

(21) Application No: 0303572.2

(22) Date of Filing: 17.02.2003

(71) Applicant(s):
Abayomi Adetunji Fajobi
38A Martins Road, Hanham, BRISTOL,
BS15 3EP, United Kingdom

(72) Inventor(s):
Abayomi Adetunji Fajobi

(74) Agent and/or Address for Service:
Alice Salami
148 Leander Road, Brixton Hill, LONDON,
SW2 2L3, United Kingdom

(51) INT CL⁷:
G07F 15/12 , G01F 11/12 , G07F 13/06

(52) UK CL (Edition W):
B8N NHAA

(56) Documents Cited:
EP 0010448 A2 **WO 1999/023621 A1**
US 5044520 A **US 4871262 A**

(58) Field of Search:
UK CL (Edition V) **B8N**
INT CL⁷ **G01F, G07F**
Other: **Online databases: EPODOC, JAPIO, WPI**

(54) Abstract Title: **Liquid toiletry dispensing machine**

(57) The machine comprises wall-mounted cabinet 16 containing a number of liquid toiletry reservoirs 6 which are connected to a corresponding number of peristaltic pumps 7. A panel 2 on the front of the cabinet displays which toiletries are currently available, as determined by sensors 11 in the reservoirs. The user introduces money into a coin-slot mechanism 1 and selects toiletry by a keypad 3 on the front of the machine. The pump, under microprocessor 9 control, delivers a fixed volume of the selected liquid to the user through a nozzle mounted in a manifold 8, located in an enclosure 5 at the bottom of the cabinet. The presence of the user's hand beneath the manifold 8 is detected by a sensor 17. The microprocessor coordinates and controls the system of coin-slot mechanism, display, keypad, sensors and pumps.

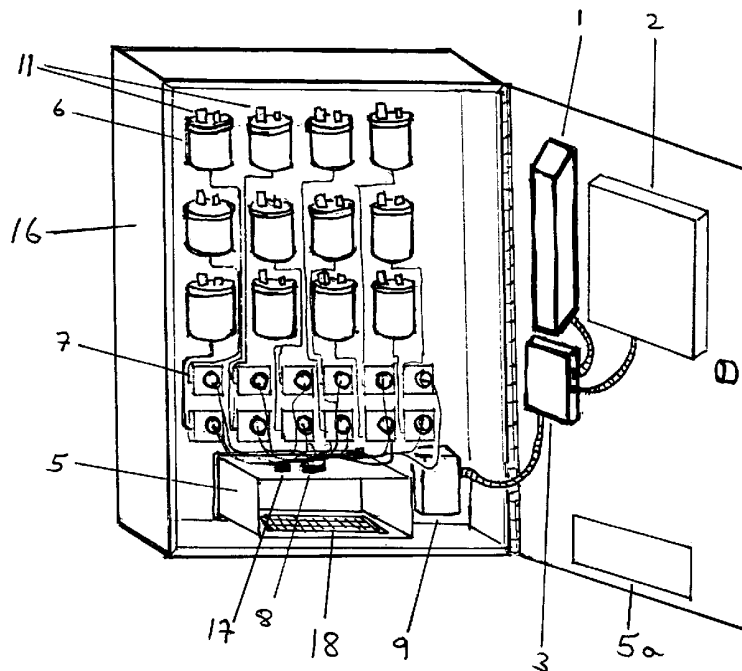


FIGURE 2

1/4

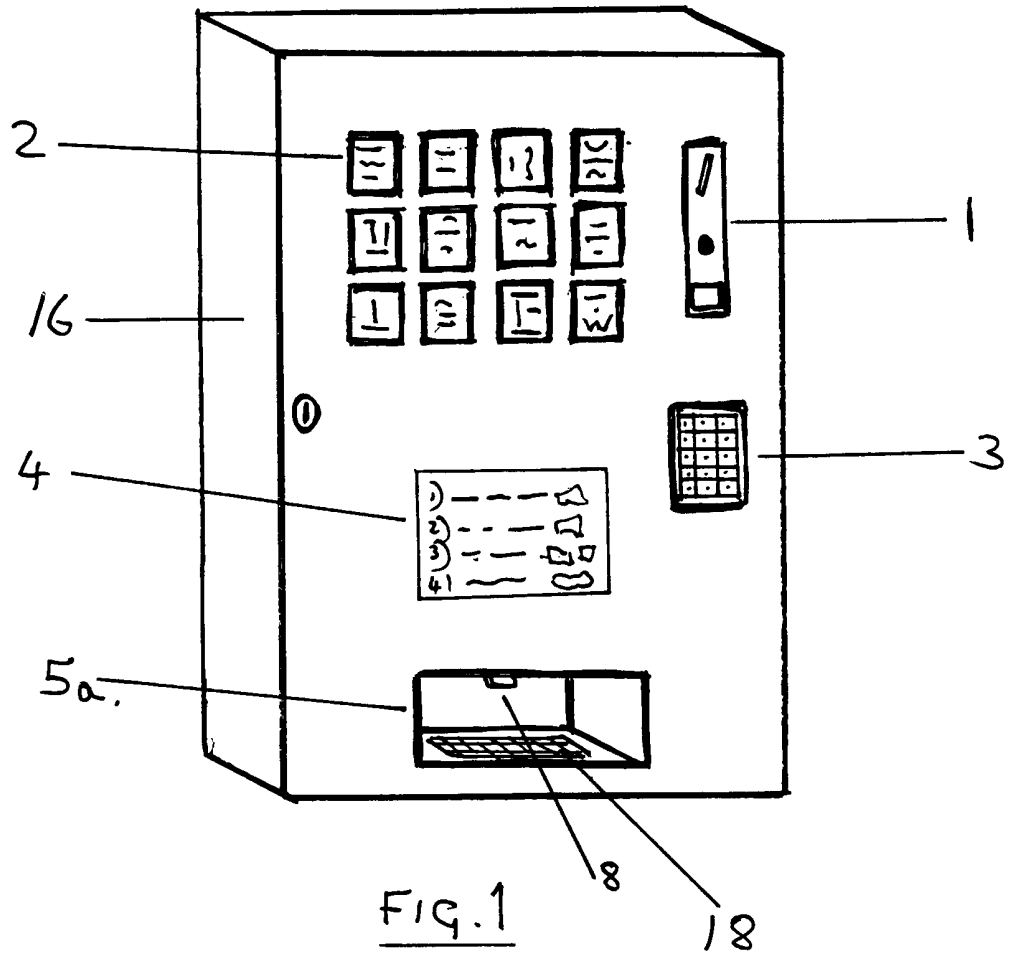


FIG. 1

2/4

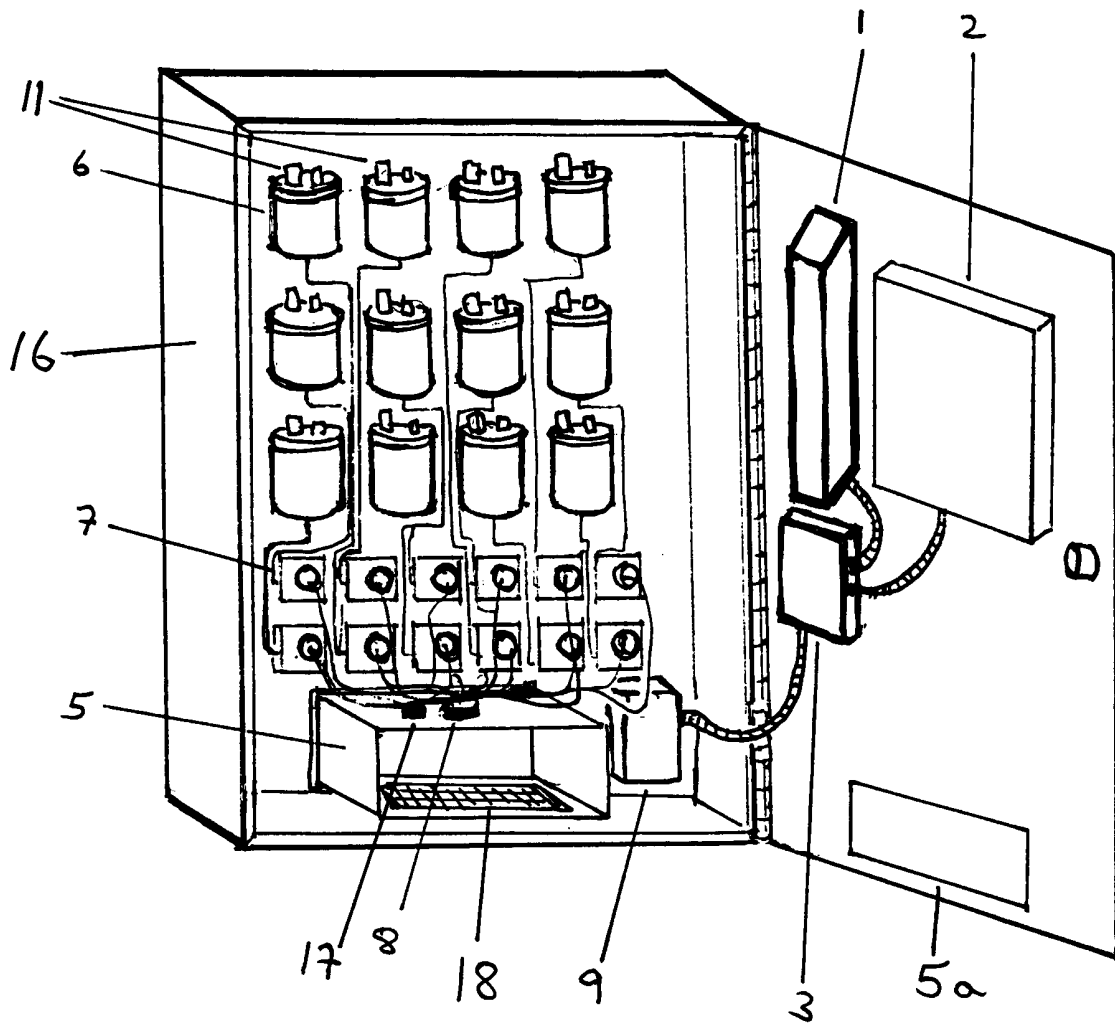
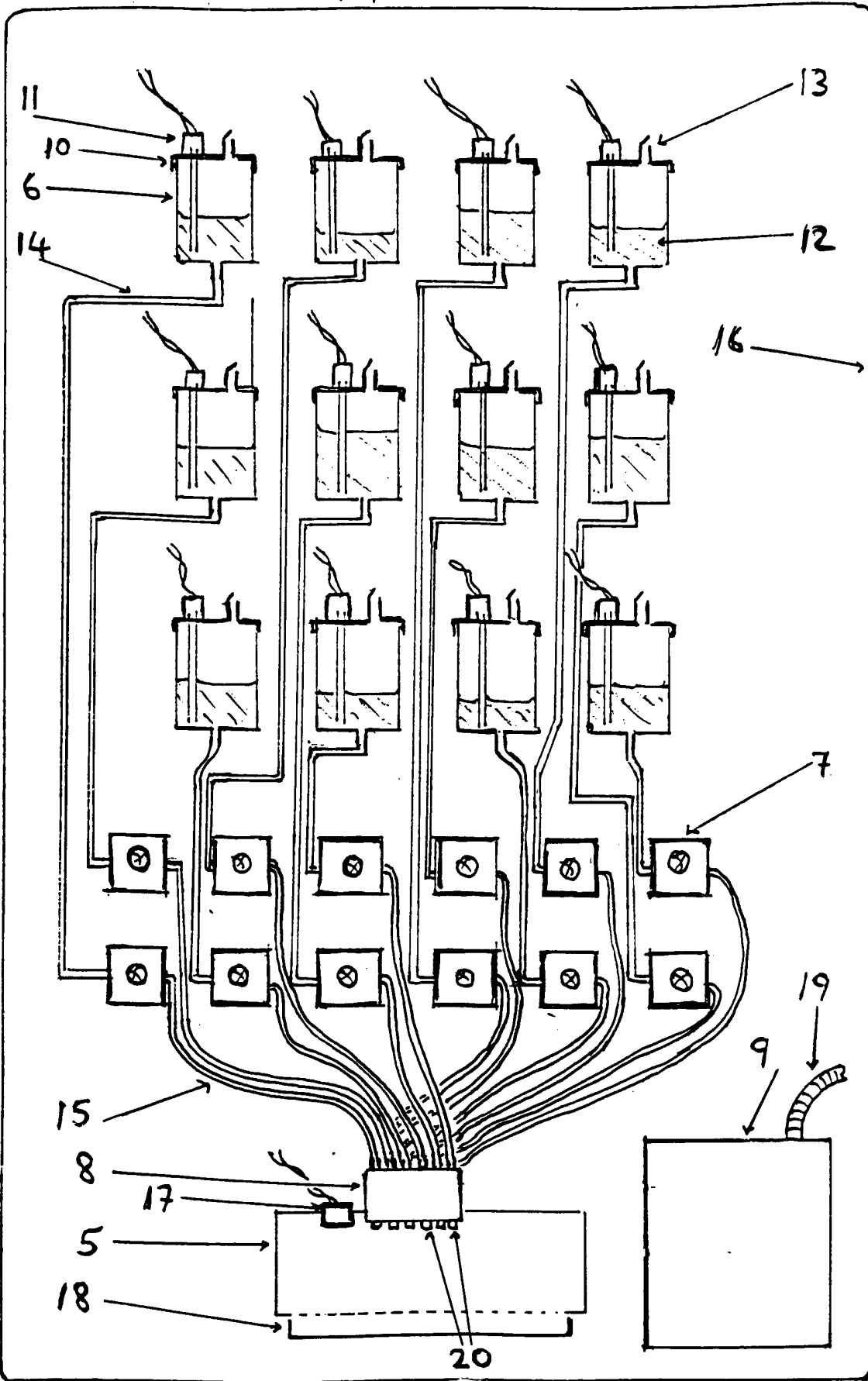


FIGURE 2

3/4

FIGURE 3



4/4

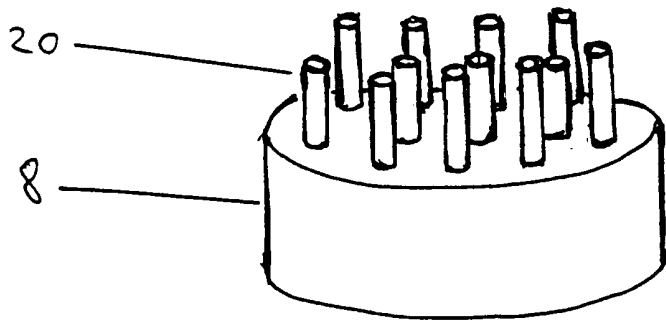


FIGURE 4

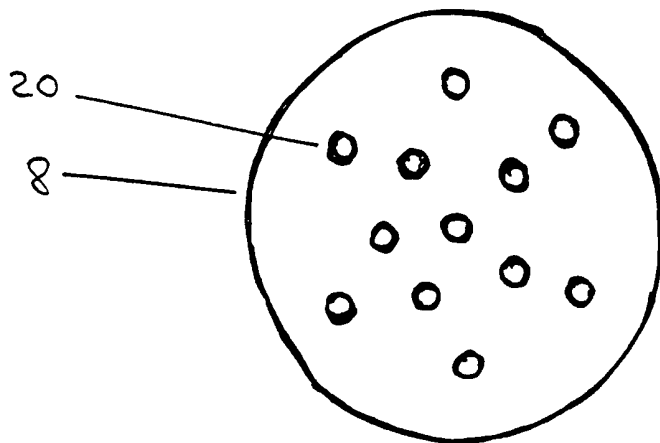


FIGURE 5

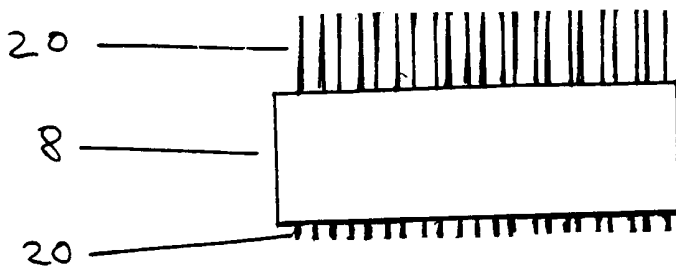


FIGURE 6

LIQUID TOILETRY DISPENSING MACHINE

This invention relates to a coin-operated machine, housed in a cabinet of durable material (e.g. stainless steel, steel) for dispensing small fixed volumes of a range of liquid toiletries (e.g. perfumes, aftershaves). The machine would normally be wall-mounted in the washroom facilities of hotels, motorway service-stations, clubs and other such public areas which do not usually offer supplies of such toiletries.

A coin-in-the-slot mechanism, keypad and back-lit display of currently available toiletries are mounted on the front door of the cabinet. There is a label, with written and pictorial instructions showing how to use the dispenser, attached to the front of the cabinet. The user of the dispenser introduces a coin into the slot mechanism and uses a keypad to select the brand of toiletry required. The user then puts his/her cupped hand beneath a nozzle in an enclosure on the lower front face of the cabinet. After a few seconds the toiletry is dispensed into the user's hand.

The cabinet has a hinged lockable front which can open horizontally. It is normally only opened for maintenance. Inside the upper part of the cabinet is an array of a number of containers of a suitable material (e.g. plastic, stainless steel) firmly attached to the cabinet. These are the reservoirs of the toiletries. Each reservoir has a top cap carrying a liquid-level sensor and an opening for replenishing the reservoir. The sensor is used to detect the presence or absence of liquid in the reservoir. When there is liquid in a reservoir the corresponding section of the display on the front of the cabinet is back-lit, showing that toiletry's name and logo, and that it is available.

Situated at a low level within the cabinet is an array of electrically-driven peristaltic pumps, firmly attached to the cabinet. Each reservoir is connected from its base to the inlet of one of these peristaltic pumps, using suitable tubing (e.g. nitrile-rubber, silicone). The pumps are thus gravity-fed by the reservoirs. The outlet of each pump is connected, using similar tubing, to a manifold carrying an array of miniature nozzles. Each nozzle is thus connected to a pump. The nozzles and manifold are made of a suitable material (e.g. brass, stainless steel). The manifold is located in the roof of an enclosure situated at the bottom front edge of the cabinet. The enclosure is large enough for the user to put a cupped hand in, beneath the manifold, and also carries an infra-red detector to detect the presence or absence of the user's hand within the enclosure. At the bottom of the enclosure is a drip-tray to collect any spilled liquid. The cabinet door features an aperture opening onto the enclosure.

For safety reasons all electrical systems could operate on a low-voltage system. The system of coin-slot mechanism, infra-red detector, display, keypad, liquid-level sensors, and pumps is coordinated by a microprocessor located inside the cabinet.

The pumps are individually controlled by the microprocessor, such that when a pump is activated it is 'on' for a pre-set fixed period of time (e.g. three seconds). This ensures that a controlled and repeatable volume of toiletry is dispensed by that particular pump. The pumps are individually programmable. Under normal conditions liquid is only dispensed when a) money has been inserted, b) the user has selected an available toiletry (i.e. the reservoir is not empty) and c) the user's hand is in the enclosure beneath the nozzle.

The Invention provides a machine for dispensing small volumes of liquid toiletries such that the user may select one of a range of toiletries (the selection of which is made through a key-pad on the front of the machine) which is then dispensed to the user by a corresponding peristaltic pump that, under microprocessor control, delivers an accurately metered volume through a nozzle on the machine. Further features are set out in subsidiary claims.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure1 Shows a front view of the whole dispenser cabinet

Figure2 Shows a front view of whole dispenser with cabinet door open

Figure3 Shows a layout of parts within the dispenser cabinet

Figure4 Shows a general drawing of the manifold 8

Figure5 Shows a plan view of the manifold 8

Figure6 Shows a side elevation of the manifold 8

As shown in Figure1, the front of the dispensing cabinet 16 carries a coin slot mechanism 1 of known design, a keypad 3 of known design, a back-lit display 2, printed instructions 4 and an aperture 5a.

Figure2 shows a general layout of the liquid reservoirs 6, peristaltic pumps 7 of known design, manifold 8, liquid-level sensors 11, infra-red detector 17, and Power Supply/Microprocessor Unit 9 of known design. The pumps are under the control of the Microprocessor 9.

Figure 3 shows a more detailed layout of parts within the cabinet 16. The reservoir 6 carries a removable cap 10 which holds a liquid-level sensor 11 to detect liquid 12, and a filling spout 13. Each reservoir 6 has an outlet spigot on its base which is connected to the inlet of a peristaltic pump 7 by tubing 14. The outlet of the pump is attached by tubing 15 to a manifold 8.

The manifold 8 carries an array of small separate nozzles 20, one corresponding to each pump. The manifold is located in the roof of the enclosure 5, into which the user puts his/her cupped hand. Also in the enclosure's roof is located an infra-red detector 17 which detects the presence of the user's hand. At the base of the enclosure is a removable drip-tray 18 to collect residues and spillages. Also in the cabinet is the Power Supply / Microprocessor Unit 9. The controls on the cabinet door are connected to this unit 9 by flexible cables 19.

CLAIMS

- 1) A machine for dispensing small volumes of liquid toiletries such that the user may select one of a range of toiletries (the selection of which is made through a key-pad on the front of the machine) which is then dispensed to the user by a corresponding peristaltic pump that, under microprocessor control, delivers an accurately metered volume through a nozzle on the machine.
- 2) A dispensing machine as claimed in Claim 1 whose operation depends on the user introducing money into a coin-slot mechanism.
- 3) A dispensing machine as claimed in Claim 1 where the range of currently available toiletries is electronically detected and displayed on an illuminated front panel.
- 4) A dispensing machine as claimed in Claim 1 where the liquid will only be dispensed when the user's hand is electronically sensed as being in place below the dispensing nozzle.
- 5) A dispensing machine as claimed in Claim 1 where each pump in the machine is individually programmed to deliver a predetermined volume of liquid, and the electronic and electrical systems outlined in Claims 2, 3 and 4 are controlled by a microprocessor.
- 6) A dispensing machine substantially as herein described and illustrated in the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0303572.2
Claims searched: 1-5

Examiner: Bob Crowshaw
Date of search: 2 December 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X, Y	X: 1 & 5 Y: 2, 3 & 4	US4871262 (KRAUSS) Whole document particularly relevant to a cosmetic dispenser using computer controlled peristaltic pumps, but see especially column 1 lines 5-11, column 4 lines 3-32, column 7 lines 44-64 and figures 1 & 4.
Y	2	US5044520 (MOISAN) An example of a coin operated cosmetic dispenser. See especially column 1 lines 21-25, column 2 lines 48 to column 3 line 5, column 4 lines 1-11 and figure 1.
Y	3	EP0010448 A2 (VGL) An example of a dispenser having a product level detection and display. See especially the abstract and the first paragraph on page 5.
Y	4	WO99/23621 A1 (AIR DELIGHT) An example of a dispenser having a sensor 20 for a user's hand. See especially the abstract and lines 21-24 on page 5.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^v:

B8N

Worldwide search of patent documents classified in the following areas of the IPC⁷ :

G01F; G07F

The following online and other databases have been used in the preparation of this search report :



INVESTOR IN PEOPLE

Application No: GB 0303572.2
Claims searched: 1-5

Examiner: Bob Crowshaw
Date of search: 2 December 2003

Online databases: EPODOC, JAPIO, WPI