

EUROPEAN PATENT APPLICATION

Application number: 85307344.3

Int. Cl.⁴: F 24 C 15/00

Date of filing: 14.10.85

Priority: 14.11.84 GB 8428795

Date of publication of application:
21.05.86 Bulletin 86/21

Designated Contracting States:
DE FR GB IT

Applicant: THORN EMI Appliances Limited
THORN EMI House Upper Saint Martin's Lane
London, WC2H 9ED(GB)

Inventor: May, David Robert
9, Morland Way
Cheshunt Hertfordshire, EN8 0RY(GB)

Representative: Marsh, Robin Geoffrey et al,
Thorn EMI Patents Limited The Quadrangle Westmount
Centre Uxbridge Road
Hayes Middlesex, UB4 0HB(GB)

Domestic cookers.

A domestic cooker (1) consists of a cabinet (2) including two heating compartments (3, 4), control components (6, 7) situated above the heating compartments (3, 4), and an air management system for cooling the components (6, 7). The system includes a vertical duct (8) on one side of the cooker, connecting an air inlet (9) adjacent the base of the cooker to an upper location at approximately the same vertical level as the components (6, 7), where a fan (10) is mounted. The upper end of the duct (8) is closed and the fan (10) draws air up through the inlet (9) and transversely of the cooker, past the components (6, 7) to be cooled. The air then diffuses down the opposite side of the cooker and exits via an aperture adjacent the base of the cooker.

: 1 :

DOMESTIC COOKERS

This invention relates to domestic cookers and, in particular, to such cookers as are electrically heated and controlled.

In a typical domestic cooker construction, one or more
5 heated compartments are surmounted by a hob unit and, for the sake of convenience of access for the housewife, the controls for the compartments and the hob unit are usually mounted near the front of the cooker, in the area where the cook-top of the hob unit overlies the front of the heating compartment.

10 Although, when placed in the aforementioned location, the controls are readily accessible, the problem exists that they are exposed to considerable amounts of heat emanating from the compartment(s) and/or the hob. This problem becomes more significant with the current trend towards the use of
15 sophisticated electronics in timers and other components associated with, and preferably co-sited with, the temperature regulating controls.

It is an object of this invention to provide a domestic cooker having an efficient air-flow management system by means
20 of which controls and other electrical and/or electronic components can be kept sufficiently cool to ensure reliable operation and longevity despite their exposure to heat generated when the cooker is in use.

According to the invention there is provided a domestic

cooker comprising a cabinet incorporating one or more heated compartments and an array of control components distributed transversely across the top of said cabinet, above the heated compartment or compartments, and characterised in that said
5 cooker also includes an air management system comprising an impeller device mounted at substantially the same level as said control components, a duct coupling said impeller device to an air inlet adjacent the base of one of the sides of said cabinet, means constraining air drawn along said duct by said impeller
10 device to flow laterally across the cooker and past said control components, internally of said cabinet, to effect cooling thereof, and an exit path for said air on the other side of the cooker.

Preferably, the said duct is lined with, or formed of,
15 thermally insulative material at least where it runs adjacent the heated compartment or compartments, or else thermally insulative material is interposed between said compartment or compartments and said duct.

Preferably also, the control components are so sited in
20 relation to the impeller device and other parts of the air management system that particularly sensitive and/or critical components are cooled first, i.e. are exposed to the cooling air prior to its having flowed past other components.

Preferably again, the cabinet is double skinned and the
25 said duct is constrained within the cavity between the two skins, thus being concealed from view and protected against damage.

It is also preferable that an air filter be included in the air management system to guard against the ingress of material
30 which could block the air passageways. Conveniently, such a filter can be located at the inlet to the said duct.

Preferably the exit path comprises the cavity between two skins of the cabinet on the opposite side of the cooker to the duct and the air exits, transversely of the cooker, at or
35 adjacent floor level, so as to minimise draughts and also to

reduce the possibility that air which has been used by the air management system, and thus heated, will be drawn directly into the inlet.

5 In order that the invention may be clearly understood and readily carried into effect, one embodiment thereof will now be described, by way of example only, with reference to the accompanying drawing, the single figure of which shows, in perspective and partly broken-away view, a domestic cooker in accordance with one example of the invention.

10 Referring now to the drawing, a domestic cooker, shown generally at 1, consists of a cabinet 2 which incorporates two heated compartments, 3 and 4 and is surmounted by a hob area 5.

Controls for the various hot-plate areas of the hob and for the heated compartments are shown generally at 6. These
15 controls are distributed transversely across the top of the cabinet, directly above the heated compartments, and may include sophisticated electrical or electronic components, such as a timer and programmer unit 7, which could be adversely affected by exposure to heat of the quantities generated during operation
20 of the cooker.

The invention provides an air management system for cooling the controls and components 6, 7 and, in accordance with this example of the invention, the cabinet 1 is of double skinned construction and an inlet duct 8 is disposed within the cavity
25 between the skins on one side of the cabinet. The duct 8 is rectangular in cross-section and runs vertically from an air inlet 9 adjacent the base of the cooker to an upper location, at approximately the same vertical level as that occupied by the controls and components 6, 7, and at which there is mounted a
30 fan 10. The upper end of the duct 8 is closed, and the fan is constructed and positioned so as to draw air through the inlet 9, up through the duct 8 and to project the air so drawn generally into a cavity 11, behind the fascia of the cooker which supports the controls and components 6, 7 with their
35 operative mechanism exposed for access, and which runs

transversely of the cooker cabinet, communicating with the cavity between the two skins of the cabinet on the opposite side of the cooker to that containing the duct 8.

Air issuing from the fan 10 into the cavity 11 flows
5 transversely across the cooker, past the controls and components
6, 7 which it is desired to cool, and diffuses down through the
cavity between the skins on said opposite side of the cooker, to
leave via an exit aperture (not shown) adjacent the base of the
cooker. Preferably the exit aperture constrains or assists the
10 air to flow laterally away from the cooker so as to minimise
draughts of warm air. These draughts can be particularly
annoying if they occur at waist level, and the combination of a
diffusive output path, via the two skins of the cabinet as a
whole, rather than a defined duct, the low-level exit aperture
15 and the general transverse movement, away from the cooker, of
exiting air combine to minimise such draughts.

In order to ensure that cooling efficiency is not greatly
reduced by the air in duct 8 being heated as it flows past
either of the compartments 3 or 4, it is desirable for the duct
20 to be either lined with, or formed of, thermally insulative
material, at least where it runs adjacent said compartments.
As an alternative, which may be preferred with some cooker
constructions, thermally insulative material may be interposed
between the walls of the compartments 3 and 4 and the inner wall
25 of the duct 8. The walls of compartments 3 and 4 are, of
course, usually insulated in any case, and in some circumstances
it may be unnecessary to provide further insulation for the duct
8.

It is preferable for the air used for the aforementioned
30 purposes to be filtered before it encounters the fan 10 or, at
least, the controls and components 6, 7 which it is desired to
cool. This avoids the undesirable deposition of dust, fluff
and similar materials in the passageways of the air management
system or upon the controls or components themselves.
35 Conveniently, a filter such as that shown at 12 is provided at

the inlet aperture 9 to the duct 8.

An important feature of the invention will be observed from the drawing in that the controls and components 6, 7 are so sited that components, such as the timer/processor unit 7, which
5 may be particularly sensitive to exposure to excessive temperatures, are located closer to the fan than are the other controls, thus ensuring that these particularly sensitive components are exposed to the coolest air, i.e. that which has not passed other controls or components but which has only been
10 drawn through the duct 8.

•

CLAIMS

1. A domestic cooker comprising a cabinet (2) incorporating one or more heated compartments (3, 4) and an array of control components (6, 7) distributed transversely across the top of said cabinet (2), above the heated compartment or compartments (3, 4), and characterised in that said cooker also includes an air arrangement system comprising an impeller device (10) mounted at substantially the same level as said control components (6, 7), a duct (8) coupling said impeller device (10) to an air inlet (9) adjacent the base of one of the sides of said cabinet (2), means constraining air drawn along said duct (8) by said impeller device (10) to flow laterally across the cooker and past said control components (6, 7), internally of said cabinet, to effect cooling thereof, and an exit path for said air on the other side of the cooker.
2. A cooker as claimed in Claim 1 wherein said duct (8) is lined with, or formed of, thermally-insulative material at least at the portion thereof adjacent said heated compartment or compartments (3, 4).
3. A cooker as claimed in Claim 1 wherein thermally-insulative material is interposed between said compartment or compartments (3, 4) and said duct (8).
4. A cooker as claimed in any one of Claims 1, 2 or 3 wherein said control components (6, 7) are sited relative to said impeller device (10) so that components (7), which tend to be particularly sensitive to exposure to excessive temperatures, are exposed to the incoming air before it passes over the other components.
5. A cooker as claimed in any preceding claim wherein said cabinet (2) is provided with two skins and said duct (8) is constrained between said two skins.
6. A cooker as claimed in Claim 5 wherein said exit path comprises a cavity formed between said two on the opposite side of the cooker to said duct (8), the air exiting at or adjacent floor level.

7. A cooker as claimed in any preceding claim wherein said air management system includes an air filter (12) to guard against the ingress of material capable of blocking the air passageway.

8. A cooker as claimed in Claim 7 wherein said filter (12) is
5 located at the inlet of said duct (8).

1/1

0181704

