(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 490 693 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **91311598.6**

(22) Date of filing : **12.12.91**

(51) Int. Cl.[5] : **A47F 3/04,** F25D 25/00

(30) Priority : **13.12.90 GB 9027067**

(43) Date of publication of application :
17.06.92 Bulletin 92/25

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

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(54) Dispenser.

(57) A compact refrigerated dispenser for cooled articles, such as drink cans, comprises a housing (2) having a plurality of pairs of chutes (10,12 ; 40,42) for storing and dispensing the articles under gravity. The open lower end of each chute opens through a front panel of the housing. The chutes are filled either through a lid (8) in the top of the housing, or a door (48) in the top of the front panel. A lip (18) allows the articles to be withdrawn one at a time. Cooled air from a refrigerator (26) is recirculated over the stack of articles by a fan (28). The dispenser is non-coin operated.

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The present invention relates to a compact refrigerated dispenser for dispensing cooled articles, such as soft drink cans.

Refrigerated vending machines for dispensing cold cans are already known. These are mostly coin-operated. and are also required to be thief proof. Such vending machines are usually free standing and tend to be of bulky construction.

It is an object of the present invention to provide a more compact refrigerated dispenser suitable for use in self service supermarkets, where a cooled can may be withdrawn from the dispenser without the need to insert coins.

The present invention provides a compact refrigerated dispenser for dispensing cooled articles, which comprises.

– a housing containing storage means for storing a plurality of stacked articles, and gravity operated dispensing means for dispensing the articles; and

– refrigeration means for passing cooled air over the articles in order to cool the articles and for recirculating the air. The dispenser is not coin-operated

The housing is generally insulated and contains at least one chute for storing a stack of articles to be cooled. Generally, each chute is provided with a release mechanism at the base, which allows the articles to be withdrawn one at a time, the remaining articles moving down the chute under the effect of gravity. The release means may be a lip at the bottom of the chute, or may be a mechanism which ejects the lowermost can whilst holding back the next can. In order to provide a compact construction, the housing may contain pairs of chutes, one behind the other, each chute terminating in an aperture in a front face of the housing through which the article can be dispensed. Chutes (or pairs of chutes) may be arranged side-by-side.

Preferably, the housing has a removable lid to allow the chutes to be filled from above. The housing may have a transparent front face which allows the stock of articles to be visually monitored, prior to refilling if necessary. Alternatively, the chutes may be loaded from the front of the housing by providing a suitable door therein.

The refrigeration means is generally a vapour compression refrigerator, with the machinery located in the base of the housing. Cold air is preferably passed up a duct at the rear of the housing and passes over the stack of articles in a direction from the top to the bottom. In this way, fresh cans are subject to the coldest air, so that they are cooled most rapidly.

The present invention provides a refrigerated dispenser of compact construction suitable for wall or rack mounting, and which is narrow enough to be conveniently located near supermarket checkouts.

Embodiments of the present invention will now be described by way of example only in conjunction with the attached drawings wherein;

Figure 1 is a side view in cross-section of a first embodiment;

Figure 2 is a front view of the first embodiment;

Figure 3 is a front view of a second embodiment having four rows of chutes;

Figure 4 is a cross-sectional side view of a third embodiment; and

Figure 5 is a front view thereof.

The first embodiment shown in Figures 1 and 2 comprises a housing 2 having an insulated upper section 4 and a lower section 6 containing refrigeration machinery. A lid 8 is provided at the top of the housing for refilling with cans 1. The housing contains a pair of generally vertical chutes 10, 12 which turn to the horizontal at their lower ends, terminating in apertures 14, 16 in the front face of the housing. The cans in each chute are fed by gravity, with the lowermost can being retained in place by means of a lip 18 at the base of each chute. Alternatively, any known release mechanism may be employed, provided that this does not protrude substantially in front of the housing and thus constitute an obstacle.

The front face of the housing includes transparent panels 20 of glass or plastics which allow the stock of cans to be monitored, so that the dispenser can be refilled if required.

The lower section 6 contains a motor and pump mechanism 22 and condenser 24, which are connected by suitable duct work to a cooler 26 which comprises a nest of tubes which are finned to extend their cooling surfaces. Air is circulated within the upper section of the housing by means of a fan 28 which draws air from the bottom of the chutes (which are perforated to enable air flow) and passes it through the cooler 26, through a duct 30 running up the back of the housing and onto the tog of the chutes, before passing down the chutes and cooling the cans. Since the coldest air comes into contact with the newest cans at the top of the chute, these are cooled quickly to the required temperature. The temperature is maintained at a preset level by means of a thermostat. A defrosting system is also included and operates by means of a time clock. The defrost water is fed to a tray provided with a heater which vapourises the defrost water in known manner.

The arrangement of dual chutes one behind the other enables a particularly compact construction. Figure 2 shows three rows of dual chutes. Figure 3 shows an analagous construction having four rows of dual chutes.

The dispenser shown in Figures 1 and 2 is of particularly compact construction in front to back and side to side dimensions, and is thus particularly suitable for location at supermarket checkouts. The dispenser may be walled mounted or rack-mounted, or might be provided with a stand to allow it to be free standing.

The dispenser may be operated as follows. Firstly, the two chutes are filled by lifting the top of the housing and gently inserting the cans, whilst holding the bottom can to prevent it coming out of the aperture 14, 16. Once filled, the lid 8 is closed. Cooled air is forced over the cans by the fan, so that the newest cans are chilled quickly. A customer selects a can by looking through the transparent front panel to identify the correct product and lifting that product from the end of the chute over the lip 18, allowing the remainder of the stack to fall slightly and bringing a new can into the aperture 14, 16. In this way, cans are used in rotation, the oldest can being dispensed first. The stock of cans can be monitored visually through the transparent front panel, refilling taking place as required.

The invention can be used to dispense not only cans but also a wide variety of chilled goods.

Figures 4 and 5 show a third embodiment, which is similar in principle to the other embodiments; except that the rows of chutes extend up and over the top of the housing such that they may be filled through the front panel of the housing. Also, the cooler and fan are located differently. Analogous parts are indicated by the same reference numbers.

In this embodiment, the fan 28 and cooler 26 are located in front of the chutes 40, 42, which then curve over the top of the cooler to entrances 44, 46 in the front panel 50 of the housing. The chutes are filled by inserting fresh cans through the entrances 44, 46, which are closed by a hinged door 48 extending across the width of the housing. Cold air from the cooler is circulated through the cans 1 in the direction of the arrows so as to cool the cans by means of the fan. A flap 50 which may carry advertising material directs cold air away from the front panel. The front panel is formed of transparent or semi-transparent plastics material. Cans are dispersed by removing from the apertures 14, 16 as before.

Since this embodiment is front-loaded, it is suitable for insertion into a recess and goods may be stacked on top of it.

Claims

1) A compact refrigerated dispenser for dispensing cooled articles, which comprises

– a housing (2) containing storage means (10,12; 40,42) for storing a plurality of stacked articles (1),

and gravity operated dispensing means (10,12; 40,42) for dispensing the articles; and

– refrigeration means (22,24,26) for means (28) for passing cooled air over the articles from the refrigeration means in order to cool the articles and for recirculating the air;

the dispenser not being coin-operated.

2) A dispenser according to claim 1 wherein the storage means and the gravity operated dispensing means comprises a chute for storing a plurality of stacked articles, the chute having an open lower end opening into a front panel (20;50) of the housing to allow the stacked articles to be dispensed from a lower end of the stack.

3) A dispenser according to claim 2 wherein the chute has an upper end closed by a lid (8) in a top surface of the housing.

4) A dispenser according to claim 2 wherein the chute has an upper end closed by a door in the front panel of the housing at a point above the open lower end of the chute.

5) A dispenser according to claim 2,3 or 4 wherein the dispensing means comprises a lip (18) at the open lower end of the chute to hold back the stack of articles, and to allow the stacked articles to be dispensed one at a time.

6) A dispenser according to any of claims 2 to 5 which comprises pairs of chutes arranged side-by-side, the chutes of each pair being disposed one behind the other.

7) A dispenser according to any preceding claim wherein the means for passing cooled air comprises a fan (28) for circulating cooled air over the stacked articles.

8) A dispenser according to claim 7 wherein the cooled air from the refrigeration means is passed down the storage means from an upper end to a lower end thereof.

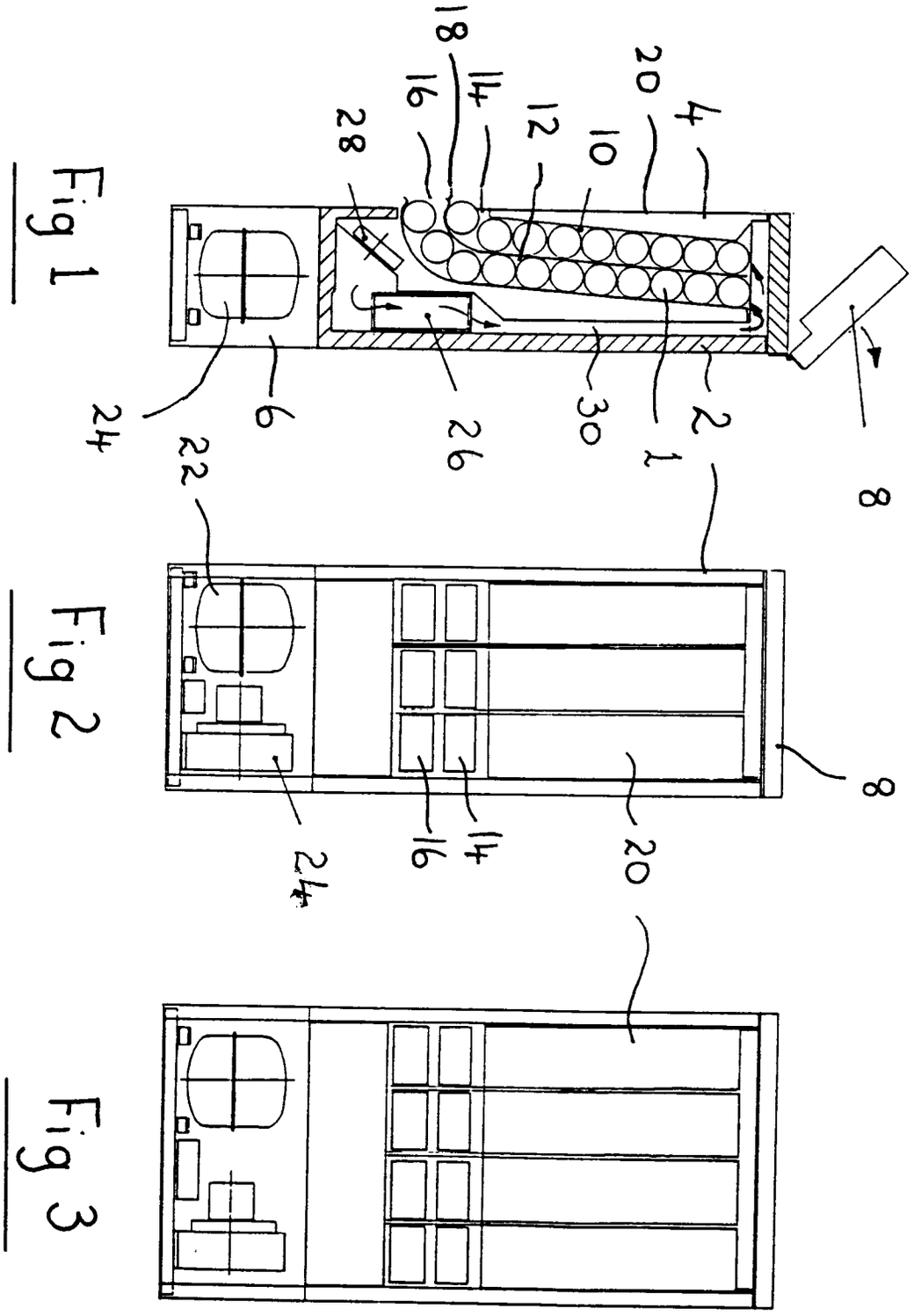

Fig 1

Fig 2

Fig 3

Fig 5

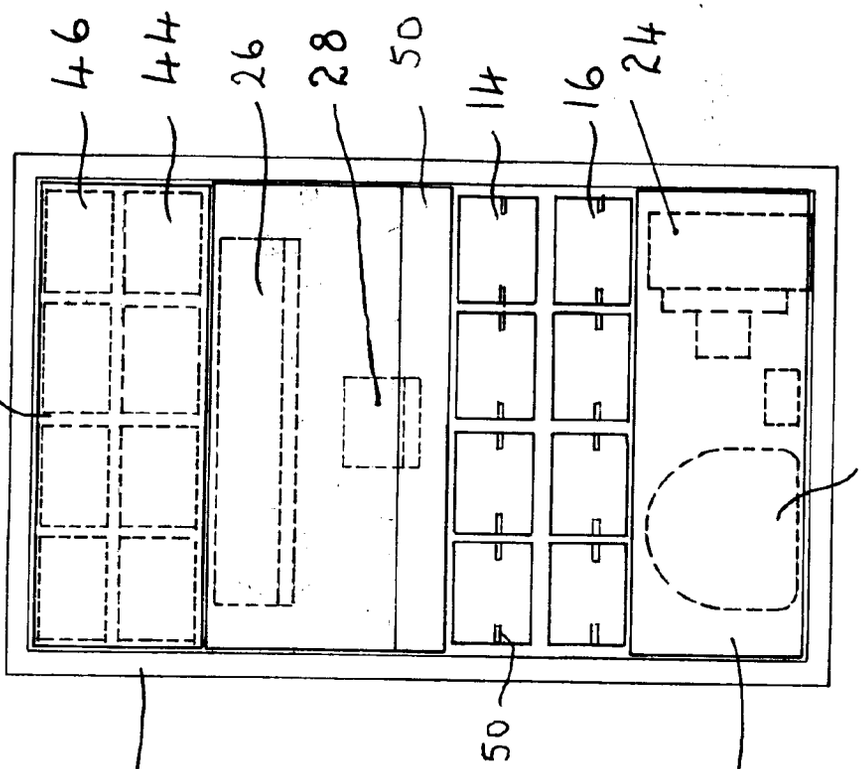
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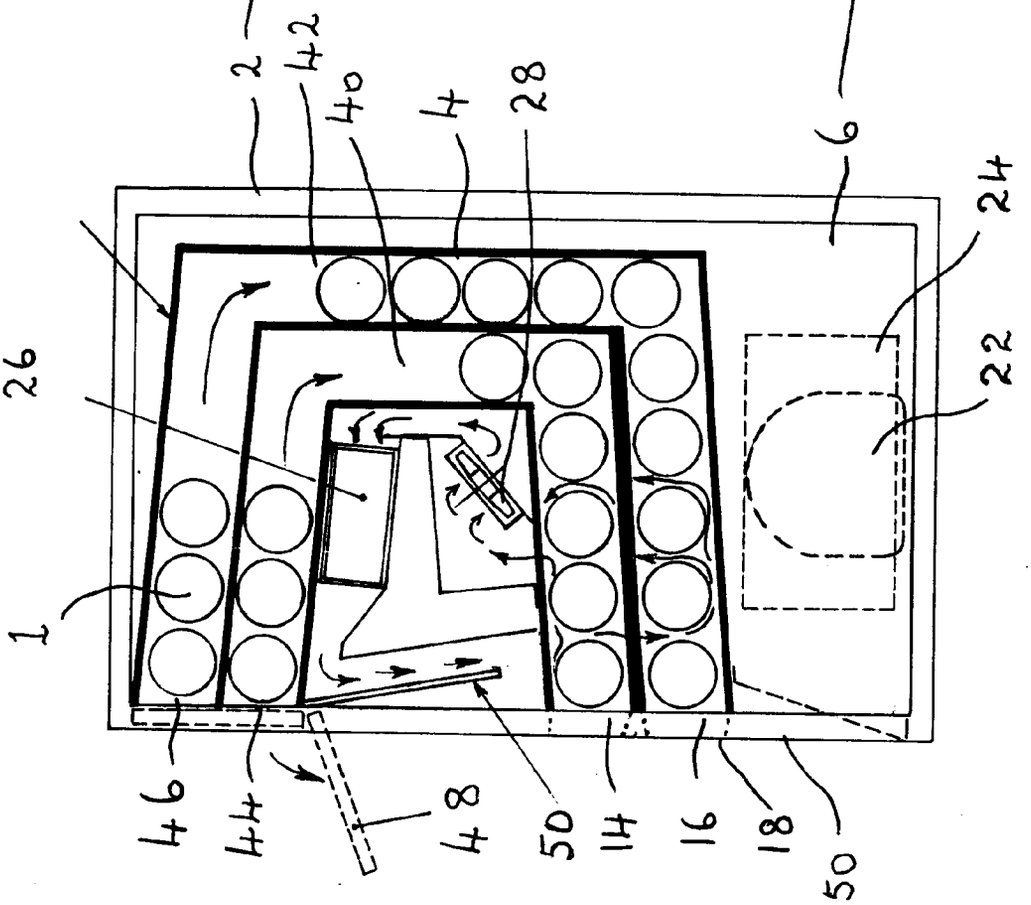
Fig 4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