

[54] **DEVICE FOR AUTOMATICALLY
SUPPLYING DRINKS AND FOODSTUFF**[76] Inventor: **Francisco Arin Urcola,**
Zumalacarregui 10, Tolosa, Spain[22] Filed: **July 27, 1973**[21] Appl. No.: **383,149**[30] **Foreign Application Priority Data**

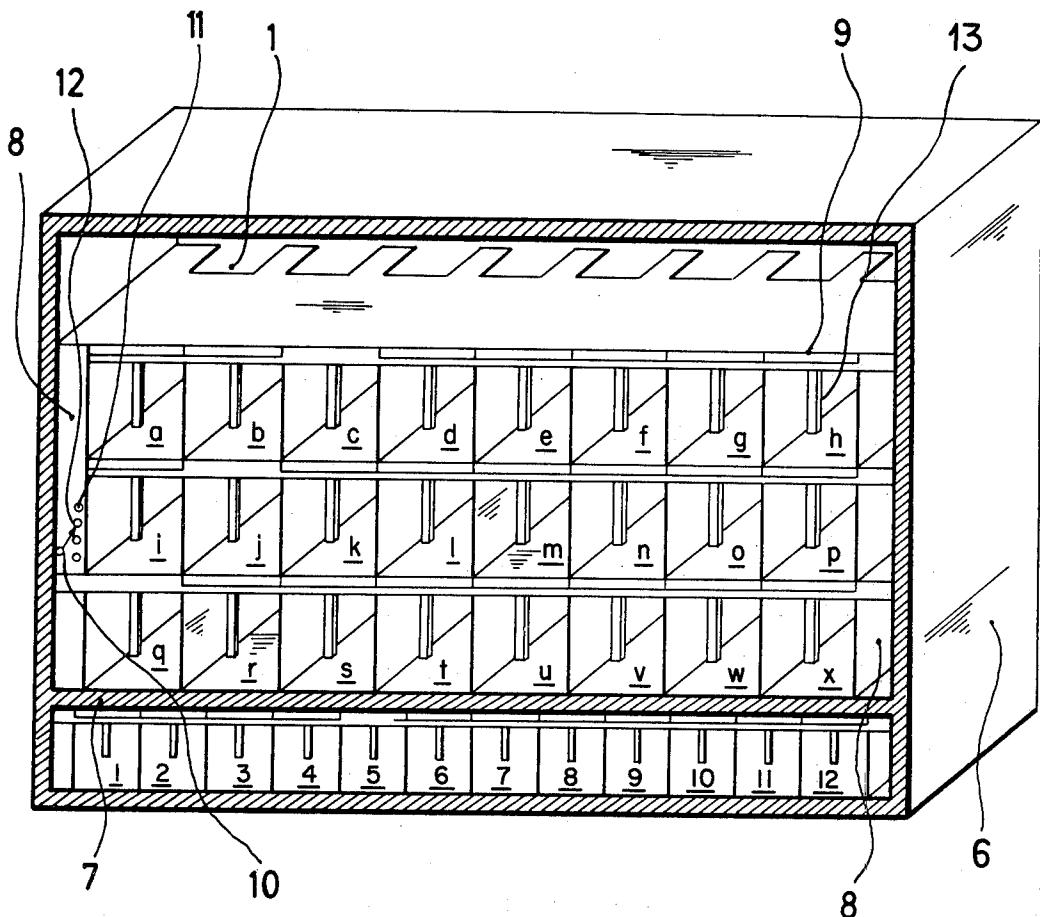
July 29, 1972 Spain 405376

[52] U.S. Cl. **221/7; 221/21; 221/150 B;**
312/234; 235/92 FP[51] Int. Cl. **G07f 11/00**[58] Field of Search 312/DIG. 21, DIG. 32, 234,
312/35; 62/3; 235/92 FP; 340/274, 276
221/2, 3, 4, 5, 6, 7, 8, 21, 150 B, 150 R[56] **References Cited****UNITED STATES PATENTS**1,152,638 9/1915 Hurd 221/7 X
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3,749,279 7/1973 Ungerman 221/7*Primary Examiner*—Robert B. Reeves*Assistant Examiner*—Joseph J. Rolla*Attorney, Agent, or Firm*—Wenderoth, Lind & Ponack

[57]

ABSTRACT

Device for automatically supplying or dispensing drinks and food stuffs includes a cabinet having a cooling zone, a zone for containing drinks and foodstuffs, a zone for registering consumptions and a zone for generating cooling energy. The cabinet is conveniently provided with a mechanical closure as well as an electrical closure.

11 Claims, 17 Drawing Figures

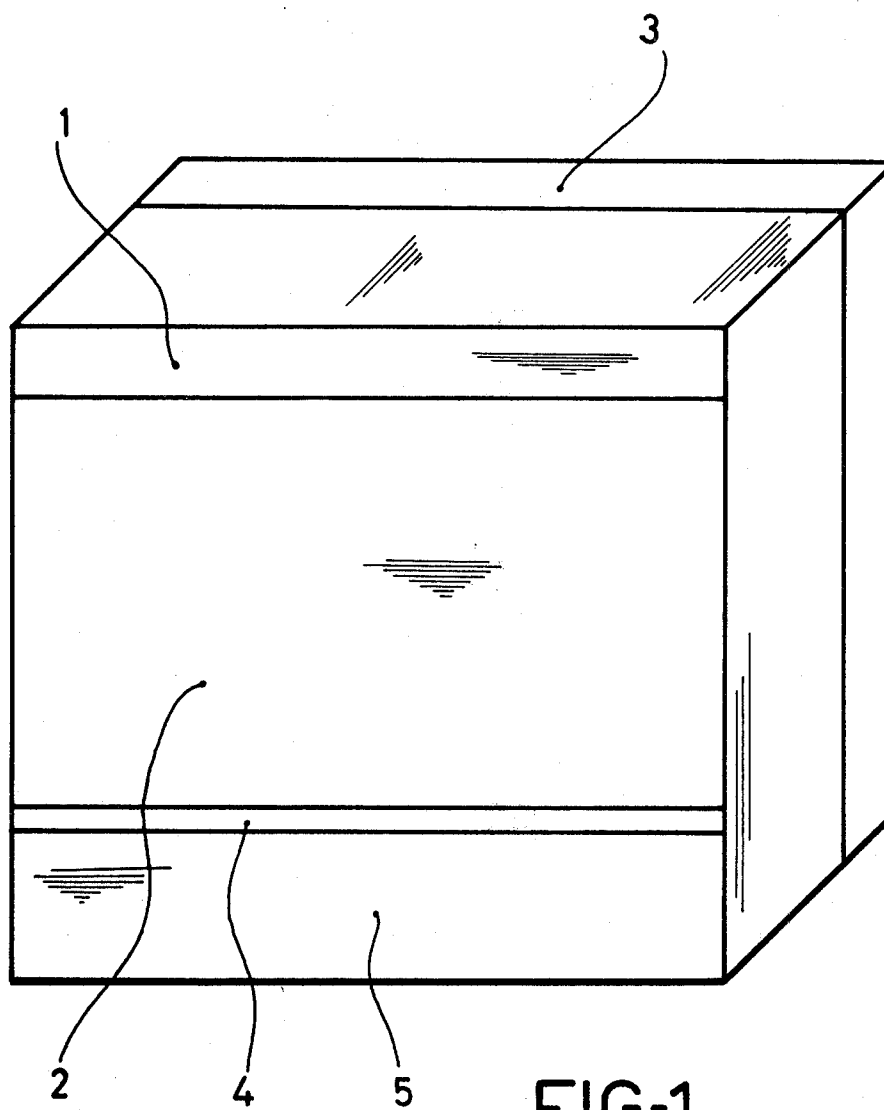


FIG-1

SHEET 2 OF 5

FIG-2

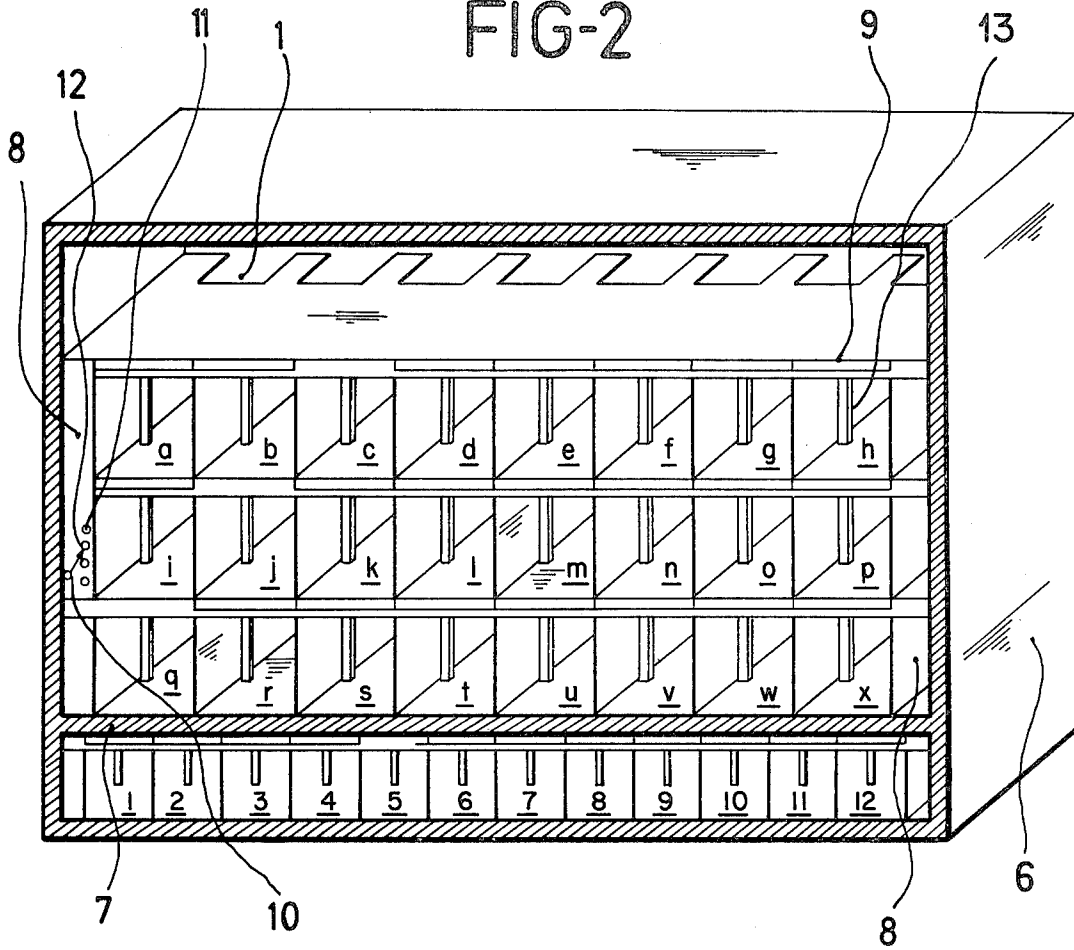


FIG. 4a

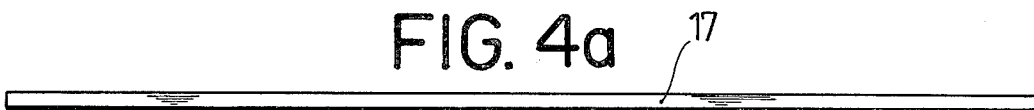


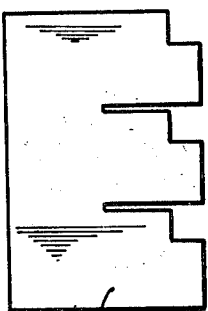
FIG. 4b



FIG. 4c

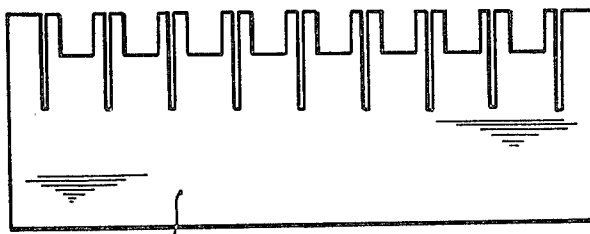
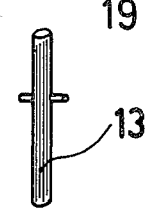


FIG. 4d



16

FIG. 4f



14

FIG. 4e

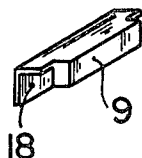


FIG. 4g

SHEET 3 OF 5

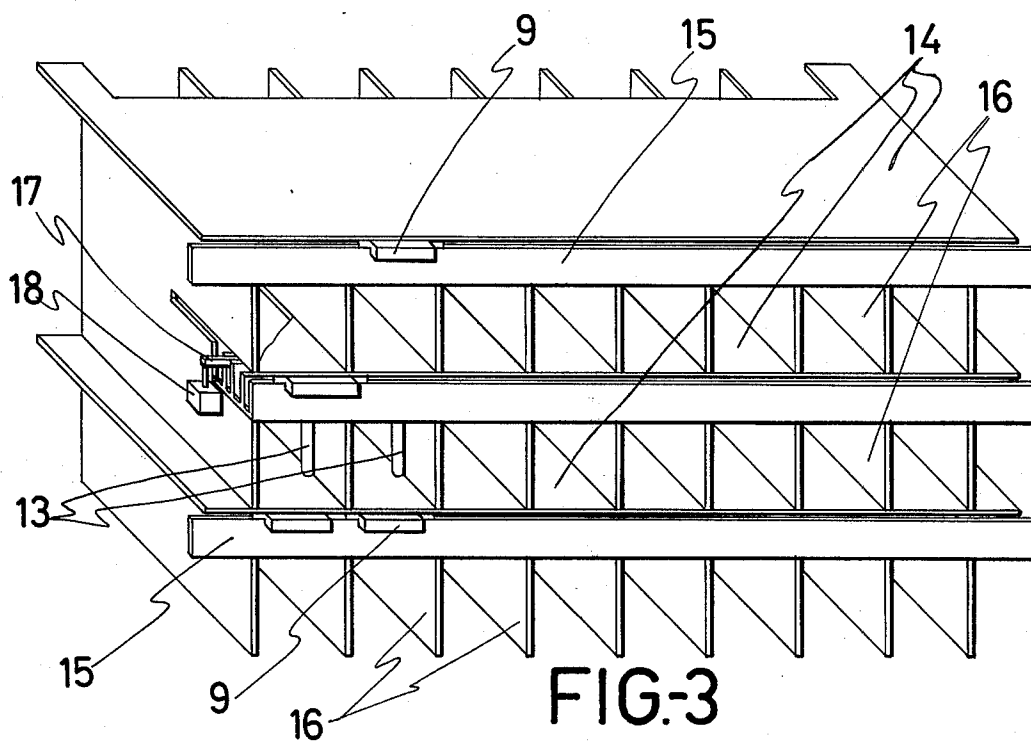


FIG. 5a

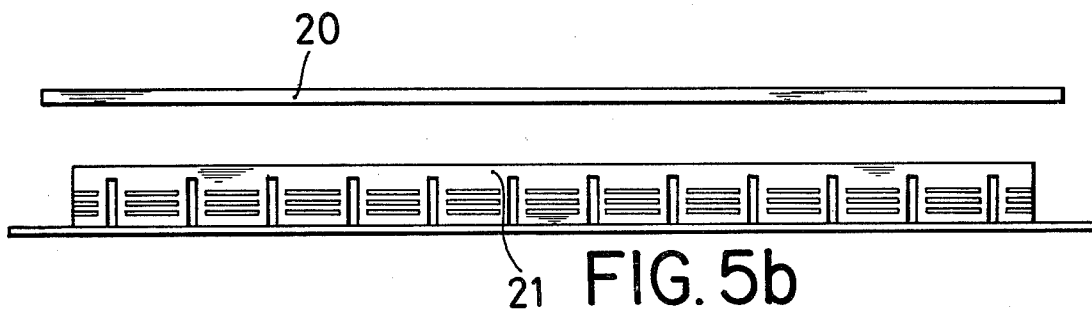


FIG. 5c

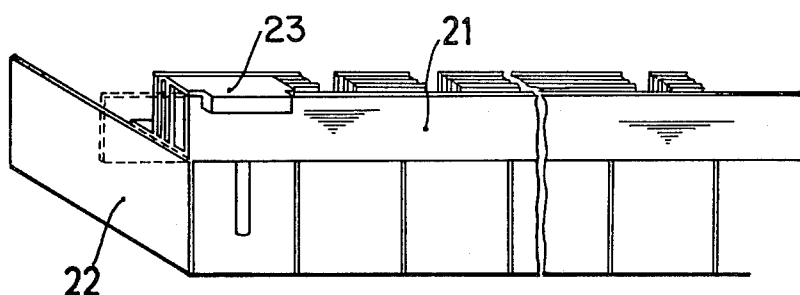


FIG. 5d

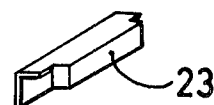
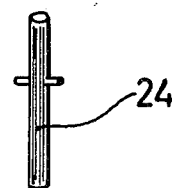


FIG. 5e

FIG-6

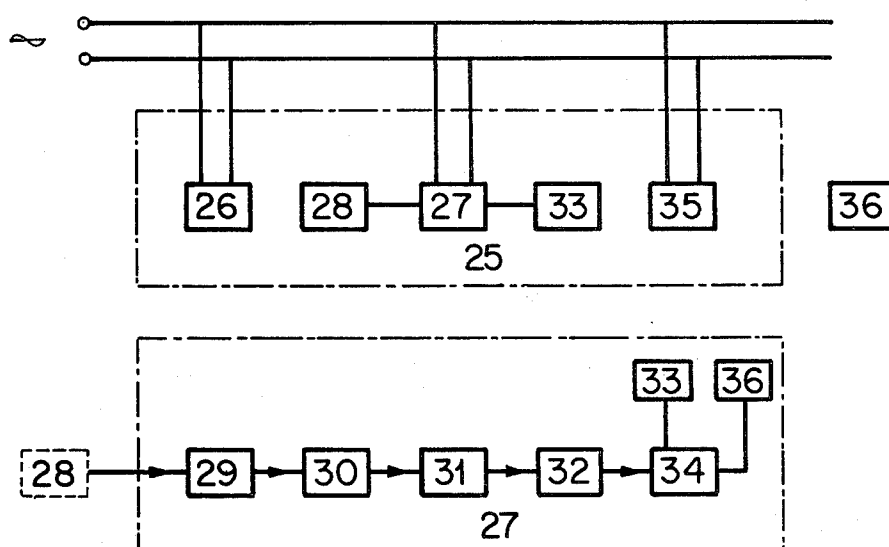


FIG. 7a

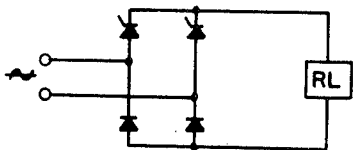


FIG. 7b

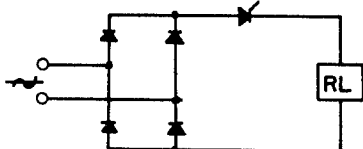


FIG. 7c

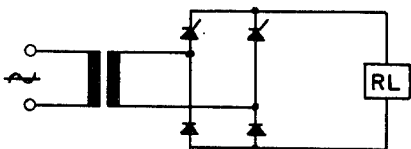
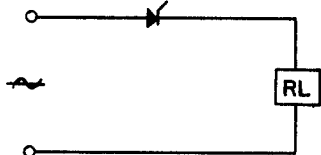


FIG. 7d

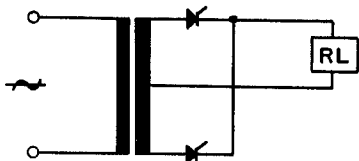


FIG. 7e

DEVICE FOR AUTOMATICALLY SUPPLYING DRINKS AND FOODSTUFF

BACKGROUND OF THE INVENTION

The present invention refers to units designed for supplying drinks and foodstuffs, to the consumer without the need for money pieces, coins or other elements.

Devices for supplying drinks, others for foodstuffs and some for both, presently exist on the market. Generally speaking, these devices can be divided into two large groups: Supplying devices which require the insertion of money pieces or coins, broadly speaking, for its functioning, and others which do not require introduction of money pieces or coins.

The first mentioned devices do not constitute a part of this invention. With regards the second mentioned devices, the end purpose of which is similar to that of the present invention, known devices are in almost all cases combined electrical and mechanical operable devices. Such devices have certain drawbacks, of which the most important are: Since they are mechanical, they should have metallic elements which, due to the fact that they are situated in a highly humid atmosphere, either become oxidized or must be adequately protected, thus making the product more expensive. Since the extraction of each bottle requires a mechanical action, the devices have a construction which is highly complex and, therefore, not economical. When the devices are used for supplying cold drinks, consequently operating at low temperatures, ice is formed in the joints due to the combination of cold and moisture, thus making extraction of the bottles very difficult and forcing the user to apply great force, which could give rise to breakage of the mechanical device when the resistance of the ice suddenly yields. The bottles or foodstuffs are not visible to the client which, at certain times, can give rise to the extraction if an empty tray. All cold-producing devices use conventional compressing or absorption processes and/or are noisy or they have a very low yield. In general all known such devices are very bulky.

All these drawbacks together with others of minor importance make their existence in the market scarce, wherein their novelty, likewise, plays a part.

SUMMARY OF THE INVENTION

The device of the present invention overcomes all the drawbacks of the previously existing units. The end purpose of the device of the present invention is essentially the same, but its conception and realization are radically different in all its parts with the exception of the cold-producing unit which in two of the three embodiments to be discussed below, is similar to that of the conventional devices.

The unit in question is destined to supply chilled drinks, non-chilled drinks, chilled foodstuffs and non-chilled foodstuffs. A single device can be contemplated for dispensing all four products, for only some of them, or only one of them.

Due to the way in which it is conceived, the device of the invention is destined to be positioned in places to which access is restricted to a single person or to a group. For example, it can be placed in a hotel room which can simultaneously be occupied by a single or various persons known to each other who will jointly or individually be responsible for the affected consumptions. In the aforementioned example, while the cited

person or persons occupy the room, only they will have access to the interior of the unit. However, when they leave the room they will no longer have access thereto and if another of other persons occupy the same room, they will have access to the unit.

The device of the inventor may be used in hotel, inn, hostel rooms and similar centers. This enables hotel managers to offer to their clients, at any hour of the day and night, drinks and foodstuffs, or either of the two, as they wish. If the device were unable to register the amount of consumptions, the same would become less interesting, since visual checks on consumption would have to be made, which would give rise to arguments between the hotel manager and the client. Therefore, necessary elements are incorporated in the units to permit the consumptions made by the clients to be controlled and registered.

The most important advantages of the device of the present invention are:

For the client:

He has at his disposal, at any time of the day or night, and in his room without delays or disturbances, foodstuffs and drinks.

He does not need to use money pieces but a simple key which he receives together with that of the room.

His privacy is not disturbed by strange persons coming into his room.

For the hotel manager:

The device reduces the cost of room service.

The number of sales increases due to the fact that the client has free access to the drinks.

It gives a better service which allows him to be ahead of competition.

Accounting is made with less expense and without error.

There are other less important advantages for both parties which have been omitted for the description so as not to make the same tedious.

As previously mentioned the device is destined to be placed in hotels, hostels and other centers.

In the interior of such device there are drinks which could be chilled or not and even some which could be chilled while others are not.

In anyone of its variants the unit will be able to produce ice cubes besides chilling the bottles of drinks.

The bottles will be placed in the interior of the "bar" in such a way that the client can have easy access thereto. The following variants are possible:

A. There is no obstacle whatsoever between the bottle and the user with the exception of the door of the "bar."

B. There is, besides the door of the "bar," a small obstacle between the bottle and the user which permits visibility of the bottle and access thereto. In order to extract the bottle, the obstacle can be withdrawn and the bottle can thereafter be extracted, or the bottle can merely be extracted whereby the obstacle is withdrawn by the bottle itself.

C. There is an obstacle between the bottle and the user which impedes access to the bottle and requires previous withdrawal of the obstacle in order to extract the bottle.

D. In cases (B) and (C) the unit can be made in such a way that the client should select, with the help of a switch, a keyboard or a push-button, the row or column from which the user desires to extract a

bottle and thereafter effect the contemplated actions.

In all cases the bottles will be separated from each other and distributed at random.

Each bottle will have a value which could be varied at will by the owner of the "bar." When the client extracts any bottle, its value will be accounted for in units which could be multiples or fractions of the monetary unit of the country in which the device is installed. The final result of accounting, for a "bar" and a client, will be the sum of the prices of all the bottles extracted by the client.

Registration or accounting can be made in the "bar" itself or in a centralized site, or in both places simultaneously.

In any one of the variants, the proposed system will register, furthermore, each drink consumed. In this case and in the central registering point, there is a registering element for each type and brand of drinks. This registering element will receive information for all and each one of the "Automatic Bars," in the following way: when a client takes a bottle, signals will be produced which will be delivered by the unit to the registering element which records the consumptions of the client. A signal indicating that a certain bottle has been consumed, will simultaneously be produced. This signal will be delivered by the unit to a registering element which will record the number of bottles of each type consumed.

In units incorporating this system, there is a centralized register wherein consumption of each type of drink will be registered in all "bars" associated with this register.

This, in short, is a control of stock. As will be seen hereinafter, the bottles are arranged in an assembly of ordinate receptacles, each bottle in a receptacle. The assembly of receptacles will be situated in a cabinet provided with a mechanical and electrical double lock. The cabinet will be placed in the corresponding room.

A client of the hotel simultaneously receives the key of the room and that of the "bar." The receptionist or the person in charge will have a control which will permit him to release at will, or not, opening of the bar by acting upon the electric lock.

If the electric lock of the "bar" is freed, the client will be able to open the door of the "bar" and have access to same by making use of his key.

As previously mentioned, in the interior of the "bar" there is a series of conveniently ordained bottles, visible to the user, as well as a graphic indicator which will point out the type, brand and price of the bottles. When we speak of bottles we do so in order to simplify matters as the "bar" could be also include foodstuffs, besides bottles. In order to take a bottle the client will dispose of a switch having as many positions as rows. This switch must be placed in the position corresponding to the row in which the selected bottle is found, whereby such row will be unblocked.

Once this operation is effected a slide or guide will be moved so as to release the receptacle corresponding precisely to the chosen bottle, whereby it will only be necessary to extract the bottle.

On effecting extraction, an extraction detector will be activated and the consumption made by the client will be detected. Each one of the detectors will activate an electronic device wherein a computer, which will permit choosing the price corresponding to each drink

and varying it at the discretion of the proprietor of the "Automatic Bar," is incorporated.

After extraction, the electronic unit will emit an electric signal proportional to the price of the withdrawn bottle. This signal will be applied to a registering device which could be centralized with those corresponding to the remaining rooms or in the Automatic Bar itself, or in both places simultaneously.

The electronic device, which will have been previously programmed by the proprietor, will emit a signal which will be proportional to the price of the bottle withdrawn, differentiating the bottles and registering a price, and only one price for each bottle which can even be different from the price of all the remaining bottles.

If the user extracts bottles, the electronic unit supplies electronic signals proportional to the values of the extracted bottles, adding the prices of the successive consumptions made to the registering system.

While the client has access to the room and has a key to the "bar," all annotations affected in the registering system will be charged to him. The hotel manager will bill the difference between the annotations of the registering element when the client checked in and when he leaves the hotel.

If, for any reason, electric power fails, the "Automatic Bar" will be blocked, the door will therefore not open, and extraction of a bottle will also be impossible even if the door were open during power failure.

The cooling unit will function automatically and will automatically regulate the temperature of the cooling area by means of a thermostat.

Once the assembly of the invention has fully been understood, other details and characteristics thereof will become evident in the course of the description which will subsequently be made, wherein the special features of the invention as well as those of the means used for its execution, will be explained. These features are given by way of example making reference to two preferred embodiments. However, the invention is not entirely limited to the details herein outlined, this description should, therefore, be considered as illustrative and without limitations whatsoever.

BRIEF DESCRIPTION OF THE DRAWINGS

The following description gives a better idea of the invention. Such description refers to the drawings attached hereto wherein the preferred details of the invention are schematically and exclusively represented by way of example.

In such drawings like references are used to indicate elements, assemblies or parts which are similar to those represented in the various views. Such elements, details and arrangement are specifically defined in the present specification.

In the drawings:

FIG. 1 is a perspective view of the device of the present invention, divided into determined areas which manifest the interior arrangement of the invention.

FIG. 2 is a perspective view of the device which illustrates in detail the arrangement of an upper free zone and that of the zone destined to contain the foodstuffs, together with its extraction and detection devices.

FIG. 3 is a perspective view of the area of the receptacles which contain the chilled products and, besides its general arrangement, it also illustrates a feed net-

work detector which blocks the receptacles when the electric energy supply fails.

FIGS. 4a-4g illustrate the elements of the assembly described in FIG. 3.

FIGS. 5a-5e illustrate a modified embodiment of a device having a single row of small receptacles.

FIG. 6 is a schematic circuit diagram of the control assembly of the invention.

FIG. 7 represents five possible distributions of the automatic rectifier of the cooler or chiller for use in the device.

DETAILED DESCRIPTION OF THE INVENTION

With reference to these drawings, the area of FIG. 1 destined to contain the ice cubes and their corresponding container, i.e., the interchanger of the cooling system, has been denominated as 1. This area will, in its major part, be free and will permit placing of glasses and various objects therein.

Zone 2 is destined to contain the bottles and the extraction and detection devices. Zone 2 can, in turn, be divided into two sub-zones, one of which will contain the cooled elements and the other will contain the non-cooled elements. Three variants are possible: (a) that all the elements are cooled; (b) that none of the elements are cooled; and (c) that some are cooled and others not. In this latter case, the zone 2 will be divided into two sub-zones having a thermal insulated separation therebetween.

Provided that there are cooling elements, zones 1 and 2 will be separated from the remainder of the system by means of thermal insulated walls, barely communicating with zone 3 for connecting the cold system of the interchanger. The term interchanger is employed since, according to the present invention, three modes of producing cold have been contemplated: i.e., by compression, by absorption and by the Peltier effect.

Zone 4 will contain the electronic device itself which will be referred to as "Processing device."

Zone 5 has been designed in such a way that the power generating element for producing cold is arranged therein. In view of the production system, the zone will be completely or partially occupied and if there is no refrigeration, then it will be empty.

Zone 3 has been designed in such a way that the "radiator" which evacuates the heat energy withdrawn is arranged therein. In the case of producing cold by the Peltier effect it will really be a radiator. Zone 3 will generally be open at the portion corresponding to the bottom of the cabinet.

Zone 1 is empty, and both zones 1 and 2 are enclosed by a thermal insulating panel 6.

An additional thermal insulating panel may be provided to separate zone 2 into two sub-zones. The lower sub-zone will contain the non-cooled drinks and the upper sub-zone will contain the cooled drinks.

FIG. 2 illustrates a device having receptacles for 24 chilled drinks referenced with the letters a to x, and receptacles for 12 non-chilled drinks referenced with Roman numerals 1 to 12. The number of drinks, or in general, foodstuffs, may be randomly varied as desired for a given model.

Panel 8 closes a cavity wherein electromagnets which provide blockage for withdrawal are arranged. These electromagnets will subsequently be described.

Plastic blocking members 9 are mounted to slide horizontally. If one of these members 9 is arranged on any

receptacle, the bottle thereof cannot be withdrawn. It is necessary, in order to withdraw bottle, that the respective member 9 be displaced. According to FIG. 2, the bottles situated in receptacles c, j and q can be withdrawn. In order to withdraw any other bottle it is necessary to move the member 9 horizontally in the respective rows so that the corresponding cavity can be free.

Panels 8 secure blockage, independently of the position of member 9. It will be impossible to extract a bottle in the absence of operation of the electromagnets in panel 8, since the electromagnets will block the system in the manner subsequently described.

Panel 8 includes a switch 10 having four positions. The switch is optional and can be included in certain models. The function of this switch, when it is included, will be the following:

At position 11, it will permit extraction of any bottle from the first row, no bottles can be withdrawn from the other rows even though the position of members 9 permits such removal. The same will occur with regards the remaining positions. The number of positions of switch 10 will be equal to that of the rows in which the bottles are arranged.

In units incorporating switch 10, and supposing that the door of the cabinet is open, it will be necessary in order to extract a bottle, for the following conditions to exist simultaneously:

a. Network voltage should exist. Otherwise, the electromagnets will block all the rows.

b. Switch 10 should be in the position corresponding to the row in which the bottle to be withdrawn is placed. The electromagnets corresponding to the other rows will be blocked in the same way as if network voltage does not exist.

c. Sliding members 9 should be situated so that the receptacle corresponding to the chosen bottle is free.

In the case shown in FIG. 2, and supposing that the network voltage exists, only the bottle situated in receptacle (j) can be withdrawn. Supposing that a user wishes to extract a bottle situated in receptacle (f) and starting from the position represented in FIG. 2, he should:

a. Situate switch 10 in position 11.

b. Move members 9 of the first row towards the left, starting from that situated on receptacle (f), leaving receptacle (f) free.

c. Withdraw the chosen bottle.

A similar operation should be effected for any bottle. On withdrawing the bottle a tilting element 13 is activated. The detection systems and the function of element 13 will subsequently be discussed.

The receptacles are made by means of the assembly of elements 14, 15, and 16 which constitute the body, and in which other elements of the assembly are inserted.

The adequate assembly of all these elements forms the receptacle itself. With regards the way in which such assembly is effected, it is believed that the figures are sufficiently descriptive.

Element 17 has a length corresponding to the width of each row. This element is mounted for an ascending-descending movement for which it is activated by means of electromagnets placed at its ends. When electric energy exists, element 17 will be at the upper position of its movement, and if no electric energy exists, element 17 will be at its lower position. In units having

the mentioned switch 10, element 17 will be exclusively at the upper position, in the row corresponding to the position of switch 10. The elements 17 corresponding to the other rows, will be at their lower position. The role played by these elements is to block and to impede removal of the bottles, hampering the movement or tilting of element 13 which is the device which ultimately permits or impedes extraction of the bottle.

Even though the figure exclusively illustrates one of the elements 17, the fact that there is one for each row should be emphasized.

Elements 18 are electromagnets exclusively destined to activate elements 17. Their role is to raise or lower the same. There is a pair of electromagnets 18 for each row, one each arranged at each side of the receptacle assembly. If the unit is provided with a switch for the rows, the pair of electromagnets, corresponding to the chosen row together with the switch, will maintain their respective elements 17 in a raised position while the remaining pairs will maintain element 17 in a lowered position. If no switch exists all elements 17 will be maintained in the upper position.

Irrespective of the reasons and when the electric energy which feeds the distributor machine fails, all the electromagnets 18 will automatically act, thus lowering elements 17 and blocking the system.

The detailed form of element 13 is shown in FIG. 4f. However, referring to FIG. 3, a part of element 13 occupying a part of the receptacle corresponding to each bottle, is shown. Besides the visible part, element 13 has a hidden part which is covered by element 15 in FIG. 3. In order to extract a bottle element 13 should tilt, thus leaving the entrance of the receptacle free. The hidden part of element 13 is such that when element 9 is situated on the receptacle, element 13 cannot tilt due to the fact that its hidden part will abut against element 9, for which reason tilting cannot take place. Tilting of element 13 can only take place when element 17 is in a raised position, since when the same is in a lowered position the hidden part of element 13 will abut therewith and will, therefore, not tilt. Whether element 9 impedes tilting or whether element 17 impedes the same, movement of element 13 will be produced, but in no case sufficient to permit extraction of the corresponding bottle.

On studying the various detection systems, the use of which has been contemplated, element 13 will again be discussed since in some of these systems element 13 has the double role of detection and blockage.

Member 9 is illustrated in detail in FIG. 4g. It is a member which slides between elements 15 and 14. Each row has the same amount of members 9 as receptacles, less one, in such a way that there is always one receptacle which is not blocked by means of a member 9. The visible part of member 9 facilitates its pulling by the client and furthermore facilitates pointing out, due to absence, the available receptacle. The hidden part 18, in the form of an L, is inserted in the second channel 19 of element 15, thus obstructing the path of the hidden part of element 13 and impeding its tilting. It should be noted that in FIG. 3, and for the sake of clarity, most of members 9 have not been shown and only a few of them have been illustrated. It should be clarified that all the rows will have as many members 9 as receptacles, less one.

FIG. 5 represents small sized receptacles. A superficial review of this figure points out that the same is simi-

lar to that representing large sized receptacles. The drawing was effected for a single row of small receptacles, and it is obvious that the arrangement of two or more rows does not substantially modify the system.

Element 20 is similar to that referenced 17 represented in the prior drawings. What has been stated with regards element 17 is applicable to element 20.

Element 21 is identical to element 15 already described in previous drawings, with the only difference being that some of its dimensions vary.

The side wall 22 of the receptacles has a single row. If the same were provided with various rows, its shape would correspond to 16 in the previous figures with slight modifications with regards dimensions. Sliding member 23 is identical to member 9 described in previous figures with modifications concerning certain dimensions. What has been said up to the present moment and what will be said subsequently with regards member 9, applies to member 23.

The blocking tilting element 24 is identical to that referenced 13, with the exception of certain modifications with regards dimensions. What has been said up to the present moment as well as what will be said subsequently with regards element 13, is applicable to element 24.

FIG. 6 represents a blocking diagram of the assembly of the "device for automatically supplying drinks and foodstuffs" which has been repeatedly referred to as an automatic bar.

The two parallel lines of the upper part of the figure represent the network which will supply energy to the various parts of the system. Intakes for the different parts of the system are represented. With the exception of the energy supply, all the electric connections are represented single wired.

Zone 25 embraces all that contained in the dotted lines. In reality, the cabinet comprises all the component elements of the automatic bar. Everything with regards its shape, dimension and distribution was previously stated. Therefore, further comments with regards to the same will not be made, and further discussion will now exclusively deal with certain features not yet mentioned:

- a. Lock or closure — Irrespective of the distribution of the shape, dimensions and even irrespective of the elements arranged in its interior and whether it cools or not, closure of the cabinet will be effected hermetically by means of joining.
- b. Insulation — In the same conditions previously stated the walls of the cabinet will be heat insulated.
- c. Locks — In all cases the cabinet will have two types of locks.

— Mechanical lock with a key of any of the types presently on the market. — electric safety lock. It will be an electromagnet activated by means of the very network which feeds the unit. When there is no network voltage, the door will be blocked and cannot be opened even though the mechanical device is unlocked. The owner of the bar can, at will, activate the safety electric closure or lock from a control panel, in such a way that even when electric energy exists, the safety electric closure is activated and the door is blocked. For such purpose the mentioned general control panel will be provided with a switch for each automatic bar which will permit activation of the given unit

from a distance, thereby impeding access to the bar even though the user is in possession of a key.

The zone 26 represents the cooling group and its corresponding elements. In the case in which the automatic bar is not destined to contain chilled elements, such zone will naturally not be incorporated.

In view of the cooling system employed, four types of automatic bars can exist:

Type a. — Without cooling. This model does not include a cooler of any kind whatsoever.

Type b. — Cooling by means of a compressor. The cold producing group will be absolutely conventional and can be any one of those manufactured by any of the many firms dedicated to the production of such elements. Due to the fact that the same are very widely known, there will not herein be provided a detailed description of such elements. However, it should be emphasized that the temperature will be regulated by means of a thermometer which will be connected to and disconnected from the compressor in an automatic fashion.

Type c. — Cooling by absorption. Since this system is so widely known, it will not herein be described. The unit incorporated in such system can be any one of these existing on the market.

Type d. — In the automatic bar corresponding to the illustrated model, cooling is achieved by applying the Peltier effect for this purpose.

The cold producing group comprises:

— A Peltier effect semiconducting element, whose number of semiconductors, connection between the same and characteristics thereof will depend upon the cooling energy needs which, in turn, will depend upon the number of elements to be cooled. Due to the fact that this number can be varied as desired by the client, the energy needs can also be varied, for which reason the cooling capacity of the illustrated system will not be specifically limited.

— An aluminium radiator mechanically and thermally connected to the hot surface of the Peltier effect semiconductor. The dimensions of this radiator will be determined by the thermal energy to be dissipated, which will depend upon the cooling energy. Due to the fact that this is variable, the former will likewise be variable. Therefore, the radiator is only defined in the sense that it will have the necessary thermal resistance and dimensions in order to dissipate the corresponding thermal energy.

— A transformer to convert the feed voltage into another having an adequate value for feeding the rectifier.

The primary of the transformer will be connected to the general feed network of the unit. The secondary will be connected to the automatic rectifier hereinafter described. The primary has four intakes, the first, which is common, will be connected to one of the cables of the feed network; the second intake will be connected to the second cable if the voltage is of 110, thus being disconnected in all other cases, the third intake will be connected to the second cable if the voltage is of 220 and will be disconnected in the remaining cases, the fourth intake will be connected to the second cable if the voltage is of 380 and will be disconnected in the remaining cases.

— Automatic rectifier. This will be a combined thyristor and diode rectifier having its corresponding regu-

lation and control circuits. The following are the electric arrangements which such rectifying circuit can have:

- a. Monophasic bridge having two thyristors in two of the branches and two rectifying diodes in the other two.
- b. Monophasic bridge having four diodes in the four branches and a thyristor in series with the charge.
- c. Half wave rectifier, a single thyristor in series with the charge.
- d. A rectifying bridge exclusively formed by diodes and a triad in the primary of the rectifier.
- e. A double wave rectifier having two thyristors and an intake in the secondary of the transformer.

FIGS. 7a-7e illustrate the above five possible distributions. Technical and economic conditions will determine which one of the possible distributions should be adopted.

— Temperature detector. This will be arranged in the interior of the cooled zone. The electrical features of this device will vary according to the temperature in the interior of the cabinet. This sensing device will indicate the thermal state to the automatic rectifier which will deliver a voltage proportional to the derivations with regards the temperature desired to the charge.

— A temperature selection control which permits choosing a temperature value between the possible minimum and maximum values.

The functioning of this assembly is as follows:

By means of the temperature selection control the desired temperature value can be chosen. The transformer will feed the rectifying group with a alternate, constant or variable voltage, depending upon the network. In view of the chosen temperature and of the information coming from the detector, the rectifying group will deliver to the Peltier effect semiconductor a continuous voltage having a variable average value and in such a way that the temperature in the cooled zone remains constant. The Peltier effect semiconductor will produce, when fed by the previously mentioned continuous voltage, a cooling capability which will depend upon, even though not exclusively, the voltage applied thereto. The calories corresponding to the cooling produced, plus those due to electric conduction, will be stored on the hot surface of the Peltier effect semiconductor which, by means of conduction, will be delivered to the radiator and the same, by means of radiation, to the atmosphere.

The Peltier effect semiconductor, therefore, has one hot and one cold surface which conditions its physical arrangement in the element to be cooled.

In the case under discussion the Peltier effect semiconductor is arranged in the intermediate wall between zones 1 and 2 of FIG. 1, in such a way that the cold surface is situated in the interior of zone 1 and the warm surface, as well as the radiator, are situated in the interior of zone 2.

Also situated in zone 1 and placed on the Peltier effect semiconductor, there is a small receptacle similar to the commercial cooler, in which the containers for the formation and storage of ice cubes are arranged.

— The processing device 27 is the heart of the system.

FIG. 6 also represents a block diagram corresponding to the processing device 27 which comprises various blocks. The description and functioning of the processing device 27 will be studied when analyzing each one

of the parts constituting same, even though the processing device can be defined as an assembly of elements which, starting from the signal originated by the detectors 28, conventionally handles the same and delivers a signal to the registering elements in the form of signals which can be assimilated by the same and considered in view of the energized detector 28.

Processing device 27 will be analyzed in view of its elements.

The pickup device 29 directly receives signals coming from detectors 28.

It conforms same so as to permit its subsequent handling. The various detectors 28, which can be used, determine the characteristics and constitution of the pickup device 29.

These pickup devices 29, in view of their corresponding detector 28 can be:

a. Pickup device for photoelectric detecting.

It comprises: a photoemitting feed rectifier, an amplifier-squarer for detecting the change in state of the photoreceptor and an impulse shaper.

b. Pickup device for capacitive detecting.

It comprises: a condensor feed circuit, an impedance bridge, one branch of which is the condensor, an amplifier of the unbalanced current of the bridge when an unbalance is produced due to dielectric variation as a result of the withdrawal of a bottle, and an impulse shaper.

c. Pickup device for inductive detecting.

It comprises: a coil feed circuit; an amplifier for varying the induction produced by the extraction of the bottle, and an impulse shaper.

d. Pickup device for switch or microswitch detecting.

It comprises: a feed circuit, common to all detectors of the same type and of the same unit, an amplifier shaper circuit which, on varying the state of the contact from that which is sent, generates an electric impulse.

e. Pickup device for reed-switch and magnetic detecting.

It is identical to the former since the detector acts in the same way in both cases, changing the state of a contact.

f. Pickup device for contact detecting.

It is identical to the two previously mentioned devices, since the detector acts in the same way in all cases, changing the state of a contact.

There will be as many pickup devices as detectors in the unit and the assembly of all of them constitutes a pickup device. Naturally, there will only be one feed circuit which is common to all the pickup devices. The most commonly used pickup devices will be those mentioned in (e) and (f) above, since the others will only be used in special cases.

In any of the cases, the impulse conveniently shaped will be delivered to the programming device 30.

Each detector 28 forming part of the bar should be activated when withdrawing the element corresponding to its receptacle. Any element should be able to be introduced in each receptacle. Such element introduced in a given receptacle should be variable at will. The price of the element corresponding to a receptacle should also be variable at will. If these are analysed with regards drinks, it will be possible to introduce in a given receptacle a refreshment or a bottle of liquor, the prices of which may vary, and it will be possible to stipulate any price.

In other words, the owner of the bar should be able to give a value to the element offered in a given receptacle and should, furthermore, be able to vary such value at will. And this should apply to all the receptacles irrespective of their number. The value given to the element deposited in each receptacle and, therefore, to that corresponding to each detector, will be referred to as specific weight.

Thus, some detectors will have a specific weight 1, others, 2, others 3, and so on successively.

For example, if the specific weight is 1, it will mean that if the corresponding detector 28 is activated, the processing device 27 will deliver the electric signal corresponding to 1 to the registering element 33. This number can represent the monetary unit of the country in which the device is installed, a multiple or a sub-multiple. Thus, for example, 1 can mean 1 French franc or 10 pesetas or even half a dollar, etc. Naturally, 2 will mean the double, 3 the triple, etc.

In all cases the pickup devices 29 will send one electric impulse and only one for any detector 28.

The computer 30 is the device which receives the impulse from the pickup device 29 and allots thereto the specific weight. It has four functions:

— It receives impulses from the pickup device 29 wherefore it should have as many inlets as pickup devices in a given bar.

— It will select the specific weight of each detector 28.

— It will allot thereto the selected specific weight.

— It will direct the impulses charged with their specific weight to the memory system corresponding to each weight.

Assume that a computer 30, associated with 36 pickup devices, will have 36 inlets. The impulse coming from any of the 36 inlets will correspond to the specific weight which can be varied at will by means of any one of the following systems:

— By means of a perforated card and reading of the same irrespective of the type of reading used.

— By means of a perforated tape and reading of the same irrespective of the type of reading used.

— By means of a magnetic tape and reading of the same irrespective of the type of reading used.

— By means of a disc and reading of the same irrespective of the type of reading used.

— All these aforementioned systems of programming of the specific weight of each pickup device 29 will make sense when the registering element employed is an ordinator or "computer."

— By means of a programming matrix which is sufficiently well known and is, therefore, not described.

— By means of a switch or switches.

— By means of electric conductors attached to each other, either manually or by welding, or by strips or connectors, the possibility of using conductors or rigid or flexible printed circuits also being included.

— By means of electronic switching circuits. Supposing that one wishes to change the specific weight of one or all of the pickup devices 29, it will be sufficient to effect the corresponding manipulations, for example, to change the position of the plugs in the programming matrix.

Once a specific weight of each pickup device 29 is chosen, after an impulse is produced, the computer 30 will direct it to the corresponding memory device 31.

The memory device 31 will have as many memory managements or individual memories as different specific weights given to the pickup devices 29 of a given automatic bar, and each memory management or individual memory will, in turn, have as many sub-memories or memory sub-managements as pickup devices 29 in the bar.

The functions of the memory are:

— to receive the impulse coming from each pickup device 29 charged with its specific weight, through the computer 30. The computer 30 directs the corresponding impulse to the adequate memory position or to the individual memory.

— to transmit to the generator 32 instructions concerning the impulses received so that same transmits it to the registering device 33.

— to store the information and to maintain the order in the generator 32 until the same has transmitted such information to the registering element 33.

— to memorize the energizing of a given pickup device 29. Even though this pickup device is once again energized, the memory device will not order the generator 32 to transmit the same to the registering element 33.

That is, the memory, as such, can be:

previously — That is to say, it retains the information until the registering system can admit the same, and the storage time will be variable depending upon the circumstances.

Subsequently — That is to say, it memorizes that the information coming from a specific detector 28 has already been processed and will not process the same again, even though the same pickup device 29 sends new information, storage time is intrinsically variable since such time will refer to the period in which a detector 28 has been activated and the memory has manually been erased, which would occur when the withdrawn element is replaced in the corresponding receptacle and the erasing control is activated (blanking).

The memory carries out the various functions by means of the following elements:

— Receiver — This is merely an electronic circuit through which signals, coming from the pickup devices through the computer, reach the memory itself.

— Memory — This is the memory itself. The memory systems which can be used in the different variants are:

- a. Magnetic or ferrite memory, in the multiple variants known.
- b. Semiconductive electronic memory, in any of its multiple variants known, such as tilting or flip-flop transistors, doors, unique or multiple integrated circuits, photoelectric devices with static or dynamic recording or reading even that of laser.
- c. Electric memories. By means of relays or contact units both with mechanical or electrical interlocking, irrespective of the type of relay or contact amongst these known.
- d. Mechanical memories. Refer to those which keep the detectors of the passage of the bottle energized, irrespective of the detector used and of the system followed in order to keep it energized.

Transmitter — It is the electronic circuit through which the information with regards a change in any of the memories and the order to transmit such information to the registering element, reaches the generator.

Generator 32 is determined by the registering system. If registration is effected by means of meters of any na-

ture whatsoever, whether electric, electronic or electromagnetic, the generator 32 will exist. This is the device which will now be studied. If registration is effected by means of an ordinator, the generator will not exist since the ordinator will directly explore the memories.

Generator 32 connected to a meter will definitely be an impulse generator.

Its functions are as follows:

— to generate a number of impulses proportional to the specific weight of the energized pick-up device 29.

— to transmit the signal, to the effect that the instruction has been fulfilled, to memory 31, which will be effected by means of the transmitter of the memory itself.

In order to effect these functions, the generator 32 comprises:

An impulse generator. This can be electric or electronic and of any one of the well known types. The amplitude, duration and frequency of the impulses have no limit and can be determined by the registering element used.

A digital meter. It will be electronic and of any one of the well known types. In any case it will be a predetermined meter.

The digital meter will receive notification of the fact that a detector 28 has been activated by means of the already described chain. This notification is double since it indicates that a detector has been activated and also specifies the detector in question.

The meter is instructed to generate n impulses. On receiving this notification it orders the generator 32 to operate and it counts the impulses which the latter generates. When the predetermined digit n is reached it orders the generator 32 to stop and it automatically returns to zero, thus transmitting the information that the order has been obeyed, to the memory.

If the meter receives information that two different detectors 28 have been activated, in cases where this is possible, charged with specific weights n and $2n$, for example, the order is interpreted in the sense that $3n$ impulses should be counted and proceeds in the same way as previously stated ordering the generator to stop when the predetermined figure of $3n$ is reached.

n can naturally be a number between 1 and 99,999, even though in the usual models this number is limited to between 1 and 9.

Coder 34 is one of the variants of the unit and in reality is the meter described as an integral part of generator 32. As previously mentioned the unit presents the possibility of registering, besides the consumptions effected by a given unit, the total consumption made in the units installed in a single center, of each one of the drinks at the disposal of the user of the units.

In this case, which will be separately studied, the coder selectively acts and directs information coming from the generator to the registering elements 33 of the consumption made by each client or to the registering elements of the consumption which a group of clients make of a given drink.

Detectors 28 are designed to detect the withdrawal of elements contained in the receptacles by the client.

The foreseen processes for detection of bottles or foodstuffs are:

Photoelectric detector — This will be comprised of a photo emitter and a photo receiver. Both the photo emitter and photo receiver can be any one of the usual type in the market not visible under light.

Capacitive detector — Two of the opposite walls of each receptacle will be metallic and will be under tension. The dielectric will be the air space contained between both. On inserting the bottle or the foodstuff into the receptacle the nature of the dielectric will change. The condenser formed by the two plates and the dielectric will have a capacity which will depend, amongst other things, upon the dielectric. Therefore, on varying the dielectric the capacity will vary and through the corresponding pickup device detection of withdrawal will be made.

Inductive detector — It is a coil which surrounds each one of the receptacles and which is passed by a current. The free space in the receptacle will sometimes act as an air gap. When the air gap varies, due to the presence or absence of the element to be consumed, the flow will also vary. This variation in flow will be detected by means of a suitable pickup device.

Microswitch or switch detector — This detector is a switch or microswitch of any of the usual types existing on the market. It will be arranged in the interior of each of the receptacles in such a way that when tilting occurs, due to the extraction of a bottle, the tilting piece 13 of FIG. 2 activates the same, giving the signal to the corresponding pickup device 29.

Reed-switch or magnet detector — The two conductive metallic sheets arranged in the interior of a glass tube in which the vacuum has been made, are called a reed-switch. One of the metallic sheets is fixed while the other is movable and is necessarily made of a magnetic material.

When the assembly is subjected to the action of a magnetic field, the movable piece is displaced and attracted by the same, opening the contact, if both sheets were joined, or closing the same, if the sheets were separated. Both sheets have an end to the exterior which can be used.

The reed-switch, in units having the same, is arranged on the tilting element 13 or 24.

When extracting a bottle and making element 13 or 14 tilt, the magnet will approach the reed-switch, activating the same and giving the corresponding signal to pickup device 29.

Contact detector — In this case a conductor element is arranged on element 14 of FIG. 3. Likewise, another conductor element is arranged on tilting element 13. On withdrawing the element contained in the receptacle, element 13 tilts whereby both conductors come into contact, giving the signal to the corresponding pickup device 29 that the bottle has been extracted.

Use of any one of the mentioned pickup devices 29 is possible. Selection of one or another is determined by special considerations of each series of units. The two preferably used will be the reed-switch and the contact.

The registering element 33 picks up and stores, in an accessible manner, the information coming from the processing device 27.

As previously mentioned two groups of registering systems are provided:

— Registration by means of an ordinator — The ordinator used can be any one of the usual types on the market and its use is not confined to registering information coming from the automatic bars.

When registration is effected with an ordinator, the processing device 27 will not send impulses but will store the information of the consumptions made in its

memory. The ordinator will sequentially explore each one of the bars subjected to its control, picking up information contained in the memories of the processing device 27.

Access to the information contained in the ordinator can be effected by any one of the normal known means.

— Registration by means of meters — When registration is effected by means of meters, the processing device 27, as has already been seen, generates a number of impulses which will depend upon the activated detector 28. This will take place each time a detector 28 is activated.

These impulses are applied to the meters which add up the successive impulses sent by the processing device 27 and which keep note of the results of the addition, or total.

The following two basic types of meters can be used as registering elements:

— Electromagnetic meters: Those in which electric impulses activate an electromagnet which moves a small and numbered toothed wheel. The resultant number will depend upon the number of strokes of the electromagnet and a stroke will correspond to each impulse. As a meter of this type, any one of those existing on the market or any one expressly made, can be used.

Electronic meters: Metering is effected by means of electronic meters of any of the known types, and can be:

for functioning: ring, BCD, etc.

for its basic elements: thyristors, thyratrons, transistors, integrated circuits, etc.;

for the indication system: Nixie type lamps, segment lamps, etc.

Irrespective of the registration system used, the following data can be registered: the total consumption effected by a client. It will be contained in a registering element 36 corresponding to his room.

The registering element 36 will reflect, as a result, the algebraic sum of all the bottles withdrawn by the client charged with the weight of each of them.

Eventually, and in the cases where the same is used:

Total consumption made by all the clients of each of the brands or types of available drinks. To each drink a meter or a management of the ordinator wherein the total consumption is reflected, will correspond, irrespective of the room wherein the same is effected and of the brand or type of drink consumed by the client.

If registration is effected by means of a meter there will be three variants in the unit:

— The meter is arranged only in the automatic bar.

— Two meters are provided, one in the automatic bar and the other, for each bar, in a centralized panel.

— A meter for each bar is provided in a centralized panel.

The network failure detector 35 — This is destined to impede extraction of bottles or foodstuffs when there is no electric energy and, therefore, such extraction cannot be registered.

The contemplated protection against network failure is double:

The door and the receptacles will become blocked.

When the network failure occurs, the door may be open and, therefore, blockage thereof will be inefficient. However, blockage of the receptacles will be efficient since, even though at the time of failure one of them is half open, two things may occur: that the device for blocking impedes its opening or that it is completely

opened and kept that way, whereby when electrical energy is restored it will be registered.

The elements constituting the network failure detector are:

— An electromagnet situated in the cabinet in front of a slot in the door. If the electromagnet has tension between its ends, it will be activated and it will not enter the slot, thus impeding opening of the door.

— Blockage of the receptacles will be effected by elements 18 of FIGS. 3 and 4 which are electromagnets and element 17 of the same figures. If the electromagnets have tension between their ends, element 17 will be situated in its upper position, thus allowing the tilting of element 13. If the electromagnets are not under tension, element 17 will be situated in its lower position, thus impeding tilting of element 13.

The present device has a switch, duly protected by lock or any other suitable means, in its general detection circuit. Such switch disconnects the detecting system, thus allowing replenishment of the device without the risk of erroneously sensitizing the memory of the device. Once the device has been replenished with all the appropriate communications, the switch is activated and is duly sensitized and ready for adequate functioning.

After having reviewed the drawings and the preceding description, it can easily be understood that the concept of the present invention provides a simple and effective construction which can easily be put into practice, assuring a relatively inexpensive manufacture.

This economic detail is of great importance if one considers production of a large scale, since it is evident that a given client may install a considerable number of devices of the invention, and any small saving in a single unit achieved by the improvements of the invention will thereby be substantial.

I claim:

1. A device for storing and dispensing a plurality of different foodstuffs, such as bottled drinks and the like, said device comprising:

a cabinet;

said cabinet having therein a foodstuffs storage zone, said foodstuffs storage zone being divided into a plurality of separate receptacle means parallelly arranged in horizontal rows, each for storing therein an individual foodstuffs unit;

said cabinet having therein an electric energy zone adapted to be connected to a source of electric energy;

selectively operable and adjustable mechanical blocking means movably mounted at the front of each of said receptacle means for selectively blocking the removal from each of said receptacle means of the foodstuffs unit stored therein, said mechanical blocking means comprising a plurality of members mounted to slide horizontally along each of said horizontal rows of receptacle means, the number of said members in each of said rows being equal to the number of receptacle means in said each row, less one;

selectively controllable electric blocking means separate from said mechanical blocking means and connected to said electric energy zone for selectively blocking the removal from any of said receptacle means of the foodstuffs unit stored therein and for blocking such removal upon the failure of said source of electric energy;

detection means associated with each of said receptacle means for detecting the removal therefrom of the respective foodstuffs unit and generating a signal representative thereof; and

said cabinet having therein a registering zone operatively connected to said electric energy zone and to said detection means for receiving therefrom said signal representative of the removal of any of said foodstuffs units.

2. A device as claimed in claim 1, wherein said cabinet further has therein a cooling zone, at least a portion of said receptacle means of said foodstuffs storage zone being within said cooling zone; and a cooling unit storage zone containing therein a Peltier effect cooler means for cooling said cooling zone, said cooler means comprising a transformer having a primary and a secondary, a rectifier connected to said secondary, a temperature selector and detector connected to said primary, and a semiconductor element connected to said rectifier said said temperature selector and detector.

3. A device as claimed in claim 2, wherein at least one of said horizontal rows of receptacle means is positioned without said cooling zone.

4. A device for storing and dispensing a plurality of different foodstuffs, such as bottled drinks and the like, said device comprising:

a cabinet;

said cabinet having therein a foodstuffs storage zone, said foodstuffs storage zone being divided into a plurality of separate receptacle means parallelly arranged in horizontal rows, each for storing therein an individual foodstuffs unit;

said cabinet having therein an electric energy zone adapted to be connected to a source of electric energy;

selectively operable and adjustable mechanical blocking means movably mounted at the front of each of said receptacle means for selectively blocking the removal from each of said receptacle means of the foodstuffs unit stored therein;

selectively controllable electric blocking means separate from said mechanical blocking means and connected to said electric energy zone for selectively blocking the removal from any of said receptacle means of the foodstuffs unit stored therein and for blocking such removal upon the failure of said source of electric energy, said electric blocking means comprising a plurality of longitudinal strips, one each extending within said cabinet parallel with one of said horizontal rows and positioned within each of the receptacle means thereof, and electromagnet means connected to said electric energy zone and to each of said strips for selectively moving each of said strips from a first raised open position wherein removal of a foodstuffs unit from a receptacle means of the respective row is not blocked by the respective strip, to a second lowered blocking position wherein removal of a foodstuffs unit from a receptacle means of the respective row is blocked by the respective strip;

detection means associated with each of said receptacle means for detecting the removal therefrom of the respective foodstuffs unit and generating a signal representative thereof; and

said cabinet having therein a registering zone operatively connected to said electric energy zone and to said detection means for receiving therefrom said

signal representative of the removal of any of said foodstuffs units.

5. A device as claimed in claim 4, wherein said cabinet further has therein a cooling zone, at least a portion of said receptacle means of said foodstuffs storage zone being within said cooling zone; and a cooling unit storage zone containing therein a Peltier effect cooler means for cooling said cooling zone, said cooler means comprising a transformer having a primary and a secondary, a rectifier connected to said secondary, a temperature selector and detector connected to said primary, and a semiconductor element connected to said rectifier and said temperature selector and detector.

6. A device as claimed in claim 5, wherein at least one of said horizontal rows of receptacle means is positioned without said cooling zone.

7. A device for storing and dispensing a plurality of different foodstuffs, such as bottled drinks and the like, said device comprising:

a cabinet;

said cabinet having therein a foodstuffs storage zone, said foodstuffs storage zone being divided into a plurality of separate receptacle means parallelly arranged in horizontal rows each for storing therein an individual foodstuffs unit;

said cabinet having therein an electric energy zone adapted to be connected to a source of electric energy;

selectively operable and adjustable mechanical blocking means movably mounted at the front of each of said receptacle means for selectively blocking the removal from each of said receptacle means of the foodstuffs unit stored therein;

selectively controllable electric blocking means separate from said mechanical blocking means and connected to said electric energy zone for selectively blocking the removal from any of said receptacle means of the foodstuffs unit stored therein and for blocking such removal upon the failure of said source of electric energy;

detection means associated with each of said receptacle means for detecting the removal therefrom of the respective foodstuffs unit and generating a signal representative thereof, said detection means comprising a tiltable element positioned in each of said receptacle means, each of said tiltable elements being in contact with the respective food-

stuffs unit to be tilted forward thereby upon the removal thereof, said each tiltable element being positioned, upon tilting, to contact said mechanical and electric blocking means when said blocking means are arranged in blocking position; and signal generating means operable by said tiltable elements for generating said signal representative of the removal of said foodstuffs unit; and

said cabinet having therein a registering zone operatively connected to said electric energy zone and to said detection means for receiving therefrom said signal representative of the removal of any of said foodstuffs units.

8. A device as claimed in claim 7, wherein said cabinet further has therein a cooling zone, at least a portion of said receptacle means of said foodstuffs storage zone being within said cooling zone; and a cooling unit storage zone containing therein a Peltier effect cooler means for cooling said cooling zone, said cooler means comprising a transformer having a primary and a secondary, a rectifier connected to said secondary, a temperature selector and detector connected to said primary, and a semiconductor element connected to said rectifier and said temperature selector and detector.

9. A device as claimed in claim 8, wherein at least one of said horizontal rows of receptacle means is positioned without said cooling zone.

10. A device as claimed in claim 7, wherein said registering zone comprises a plurality of pickup devices, equal in number to the number of said signal generating means, for receiving said signals therefrom; a computer means for receiving said signals through said pickup devices; said computer having therein selector means for determining, for each signal, a specific weight value representative of the price of the respective foodstuffs unit and for generating an impulse representative thereof; a memory means for receiving the impulses from said selector means of said computer and for storing said impulses for a selected time; and register means for selectively registering all stored impulses from said memory means for a given device for a selected period of time.

11. A device as claimed in claim 10, wherein said selector means is adjustable regarding the specific weight allocated to each of the signals received thereby.

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