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(71) Applicant: **Seadon, Charles
Fethard-On-Sea Y34 K266
Wexford (IE)**

(72) Inventor: **Seadon, Charles
Fethard-On-Sea Y34 K266
Wexford (IE)**

(54) **AUTOMATIC BEVERAGE, DRINKS, AND SNACKS DISPENSER**

(57) An automated beverage, drinks and/or snacks dispensing device, including a printed circuit board incorporating an integral on-board processor and hard drive or solid state drive storage system with software to control its electric systems, operation, and communicate with other devices. Products are stored in individual sachets which in turn are housed in a compartmental stor-

age system. This system enables the storage of 400-800 individual sachets of products. By storing products in individual sachets it is possible to dispense the contents of one or more sachets into a glass receptacle, thus enabling hundreds of different combinations and permutations, to create a variety of drinks and cocktails.

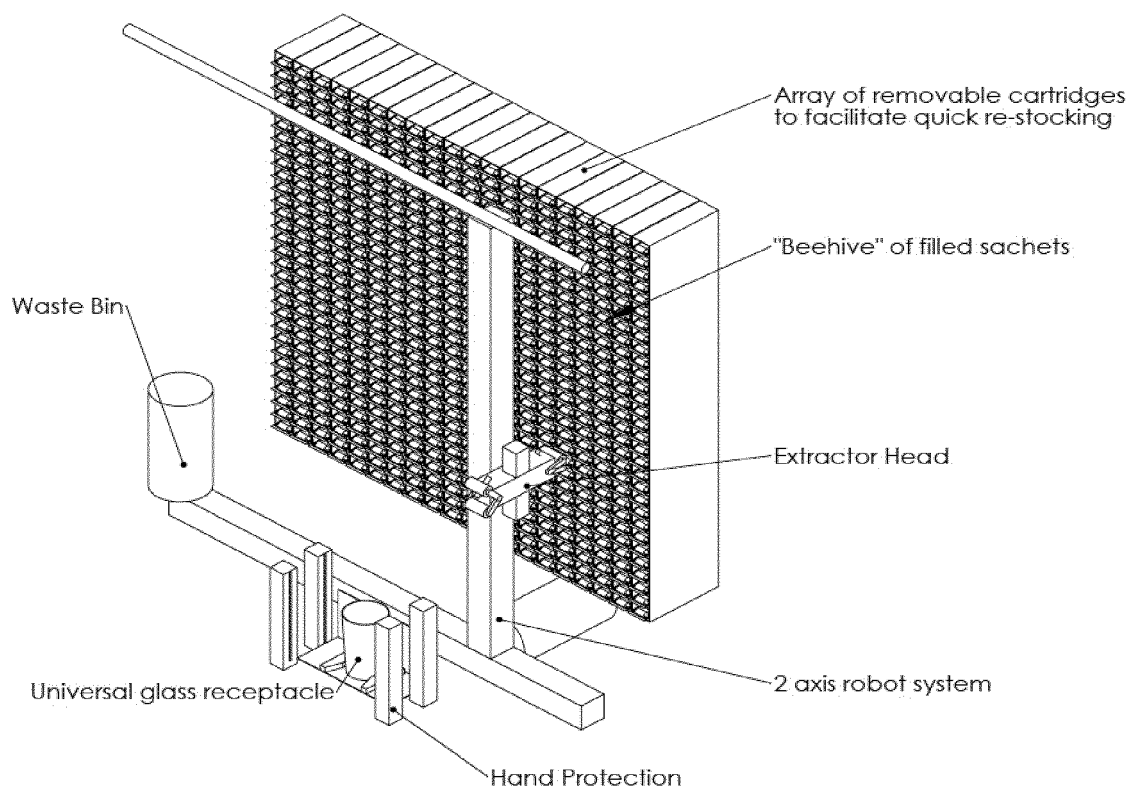


FIG. 1

Description

Technical field to which invention relates

[0001] The present invention relates to the field of drinks, snacks, and beverage dispensing. More specifically to an automated device for dispensing beverages, drinks, and /or snacks with a printed circuit board (PCB) incorporating an integral on-board processor and hard drive or solid state drive storage system with software to control its electronic systems, operation, and communicate with other devices.

Indication of the background art

[0002] The beverages, drinks, and /or snacks dispenser's contents are packaged into small sachets Fig. 2.

[0003] Each sachet has a barcode label, RFID or similar identification and labelling system.

[0004] Each sachet has a burstable seal at one end to enable pressure from the rollers to extrude the contents into a receptacle.

[0005] A compartmental storage system for storing product sachets Fig. 1 is able to hold hundreds of sachets which can be individually selected by the extractor head Fig. 3 and dispensed directly into a glass receptacle, or receiving tray.

Technical problem to be solved

[0006] Presently many hotels use minibars or fridges to store and dispense beverages.

[0007] These are costly in terms of maintenance, store a limited range of items and require daily checking, constant daily restocking, cleaning, costly daily monitoring and maintenance.

[0008] Hotels are unable to monitor minibars or fridges situated in hotel rooms, chalets, apartments, lodges, or holiday flats remotely, determine the stock levels within or control their sales, see their status, recognise breakdowns and carry out remote support, repair and servicing.

[0009] When a client selects a drink the minibars or fridge cannot determine precisely what is selected and directly add the item to the bill and automatically add the item to a reordering list.

[0010] Because minibar / fridges are easily accessible and not sealed their contents can be tampered with and contaminated, the minibar / fridge itself can be contaminated by food and other items being placed into the unit.

[0011] The hotel guest cannot readily see the price of each item and is not presented with a vast array of choice. Minibars or fridges have extremely limited space and consequently the choice of products held within is limited.

[0012] Present systems do not prevent alcohol from being accessed by children or persons unsuitable to drink alcohol.

[0013] Hotels cannot view up to the minute data on

sales of beverages and snacks from minibars / fridges, view historical data, and extrapolate sales and profit data both historical and up to the minute, easily and instantly.

[0014] Minibars / fridges cannot communicate with the hotel billing system or point of sale systems directly.

[0015] Minibars / fridges do not automatically reorder stock.

[0016] There is at present no automated drink, snacks, and beverage dispensing system that stores its products in small individual sachets enabling the unit to stock and offer the user a vast array of (over 35) beverages and snacks.

[0017] The object of the invention is to provide an automated drink, snacks, and beverage dispenser, and more particularly an automated drink, snacks, and beverage dispenser that can dispense and mix a wide range of drinks, beverages and snacks by packaging these products into small sachets.

[0018] This unique feature makes the unit capable of stocking many individual sachets and offering a vast array of beverages and snacks it is low maintenance, does not require constant or frequent cleaning, does not require frequent refilling, can be controlled remotely, is capable of remembering and recording contents, recording transactions, can monitor its temperature, state of readiness, water reservoir or supply, waste bin capacity, and can transmit this information to a remote database for rendering on a web interface. In addition this information can be retrieved directly from the machine or from the database, by applications which access the features or data of the automated drink, snacks, and beverage dispenser for remote monitoring and management purposes.

[0019] This system by dispensing the contents of the sachets directly into the glass receptacle or receiving tray, avoids cross contamination caused by a number of different fluids sharing tubes or pipes, or dispensing apparatus, or requiring the storage of products in bottles. This alleviates the requirement for regular washing and cleaning, thereby minimising maintenance and cleaning cycles. In addition restocking intervals may be kept to a minimum reducing maintenance requirements and costs.

Disclosure of invention

[0020] In accordance with the present invention, there is provided a compartmental storage system or main array of compartments for storing sachets containing fluids or other products.

[0021] The compartmental storage system is comprised of sections, each section containing a number of rows of compartments.

[0022] These sections of the compartmental storage system can be removed and easily replaced by a new section which has been prefilled with replacement sachets, to facilitate fast reloading of the device.

[0023] When the sections of the compartmental storage system are combined together they create a storage

facility for hundreds of individual sachets.

[0024] In addition to the compartmental storage system there is one or more extractor heads mounted on a 2 axis robot system which enables the extractor heads to move both vertically and horizontally as well as rotate. Each extractor head is mounted facing the main array of compartments enabling it to move to face any individual compartment and extract its contents. The extractor head contains a series of motors and rollers enabling it to extract a single sachet, turn and deliver the sachet contents into either a receiving universal glass receptacle, or a receiving tray. The rollers mounted on the extractor head enable the sachet contents to be first loaded into the extractor head and subsequently squeezed out into a receiving universal glass receptacle, the extractor head can then move to position over a bin and deposit the empty sachet packaging into a waste bin.

[0025] The receiving universal glass receptacle is placed into a housing tray prior to the sachet being selected. The housing tray has a protective device to prevent a person's hand interfering with the delivery of the sachet contents or function of the device. This protective device will be in the form of a laser beam curtain system which when interrupted will cause the device to halt its operation.

[0026] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

Brief description of drawings

[0027] In the drawings:

Fig. 1 is a perspective view of the main array of compartments the extractor head and robotic axis, also showing the receiving universal glass receptacle.

Fig. 2 a perspective view of a long, finger shaped product sachet used to store product.

Fig. 3 is a locally enlarged view of the extractor head as shown in Fig.1.

Fig. 4 is a software flow chart demonstrating how the PCB with on-board processor and embedded software interacts with the web interface (GUI), the touch screen, tablet control system, web application, a hotel billing system, checkout or point of sale system, and the company server via the company website.

Description of at least one way of carrying out the invention

[0028] Referring to the drawings and initially to Figs.1-4, an automated device for dispensing beverages, drinks, or snacks comprises a main array of compartments, an extractor head mounted on a 2 axis robot sys-

tem, a housing tray to hold one or more universal glass receptacles, an additional dispensing tray to receive non liquid sachets, a waste bin, a water bottle or water reservoir, a printed circuit board (PCB) which houses an on-board processor and electronic data storage device, to control the machine functions, an ice cube maker, an ice crusher, a dry ice dispenser. The dispenser will also have external connectivity such as an Ethernet connection, a Wi-Fi connection, a blue tooth connection, a USB 3.0 connection, a thunderbolt connection and Li-Fi LED connection. Drinks or snacks are stored in sachets (Fig 2) which are in turn stored in the main array storage compartment (Fig 1). When the automatic dispenser is loaded with stock it takes account of where each product is located. It may move and relocate product sachets to other compartments.

[0029] A drink may be ordered using an application or web application, the said application being on a touch screen, a tablet personal computing device, a website, a personal computer, or smartphone (Fig 4), the application or web application (Fig 4) sends the command to the drinks dispenser.

[0030] The beverage, drinks, and /or snacks dispenser which has a printed circuit board (PCB) with an integral on-board processor and electronic data storage interprets the command, determines which sachets need to be retrieved. The extractor head moves by means of the robotic axis system to align itself directly in front of the storage compartment for the required sachet (Fig 1). The extractor head (Fig 3) then extends towards the selected sachet; electric powered rollers draw the sachet into the extractor head. A barcode reader reads the information on the sachet to cross reference and check that it is the correct sachet. The extractor head then rotates and moves to locate itself over the universal glass receptacle, it rotates into a vertical position, and electric powered rollers then squeeze the contents into the glass. Finally the electric powered rollers then withdraw the now empty sachet and dispense it into a waste bin. This process may be repeated in order to mix combinations of product into a glass. Ice or crushed ice may be added as required.

[0031] The beverage, drinks, and /or snacks dispenser then stores the information on its electronic data storage system, and transmits the information to the external database where the data is used to update the stock order list, update sales and transaction information, as well as sending the information to any hotel billing system or point of sale system. In addition is acknowledges that the beverage or snack has been dispensed and confirms this with the requestor on the device used to order the beverage or snack via the web application, personal computing device, touch screen, tablet or smartphone.

[0032] It may be that during this procedure a parental lock system will engage that prevents the dispensing of alcohol to unsuitable persons or children, should an alcoholic beverage be selected, this will require the inputting of a code for the unit to dispense the alcoholic beverage, if no code is inputted, or an incorrect code is en-

tered the unit will not dispense the beverage.

[0033] When the beverage, drinks, and /or snacks dispenser is restocked it reviews and records the location of each sachet, moving sachets within its storage system, and recording their location, contents, date of end usage, so that it is ready to receive further instructions.

Claims

1. An automated device for dispensing beverages, drinks, or snacks comprising:

A compartmental storage system for storing product sachets (Fig. 1), filled with product either fluid or solids, sachets stored in sachets (Fig 2). An extractor head (Fig 3), mounted on a 2 axis robot system (Fig 1). A printed circuit board (PCB) incorporating an integral on-board processor and hard drive or solid state drive data storage system, with software to enable control of its electronic systems by the on-board software and from remote devices. The whole system is encased in a tamper proof cover with a secure locking system.

2. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, further comprising an ice making device and ice crushing device.
3. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, enables the storage of 400 - 3000 different individual sachets of products (Fig 2). Sachets can be individually selected by the extractor head (Fig 3) and their contents dispensed on demand directly into a glass receptacle.
4. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 2, makes it possible to dispense the contents of one or more sachets, either individually or collectively, into a glass receptacle.
5. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 2, enables product dispensed from the sachets to be mixed in hundreds of different combinations and permutations to create a variety of drinks and cocktails. In addition such a dispenser can hold a range of snacks and vacuum sealed food items, which can be dispensed directly to a receiving tray in their packaging.
6. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, enables a range of functions to be monitored and

carried out both autonomously by the drinks dispenser and remotely, these functions include monitoring its temperature, state of readiness, water reservoir or supply, waste bin capacity.

7. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, incorporates a device capable of detecting movement in the vicinity, to enable the unit to wake up and come alive when people are nearby. This enables the unit to sleep and enter a power saving mode during periods of inactivity.
8. The automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, can connect directly to billing systems, point of sale systems, where it can receive commands for dispensing beverage, drinks, and /or snacks; it can automatically add the dispensed product to an invoice or bill or link the dispensing function to an invoicing or billing system. (Fig 4). A point of sale system may also be used to control the beverage, drinks, and /or snacks dispenser so that item or items ordered at the point of sale system may be subsequently dispensed upon payment by the point of sale system being connected to and controlling the beverage, drinks, and /or snacks dispenser (Fig 4).
9. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, functions by commands received from a remote device, on-board touch screen, personal computing device, tablet PC, smartphone, point of sale system, a web application, or other remote control system, which enables drinks to be ordered remotely (Fig 4).
10. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, enables the system to be accessed remotely and monitored by support personnel to carry out a number of maintenance tasks (Fig 4).
11. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, makes it possible to order and pay for a beverage, drinks, and /or snack over the internet, by means of a web application interface (API) which communicates with the beverage, drinks, and /or snacks dispenser enabling beverage, drinks, and /or snacks to be subsequently dispensed by this machine (Fig 4).
12. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, usage history can be stored either on-board or in a remote database, enabling statistical analysis, and future usage predictability which can be used in future ordering recommendations, or fine tuning of profit, enabling each dispensing unit to become a

profit centre (Fig 4).

13. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 2, by utilising a method of storing products in individual sachets and dispensing single or combinations of sachets of fluid directly into a glass or receptacle, regular washing, cleaning is not necessary, and by containing numerous sachets of products restocking intervals may be infrequent. Hence the beverage, drinks, and /or snacks dispenser requires minimal servicing, cleaning and refilling; service intervals can be monthly or bi monthly. Consequently with less frequent refilling, cleaning and servicing intervals, it is a low maintenance cost saving device.
14. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, incorporates a parental lock safety system, which requires the input of a code prior to it dispensing drinks or products containing alcohol. This prevents alcohol being dispensed to under age persons or persons not considered suitable.
15. This automated device for dispensing beverages, drinks, or snacks system, in accordance with Claim 1, by supplying up to date sales and usage information, can be used in product trials with the ability to instantly and immediately compare the popularity of one product over another or measure the popularity of a new product.

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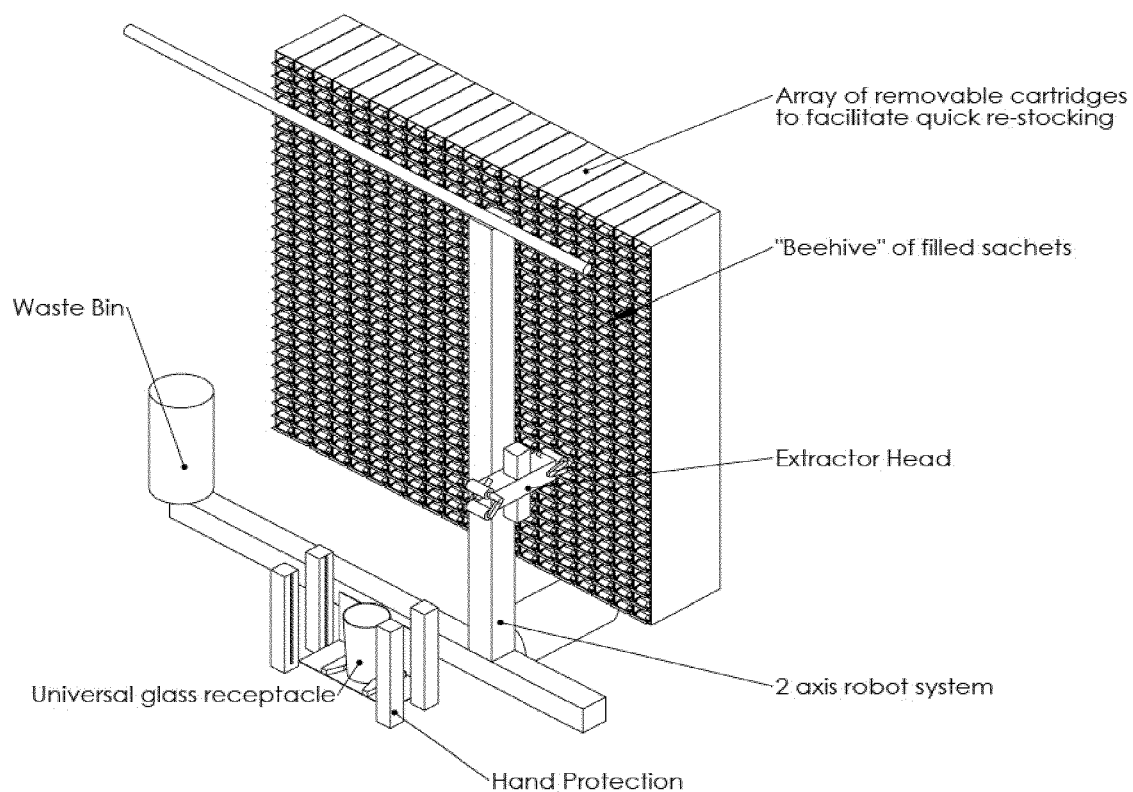


FIG. 1

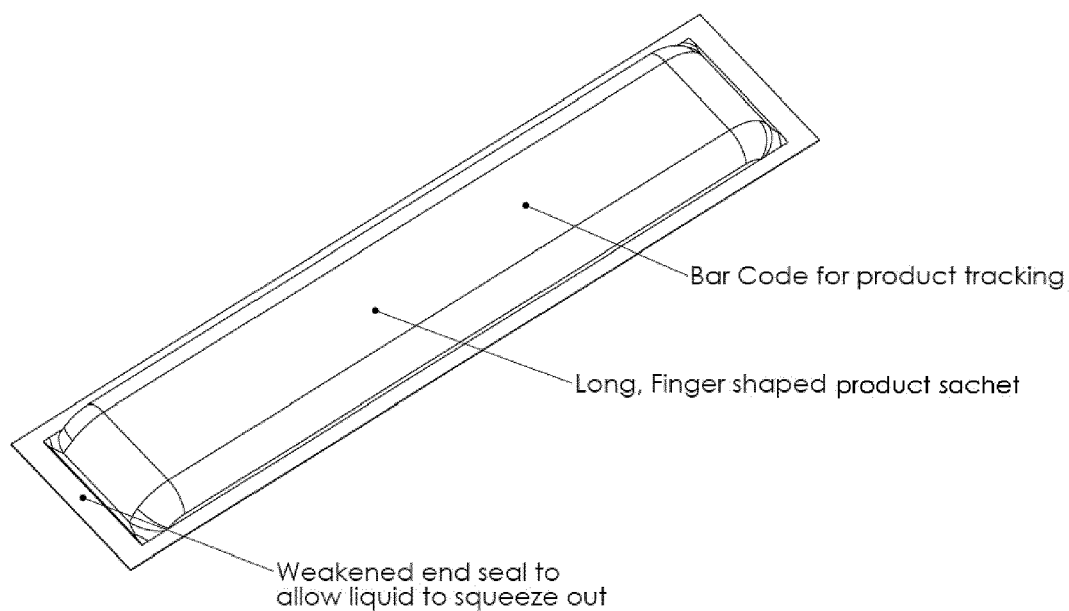
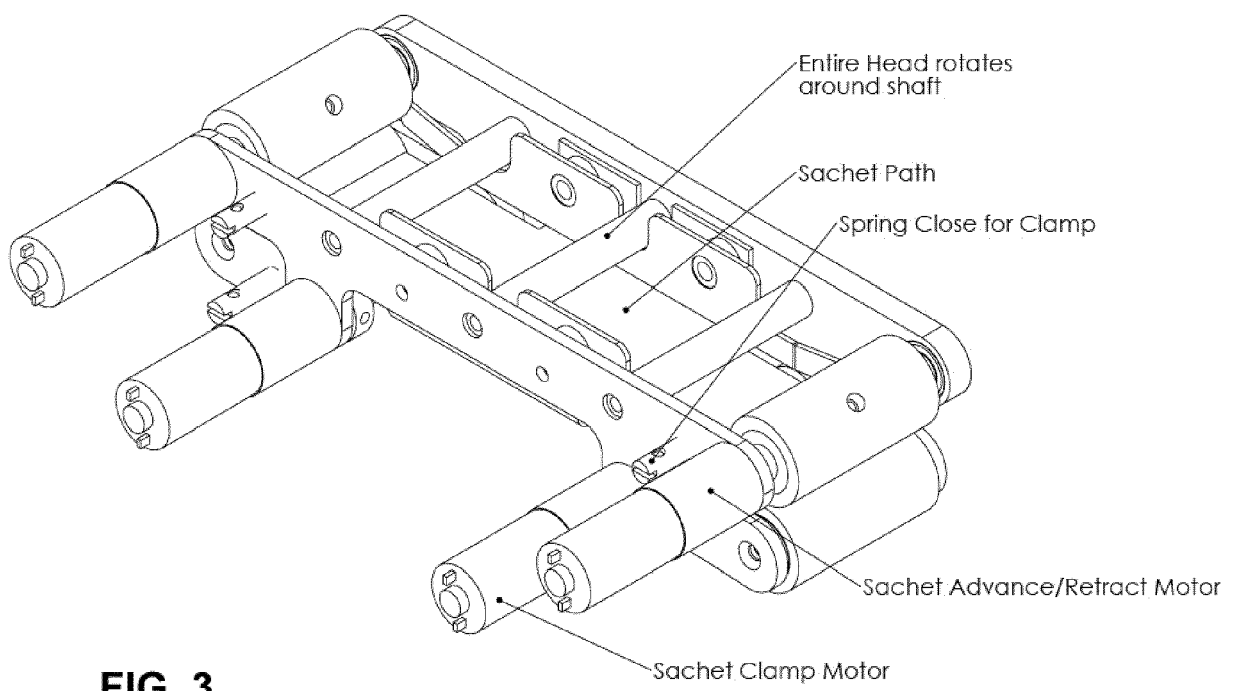
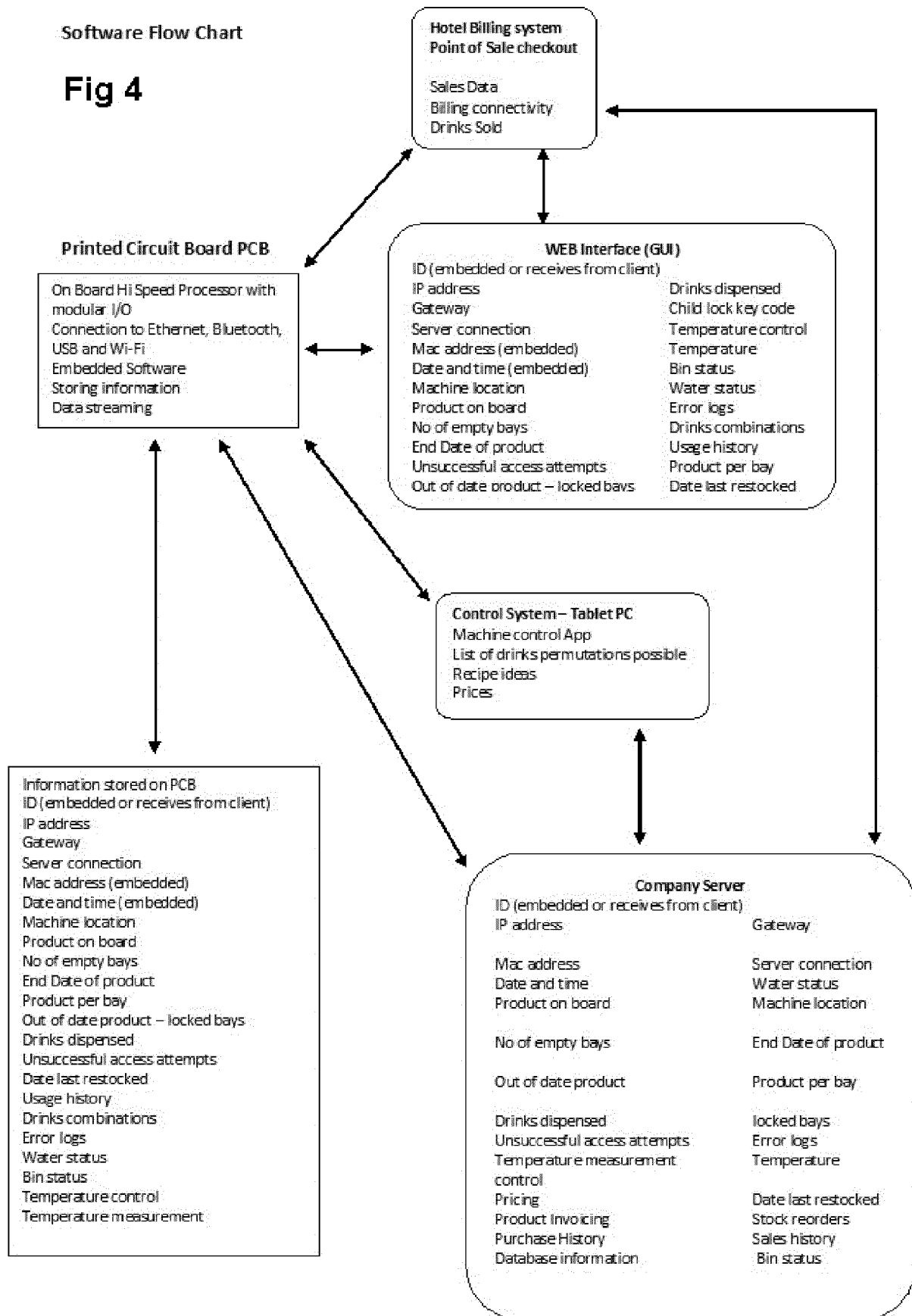


FIG. 2



Software Flow Chart

Fig 4





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Place of search Munich		Date of completion of the search 29 September 2016	Examiner Schultz, Tom
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