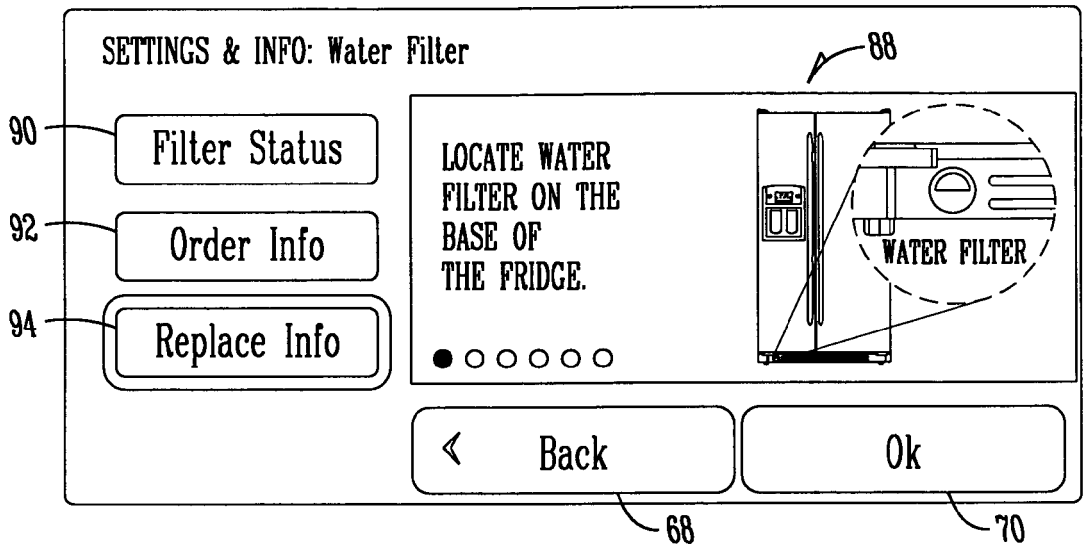
SETTINGS & INFO: Water Filter
88
90
Filter Status
92
Order Info
94
Replace Info
LOCATE WATER FILTER ON THE BASE OF THE FRIDGE.
WATER FILTER
Back
Ok
68
70

Fig. 7

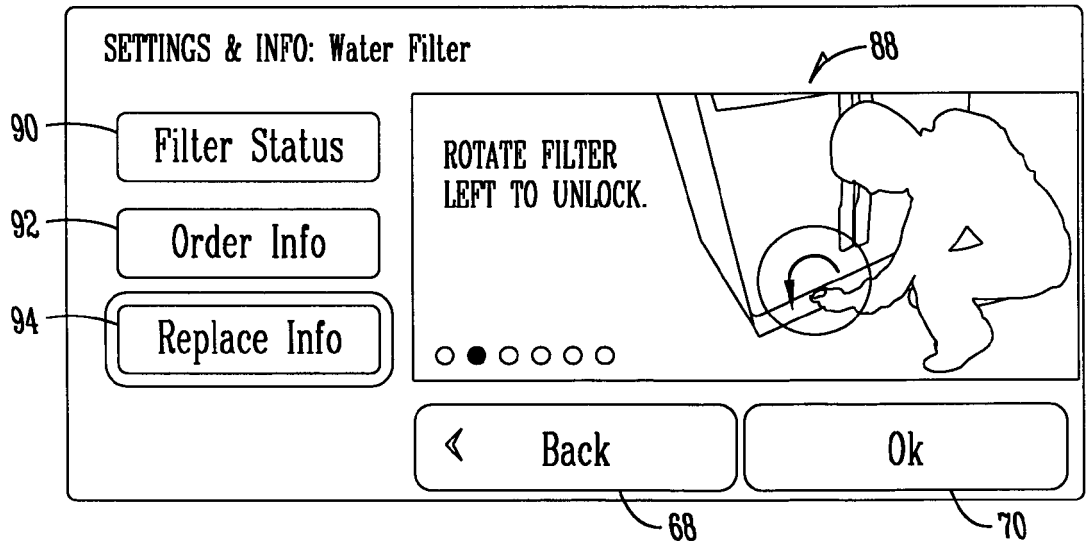
SETTINGS & INFO: Water Filter
88
90
Filter Status
92
Order Info
94
Replace Info
ROTATE FILTER LEFT TO UNLOCK.
Back
Ok
68
70

Fig. 8

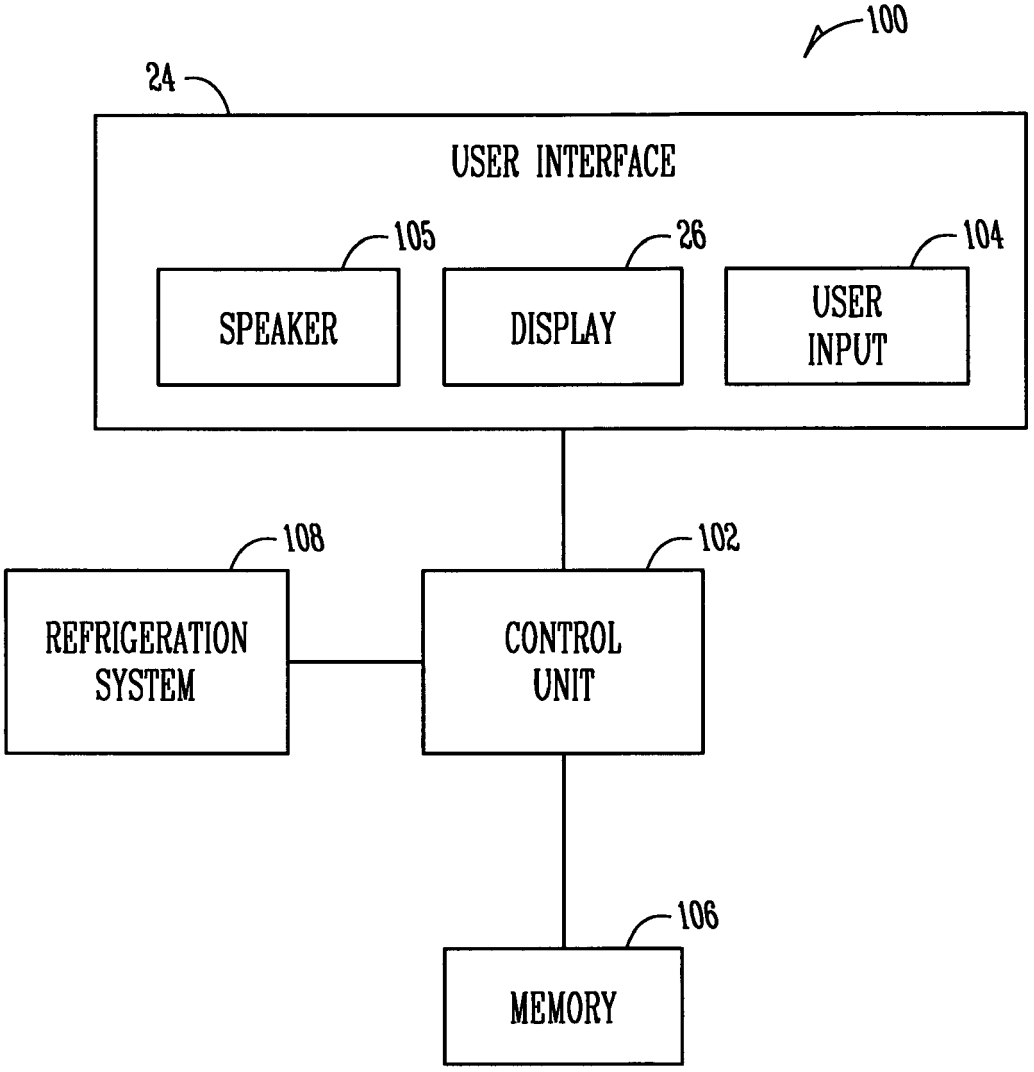
100
24
USER INTERFACE
105
SPEAKER
26
DISPLAY
104
USER INPUT
108
REFRIGERATION SYSTEM
102
CONTROL UNIT
106
MEMORY

Fig. 9