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### (54) Dispensing machine

(57) A dispensing machine for cigarette packs in accordance with one embodiment of the invention includes a housing containing a plurality of supply channels. Each supply channel is configured to hold a plurality of cigarette packs arranged in a line. Each supply channel comprises

a biasing device operable to urge the cigarette packs in the line towards a delivery position; a slot located above the delivery position; a delivery button; and a dispensing mechanism that is operable to dispense a cigarette pack from the delivery position upwards through the slot in response to actuation of the delivery button.

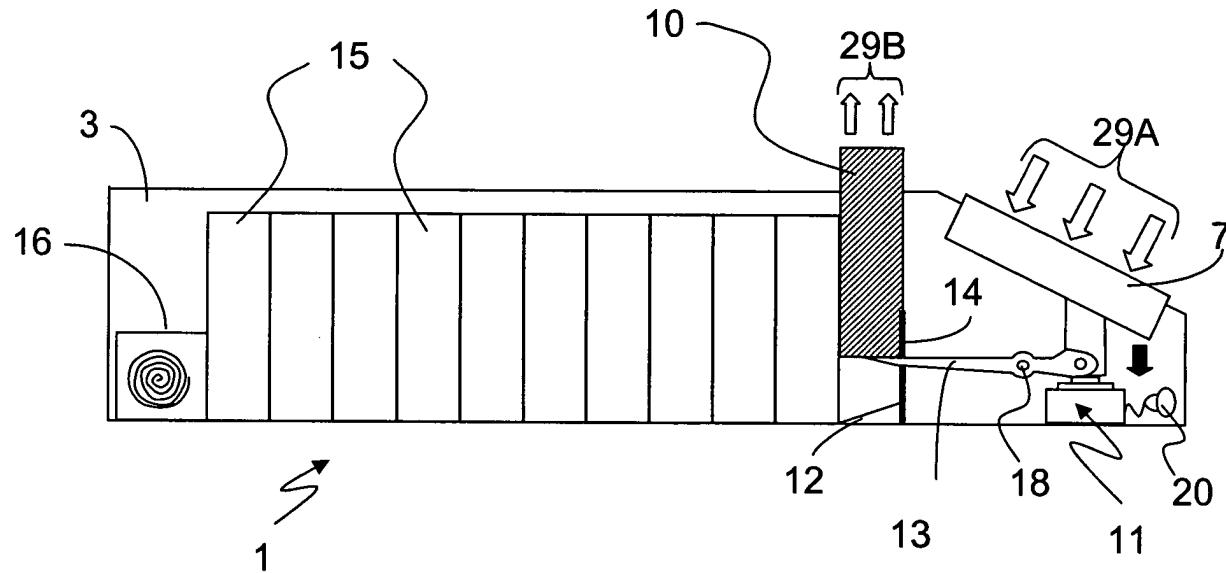


Fig. 2B

**Description****FIELD OF THE INVENTION**

**[0001]** The invention relates to a dispensing machine for cigarette packs.

**BACKGROUND TO THE INVENTION**

**[0002]** Various vending and dispensing machines for cigarette packs are known, see for example WO 2003/096289, IE S83614, and SE455900. Vending machines are generally intended for unattended use by consumers, so that such machines have to be robust and secure. Dispensing machines for cigarette packs are often used in a back-of-bar environment (or similar, for example a retail environment). Such machines are not directly operated by a consumer. Rather, the consumer makes an appropriate payment to an operator, for example, someone working behind the bar, and this person then dispenses a cigarette packet from the machine to return to the consumer.

**[0003]** Many vending machines are ill-suited for use in a back-of-bar environment, since their relative complexity tends to make them more expensive and more difficult to operate and maintain.

**SUMMARY OF THE INVENTION**

**[0004]** One embodiment of the invention provides a dispensing machine for cigarette packs. The machine includes a housing containing a plurality of supply channels. Each supply channel is configured to hold a plurality of cigarette packs arranged in a line. Each supply channel comprises a biasing device operable to urge the cigarette packs in the line towards a delivery position; a slot located above the delivery position; a delivery button; and a dispensing mechanism that is operable to dispense a cigarette pack from the delivery position upwards through the slot in response to actuation of the delivery button. Such a dispensing machine is robust, flexible, convenient and straightforward to operate.

**[0005]** In one particular embodiment, the delivery button for a supply channel is positioned adjacent the slot for the supply channel. This helps a user to easily operate the device.

**[0006]** In one embodiment, the dispensing mechanism includes a lever that acts on the bottom of the pack located at the delivery position to lift the pack towards and through the slot in response to actuation of the delivery button. Note that a wide variety of dispensing mechanisms may be used, including purely mechanical, electromechanical, electronic, and so on.

**[0007]** In one embodiment, the dispensing mechanism includes a device to provide an audible indication of a dispensing operation of the machine. The device might be a bell or other mechanism to produce a sound when the button is pressed. The audible indication helps to

prevent illicit removal of stock from the machine.

**[0008]** In one embodiment, the housing comprises a removable lid covering the plurality of supply channels. Opening the lid (e.g. by a hinged motion), provides access into the machine for stock replenishment and so on. The lid may also be used to provide advertising space for information relating to the contents of the one or more channels.

**[0009]** In one embodiment, the dispensing machine comprises five supply channels, but other numbers of supply channels (e.g. three, four, six, seven or eight) may be used instead, depending on the desired size and capacity of the machine.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0010]** Embodiments of the invention are described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of the dispensing machine according to one embodiment of the present invention;  
 Figures 2A and 2B illustrate a cross-sectional side view of the interior of the dispensing machine of Figure 1, with Figure 2A depicting the configuration prior to a dispensing operation, and Figure 2B depicting the configuration during to a dispensing operation;  
 Figure 3 illustrates a side view of the dispensing machine of Figures 1, 2A and 2B with the lid partially open; and  
 Figure 4 illustrates a plan view of the dispensing machine of Figures 1, 2A, 2B and 3 with the lid fully open to reveal the channels inside.

**DETAILED DESCRIPTION**

**[0011]** Figure 1 shows a dispensing machine 1 for cigarette packs in accordance with one embodiment of the invention. The dispensing machine 1 comprises a housing 3 within which a plurality of cigarette packs are housed until they are dispensed from the machine. In the illustrated example, the housing 3 comprises five dispensing slots 5 and five push buttons 7. Each button 7 is located adjacent to a corresponding dispensing slot 5. Pressing on a button 7 causes a cigarette pack to be dispensed from the corresponding (adjacent) slot 5.

**[0012]** Associated with each button/slot is a supply channel 21 for holding a row of cigarette packs. (The supply channels are not visible in Figure 1, since they are hidden within the housing 3). The dispensing machine 1 of Figure 1 has five supply channels (and hence five associated buttons and slots), but it will be appreciated that other machines may have more or fewer supply channels (and hence more or fewer associated buttons and slots).

**[0013]** Each supply channel may be filled with a different type of product, for example, different cigarette

brands, or different cigarette flavours. Two or more supply channels may be filled with the same type of product if so desired, for example, in respect of a very popular brand that might otherwise quickly exhaust a single supply channel.

**[0014]** Referring to Figures 2A and 2B, there is shown a cross-sectional side view of the dispensing machine 1 of Figure 1 in accordance with one embodiment of the invention. Figures 2A and 2B illustrate one supply channel, comprising a row of standing cigarette packets 15. These packets are arranged such that the front of each cigarette packet is facing the front of the machine (from where dispensing occurs). Figure 2A illustrates the rest configuration of the machine, while Figure 2B illustrates the configuration of the machine during a dispensing operation.

**[0015]** The cigarette packet 10 to be dispensed next from the supply channel is located at the front of the machine, underneath dispensing slot 5. A pusher 16 is located at the back of the supply channel. The pusher urges the row of cigarette packets in the supply channel towards the front of the machine. This ensures that there is always a packet in the position to be dispensed next (as for packet 10) unless the supply channel is completely empty.

**[0016]** The skilled person will be aware of various implementations for pusher 16. For example, pusher 16 might include a plate for abutting against the rearmost cigarette packet in the supply channel, plus a coil spring for resiliently urging the plate forwards against this rearmost cigarette packet. The supply channel may also be provided with one or more rails or other devices to guide the plate and spring in the correct direction back and forward along the supply channel.

**[0017]** The end position of the supply channel is provided with a small ramp 12 and end-plate 14. The end-plate 14 prevents any further movement of the row of cigarette packets towards the front of the machine. End-plate 14 therefore balances against the force from pusher 16.

**[0018]** Ramp 12 acts to lift a cigarette packet as it is moved forwards by pusher 16 into the dispensing position 10. This raising action assists with the dispensing operation, as described below. Note that even in this raised position, the cigarette packet 10 to be dispensed does not protrude through slot 5 above the top of the machine. Thus cigarette packet 10 cannot be directly removed by a user grasping the packet; rather a user has to push on button 7 in order to dispense cigarette packet 10.

**[0019]** As can be seen in Figure 2A, button 7 is connected to a dispensing mechanism 11, whereby pushing on button 7 causing cigarette packet 10 to be dispensed through slot 5. In one embodiment, the dispensing mechanism 11 involves a mechanical linkage between button 7 and lever 13, which is pivoted about axis 18.

**[0020]** In the rest position of Figure 2A, with button 7 not depressed, the end of lever 13 rests on the floor of the vending machine, underneath the next pack 10 to be dispensed. It will be appreciated that ramp 12, in partly

lifting pack 10, provides space to locate lever 13 under pack 10 in the rest position. N.B. Both ramp 12 and end-plate 14 are provided with slots, not visible in Figure 2A or 2B, to accommodate the positioning and operation of lever 13.

**[0021]** The dispensing mechanism 11 further includes a bell 20 or other audio output. The bell 20 signals whenever button 7 is depressed to dispense a cigarette pack from the machine 1. This helps to guard against stock 10 leakage from machine 1, by making it harder to dispense a cigarette pack from the machine without attracting attention.

**[0022]** Figure 2B illustrates the dispensing operation in which button 7 is depressed, as indicated by arrows 29A. This depression of button 7 causes lever 13 to pivot about axis 18, thereby lifting the end of the lever located underneath pack 10. The lever 13 contacts the underside of pack 10 and so lifts the pack 10 towards and out of the slot 5, as indicated by arrows 29B. An operator can now grasp pack 10 by hand, to withdraw the pack manually from machine 1.

**[0023]** After pack 10 is removed from the machine, the remaining packs 15 move forwards under the force from pusher 16. Prior to reaching end-plate 14, this movement 25 is halted by the end of lever 13, which is assumed to be still in the dispensing position. However, after button 7 is released, lever 13 is allowed to fall back to the rest position (as shown in Figure 2A). Pusher 16 can now drive the row of cigarette packs against end-plate 14, back to 30 the position of Figure 2A, with the next pack in the line being located on ramp 12 beneath slot 5 for dispensing.

**[0024]** As shown in Figure 3, in one embodiment of the invention, access to the inside of the housing 3 including supply channels 21 is provided by a lid 17 on top of the 35 housing 3. Opening the lid 17 allows the machine to be replenished, serviced, and so on. When closed, lid 17 provides a flat surface that may easily be used as a work-top.

**[0025]** In the embodiment of Figure 3, the lid 17 is attached to the rear edge of the housing by hinge 19. The lid 17 can then be lifted and rotated, as shown in Figure 3, to open the housing 3. In other embodiments, lid 17 may be hinged to the side, or have some other opening mechanism. For example, an operator might be able to 45 slide or lift lid 17 away from housing 3. In some embodiments, a latch or one or more screws might be provided for holding lid shut (whatever the opening mechanism).

**[0026]** Figure 4 shows a plan view of the vending machine 1 in accordance with one embodiment of the invention. Figure 4 depicts machine 1 with lid 17 fully open. The machine 1 includes three hinges 19 for opening and closing the lid.

**[0027]** In the embodiment of Figure 4, the housing contains five supply channels 21, where each channel 21 55 extends the length of the housing 3 and ends coincident with a corresponding dispensing slot 5. The channels 21 are configured to hold multiple cigarette packs 15. In Figure 4, two of the channels are shown containing cigarette

packs 15. Of these two, one channel 21A is partially full and one channel 21B is completely full. The pusher 16 is illustrated in Figure 4 as a plunger and spring arrangement. The sides (walls) or floor of the supply channels 21 may be provided with rails or such-like to guide the pusher 16 when extended.

**[0028]** As shown in Figure 4, the lid 17 includes an inset panel 23. In the illustrated example, the panel 23 is fixed to the lid 17 via tabs 25. The lid 17 may be transparent (of glass or plastic), while panel 23 may be opaque. Panel 23 can be removed to allow a sheet of paper or card to be placed on the inside of lid 17. This paper is then held in place between the lid 17 and the panel 23 (once re-fastened). The paper is visible through the top of the lid once the lid is closed, and may be used, for example, as a means of communicating with a consumer. Another possibility is that the top of panel 23 itself directly supports such markings, which are then visible through lid 17 (with panel 23 therefore being replaced if different markings are desired).

**[0029]** Dispensing machine 1 may be provided with markings to indicate to an operator the different products in the different supply channels. Such markings may be provided for example on lid 17 (e.g. between lid 17 and panel 23), and/or on or adjacent to buttons 7. In general the markings are replaceable to allow for the product in a given supply channel to be changed. In other embodiments, such markings may be omitted, especially if the product available from a supply channel is already visible through slot 5.

**[0030]** Although a variety of embodiments has been described herein, this is provided by way of example only, and there are many further possible modifications and different combinations of the features described herein. For example, slots 5 may be normally closed by flaps to prevent dirt, etc., from entering the machine. These flaps would then be opened automatically as a cigarette pack 10 is dispensed from the machine. In addition, although dispensing mechanism 11 has been described in terms of a mechanical linkage, it could also include an electrical or electronic component - e.g. button 7 might operate an electrical switch to activate the dispensing action. One possibility is for a single pressing of button 7 to move the machine from the rest position of Figure 2A to the dispensing position of Figure 2B. With such an arrangement, button 7 does not have to stay depressed in order to keep cigarette pack 10 in the vending position (of Figure 2B), which makes it easier to operate the machine with one hand. A further possibility would be to include some form of sensor to detect automatically when pack 10 is removed from the machine, which could then cause the machine to return to the state of Figure 2A.

**[0031]** In conclusion, many variations and modifications on the described embodiments will be apparent to the skilled person and will fall within the scope of the present invention, which is defined by the appended claims and their equivalents.

## Claims

1. A dispensing machine for cigarette packs, said machine including a housing containing a plurality of supply channels, wherein each supply channel is configured to hold a plurality of cigarette packs arranged in a line; each supply channel comprising:
  - 5 a biasing device operable to urge the cigarette packs in the line towards a delivery position;
  - 10 a slot located above the delivery position;
  - 15 a delivery button; and
  - 20 a dispensing mechanism that is operable to dispense a cigarette pack from the delivery position upwards through the slot in response to actuation of the delivery button.
2. A dispensing machine according to Claim 1, wherein the delivery button for a supply channel is positioned adjacent the slot for the supply channel.
3. A dispensing machine according to Claim 1 or 2, wherein the dispensing mechanism includes a lever that acts on the bottom of the pack located at the delivery position to lift the pack towards and through the slot in response to actuation of the delivery button.
- 30 4. A dispensing machine according to any preceding Claim, wherein the dispensing mechanism includes a device to provide an audible indication of a dispensing operation of the machine.
- 35 5. A dispensing machine according to any preceding Claim, wherein the biasing device comprises one or more springs that extend along the supply channel.
- 40 6. A dispensing machine according to any preceding Claim, wherein the supply channel includes a ramp to lift a pack being moved into the delivery position.
- 45 7. A dispensing machine according to any preceding Claim, wherein the housing comprises a removable lid covering the plurality of supply channels.
- 50 8. A dispensing machine according to Claim 7, wherein the lid provides space for information relating to the contents of the one or more channels.
- 55 9. A dispensing machine according to any preceding Claim, comprising between four and six supply channels.

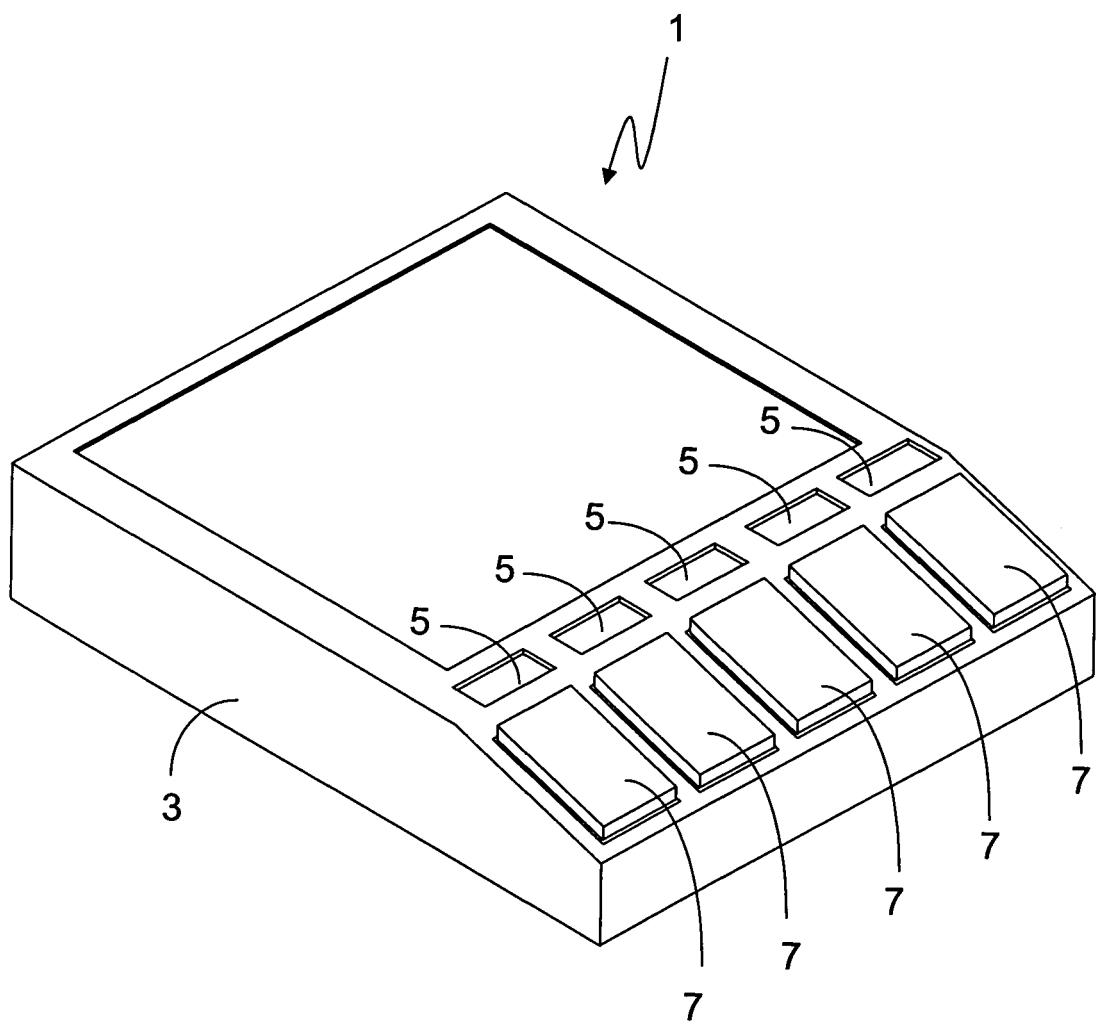


Fig. 1

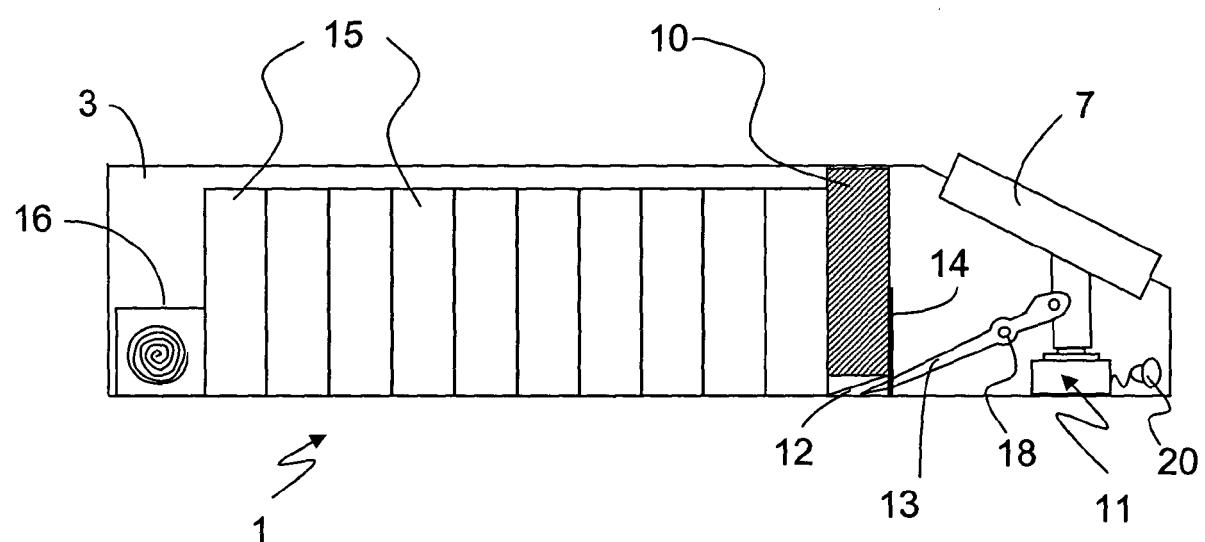


Fig. 2A

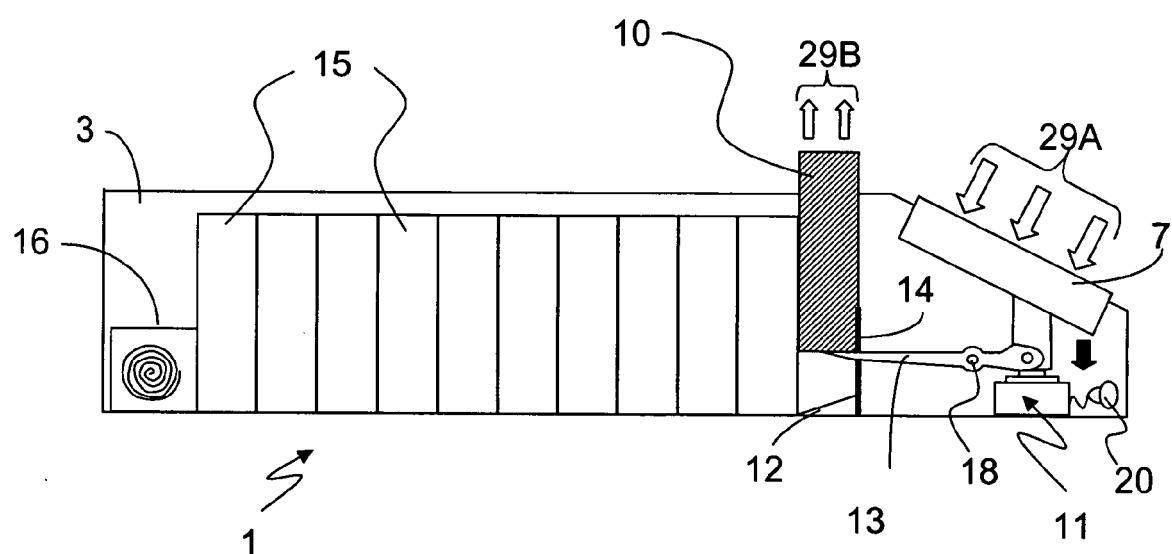
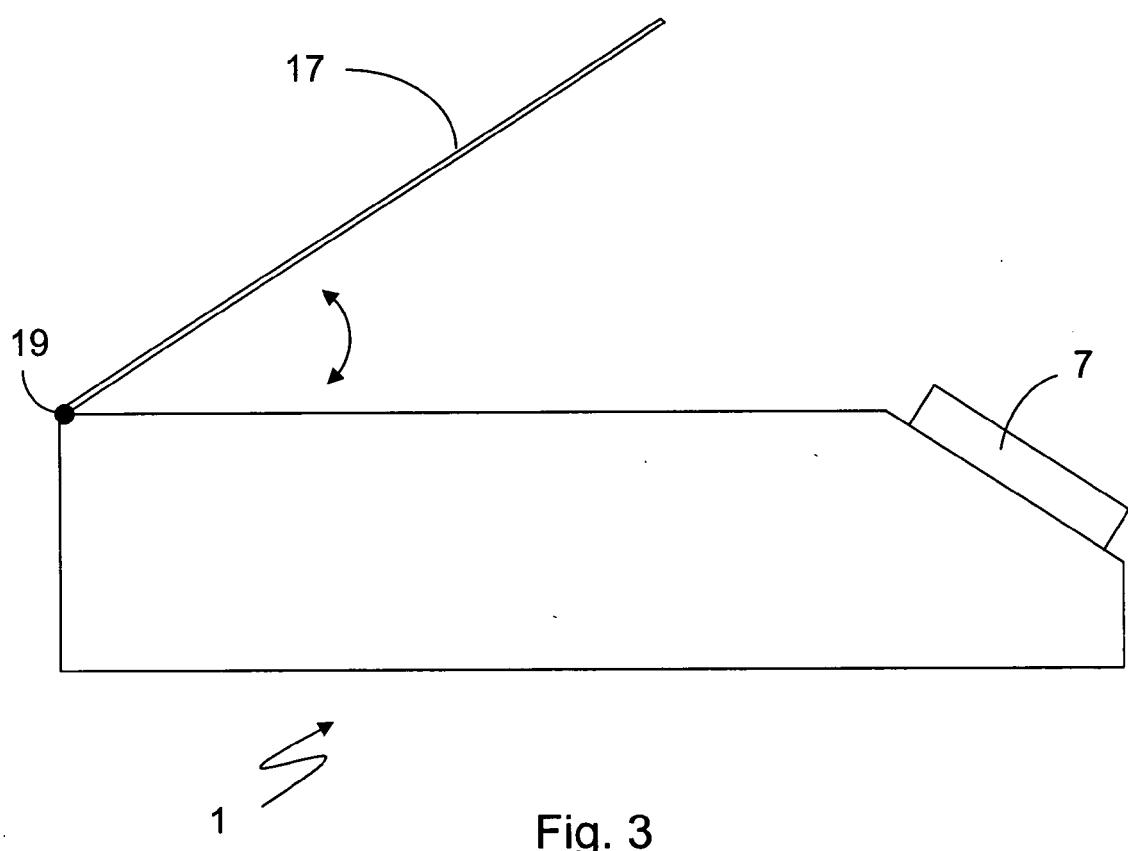


Fig. 2B



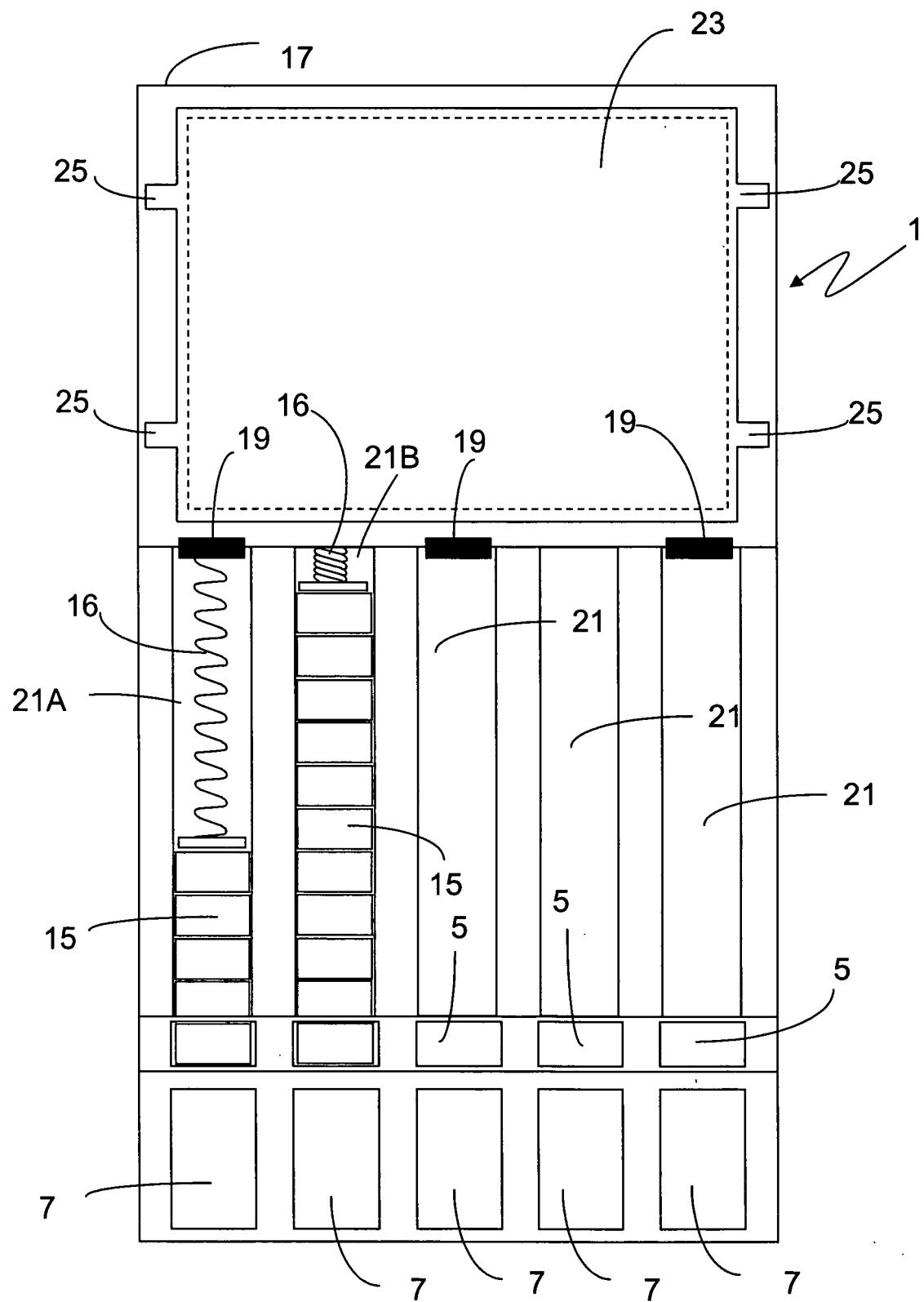


Fig. 4



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The present search report has been drawn up for all claims			
2	Place of search The Hague	Date of completion of the search 16 May 2008	Examiner Breugelmans, Jan
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			



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<p>2 The present search report has been drawn up for all claims</p>			
Place of search		Date of completion of the search	Examiner
The Hague		16 May 2008	Breugelmans, Jan
CATEGORY OF CITED DOCUMENTS		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) 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			

ANNEX TO THE EUROPEAN SEARCH REPORT  
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