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(12) # EUROPEAN PATENT APPLICATION

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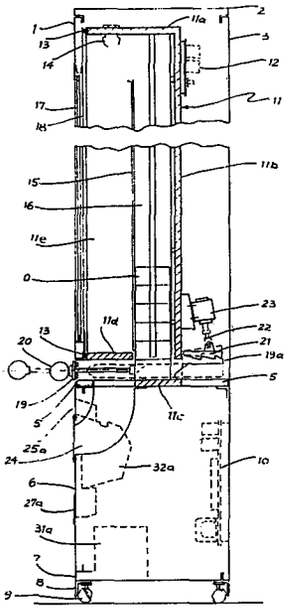
(54) **Vending machine.**

(57) A vending machine for vending heated food such as hamburgers, incorporating a storage receptacle (16) and an associated heating device (11) arranged to heat the food before dispensing. The dispensing mechanism is typically a coin freed drawer (19) at the bottom of the storage receptacle (16).



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This invention relates to a vending machine which has been designed for vending heated items or articles, and in particular heated items of food, such as hamburgers.

An object of the present invention is to provide a vending machine which, when actuated, will dispense such a heated item or article.

The present invention consists in a vending machine comprising: a storage receptacle in which items or articles can be placed and held, heating means associated with the storage receptacle for heating items or articles in the storage receptacle, and a dispensing mechanism which, when actuated, dispenses an item or article from the storage receptacle and delivers it from the vending machine.

The above gives a broad description of the present invention, a preferred form of which will now be described with reference to the accompanying drawings, in which:

Figure 1 is a sectional side view of this preferred form of vending machine; and

Figure 2 is a front view of a vending machine similar to that shown in Figure 1.

A preferred vending machine for vending articles 0, which for example may be cartons containing hamburgers or the like, has the appearance of an elongated upright cabinet. The cabinet has a hinged front or door 1, a top panel 2, a back panel 3, and two ventilated side panels 4. The back and side panels extend the full vertical length of the vending machine but the front panel extends from the top panel for approximately two-thirds the length of the vending machine. This cabinet is attached to an internal chassis 5 which also provides a frame for the mounting of the dispensing mechanism.

The bottom of the cabinet below the chassis forms a base compartment which is closed off by means of a front panel 6 and a base panel 7. The base panel is mounted on a base frame 8 and this base frame may be supported on wheels or castors 9 as shown in Figure 1 or fixed feet 9a as shown in Figure 2. A primary electric circuit board 10 is mounted within this base compartment.

Within the cabinet there is an internal oven 11. In

Figure 1 the roof and the rear wall are indicated by numerals 11a and 11b respectively. The floor of the oven is in two sections, these being indicated in Figure 1 by numerals 11c and 11d. The oven also has side walls 11e, only one of which is shown in Figure 1. The walls, roof and floor of the oven each have an impervious and heat resistant liner backed by any suitable heat insulating material. Heating elements (not shown) are associated with the oven side and rear walls and also with part 11c of the floor of the oven. These elements are preferably contained within heating pads made of aluminium which are affixed to the inner surfaces of the side and rear walls and floor portion 11c. The heating elements are controlled by means of thermostatic controls mounted on a secondary electric circuit board 12 which is affixed to the outside of the rear wall of the oven.

It is desirable that when the front or door 1 is closed the oven space is substantially sealed to reduce loss of heat. To achieve this an oven seal 13 is attached to the front edges of the roof, side walls, and floor portion 11d of the oven and the door, when closed, makes close contact with this seal. Also to prevent undersirable loss of heat and for safety reasons the door is insulated. The door preferably has a viewing window 17 which allows inspection of the oven and its contents, if any, when the door is closed. The window is also preferably insulated, typically by means of a second transparent pane 18 located behind the viewing window 17 with an air space between. A lamp 14 may be mounted to the roof of the oven as an inspection aid.

Within the oven space adjacent the rear wall there is a set of guide rails 15 forming an elongated and vertical storage receptacle or chute 16 within which the articles 0 can be stacked one upon the other. The bottom most article rests upon the floor portion 11c of the oven.

Associated with the storage chute there may be provided a micro switch (not shown) located towards the bottom of the chute which, when the height of the stacked articles contained in the storage chute drops below the micro switch, is actuated to operate an alarm or lamp, indicating that the storage chute should be refilled.

Similarly a second micro switch may be located in the floor portion 11c of the oven to be actuated when the storage chute is emptied of articles to also operate an alarm or lamp to indicate that the storage chute is empty.

At the base of the chute there is a dispensing mechanism which includes a drawer 19 having an open top and bottom and manually operated by means of a handle 20. The drawer is slidable horizontally between a first position in which it is located below the storage chute, where it is positioned to receive the bottom most article of the stack of articles in the storage chute and a second position from which the article contained in the drawer is delivered or can be retrieved from the vending machine. In Figure 1 the drawer is shown in solid outline in the first position and is shown in dotted outline in its second position.

The drawer has an upstanding lip 19a at its rear and this lip is engageable with a retaining claw 21 which is pivotally mounted to the outside of the rear wall of the oven and is also pivotally connected to a link rod 22 operated by a solenoid 23 also mounted to the outside of the rear wall of the oven. Normally the retaining claw engages with the lip 19a of the drawer when in its first position and thus prevents the drawer from being pulled into its second position. However, when the dispensing mechanism is actuated the solenoid acts to lift the retaining claw out of engagement with the lip of the drawer thereby allowing this to be pulled forwardly by means of its handle 20. This forward movement of the drawer pushes the bottom most article in the stack forward also.

The preferred dispensing mechanism includes a delivery chute 24 located in the base compartment of the vending machine. This delivery chute has an entry opening below the second position of the drawer in order to receive through the open bottom of the drawer, any article contained in the drawer. The delivery chute also has an exit opening to the exterior of the vending machine, such that when the drawer containing an article is pulled forwardly to the second position this article drops down the delivery chute and is delivered from the machine.

As the drawer is pulled forwardly it actuates a micro switch (not shown) to deactivate the solenoid 23 and drop the retaining claw back to its lowered position. When the drawer is subsequently pushed in and returned to its first position its upstanding flange 19a is re-engaged by the retaining claw to prevent the drawer from being pulled forwardly again until the dispensing means is re-actuated. This makes it impossible for someone, by quickly moving the drawer in and out again, to get two articles on a single actuation of the dispensing mechanism.

The preferred dispensing mechanism is operated by means of a coin or token operated actuating mechanism and any suitable coin or token operated actuating mechanism can be used. This will normally include a slot 25 for receiving the coins or tokens, with a coin or token reject button 26 and a reject coin or token discharge slot 27.

The front panel or door of the cabinet is preferably hinged at its edge 28 and has a lock and catch 29 located on the other side whereby the operator of the vending machine can open the cabinet and obtain access to the oven to replenish the stock of articles in the storage chute. The preferred vending machine is designed to hold approximately 20 hamburger cartons in its storage chute. When the operator is aware that the stack is getting low he can open the door and insert an extra stack of articles which may have been stored in an adjacent freezer. If the vending machine is to be replenished with frozen articles it is desirable that booster heating means be provided. The booster heating means may be provided by additional heating elements or thermostatic control of the existing elements. It is desirable that the booster heating means is switched on manually but is switched off by the thermostatic control so that the booster heating means operates to rapidly heat the frozen articles until they have reached the desired temperature whereupon the thermostatic control reduces the temperature of the heating elements so that the articles are then merely maintained at their desired temperature.

When the vending machine is used to heat and dispense food stuffs such as hamburgers the operator should discard

any such articles which have been left in the vending machine so long that their quality is in danger of deterioration.

The above describes a preferred form of the invention and indicates some possible modifications but various other modifications can be made to the vending machine without departing from the scope of the invention.

For example if the cabinet is wide enough there may be two storage chutes side by side within the cabinet. These can be contained within a single oven or alternatively there may be a separate oven associated with each storage chute. In the latter case there would be a second viewing window 17a, a second drawer 19a with its handle 20a, and a second delivery chute 24a. The coin or token operated actuating mechanism, instead of being situated in the top cabinet, would be situated in the bottom compartment as indicated by the coin or token receiving slot 25a, the reject botton 26a and the discharge slot 27a. There would also be a selection buttom located towards each side of the vending machine, each selection button being associated with the dispensing mechanism for one of the storage chutes. A coin or token collection box 31a would be located in the bottom compartment below the coin or token operated actuating mechanism 32a.

In another modification of the invention the dispensing drawer may have a solid bottom but when pulled forwardly to its second position would be pulled substantially clear of the vending machine so that a person could pick the article out of the open drawer. In this case a delivery chute 24 would not be necessary.

In another modification of the invention there may be means such as a solenoid or a motor providing for the automatic movement of the draw from its first to its second position, and then perhaps vice versa, on insertion of the appropriate coin(s) or token(s) into the machine.

It is preferable that the storage chutes within the machine be vertically orientated so that the machine need occupy relatively small floor space. However with appropriate modifications there is no reason why storage chutes could not be arranged at some other angle or even lie

horizontally, though in the latter case means such as a conveyor would need to be provided to move the articles along the storage chute at appropriate times. Because of the additional complexity of such a machine this modification is not preferred.

Of course the vending machine need not be restricted to vending hamburgers. Pies, pizzas or any other food articles which can satisfactorily be kept warm for a period may be sold through the machine of the present invention. Furthermore, it is not essential that the articles be food stuffs.

CLAIMS
"VENDING MACHINE"

1. A vending machine comprising: a storage receptacle in which items or articles can be placed and held, heating means associated with the storage receptacle for heating items or articles in the storage receptacle, and a dispensing mechanism which, when actuated, dispenses an item or article from the storage receptacle and delivers it from the vending machine.

2. A vending machine as claimed in claim 1 wherein the dispensing mechanism is coin or token operated, there being a coin or token operated mechanism, into which insertion of coins(s) or token(s) is necessary to actuate the dispensing mechanism.

3. A vending machine as claimed in claim 1 or claim 2 wherein the storage receptacle is elongated and of a size that the articles are packed in single file in the storage receptacle.

4. A vending machine as claimed in claim 2 wherein the storage receptacle is a vertical chute, when the vending machine is in an upright position, in which the articles can be stacked one on top of another.

5. A vending machine as claimed in claim 4 wherein the dispensing mechanism is located at the bottom of the chute and when actuated dispenses the bottom most article from the chute.

6. A vending machine as claimed in claim 5 wherein the dispensing mechanism includes an open topped drawer which is slidable horizontally between a first position below the storage chute where it can receive the bottom most article of the stack of articles in the storage chute and a second position from which the article in the drawer is delivered or can be retrieved from the vending machine.

7. A vending machine as claimed in claim 6 wherein the drawer is manually operated.

8. A vending machine as claimed in claim 6 or 7 wherein the drawer has an open bottom and the dispensing mechanism includes a delivery chute having an entry opening below said second drawer position in order to receive any

article contained in the drawer and an exit opening to the exterior of the vending machine from which the article is delivered from the vending machine.

9. A vending machine as claimed in any one of claims 6, 7 or 8 wherein the dispensing mechanism includes a solenoid operated catch which is engageable with said drawer when in its first position, actuation of the dispensing mechanism being necessary to release the catch to permit the drawer to be slid to its second position, the catch re-engaging with the drawer when it is returned to its first position.

10. A vending machine as claimed in any one of claims 3 to 9 wherein the heating means extends along the length of the storage receptacle.

11. A vending machine as claimed in any one of the preceding claims wherein the heating means is thermostatically controlled.

12. A vending machine as claimed in any one of the preceding claims wherein the heating means includes a booster heating means.

13. A vending machine as claimed in any one of the preceding claims wherein the storage receptacle is contained within an openable cabinet.

14. A vending machine as claimed in claim 13 wherein the cabinet is provided with a window for the inspection of the storage receptacle and any articles held therein.

15. A vending machine as claimed in claim 14 wherein the cabinet has an internal light source.

16. A vending machine substantially as herein described with reference to the accompanying drawings.

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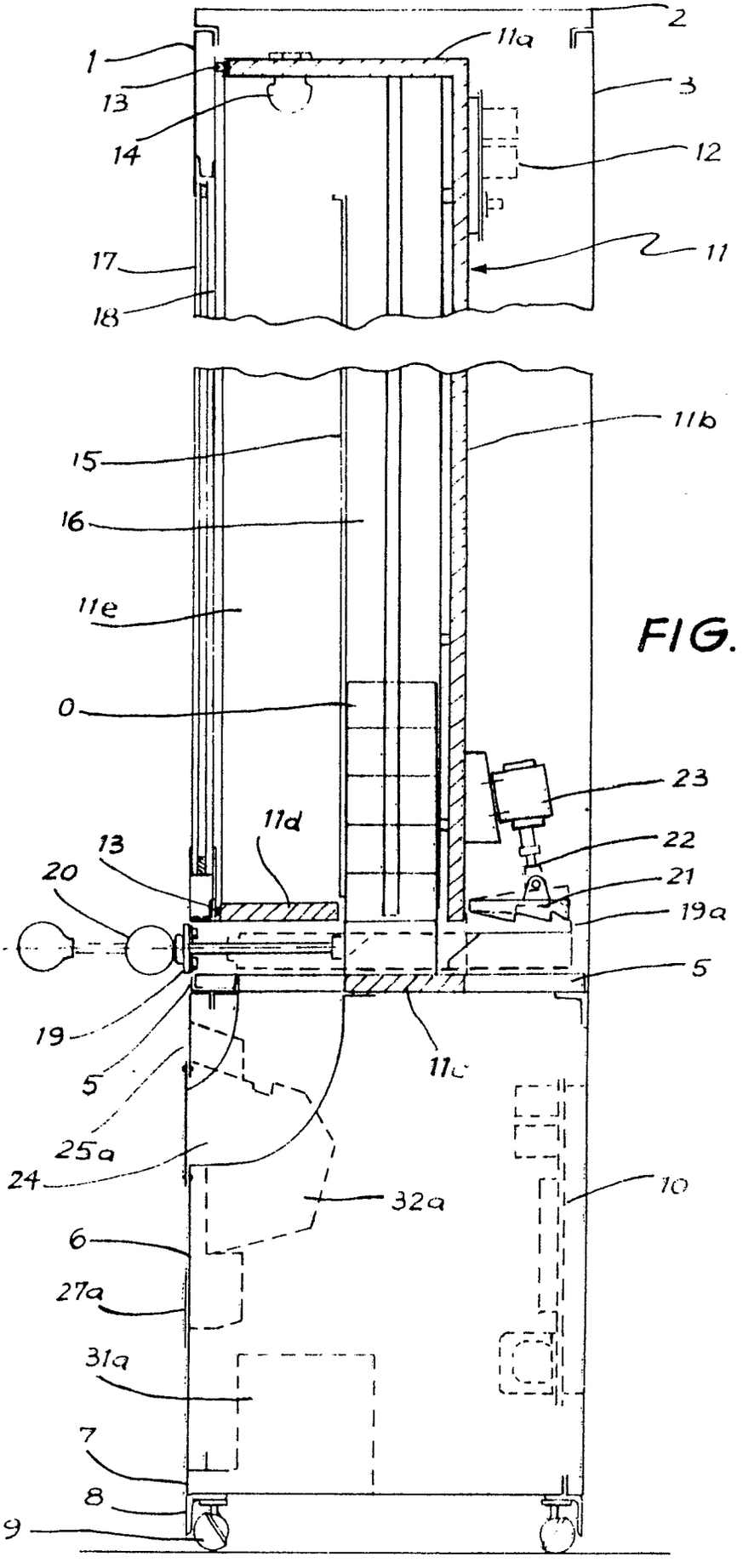

FIG. 1

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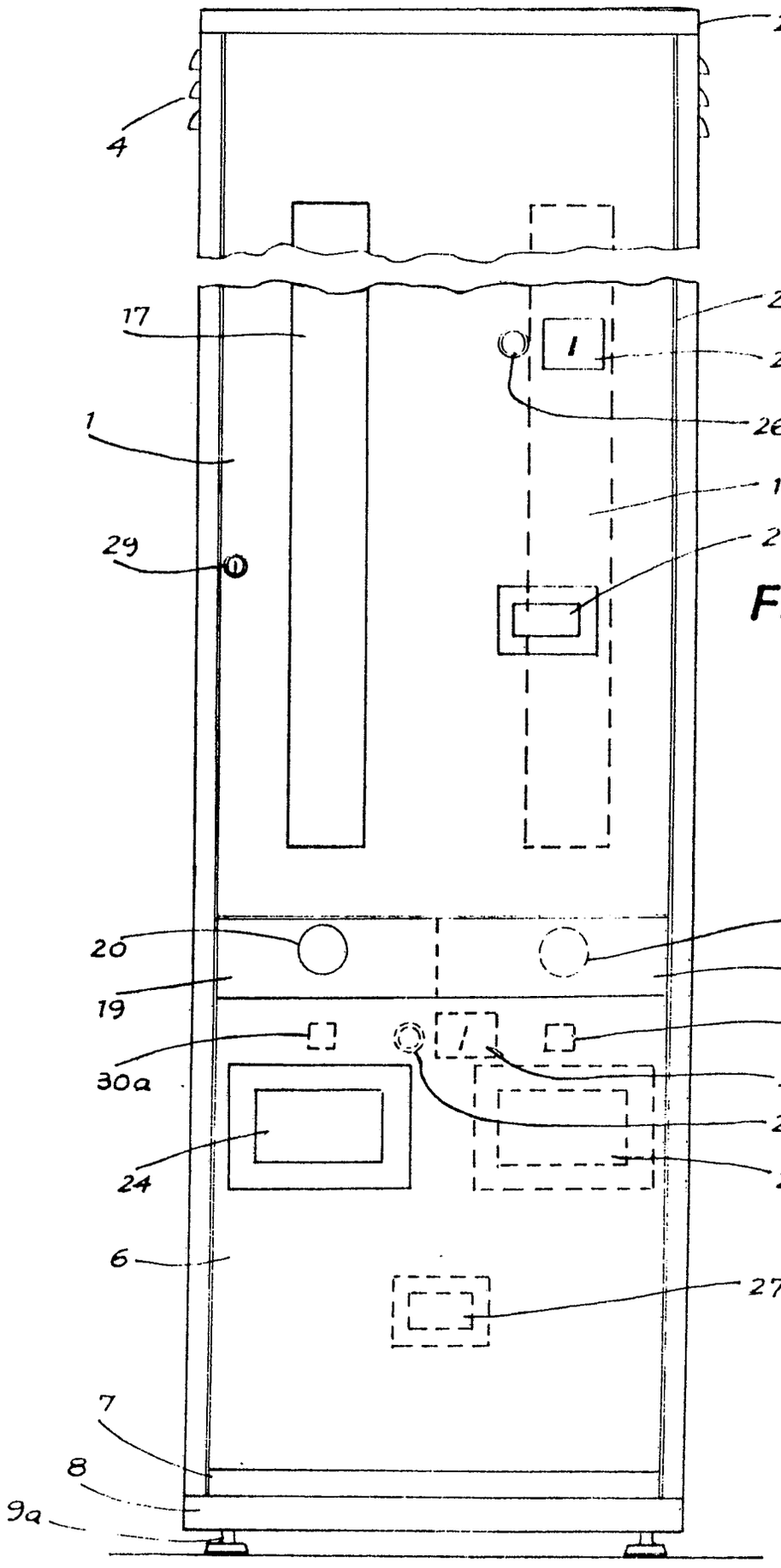

FIG. 2

European Patent Office

EUROPEAN SEARCH REPORT

0054585
Application number
EP 80 30 4605

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US - A - 1 889 406 (GOLDSCHMIDT) * Whole document * --	1-7,10 11,13	G 07 F 9/10
X	GB - A - 347 253 (GOLDSCHMIDT) * Whole document * --	1-7, 10,11, 13-15	
X	US - A - 3 531 017 ((ABBOTT) * Column 2, line 62 - column 4, line 21; figures 1,3 * --	1-5	TECHNICAL FIELDS SEARCHED (Int. Cl.³)
	US - A - 3 866 795 (URANO) * Column 4, lines 6-13; figures 2,5,6 * --	1,8,12	G 07 F 9/10
	GB - A - 945 891 (REID) * Page 1, column 1, line 27 - column 2, line 47 * ----	1,9	

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21-08-1981	RUDOLPH

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