

DESCRIPTION

AN ELECTRICAL KETTLE

This invention relates to an electric kettle comprising a body having base and side walls defining a receptacle for liquid to be heated, an electrical resistance heating means extending within the receptacle and a lid for closing the receptacle.

An example of such a kettle is given in GB-A-2179544. As described in GB-A-2179544, the kettle body and lid may be formed of a plastics material. In order to ensure that the lid does not fall off when the kettle is tilted to pour out heated liquid, the lid must fit tightly onto the kettle body. This requires very accurate moulding of the lid and body components. In addition, the lid may fit so tightly onto the kettle body that it is difficult to remove, especially where the user is disabled.

It is an aim of the present invention to provide an electrical kettle in which the lid can be both securely locked onto the kettle body and easily removed from the kettle body as and when required.

According to the present invention, there is provided an electrical kettle comprising a body having base and side walls defining a receptacle for liquid to be heated, an electrical resistance heating means extending within the receptacle and a lid for closing the receptacle, characterised in that a latch element is mounted to an outer surface of the lid and cooperates with the lid and the body so as to be movable relative to the lid between a first position in which the latch element locks the lid onto the body and a second position at which the latch element is freed from the body and engages a part of the lid so that further movement of the latch element beyond the second position away from the first position causes the lid to move with the latch element relative to the body.

Thus, in an electrical kettle in accordance with the invention a latch element provided on the lid is movable by a user between a first locked position and a second position in which the lid can then be moved by the latch element with respect to the kettle body

to enable access to the interior of the kettle body. It is accordingly not necessary for the lid to fit tightly onto the kettle body and, moreover, the latch element allows the lid to be moved relatively simply by moving the latch element from the first to the second position.

5 Preferably, the latch element comprises an elongate latch member which extends across the lid and is mounted to the lid so as to be pivotable about an axis extending along the length of the elongate member. Such a latch member can be relatively easily gripped and moved to the second position to unlock the lid. 10 Generally, the latch element will be biased into the first position so as to inhibit accidental removal of the lid from the kettle body. The biasing of the latch element into the first position serves to ensure that the lid is locked onto the kettle body each time it is moved into the position closing the receptacle. 15

Cooperating latch pins and recesses may be carried by the ends of the latch member and the side wall for locking the latch element in the first position so that movement of the latch element to the second position frees the latch pins from the recesses. The latch 20 pins and recesses may be formed integrally with the respective one of the latch element and body which provides improved reliability and avoids unnecessary tolerance errors or play in the latch mechanism. The outer surface of the lid may define a depression in which the latch element is received so that each end of the latch 25 member is positioned adjacent a respective aperture in the lid with the latch pins extending through the apertures to cooperate with the recesses to lock the latch element in the first position and the apertures defining surfaces against which the latch element abuts in the second position so that further movement of the latch. 30 element beyond the second position and away from the first position causes the lid to move with the latch element. Generally, the latch pins are carried by flanges provided at the ends of the latch member.

The apertures thus control the distance or angle through which 35 the latch element can pivot or move before the latch element

engages the lid to cause the lid to move with the latch element when the latch element is moved further from the second position away from the first position. This construction of the lid and latch element provides a robust design and is simple to assemble because, in particular, it provides a repeatable consistent
5 alignment between the latch pins and recesses.

The ends of the latch member may be provided with resilient engaging means for engaging the lid to mount the latch element to the lid so as to enable the latch element to be moved relative to the lid between the first and second positions.
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In a preferred embodiment, each end of the latch member carries a resilient engaging means which extends through the associated aperture to engage the lid to mount the latch element to the lid so as to enable the latch element to be movable relative to the lid between the first and second positions. This reduces the
15 required number of parts and simplifies the assembly of the kettle.

Each resilient engaging means may comprise a hook-like projection which snap-fits onto an edge of the lid so providing a relatively simple construction which is easy to assemble.

The present invention also provides a lid for an electrical kettle, characterised in that the lid carries a latch element comprising an elongate latch member extending across the lid so that each end of the latch member is positioned adjacent a respective aperture in the lid through which a resilient engaging
20 means carried by the end of the latch member extends to engage the lid to mount the latch element to the lid so as to enable the latch element to be moved relative to the lid between first and second positions, each end of the latch member having a latch pin which extends through the associated aperture for engaging a latch recess
25 provided on a kettle body when the lid is in position on the kettle
30 body with the latch element in the first position.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

35 Figure 1 is a very schematic simplified side view of an

electrical kettle embodying the invention;

Figure 2 is a top plan view of the electrical kettle shown in Figure 1;

Figure 3 is a sectional view taken along the discontinuous line III-III in Figure 2 of part of the kettle shown in Figures 1 and 2;

Figure 4 is a sectional view of part of a lid and latch element combination of the kettle shown in Figures 1 and 2;

Figure 5 is a side view of the part of the combination shown in Figure 4;

Figure 6 is a top plan view of the lid of the kettle shown in Figures 1 and 2;

Figure 7 is a sectional view of the lid taken along line VII-VII in Figure 6;

Figure 8 is a sectional view of the lid taken along the line VIII-VIII in Figure 6;

Figure 9 is a front view of the latch element;

Figure 10 is an underneath view of the latch element; and

Figure 11 is a side view taken along the direction of arrow X in Figure 9 of part of the latch element.

It should of course be understood that the Figures are not to scale and that, moreover, the proportions may differ between drawings.

Referring now to the drawings, there is illustrated an electrical kettle 1 comprising a body 2 having base 3 and side 4 walls defining a receptacle 5 for liquid to be heated, an electrical resistance heating means 6 extending within the receptacle 5 and a lid 7 for closing the receptacle 5. In accordance with the invention, a latch element 20 is mounted to an outer surface 7a of the lid 7 and cooperates with the lid 7 and the body 2 so as to be movable relative to the lid 7 between a first position A in which the latch element 20 locks the lid 7 onto the body 2 and a second position B at which the latch element 20 is

freed from the body 2 and engages a part 73a of the lid 7 so that further movement of the latch element 20 beyond the second position B away from the first position A causes the lid 7 to move with the latch element 20 relative to the body 2.

5 Thus, in an electrical kettle in accordance with the invention a latch element 20 provided on the lid 7 is movable by a user relative to the lid between a first locked position A and a second position B from which the lid can then be moved with the latch
10 element 20 and relative to, for example pivoted with respect to, the kettle body 2 by the latch element 20 to allow access to the interior of the receptacle. It is accordingly not necessary for the lid 7 to fit tightly onto the kettle body 2 and, moreover, the latch element 20 allows the lid 7 to be moved relatively simply.

Turning now to the specific example shown in the Figures, the
15 electrical kettle 1, as illustrated in Figure 1, is a so-called jug kettle. That is the kettle 1 has a body 2 having a side wall 4 which is much greater in height than the dimensions of the base wall 3. The body 2, latch element 20, and lid 7 may be formed of any suitable plastics material, for example by injection moulding
20 from an acetal copolymer or a suitable polypropylene. The body 2 of the kettle is shaped to form a spout 9 for enabling liquid, generally water, to be poured out of the receptacle 5 and has a handle 8 extending along the side wall 3 opposed to the spout 9 for enabling the kettle to be lifted to allow the receptacle 5 to be
25 filled with liquid and to allow heated liquid to be poured out of the receptacle 5 via the spout 9 with the lid 7 still in position closing the receptacle 5.

The electrical kettle 1 has a conventional electrical heating means 6 extending within the receptacle 5 in the form of an
30 electrical resistance heater 6a connected via an electrical control unit (not shown) providing the usual thermal cut-out, boil-dry and steam-responsive cut-out features to a mains power inlet plug 6b, again of the usual type. An on-off switch 10 may be provided on the handle 8. The body 2 of the kettle 1 may also be provided with
35 a liquid level indicator (not shown) again of the conventional

type.

It should also be understood that the base wall 3 of the kettle body 2 shown in Figure 1 may have any desired shape and, although shown as being generally oval in cross-section (Figure 2), may be, for example, circular, square or rectangular. Also, although the side wall 4 is shown as being generally cylindrical this need not necessarily be the case and the side wall 4 may, for example, bow outwardly or inwardly.

As mentioned above, the lid 7 is provided with a latch element 20 which is movable between a first position A illustrated in Figures 2 and 4 (and in solid lines in Figure 5) in which the latch element 20 locks the lid 7 onto the body 2 of the kettle and a second position B (shown in dash-dot lines in Figure 4) in which the latch element 20 is freed from the kettle body 2 and engages a part of the lid so that further movement of the latch element 20 beyond the second position B and away from the first position A causes the lid 7 to move with the latch element 20 relative to the kettle body 1 to allow access to the interior of the receptacle 5.

In the example illustrated, as shown most clearly in Figure 2, the latch element comprises an elongate latch member 21 which extends across the lid 7 (generally along a major axis of the lid) and is mounted to the lid 7 so as to be pivotable about an axis 0 (Figures 2 and 4) extending along the length of the elongate member 21.

As illustrated most clearly by Figures 3 and 4 which are cross-sectional views of part of the lid 7 and latch element 20 combination and by Figures 6 to 8 which show the lid 7 on its own, the outer surface 7a of the lid 7 is shaped to form a depression 70 within which the latch member 21 is received. Adjacent the rear of the depression 70 (that is the part of the depression furthestmost from the spout 9 when the lid 7 is positioned on the kettle body 2) the lid is provided with a pivot post 71 which has two, in the example shown, pivot pins 72 which define the axis 0 about which the latch member 21 is pivotable. As illustrated most clearly in Figures 9 to 11 which show the latch element 20 on its own, the

latch member 21 is provided on its underside with two pairs of ribs 22. Each pair of ribs 22 is arranged to engage a respective pivot pin 72, as illustrated schematically in Figures 3 and 4, to enable the latch member to pivot about the axis 0.

5 The latch element 20 has a support member 23 (see especially Figures 4, 9 and 10) which extends along and depends (in the example shown extends perpendicularly) from the latch member 21. The support member 23 is arranged to rest adjacent the pivot post 71 in the first locked position A of the latch element 20 and
10 carries a leaf spring 80 which is received in a narrow channel 74 (Figure 8) formed in the rear of the depression 70 in the lid 7 and biases the latch element 20 into the first position A.

As shown most clearly in Figures 9 to 11, each end 21a of the latch element 21 carries a downwardly extending (depending) flange 24. In the illustrated example the flanges 24 are generally
15 perpendicular to the support member 23.

Each flange 24 is in the shape of a sector of a circle such that when the latch element 20 is received in the depression 70 as illustrated in Figures 3 to 5, the surface of each flange 24 is
20 adjacent a generally straight section 7'a (Figures 6 and 7) of the outer surface 7a of the lid 7 and the edge 24a of the flange 24 follows a curved section 7''a of the outer surface 7a.

Each section 7'a is formed with an aperture 73 adjacent the associated flange 24. A latch pin 25 is provided on each flange 24
25 so as to extend through the associated aperture 73 to cooperate with a latch recess 41 provided by a latch mount 40 provided on or formed on the inner surface of the side wall 4 of the kettle body 2. Each flange 24 also carries a resilient engagement means in the form of a hook-like projection 26 which extends through the
30 aperture 73 to engage a lower surface or edge 7b of the lid 7 (Figure 3). The hook-like projections 26 serve to hold the latch element 20 in engagement with the lid 7 but can move along the surface 7''a to allow pivoting of the latch element 20 as will be described below.

35 The lid 7 is provided, as shown in Figures 6 and 8, with a

hinge arm arrangement 75 which cooperates with a complimentary hinge arm arrangement (not shown) provided on the kettle body 2 to connect the lid 7 permanently to the kettle body 2 at the hinge 76 (Figure 1). The lid 7 is thus capable of pivoting about the hinge 76 with respect to the body 2 when the latch element 20 is in the second position B. It will of course be appreciated that the lid 7 need not necessarily be hingedly connected to the body 2 and that, moreover, the lid 7 may be completely removable from the body 2 when the latch element 20 is in the second position B.

The lid 7 has a downwardly extending (that is depending) tongue 77 opposed to the hinge arm arrangement 75 so that when the lid 7 is in position on the body 2 closing the receptacle 5, the tongue 77 is received in the spout 9 to control the flow of water in and out of the spout 9 and to inhibit splashing or spilling out of water during boiling.

Assuming that electrical resistance heating means 6 and associated controls have been assembled onto the kettle body 2 in the usual manner and the latch mounts 40 have been provided on the kettle body 2 either during moulding or by securing discretely formed blocks to the side wall 4, the lid 7 and latch element 20 combination is assembled onto the kettle body 2 in the following manner.

Thus, firstly, the leaf spring 80 is secured to the latch element 20 and the latch element 20 is positioned so that the pivot pins 72 are received between their respective ribs 22 and the leaf spring rests in the channel 74. The resilient hook-like projections 26 are pushed inwardly until they can pass through the apertures 73 and so snap-fit onto the edge 7b of the lid. At this stage the latch pins 25 will extend through the apertures 73 and the leaf spring 80 will bias the latch element 20 into its first position A with the support member 23 adjacent the pivot post 71.

Having assembled the latch element 20 onto the lid 7, the hinge arm arrangement 75 of the lid is aligned with the complementary hinge arm arrangement (not shown) carried by the kettle body 2 and a hinge pin (not shown) passed through and

secured in the passage formed by the aligned hinge arm arrangements to pivotably connect the lid 7 to the kettle body 2. The kettle is then assembled.

In order to close the lid 7 onto the receptacle 5, a user of the kettle pivots the latch member 21 upwardly against the biasing force of the leaf spring 80 about the pivot axis 0 and at the same time allows the lid 7 to come to rest on the top edge 4a (Figure 3) of the side wall 4. Once the lid 7 is resting on the top edge 4a, the user releases the latch element 20 which returns under the biasing force of the leaf spring 80 to the first position A, so causing each of the latch pins 25 to engage in their respective recesses 41. It should be appreciated that Figure 3 shows the kettle 1 in a split section and that the latch pin 25 is shown slightly out of position on the right hand side of Figure 3.

The lid 7 is now locked in position on the kettle body 2. The receptacle 5 may be filled with water via the spout 9 or, if preferred by the user, by raising the lid 7. Additionally, the lid 7 may be raised to enable the inside of the kettle to be cleaned when disconnected from the main supply.

The lid 7 is raised by the user pulling the latch element 20 upwardly so that the latch member 21 pivots about the pivot axis 0 and the latch pins 25 move out of the recesses 41. The latch pins 25 are thus free of the recesses 41 and the lid 7 is no longer locked into the kettle body 2. Further rotation of the latch member 21 about the pivot axis 0 causes each of the latch projections 25 to reach the second position B in which the latch projections 25 each abut a respective edge 73a of the associated aperture 73 and continued pivoting of the latch member 21 causes the lid 7 to move with the latch member 21 from the second position B away from the first position A and so rotate upwardly about the hinge 76 to allow access to the interior of the kettle body 2. The apertures 73 thus determine the distance through which the latch member 21 is pivoted from the first position A to the second position B at which the lid 7 begins to be lifted with the latch element 20. Of course, where the lid 7 is not hingedly connected

to the kettle body 2, then once the latch element is in the second position, the lid 7 may simply be lifted upwardly and off the kettle body 2.

5 It will of course be appreciated that the present invention may be applied to so-called conventional kettles, that is to kettles where the base is generally circular and has a diameter greater than the height of the side wall of the body and where the kettle handle extends across the lid of the kettle from the spout. However the latch element 20 may be slightly less easy to operate
10 in such circumstances unless offset from the handle.

CLAIM(S)

1. An electrical kettle comprising a body having base and side walls defining a receptacle for liquid to be heated, an electrical resistance heating means extending within the receptacle and a lid for closing the receptacle, characterised in that a latch element is mounted to an outer surface of the lid and cooperates with the lid and the body so as to be movable relative to the lid between a first position in which the latch element locks the lid onto the body and a second position at which the latch element is freed from the body and engages a part of the lid so that further movement of the latch element beyond the second position away from the first position causes the lid to move with the latch element relative to the body.

2. An electrical kettle according to Claim 1, further characterised in that the latch element comprises an elongate latch member which extends across the lid and is mounted to the lid so as to be pivotable about an axis extending along the length of the elongate member.

3. An electrical kettle according to claim 2, further characterised in that cooperating latch pins and recesses are carried by the ends of the latch member and the side wall for locking the latch element in the first position and in that movement of the latch element to the second position frees the latch pins from the recesses.

4. An electrical kettle according to Claim 3, further characterised in that the outer surface of the lid defines a depression in which the latch element is received so that each end of the latch member is positioned adjacent a respective aperture in the lid with the latch pins extending through the apertures to cooperate with the recesses for locking the latch element in the first position and in that the apertures in the lid define a surface against which the latch element abuts in the second position so that further movement of the latch element beyond the second position away from the first position causes the lid to move with the latch element relative to the body.



5 5. An electrical kettle according to any one of Claims 2 to 4, further characterised in that the ends of the latch member are provided with resilient engaging means for engaging the lid to mount the latch element to the lid so as to enable the latch element to be movable relative to the lid between the first and second positions.

10 6. An electrical kettle according to Claim 4 or 5, further characterised in that each end of the latch member carries a resilient engaging means which extends through the associated aperture to engage the lid to mount the latch element to the lid so as to enable the latch element to be moved relative to the lid between the first and second positions.

15 7. An electrical kettle according to Claim 5 or 6, further characterised in that each resilient engaging means comprises a hook-like projection which snap-fits onto an edge of the lid.

8. An electrical kettle according to any one of the preceding claims, further characterised in that the latch element is biased into the first position.

20 9. An electrical kettle substantially as hereinbefore described with reference to the accompanying drawings.

25 10. A lid for an electrical kettle, characterised in that the lid carries a latch element comprising an elongate latch member extending across the lid so that each end of the latch member is positioned adjacent a respective aperture in the lid through which a resilient engaging means carried by the end of the latch member extends to engage the lid to mount the latch element to the lid so as to enable the latch element to be moved relative to the lid between first and second positions, each end of the latch member having a latch pin which extends through the associated aperture for engaging a latch recess provided on a kettle body when the lid is in position on the kettle body with the latch element in the first position.

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