

PATENTS ACT 1977

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DESCRIPTION OF INVENTION

Title: "A foldable household appliance"

THIS INVENTION relates to foldable household appliances, such as countertop and undercabinet instant coffee-makers and can openers.

5 Small countertop household appliances are well known. Conventional countertop and undercabinet appliances take up a significant amount of room in the kitchen. As the number of small appliances in homes increases, and as the size of homes decreases, countertop
10 space and under counter storage space becomes more limited.

A conventional countertop electric instant coffee or tea maker may comprise a water heating reservoir
15 supported by a stand so that a receptacle for coffee or tea can be placed under the water heating reservoir during use. Such an item is difficult to store conveniently because of its size and irregular configuration. What has been needed, but not shown or suggested by the prior art,
20 is an appliance which can be unfolded and locked into operating position for use, and which can be folded compactly for storage.

According to the present invention there is provided
25 a foldable household appliance comprising a first part and a second part, one of said parts comprising a body of the appliance and the other comprising a support for said body pivotally connected together for relative pivotal movement about an axis having a first hinge member having a
30 bore formed therein extending along said axis, said second

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part having a second hinge member rotatable about said axis relative to said first part, said second hinge member being adjacent to said first hinge member and having a partition having a passage therethrough centred on said axis, a locking member received in said bore, not rotatable in said bore but slidable axially along said bore between a first position and a second position upon the application of force thereto, an axle extending through said passage in said second hinge member, and engaging said locking member, said axle being manually movable axially with said locking member, between an initial position in which said locking member is in said first position, and a final position in which said locking member is in said second position, said axle having a bearing surface slidably engaging said second hinge member, said axle being rotatable about said axis with respect to at least one of said second hinge member and said locking member, interlocking means comprising a depression on one of said second hinge member and said locking member and a projection on the other of said second hinge member and said locking member, adapted to be in mutual engagement, to prevent relative pivotal movement between said second hinge member and said locking member, and thus between said second hinge member and said first hinge member, when said locking member is in said first position, and adapted to be mutually disengaged when said locking member is in said second position, biasing means biasing said locking member towards said first position thereof whereby said first part and said second part can be locked against relative pivotal movement in a predetermined angular position relative to one another by allowing said locking member to assume said first position thereof under the action of said biasing means, and whereby said first appliance part and said second appliance part can be unlocked by moving said axle from said initial position to said final position and thus moving said locking member from said first to said second

position to disengage said interlocking means, thereby allowing said body and said support to be pivoted about said axis relative to one another.

5 A preferred arrangement of the invention comprises a foldable household appliance having a support comprising a base and upright arms, and a body comprising a box-like structure cantilevered from and pivotally connected to the upper portions of the arms. The pivot connection includes
10 a first hinge portion on either the body or the support, and a coaxial second hinge portion on the other of the body or support. The first hinge portion has a cavity or bore which allows a locking member to slide along the hinge axis. The bore includes means, such as a non-
15 cylindrical interior, to prevent rotation of the locking member around the axis. The second hinge portion has an opening on the axis, and interlocking means which prevent rotation of the locking member with respect to the second hinge portion when they are engaged. The interlocking
20 means can conveniently take the form of depressions in the second hinge portion which engage projections in the locking member. A biasing means, such as a spring, biases the locking member in engagement _____

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with the second hinge member. An axle extends through the opening in the first hinge portion and engages the locking member. The axle may include a button at one end adjacent to the second hinge member. The axle is movable along the axis, as by depressing the button, to move the locking member against the biasing means and out of engagement with the second hinge member.

In the normal position, the biasing means urges the locking member against the second hinge member to lock the second hinge member and the first hinge member in a predetermined rotational position. The first and second hinge members are restricted from moving rotationally with respect to one another by the simultaneous interaction of the locking member with the first hinge member and with the second hinge member. The first and second hinge members are restricted from moving relative to one another transverse to the axis by the same interaction. The biasing means will tend to force the first and second hinge members apart. To restrict the movement of the first and second hinge members relative to one another along the axis, the first hinge member may be provided with an orifice through which a portion of the axle projects. The projecting portion of the axle may be provided with an enlarged portion which restricts movement of the axle through the orifice in the direction urged by the biasing means.

When the button is depressed and the axle is moved along the axis to urge the locking member against the biasing means, the locking member disengages the second hinge member and slides into the bore in the first hinge member. When the locking member is out of engagement with the second hinge member, the first and second hinge members can be rotated about the axis relative to one another. The axle engages the second hinge member and the locking

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member, to restrict relative movement of the first and second hinge members transverse to the axis. The interlocking means on the locking member and the second hinge member may be designed such that

5 when the desired rotational position of the first and second hinge members relative to one another is achieved, the first and second hinge members are locked into that rotational position. Thus, the appliance body may be locked in an unfolded

10 position relative to the support, for operation, and may be rotated and locked into a folded position for storage.

The body of the appliance of this invention may comprise a box-like structure having planar,

15 generally parallel sides, a flat bottom generally perpendicular to the sides, a generally planar hinged top generally parallel to the bottom, and a generally planar back. At each of the two lower corner of the back are either a first hinge portion or a second

20 hinge portion. The exterior configuration of each of the back hinge portions is generally cylindrical, with the axes co-axial and generally perpendicular to the sides. The lower back portions of the sides have cut-outs which form hook-like portions in the

25 sides. The hook-like portions mate with the cylindrical exteriors of the hinge portions. The top portion of the back has openings which allow it to be screwed into the upper portion of the body. When assembled, the outermost edges of the back

30 hinge portions are generally flush with the sides of the body. Disposed in the body is a reservoir for heating liquids such as water. Levers on the front of the body control the heating and dispensing functions.

35 The support comprises a foot or base, which can accomodate a cup for receiving hot liquid, and parallel raised arms at the sides of the base and

generally perpendicular to the base. The tops or upper shoulders of the raised arms are proximate the hinge portions in the back of the body, and bear the other hinge portions. The height of the arms is roughly the same as the depth of the body, so that when the appliance is folded the front of the body is immediately proximate the base and the lower portions of the sides are proximate the raised arms of the support.

In order that the invention may be more readily understood, and so that further features thereof will be appreciated, a device of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a front perspective view of a liquid heating and dispensing appliance embodying the invention, illustrated in an unfolded position;

Figure 2 is a front perspective view of the appliance of Figure 1, illustrated in a folded position;

Figure 3 is a side elevational view of the appliance of Figure 1;

Figure 4 is a rear elevational view of the appliance of Figure 1;

Figure 5 is a sectional view of a part of the device of Figure 3, viewed along the line 5-5;

Figure 6 is an enlarged, exploded perspective view of one pair of hinge members and associated parts;

Figure 7 is a sectional view taken on the line 7-7 of Figure 5, showing one pair of hinge members in a locked position;

Figure 8 is a sectional view taken on line 8-8 of Figure 5, showing a side section of the appliance body and a hinge member;

Figure 9 is a sectional view taken on line 9-9 of Figure 7, showing one pair of hinge members

in a locked position;

Figure 10 is a partial sectional view of Figure 5, showing the button depressed to unlock the hinge;

5 Figure 11 is similar to Figure 9, but shows the button depressed to unlock the hinge;

Figure 12 is similar to Figure 7, but shows the hinge members unlocked and the appliance in a folded position;

10 Figure 13 is a top sectional view of a part of the appliance in a folded position taken on line 13-13 of Figure 12, showing one pair of hinge members in an unlocked position;

Figure 14 is a sectional view taken on line 14-14 of Figure 4;

15 Figure 15 is a sectional view taken on line 15-15 of Figure 4; and

Figure 16 is an exploded front perspective view of the appliance of Figure 1.

20 Referring first to Figures 1 to 4 a countertop water heating and dispensing appliance comprises a body 2 and a support 3, preferably constructed of a molded plastics material. The body 2 comprises spaced apart parallel side walls 4, a rear panel 10, a front panel 18 and an upper closure 5.

25 The support 3 comprises a base 6 and an upwardly extending frame 7. The frame 7 comprises a pair of spaced apart upstanding side arms 8 terminating in upper shoulders 9. The body 2 is pivotally connected to the support 3, towards the upper end
30 of the side arms 8, to allow the body 2 to be folded towards the support 3 to provide a compact appliance for convenient storage (Figure 2).

35 The height of the appliance 1 when unfolded may be about 10 inches (25 centimeters) and the width about 6 inches (15 centimeters).

Figure 5 shows one preferred construction of the hinged connection between the body 2 and the

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support 3 and Figure 6 shows an exploded view of this connection. Proximate lower corners of the rear panel 10 of the body are located first hinge members 11 and proximate the shoulders 9 of frame 7 are second hinge members 12. As will be described each hinge member 11 co-operates with a respective one of the hinge members 12 to facilitate pivotal movement of the body with respect to the support.

The first hinge members 11 each comprise a blind cylindrical bore 15 formed in the body and having a base axis 16 parallel to the plane of the rear panel 10. Each hinge member 11 defines a side wall 13 and a back wall 14. A front surface 17 of side wall 13 is in a plane generally perpendicular to the bore axis 16. Vanes 20 extending from the side wall 13 into the bore 15 and a locking member 22 is adapted to be received within the bore 15 in slidable engagement, allowing locking member 22 to move within bore 15 along bore axis 16. The locking member has a rear wall 21 arranged to be generally in a plane parallel to the back wall 14 of the first hinge member 11 when the locking member is positioned within the bore 15. Each locking member 22 has slots 23 which receive the vanes 20, to prevent rotation of locking member 22 in bore 15 about bore axis 16. As will be appreciated by one skilled in the art, bore 15 need not be cylindrical, and a combination of vanes and slots are not required to prevent rotation of locking member 22 in bore 15. Any convenient configuration of the bore 15 may be used which permits locking member 22 to reciprocate within bore 15 along the bore axis 16 and which prevents locking member 22 from rotating within bore 15 about the bore axis 16. For example, the bore 15 and locking member 22 can be non-circular in cross-section, in a plane perpendicular to bore axis 16 i.e. oval or

rectangular. Alternatively, the locking member 22 may have vanes which are received by slots in side wall 13 of bore 15.

5 The second hinge members 12 each comprise a planar first wall 25 arranged to go generally perpendicular to bore axis 16 and to abutt the front surface 17 of side wall 13 of first hinge member 11 when the appliance is assembled. A passage 28 is formed in the planar wall 25 by defining a
10 generally cylindrical wall 26. The passage 28 is aligned with the bore 15 and is coaxial with bore axis 16.

An axle 30 extends along the bore axis 16 and through the passage 28 to engage the locking member
15 22. The axle 30 has a first cylindrical bearing surface 32 which engages in a cylindrical sleeve 34 of the locking member 22 and a second cylindrical bearing surface 35 which engages the cylindrical wall 26 of the second hinge member 12. The axles
20 30 provide the pivot shaft which allows the first hinge members 11 and the second hinge members 12 to pivot about bore axis 16 relative to one another. The hinge arrangements are adapted to prevent substantial movement of the first hinge member 11
25 and second hinge member 12 relative to one another in a direction transverse to bore axis 16. The axle 30 is movable along bore axis 16.

To enable the first hinge member 11 and the second hinge member 12 to be locked relative to
30 one another in a selected rotational position, interlocking means are provided. The interlocking means comprise projections 38 on the locking member 22 and co-operating surface 40 forming corresponding depressions 42 in the planar first wall 25 of the
35 second hinge member 12. The projections 38 are adapted to be received by depressions 42 and to the engage surfaces 40. The projections 38 are preferably formed as integral molded extensions

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of the locking member 22 extending parallel to the bore axis 16 proximate the outer perimeter 43 of locking member 22. The depressions 42 are conveniently formed as apertures in planar first wall 25 and are aligned with the projections 38 such that when the locking member 22 and the second hinge member 12 are in engagement in one rotational position relative to one another, the projections 38 are received by the depressions 42 to prevent relative rotation of second hinge member 12 and the locking member 22. When the locking member 22 and second hinge member 12 are in engagement in a second rotational position relative to one another, projections 38 are out of alignment with depressions 42. In that rotational position, projections 38 about the planar wall 25 of the second hinge member 12, allowing rotational movement of second hinge member 12 relative to locking member 22.

A spring 45 biases the locking member 22 against the second hinge member 12. The spring 45 is preferably a coil spring positioned in the bore 15. One end of the spring 45 engages the back wall 14 of the first hinge member 11, whilst the other end of the spring 45 is received by recess 47 formed by a lateral wall 48 and the rear wall 49 of locking member 22, and engages the rear wall 49.

The axles 30 is provided with a shoulder 50 which is adapted to engage contact a surface 52 of locking member 22 and thereby provides means for moving the projections 38 out of engagement with the surfaces 40, to relieve the interlock between locking member 22 and second hinge member 12. The axle 30 is also provided with an engagement surface 53, preferably in the form of a button, by which axle 30 can be manually moved along bore axis 16.

As can best be seen in Figures 10 and 11, by

depressing the button 53 the shoulder 50 of the axle 30 is moved to engage the contact surface 52 of the locking member 22 and thus moves the locking member 22, against the action of the spring 45, into the bore 15, allowing the first hinge member 11 and second hinge member 12 to be rotated relative to one another. Releasing button 53 allows the spring 45 to move the locking member 22 towards the second hinge member 12. If the projections 38 and depressions 42 are aligned, the spring 45 forces the locking member 22 into interlocking engagement with the second hinge member 12, thereby preventing relative rotational movement of first hinge member 11 and second hinge member 12, as shown in Figures 5 and 9. If the projections 38 and depressions 42 are not aligned, the spring 45 biases the projections 38 into slidable engagement with the planar wall 25 of the second hinge member 12, as shown in Figures 12 and 13. In this position the first hinge member 11 and second hinge member 12 can be rotated until the projections 38 and depressions 42 are in alignment, at which point the spring 45 moves the locking member 22 along the bore axis 16 into interlocking engagement with the second hinge member 12, thereby interlocking it with first hinge member 11 and preventing further rotation.

In a preferred embodiment, the second hinge member 12 is provided with a cylindrical cavity 60 defining a side wall 61 and back wall 62. The cavity 60 is adapted to receive the button 53 completely, so that button 53 does not project beyond the plane of the outside wall 65 of the second hinge member 12. It is also preferred that button 53 and cavity 60 be cylindrical and in bearing engagement, so that button 53 acts as a bearing surface for supporting rotation of the second hinge

member 12, to supplement the action of the bearing surface 32 of the axle 30.

5 The axle 30 includes a shaft 70 which projects along the bore axis 16 and through the orifice 72 of the back wall 14 of the first hinge member 11. An enlarged portion 75 at the end of shaft 70 bears against the outer surface 76 of the back wall 14 when the first hinge member 11 and the second hinge member 12 are interlocked, to limit movement of the axle 30. It is preferred that the enlarged portion 75 comprise a split pin arrangement to facilitate assembly of the hinge and to preclude the inadvertent removal of the axle 30 after assembly. In the preferred embodiment, the first hinge member 11, second hinge member 12, locking member 22, and axle 30 are made of molded plastics material. Also in the preferred embodiment, the projections 38 and depressions 42 are oriented such that appliance 1 can be unlocked in the unfolded position only. 20 Projections 38 would not engage surfaces 40 of depressions 42 when appliance 1 is in the folded position, so that appliance 1 can be unfolded quickly and easily.

25 It will be apparent to those skilled in the art that various modifications may be made without departing from the invention in its broader aspects. For example, in the type of appliance shown in Figure 1, it is not necessary that both hinges incorporate locking mechanisms. The axle 30 need not project through the back wall 14 of the first hinge member 11. The enlarged portion 75 of the axle 30 may be located within the recess 47 of the locking member 22. 30

35 In the embodiment described above, the axle 30 is able to rotate about the bore axis 16 relative both to the locking member 22 and the second hinge member 12, since the bearing surface 32 and bearing

surface 35 are cylindrical. For proper operation of the hinge, it is necessary only that axle 30 be able to rotate relative to either locking member 22 or second hinge member 12. Neither the bearing surface 32 nor the sleeve 34 need be cylindrical, and can be adapted to interfit tightly to prevent relative movement in any direction of the axle 30 and locking member 22. The sleeve 34 need form an aperture entirely through locking member 22, but may form only a receptacle for axle 30. The projections 38 can be located on the second hinge member 12 and the depressions 42 on the locking member 22. The interlocking means can be structure other than using projections 38 and depressions 42. The projections 38 and depressions 42 can be oriented such that the appliance 1 can be locked in more than one position, e.g., in the folded position as well as in the unfolded position.

The connection of the rear panel 10 to the remainder of the body 2 can be best seen in Figures 4, 8 and 16. The rear panel 10 comprises a generally planar portion 77, a lower curved portion 78, and the first hinge members 11. The rear panel 10 and body 2 are connected proximate the upper edge of back 10 by screws 79. Screw posts 80 project from the underside 81 of a reservoir support 82, having threaded screw holes 84 therein. Rear panel 10 has small holes 86 proximate its upper edge, aligned with the screw holes 84, through which the shanks of screws 79 are inserted.

The back 10 and body 2 are connected proximate the lower edge of back 10 by a mechanical interlock of the sidewalls 4 and the first hinge members 11. Exterior surfaces 86 of hinge members 11 are generally cylindrical and the sidewalls 4, which are generally planar and rectangular, have a curved wall portion 88 to form hook-shaped cut-outs 89 which conform

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to the exterior surfaces 86 of the first hinge members 11. The distance between the front surface 17 - ie., the width of rear panel 10 at first hinge members 11 - and the distance between the outside surfaces 87 of sidewalls 4, are substantially the same. The result is that the outside surfaces 87 of sidewalls 4 and the front surfaces 17 of the first hinge members 11 are generally flush.

Alternative connections for the rear panel 10 and the body 2 include snap-fit connections, or permanently affixing back 10 to body 2 using adhesive or by heat welding.

The support 3 preferably comprises a base 6 having a substantially horizontal upper surface 19 for accomodating a container such as a coffee cup or jug. The frame 7 extends upwardly from the base 6 and comprises generally parallel rails 24, separated by planar rear panel 85. The rails 24 terminate in shoulders 9 which receive the second hinge members 12. In the unfolded position, the body 2 is locked in a position cantilevered from the frame 7, supported by the first hinge members 11. In this position the rear panel 10 of the body 2 is generally co-planar with the panel 85. By depressing the buttons 53 the body 2 is unlocked from support 3 as described above, allowing the body 2 to pivot downwardly through about 90 degrees into the folded position. In the folded position, the sidewalls 4 of the body 2 are bracketed by the rails 24, and the front panel 18 of the body 2 is parallel and adjacent to the upper surface 19 of the base 6 (see Figure 2).

Beams 55 project from the exterior surfaces 86 of the first hinge members 11 to mate with recesses 56 provided at the junction of a bottom wall 134 and the sidewalls 4 of the body 2. At a position spaced from the beams 55, abutments 83 project from

the exterior surfaces 86 to engage the top edge of the rear panel 85 of the support 3 when the appliance 1 is unfolded. The rear panel 10 of the body 2 has perpendicular side flanges which extend from each of the outer surfaces 86 to the upper edge of the panel 10, which outer surfaces engage the inner surfaces of sidewalls 4.

The appliance of this invention can be either a countertop device or an under-cabinet device. For example, it may be more convenient to mount a can opener under a kitchen cabinet rather than on a countertop. A can opener according to this invention would comprise the can opener mechanism as body 2, and a can opener hanger as support 3. The can opener cutting mechanism would correspond to the top surface of body 2, shown in Figure 1 as closure 5. Support 3 would have no base 6, and would be attached to a kitchen cabinet by securing frame 7 with its back side against the underside of the cabinet with hinge members 12 toward the front of the cabinet. Frame 7 would comprise the panel 85, to which would be affixed first hinge members 11. Rails 24 would be unnecessary. The bore axis 16 would be parallel to the front edge of the cabinet. In the folded position, can opener body 2 would be folded up out of the way against frame 7. In the unfolded position, can opener body 2 would extend down from frame 7 ready for use. The hinge member 12 would be provided with two pairs of depressions 42 at 90 degree separation around bore axis 16, so that the appliance 1 could be locked in both the folded position and in the unfolded position.

Figures 5, 8, 14, 15 and 16 show the internal components of one preferred appliance 1. Extending between the upper portions of the sidewalls 4, and displaced below the upper edges 91 thereof, is a reservoir support 82. The reservoir support 82

is generally planar, having a large opening 93 therein to receive a reservoir 95. The reservoir 95 may be a cast aluminium cup of about 10 ounces (300 milliliters) capacity and have downwardly disposed
5 sidewalls 96 and a bottom wall 97. Less preferably, the reservoir 95 may be drawn stainless steel. The reservoir 95 should have a relatively low mass and a low heat capacity, to facilitate rapid heating of its contents.

10 At the upper perimeter of the reservoir 95 is an annular horizontally extending flange 100 which overlays a portion of the reservoir support 82, and by which the reservoir 95 is supported. Between the flange 100 and the reservoir support
15 82 is disposed O-ring 101. Affixed to the underside 102 of bottom wall 97 of reservoir 95 is a metal bracket 105, having a first leg 106 with a hole 107 in it and a second leg 108 with opposed slots 109. Bracket 103 is secured to the underside of
20 reservoir 95 by bolt 104, and is secured to bottom wall 134 of body 2 by bolt 99.

Also secured to the underside 102 of reservoir 95 is a sheathed heating element 110, comprising a resistance wire element 112 sheathed in an
25 insulating material and covered by a metal outer tubular sheath. Heating element 110 may be cast in reservoir 95, or it may be clamped in grooves in the underside 102 of the reservoir 95. It is preferred that heating element 110 having a rating
30 of about 1450 watts.

A plug 112 is provided to connect the heating element 110 to a power supply. One terminal of the heating element 110 is connected directly to the plug 112 whilst the other terminal of the heating
35 element 110 is connected to the plug 112 through a thermostat 112. The thermostat 113 is secured to the underside 102 of the reservoir 95 by bolts

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118 which are received by threaded openings in the underside 102. The thermostat 113 is calibrated to open the electrical circuit when the liquid in the reservoir nears a temperature of 100 degrees C.

5 A manual reset button 120 of the thermostat 113 may be pushed upwardly to complete the electrical circuit through the heating element 110 and thermostat 113. The manual reset button 120 is depressed by
10 an arm 121 of a lever 122 that pivots about trunnions 124 which are received by horizontal slots in walls 114 projecting upwardly from the inside surface 133 of the bottom wall 134. The lever 122 is caused to pivot by depressing an actuator 126, secured
15 to the lever arm 122 by a clip 123. A coil spring 127 biases the lever 122 out of engagement with the manual reset button 120. The spring 127 is held in place by a bolt 128 which passes through the spring 127 and through a slot 129 in a flange
20 130 of the lever 122. One end 131 of the bolt 128 is secured to a strut 132 that is affixed to the inside surface 133. The spring 127 is disposed between the other end 135 of the bolt 28 and the flange 130.

25 A valve 138, located below a drain hole 139 in reservoir 95, controls the flow of liquid from the reservoir 95. The valve 138 comprises a shell 140 having a liquid entry part 142, a valve seat 143, valve rod guide 144, and liquid exit part 146.
30 The end 145 of the liquid exit part 146 is spaced immediately below the bottom wall 134. A valve rod 148, having at one end a head 149, is biased against the valve seat 143 by a spring 150. The spring 150 applies force between a rod bushing 152
35 and a valve wall 153. The valve 138 is affixed to the bottom wall 134 by screws 155 which pass through bottom wall 134 and seat in screw holes

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The valve 138 is actuated by a lever 157 operated by an actuator 158. Depressing the actuator 158 causes the lever 157 to pivot on trunnions 160, causing the lever arm 161 to depress the valve rod 148, thus moving the head 149 away from the valve seat 143 and allowing liquid to flow through the valve 138. The trunnions 160 are received in horizontal slots 162 in raised walls 163 projecting from the bottom wall 134. The lever 157 is normally biased away from the valve 138 by a coil spring 164 which is held in place by a bolt 165 which passes through the spring 164 and through a slot 167 in the flange 169 of the lever 157. One end 170 of the bolt 165 is secured to a strut affixed to the inside surface 133. The spring 164 is disposed between the other end 171 of the bolt 165 and the flange 169. The actuator 158 is secured to the lever 157 by a clip 147.

The valve 138 is connected to a drain hole 139 of the reservoir by a hose 173 which is secured to a spout 74 of the reservoir 95 by clamps 172.

As can best be seen in Figures 5, 8 and 16, the closure 5 is hinged to the body 2 by cylindrical hinge pins 174 projecting from inner surfaces 175 of the sidewalls 4, immediately below the upper edges 91. Hinge pins 174 are received by apertures 176 in the sides 177 of the closure 5. Snap pins 179 of about the same diameter and length as hinge pins 174 also project from the inner surfaces 175 at the sidewalls at about the same distance below the upper edges 91 as the hinge pins 174. Snap pins 179 are located about one-third of the distance from the rear panel 10 and front panel 18 of the body 2. The sides 177 bear C-shaped receptacles 182 having flexible arms 183. When closure 5 is closed, receptacles 182 receive the snap pins 179

in friction fit, releasably to secure the closure 5 in a closed position.

5 The sides 177 are generally planar and parallel and are spaced from one another by such a distance that when the closure 5 is closed the sides 177 are closely proximate the inner surfaces 175, to restrict the flow of steam from the reservoir 95 to the exterior of the appliance 1. Adjacent to the receptacles 182 are planar baffles 185 which
10 also serve to restrict the flow of steam proximate the receptacles 182. The height of the sides 177 is slightly less than the height of the inner surfaces 175 measured from the reservoir support 82 to the upper edges 91, so that the top edge 187 of the
15 closure 5 is generally at the same height as the upper edge 91 when the closure 5 is closed.

The closure 5 is provided with curved baffles 188 proximate the front and back of the closure 5, to restrict further the flow of steam from the
20 appliance 1. The baffles 188 extend downwardly from the closure 5 by about the same distance as the sides 177, conform to the curvature of the upper perimeter of the reservoir 95, and are spaced horizontally inward slightly from reservoir 95 when
25 closure 5 is closed so that condensation forming on the baffles 188, and on the underside of the closure 5 between the baffles 188, will drip back into the reservoir 95.

The closure 5 is provided with a curved front
30 surface 190 terminating in a horizontally extending lip 191 which extends forwardly to define a grasping surface by which the closure 5 may be opened. The closure 5 is also provided with a curved back surface 193, having a height less than that of the sides
35 177, so that, when the closure 5 is closed the back surface 193 is separated from reservoir support 82 by a space 194. The space 194 allows the closure

5 to pivot open without interference from the reservoir support 82, and provides a passage for steam from reservoir 95. Closure 5 is also provided with vents 196 proximate the back surface 193, to facilitate the escape of steam.

Electrical power is provided to the appliance 1 through the plug 112 that is attached to a power cord 200 which passes through an opening 201 in the rear panel 10. A clamp 202 secures the power cord 201. The panel 85 is provided with a T-shaped bar 204 around which the cord 200 may be wound for storage. A post 205 extends from the underside of the base 6, around which the cord 200 may be wrapped. A strain relief clip 206 is affixed to the post 205, held in place by a clamp washer 209, to secure the cord 200 to the base 6. The clip 206 comprises a box-like member having a central opening through which the post 205 projects, and has a side opening through which the cord 200 enters and exits. The clamp 202 and clip 206 act together to minimize strain on the power cord 200 during folding and unfolding of appliance 1.

An indicator light 207 visible through a lens 208 in the front panel 18 of the body 2 is connected through the thermostat 113 to the power supply. Energization of the heating element 110, by depressing the reset button 120, causes the indicator light 207 to light. When the liquid in reservoir 95 is heated to a predetermined temperature, near boiling the thermostat 113 operates to turn off power to the heating element 110, thus extinguishing light 207.

It is preferred that all parts not subject to substantial elevated temperature be made of plastic, although any other convenient structural material can be used.

The embodiment described above is the preferred

embodiment of this invention. It will be apparent to those skilled in the art that various changes may be made without departing from the invention in its broader aspects. For example, without
5 limitation, first hinge members 11 may be part of sidewalls 4 rather than the rear panel 10. The first hinge members 11 can be a separate item which is glued or otherwise secured in place, or it can be molded, cast, or otherwise formed with the rear
10 panel 10 or sidewalls 4. The first hinge members 11 can be affixed to either the body 2 or the support 2, as can second hinge members 12. One of the shoulders 9 can bear a non-locking conventional hinge instead of a lockable hinge. The panel 85
15 can be omitted, allowing the body 2 to rotate 360 degrees about the axis 16. The latter facility might be of value in an under-cabinet installation.

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CLAIMS

1. A foldable household appliance comprising a first
5 part and a second part, one of said parts comprising a
body of the appliance and the other comprising a support
for said body pivotally connected together for relative
pivotal movement about an axis having a first hinge member
having a bore formed therein extending along said axis,
10 said second part having a second hinge member rotatable
about said axis relative to said first part, said second
hinge member being adjacent to said first hinge member and
having a partition having a passage therethrough centred
on said axis, a locking member received in said bore, not
15 rotatable in said bore, but slidable axially along said
bore between a first position and a second position upon
the application of force thereto, an axle extending
through said passage in said second hinge member, and
engaging said locking member, said axle being manually
20 movable axially with said locking member, between an
initial position in which said locking member is in said
first position, and a final position in which said locking
member is in said second position, said axle having a
bearing surface slidably engaging said second hinge
25 member, said axle being rotatable about said axis with
respect to at least one of said second hinge member and
said locking member, interlocking means comprising a
depression on one of said second hinge member and said
locking member and a projection on the other of said
30 second hinge member and said locking member, adapted to be
in mutual engagement, to prevent relative pivotal movement
between said second hinge member and said locking member,
and thus between said second hinge member and said first
hinge member, when said locking member is in said first
35 position, and adapted to be mutually disengaged when said
locking member is in said second position, biasing means
biasing said locking member towards said first position



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thereof whereby said first part and said second part can be locked against relative pivotal movement in a predetermined angular position relative to one another by allowing said locking member to assume said first position thereof under the action of said biasing means, and whereby said first appliance part and said second appliance part can be unlocked by moving said axle from said initial position to said final position and thus moving said locking member from said first to said second position to disengage said interlocking means, thereby allowing said body and said support to be pivoted about said axis relative to one another.

2. The appliance of claim 1, wherein said first part comprises said body and said second part comprises said support, and wherein said support comprises a frame having a pair of opposite shoulders one of which bears said second hinge member, and said body bears a first hinge member adjacent to said second hinge member, said body being pivotable with respect to said frame through an arc of at least 90°.

3. The appliance of claim 2, wherein said support comprises a base and an upstanding frame having a back wall and a pair of generally parallel side rails providing respective said shoulders and wherein said body has sidewalls and a bottom wall, said body having a pair of opposite lower corners each adjacent to a respective one of said shoulders, each of said corners providing a respective first hinge member, and each of said shoulders providing a respective second hinge member, said first hinge members and said second hinge members having a common axis, said bottom wall being generally perpendicular to said back wall in said predetermined angular position of said body relative to said support and being adjacent to and generally parallel with said back wall in a further position to which said body can be pivoted with



said interlocking means disengaged.

4. The appliance of claim 3, wherein said axle affords by an end portion thereof, a manually engageable button
5 accommodated by said second hinge member.

5. The appliance of claim 4, wherein said locking member and said bore are of complementary non-circular shape in section in a plane generally perpendicular to
10 said axis.

6. An appliance according to claim 5 wherein a vane projects inwardly from the wall of said bore, into a slot in said locking member, in order to prevent rotation of
15 the locking member in said bore whilst allowing axial sliding of the locking member in said bore.

7. An appliance according to claim 5 wherein a vane projects outwardly from said locking member into a slot in the wall of said bore in order to prevent rotation of the
20 locking member in said bore whilst allowing axial sliding of the lacking member in said bore.

7. The appliance of claim 6, wherein said locking
25 member includes a part in the form of a sleeve centred on said axis.

8. The appliance of claim 7, wherein said bore has an end wall extending transversely to said axis, said end wall having an orifice, centred on said axis and through
30 which said axle projects, and said axle bears a lobe which engages the surface of said end wall remote from said locking member.

9. An appliance according to any preceding claim,
35 wherein said support comprises a base having a generally horizontal surface adapted to receive a container, said



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base having a pair of opposite sides and upstanding rails extending therefrom, one of said rails bearing said second hinge member, and said body is cantilevered from said rails by said first hinge means in said predetermined angular position thereof to extend over said base, with clearance, said body incorporating an electrically heated reservoir having a discharge opening in the bottom of said body from which heated liquid from said reservoir can be discharged into a said container placed upon said horizontal surface of said base.

10. The appliance of any preceding claim, wherein said body is generally box-shaped having sidewalls and a removably affixed back, said back having an upper portion, means to removably affix said upper portion of said back to said body, and having a lower portion bearing said first hinge means, said side walls having lower sections having integral hook-shaped portions adapted to interlock with said first hinge means when said back is in position on said body, such that said back can be removably affixed to said body by interlocking said side walls with said first hinge members and affixing said upper portion of said back to said body.