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(54) **DRUG DISPENSER**

(57) A drug dispenser (10) comprises a container (20) having a plurality of individual compartments (30) arranged in the container (20) so as to define a series of columns and/or rows. The dispenser (10) further comprises a plurality of drug holding drawers (40) slidably insertable in a respective compartment (30), each drawer (40) being particularly adapted to receive within it one or

more drugs to be dispensed. The dispenser (10) further comprises a lock mechanism for retaining each drawer (40) within the respective compartment (30), and comprising a magnet (60) arranged on the drawer (40) and a metal element (64) arranged in the container (20) at the compartment (30).

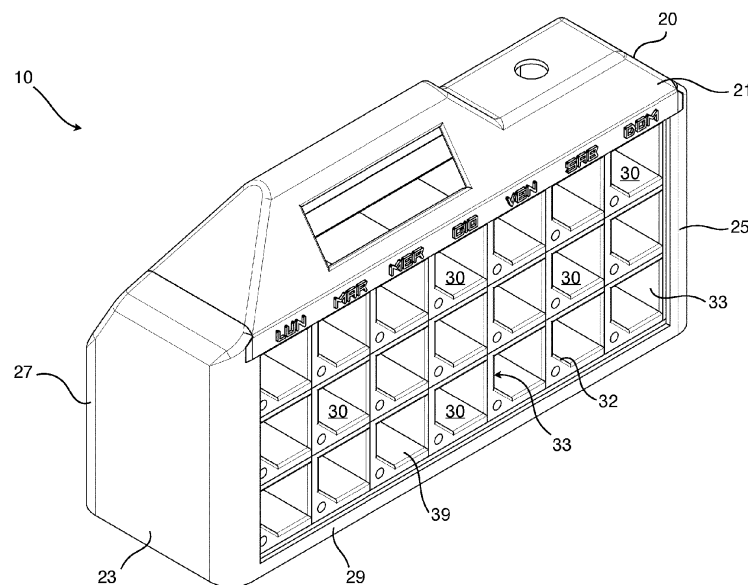


FIG. 1

DescriptionTECHNICAL FIELD

[0001] The present invention relates to the sector of drug dispensers, and in particular to a drug dispenser for making available drugs, previously stored in the dispenser, according to predetermined time intervals.

PRIOR ART

[0002] Patients who need to take drugs every day often need to take them at different times of day. Furthermore, in many situations, a different time can correspond to a different drug or a combination of different drugs.

[0003] Drug dispensers are used to fulfil this need and to allow patients to take the correct drug, or the combination of correct drugs, at the predefined time and day of the week. However, dispensers of the known type are often too complex and difficult for patients to manage. Therefore, patients are discouraged from using them and they avoid accessing, and taking, the drug when necessary.

[0004] Most dispensers currently allow the management of a limited quantity of drugs.

[0005] Another limit of dispensers of the known type is that they make the drug, or the combination of drugs, available on the basis of a particular time period but do not make it possible to verify whether such drug has been collected by the patient, and therefore do not provide sufficient information to a social services operator in relation to the therapy in progress.

[0006] Some dispensers of the prior art are timed to make the drug, or group of drugs, accessible only at a predetermined time of a predetermined day. However, these dispensers comprise lock mechanisms for the drug housings which are very complex and impossible to unlock in the event that the dispenser is not connected to the power supply or has a flat battery. In this way, the drug is not available even if the patient is able to independently remember the time and day of the week at which to take it.

[0007] Yet another problem of dispensers of the known type, timed or not, is that the housings in which the drugs are stored for each administration are difficult to reach or very narrow so as not to excessively increase the dimensions of the dispenser. In these cases, in an attempt to collect the drug to be taken, patients find it very difficult to reach, grasp and take it out or even risk dropping it, with the consequence that they can no longer take the envisaged drug.

[0008] The object of the present invention is that of solving the drawbacks of timed dispensers of the known type.

[0009] Another object of the present invention is that of providing a device with easy application and reduced maintenance.

[0010] Such objects are achieved by the features of

the invention indicated in independent claim 1. The dependent claims outline preferred and/or particularly advantageous aspects of the invention.

5 DISCLOSURE OF THE INVENTION

[0011] In accordance with the aforesaid aims, the present invention makes available a drug dispenser comprising:

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- a container having a plurality of individual compartments arranged so as to define a series of columns and/or rows,
- a plurality of drug holding drawers slidably insertable in a respective compartment, each drawer being particularly adapted to receive within it one or more drugs to be dispensed,
- a lock mechanism for retaining each drawer within the respective compartment, characterised in that the lock mechanism comprises a magnet arranged on the drawer and a metal element arranged in the container at the compartment.

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[0012] Thanks to such solution, it is possible to keep the drawers in the compartments also in the event of undesired inclinations of the dispenser preventing the exit of the drugs and, at the same time, it is possible to facilitate the extraction of the drawers for patients with tremors or refined movement difficulties, who have to exercise a simple traction without accessing complex mechanisms.

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[0013] Another aspect of the present invention envisages a sensor mechanism, said sensor mechanism comprising the magnet arranged on a drawer and a proximity sensor arranged at a respective compartment and activatable by said magnet.

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[0014] Thanks to such solution it is possible to notably simplify the manufacturing of the dispenser, reduce the number of necessary components and use the dispenser also in reduced electric power conditions.

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[0015] Another aspect of the present invention envisages that the plurality of individual compartments is arranged in the container so as to define a series of columns and rows, each column representing one day of the week and each row representing a time part of the day at which the drug is to be dispensed, the dispenser further comprising an electronic control board to which said proximity sensor is connected.

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[0016] Thanks to such solution, it is possible to transform the drug dispenser into a timed and automated dispenser, able to manage a complex and prolonged treatment plan over time. Another aspect of the present invention envisages a plurality of visual indicators arranged at each compartment and connected to said electronic board.

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[0017] Thanks to such solution it is possible to facilitate the identification of the drug, or of the group of drugs to be taken and provide indications for the patient in the

event of taking out the wrong drawer.

[0018] A further aspect of the present invention envisages an RTC module, a power supply, a display and an alarm button.

[0019] Thanks to such solution it is possible to provide the patient with communication devices from and to a remote station, e.g. the physician or reception of a ward, for any emergencies or for verifying the correct implementation of treatment.

[0020] Another aspect of the present invention envisages that the drawer also comprises a lower wall, two opposing lateral walls, a rear wall, a front wall, a base wall and at least one inclined wall that connects one of the lateral walls with the base wall.

[0021] Thanks to such solution, it is possible to facilitate the collection of the drug, or of the group of drugs, inside the drawer.

[0022] Another aspect of the present invention envisages that the internal surfaces of the drawer are connected to one another with a curved surface.

[0023] Thanks to such solution it is possible to prevent the accumulation of dirt or residues inside the drawer, increasing the hygiene conditions of the device.

[0024] Another aspect of the present invention envisages that on the front wall of the drawer there is a handle particularly suitable for facilitating the grip of the drawer.

[0025] Yet another aspect of the present invention envisages that the sensor and the metal element are engaged with the electronic board.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Further characteristics and advantages of the present invention shall become clearer from the following description, provided by way of example with reference to the appended figures wherein:

- figure 1 is an axonometric view of one of the embodiments of the drug dispenser of the present invention;
- figure 2 is a front view of a further embodiment of the dispenser of the present invention;
- figure 3 is an axonometric view of a drug holder drawer according to the present invention;
- figure 4 is a section view of the drawer of figure 3;
- figure 5 is a further view of the drawer of figure 3 that highlights some internal components;
- figure 6 is a view of the drug dispenser of figure 2 that highlights some internal components;
- figure 7 is a front view of a further embodiment of the dispenser of the present invention;
- figure 8 is a front view of yet another embodiment of the dispenser of the present invention; and
- figure 9 is an axonometric view of another embodiment of the dispenser of the present invention.

[0027] To facilitate understanding, identical reference numbers have been used, to identify common identical elements in the figures. It is to be understood that ele-

ments and characteristics of an embodiment can be conveniently incorporated into other embodiments without any further specifications.

BEST WAY TO ACTUATE THE INVENTION

[0028] Reference will now be made in detail to the various embodiments of the invention, one or more examples of which are illustrated in the appended figures. Each example is provided merely by way of illustration of the invention and is not intended as a limitation thereof. For example, the technical characteristics illustrated or described as they are part of an embodiment can be adopted on, or in association with, other embodiments for producing a further embodiment. It is to be understood that the present invention shall be inclusive of such modifications and variants.

[0029] It is also underlined that the present description is not limited in its application to the construction details and layout of the components as described in the following using the appended figures. The present description can envisage other embodiments to be implemented or put into practice with other technically equivalent characteristics. The terms used in the following have a merely descriptive aim and must not be considered as limiting.

[0030] The present invention relates to a drug dispenser, generally indicated by number 10, which comprises a container 20, substantially rectangular, with an upper wall 21, two opposing lateral walls 23, 24, a rear wall 27, and a base wall 29.

[0031] Within the container 20 a plurality of individual compartments 30 are obtained, elongated in the direction of the lateral walls 23, 25 of the container 20 and with a polygonal cross section.

[0032] In the embodiment illustrated in the appended figures, the compartments 30 comprise at least one base wall 39, two opposing lateral walls 33, 35, and an inclined lateral wall 32, e.g. inclined by 45°, which connects one of the lateral walls 33 of the compartment 30 with the base wall 39 thereof.

[0033] The compartments 30 are arranged in the container 20 so as to define a series of columns and rows, each column representing a day of the week and each row representing a time part of the day. In the embodiment illustrated in the appended figures, there are seven columns and three rows in each column, for the management of a pharmacological treatment organised on a weekly basis.

[0034] Naturally, it is possible to provide a different number of columns or lines according to the treatment requirements and the patient. For example, figure 9 illustrates an embodiment comprising a single column and three rows.

[0035] The compartments 30 can be obtained as a single piece, e.g. by moulding, within the container 20, or by means of a plurality of vertical and horizontal walls inserted within the container 20, or according to any other means of the known type without departing from the

scope of the present invention. Likewise, the compartments 30 could have different shapes and sizes from those described herein and illustrated in the appended figures. The seven columns are divided so as to represent one day of the week each. Each of the three rows must be assigned to different parts of the day, such as the morning, afternoon and evening. Alternatively, the rows can be assigned to certain hours of the day, e.g. when drugs are prescribed every eight hours.

[0036] The drug dispenser 10 further comprises a plurality of drug holder containers or drawers, generally indicated by 40, corresponding to the number of compartments 30. Each drawer 40 can be inserted slidably in a respective compartment 30.

[0037] Each drawer 40 is a single separate container, with at least two opposing lateral walls 43, 45, a rear wall 47, a front wall 48 and a base wall 49. Each draw is open at the top.

[0038] The outer perimeter of each drawer 40 reproduces the same polygonal configuration as the internal surface of the compartments 30. As can be seen more clearly in figure 2, the drawer 40 comprises at least one inclined wall 42, e.g. inclined by 45°, which connects one of the lateral walls 43 with the base wall 49 of the drawer 40.

[0039] A projection or handle, generally indicated by number 50, is provided on the front wall 48 of the drawer 40 in order to facilitate the grip of the drawer 40 and the extraction thereof from and the insertion thereof into the compartment 30.

[0040] According to a particularly advantageous characteristic of the present invention, the inner surfaces of the inclined wall 42, of the lateral wall 45, of the rear wall 47 and of the front wall 48 of each drawer 40 are connected with the inner surface of the base wall 49 so as not to create 90° corners but a curved surface 41, eliminating the possibility of deposits of dust, drug residues and impurities in general being collected in such connections. Furthermore, together with the inclined wall 42, such conformation of the inner surface of the drawer 40 promotes the collection of the drug also by patients with tremors or refined movement difficulties.

[0041] In order to retain each drawer 40 inside the respective compartment 30, there is a lock mechanism for each drawer 40. As illustrated in the embodiment of Figure 2, the lock mechanism includes a magnet 60 arranged on the drawer 40, e.g. inserted into a housing 62 obtained on the rear wall 47 of each drawer 40. The lock mechanism further comprises a metal element, by way of non-limiting example, a spacer column 64, arranged in proximity to the rear wall of the compartment 30. In this way when the drawer 40 is inserted into the compartment 30 the magnetic field generated by the magnet 60 attracts the drawer 40 towards the spacer column 64 and locks it in position.

[0042] The magnet 60 of the drawer 40 is also used in a sensor mechanism for determining the presence of the drawer 40 within the compartment 30. The sensor mechanism

comprises the magnet 60 and a sensor 70, e.g. a proximity sensor, more preferably a Hall effect sensor.

[0043] When the drawer 40 is inserted into the compartment 30, the magnetic field generated by the magnet 60 activates the sensor 70 which, in turn, generates an electric voltage which, as will become clear below, makes it possible to determine if and when the drawer 40 is inserted into the compartment 30.

[0044] The sensor mechanism can also comprise further and/or different types of sensor such as, for example, a load cell 72 or a piezoresistive sensor for determining the weight of the drawer, so as to be able to determine the weight differences before the drawer 40 is extracted and after it has been re-inserted into the compartment 30. In this way, it is possible to determine whether the drugs, or the group of drugs, have been collected by the patient or not.

[0045] The presence of the magnet 60 on the drawer 40 as a lock and sensor mechanism is a particularly advantageous characteristic also due to the fact that each drawer 40, completely extractable from the respective compartment 30, can be fully washed in water without the fear of damaging the lock and/or sensor mechanism.

[0046] According to a particularly advantageous characteristic, the drug dispenser 10 can also comprise an acoustic indicator.

[0047] In the embodiment illustrated, the drug dispenser 10 also comprises an alarm button 120, which the patient can activate in the event of feeling unwell or for other needs.

[0048] The drug dispenser of the present invention can also be of the timed type. More in particular, it may be a drug dispensing device which, through a software program, controls the time intervals for the administration of drugs, and checks whether the drugs have been collected or not from their container on the predefined day and time.

[0049] In order to perform the aforesaid functions, the drug dispenser 10 of the present invention comprises an electronic processing system, i.e. an electronic system able to provide an output signal after processing a determined input signal. In the embodiments illustrated, the timed drug dispenser 10 comprises an electronic board 100, or electronic circuit, arranged in proximity to the rear wall 27 of the container 20. The timed drug dispenser 10 further comprises a low consumption RTC (Real Time Clock) module, a power supply and a display 110.

[0050] In order to identify the time and day at which the drug, or group of drugs, contained inside each drawer 40 is to be taken, there is a visual indicator at each compartment. In the embodiment illustrated in the appended figures, an LED or a lamp 80 is provided at the inclined wall 32 of each compartment 30. The position of the LED 80 in the visual area of a "complete" drawer with a square section reduces the possibility of misunderstandings by the patient as to which drawer to access.

[0051] According to alternative embodiments, the timed drug dispenser 10 can comprise a UPS (Uninter-

ruptible Power Supply) and/or a video camera 130 for controlling the surrounding environment, in order to monitor even better the patient's behaviour and/or the effective compliance with the treatment. The video camera 130 may be either integrated or external.

[0052] According to a further particularly advantageous characteristic of the present invention, the video camera 130 can be used for the remote control of the patient by the care provider. In this case, the timed drug dispenser 10 will transmit the images acquired by the video camera 130 to predetermined appliances/clients connected remotely through a data connection. In this way, by also viewing the films from a long distance, the care provider will not only be able to make sure of the patient's state of health, but also check that the medicines are effectively taken.

[0053] According to another characteristic of the present invention, software may be loaded onto the electronic board 100, able to verify and record the taking of drugs by the patient, e.g. by means of the automated evaluation of the images of the drawers, the contents thereof and the way they are handled by the patient.

[0054] The sensors 70, the LEDs 80, the RTC module, the power supply and the display 110 are connected to the electronic board 100.

[0055] As illustrated in the embodiment of Figure 6, the metal elements 64 and the sensors 70 are engaged with the electronic board 100 and arranged, close to one another, at a respective compartment 30. When the drawer 40 is inserted into the compartment 30, the magnet 60 is coupled with the metal element 70. The magnetic field generated by the magnet 60 activates the sensor 70 which, in turn, generates an electric voltage that is received by the electronic board 100 and identified as a presence signal of the drawer 40 in the compartment 30.

[0056] In the alternative embodiments, also the uninterruptible power supply and the video camera 130 are connected to the electronic board 100.

[0057] During use, an operator, e.g. a nurse or social worker or the patient him/herself, fills each of the drawers 40 with the respective assortment of drugs required for a particular time of each day of the week. The timed drug dispenser 10 can be filled for a whole week at a time. The time of taking the drug for each day can already be set within the electronic board 100 according to standard programming, e.g. at 8 am, 2 pm and 8 pm. Otherwise, the operator can set an administration schedule, establishing a specific time for each drug for each day of the week.

[0058] To allow the interaction between the electronic board 100 and an operator, all the input systems of the known type can be used, without thereby departing from the scope of the present invention. For example, the timed drug dispenser 10 can comprise an input for connection with an external keypad, or the electronic board 100 can comprise an input for receiving data wirelessly or via bluetooth coming from a computer or a smartphone, or the electronic board 100 could even comprise

a device for data communication with a remote device by means of a network connection.

[0059] According to a further embodiment, the timed drug dispenser 10 can comprise a GSM (Global System for Mobile communications) able to send and receive an SMS (Short Message Service).

[0060] The display 110 can be used to allow further interactions of the operator with the electronic board 100 for the finalisation of the administration schedule. The display 110 can also be used to display the time and date, as well as the position of each drawer 40, if inserted or extracted, even partially and therefore not locked, from the compartment 30, like any other useful message for interaction with the operator and/or the patient.

[0061] Once the programming step is finished, the electronic board 100 can ensure that each drawer 40 is in the respective compartment 30, verifying that all the sensors 70 are active. In the event of a positive outcome of the check, the timed drug dispenser 10 is ready for use.

[0062] When the time and day of the week provided by the RTC module to the electronic board 100 coincide with one of the times and days of the week set in the drug administration schedule, the electronic board 100 switches on the LED 80 of the corresponding compartment 30, and/or switches on a sound signal, and/or shows information of interest to the patient on the display.

[0063] If the patient extracts the drawer 40 from the indicated compartment 30, the sensor 70 of that compartment 30 is switched off due to the absence of the magnet 60, the electronic board 100 detects the absence of signal, and therefore identifies the removal of the drawer 40, compares the compartment 30 from which the drawer 40 was extracted with the envisaged compartment 30 for that time and day and, if they coincide, it can switch off the sound signal and/or the LED 80.

[0064] If the patient extracts the drawer 40 from a different compartment 30 from the one indicated by the LED 80 and/or on the display, i.e. from the wrong compartment 30, and therefore the compartment 30 envisaged for that time and that day, the electronic board 100 switches on a different sound signal and/or modifies the type of lighting on the LED 80 and/or displays error information on the display for the patient.

[0065] When the patient enters the drawer 40 again into the compartment 30, the presence of the magnet 60 activates the sensor 70 of that compartment 30, the electronic board 100 detects the signal presence, and therefore identifies the repositioning of the drawer 40. In the event that the sensor mechanism comprises a load cell, the electronic board determines a weight value of the drawer and compares it with a weight value determined before the drawer was extracted. If the weight values coincide, the electronic board determines that the drugs, or the group of drugs, have not been collected by the patient and generates an alarm signal by means of the light and/or acoustic indicators and/or the display.

[0066] The time and date at which a drawer 40 is extracted or re-inserted into the compartment 30, like the

time intervals that pass between the switching on of 70 and the extraction of the drawer 40 are stored in the electronic board 100. In this way, the care provider is able to verify at any time whether the times have been respected, evaluate the reaction times of the patient to the warning emitted by the timed drug dispenser 10, and also the time taken by the patient taking the drug, or the groups of drugs, prescribed.

[0067] The lock mechanism between the magnet 70 of the present invention is particularly advantageous both because it keeps the drawers 40 inside the compartments 30 and in the event that the container 20 is inclined, and because it allows the detachment of the drawers 40 from the compartments 30 also in the event of a power cut and/or fault on the electronic board 100 of the timed drug dispenser 10.

[0068] According to an advantageous characteristic of the present invention, the electronic board 100 of the timed drug dispenser 10 can be programmed to perform the following actions through the communication devices indicated above:

- send a start message when the timed drug dispenser 10 is connected to an electric power supply;
- send a daily correct operating message or signal any errors, e.g. a fault on an LED, a broken sound indicator, etc.;
- send a "drawer opening" message whenever a drawer 40 is extracted from a compartment 30;
- send an alarm message when a predetermined drawer 40 is not extracted within a predetermined time interval, so as to allow the care provider to verify whether the patient is in trouble;
- send a warning message if the patient re-inserts into the housing 30 a drawer 40 still containing the drugs or the group of drugs.

[0069] The systematic sending of messages during the day is an indirect index of the presence and active mobility of the subject using the dispenser.

[0070] The timed drug dispenser 10 can also comprise interface devices with other medical devices such as, for example, devices able to check blood pressure, a blood sugar level test, a pulse reader and the like.

[0071] All the details can be replaced with other technically-equivalent elements. Likewise, the materials used, and the contingent shapes and sizes, may be any according to the requirements but without thereby departing from the scope of protection of the following claims.

Claims

1. A drug dispenser (10) comprising:

- a container (20) having a plurality of individual compartments (30) arranged in the container

(20) so as to define a series of columns and/or rows,

- a plurality of drug holding drawers (40) slidably insertable in a respective compartment (30), each drawer (40) being particularly adapted to receive within it one or more drugs to be dispensed,
- a lock mechanism for retaining each drawer (40) within the respective compartment (30),

characterised in that the lock mechanism comprises a magnet (60) arranged on the drawer (40) and a metal element (64) arranged in the container (20) at the compartment (30).

2. A dispenser according to claim 1, **characterised in that** it comprises a sensor mechanism (60, 70), said sensor mechanism comprising the magnet (60) arranged on a drawer (40) and a proximity sensor (70) arranged at a respective compartment (30) and activatable by said magnet (60).

3. A dispenser according to claim 1 or 2, **characterised in that** the plurality of individual compartments (30) are arranged in the container (20) so as to define a series of columns or rows, each column representing a day of the week and each row representing a time part of the day at which the drug is to be dispensed, the dispenser (10) further comprises an electronic board (100) to which said proximity sensor (70) is connected.

4. A dispenser according to claim 3, **characterised in that** it comprises a plurality of visual indicators (80) arranged at each compartment (30) and connected to said electronic board (100).

5. A dispenser according to claim 4, **characterised in that** it further comprises an RTC module, a power supply, a display (110) and an alarm button (120).

6. A dispenser according to any one of the preceding claims, **characterised in that** the drawer (40) comprises a lower wall (41), two opposing lateral walls (43, 45), a rear wall (47), a front wall (48), a base wall (49) and at least one inclined wall (42) that connects one of the lateral walls (43) with the base wall (49).

7. A dispenser according to claim 6, **characterised in that** the inner surfaces of the walls (42, 43, 45, 47, 48, 49) of the drawer are connected to one another with a curved surface (41).

8. A dispenser according to claim 6, **characterised in that** on the front wall (48) of the drawer (40) there is a handle (50) particularly adapted to facilitate the grip of the drawer (40).

9. A dispenser according to claim 3, **characterised in that** the sensor (70) and the metal element (64) are engaged with the electronic board (100).

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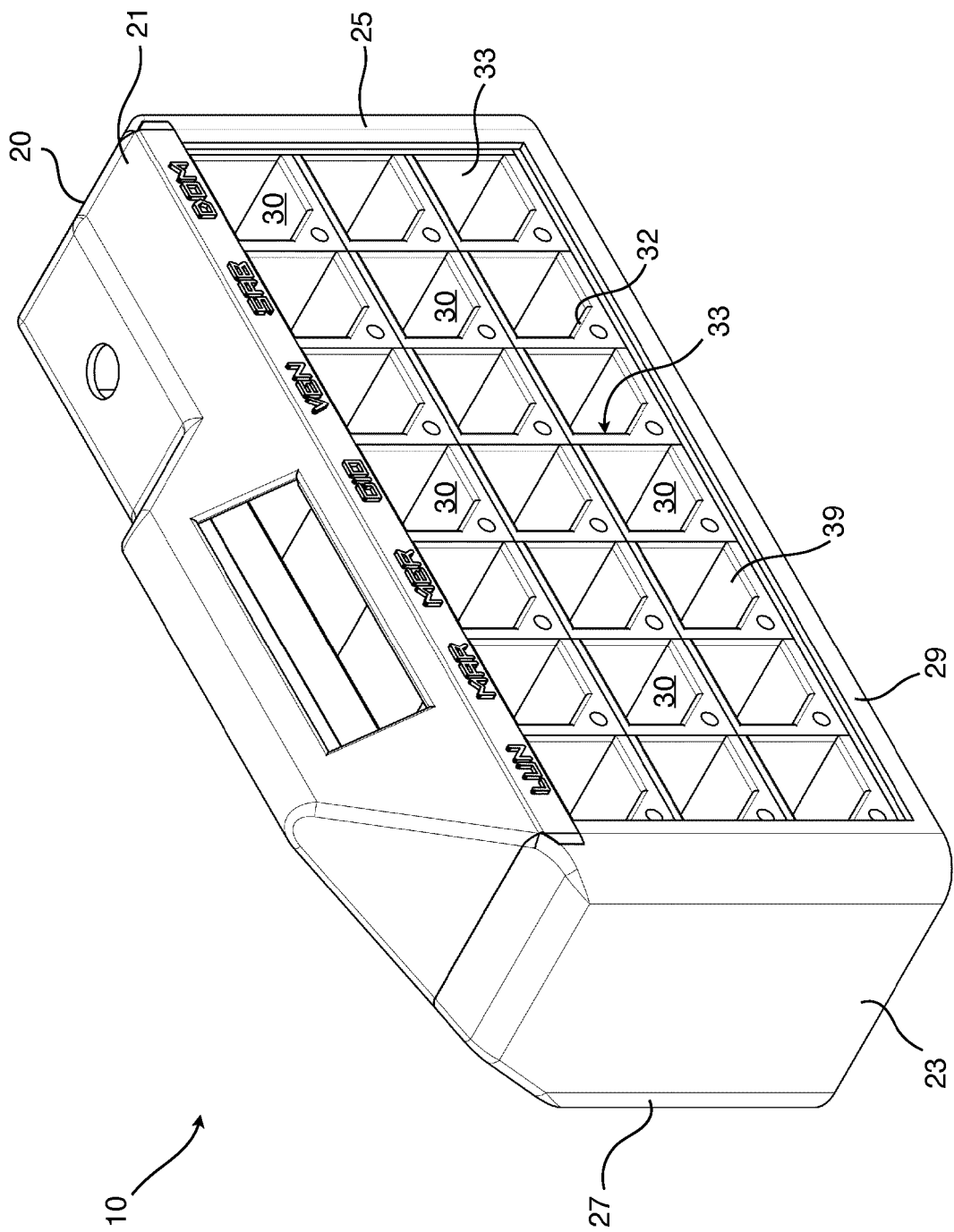


FIG. 1

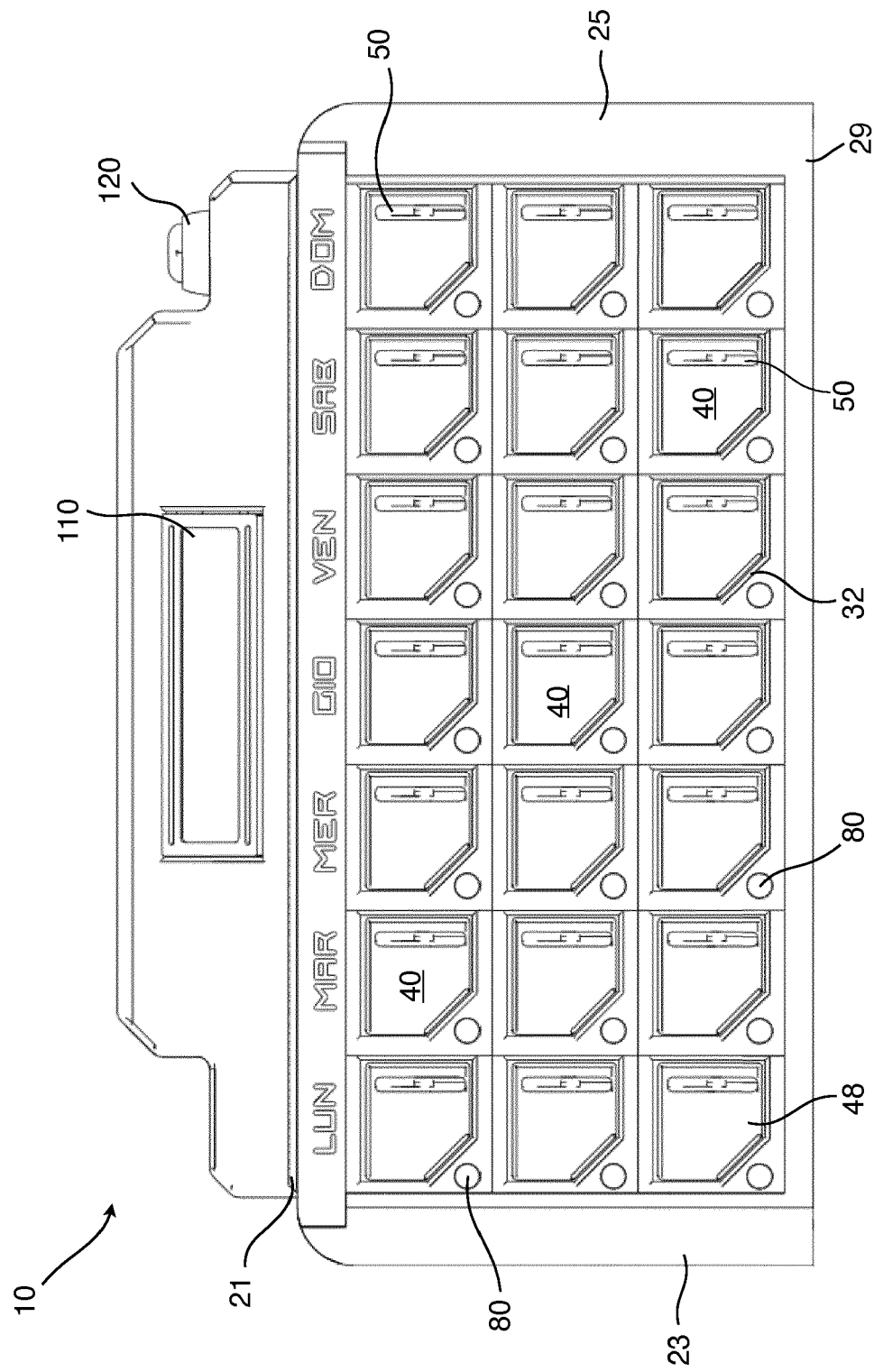


FIG. 2

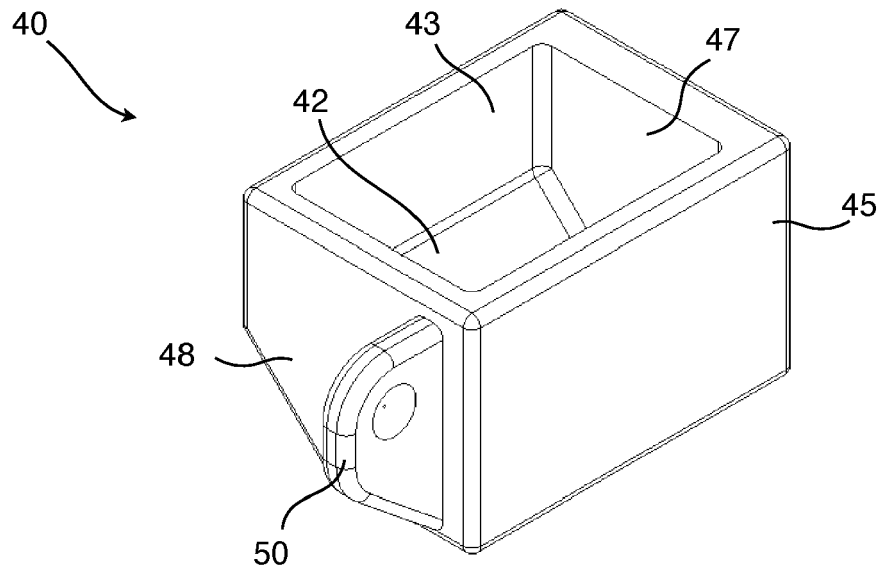


FIG. 3

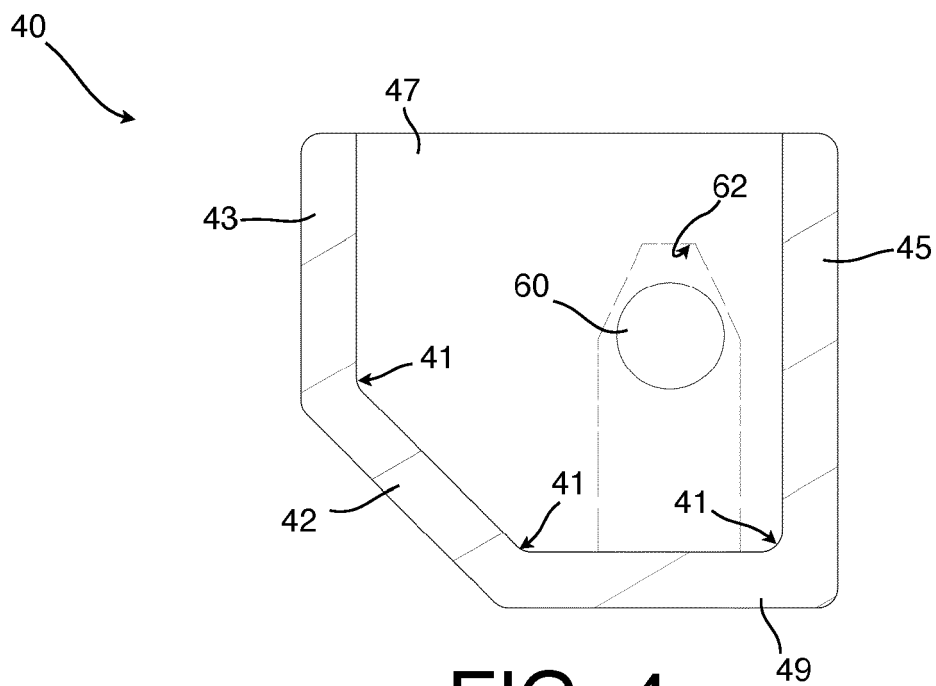


FIG. 4

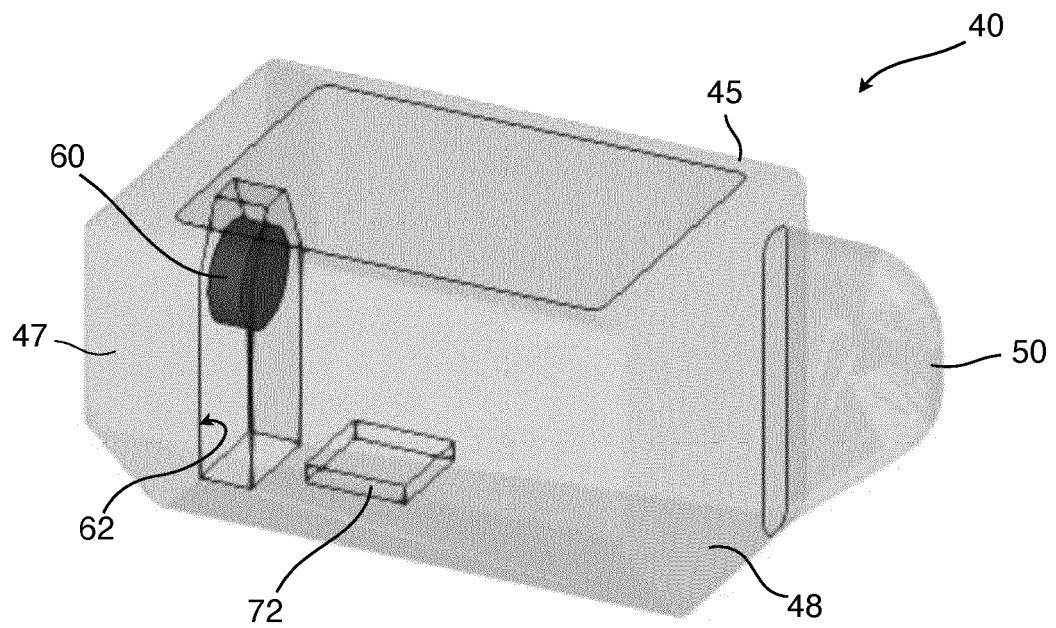


FIG. 5

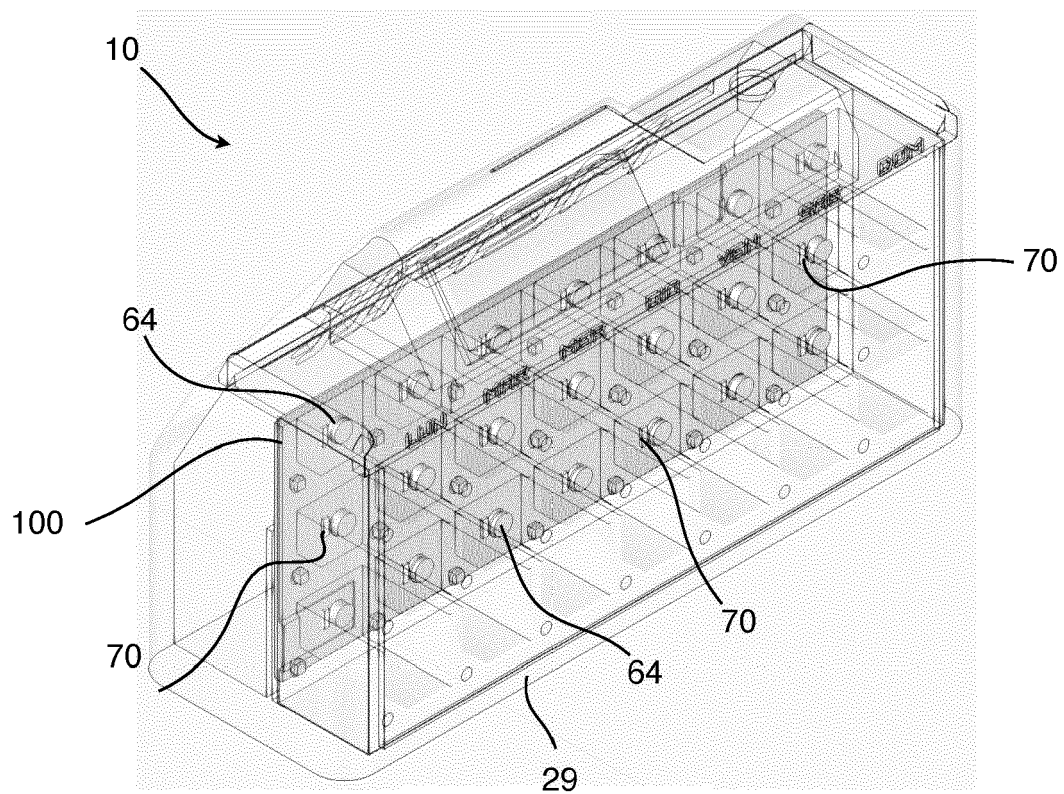


FIG. 6

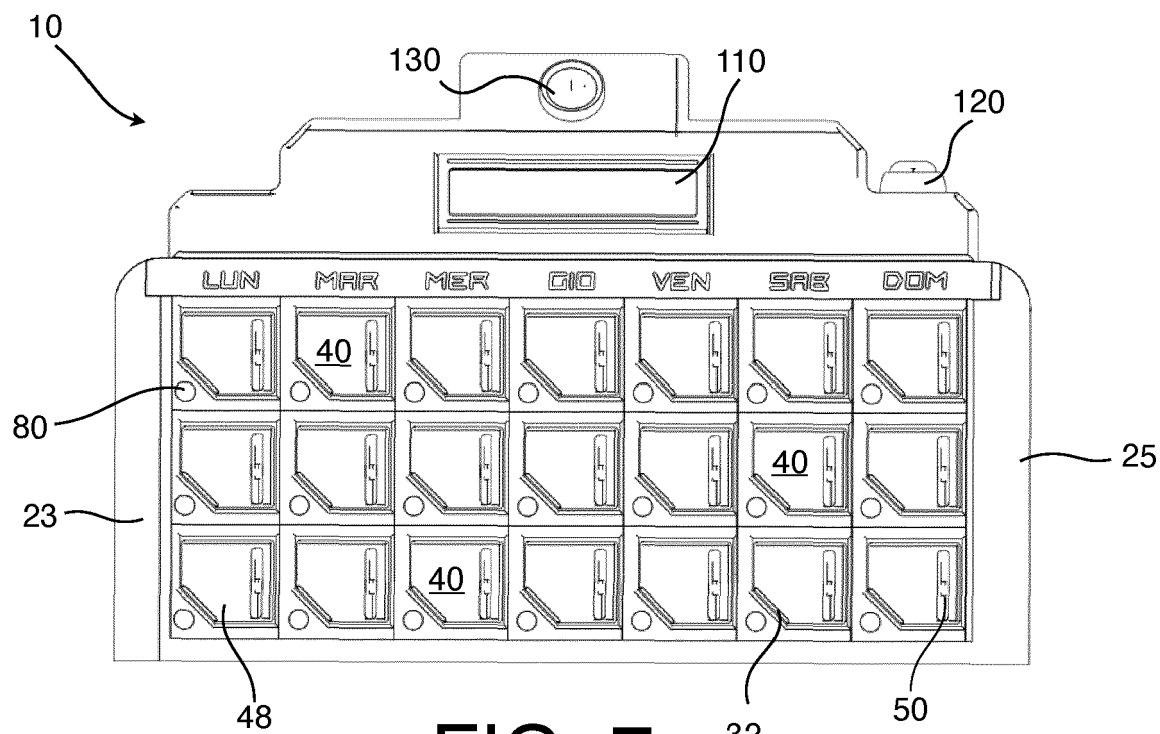


FIG. 7

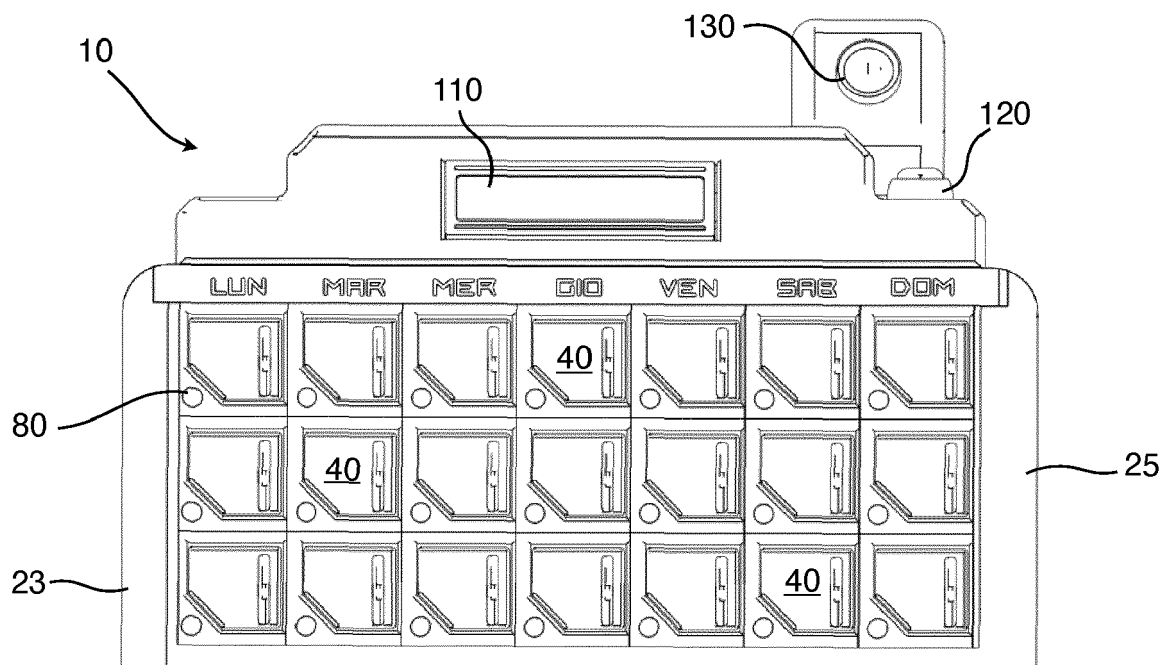


FIG. 8

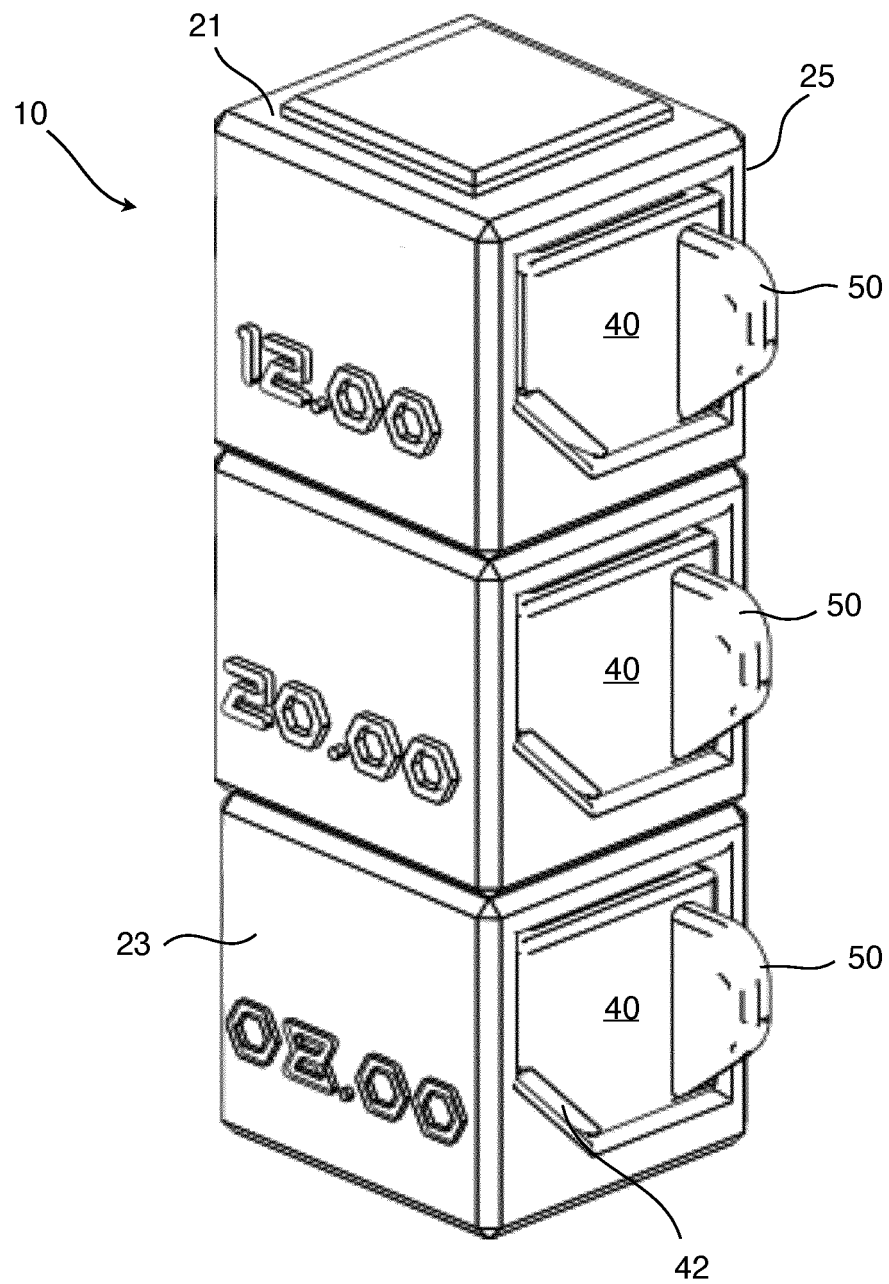


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 20 15 8724

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 9 916 715 B2 (MICRO DATASTAT LTD [US]) 13 March 2018 (2018-03-13) * column 4, line 21 - column 10, line 60 * * column 30, line 53 - column 31, line 30 * * figures 1-3, 4, 6, 8, 29, 30 *	1-9	INV. A61J7/04
X	US 2003/120384 A1 (HAITIN DAVID [IL] ET AL) 26 June 2003 (2003-06-26) * paragraph [0043] - paragraph [0076] * * figures 3-5 *	1	
X	WO 2014/160489 A1 (MEPS REAL TIME INC [US]) 2 October 2014 (2014-10-02) * paragraph [0064] - paragraph [0067] * * paragraph [0109] - paragraph [0119] * * figures 2, 22-25 *	1	
A	US 7 668 620 B2 (S & S X RAY PRODUCTS INC [US]) 23 February 2010 (2010-02-23) * column 5, line 54 - column 7, line 8 * * figures 1-7 *	2,3,9	TECHNICAL FIELDS SEARCHED (IPC)
A	US 2016/081881 A1 (ABABIO JULIET BRAGU [US]) 24 March 2016 (2016-03-24) * paragraph [0013] - paragraph [0016] * * figures 1, 2A *	3	A61J E05B
A	US 4 695 954 A (ROSE ROBERT J [US] ET AL) 22 September 1987 (1987-09-22) * column 10, line 55 - column 13, line 2 * * figures 7-10 *	4	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 July 2020	Examiner Schiffmann, Rudolf
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 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 15 8724

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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
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