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(11) **EP 1 256 913 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.11.2002 Bulletin 2002/46

(51) Int Cl.7: **G07F 11/18, G07F 11/10**

(21) Application number: **02007815.0**

(22) Date of filing: **08.04.2002**

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

(72) Inventors:
• **Pesenti Barili, Sergio**
24040 Stezzano, Bergamo (IT)
• **Roncari, Aristide**
20037 Paderno Dugnano, Milano (IT)

(30) Priority: **08.05.2001 IT PN010035**

(74) Representative: **Giugni, Valter et al**
PROPRIA S.r.l.,
Via Mazzini 13
33170 Pordenone (IT)

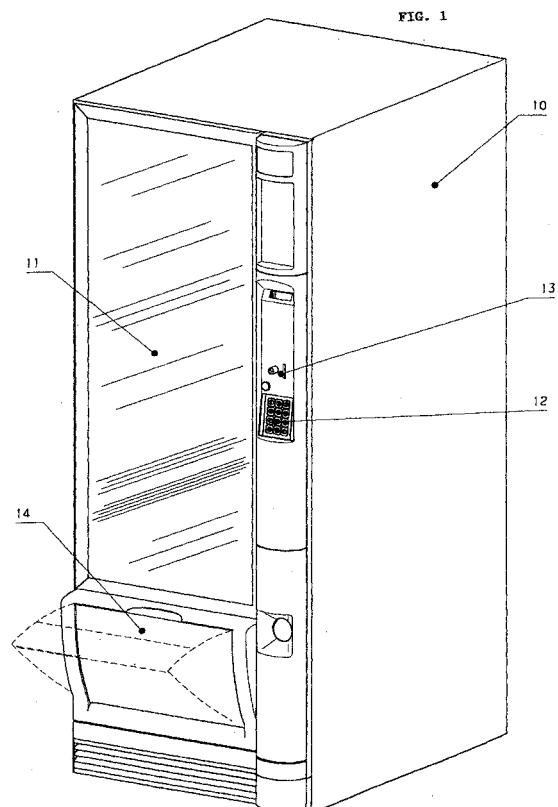
(71) Applicant: **Necta Vending Solutions S.p.A.**
24030 Valbrembo, Bergamo (IT)

(54) **Packaged product vending machine equipped with anti-theft provision**

(57) Packaged-product vending machine comprising a cabinet-like outer casing (10) containing the products to be dispensed and provided with a hopper (14), or the like, for delivering and collecting the selected products.

The hopper (14) is connected to both the cabinet (10) and a swinging partition (25) by means of a toggle-lever mechanism (16), and the partition (25) is adapted to shut off the aperture through which the vended products pass from the interior of the cabinet (10) into the dispensing hopper (14), when the latter is in its open position.

The described solution according to the invention has outstanding characteristics as far as both ergonomics, i.e. convenience of use, and security are concerned.



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Description

[0001] The present invention refers to a vending machine for packaged products, such as products wrapped up, sealed or filled in packages, cans or bottles, which are delivered down into a dispensing compartment that is accessible to the users for picking them up.

[0002] Vending machines of such a kind are being used since a long time now and may store products either at an ambient temperature or under refrigeration conditions; in the latter case, the vending machine is provided with a refrigerating circuit whose characteristics and construction are well-known in the art.

[0003] Vending machines of this kind are generally constituted by a cabinet-like outer casing, which is closed by a glazed door allowing the products stored inside that casing on appropriate stationary or moving shelves to be conveniently viewed from the outside. On the front wall of the vending machine, flanking the door, there are arranged the devices used to control and operate the vending machine, such as the push-buttons used to select the products to be dispensed, as well as the coin-operated or similar payment unit of the machine. The handling of the products inside the apparatus can be carried out in a number of ways, such as for instance by dropping them in a controlled manner or pushing them by means of calibrated springs, so as to bring the selected product into the proper position, or dispensing compartment, for it to be withdrawn, i.e. picked up by the user. Such a dispensing compartment is preferably formed by a hopper-like arrangement that is usually situated in the lower portion of the front surface of the cabinet and closed by a lid or similar shutting means.

[0004] The problem that arises in connection with the dispensation of the products lies in the actual ability to prevent products from being unduly withdrawn through the dispensing hopper and, for the matter, various efforts have been made in view of solving such a problem.

[0005] A first solution in this connection calls for the use of a lid hinged on top so as to swing inwards, i.e. into the interior of the dispensing compartment, in such a manner that, when access is gained into such a compartment in order to pick up the selected product, the lid swings inwards to automatically shut the passage through which the products are dropped, i.e. unloaded from the storage shelves into the dispensing hopper. Such a solution is simple from a construction point of view, but is not ergonomic as far as the withdrawal of the product is concerned, since the latter is scarcely visible to the person collecting it.

[0006] Another solution calls for the use, instead of the usual hopper-like arrangement, of a cylindrical hollow container adapted to rotate or revolve about a longitudinal axis. In this case, the cylinder acts in the way of a revolving door and presents the user with two different alternative situations, i.e. a situation in which it is empty (in its closed, resting position, waiting for a product to be selected for vending) and a situation in which

it on the contrary is full (in its open, working condition, containing a selected product). This solution, however, implies a reduction in the free cross-section area of the passage aperture through which the product is first dropped for dispensing and then picked up by the buyer.

[0007] Both above mentioned solutions can be improved from an ergonomic point of view as far as the withdrawal of the selected products is concerned, as well as be made safer against vandalisms, if they are provided with appropriate anti-theft opening provisions, either with or without associated alarm signal-emitting system. In this case, however, both the construction and the operation of the vending machine are complicated to an unacceptable extent (see for instance the disclosure in US 4,576.272).

[0008] It therefore is a purpose of the present invention to provide a packaged-product vending machine, in which the product dispensing arrangement is integrated with an anti-theft provision, i.e. mechanism that is made in a simple and reliable manner.

[0009] According to the present invention, this aim is reached in a vending machine in which the hopper or similar arrangement provided to collect the products being dropped and to enable the same products to be picked up by the buyers, is revolving about a horizontal axis, so as to be brought from a closed to an open position, and is connected to both the cabinet or outer casing of the machine and a swinging partition via a toggle-lever mechanism with associated return spring. The swinging partition is adapted to shut off the aperture through which the products pass from the interior of the cabinet into the dispensing hopper, when the latter is in its open position for enabling a product to be picked up.

[0010] Features and advantages of the present invention are defined in the appended claims and will anyway be more readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a schematic front perspective view of a packaged-product vending machine;
- Figures 2A and 2B are perspective side views of a detail of the vending machine shown in Figure 1, in a first operating position thereof;
- Figures 3A and 3B are perspective side views of the same detail shown in Figures 2A and 2B, in a second operating position thereof; and
- Figures 4A and 4B are perspective side views of the same detail shown in Figures 2A and 2B, in a third operating position thereof.

[0011] A vending machine according to the present invention is substantially constituted (Figure 1) by a cabinet-like outer casing 10, which is closed on the front side by a glazed door 11 enabling the products stored

inside the vending machine, and arranged on appropriate shelves provided therewithin, to be properly viewed from the outside.

[0012] On the front wall of the vending machine, at a side of the glazed door thereof, there are arranged the various control devices of the apparatus, such as the push-buttons 12 for selecting the products to be vended, and the coin-operated or similar payment device 13. In the lower portion of the vending machine, again on the front side thereof, there is installed a hopper 14, or similar arrangement, into which the dispensed products, upon having been duly selected and paid for, are unloaded for the buyer to pick them up. This hopper 14 is adapted to normally revolve about an horizontal axis, on which it is pivotally hinged, from a closed position, in which it lies flush with the front wall of the cabinet, to an open pick-up position, in which it on the contrary protrudes from said front wall.

[0013] According to a feature of the present invention, the vending machine is provided with an anti-theft arrangement associated to said hopper 14. Such an arrangement comprises a toggle-lever mechanism 16 (Figures 2, 3, 4) that connects the same hopper 14 with the cabinet 10 and a swinging partition 25. This partition 25 forms an element that is adapted to shut off the aperture through which the products pass from the interior of the cabinet into the dispensing hopper 14, when the latter is in its open position for enabling a product to be picked up.

[0014] In other words, the hopper 14 is provided on a side thereof with a pin 18 sliding within a curved slot 19 that is provided in a properly shaped arm 20. This arm 20 is pivotally hinged on a pin 21 attached inside the cabinet 10.

[0015] A return spring 22, connected at an end portion thereof with the hopper 14 and attached at its other end portion to the cabinet 10, is used to bias the hopper 14 into moving back to its closed resting position (Figures 2A and 2B).

[0016] Preferably, a braking device 23 is connected between the hopper 14 and a pin 24 (Figures 4A and 4B) secured to the cabinet 10, in order to decelerate the closing movement of the hopper 14. This braking device 23 may be formed by a pneumatic damper or similar cushioning means.

[0017] The toggle-lever mechanism 16, further to controlling the opening and closing movements of the hopper 14, operates a partition 25 that is adapted to shut off the aperture through which the vended products pass from the interior of the cabinet 10 into the dispensing hopper 14, when the latter is in its open position for enabling a product to be picked up. The partition 25 is supported by at least an arm 26 that is pivotally hinged on to a pin 27 secured to the cabinet 10. The partition 25 is operated by means of a connecting rod 28 whose end portions are hinged on to the arm 20 and the arm 26, respectively.

[0018] The swinging motion of the partition 25 about

the pin 27 is substantially similar to the corresponding revolving motion of the hopper 14 about the pin 15.

When the hopper 14 is in its closed position (Figures 2A and 2B), the partition 25 moves preferably into abutting against the inner rear wall of the cabinet 10. When the hopper 14 is on the contrary in its open position (Figures 4A and 4B), the partition 25 moves with its front border into a recess 30 provided in the frame 31 that defines the compartment or space within which the hopper 14 revolves. Figures 3A and 3B are perspective and cross-sectional views, respectively, of an intermediate operating position, in which the hopper 14 just starts to be opened.

[0019] The above description, made with reference to Figures 2 to 4, considered a toggle-lever mechanism 16 as arranged on a side of the hopper 14. It will of course be readily appreciated that, in view of a more balanced operation of the hopper 14, a similar toggle-lever mechanism 16 may be provided also on the other side of said hopper 14.

Claims

1. Packaged-product vending machine comprising: a cabinet-like outer casing (10) closed by a glazed door (11), inside which the products are stored for vending on appropriate stationary or moving shelves and are guided, upon being selected by a buyer, towards a dispensing or pick-up position, constituted by a hopper (14), or the like, that is usually arranged in the lower portion of the front surface of the cabinet and adapted to revolve about a horizontal axis so as to be brought from a closed position to receive a dispensed product to an open position to enable said product to be picked up, **characterized in that** the hopper (14) is connected to both the cabinet (10) and a swinging partition (25) by means of a toggle-lever mechanism (16), and **in that** said partition (25) is adapted to shut off the aperture through which the vended products pass from the interior of the cabinet (10) into the dispensing hopper (14), when the latter is in its open position.
2. Vending machine according to claim 1, **characterized in that** said hopper (14) is biased into moving back in its closed position by a return spring (22) connecting said hopper to the cabinet..
3. Vending machine according to claim 1 or 2, **characterized in that** a braking device (23) is connected between the hopper (14) and the cabinet (10) to decelerate the closing movement of the hopper.
4. Vending machine according to any of the claim 1 to 3, **characterized in that**, when the hopper (14) is in its open position, the front border of the partition

(25) moves into a recess (30) provided in the frame (31) that defines the compartment or space within which the hopper (14) revolves.

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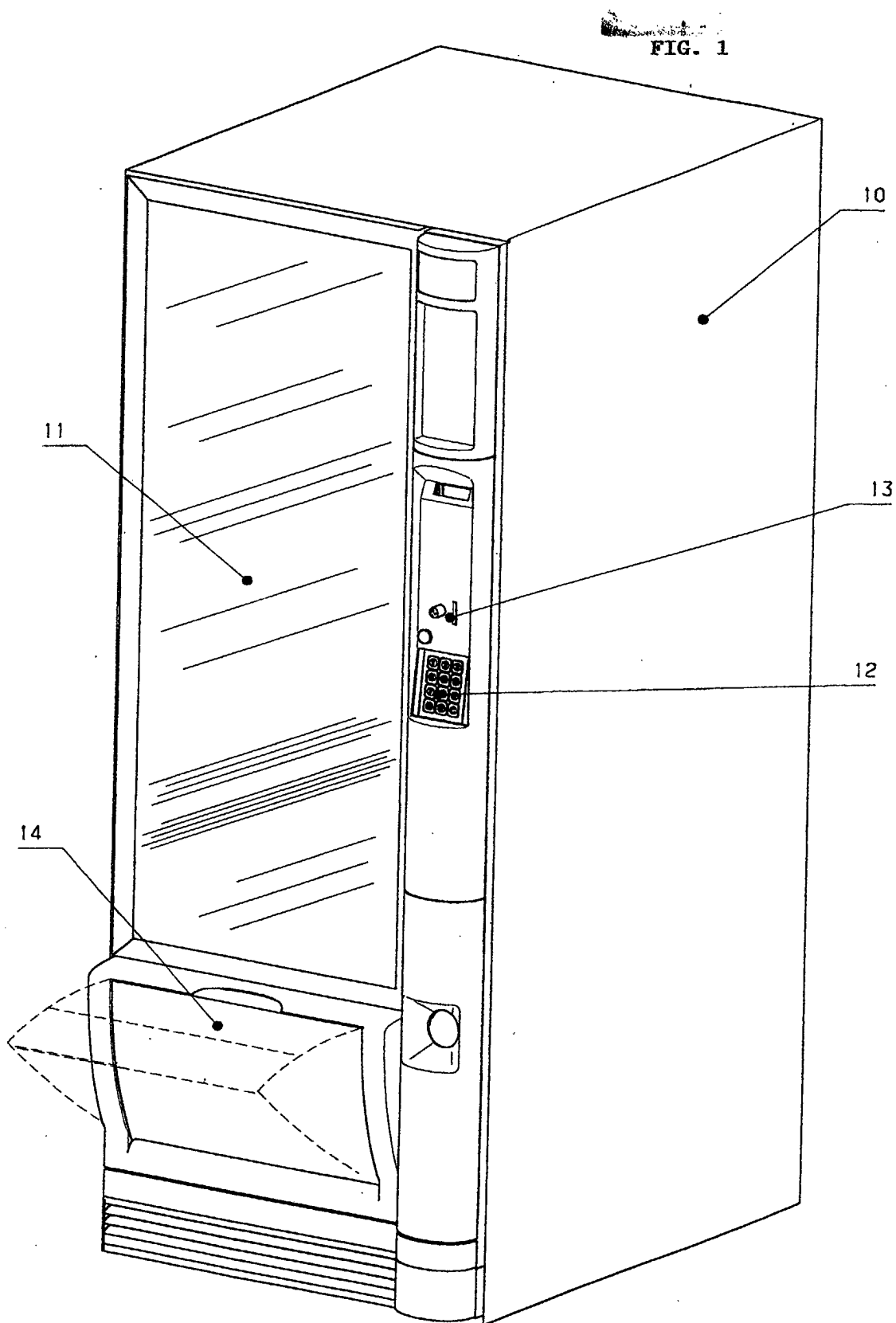


FIG. 2A

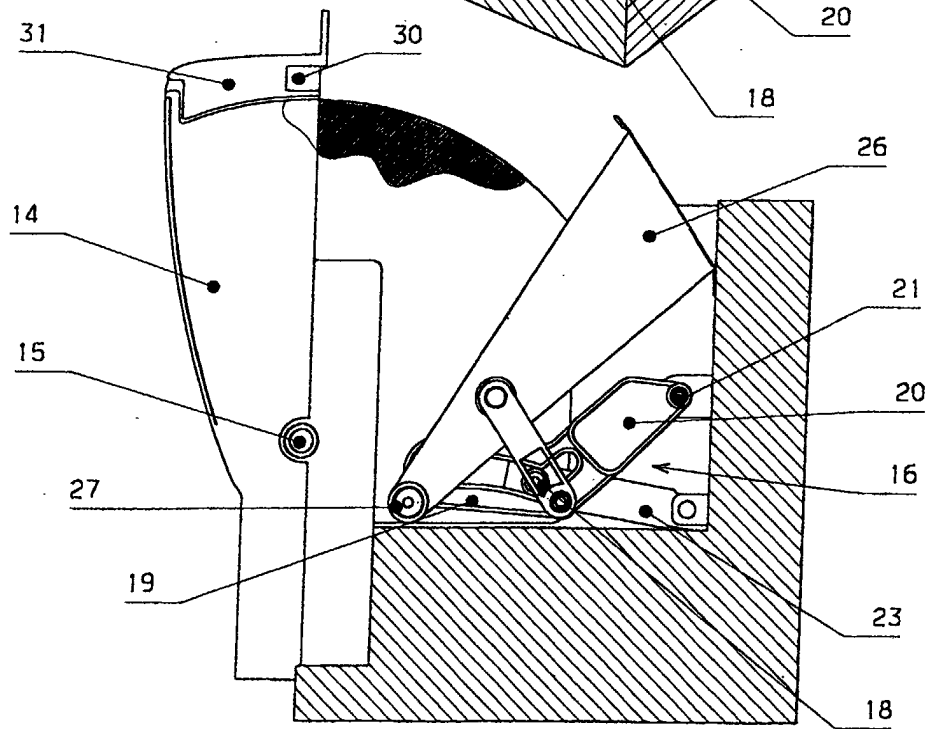
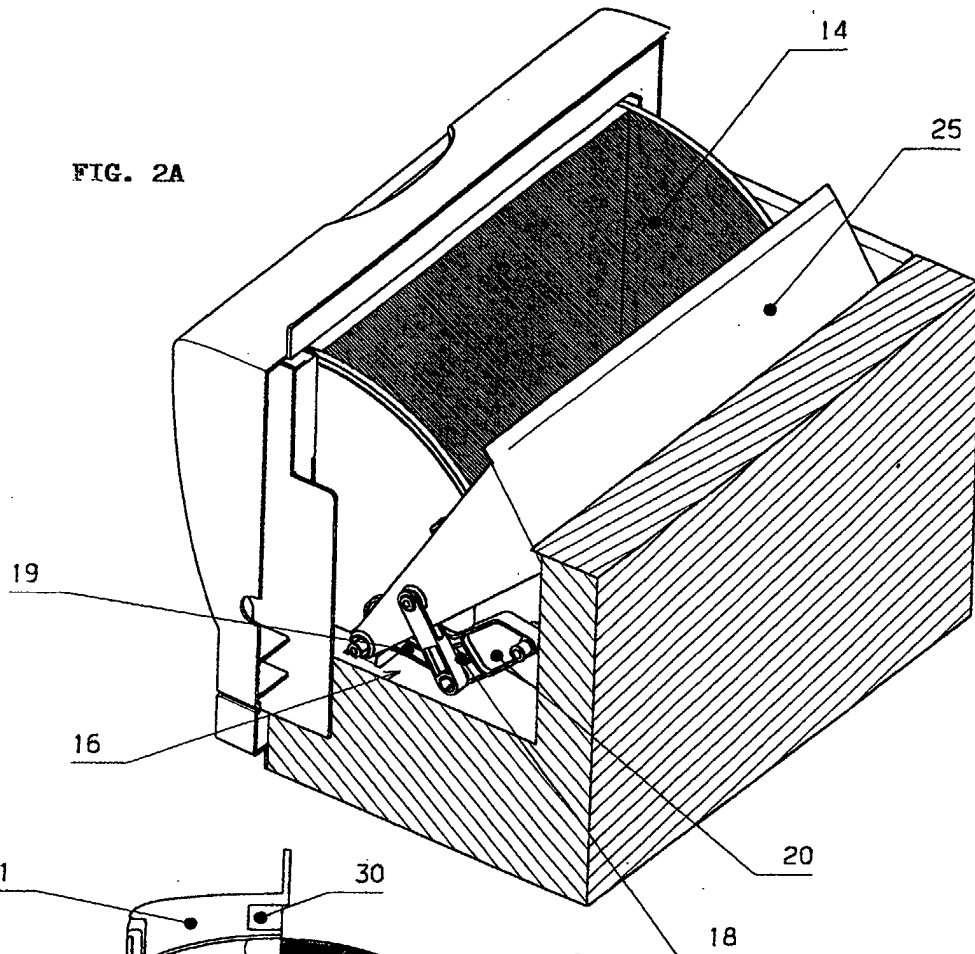


FIG. 2B

FIG. 3A

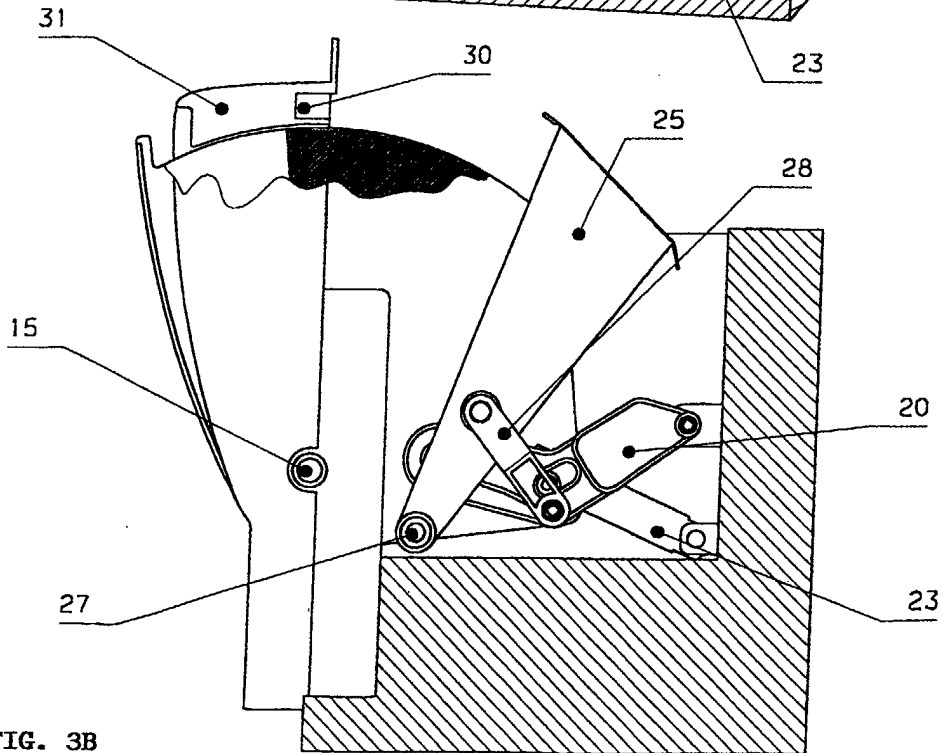
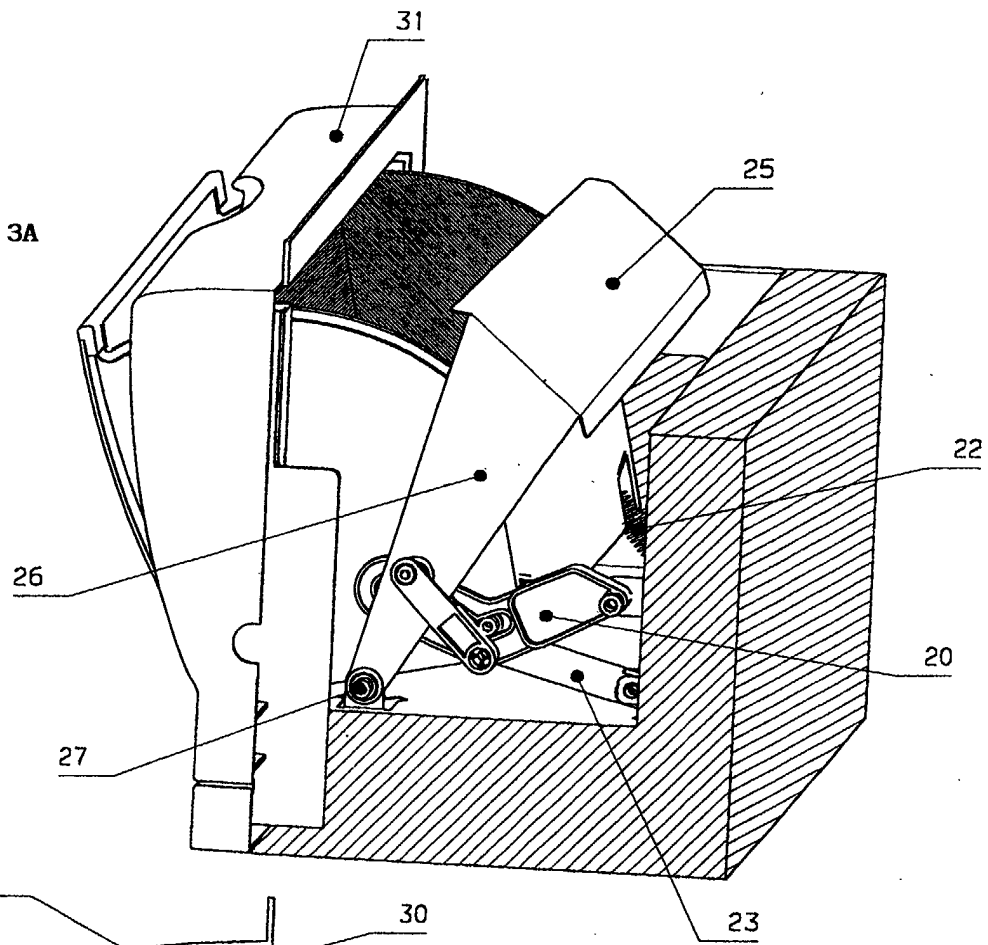


FIG. 3B

FIG. 4A

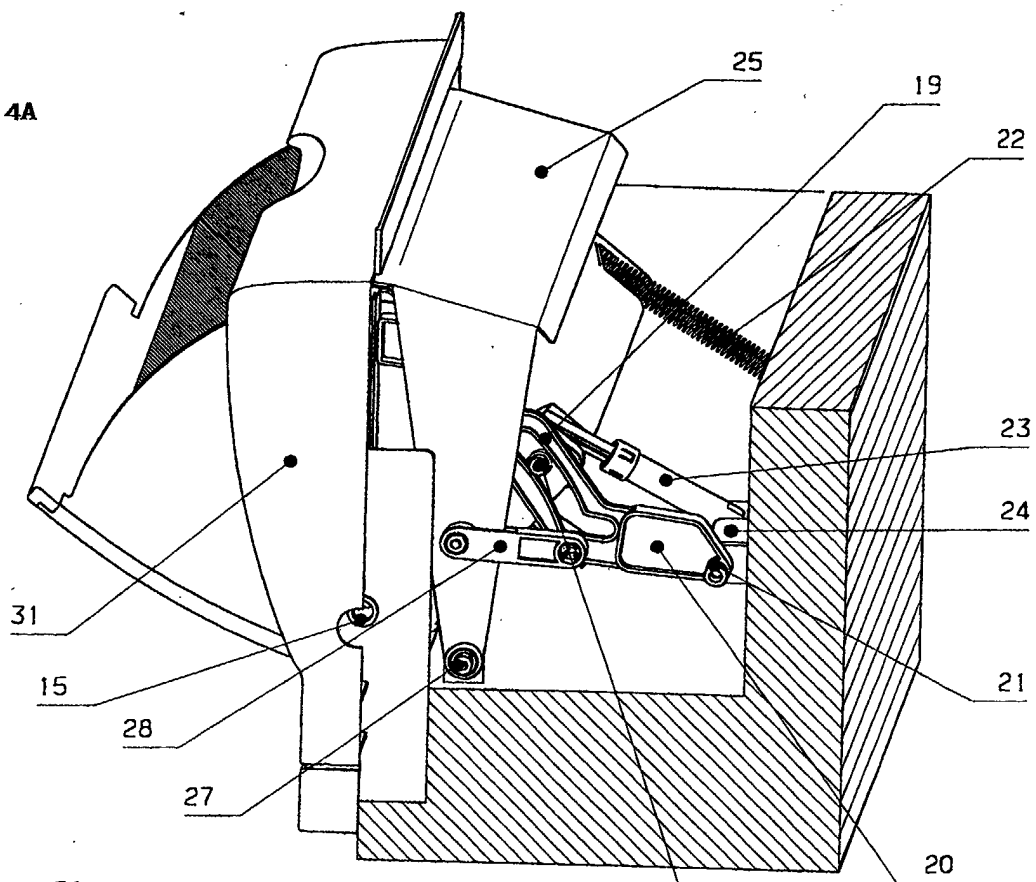


FIG. 4B

