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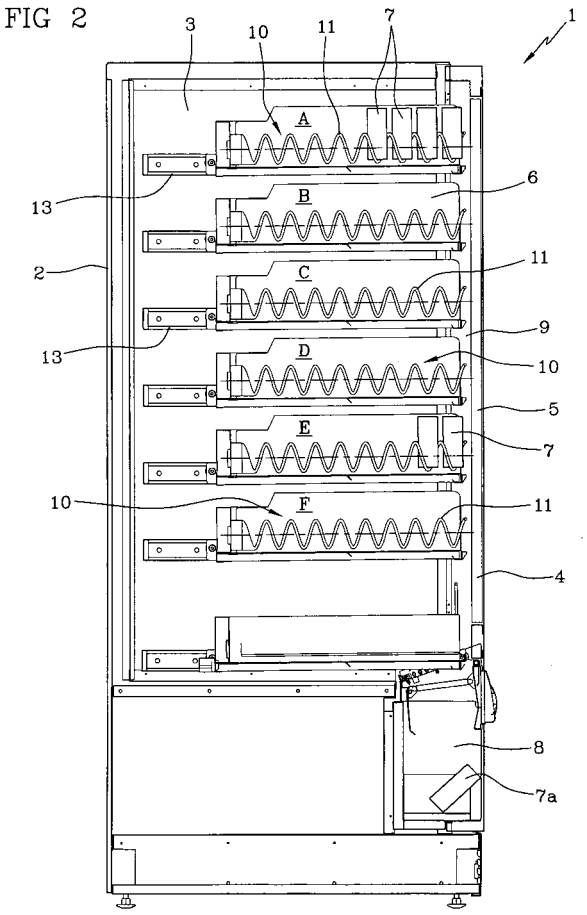
(54) **Products vending machine**

(57) It is disclosed a vending machine for selling goods in which the magazine (6) placed inside the housing space of the machine carries a predetermined number of items or goods (7) to be released; the magazine is movable internally of the housing space (3) between a first operating position at which the goods to be released are moved close to the transparent portion (5) to increase visibility of same from the outside, and a second operating position at which the magazine is moved backwards relative to the transparent portion (5) to enable release of the selected item to the picking-up compartment. The vending machine increases visibility of the goods by the external consumer and therefore enables higher sale rates to be achieved.

FIG 2



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Description

[0001] The present invention relates to an automatic vending machine for selling goods.

[0002] It is known that there are presently on the market and are widely spread many types of goods vending machines designed to sell food products, for example.

[0003] One type of these devices consists of a frame defining a housing space at the inside of the machine which is set to receive a magazine containing a plurality of different foodstuffs.

[0004] These foodstuffs, usually disposed along rows of compartments in the magazine, can be seen through a transparent front panel enabling visual access.

[0005] The consumer selects the desired item through suitable commands, the item is caused to move forward in the magazine (through use of a spiral driven in rotation, for example) until it comes close to a gap placed between the magazine itself and the front wall of the frame. Here the item is dropped until it reaches a collecting compartment where it can be picked up by the consumer.

[0006] It was possible to observe over time that a good visibility of the goods from the outside is susceptible of increasing the machine's sale rates. In other words, above all where the device is placed in coming-and-going regions such as underground stations or the like, it was possible to verify that the goods located at well visible positions draw the consumers' attention much more so that they more often tempt the consumers to buy.

[0007] In the light of the above, attempts have been made to draw the consumers' attention to the vending machine to the greatest extent.

[0008] In accordance with Patent No. JP 2003 123131 vending machines have been manufactured that are provided with suitable attraction lights and/or sound appeals turned on at predetermined frequencies and designed to catch the passer-by's attention.

[0009] While the above described solution partly accomplishes the specified tasks, it however has some drawbacks.

[0010] In fact, in the type of machine briefly described above implementation of further devices is required which are exclusively designed to catch people's attention and without other specific functions.

[0011] The above not only increases the production costs, but also makes the machine's servicing costs higher and in addition this solution is only able to draw people's attention to the machine and not directly to the goods.

[0012] Accordingly, the present invention aims at substantially solving the drawbacks highlighted above.

[0013] A first aim of the invention is to make available a goods vending machine capable of increasing visibility from the outside of the goods on sale.

[0014] It is an auxiliary aim of the invention to make available a machine the structure of which is not more complicated than that of the machines presently existing on the market and which involves minimum additional costs for carrying the invention into effect.

[0015] A still further aim of the invention is to make available a solution that can be easily and universally implemented on already known devices.

[0016] The foregoing and further aims that will become more apparent in the course of the following description are substantially achieved by an automatic vending machine for selling goods in accordance with the invention.

[0017] Further features and advantages will be best understood from the detailed description of a preferred, but not exclusive, embodiment in accordance with the appended claims. This description will be taken hereinafter with reference to the accompanying drawings, in which:

- Fig. 1 is a diagrammatic perspective view of an automatic goods vending machine in accordance with the invention;
- Fig. 2 shows the machine in Fig. 1 in a first operating condition; and
- Fig. 3 shows the machine in Fig. 1 in a second operating condition;
- Fig. 4 shows the machine in Fig. 1 in an alternative embodiment in the second operating condition.

[0018] With reference to the drawings, an automatic goods vending machine, to sell foodstuffs or also gadgets for example, has been generally identified by reference numeral 1.

[0019] The machine first of all comprises a supporting frame 2 defining a housing space 3 at the inside thereof. As shown in Fig. 1, the supporting frame 2 generally of parallelepiped shape, comprises a front wall 4 formed with a transparent portion 5 enabling visual access to the housing space 3.

[0020] Preferably, but not necessarily, the wall 4 carrying the transparent portion 5 defines the opening door for access to the housing space 3 for loading of the goods and servicing of the device.

[0021] Also present is a magazine 6 contained in the holding space 3 and adapted to carry a predetermined number of goods on sale. Generally, the goods of different nature will be housed in the different compartments into which the magazine is divided and will be selected by a suitable input keyboard 12 or similar device.

[0022] By mere way of example, the magazine 6 can have a parallelepiped shape and be provided with a plurality of shelves or racks A, B, C, D, E, F each of which is divided into respective rows a1, a2, a3; b1, b2, b3 containing the goods.

[0023] The machine further comprises a compartment 8 from which the released goods 7a can be picked up or removed; said compartment in the embodiment herein shown is placed close to the front wall 4 at a low position.

[0024] Advantageously, and as can be noticed from a comparison between Figs. 2 and 3, the magazine 6 as a whole is movable internally of the housing space 3 (preferably by translation) at least between a first operating

position (Fig. 2) at which the goods to be released are moved close to the transparent portion 5 to increase visibility of same from the outside, and a second operating position (Fig. 3) at which the magazine is moved backwards relative to the transparent portion 5 to enable release of the selected item to the picking-up compartment.

[0025] Alternatively, provision may be made for the individual shelves A, B, C, D, E, F or a predetermined number of them (but possibly also the individual rows a1, a2, a3; b1, b2, b3) to shift between the two operating positions, as shown in Fig. 4.

[0026] It will be appreciated that the two operating positions of magazine 6 (or of the shelves) are only taken up in a closed condition of the access door 4, i.e. during operation of the machine and not during the goods loading step or during the servicing step, as already known in some devices.

[0027] In more detail, in the first operating position, the magazine 6 (or the shelves A, B, C, D, E, F) is moved close to the transparent portion 5 and the goods 7 contained in the magazine cannot be released. In particular, the interspace or gap 9 defined between the magazine 6 and wall 4 provided with the transparent portion 5 is very reduced and the goods housed in the magazine cannot pass therethrough.

[0028] Vice versa, in the operating condition shown in Fig. 3 the magazine 6 is moved away from the transparent portion 5 and the goods 7 contained in said magazine can be released because they fall through gap 9, as shown, until they reach the picking-up compartment 8.

[0029] Furthermore, as shown in Fig. 4, it will be also possible, as an alternative, to shift the individual shelves A, B, C, D, E, F.

[0030] By selecting an item from the lower shelves it will be possible to cause a backward movement to the second operating position of the only shelves necessary to define falling of the selected item into gap 9.

[0031] In the embodiment shown, selection of an item of the second-last shelf will involve a backward movement of shelves E and F. Obviously, by adopting the same operating principle, the only item-containing rows will be caused to move backwards.

[0032] Finally, it will be appreciated that locking of the picking-up compartment 8 can be provided when the magazine is in the first operating position so as to reduce the attempts of stealing the goods by acceding thereto through the picking-up region.

[0033] Operation of the vending machine is as follows.

[0034] A consumer selects the desired item through the keyboard 12. A control unit active on the magazine 6 is able to carry out shifting of said magazine from the first operating position to the second operating position for goods release (the magazine or shelves move from the condition in Fig. 2 to that in Fig. 3 or 4).

[0035] At this point the means 10 for release of the selected item is operated so that said item is caused to fall through gap 9 towards the picking-up compartment 8. In particular, the means 10 for goods release is defined by an actuating member 11 capable of making the goods move forward towards the gap 9. For instance, this actuating member 11 can be defined by a common spiral set in rotation around its longitudinal extension axis so as to cause moving forward of the selected item until the latter falls into the picking-up compartment.

[0036] Once the selected item reaches the picking-up compartment 8 (and is picked up by the consumer), the control unit itself brings the magazine 6 back from the second position to the first operating position so that the goods visibility for a subsequent selection is increased again.

[0037] It will be also appreciated that provision is made for further drive means designed to take the magazine 6 from the first to the second operating position each time a lack of power occurs. This enables opening of the access door and intervention on the machine under any situation.

[0038] The invention achieves important advantages.

[0039] In fact, the adopted solution allows the goods visibility to be increased and, as a result, an increase in the sale rates to be reached, without being obliged to substantially intervene on the structure and operation of the goods vending machines of known type.

[0040] Movement of the magazine and/or the shelves can be obtained by simple technical expedients such as adoption of sliding guides 13.

[0041] On the other hand, it will be recognised that some vending machines already contemplate use of sliding guides for movement of the magazine or the individual shelves for goods loading and therefore these devices can be exploited for obtaining the above described operation by merely implementing the claimed technical idea via software.

[0042] It is also to be pointed out that the embodiment herein disclosed not only applies to new vending machines but it can also be utilised in automatic vending machines of the type currently on the market through simple technical modifications.

[0043] The manufacture and maintenance costs too are quite comparable with those of the machines already in use.

Claims

1. A vending machine for selling goods, comprising:

- a supporting frame (2) defining a housing space (3) and having at least one wall (4) provided with a transparent portion (5) to enable visual access to the housing space (3),
- a magazine (6) preferably equipped with a predetermined number of shelves (A, B, C, D, E, F), which is located in the housing space (3) and is set to carry a predetermined number of goods to be released (7),
- a compartment (8) for picking-up the released

item (7a), which is associated with the supporting frame (7) to enable picking up of the selected item (7a) after release,

characterised in that the magazine (6) or a predetermined number of shelves (A, B, C, D, E, F) are movable internally of the housing space (3) at least between a first operating position at which the goods to be released are moved close to the transparent portion (5) to increase visibility of same from the outside, and a second operating position at which said goods are moved backwards relative to the transparent portion to enable release of the selected item to the picking-up compartment (8).

2. A machine as claimed in claim 1, **characterised in that** it further comprises an access door to be configured between an open condition to enable access to the magazine (6) and a closed condition to enable operation of the machine, the magazine (6) being movable between the first and second operating positions when the door is in a closed condition.

3. A machine as claimed in anyone of the preceding claims, **characterised in that** in the first operating position the magazine (6) is moved close to the transparent portion (5) and the goods (7) contained in the magazine cannot be released as they do not pass through a gap (9) defined between the magazine (6) and the wall (4) provided with said transparent portion (5).

4. A machine as claimed in anyone of the preceding claims, **characterised in that** in the second operating position the magazine (6) is moved apart from the transparent portion (5), and the goods (7) contained in the magazine can be released passing through a gap (9) defined between the magazine (6) and the wall (4) provided with the transparent portion (5).

5. A machine as claimed in anyone of the preceding claims, **characterised in that** the wall (4) provided with the transparent portion (5) defines an opening door for access to the housing space (3), the first and second operating positions of the magazine being both defined in a closed condition of the door.

6. A machine as claimed in anyone of the preceding claims, **characterised in that** it further comprises means (10) for releasing the selected item from the magazine (6), which means is adapted to enable falling of the selected item into the picking-up compartment (8).

7. A machine as claimed in claim 6, **characterised in that** the magazine (6) comprises a plurality of shelves each divided into respective goods rows, the means (10) for releasing the goods consisting of an actuating member (11) for each row which is able to move the selected item towards a gap (9) defined between the magazine (6) and the wall (4) provided with a transparent portion (5) and make it fall towards the picking-up compartment (8).

8. A machine as claimed in anyone of the preceding claims, **characterised in that** it further comprises a control unit active on the magazine (6) to shift it at least from the first operating position for increasing visibility of the goods, to the second operating position for release of an item following selection of same, the magazine (6) being preferably movable on sliding guides (13) between the first and second operating positions.

9. A process for goods sale by means of vending machines comprising a supporting frame (2) defining a housing space (3) and having at least one wall (4) provided with a transparent portion (5) to enable visual access to the housing space (3), a magazine (6) preferably equipped with a predetermined number of shelves (A, B, C, D, E, F), which is located in the housing space (3) and is set to carry a predetermined number of goods to be released (7), and a compartment (8) for picking-up the released item (7a) which is associated with the supporting frame (7) to enable picking up of the selected item (7a) after release, the process comprising the following steps:

- positioning the magazine (6) so as to take the goods to a first operating position in which they are moved close to the transparent portion (5) to increase visibility of same from the outside;
- selecting the desired item by means of a control unit acting on the magazine (6);
- carrying out movement of the magazine (6) or the magazine shelves (A, B, C, D, E, F) bringing the goods from the first operating position to a second operating position at which they are moved backwards relative to the transparent portion to enable release of the selected item to the picking-up compartment (8);
- sending the selected item to the picking-up compartment (8); and
- picking-up the released item (7a).

10. A process as claimed in claim 9, **characterised in that** it further comprises the step of bringing the magazine back from the second to the first operating position.

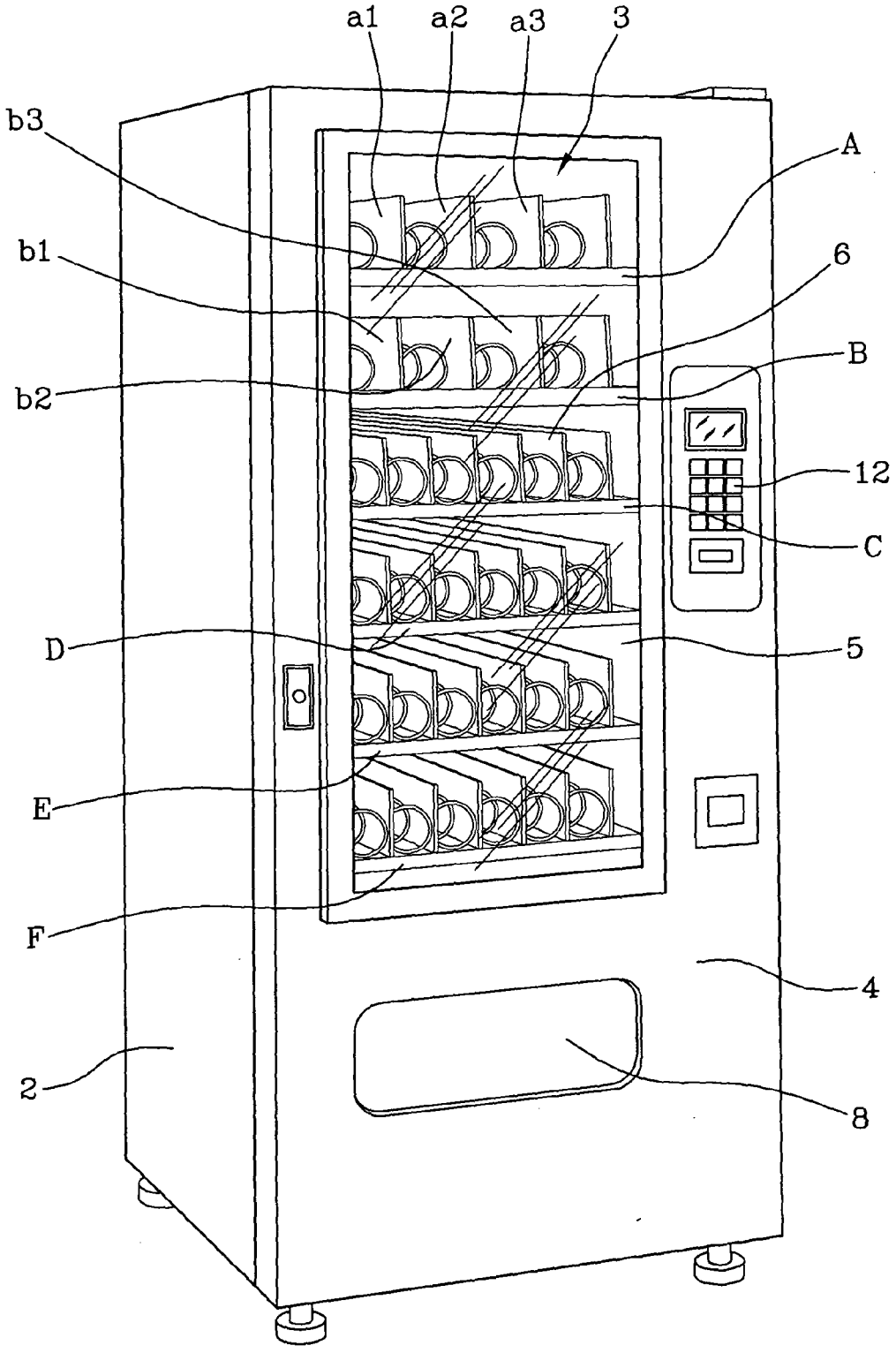


FIG 1

FIG 2

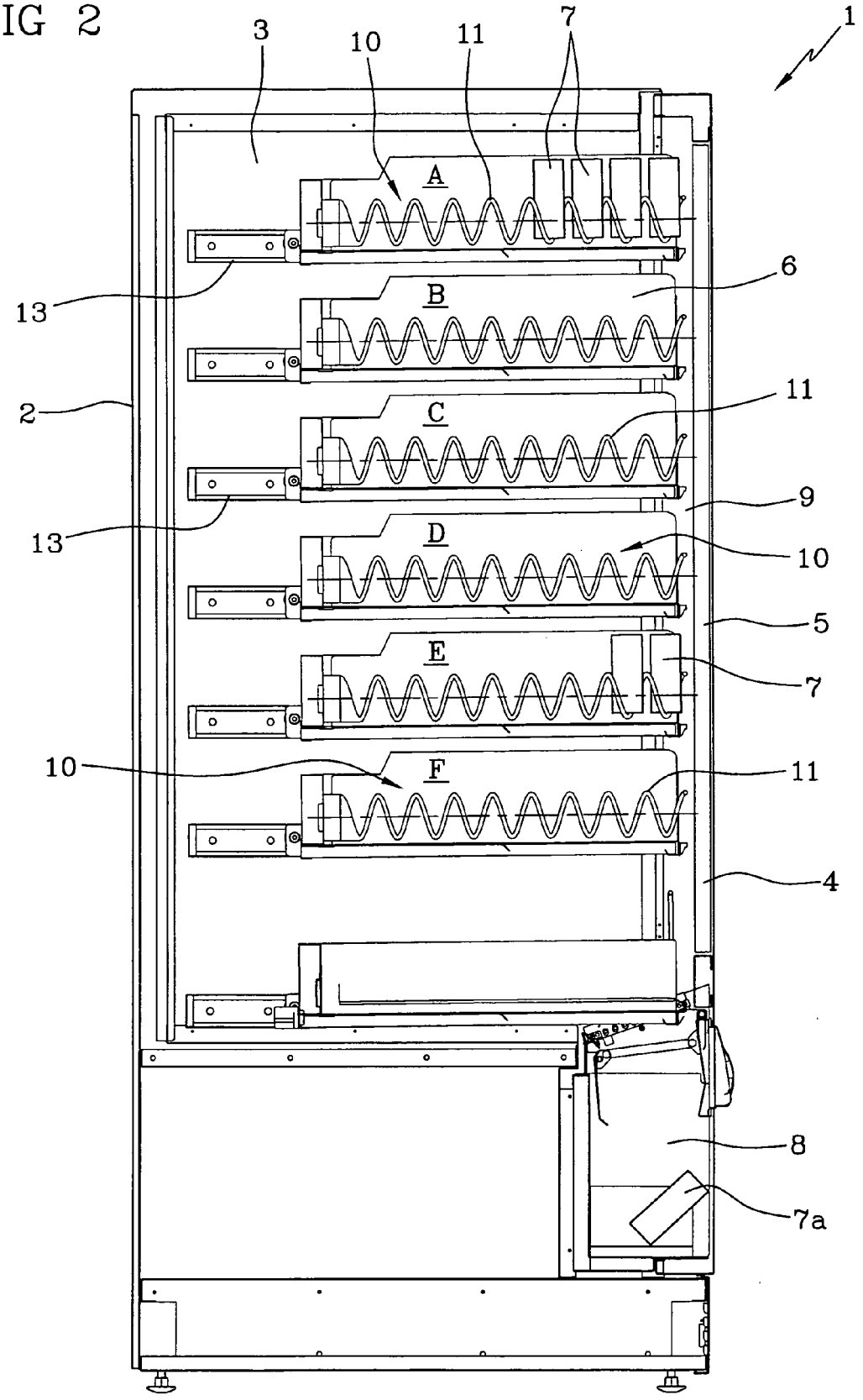


FIG 3

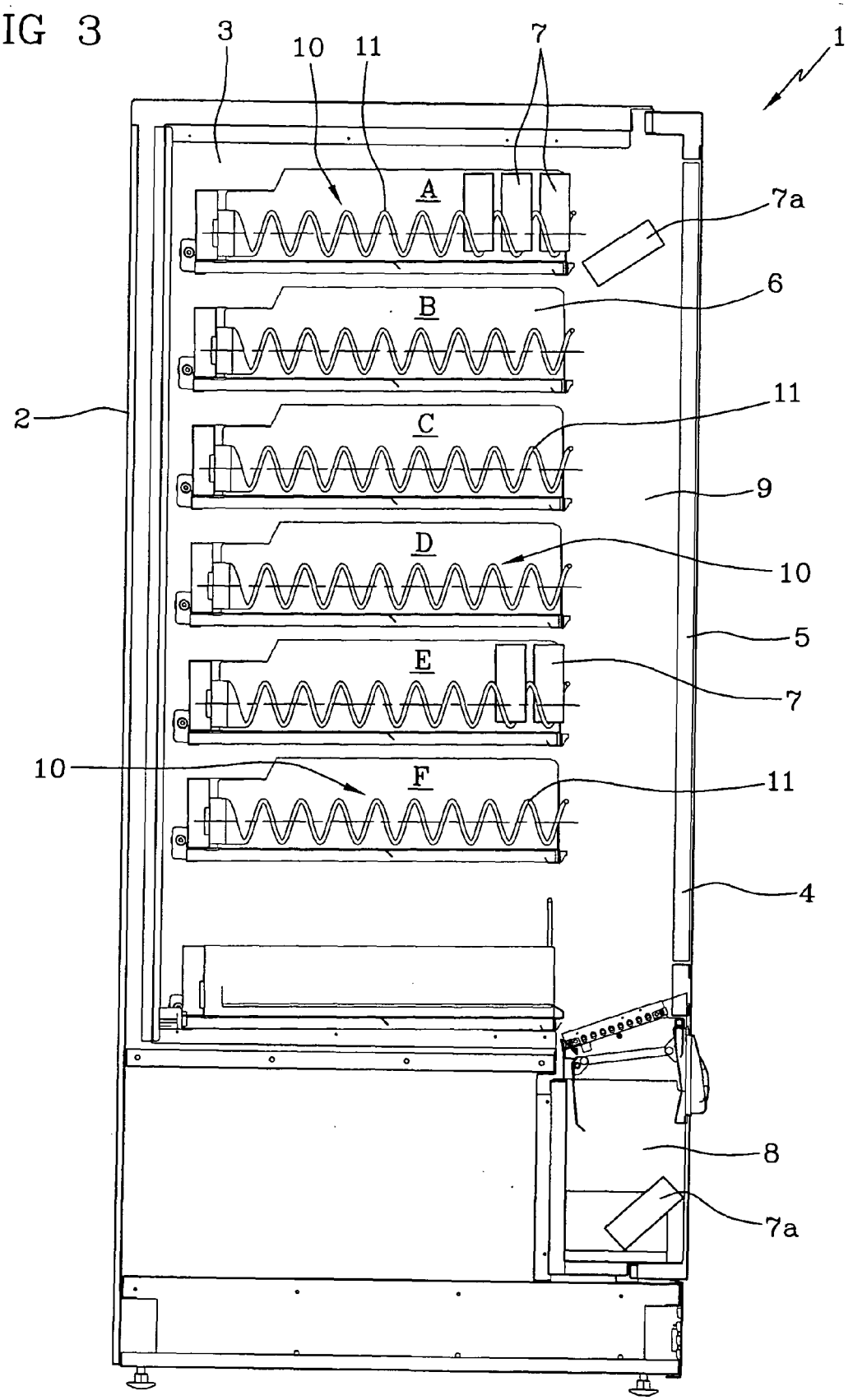
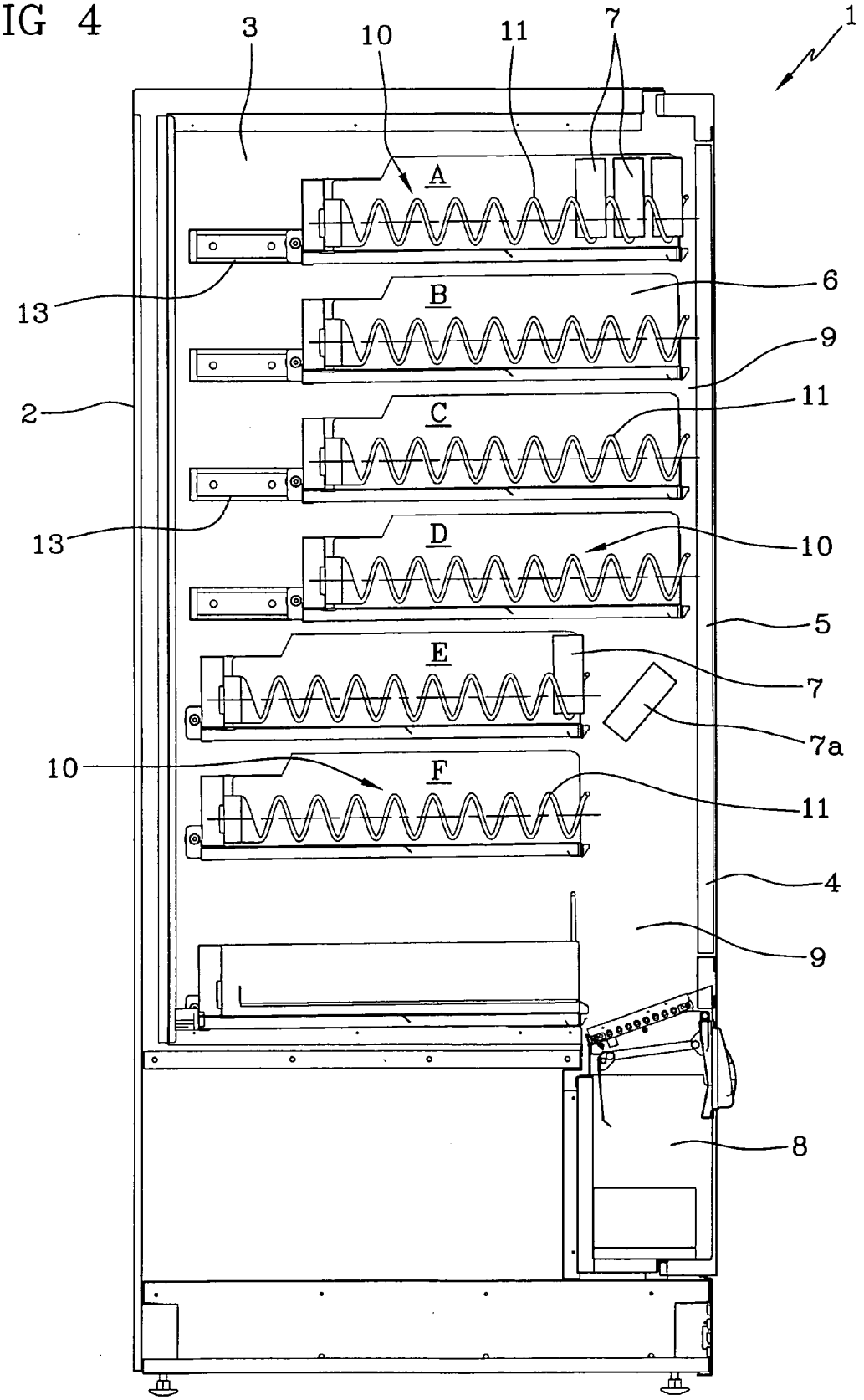


FIG 4



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EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5672

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 December 2005	Breugelmans, J

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EUROPEAN SEARCH REPORT

Application Number
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