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(54) PRODUCT DISPENSING MACHINE WITH DISCHARGE THROUGH ITS TOP

(57) Product dispensing machine with discharge of the products through the top part of the machine, comprising under the platform (7) as many telescopic rods (11) as there are platforms, said telescopic rods being actuated by a telescopic elevator (14) itself controlled by a microswitch (2) in collaboration with a CPU unit, to stop or raise the platform and to set in motion the drive mechanism comprised of an arm (4) movable in a horizontal direction, to pull out the selected product (6) to a receptacle (23) where the user can retire it from.

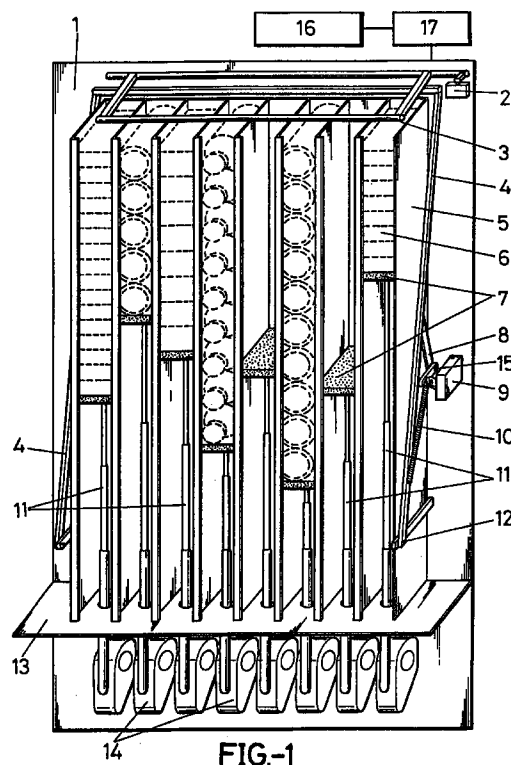


FIG.-1

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Description

The present invention refers to a machine dispensing products with discharge through its top, which object is to provide a method to carry products, and to lift them from the different channels in the frame. The invention has as a secondary realisation the possibility of moving cylindrical cabs from down to up. When they are asked by users, these are one to one, extracted and dispensed across a cramp upper the different stacks in the machine, and dispensed through a opening on the upper side of the machine.

FIELD OF THE INVENTION

This is a coin actuated dispensing machine.

KNOWN STATE OF THE ART

At this moment, the coin actuated dispenser machines, move the products from up to down, dispensing them through a lower side of the machine frame.

All these machines, known at this moment as coin actuated dispenser machines, dispense products through a lower side of the machine, use gravity in its actions, so mechanism are very simply, because they don't need to move the product by means that could move it from the stack platform from down to up.

When makers of products like tobacco, prophylactics, alcohol, etc. want to sell these products by automatic coin actuated machines, wish prevent these were sold to minors by means of expending the products through the upper side.

Nevertheless, the known machines that dispense products through its upper side, move products down to up by means of complicated and expensive mechanisms. This mechanisms implicate also frequent failures, and a continuous and expensive maintenance.

It must be said that mechanism to move the products horizontally to the definitive expending window are in the same manner complicates, suffering the same problems as the lifting mechanism.

The obvious solution is to have a upper-side expending machine without these complicate mechanisms, without chains, weight levers, etc. It would be an advantage that these mechanism were managed by a electronic CPU unit, installed in the coin receiver, having this kind of mechanism less failure risk and less maintenance costs than present known mechanisms.

It has been wished that the same machine could deliver different enveloped and sized products, without important changes, and that this machine could dispenses cylindrical envelopes drinks, whit or without alcohol.

DESCRIPTION OF THE INVENTION

Here described product dispensing machine with

discharge through its top, has the novelty of having an unitary product pulling mechanism, with the possibility of not including it, and so the products can be managed climbing down to exit by gravity, and having a telescopic lifting mechanism, reducing the problems of similar machines used today.

This product dispensing machine with discharge through its top, incorporates as lifting machine an element, hermetically closed, electrically feed, with an internal eccentric engine that moves a telescopic rod, having enough power to lift products, step by step, as they were requested by users. The product is lifted from its compartment to the upper side of the machine, where an arm run over the whole upper side and, when find the product, pull it to the exit. This arm does its running twice times, in order to solve the problem of not finding the product in a suitable position to be pulled out horizontally the first time.

Additionally, as a second embodiment of the invention, the horizontal pulling device can be eliminated, replaced by a climb in the upper side of the machine which allows the product movement down to a central compartment. This embodiment can be used only for cylindrical enveloped products.

Each compartment has a door which opens automatically when the product goes up, leaving this product on a height that allow it rolls over the upper surface of the other department doors down to the central zone where the user can get the product.

The doors can additionally actuate relays or micro-switches in order to count the amount of products that have been dispensed. That doors can also be simple doors with side hinges, forming a climb surface where the cylindrical product envelopes can roll down over. The doors can also be opened by the telescopic rods.

This machine works through a internal CPU unit and a coin-actuated arrangement. Both CPU and coin arrangement can be regulate following different characteristics of the locations where the machine could be placed. The machine frame has more high than existing ones, by one hand to achieve a greater storing capacity, and by the other hand to present accessing difficulties to children.

The invention has a coin-actuated arrangement, connected with the CPU unit inside a frame. A micro-switch controls the height and manage the pulling arm, which runs over the upper side of departments where products are stored. These products are stored over a platform that is moved up vertically by a telescopic rod actuated by a telescopic lifter. The pulling arm is moved by a cam mechanism, with a electromagnet or a eccentric engine, which, trough a spring, moves a telescopic rod having a turning point suitable of moving the pulling arm.

In the second embodiment, when the machine dispenses cylindrical enveloped products, there is not any pulling arm, not any of the mentioned elements to move it. In this case the compartment upper doors are dis-

posed as a climb surface over the upper side of the different product compartments

BRIEF DESCRIPTION OF THE DRAWINGS

In order to complement the description and to a better comprehension of the invention characteristics, two sheets of drawings are joined.

Figure 1 is a front view of the machine internal disposition.

Figure 2 is a side view of the pulling arm arrangement on the upper side of product compartments.

Figure 3 is a front view of the second embodiment of the invention, when the product envelopes are cylindrical type only.

PREFERRED EMBODIMENT

Looking at figures, it can be appreciated that the machine has all its parts inside a frame. It has a door in its front side to have access to the machine inner. This door can have all kinds of configuration, having decorating or lighting elements, and it can have texts with instructions for good use of it.

The invention has a coin-actuated mechanism (16), with a external coin insertion slot, and a CPU unit (17), directly connected with the coin mechanism, that has the general managing of the invention.

When coins are inserted through the slot to the coin-mechanism (16), the CPU unit allows the user choose one of the products, indicating the lack of stock if it were the case and permitting the user choose another product or asking him if he wants the machine returns the money.

When a product has been selected, the telescopic lifter (14) corresponding to that product compartment gets on.

After this, the telescopic rod (11), that is moved by the telescopic lifter (14), pull up the platform (7) where products (6) are placed.

The telescopic lifter (14) moves the telescopic rod (11), it pull up vertically the platform (7). When the platform reach the expulsion height, controlled by a micro-switch, this get on a height control device (3). The height control device (3) has two duties: the first is to stop the telescopic lifter (14) and the telescopic rod (11) mechanism. The second is to get on the pulling mechanism (4) that includes a pulling arm (its movement arrangement explained below) that launch the product (6) to outside, moving again if the height control device (2), the micro-switch, detect the product has not been launched.

After the product (6) has been launched, the telescopic rod (11), moved by the telescopic lifter (14), goes down a predetermined height, in order to prevent blockages in the upper side of the product (6) compartment (5).

When products stacked in the different compartments (5) have similar configuration, the height control

device (3) is completely straight. If it is not the case, this device must be adapted to the shape of each product to dispense.

The pulling mechanism of the pulling arm (4) includes a electromagnet or eccentric engine (9), that operate on the cam (8) with a turning point (12), having a spring (10) to give stress to the pulling arm mechanism.

When the lifting operation is finished, the CPU (17) send the expulsion order to the electromagnet or eccentric engine (9). If there is a electromagnet, this must be managed by the CPU (17)

controlling the actuating time, but if there is a eccentric engine, this must be moved controlling the cycles.

The electromagnet (9) moves a cam (3) that push the pulling arm (4). The sort hand of the cam has several drills, in order to allow different pulling courses and strong.

The pulling arm section has the shape of a "U", viewing from the upper, so the long half of the cam (8) push the pulling arm (4), sliding inside it.

The string (10), placed between the long hand of the cam (8) and the pulling arm (4), has the target of stabilising the cam and make easier the going back of the pulling arm.

In a second embodiment of the invention, that can be looked in the figure 3, cylindrical envelopes (19) and (20) with different kinds of products, particularly drinks, are placed on the platforms (7). These are moved by the telescopic pushers (11), the telescopic rods, in a similar way that before. The difference is that now, in the upper side of the compartments (5), there is a door (21), joined with one of the walls by mean of hinges (22). The doors (21) can be opened enough to allow the envelope (19 or 20), having the product the user asked for, move itself. This self-movement is because the compartments (5) upper doors (21) are disposed forming a climb, and over it the envelope with the product slide down to a receptacle (23) where the user can retire it from. This receptacle is near the top side of the dispense machine, but obviously lower than in the first embodiment.

In this embodiment, by one hand, is eliminated the pulling mechanism, with the pulling arm. By the other hand, when inside the envelope (19 or 20) there is a carbonated drink, if it is shacked can sprinckle when is opened. The location of the receptacle (23) prevent from happening it.

Claims

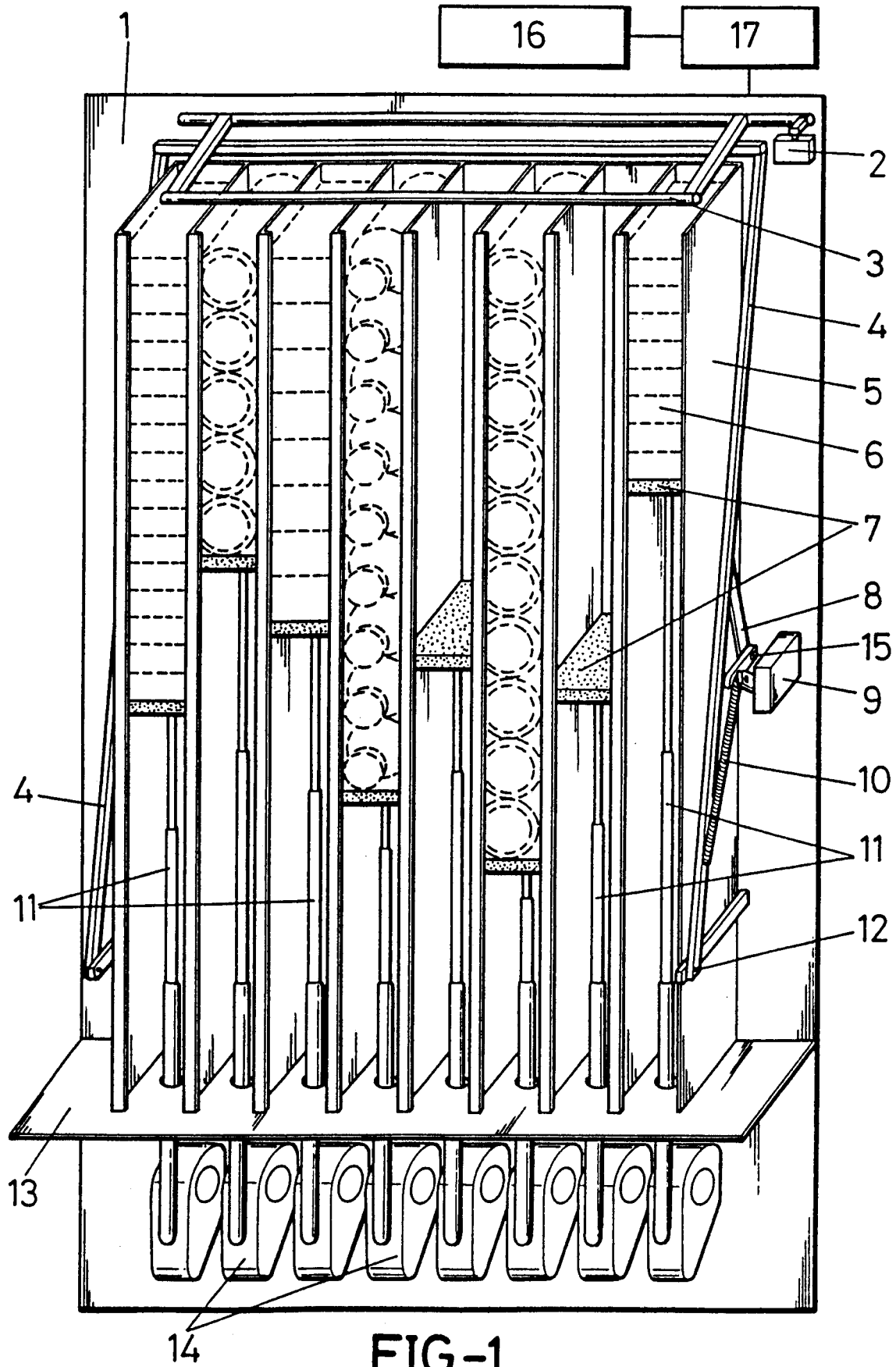
1. Product dispensing machine with discharge of the products through the top part of the machine, applied to dispense different enveloped products, in different kinds of envelopes that can be a parallelepiped, cylindrical or any other kind, stored inside a machine including a frame (1), with a coin-actuated mechanism (16) connected to a CPU unit (17), with a microswitch and a height-control device, being

the product (6) stored in stacks inside compartments or channels (5) over a platform (7), characterised in that the products (6) over the platform (7) are moved up vertically by mean of a telescopic rod (11) actuating below the platform (7), this telescopic rod being powered by a telescopic lifter(14), managed by the microswitch (2) collaborating with the CPU unit (17), that actuate when coins introduced in the coin-machine (16), are accepted and the product is selected by the user, that if there is stock get on the telescopic lifter (14) over the telescopic rod (11) in the adequate channel (5), pushing up the platform (7) where the products are (6), and when the launching height is reached, by mean of a control, the lifter is stopped and actuate the pulling mechanism with the pulling arm (4) that moves horizontally the selected product (6) to outside.

2. Product dispensing machine with discharge of the products through the top part of the machine, as claimed in the first claim, characterised in that when the product reaches the launching height, if the height control device detects the product (6) has not been launched to outside, through a ramp that communicates the longitudinal mouth in the upper front of the frame (1), specifically in the door, the pulling mechanism with the pulling arm (4) and the other elements, try a second time, and when it is sure that the product has been launched, the lifting device including the telescopic lifter (14), actuates over the telescopic rod (11), joined to the platform (7), going down to a predetermined height, leaving the upper compartments (5) zone free.
3. Product dispensing machine with discharge of the products through the top part of the machine, as claimed in the first and second claims, characterised in that when the product reaches the launching height, if the height control device detects the product (6) has not been launched to outside, through a ramp that communicates the longitudinal mouth in the upper front of the frame (1), specifically in the door, the pulling mechanism with the pulling arm (4) and the other elements, try a second time, and when it is sure that the product has been launched, the lifting device including the telescopic lifter (14), actuates over the telescopic rod (11), joined to the platform (7), going down to a predetermined height, leaving the upper compartments (5) zone free
4. Product dispensing machine with discharge of the products through the top part of the machine, as claimed in the previous claims, characterised in that when the lifting operation is finished, the CPU send the expulsion order to the electromagnet (controlling the actuating time) or the eccentric engine (moved controlling the cycles). The electromagnet or eccentric engine (9) moves a cam (8) that push

the pulling arm (4), having the cam (8) a sort hand with several drills, in order to allow different pulling courses and strong.

5. Product dispensing machine with discharge of the products through the top part of the machine, as claimed in the previous claims, characterised in that the pulling arm section has the shape of a "U", viewing from the upper, so the long half of the cam (8) push the pulling arm (4), sliding inside it, helped by a string.
6. Product dispensing machine with discharge of the products through the top part of the machine, as claimed in the previous claims, characterised in that the upper side of the compartments (5), there is a door (21), joined with one of the walls by mean of hinges (22). The doors (21) are disposed forming a climb, and over it the cylindrical envelopes (19 or 20) with the product (6) slide down from channels (5)



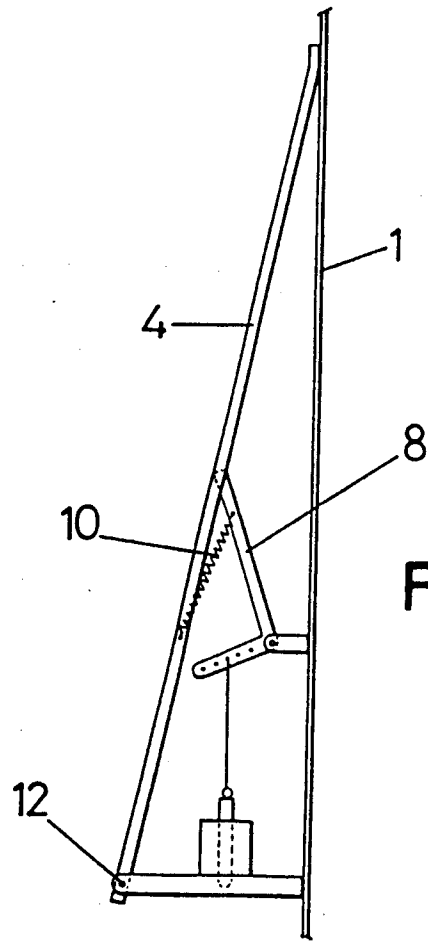


FIG.-2

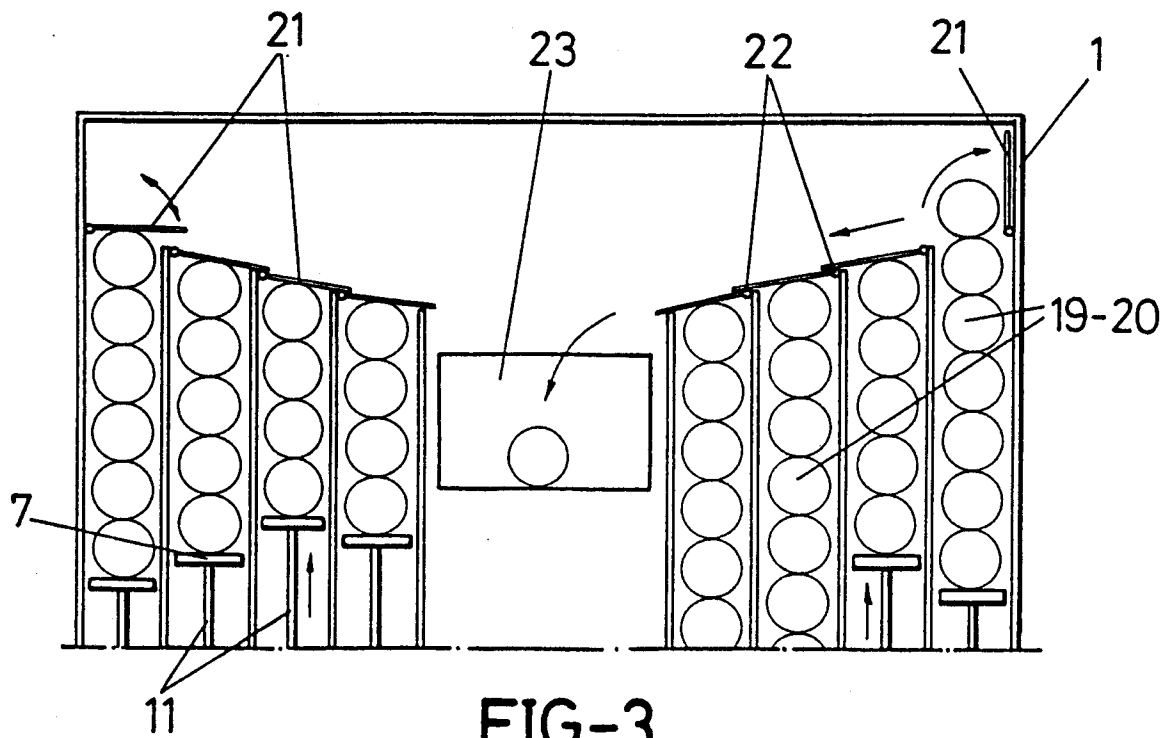


FIG.-3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 96/00207

A. CLASSIFICATION OF SUBJECT MATTER		
IPC ⁶ G07F11/14		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC ⁶ G07 F B65G		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
CIBEPAT, WPI, EPODOC		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 24145 A (DEELEY STEPHANIE TAMSIN ;ABOUAV DAVID MICHAEL (AU)) 14 September 1995 (14.09.95)	1-3
A	see page 1, line 10 - line 26 see page 2, line 27 - page 3, line 11 see page 6, line 7 - page 9, line 30 see page 17, line 20 - line 24 see page 19, line 24 - line 26; claims 1-16, 19-22; figure 1, 10, 12	4
X	ES 2 061 404 A (WILHELMUS C DE KLERK JOSEPHUS)	1
A	1 December 1994 (01.12.94) see column 1, line 33 - line 52 see column 2, line 9 - line 38; claims 1, 2	3,6
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
27 February 1997 (27.02.97)		3 March 1997 (03.03.97)
Name and mailing address of the ISA/ S.P.T.O		Authorized officer
Facsimile No.		Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 96/00207

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 542 244 A (DYER KERMIT W ET AL) 24 November 1970 (24.11.70)	1
A	see claims 1-9; figure 6 ---	2-4
X	GB 2 248 609 A (ADVANCED VENDING SERVICES) 15 April 1992 (15.04.92)	1
A	see page 2, line 8 - page 9, line 9; figure 1 ---	3,4
A	EP 0 580 955 A (JOURNOMAT AG) 2 February 1994 (02.02.94) see column 2, line 16 - column 3, line 12; claim 1; figure 1 ---	1,3-5
A	FR 2 266 229 A (DISTRIBUTION AUTOMATIQUE CIE F) 24 October 1975 (24.10.75) see the whole document	1,3