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(54) Totally retractable cooking hob incorporated into a kitchen furniture unit

(57) A cooking hob (1) incorporated into a kitchen furniture unit (15) comprises a supporting structure (2), one or more heating elements (3), a corresponding knob or control means (6) for activating and deactivating each heating element (3), and means (50) for feeding this latter with gas or electrical energy for its activation. Said structure (2) is slidingly associated with a side (17) of said furniture unit (15) and is able, when the cooking hob (1) is not to be used, to be inserted into a compartment (18) in said furniture unit (15), said hob (1) being positionable in at least one position projecting from the furniture unit (15) to allow the heating element (3) to be used, this latter being fed only when in this position with gas or electrical energy enabling it to be used.

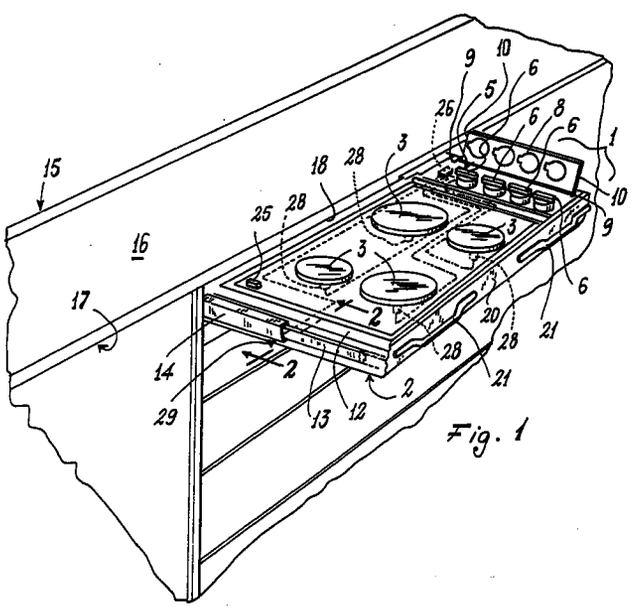

Fig. 1

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Description

This invention relates to a cooking hob in accordance with the introduction to the main claim.

In kitchens, the availability of spaces, shelves or worktops on which, for example, to prepare food has always been an important requirement. This space requirement is even more important if the kitchen occupies a dwelling room of small surface area or if there is not an actual room fitted as a kitchen, which instead is in the form of a "cooking corner" in a room also performing other functions, such as a dining room.

This requirement and desire for space is however opposed by the need to associate the sink and cooking hob with the usual worktop of the kitchen furniture unit. The sink dimensions can be chosen according to need (for example a common sink or one with two bowls, with or without a lateral overflow), however the dimensions of the cooking hob (generally provided with four heating elements) are substantially standard and cannot be changed (without reducing its functionality). The result is that especially in small kitchens the useful surface area of the worktop is considerably limited by the (necessary) presence of the cooking hob.

Cooking hobs are currently fixed to the worktop and occupy a considerable area thereof, with the aforesaid consequences. In addition, to achieve a pleasing appearance such cooking hobs are constructed of materials (such as glass ceramic, materials resembling the constituent material of the worktop, etc.), and by methods, which considerably affect the cost of the entire kitchen.

As an alternative, the use of furniture covering elements is also widespread, these on the one hand enabling the cooking hob to be concealed under a cover of pleasing appearance, but on the other hand being fragile and adding a complication to the overall appearance of the kitchen.

An object of the present invention is therefore to provide a cooking hob which overcomes the aforesaid drawbacks.

A particular object of the invention is to provide a cooking hob, the presence of which in the kitchen furniture unit does not penalize the useful woking surface area of this unit.

A further object is to provide a cooking hob of simple and reliable use, and of low cost.

These and further objects which will be apparent to the expert of the art are attained by a cooking hob in accordance with the accompanying claims.

The present invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 shows a cooking hob with electrically powered heating elements, in its operating position;

Figure 2 is a schematic section on the line 2-2 of Figure 1;

Figure 3 shows a cooking hob with gas powered heating elements in its operating position;

Figure 4 shows the hob of Figure 3 in its totally retracted non-operating position; and

Figure 5 shows a detail of the cooking hob of Figure 1.

Figures 1 and 2 show a cooking hob 1 with a structure 2 carrying known electrically powered heating elements 3 (for example electric hotplates). To one side of this hob there is a control panel 5 for the elements or hotplates 3 comprising a plurality of knobs 6 (in a number equal to the number of hotplates 3). These knobs can be covered by a cover element 8 hinged at 9 along its sides 10 to the structure 2.

On its side walls 12 this latter supports rectilinear elements (for example of T-shape as visible in Figure 2) movable along C-shaped guides 14. These guides are associated with a kitchen furniture unit 15 comprising upperly a worktop 16 and on one side 17 a compartment 18 from which the hob 1 can be extracted when it is to be used. The guides 14 are associated with lateral walls (not shown) of this compartment and can be fixed or, as in the figure, telescopic so as to also guide and support the structure 2 when it is at least partly extracted from the compartment 18. The structure 2 is returned to this latter when the hob 1 is not required for use. Said structure also comprises a front wall 20 provided with handles 21 to enable the hob 1 to be moved relative to the furniture unit 15.

The heating elements 3 are powered electrically in any known manner (for example by flexible or windable cables or by sliding contacts). This powering is possible only when the heating element 1 is in its operating position. This is achieved by a microswitch 25 positioned on the structure 2 to sense when this has been completely extracted from the compartment 18, and in any known manner closes a power circuit for the elements 3. If the hob 1 is also to be able to be used in a position partly extracted from the compartment 18 (allowing the two elements closest to the front wall 20 to be used), a second microswitch (not shown) is positioned in a suitable position, for example in correspondence with the guides 14, such that only when the partially extracted position has been attained and maintained for a predetermined minimum time can the elements 3 be activated. This positioning and its maintaining for said minimum time are evaluated by a control unit 26 associated with the structure 2. To the unit 26 there are preferably connected temperature sensors 28 associated with the elements 3 and at least one element 29 for locking the movement of the structure 2 along the guides 14.

More specifically, the sensors 28 enable the unit 26 to recognize when each element 3 has cooled down after its use and to allow the structure 2 to be reinserted into said compartment 18 only when said element has cooled.

The locking element 29 comprises a body 33 having a socket-shaped end 34 and an elongate opposite end 35 able to move relative to the adjacent end 13

within a hole 34 therein. The end 35 supports a permanent magnet 36 arranged to cooperate with a coil 37 controlled by the unit 26. The end 35 also cooperates with a free end 38A of a compression spring 38 having its other end 38B fixed to a wall 39, relative to which the body 33 moves.

It will be assumed that the hob 1 is to be used and is initially in its rest position, totally retracted into the compartment 18 of the furniture unit 15.

The structure 2 of the hob is now extracted by sliding it along the guides 14. When it has been (for example) totally extracted from the compartment 18 and projects from the side wall 17 of the unit 15, the microswitch 25 enables activation of the elements 3.

This can be achieved by closing a movable contactor connected into the mains power circuit to said elements.

Opening the element 8 provides access to the knob 6 for the element 3 to be activated.

After use, the heating element 1 can be returned into the compartment 18. This can be done only after the unit 26 senses, via the temperature sensor 28 associated with that element 3 used, that this latter has cooled down, and hence releases the structure 2 to enable it to be slid along the guides 14. This sliding had been made impossible by the extraction of the hob 1 from the compartment 18 because this had caused the locking element to become positioned (as shown in Figure 2) such as to prevent the structure 2 from sliding along the guides 14. This was achieved automatically by the thrust of the spring 38 on the body 33 of said element, causing it to emerge from the hole 34 on complete extraction of the hob 1 from said compartment.

After the element 3 has been used and has cooled down, the unit 25 powers the coil 37 to magnetically attract the magnet 36. This causes the body 33 to move towards the wall 39 against the spring 38, hence causing the end 35 of said body to withdraw into the hole 34. The hob 1 is hence able to slide along the guides 14.

The coil 37 is maintained powered until the hob 1 has been reinserted into the compartment 18, a suitable limit switch enabling the unit 26 to recognize that this insertion has taken place. The power feed than ceases.

Figures 3 to 5, in which parts corresponding to those of the already described figures are indicated by the same reference numerals, show a cooking hob in which the heating elements are fed by gas. For this purpose a pipe 50 present in the furniture unit 15 feeds gas to a U-shaped tube 51 carrying usual taps 59 for shutting off and regulating the gas and associated with the structure 2 of the hob 1. The pipe 50 has its axis K perpendicular to the axis W of the tube 51 and terminates with a sleeve 52 within which the tube 51 can slide (arrows A and B of Figure 5). Usual seal elements 53 such as double toric joints are provided within said sleeve.

The tube 51 has its ends 55 and 56 closed and comprises a through hole 57 in its lateral wall 58. This wall intercepts the pipe 50 when the hob 1 is within the compartment 18. When however it is in its extracted position, the hole 57 lies within the sleeve 52 and only in this case is there communication between the interior of the tube 51 and the pipe 50. The gas can then flow from this latter into the tube and reach the taps 59 (on which the knobs 6 are positioned) from which, by way of usual hoses (not shown) connected to said taps, it can reach the heating elements (in this case burners) 3.

Because of the particular configuration of the pipe 50, the tube 51 and the sleeve 52, when the hob 1 is only partly extracted from the compartment 18 or is inserted into it, there is no possibility of gas passage from said pipe, and hence even if a knob 6 is kept in the open position there is no risk of gas escape.

The gas burner hob 1 can also be provided with safety members (such as the element 29, the sensors 28, the unit 26 etc.) similar to those provided for the hob 1 of Figures 1 and 2.

Finally, the use of the gas hob of Figures 3, 4 and 5 is apparent from the aforegoing description and will therefore not be described.

By virtue of the invention the worktop 16 of the furniture unit 15 can be totally used. The user has therefore a greater space on which to rest containers for food preparation or other objects usually used in kitchens.

In addition the particular embodiments of the present invention particularly enhance the appearance of the kitchen.

Different embodiments of the invention have been described.

Others are however possible (such as one comprising only a single gas or electric heating element) and are to be considered as falling within the present document.

Claims

1. A cooking hob (1) incorporated into a kitchen furniture unit (15), comprising a supporting structure (2), one or more heating elements (3), a corresponding knob or control means (6) for activating and deactivating each heating element (3), and means (50) for feeding this latter with gas or electrical energy for its activation, characterised in that said structure (2) is associated in a totally retractable manner with said furniture unit (15) and is able, when the cooking hob (1) is not to be used, to be inserted into a compartment (18) in said furniture unit (15), said hob (1) being positionable in at least one position external to said compartment (18) so as to enable the heating element (3) to be used, this latter being fed only when in this position with gas or electrical energy enabling it to be used.

2. A cooking hob as claimed in claim 1, characterised in that the compartment (18) within which the cooking hob (1) is positioned when not in use is provided in a side (17) of the kitchen furniture unit.

3. A cooking hob as claimed in claim 1, characterised in that its structure laterally comprises elements (13) arranged to slide within guides (14) associated with the walls of the compartment (18) of the furniture unit (15).

4. A cooking hob as claimed in claim 3, characterised in that the guides (14) are telescopic.

5. A cooking hob as claimed in claim 1, characterised in that the means (6) for activating and deactivating the heating elements (3) are associated with the movable structure (2).

6. A cooking hob as claimed in claim 5, characterised in that the means (6) for activating and deactivating gas-fed heating elements (3) cooperate with usual gas taps (59) connected to a tubular structure (51) slidingly associated with a gas feed pipe (50) fixed in the furniture unit (15), said pipe carrying a connection element (52) provided with gas seal elements (53) and relative to which the tubular structure (51) moves, this latter comprising connection means (57) arranged to enable gas to pass from the feed pipe (50) into said structure only when this latter is in a particular position relative to said pipe, said gas reaching the taps (59), to then reach the heating elements (3) via usual feed conduits connected to the taps (59).

7. A cooking hob as claimed in claim 6, characterised in that the connection means are a through hole (57) provided in a wall (58) of the tubular structure (51).

8. A cooking hob as claimed in claim 6, characterised in that the tubular structure (51) is U-shaped and has its free ends (55, 56) closed.

9. A cooking hob as claimed in claim 1, characterised by comprising enabling means (25) associated with the structure (2) to enable each heating element (3) to be activated only when said hob is at least partially extracted from the relative compartment (18) provided in the kitchen furniture unit (15).

10. A cooking hob as claimed in claim 1, characterised by comprising locking means (29) enabling the movable structure (2) to be returned into the relative compartment (18) only when each heating element (3) has attained a determined cooling temperature, sensor means (28) being associated with each heating element (3) to measure its temperature.

11. A cooking hob as claimed in claims 9 and 10, characterised in that the enabling means (35) and/or the locking means (29) and sensors (28) are connected to a control unit (26) which, on the basis of a signal generated by said means, sets the heating elements for activation and/or enables the movable structure (2) to be returned into the relative compartment.

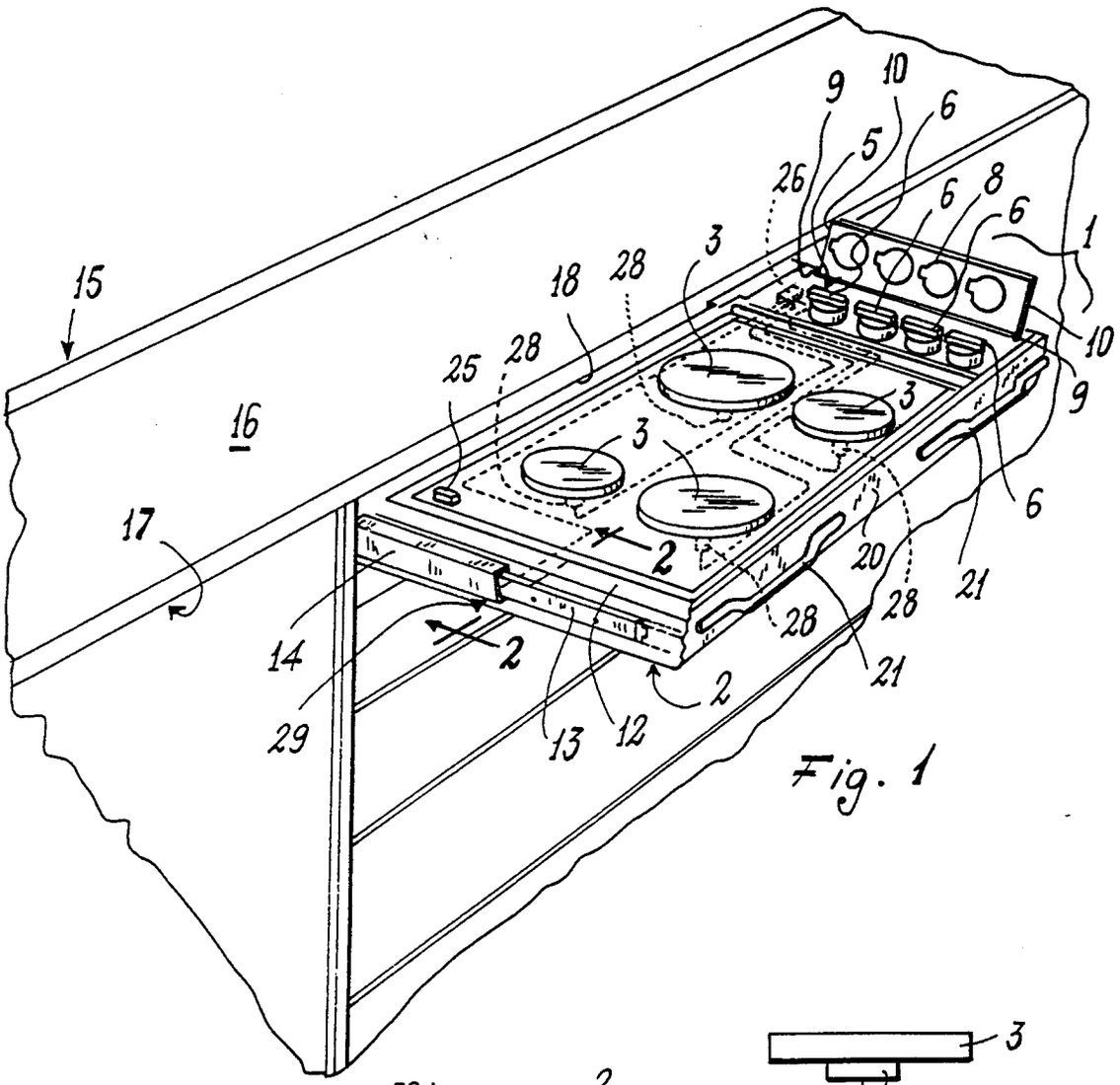
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Fig. 1

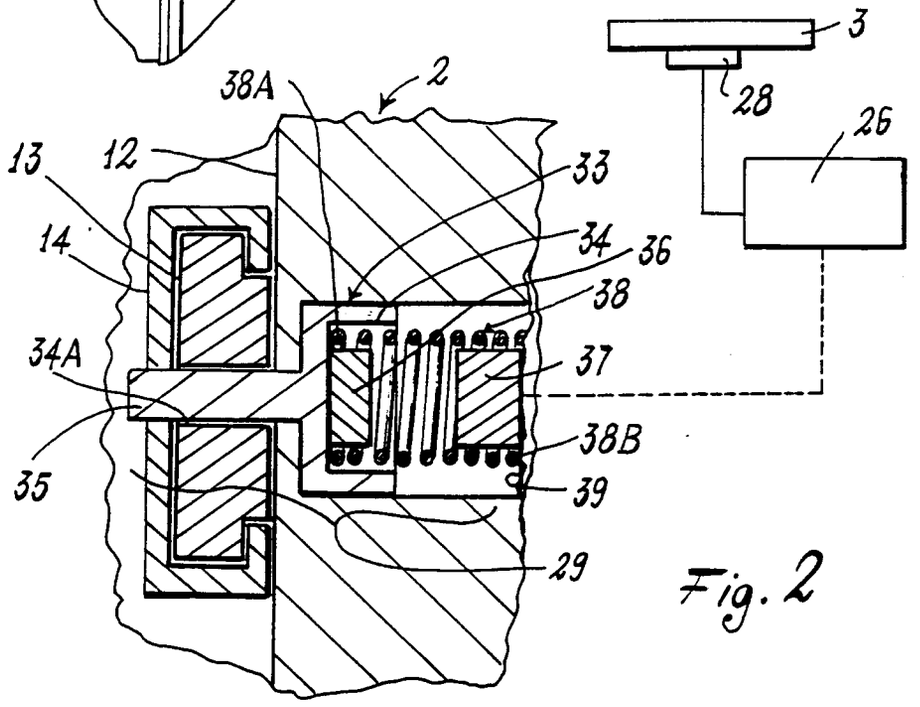
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Fig. 2

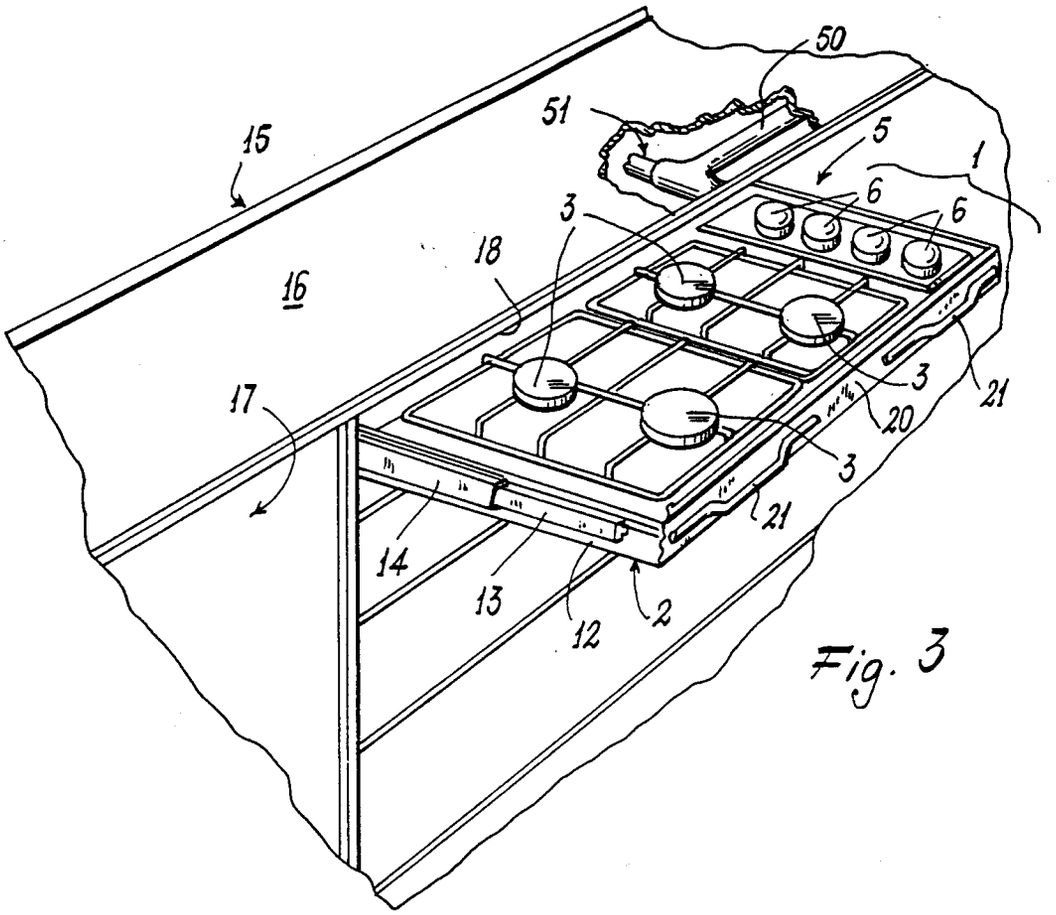

Fig. 3

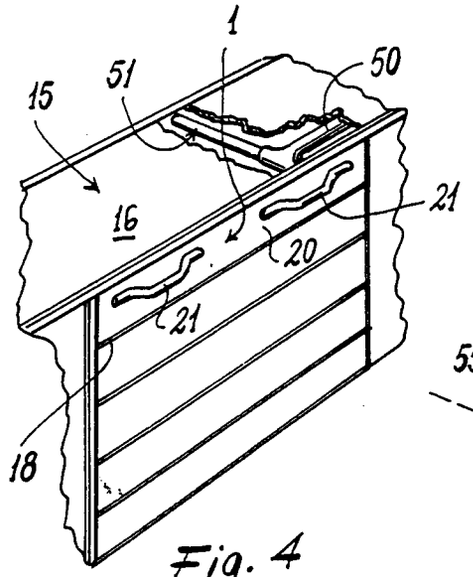

Fig. 4

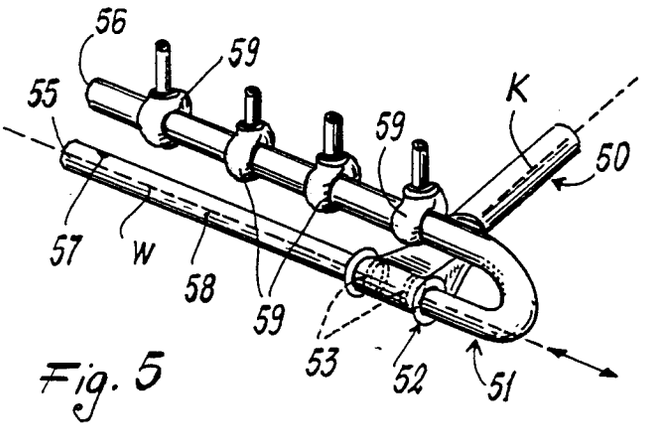

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 96 10 9377

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-A-40 28 814 (BOSCH SIEMENS HAUSGERAETE) 26 March 1992 * column 1, line 68 - column 2, line 65; figures 1-7 *	1-5,9,10	F24C15/30 A47B77/08 F24C3/14
A	* abstract *	6	

A	EP-A-0 190 716 (IVECO MAGIRUS) 13 August 1986 * abstract *	1-4	

A	EP-A-0 623 787 (ROSENFELD ELIAHU ;MIZRAHI ZADOK (IL)) 9 November 1994 * abstract *	6	

A	US-A-3 790 750 (GIANNINI A) 5 February 1974 * column 3, line 26 - column 3, line 38; figures 1,5 *	1,5,9	

A	GB-A-2 192 127 (SOMERS PAUL) 6 January 1988	1	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
	-----		F24C A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	8 October 1996	Filtri, G

CATEGORY OF CITED DOCUMENTS

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