

[54] COOLING APPARATUS FOR AN OVEN

[75] Inventors: Sueo Mizuno, Higashikasugai-gun;
Tadayoshi Takase, Nishikamo-gun,
both of Japan

[73] Assignee: Kabushiki Kaisha Rinnai
Seisakusho, Nagoya-shi, Aichi-ken,
Japan

[22] Filed: Mar. 29, 1971

[21] Appl. No.: 128,851

[52] U.S. Cl. 126/21 R

[51] Int. Cl. F24c 3/00

[58] Field of Search 126/21 R, 21 A, 39 C

[56] References Cited
UNITED STATES PATENTS

| | | | |
|-----------|---------|----------|------------|
| 2,622,582 | 12/1952 | Pollock | 126/21 R |
| 2,526,890 | 10/1950 | Mendel | 126/21 R X |
| 3,150,655 | 9/1964 | Saponara | 126/21 R |

| | | | |
|-----------|--------|---------------|------------|
| 3,499,431 | 3/1970 | McArthur, Jr. | 126/21 R X |
| 3,499,430 | 3/1970 | Kemp | 126/21 R |

Primary Examiner—Kenneth W. Sprague

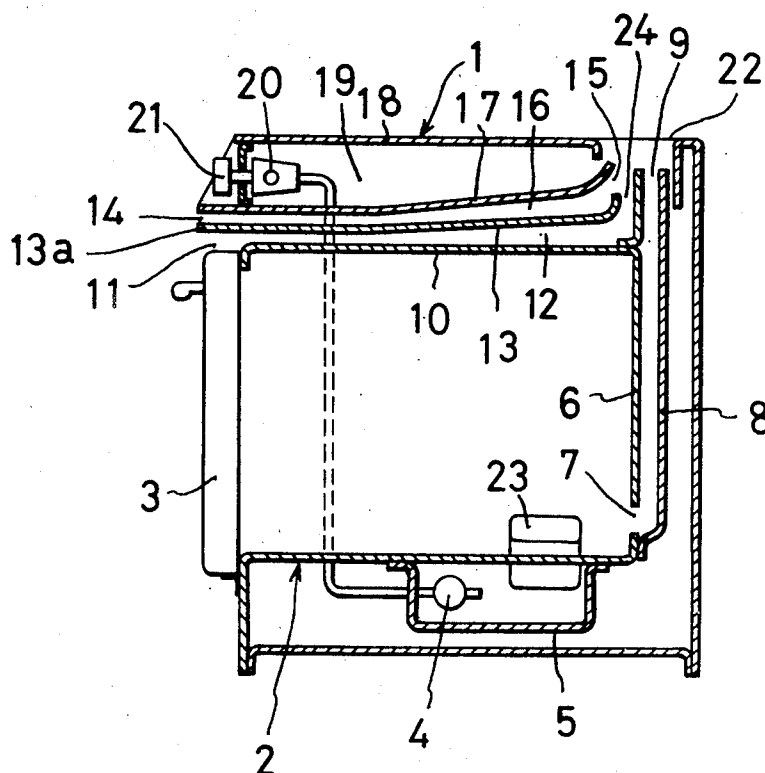
Assistant Examiner—Harold Joyce

Attorney—Waters, Roditi, Schwartz & Nissen

[57] ABSTRACT

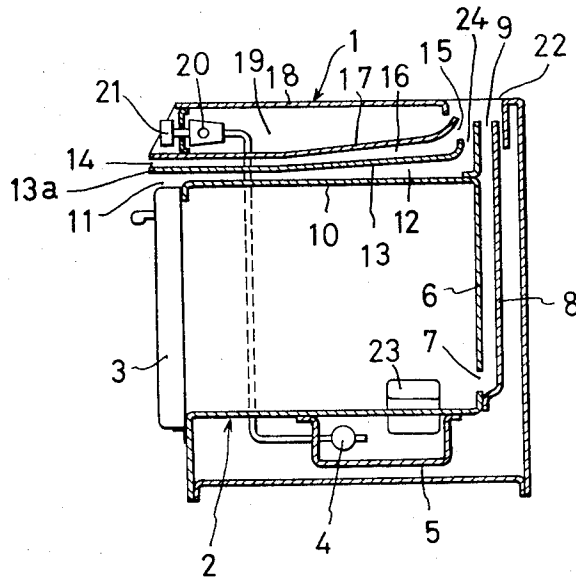
An oven has a heating chamber and a surrounding outer casing, and mounted between the chamber and casing are partition plates which define flow passages for cooling air. The flow passages have outlets adjacent an outlet of an exhaust channel of the heating chamber so that air flow is produced in the passages by suction effect caused by exhaust flow through the outlet of the exhaust channel. A manual control knob of a burner valve disposed in a space between the uppermost partition plate and the outer casing is cooled by proximity to the flow passages.

2 Claims, 1 Drawing Figure



PATENTED DEC 18 1973

3.779.228



INVENTOR
Sueo Mizuno
BY *Tadayoshi Takase*

COOLING APPARATUS FOR AN OVEN

BRIEF SUMMARY OF THE INVENTION

The invention relates to the construction of domestic ovens, and particularly to cooling of the upper portions of such ovens.

More specifically, the invention relates to means for cooling a control apparatus such as a burner valve at the upper portion of the oven to prevent overheating of the valve.

According to the invention, the oven comprises a heating chamber, an outer casing surrounding said heating chamber and defining a lower burner chamber and an upper space above the heating chamber, burner means in said burner chamber, control apparatus connected to said burner means and located in said space for controlling the burner means, exhaust means for exhausting heated air from said burner chamber, and means defining flow passages which open proximate said exhaust means to produce air flow in said passages under suction effect therein caused by exhaust of heated air from said exhaust means, said passages being between the burner chamber and said space to cool the latter and limit heating of said control apparatus.

BRIEF DESCRIPTION OF THE DRAWING

The sole figure of the drawing is a side sectional view of the oven according to the invention.

DETAILED DESCRIPTION

Referring to the drawing, therein is seen an outer casing 1 of an oven which is open at its front, and disposed in the outer casing is an inner casing 2, serving as a heating chamber, the casing 2 also being open at its front. Mounted at the front of the inner casing 2 is an openable door 3. Below the inner casing 2 is a burner 4 mounted in a burner chamber 5. At the rear of casing 2 is a wall 6 with an exhaust opening 7 at its lower end leading into an exhaust channel 8 having an upper exhaust opening 9 facing upwardly.

A partition plate 13 having a front end 13a projecting forwardly above the door 3 is disposed above an upper wall 10 of the inner casing 2, to define therewith an air passage 12 having an opening 11 at its front end and an opening 24 at its upwardly bent rear end. The opening 24 is adjacent the opening 9 of the exhaust channel 8. Another partition plate 17 is disposed above the plate 13, to define therewith a similar air passage 16 having an opening 14 at its front end and an opening 15 at its upwardly bent rear end, the opening 15 adjoining the opening 9 of the exhaust channel. A space 19 is formed between the plate 17 and a top wall 18 of the outer casing 1, and a control apparatus 20, such as a gas-valve or the like is disposed in space 19. A control knob 21 for the control apparatus 20 is accessible externally of space 19 at the front thereof. The gas-valve operates to control the flow of gas to the burner 4.

The outer casing 1 is provided with an opening 22 into which face the exhaust opening 9 and the openings 15, 24. Numeral 23 denotes a passage for combustion gas communicating between the heating chamber 2 and the burner chamber 5.

In use of the oven according to this invention, the exhaust gas which is being discharged from the exhaust opening 9 produces a suction action in the exhaust openings 24 and 15 and creates within each of the air

passages 12 and 16 a current of external air entering at each of the front openings 11 and 14, so that the air flowing through the lower air passage 12 cools the upper wall 10 of the inner casing 2 and the partition plate 13 while the air flowing through the upper air passage 16 cools the partition plate 13 and 17, whereby the space 19 above partition 17 can be limited to a very slight rise in temperature. Therefore, the control apparatus 20 which is conveniently mounted at an upper portion of the oven body can be prevented from undergoing overheating and the manual control knob 21 can be kept at a relatively low temperature so as to be capable of being handled safely.

Ordinarily, it is difficult to maintain a complete airtight seal at the front portion of door 3 and therefore a slight leakage of hot air thereat is unavoidable. In the oven of the invention, this leakage of hot air is drawn in through the opening 11 and the knob 21 can be prevented from being heated thereby.

What is claimed is:

1. An oven comprising a heating chamber, an outer casing surrounding said heating chamber and defining a lower burner chamber and an upper space above the heating chamber, burner means in said burner chamber, control apparatus connected to said burner means and located in said upper space for controlling the burner means, exhaust means for exhausting heated air from said burner chamber, means defining first and second flow passages which have inlets at the front of the outer casing and outlets which open proximate said exhaust means to produce air flow in said passages under suction effect therein caused by exhaust of heated air from said exhaust means, said passages being between the heating chamber and the said upper space to cool the latter and limit heating of said control apparatus, said control apparatus including an external manually controlled knob disposed above said heating chamber, said passages extending between said knob and said heating chamber, said heating chamber having a front which is open, and an operable door at the open front of the heating chamber, the first of said passages extending at the location where the door closes the front of the heating chamber to exhaust any leaking heated air thereat, the second passage extending between the control knob and said first passage, said first passage having its inlet above the location where the door closes the front of the heating chamber, the second passage being above the first and extending beyond said knob with its inlet above the inlet of the first passage, said exhaust means comprising an exhaust channel leading from said heating chamber and having an outlet, said passages having individual outlets adjacent one another and the outlet of said exhaust channel such that heated air flowing from the outlet of the exhaust channel produces suction at the outlets of said passages, said exhaust channel opening into said heating chamber at the lower rear thereof and extending upwardly therefrom, said passages being upwardly bent at their outlets and facing upwardly proximate the outlet of the exhaust channel, said outer casing having an opening in which all the outlets from said passages and said exhaust channel are confined.

2. An oven as claimed in claim 1 comprising partition plates defining said heating chamber and said outer casing and defining said flow passages.

* * * * *