



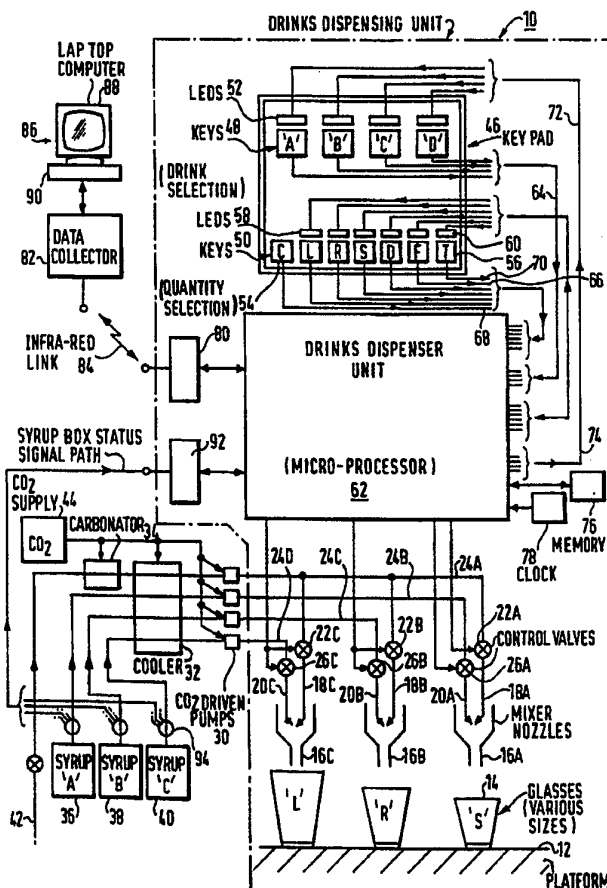
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(21) International Application Number: PCT/GB96/01615 (22) International Filing Date: 8 July 1996 (08.07.96) (30) Priority Data: 9514592.6 17 July 1995 (17.07.95) GB (71) Applicant (for all designated States except US): COCA-COLA & SCHWEPPE'S BEVERAGES LIMITED [GB/GB]; Charter Place, Uxbridge, Middlesex UB8 1EZ (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): ORSBORN, Brian, Joseph [GB/GB]; 7 Grange Road, Chiswick, London W4 4DB (GB). (74) Agent: SAUNDERS & DOLLEYMORE; 9 Rickmansworth Road, Watford, Hertfordshire WD1 7HE (GB).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report.

(54) Title: DRINKS-DISPENSING APPARATUS

(57) Abstract

A multi-head drinks-dispensing apparatus (10) comprises a group of drinks-dispensing heads (16A, 16B, 16C) each arranged for supply with respective drink ingredients through respective fluid control (22A, 22B, 22C, 26A, 26B, 26C) valves. A keypad (46) has a first group of keys (48) for selecting the type of drink and hence the dispensing head to be used, and a second group of keys (50) for selecting the quantity of drink to be dispensed. Signals from those groups of keys are processed in a micro-processor (62) to produce for each pair of associated "drink type" and "drink quantity" signals energisations of the control valves of the relevant dispensing head for periods sufficient to dispense the selected quantity of the selected drink. Dispensing of the selected drink is thus initiated at the earliest moment, whilst other drinks are being selected, so that respective selected drinks can be dispensed from the respective heads in a serial, overlapping manner. The processor stores data concerning the various drinks that are dispensed in a non-volatile memory, and this data can be transferred to a data collection (82) unit via an infrared link (84), and thence to a drinks management system (86).



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DRINKS-DISPENSING APPARATUS

This invention relates drinks-dispensing apparatus.

5 Such apparatus commonly includes for each kind of drink to be dispensed (a) a dispensing head which includes a nozzle for feeding the drink into a cup placed below the nozzle, and associated control valves for controlling the flow of drink ingredients under pressure from
10 supply lines to the nozzle for mixing there and delivery into a waiting cup, (b) manually-operable electrical selection means for selecting the quantity of drink to be delivered to the cup, and (c) an electrical control module responsive to an output
15 signal of the selection means and arranged to energise in response thereto the control valves for a period sufficient to deliver the selected quantity of drink through the nozzle into the waiting cup.

20 A plurality of such dispensing heads may be arranged in a common drink dispensing unit, each such head being arranged to deliver a particular drink different from those to be delivered by the other dispensing heads, and each head being controlled independently of the
25 other heads by its own dedicated selection means and control module. By way of example, a known drinks-dispensing unit includes three such dispensing heads, dispenses three different drinks, and includes three separate spaced-apart selection means and their
30 associated control modules. The three different drinks may comprise a brand of cola, a brand of low calorie 'diet' cola, and a brand of lemonade.

In such a dispensing unit, the dispensing of drinks
35 from the respective heads takes place in a serial, non-overlapping and hence time-consuming manner, which is less convenient for handling customers' multi-drink orders, such as are presented in cinemas, theatres and

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concert halls in the intervals between successive parts of a performance.

5 The present invention seeks to provide a multiple-head drinks-dispensing unit which in response to a multi-drink order is simpler and quicker to operate, requires less time to dispense the required drinks, and requires less electrical selection and control hardware to be accommodated in the dispensing unit.

10

The present invention also seeks to provide means whereby the operation of each of the dispensing heads can be continuously monitored and its operations reported from time to time to a drinks management
15 system.

The present invention thus concerns a multi-head drinks-dispensing apparatus which comprises a plurality of drink dispensing heads each arranged to deliver a
20 particular drink different from that to be delivered by each other dispensing head, and in which each dispensing head comprises (i) a nozzle for feeding the drink into a cup placed below the nozzle, and (ii) associated control valve means for controlling the flow
25 of drink ingredients under pressure from ingredient supply means to the nozzle for mixing there and delivery into a waiting cup.

30 According to the present invention, there is provided in such an apparatus (a) first selection means for selecting a drink to be dispensed and thus the dispensing head to be used, (b) a second selection means for selecting the quantity of drink to be delivered by that dispensing head, said first and
35 second selection means being arranged to emit respective first and second selection signals representative of the selected drink and selected drink quantity, (c) memory means for storing at least

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temporarily each pair of associated first and second selection signals, and (d) logic circuit means arranged to receive said pairs of associated first and second selection signals and in response to each such pair of signals to provide a valve control signal for effecting energisation of the control valve means of the selected dispensing head for a period sufficient to deliver the selected quantity of the selected drink, whereby two or more drinks may be dispensed simultaneously in a serial but over-lapping time relationship.

Thus, the time taken to dispense a customer's multiple drink order is substantially reduced as compared with that of the prior art unit referred to above.

Preferably, supply means for supplying the respective drink ingredients to the respective control valve means are arranged to supply those ingredients at predetermined constant flow rates, and the logic circuit in response to a said second selection signal determines the time period during which the relevant control valve means shall be energised and deliver the relevant drink ingredients to the associated nozzle.

According to one preferred feature of the present invention, there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a monitoring means for monitoring the presence of drink ingredients in that supply line, the monitoring means being arranged to emit an 'ingredient failure' warning signal when there is insufficient drink ingredient in the monitored supply line.

According to another preferred feature of the present invention, there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a supply line

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monitoring means for monitoring the integrity of that supply line, the monitoring means being arranged to emit a 'supply line tampered' warning signal when that supply line has been interrupted, or otherwise tampered with.

According to further preferred feature of the present invention, there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a monitoring means for monitoring the quality of a drink ingredient in that supply line, the monitoring means being arranged to emit a 'quality failure' warning signal when the quality of the ingredient in the monitored supply line falls below a required standard.

Preferably, a multi-head drinks-dispensing apparatus according to the present invention includes means responsive to said first selection signals and to said 'ingredient failure' warning signals, and is arranged to emit an 'inhibit' signal whenever a first selection signal and an 'ingredient failure' signal are present simultaneously.

Furthermore, such an apparatus preferably includes means responsive to said first selection signals and to said 'supply line tampered' warning signals, and to emit an 'inhibit' signal whenever a first selection signal and a 'supply line tampered' signal are present simultaneously.

In addition, such an apparatus preferably includes means responsive to said first selection signals and to said 'quality failure' warning signals, and to emit an 'inhibit' signal whenever a first selection signal and a 'quality failure' signal are present simultaneously.

Preferably, said memory means retains in storage each

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such pair of associated first and second selection signals, and stores in association therewith any such inhibit signal emitted pursuant to that pair of selection signals, thereby to indicate that there has
5 been a failure to properly dispense a selected drink.

There may also be provided means for totalling the selected drinks in response to the emission of each such first selection signal, in which means the total
10 is not increased in response to a first selection signal when that signal is accompanied by an inhibit signal.

Alternatively, there may be provided means for
15 totalling the selected drinks in response to the emission of each such second selection signal, in which means the total is not increased in response to a second selection signal when that signal is accompanied by an inhibit signal.

20 Preferably, there is also provided a 'real time' timing device for recording the day and or time at which a drink has been selected.

25 In a preferred embodiment of the present invention, the logic circuit means comprises a suitably programmed micro-processor.

The present invention also extends to the provision of
30 apparatus for converting an existing multi-head drinks-dispensing apparatus into an apparatus according to the present invention.

Other features of the present invention will appear
35 from a reading of the description that follows hereafter and from a reading of the claims that are appended at the end of the description.

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One multi-head drinks-dispensing apparatus and various modifications thereof, all according to the present invention, will now be described by way of example and with reference to the accompanying diagrammatic drawing, in which there is shown schematically the principal components of the apparatus and their various electric and fluid inter-connections.

Referring now to the drawing, a drinks-dispensing unit comprises a platform 12 on which drinking cups or glasses 14 of various sizes may be stood beneath three nozzles 16A, 16B, 16C through which respective drinks may be delivered into those glasses.

Each nozzle has two fluid delivery pipes 18(A,B,C) and 20(A,B,C) for delivering and mixing within the nozzle the respective ingredients of the selected drink. Those ingredients comprise cooled carbonated water and a smaller quantity of the relevant cooled syrup.

Pipe 18A delivers to nozzle 16A cooled, pressurised, carbonated water received through a control valve 22A from a supply line 24A. Pipe 20A delivers to nozzle 16A a cooled, pressurised syrup through control valve 26A from a supply line 24B.

Likewise, pipes 18B, 18C deliver to nozzles 16B and 16C cooled, pressurised, carbonated water received through control valves 22B and 22C from the supply line 24A; and pipes 20B, 20C deliver to nozzles 16B and 16C respective cooled, pressurised, syrups through respective control valves 26B and 26C from respective supply lines 24C and 24D.

The respective supply lines 24(A,B,C,D) receive their respective fluids from pumps 30(A,B,C,D) which draw their supplies through a cooler 32 respectively from a carbonator 34, a brand 'A' syrup supply box 36, a brand

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'B' syrup supply box 38, and a brand 'C' syrup supply box 40.

5 The carbonator 34 draws its supply of water from a water supply main 42, and its supply of carbon dioxide from a CO2 cylinder 44. That cylinder also supplies CO2 as the driving fluid to the pumps 30.

10 The drinks-dispensing unit 10 also includes above the nozzles 16 a tactile membrane keypad 46 which incorporates a group of keys 48 for selecting a drink to be dispensed, and a second group of keys 50 for selecting the quantity (or portion) of the selected drink to be dispensed. Touching one of the keys
15 48(A,B,C) selects the appropriate one of the syrup brands ('A','B','C') to be mixed with carbonated water to provide the selected drink, whilst touching the key 48D selects carbonated water alone.

20 Brand 'A' syrup may comprise, for example, 'COCA COLA' (RTM) syrup; Brand 'B' may comprise, for example, 'DIET COKE' (RTM) syrup; and Brand 'C' may comprise a suitable lemonade syrup.

25 Disposed above the keys 48 are LED (light emitting diode) indicators 52 which become illuminated to indicate the drinks that have been selected by operation of those keys.

30 Touching one of the keys 50(A,B,C,D,E) selects the appropriate quantity of the selected drink which is to be dispensed. The respective keys select as desired a large, a regular or a small size of drink, or a dash of syrup only, or a free-flow of carbonated water.

35 Additional keys on the keypad comprise a **CANCEL** key 54 for cancelling a selection just entered, and a **TEACH** key 56 for enabling the system to learn by example what

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is required in response to the selections made on the 'quantity' selection keys 50.

5 Disposed above the keys 50 are LED (light emitting diode) indicators 58 which become illuminated to indicate the quantities that have been selected by operation of those keys.

10 A further LED indicator 60 is provided above the **TEACH** key 56, to indicate when the apparatus is in the **TEACH** mode.

15 The 'drink' and 'quantity' selections made by means of the keypad 46 are translated into command signals for the respective valves 22 and 26 by means of a logic circuit in the form of a micro-processor 62, which receives from the keypad 'drink' selection signals via lines 64 and 'quantity' selection signals via lines 66. The processor also receives appropriate signals from
20 the 'cancel' and 'teach' keys via lines 68,70 to cause it as appropriate to cancel a selection just made, or to cause it to function in the **TEACH** mode.

25 The processor 62 emits indication signals via lines 72 and 74 to cause illumination of the appropriate ones of the LED indicators 52 and 58, thereby to indicate which drink and which quantity have been selected.

30 The processor 62 has an associated memory device 76 for storing as required 'drink' and 'quantity' selections and other data, and an associated clock 78 for providing the sequence of timing signals necessary for the operation of the processor itself, for timing the flows of the respective fluids through the respective
35 control valves of the nozzles 16, and for providing dates and times of the various drink dispensing operations that have been effected.

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The processor 62 is also provided with an input/output means 80 for enabling it to relay, by an infra-red link 84, drink dispensing data held temporarily in the processor 62 and memory 76 to a data collection unit 82.

The data collection unit 82 is electrically connectible with a lap-top computer 86 which includes a monitor 88 for displaying data received from the data collection unit 82, and a keyboard 90 for inputting information (e.g. relating to customer identity) to the system via the data collection unit 82 and the infra-red link 84.

The processor 62 has a second input/output means 92 for enabling it to communicate via a master/slave serial communication system with remotely situated syrup supply monitors 94 which have separate monitoring elements for monitoring respectively three separate functions: (a) the presence/absence of syrup in the supply lines 24(B,C,D) leading from the respective syrup boxes 36-40 to the control valves 26(B,C,D), (b) the integrity of those syrup supply lines, and (c) the quality of the syrups flowing in those supply lines.

The functions (a) and (b) may be monitored, for example, by observing pressure changes in the syrup lines, whilst the function (c) may be monitored, for example, by observing the contents of those lines by optical monitoring means or by acoustic monitoring means thereby to determine the characteristics of the syrup being used.

Loss of syrup supply either by the emptying of a syrup box or by the unauthorised disconnection of a syrup box (or the syrup supply line at some other point) results in the emission by the monitoring means of an 'syrup failure' signal to the micro-processor. Such a signal accompanying a 'drink type' signal or a 'drink

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quantity' signal from the keys 48 or 50 results in the emission of an 'inhibit' signal to negate, in a drinks management system, the adding of a drink count to the total count of drinks already dispensed. Thus,
5 dispensing only carbonated water in response to a selection of a drink type which requires the addition of syrup would not increase the total count of drinks dispensed. This ensures that the 'drinks dispensed' information supplied to the management system is
10 accurate.

Furthermore, the emission of such an inhibit signal may be used to inhibit a 'drinks' cost reckoning being made in an adjacent electronic-point-of-sales (EPOS) till in
15 response to such 'drink type' and 'drink quantity' signals.

The emission of a 'syrup failure' signal also gives warning of the need to substitute a new syrup box for
20 an empty one, and where appropriate to initiate an automatic changeover to a new syrup box.

The emission of a 'supply line tampered' signal by the monitoring means gives warning that the syrup supply
25 lines have been disconnected or otherwise tampered with, possibly by an unauthorised person.

The emission of a 'quality failure' signal by the monitoring means occurs when the quality of the
30 monitored syrup fails to meet the required standard, and indicates the possibility that a competitor's syrups are being used instead of the authorised ones.

Such 'supply line tampered' and 'quality failure'
35 signals have the same effect as the 'syrup failure' signals, in producing 'inhibit' signals for preventing the improper recording of a dispensed drink in the management system or in an 'EPOS' till

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In operation, the processor 60 receives (a) from the 'drink' selection keys 48 - 'drink' selection signals emitted by those keys on being touched, and (b) from the 'quantity' selection keys 50 - 'quantity' selection signals emitted by those keys on being touched, and translates each pair of associated 'drink' and 'quantity' selection signals into control signals for the relevant pair of 'carbonated water' and 'syrup' control valves 22 and 26, thereby to deliver at the relevant nozzle 16 the selected drink in the selected quantity.

On receipt of an associated pair of 'drink' and 'quantity' signals, the processor immediately energises the relevant pair of nozzle control valves thereby to commence delivery of the selected drink without any delay. Hence, after keying in the first drink selections, delivery of that drink proceeds whilst the subsequent selections are keyed in. Thus, delivery from the respective nozzles commences in a serial manner and continues in an over-lapping manner. This permits a continuous process of drinks dispensing, since immediately the first drink is dispensed, that drink may be removed and be replaced by another glass, whereupon the selections for the drink to be delivered to that new glass can be made, and so on, and likewise at the respective other dispensing nozzles 16.

In response to a customer's order for carbonated water, the processor energises in response to that keyed-in selection only the carbonated water control valve 22A of the nozzle 16A, thereby to allow the flow of only carbonated water through that nozzle, the associated syrup valve 26A remaining closed against the flow of lemonade syrup.

The processor 62 is arranged to record in the associated memory 76 the details of all the drink

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transactions carried out in response to operation of the selection keys, and to deliver those details to the data collection unit 82 when that device emits an infra-red command signal calling for the transmission of those details to it. The data collection unit 82 can then input that information subsequently to the lap-top computer 86 for use in a drinks management system, and/or display on the monitor 88.

10 Data (for example, relating to the location of the unit, the customer, the syrups, or to the sizes of the cups/glasses to be used) can be inputted to the processor 62 and memory 76. That data is first introduced into the system by means of the keyboard 90, and is subsequently transferred to the data collection unit 82 for onward transmission to the processor 62 and memory 76 by the infra-red signal link 84.

With the present drinks-dispensing unit, the selections are all made quite quickly at the one keypad, regardless of which drinks are required. Moreover, the dispensing of successive drinks takes place in the minimum of time, so that customers' multiple-drink orders are fulfilled with the minimum of delay and in the minimum of time.

In the TEACH mode, the processor and memory are taught by example the dispensing cycle to be used for each dispensing head for each of the selected drink quantities, that is, for each pair of associated 'drink type' and 'drink quantity' selection signals that may be keyed in. This is achieved, when in the TEACH mode, by executing for each dispensing head with each of the selected drink quantities a manually controlled dispensing cycle for that combination. The data defining each such cycle is stored in the memory, and is used each time the same combination of 'drink type' and associated 'drink quantity' signals is keyed in on

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the keypad.

An alternative entry to the TEACH mode may be made by
keying in on one only of the two groups of keys 48 or
5 50 a predetermined sequence of key operations.

Whereas the monitors 94 are shown adjacent the syrup
supply boxes 36-40, they may be alternatively
positioned on the output side of the pumps 30, or
10 according to circumstances at any other suitable
position on the syrup supply lines where the desired
monitoring action can be satisfactorily obtained.

If desired, the monitoring means 94 may also supply
15 syrup pressure signals to the processor 62, thereby to
enable the processor to adjust in a corrective manner
the respective times to be used in dispensing the
respective sizes of drinks keyed in on keys 50.

20 Alternatively, (or in addition) such syrup pressure
signals may be used to modify the output pressures of
the respective pumps in a corrective sense and so
maintain the desired rates of flow.

25 The data collection unit 82 is preferably a small hand-
held, battery-operated device, and is programmed to
store in its own non-volatile memory data received from
the processor 62 and memory 76. That non-volatile
memory is capable of storing data from as many as
30 thirty-two multi-head drinks dispensing units 10. The
data collection unit may also include a battery-backed
real time clock, which may be used if desired to set
the time on the clock 78 of the drinks-dispensing unit
10. The data collection unit preferably has a READ key
35 for initiating the storage in its own memory of data
stored in the processor 62 and memory 76 of the
dispensing unit 10, and a RESET key for clearing such
data from the processor 62 and memory 76 after it has

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been transferred to the data collection unit's memory.

The electrical control and monitoring system described
above may be applied as retro-fit equipment to any
5 suitable existing multi-head drinks-dispensing
apparatus.

It should be noted that in the drawing the arrow heads
indicate the directions of the various fluid and
10 electric signal flows.

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CLAIMS

1. Multi-head drinks-dispensing apparatus comprising a plurality of drink dispensing heads each arranged to deliver a particular drink different from that to be delivered by each other dispensing head, and each dispensing head comprising (i) a nozzle for feeding the drink into a cup placed below the nozzle, and (ii) associated control valve means for controlling the flow of drink ingredients under pressure from ingredient supply means to the nozzle for mixing there and delivery into a waiting cup, wherein there is provided (a) first selection means for selecting a drink to be dispensed and thus the dispensing head to be used, (b) a second selection means for selecting the quantity of drink to be delivered by that dispensing head, said first and second selection means being arranged to emit respective first and second selection signals representative of the selected drink and selected drink quantity, (c) memory means for storing at least temporarily each pair of associated first and second selection signals, and (d) logic circuit means arranged to receive said pairs of associated first and second selection signals and in response to each such pair of signals to provide a valve control signal for effecting energisation of the control valve means of the selected dispensing head for a period sufficient to deliver the selected quantity of the selected drink, whereby two or more drinks may be dispensed simultaneously in a serial but over-lapping time relationship.

2. Multi-head drinks-dispensing apparatus according to claim 1, wherein supply means for supplying the respective drink ingredients to the respective control valve means are arranged to supply those ingredients at predetermined constant flow rates, and wherein the logic circuit in response to a said second selection

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signal determines the time period during which the relevant control valve means shall be energised and deliver the relevant drink ingredients to the associated nozzle.

5

3. Multi-head drinks-dispensing apparatus according to claim 1 or 2, wherein there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a monitoring means for monitoring the presence of a drink ingredient in that supply line, the monitoring means being arranged to emit an 'ingredient failure' warning signal when there is insufficient drink ingredient in the monitored supply line.

15

4. Multi-head drinks-dispensing apparatus according to claim 1 or 2, wherein there are provided in supply lines extending between the respective drink ingredient supply means and the respective control valve means respective monitoring means for monitoring the presence of drink ingredients in the respective supply lines, each such monitoring means being arranged to emit an 'ingredient failure' warning signal when there is insufficient drink ingredient in the monitored supply line.

25

5. Multi-head drinks-dispensing apparatus according to claim 1 or 2, wherein there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a supply line monitoring means for monitoring the integrity of that supply line, the monitoring means being arranged to emit a 'supply line tampered' warning signal when that supply line has been interrupted, or otherwise tampered with.

35

6. Multi-head drinks-dispensing apparatus according to claim 1 or 2, wherein there are provided in supply

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lines extending between the respective drink ingredient supply means and the respective control valve means respective supply line monitoring means for monitoring the integrity of the respective supply lines, each such
5 monitoring means being arranged to emit a 'supply line tampered' warning signal when the associated supply line has been interrupted, or otherwise tampered with.

7. Multi-head drinks-dispensing apparatus according
10 to claim 1 or 2, wherein there is provided in at least one supply line extending between a drink ingredient supply means and the associated control valve means a monitoring means for monitoring the quality of a drink ingredient in that supply line, the monitoring means
15 being arranged to emit a 'quality failure' warning signal when the quality of the ingredient in the monitored supply line falls below a required standard.

8. Multi-head drinks-dispensing apparatus according
20 to claim 1 or 2, wherein there are provided in supply lines extending between the respective drink ingredient supply means and the respective control valve means respective monitoring means for monitoring the quality of drink ingredients in the respective supply lines,
25 each such monitoring means being arranged to emit a 'quality failure' warning signal when the quality in the monitored supply line falls below a required standard.

30 9. Multi-head drinks-dispensing apparatus according to claim 3 or 4, including means responsive to said first selection signals and to said 'ingredient failure' warning signals, and to emit an 'inhibit' signal whenever a first selection signal and an
35 'ingredient failure' signal are present simultaneously.

10. Multi-head drinks-dispensing apparatus according to claim 5 or 6, including means responsive to said

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first selection signals and to said 'supply line tampered' warning signals, and to emit an 'inhibit' signal whenever a first selection signal and a 'supply line tampered' signal are present simultaneously.

5

11. Multi-head drinks-dispensing apparatus according to claim 7 or 8, including means responsive to said first selection signals and to said 'quality failure' warning signals, and to emit an 'inhibit' signal
10 whenever a first selection signal and a 'quality failure' signal are present simultaneously.

12. Multi-head drinks-dispensing apparatus according to claim 9, 10 or 11, wherein said memory means retains
15 in storage each such pair of associated first and second selection signals, and stores in association therewith any such inhibit signal emitted pursuant to that pair of selection signals, thereby to indicate that there has been a failure to properly dispense a
20 selected drink.

13. Multi-head drinks-dispensing apparatus according to claim 12, including means for totalling the selected drinks in response to the emission of each such first
25 selection signal, and wherein the total is not increased in response to a first selection signal when that signal is accompanied by an inhibit signal.

14. Multi-head drinks-dispensing apparatus according to claim 12, including means for totalling the selected
30 drinks in response to the emission of each such second selection signal, and wherein the total is not increased in response to a second selection signal when that signal is accompanied by an inhibit signal.

35

15. Multi-head drinks-dispensing apparatus according to any preceding claim, including a timing device for recording the day and or time at which a drink has been

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selected.

16. Multi-head drinks-dispensing apparatus according
to any preceding claim, wherein the logic circuit means
5 comprises a suitably programmed micro-processor.

17. Multi-head drinks-dispensing apparatus
substantially as hereinbefore described with reference
to and as illustrated by the accompanying diagrammatic
10 drawing.

18. Apparatus for converting an existing multi-head
drinks-dispensing apparatus into an apparatus as
claimed in any preceding claim.

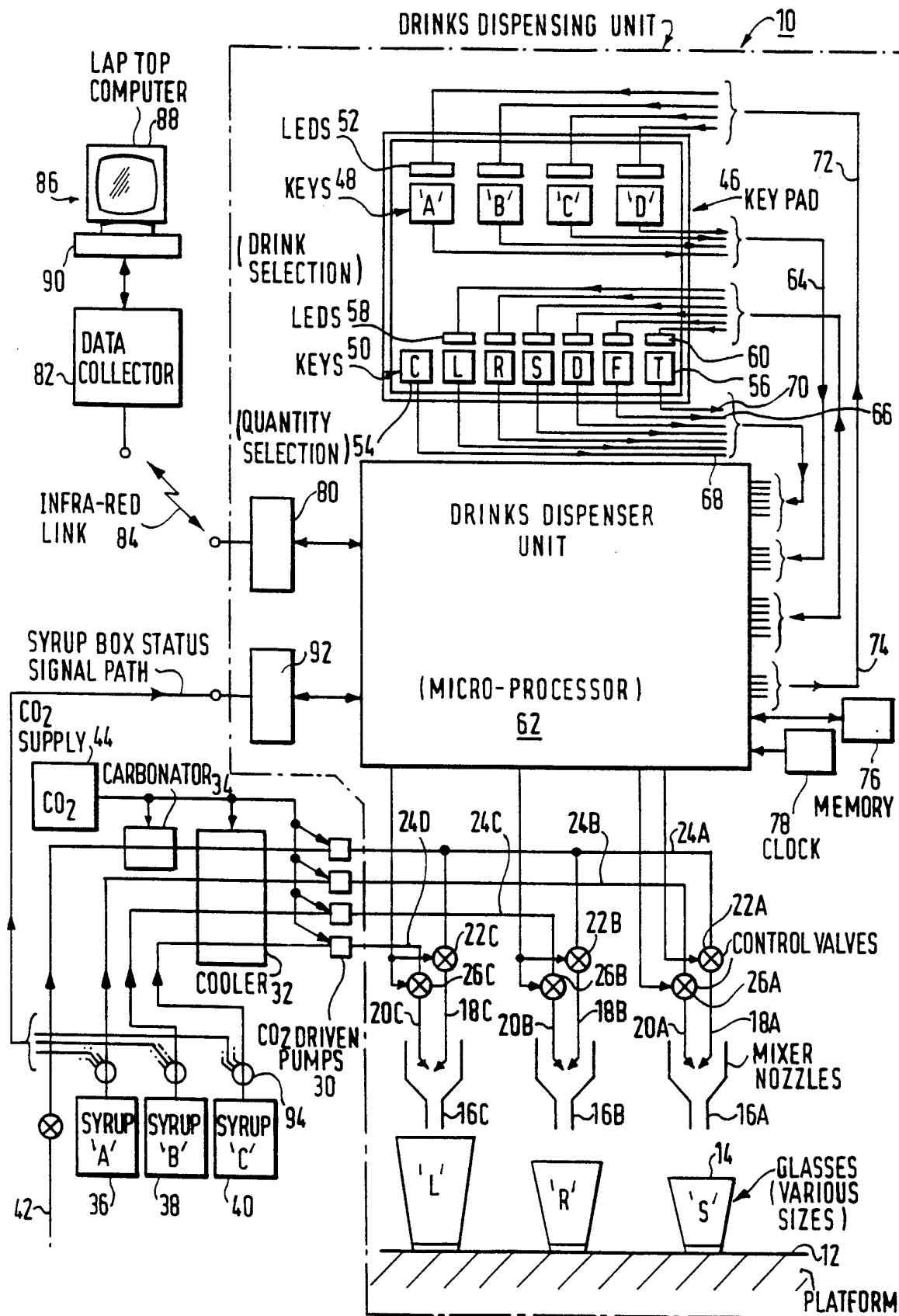
15 19. Multi-head drinks-dispensing apparatus comprising
any novel and inventive combination of features
disclosed in the present specification, other than a
combination as specifically defined in any one of the
20 preceding claims.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 96/01615

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B67D1/00

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 B67D G07F

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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 04286 A (AZTEC DEVELOPMENTS LTD) 3 March 1994 see page 16, line 30 - page 22, line 5 see figure 1	1,2,7,8, 11,16
A	--- EP 0 530 858 A (THE COCA COLA COMPANY) 10 March 1993 see page 5, line 6 - page 6, line 4 see figures 1,6,7	1,2,16
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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
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Date of the actual completion of the international search

5 November 1996

Date of mailing of the international search report

15. 11. 96

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Authorized officer

Smolders, R

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 96/01615

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 027 284 A (K. SENGHAAS ET AL.) 25 June 1991 see column 2, line 48 - column 5, line 60 see figure 2 ---	1,2,16
A	US 4 827 426 A (M. PATTON ET AL.) 2 May 1989 see column 2, line 67 - column 6, line 60 see figures 1-4 ---	1,2,16
A	WO 92 08671 A (HETPER PTY LTD) 29 May 1992 see page 4, line 21 - page 6, line 6 see figures 1,2 ---	1,2,16
A	US 5 230 448 A (D. STROHMEYER ET AL.) 27 July 1993 see column 2, line 59 - column 3, line 49 see figure 1 ---	1,2,16
A	US 4 800 492 A (D. JOHNSON ET AL.) 24 January 1989 -----	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 96/ 01615

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 17-19
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
See Rule 6.2) a
Claim 18 is not covered by any description
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 96/01615

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 96/01615

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