

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 503 107 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **91103646.5**(51) Int. Cl.⁵: **F24C 3/12**(22) Date of filing: **09.03.91**

(43) Date of publication of application:
16.09.92 Bulletin 92/38

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR LI LU NL SE

(71) Applicant: **MIRALFIN S.R.L.**
Via L. Seitz 47
I-31100 Treviso(IT)

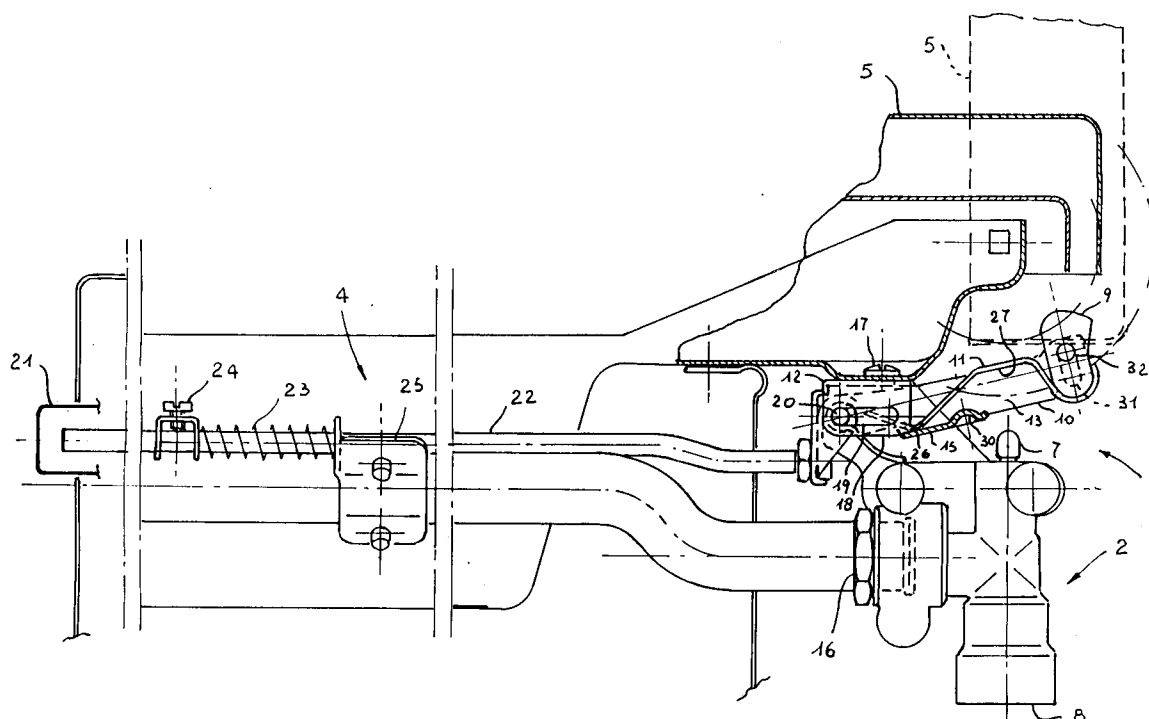
(72) Inventor: **De' Longhi, Giuseppe**
Vicolo Rovero, 1
I-31100-Treviso(IT)

(74) Representative: **Rapisardi, Mariacristina,**
Brevetti S.r.l., Largo V Alpini 15
I-20145 Milano(IT)

(54) **Safety device for allowing and stopping the feeding of gas in a cooking appliance.**

(57) The safety device for allowing and stopping the feeding of gas in a cooking appliance comprises valve means (2) for stopping the flow of gas to the burners and means (3) for activating said valve

means; the activation means are operative by means of actuation means (4) and by means of the oscillation of the cover (5) of the cooking appliance.

**EP 0 503 107 A1**

The present invention relates to a safety device for allowing and stopping the feeding of gas in a cooking appliance.

As is known, current cooking appliances or gas cookers have a plurality of burners by means of which the flame for cooking food is produced.

Each burner is connected to a cock, which can be operated by the user, to allow the feeding of a preset amount of gas according to the user's requirements or, vice versa, to allow the total cutoff of the feeding of gas to the burners when the appliance is not in use.

In order to avoid that, due to causes independent of the will of the user rather than due to the user's distraction, a cock of the gas cooker is left open by mistake and the cover of the gas cooker is intentionally or accidentally lowered over the burners which are possibly delivering a flame or gas without a flame, gas leak detectors have been commercialized; said detectors allow, by means of an acoustic and/or visual device, to alarm the user so that he can immediately close the cock left open so as to stop the feeding of gas before this situation causes irreparable damage.

Current gas cookers therefore do not normally have devices suitable for mechanically stopping the feeding of gas in case of accidental closure of the cover over the burners.

The aim of the present invention is to eliminate the disadvantages described above by providing a safety device for allowing and stopping the feeding of gas in a cooking appliance, preventing the flow of gas to the burners if the cover of said appliance is lowered over the burners due either to accidental causes or to the user's distraction, preventing both the escape of gas from said burners and the feeding of a possible flame, which besides, after a more or less long period of time, due to lack of oxygen tends to extinguish itself, thus delivering only gas.

Within the scope of this aim, an important object of the invention is to provide a safety device which can be applied in a very easy manner to currently manufactured gas cookers without modifying their structure substantially.

Another object of the present invention is to provide a safety device which requires a further operation, to be performed simultaneously with the lifting of the cover, in order to allow the activation of the gas cooker, so as to ensure high safety even against possible actions of children or non-expert persons.

Not least object of the invention is to provide a safety device which has an extremely modest cost which facilitates its diffusion among the public and furthermore, by being structurally simple, is free from any anomaly in operation.

This aim, these objects and others are

achieved by a safety device for allowing and stopping the feeding of gas in a cooking appliance, characterized in that it comprises valve means for stopping the feeding of gas to the burners and means for activating said valve means, said activation means being made operative by means of actuation means and by the oscillation of the cover of said cooking appliance.

Further characteristics and advantages of the invention will become apparent from the detailed description of a safety device according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

- the only figure is a schematic partially sectional lateral elevation view of the safety device according to the invention.

With particular reference to the above figure, the device according to the invention, generally indicated by the reference numeral 1, comprises valve means, generally indicated by 2, for stopping the feeding of gas to the burners, which are not illustrated in the drawing, and activation means, generally indicated by the reference numeral 3, for said valve means 2.

Advantageously, the activation means are made operative by virtue of actuation means, generally indicated by 4, and by means of the oscillation of the cover of the cooking appliance, which is partially visible in the figure and is indicated by 5.

The cover is shown in solid lines in its closed position and is shown in broken lines in its open position.

The valve means 2 have, on the side of the cover 5, a plunger 7 which, as described in greater detail hereinafter, according to the oscillation of the cover 5 assumes a raised or lowered position, stopping or allowing the flow of gas from the main inlet 8 for connection to the primary gas feed duct, not shown in the figure, to an outlet 16 which is connected to the gas feed pipe and to the burners, also not illustrated, which are arranged in front of the hinge system of the cover.

The activation means 3 have an element which is defined by a cam element 9 suitable for converting the oscillating motion produced by the opening and closure of the cover 5 into a substantially rectilinear motion with respect to the plunger 7.

More precisely, the cam element 9 is associated with a lever 10 which is slidably hinged, in contrast with, and due to the action of, elastic means, more precisely of a first shaped spring 11, to a supporting element 12 which is connected to the appliance.

The lever 10 is defined by two lateral walls, only one of which, indicated by 13, is visible in the figure; said walls are mutually parallel and are connected both by an upper wall 14 and, for at least a portion thereof which is smaller than their

entire extension, by a shaped base wall 15.

The supporting element 12 has the shape of an inverted U and, as already mentioned, is rigidly connected to a portion of the appliance, for example by means of a screw 17 or of any other element suitable for the purpose.

Each wing of the supporting element, of which only one, indicated by 18, is visible in the figure, has an elongated slot 19 inside which the respective ends of a pivot 20 engage; said pivot is connected to the lever 10 to allow its rotation in contrast with, and due to the action of, the first shaped spring 11.

The actuation means 4 are defined by a button, shown schematically in the figure and indicated by 21, which acts, by means of a rod 22 which is slidably associated with the body of the appliance, so as to move the lever 10 inside the slot 19 in contrast with, and due to the action of, a second spring indicated by 23.

In the figure, in order to simplify the drawing, the dimensions of the rod 22 have been reduced, and only the portion of the device which is comprised between the button 21 and the activation means has been illustrated; said portion shows the two blocks 24 and 25 which are respectively suitable for defining the adjustment of the compression of the spring 23, for example by means of its movement along the rod 22, and the stop and resting point of the spring 23.

As can be seen from the drawing, the second shaped spring 11 is advantageously pivoted on the pivot 20 and has three resting points which are respectively defined by the resting of the spring on the cam element 9, on the valve means 2, and on the shaped base wall 15 with a portion 26 thereof.

Above the base wall 15, the spring furthermore has a depressed region 27 which is wide enough to contain the plunger 7 of the valve means.

The lower wall 15 furthermore has a seat 30 for engagement with the plunger 7, to allow the activation and deactivation of the valve means 2 and to consequently allow the flow or cutoff of gas to the burners. Finally, it should also be mentioned that the cam element 9 has a slot 31 which, by engaging in a pivot 32, allows the cam element to perform a translatory motion once more in contrast with, and due to the action of, the first shaped spring 11, so as to allow, together with the oscillation of the lever 10, to absorb the shock due to the opening of the cover 5 of the gas cooker with respect to the plunger 7 and to recover any differences in size between the cam element and the plane of the cover of the appliance.

The operation of the safety device according to the invention is evident from what has been described and illustrated; in particular, with reference to the figure shown, it can be seen that the wall 15

and more particularly the seat 30 thereof is axially offset with respect to the plunger 7 for stopping and/or allowing the feeding of gas to the burners.

In this situation, by virtue of the fact that the spring 11 and the lever 10 have a depressed region 27 proximate to the plunger 7, the simple rotation of the cover 5 rotates the lever 10, making the plunger enter the depressed region without being activated.

In this case, therefore, despite the rotation of the cover 5, the activation of the gas cooker does not occur; said activation instead occurs if, simultaneously with the rotation of the cover, the button 21 is pressed and therefore the rod 22 is moved; said movement of the rod, in contrast with the spring 23, causes the lever 10 to move so that the shaped wall and the related seat 30 axially align themselves with the plunger 7.

In this case, therefore, the rotation of the cover 5 causes the lowering of the plunger 7 and thus the flow of gas through the valve means to the burners.

When the cover 5 is lowered again, the rod 22 automatically returns to the initial position by virtue of the reaction of the spring 23, and therefore the plunger 7 rises again and the lever 10 repositions itself so as to offer the depressed region 27 to said plunger, thus allowing the reactivation of the two intrinsic safeties of the device.

In practice it has been observed that the safety device according to the invention is particularly advantageous in that it allows the activation of a gas cooker only by substantially simultaneously performing two actions, i.e. the lifting of the cover of said cooker and the pressing of a button, thus preventing any user, even if said user is a child, from committing imprudent actions or negligences the damage whereof would be irreparable.

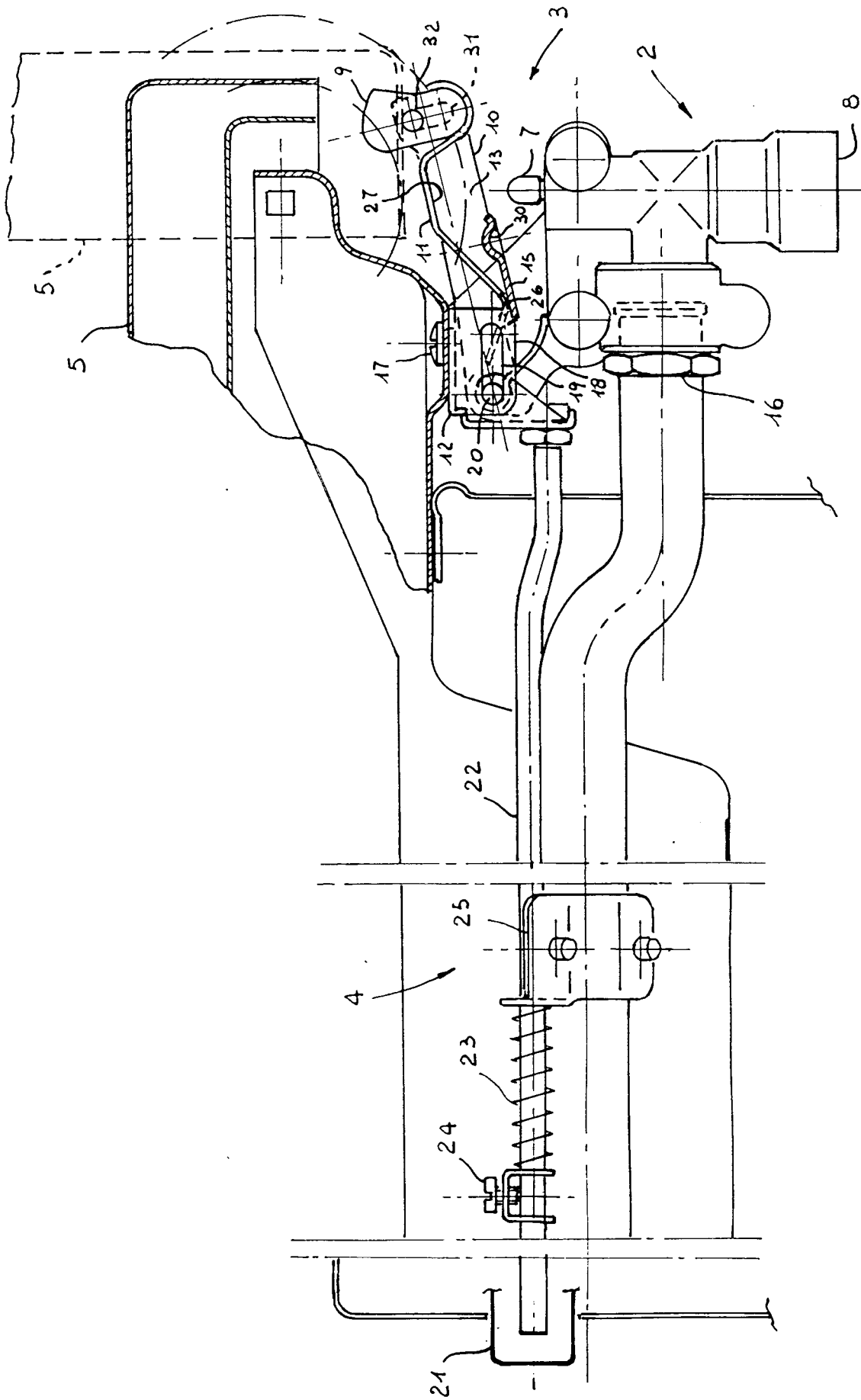
In practice, the materials employed, as well as the dimensions, may be any according to the requirements and to the state of the art.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Safety device for allowing and stopping the feeding of gas in a cooking appliance, characterized in that it comprises valve means (2) for stopping the feeding of gas to the burners and means (3) for activating said valve means, said activation means being made operative by means of actuation means (4) and by the os-

- cillation of the cover (5) of said cooking appliance.
2. Safety device according to claim 1, characterized in that said valve means have a plunger (7) on the side of said cover and are associated with the primary gas feed duct (8). 5
 3. Safety device according to claim 1, characterized in that said activation means have an element (9) for converting the oscillating motion of said cover into a substantially rectilinear motion coaxially to said plunger. 10
 4. Safety device according to claim 3, characterized in that said element comprises a cam element (9) which is associated with a lever (10) which is slidably pivoted, in contrast with and due to the action of elastic means 11, to a supporting element (12) which is connected to said appliance. 15
20
 5. Safety device according to claim 4, characterized in that said lever (10) has two parallel lateral walls (13) which are mutually connected by an upper wall (14) and, for at least a portion of their extension, by a shaped base wall (15). 25
 6. Safety device according to claim 4, characterized in that said supporting element has the shape of an inverted U and comprises, on each wing (18), an elongated slot (19) inside which the respective ends of a pivot (20) engage, said pivot being connected to said lever for its rotation in contrast with, and due to the action of, a first shaped spring (11). 30
35
 7. Safety device according to claim 1, characterized in that said actuation means comprise a button (21) which is associated with the end of said lever which is opposite to said cam element by means of a rod (22), said rod being slidably associated with said appliance in contrast with, and due to the action of, a second spring (23). 40
45
 8. Safety device according to claim 6, characterized in that said first shaped spring is pivoted on said pivot, its ends respectively act on said cam element and on said valve means, and a portion (26) thereof acts on said shaped base wall (15) to define a depressed region (27) above said wall. 50
 9. Safety device according to claim 5, characterized in that said shaped base wall comprises a seat (30) for engagement with said plunger. 55
 10. Safety device according to claim 4, characterized in that said cam element has a slot (31) for its translatory motion with respect to said lever in contrast with, and due to the action of, said first shaped spring.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 10 3646

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.5)
X	GB-A-2 180 638 (THORN EMI) * page 1, line 121 - page 2, line 21; figures 1,2 *	1-3,7	F24C3/12
A	* page 1, line 82 - line 120 * ----	4,9	
X	GB-A-2 165 040 (VALOR) * page 2, line 69 - line 123; figures 4-6 *	1-3,7	
A	GB-A-2 230 085 (SMEG) ----		
A	GB-A-2 192 269 (VALOR) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F24C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04 NOVEMBER 1991	Examiner VANHEUSDEN J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			