(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 639 986 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.03.2006 Bulletin 2006/13

(51) Int Cl.:
A61J 3/00 *(2006.01)* ***B01F 13/10*** *(2006.01)*

(21) Application number: **04022875.1**

(22) Date of filing: **24.09.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(71) Applicant: **Preventest Limited**
Gibraltar (GI)

(72) Inventor: **Vertommen-Billene, Nadine**
1300 Limal (BE)

(74) Representative: **Micheli & Cie**
122, rue de Genève,
CP 61
1226 Thonex-Genève (CH)

(54) Installation for the realization of magistral preparations

(57) The invention relates to an installation (10) for realizing magistral preparations, which contain determined weights of a plurality of given ingredients, each of said ingredients being contained in a reservoir (18) that has an identification marking, said installation (10) comprising weighing means (12) and receiving means (14) suitable for mounting on said weighing means (12), the ingredients being delivered into said receiving means (14) for each of said reservoirs (18), said weighing means (12) providing a weight value of ingredient delivered, said installation comprising: means for identification (20, 17, 19) of the reservoirs; means for transferring (16) reservoirs into a distribution position; means for distributing (36) the ingredient from each of the reservoirs into said receiving means, and means for controlling (22) said transfer means (16) and said distribution means.

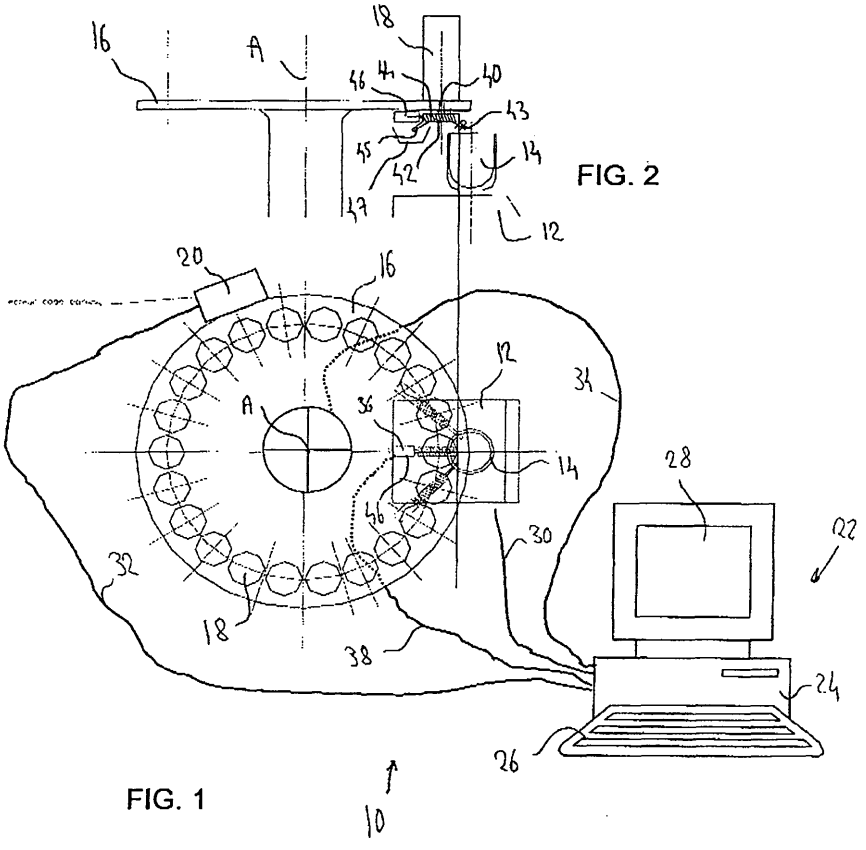

FIG. 1

FIG. 2

EP 1 639 986 A1

Description

[0001] The present invention relates to an installation for the realization of magistral preparations.

[0002] This type of installation is more particularly for public pharmacies for the fabrication of magistral preparations, especially vitamin and / or mineral compositions or containing any other substance having beneficial effect for health prescribed by physician for his or her patients.

[0003] In fact, certain compositions containing different active principles and combined to combat relatively rare pathologies are not or are no longer prepared industrially by pharmaceutical manufacturers considering their low distribution. On the other hand, a certain number of deficits or misregulations shown by biological tests may be overcome by an adequate and personalized composition.

[0004] Therefore, public pharmacies, as they have done in the past, are in a position to prepare these compositions themselves. Thus, using a given composition, elaborated by the physician, said composition containing the defined weights of a plurality of given ingredients, the pharmacist proceeds with weighing each of said ingredients and mixing them, in order to form a magistral preparation. In addition, they are capable of manually packaging them in the form of tablets, gel caplets or capsules.

[0005] However, the realization of these magistral preparations requires special equipment and this is even more so the case when the hygiene precautions that must be taken are relatively rigid. In addition, the realization of these preparations requires manual work and is generally incompatible with the normal business operations practiced in public pharmacies.

[0006] A problem that occurs and which the present invention seeks to solve is thus that of proposing an installation for the realization of magistral preparations that makes it possible not only to realize them under irreproachable sanitary conditions but also to be able to repeat doing so with considerable precision and with a minimum of operator intervention.

[0007] For this purpose and in terms of a first object of the present invention, an installation for realization of magistral preparations is proposed, wherein each magistral preparation contains determined weights in a reservoir which has an identification mark for the ingredient it contains, said installation comprising means for weighing the ingredients and receiving means adapted for being mounted on said weighing means, the ingredients being capable of being delivered into said receiving means from said reservoirs, said weighing means being adapted for providing a weight of the ingredient delivered, and which comprises according to the inventions:

- identification means suitable for identifying said reservoirs;
- transfer means for transferring the identified reservoirs at said receiving means into a distribution position;
- distribution means for distributing the ingredient from each of said reservoirs arranged in said distribution position, into said receiving means, and
- controlling means suitable for controlling, for each of said ingredients of said plurality of given ingredient, said means of transfer for transferring the reservoir identified by said means of identification into said distribution position and, said distribution means until said determined weight value of the corresponding ingredient is attained.

[0008] Thus, a characteristic of the invention resides in the utilization of distribution means, transfer means and identification means by suitable control means. making it possible to sequentially and automatically control the means for identifying the reservoirs containing the given ingredients of said preparation into which the ingredients are going to be dispensed, then the distribution means for dispensing said ingredients until the respective determined weight values are attained. In this fashion, the installation for the realization of magistral preparations according to the invention makes it possible to produce the magistral preparation completely automatically.

[0009] In addition, and particularly advantageously, the installation for the realization of magistral preparations comprises means for mixing the ingredients contained in said receiving means and said mixing means are capable of being controlled by said control means. In this fashion, after the ingredients are dispensed into the receiving means, the mixing means comprising, for example, a mechanical agitator, are also used automatically by said control means.

[0010] Advantageously, the installation for the realization of magistral preparations comprises an automatic transfer mean for transferring the recipient by translation or by pendular guided motion from the reception/weighting zone to the upright of the mixing system.

[0011] Advantageously, the installation for the realization of magistral preparations comprises means for encapsulation into unit doses, said encapsulation means being capable of being controlled by said control means. In this fashion, the installation makes it possible not only to realize the magistral preparations but it also makes it possible to automatically package them. Thus, by realizing and packaging the magistral preparation automatically without human intervention and doing so in a controlled sanitary environment, the risk of contamination with any microbe or a substance not foreseen in the formulation is practically zero.

[0012] According to one particularly advantageous embodiment of the invention, said identification mark are constituted of a barcode, said identification means comprising a barcode reader. Thus, each of the reservoirs has a barcode or barcodes determined as a function of the ingredient it contains, the reading of the barcode is suitable for reading the barcode of each of said reservoirs, in order to transmit information to said control

means. In the continuation of the description the co-operation of the barcode reader and the command means will be described in more detail.

[0013] In addition, said transfer means comprises a rotating magazine, wherein said reservoirs are installed. Thus, the rotating magazine comprises a plate on which the reservoirs are installed in a circular arrangement; it is suitable by rotating to carry each of said reservoirs at the receiving means.

[0014] According to one particular embodiment of the invention, said distribution means comprise at least one endless screw suitable for extending into said distribution position between said tank and a point situated plumb with said receiving means. Said reservoir is adapted to open into a discharge spout that extends over the receiving means, said spout is crossed by an endless screw making it possible to carry along the ingredients from the tank to the receiving means.

[0015] According to another particular embodiment of the invention, said control means comprise a computer, said computer comprising a computer program specifically adapted for controlling said installation. Thus, the computer that also comprises a memory suitable for recording each of the determined weights of a plurality of given ingredients of a magistral preparation is suitable, in virtue of its specific program, so that said magazine comprises all of the reservoirs of the given ingredients of said plurality and does so in sufficient quantities for automatically controlling the identification means, the transfer means, the weighting means and the distribution means in order to deliver into the receiving means all of the ingredients of said preparation.

[0016] According to another feature, the invention proposes a method for formulating magistral preparations utilizing an installation such as the one described hereinbefore.

[0017] According to yet another feature, the invention proposes a software product comprising a user interface, characterized in that it comprises said aforementioned specific computer program. Thus, a software product is suitable for being installed into said computer, said software product comprising at least one computer program corresponding to a magistral preparation. Naturally, the software product comprises a plurality of computer programs suitable respectively for carrying out a plurality of magistral preparations.

[0018] In addition, and particularly advantageously, the user interface comprises a formulation editor suitable for editing the formulated preparations. Thus, not only the magistral preparations compounded are capable of being saved in the computer memory but further, edition of each of the preparations can done on each formulation so that it can be then associated with it, for example, after packaging.

[0019] Other features and advantages of the invention will become apparent when reading the following description of particular embodiments of the invention, being provided illustratively but non-limiting, with reference to the appended drawings, wherein:

Fig. 1 represents a synoptic diagram of the different elements of the installation according to the invention together with their connections;
Fig. 2 represents a detail view of an element shown in Fig. 1;
Fig. 3 represents an overall view of the installation according to the invention comprising an additional element, and
Fig. 4 is an organigram corresponding to a mode of operation of the aforementioned installation.

[0020] Fig. 1 diagrammatically represents an installation 10 according to the invention, suitable for automatically realizing magistral or extemporaneous preparations. This installation 10 comprises, in top view, a scales 12 on whose platform the receiving means 14 are placed, said means being formed by a container open at its top, and a circular magazine 16 in which a plurality of reservoirs 18 are arranged. The circular magazine 16 is capable of being rotated by driving means (not shown), about a central axis A kept at a fixed distance from the scales 12 and the container 14 in order to bring each of the reservoirs 18 of said plurality of reservoirs to overhang said container 14. The circular magazine 16 has in this case 22 cavities each suitable for receiving 22 reservoirs. Thus, the circular magazine 16 is suitable for being moved in steps of 1/22ths of a rotation in order to be able to successively carry all of the reservoirs 18 at said container 14. In addition, each of the reservoirs 18 bears an identification marking formed by a barcode, this barcode being capable of being read by a contact less reading device 20, equipped with laser means or a suitable optical measurement apparatus disposed tangentially relative to the circular magazine 16. In addition, the reading device 20 is in this case suitable for reading an identification marking on a reservoir, scaled in 7/20ths of a rotation relative to the position of a reservoir situated at the recipient 14.

[0021] Each of the reservoirs 18 contains a given and single ingredient and has an identification marking formed by said barcode and corresponding to the given ingredient. For example, the barcode for each of the reservoirs 18 is composed of a six-figure code, the four first figures designate the type of ingredient, the three following figures correspond to the batch number of said ingredient and the three following figures correspond to the order in the series of the batch. These last figures serve only in distinguishing one given reservoir relative to another in the same batch of the given ingredient.

[0022] In addition, the installation 10 comprises control means 22 comprising a microcomputer equipped with a central unit 24, a data entry peripheral device 26 in the form of a keyboard and a viewing peripheral device 28 in the form of a monitor. The central unit 24 is connected to the scales by means of a link 30; for example, a RS232 type link, so that said scales 12 can transmit to the central

unit 24 signals representing the weight value that it measures and this, advantageously, to the nearest milligram.

[0023] The central unit 24 is also connected to a reading device 20 by appropriate connection means 32, the reading device 20 being suitable for transmitting to it signals representing each of the barcodes read and consequently of the ingredients contained in each of said reservoirs.

[0024] In addition, the central unit 24 is connected at once to the circular magazine driving means 16 by a first electrical link 34 and to distribution means 36 by means of a second electrical link 38; said distribution means 36 will be described hereinafter with reference to Fig. 2. Advantageously, the installation has a communications interface (not shown) between the central unit 24 and the actuators themselves: the distribution means 36 and the circular magazine driving means 16. This communications interface makes it possible to control the inputs/outputs and to run automated sub-routines in order not to saturate the computer in its serial scanning phases.

[0025] In said Fig. 2, the circular magazine 16 is shown together with a representation of a single reservoir 18 for the sake of clarity. The circular magazine 16 is capable of being driven in rotation in a plane perpendicular to the plane of Fig. 2 and about the axis

A. The reservoir 18 has a single opening 40 and it is turned so as to be mounted in a stationary position on the circular magazine 16, so that said opening 40 can open into a spout 42. In addition, with regard to each of the openings corresponding to each of the reservoirs, the circular magazine 16 comprises a trap (not shown) and is suitable for closing the openings. In addition, the spout 42 that extends substantially horizontally plumb to the opening 40 has a first end 43, which overhangs the open recipient 14 and a second opposed end 45 that overhangs a collection receptacle 47. In addition, the spout 42 is equipped with an endless screw 44 set into motion by driving means 46 suitable for driving in rotation in two opposing directions. In addition, the aspiration and filtration means (not shown) are connected to the spout 42 in order to drive the products towards the collection receptacle 47.

[0026] In addition, the distribution means 36 comprising opening means (not shown) make it possible to drive said traps in translation in order to free the openings when they are situated plumb with said spout 42.

[0027] The control means 22 of installation for realizing magistral preparations 10 as represented in Fig. 1 comprise a specific computer program suitable for controlling said installation 10.

[0028] Reference is now made to Fig. 4 for a description of the different steps in utilization of the automatic installation for realization of magistral preparations 10 by said aforementioned specific computer program.

[0029] First of all, when the reservoirs 18 are mounted in the circular magazine 16, they are first filled with the ingredient corresponding to their barcode and a corresponding weight value of said ingredient contained in the reservoir is saved in the computer memory. Thus, the weight of each of the ingredients contained in said reservoirs 18 is saved in memory.

[0030] In addition, a plurality of magistral preparations is also stored in the computer memory. Each of the magistral preparations comprises information on the ingredients that it contains and on the required weight of each of these ingredients.

[0031] In a first step 50 of utilization, upon starting the control means 22, the microcomputer launches the program that then displays on the screen 28 a choice of magistral preparations. After a choice of magistral preparation has been made, on the one hand a list of the ingredients of said selected magistral preparation is displayed on the screen 28 and on the other hand, in a second step 52, the computer program at once controls the rotation of the circular magazine 16 and the sequential reading of the barcodes of all of the reservoirs 18 mounted on said circular magazine so that each of the ingredients of said list is available and to record its position relative to all of the other reservoirs. In addition, the computer program subtracts, for each of the ingredients, the weight required for formulating said magistral preparation from the weight value previously stored in the computer memory from the weight of the product contained in the reservoir 18. Obviously, after the reservoirs 18 have been filled, this subtraction is positive for all of the ingredients.

[0032] Then the computer program carries out a first test 54 making it possible to verify if the aforementioned subtraction is positive and if, consequently, the quantity of each of the ingredients of the magistral preparation selected is sufficient for compounding it. If this is not the case, the computer program stops and displays an error message 56; if not, it continues with normal operation.

[0033] By continuing its normal operations and in a third step 58, the computer program controls the driving means of the circular magazine 16 in order to bring the reservoir 18 corresponding to the first ingredient of said list, in front of the open container 14. In order to do this, the program stops the circular magazine 16 when the reading device 20 identifies the reservoir that is scaled at 7/22ths of a rotation relative to the reservoir of the first ingredient of said list, in the counter clockwise direction. This is made possible in virtue of the prior calibration of the reservoirs 18 each one relative to the others.

[0034] Then, the computer program controls, in a fourth step 60, the opening means for driving said trap and allowing the corresponding ingredient to flow through the opening 40 and into the spout 42. The, in a fifth step 62, the program controls the driving means 46 in a first direction of rotation, so as to drive the endless screw 44 in the same direction of rotation so that it carries ingredient along which then arrives in the spout 42, towards the first end 43 and further, into the bottom of the con-

tainer 14 situated further down. During this fifth step 62, the scales 12 transmits to the central unit 24 signals representing a variation in weight that corresponds to the weight of the ingredient delivered into the container 14.

[0035] In a second test 64, the computer program then checks, if the determined weight of the first ingredient of said list is attained. As long as said weight has not been reached, the driving means 46 continue to drive the endless screw 44. In contrast, once the computer program identifies that a weight value transmitted by the scales 12 is equal to that of the determined weight of the first ingredient, in a sixth step 66, it commands the stop of the driving means 46, the closure of the opening 40 and then, again, the driving means 46, but in a reverse direction of rotation. In this fashion, the endless screw 44 carries the ingredients remaining in the spout 42 towards the recovery receptacle 47. Thus, the spout 42 is cleared of any ingredient and it can receive the ingredient of another reservoir 18.

[0036] Before this, and in a seventh step 68, the computer program stores the actual weight value of the preceding ingredient delivered and which is measured by the scales 12.

[0037] Then, during a third test 70, the computer program verifies that all of the ingredients of said list have been delivered into the container 14, and in the negative case, returns to the third step 58 and controls the circular magazine 16 in rotation, in order to bring the reservoir of the second ingredient of said list in front of the container 14. In the same fashion and for this second ingredient, the computer program commands the installation to run the third test 70.

[0038] Thus, the computer program is suited to control the dispensing of all of the ingredients of said list in their respective weights and to do so entirely automatically, until the third test 70 indicates that all of the ingredients of said list have been delivered into the container 14.

[0039] In this case, and in an eighth step 72, the computer program then commands means that will be described hereinafter with reference to Fig. 3 and which make possible the mixing together of the ingredients.

[0040] Figure 3 diagrammatically represents in part the circular magazine 16 over which the reservoirs 18 are mounted. For the purpose of illustration and in order to simplify the drawing, only two reservoirs have bar codes 17 and 19. However, all of the reservoirs have a barcode representative of the ingredients they contain, respectively. Also shown here are the scales 12 and the container 14 positioned on its plate, said container 14 now being between two parallel belts 74, 76. These two parallel belts 74, 76 are suitable for being held in extension between two supports 78, 80 and being driven parallel in translation in the direction of an agitator 82, arranged in the vicinity of the scales 12. In this fashion, the container 14, held locked between the two belts 74, 76 can be carried to be plumb with the agitator 82. However, this transfer system of the container 14 can be replaced advantageously by pendulum guiding means that make it possible to raise the container 14 from the scales, in order to transfer it in line with the agitation system.

[0041] Then, the agitator 82 is controlled so as to be introduced into the container 14, closure means being provided for simultaneously closing said container 14 so as to prevent any contamination of said preparation and to confine it in the container 14 during agitation. Then the agitator is controlled in rotation in order to homogenize all of the ingredients of the preparation so formulated.

[0042] Then the ingredients homogenized in this fashion can be automatically encapsulated or placed into gelatin capsules in virtue of encapsulation means known per se.

[0043] The supports 78, 80 are equipped with driving means in translation of the belts 74, 76; these driving means in translation being capable of being controlled via a connection 84 connected to the central unit 24 by the computer program. In addition, the agitator 82 is also connected to the central unit 24 via another connection 86.

[0044] Thus, in the eighth step 72, the computer program is suitable for controlling the driving means in translation for carrying the container 14 to the agitator 82 and then for controlling said agitator 82 and mixing the ingredients of said preparation.

[0045] In an eighth step 88, the computer program is suitable for controlling said aforementioned encapsulation means. Finally, the computer program is capable of controlling the printing means (not shown), in a final step 90, so as to provide the list and the proportion of ingredients of the preparation so formulated and the actual weights of the ingredients it contains.

[0046] According to another embodiment of the invention, the circular magazine or table is vertically mobile in order to assure the connection of the reservoirs or bottles to the spout equipped with the endless screw or pump. To this end, the reservoirs are equipped with a coupling end. Thus, when the reservoir is brought in line with the spout, the circular magazine is driven in translation downwards in order to connect the reservoir and the spout. In addition, the reservoir has a neck, which is closed off by a lateral hatch, which is brought into a position opposite to a mobile piston when the circular magazine moves down. Accordingly, the mobile piston can be driven in translation and is capable of operating the hatch and effecting the evacuation of the product contained in the reservoir towards the spout. After the quantity of material has been dispensed, the hatch is closed again and the circular magazine raised.

[0047] In addition, the bar code reader is advantageously mounted overhanging the spout and gently moved upstream relative to the direction of rotation of the circular magazine, so as to compensate for the inertia of reaction due to the rotation of the circular magazine. Furthermore, locking means for the circular magazine are provided, which make it possible not only to block rotation during the product dispensing operations but also to bring it into a position, wherein the receptacle is

precisely in line with the spout.

[0048] According to another variation of the invention, the circular magazine has two circular concentric rows of reservoirs, the respective reservoirs of the two circular rows being angularly offset. In addition, two spouts are required; the one for the first inner circular row and one for the second circular peripheral row.

[0049] The inner circular row makes it possible to receive the larger-volume containers containing the excipients, for example. Furthermore, the spout that is adapted to connect with said inner circular row and the container is on the one hand of a greater diameter than the other spout and it is equipped with a larger endless screw so as to dispense the products with a greater throughput.

[0050] According to one particular embodiment of the invention, the speed of distribution of the products into the container 14 is modulated as a function of the mass already delivered. In particular, not only is the endless screw driven by a slower rotational speed when the powder mass or the remaining product to be dispensed in order to obtain the set value is less than the dead volume contained in the spout but, in addition, the closure hatch of the container is closed. Accordingly, product losses are limited, because the product contained in the spout serves to adjust the set weight value and further, the spout is at least partially cleaned.

Claims

1. An installation (10) for realizing magistral preparations, each magistral preparation containing determined weights of a plurality of given ingredients, each of said ingredients being capable of being contained in a reservoir (18) having and identification marking of the ingredient contained, said installation (10) comprising the suitable means for weighing (12) and means for receiving (14) for being mounted on said weighing means (12), the ingredients being capable of being delivered into said receiving means (14) from each of said reservoirs (18), said weighing means (12) being suitable for providing a weight value of the ingredient delivered, **characterized in that** it comprises

   - identification means (20, 17, 19) suitable for identifying said reservoirs;
   - transfer means (16) for transferring the identified reservoirs to said receiving means into a distribution position;
   - distribution means (36) for distributing the ingredient from each of said reservoirs arranged in said distribution position, into said receiving means, and
   - controlling means (22) suitable for controlling, for each of said ingredients of said plurality of given ingredient, said means of transfer (16) for transferring the reservoir identified by said means of identification (20, 17, 19) into said distribution position and, said distribution means (36) until said determined weight of the corresponding ingredient is obtained.

2. An installation (10) for realizing magistral preparations according to Claim 1, wherein it comprises in addition means for mixing (82) the ingredients contained in said receiving means (14) and in that said mixing means are capable of being controlled by said controlling means (22).

3. An installation according to Claim 1 or 2, wherein it comprises in addition means for encapsulation in unit doses, said encapsulation means being capable of being controlled by said controlling means.

4. An installation according to any one of Claims 1 to 3, wherein said identification marking (17, 19) being comprised of a bar code, said identification means comprising a barcode reader (20).

5. An installation according to any one of Claims 1 to 4, wherein said transfer means comprise a rotating magazine (16), wherein said reservoirs (18) are arranged.

6. An installation according to any one of Claims 1 to 5, wherein said distribution means (36) comprise at least one endless screw (44) suitable for extending into said distribution position between said reservoir (18) and a point situated plumb with said receiving means (14).

7. An installation according to any one of Claims 1 to 6, wherein said controlling means comprise a computer (22), said computer comprising a specific computer program suitable for controlling said installation (10).

8. The method of realizing magistral preparations, **characterized in that** it utilizes an installation according to any one of Claims 1 to 7.

9. A software product comprising a user interface, **characterized in that** it comprises said specific computer program according to Claim 7.

10. The software product according to Claim 8, wherein the user interface comprises a formulation editor suitable for editing the preparations formulated.

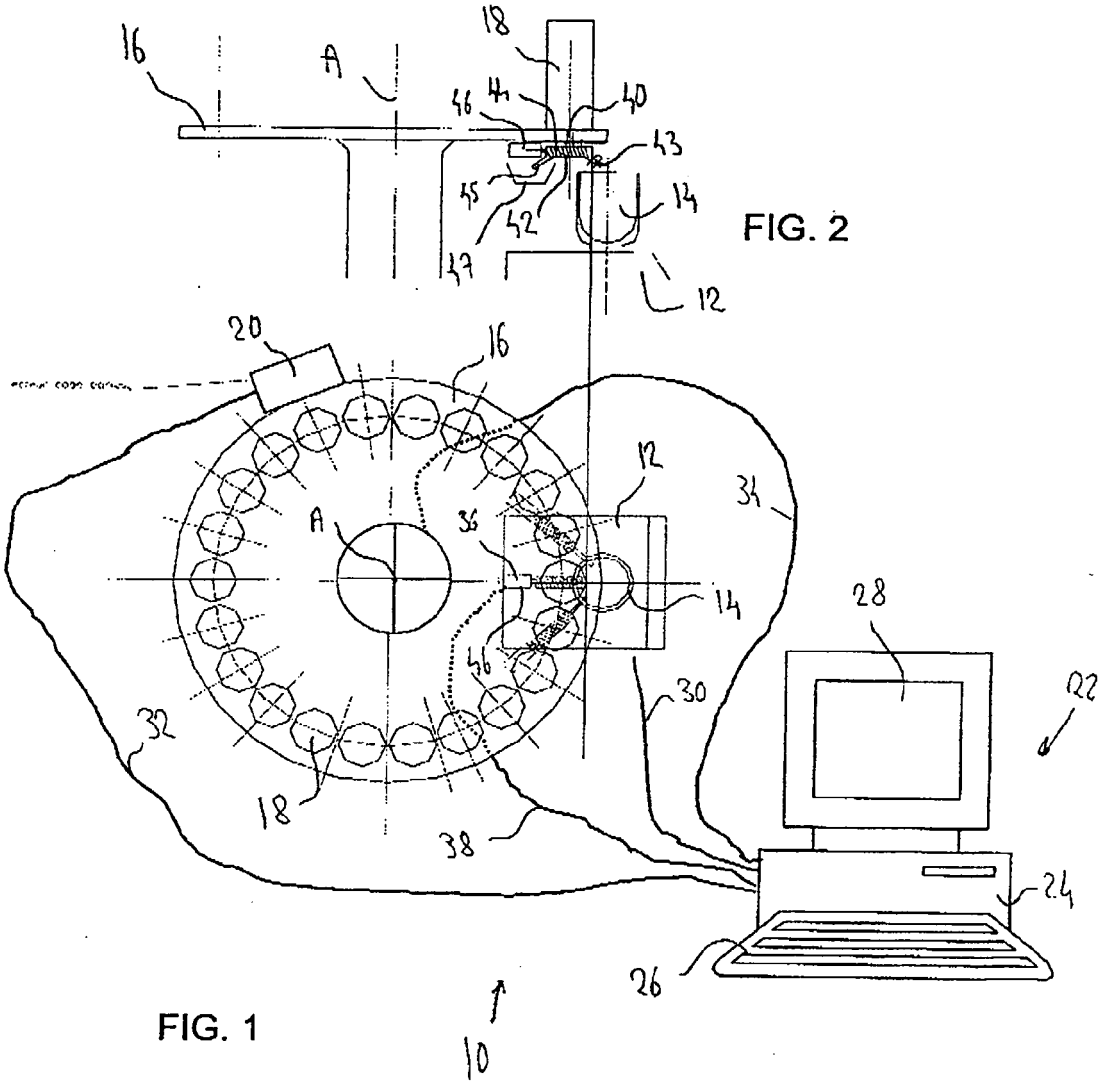
16
A
18
46
44
40
43
45
42
47
14
12
20
16
12
34
A
36
14
28
22
30
32
18
38
24
26
10

FIG. 2

FIG. 1

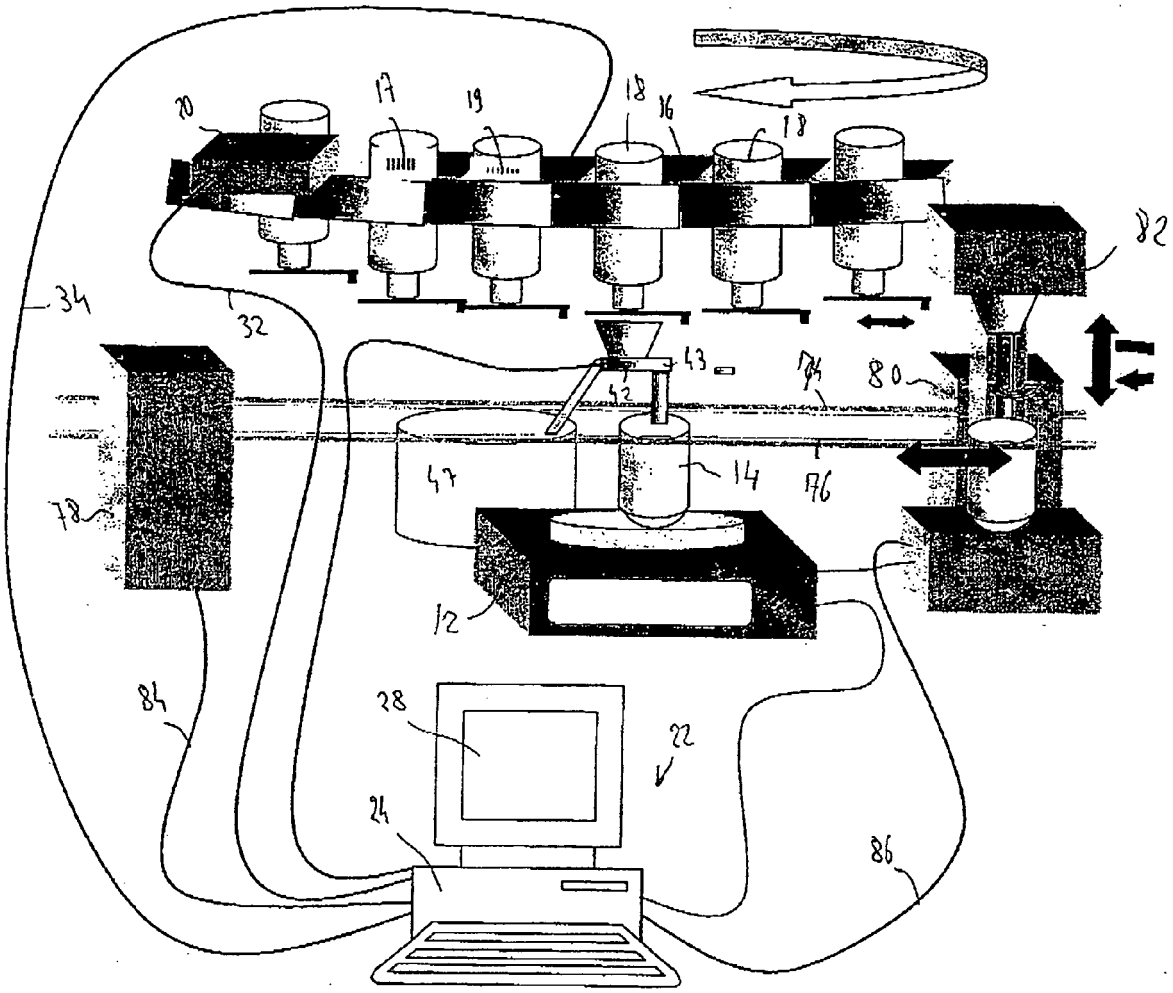

FIG. 3

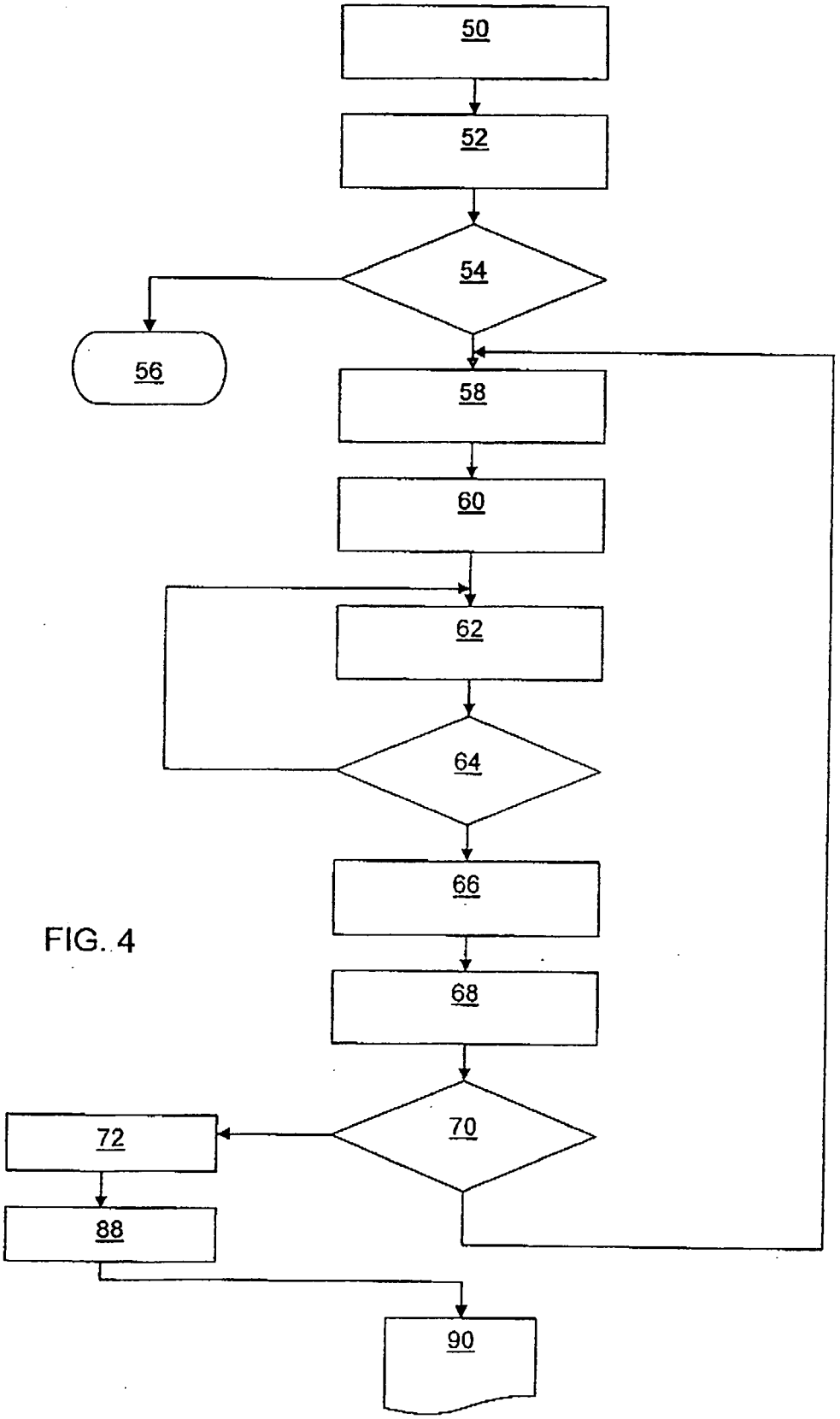

FIG. 4

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 04 02 2875

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 093 842 A (ESMORIS RODRIGUEZ, MARIA JESUS) 25 April 2001 (2001-04-25) * paragraphs [0021] - [0025], [0027], [0028], [0030]; claim 1; figures *	1-8	A61J3/00 B01F13/10
X	US 5 938 080 A (HAASER ET AL) 17 August 1999 (1999-08-17)	1,5,7,8	
A	* column 8, line 42 - column 9, line 16; figures *	2,4	
A	US 5 111 855 A (BOECK ET AL) 12 May 1992 (1992-05-12) * column 3, line 13 - line 53; figures *	1-10	
A	US 3 933 272 A (LAMB ET AL) 20 January 1976 (1976-01-20) * column 6, line 20 - line 29; figures *	3	
A	EP 0 348 077 A (YAMATO SCALE COMPANY, LIMITED) 27 December 1989 (1989-12-27) * column 3, line 31 - line 34; figures *	6	
	-/--		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A61J
B67C
A47J
B65B
B67D
B01F

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
The Hague	24 February 2005	Cametz, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C07)

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 04 02 2875

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	WO 98/31322 A (TEEPLE, EDWARD, JR) 23 July 1998 (1998-07-23) * page 37, line 10 - page 38, line 6; figures * -----	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7)

EPO FORM 1503 03.82 (P04C10) 2

European Patent Office

INCOMPLETE SEARCH SHEET C

Application Number
EP 04 02 2875

Claim(s) not searched:
9,10

Reason for the limitation of the search (non-patentable invention(s)):

Article 52 (2)(c) EPC - Program for computers

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 02 2875

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-02-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1093842 A	25-04-2001	EP 1093842 A1	25-04-2001
		AT 239543 T	15-05-2003
		DE 69907680 D1	12-06-2003
		DE 69907680 T2	22-01-2004
		DK 1093842 T3	01-09-2003
		ES 2198871 T3	01-02-2004
		PT 1093842 T	30-09-2003
US 5938080 A	17-08-1999	AT 255032 T	15-12-2003
		AU 744968 B2	07-03-2002
		AU 6937698 A	09-09-1998
		BR 9807595 A	22-02-2000
		CA 2291083 A1	27-08-1998
		DE 69820071 D1	08-01-2004
		DE 69820071 T2	26-08-2004
		EP 1260435 A1	27-11-2002
		EP 1009655 A1	21-06-2000
		HU 0001338 A2	28-06-2001
		JP 2002501463 T	15-01-2002
		NO 994037 A	18-10-1999
		PL 335354 A1	25-04-2000
		WO 9836968 A1	27-08-1998
US 5111855 A	12-05-1992	DE 3824727 A1	25-01-1990
		AT 98518 T	15-01-1994
		DE 58906417 D1	27-01-1994
		EP 0351681 A1	24-01-1990
		ES 2047612 T3	01-03-1994
		JP 2068125 A	07-03-1990
US 3933272 A	20-01-1976	CA 1002912 A1	04-01-1977
EP 0348077 A	27-12-1989	JP 2004604 A	09-01-1990
		JP 2779937 B2	23-07-1998
		DE 68902430 D1	17-09-1992
		DE 68902430 T2	25-02-1993
		EP 0348077 A1	27-12-1989
		US 4928473 A	29-05-1990
WO 9831322 A	23-07-1998	US 5807316 A	15-09-1998
		AU 739664 B2	18-10-2001
		AU 5824798 A	07-08-1998
		BR 9807485 A	19-06-2001
		JP 2001509059 T	10-07-2001
		RU 2212223 C2	20-09-2003
		WO 9831322 A1	23-07-1998

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82