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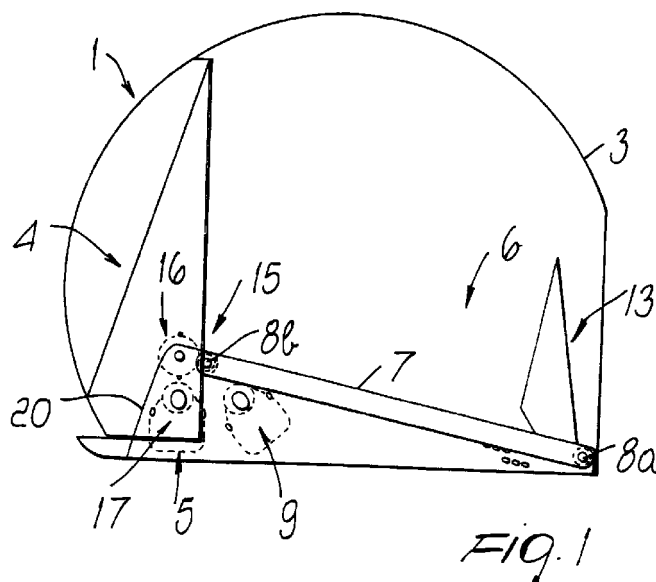
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(54) **Newspaper and/or magazine vending machine**

(57) A newspaper and/or magazine vending machine (1) comprising a box-like container (3) which has a swing-down front door (4). The vending machine contains a lifting unit (6) for newspapers and/or magazines which are arranged so that their base rests on a

feeder (7). The vending machine also contains means (16,17,18) for selecting a single newspaper and/or magazine following preliminary selection and/or payment on the part of a user.



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Description

[0001] The present invention relates to a newspaper and/or magazine vending machine.

[0002] Newspaper vending machines are currently known which are substantially constituted by a box-like container which has an upper slot for dispensing a single newspaper and inside which stacked newspapers and/or magazines are arranged and are moved upward. When the newspaper at the top of the stack arrives at the level of the slot, suitable flanges having a fixed thickness are activated in order to expel it, and such flanges, by sliding over the newspaper located at the top of the stack, push it out of the container.

[0003] This conventional solution has several drawbacks, since it allows to select only newspapers or magazines which have the same dimensions, owing to the fixed thickness of the flanges used for moving them.

[0004] Considerable drawbacks are further noted if the newspapers absorb moisture: the movement of the first newspaper with respect to the underlying one in fact involves large surfaces, and any moisture between them can cause packing of the sheets and therefore break them if they are moved by forcing.

[0005] It is also known to use a device which moves a single newspaper by using suckers which are connected to air suction ducts.

[0006] This solution, however, has a drawback: it cannot be used with magazines or newspapers which comprise, for example, inserts which alter the flatness of their structure.

[0007] Moreover, in the case of very heavy magazines the suckers may even tear the first page without being able to drag the entire magazine.

[0008] The aim of the present invention is to solve the above-noted problems, eliminating the drawbacks of the cited prior art, by providing a newspaper and/or magazine vending machine which can be used so as to dispense a single newspaper or magazine in an optimum manner.

[0009] Within the scope of this aim, an important object of the present invention is to provide a vending machine which allows the user to select a single newspaper and/or magazine, keeping it intact even in the presence of any moisture inside said vending machine.

[0010] Another object of the present invention is to provide a machine which can also dispense rather heavy magazines without damaging them.

[0011] Another object of the present invention is to provide a machine which can dispense magazines containing inserts or other items which make their outside surface unevenly flat.

[0012] Another object of the present invention is to provide a machine which can dispense, without requiring any prior adjustment, magazines or newspapers or other printed matter which differs from the previously dispensed ones in terms of shape or weight.

[0013] Another important object of the present

invention is to provide a vending machine which is structurally simple and has low manufacturing costs.

[0014] This aim, these objects and others which will become apparent hereinafter are achieved by a newspaper and/or magazine vending machine, characterized in that it comprises a box-like container which has a swing-down front door and contains an inclined-plane lifting unit for said newspapers and/or magazines arranged so that their base rests on a feeder, means being provided for selecting a single newspaper and/or magazine following preliminary selection and/or payment on the part of a user.

[0015] Further characteristics and advantages of the invention will become apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a sectional side view of the vending machine according to the present invention;

Figure 2 is a front view of the lifting unit of the machine shown in Figure 1;

Figure 3 is a detail view of the means for selecting a single newspaper and/or magazine;

Figure 4 is a side view of the means for selecting a single newspaper and/or magazine and of the feeder;

Figure 5 is a second side view of the feeder.

[0016] With reference to the above figures, the reference numeral 1 designates a vending machine particularly for newspapers and/or magazines, which are designated by the reference numeral 2.

[0017] The vending machine is constituted by a box-like container 3 which is advantageously provided by means of a metallic body which has a curved shape and is therefore such as to contain and protect the newspapers and/or magazines and can also be used outdoors or in locations that are not protected from the weather; the curved shape therefore allows rain, moisture, hail or other to flow downward, thus avoiding deposits of water on the surface of the vending machine.

[0018] The vending machine further has a swing-down front door 4 which is hinged to the container at a base 5.

[0019] Advantageously, the front door 4 is constituted by a metallic frame and by a transparent impact-resistant polycarbonate sheet which accordingly allows the user to see the product inside the vending machine.

[0020] The curved configuration of the container therefore allows to keep the surface of the transparent polycarbonate sheet always clean in case of rain.

[0021] The vending machine further comprises an inclined-plane lifting unit, generally designated by the reference numeral 6, which is composed of a feeder, such as a first pair of toothed belts 7 which are mutually parallel, are tensioned between two pairs of first rollers

8a, 8b and are arranged so as to form an acute angle with respect to the lower supporting surface of the vending machine, considering a counterclockwise rotation as positive.

[0022] The first pair of toothed belts 7 is moved by means of a first gearmotor 9 which lies below the plane of arrangement of the first pair of toothed belts 7 and is connected to the first rollers 8a, 8b by means of a second belt 10.

[0023] A first fixed surface 11 is interposed between the first pair of toothed belts 7, and said first pair of toothed belts protrudes outside said first surface, so that part of the spines 12 of said newspapers and/or magazines 2 rests on them.

[0024] A panel 13 is furthermore rigidly coupled to the first pairs of toothed belts 7, protrudes above the first surface 11, is arranged transversely to the first pair of toothed belts, and acts as a supporting base for the lateral surface 14 of the newspaper and/or magazine.

[0025] The first gearmotor 9 turns in both directions, since it must move the panel 13 from the position that is adjacent to the supporting surface of the container proximate to the higher end 15 of the first pair of toothed belts 7.

[0026] Means for selecting a single newspaper are associated near the first pair of toothed belts 7 and are constituted by one or more second rollers 16 which are moved by means of a second gearmotor 17 which is connected to the second rollers 16 by means of at least one suitable third belt 18.

[0027] The second rollers 16 are provided with two ridges 19a and 19b which protrude diametrically from its lateral surface and whose purpose is to engage a spine 12 of a newspaper or magazine that arrives at an end 15 of the first pair of toothed belts 7, forcing it to perform a further forward movement and therefore conveying it at an adjacent inclined plane 20 for delivering the newspaper at an underlying tray 21.

[0028] The vending machine further comprises a light sensor 22 which is applied at the inclined plane 20 and whose function is to report to a suitable electronic board, which controls the system, that a newspaper has been dispensed, ensuring that the first and second gearmotors 9, 17 stop running.

[0029] A second function of the light sensor 22 is to prevent ill-intentioned individuals from accessing the inside of the vending machine without hindrance. During the standby condition, shown in Figure 1, if the beam of the light sensor 22 is interrupted by objects trying to reach the inside of the vending machine an acoustic and/or luminous alarm is activated.

[0030] Provisions are also made for the presence of adapted microswitches, whose basic functions are to block the stroke of the first pair of toothed belts 7 when the panel 13 reaches the end of its stroke and therefore when it arrives both at the end 15 and at the opposite end.

[0031] Use of the vending machine is as follows:

one begins from the initial position shown in Figure 1, in which the newspapers or magazines are arranged so that their spine 12 lies on the first pair of toothed belts 7 and their lateral surfaces 14 rest on each other, the first lateral surface resting at the panel 13.

[0032] The user, and therefore the buyer of the newspaper, can select the newspaper that he wants from a suitable board provided on the container, since it is possible to provide, for example, means for selection and payment which control the activation of a plurality of vending machines arranged side by side, which accordingly contain various kinds and numbers of magazines.

[0033] After the buyer has selected, by means of an appropriately provided keypad board, the corresponding newspaper or magazine that he wishes to purchase, and after the appropriate amount of money has been inserted at a suitable opening, the electronic board provided for this purpose activates the second gearmotor 17 and therefore the second rollers 16 which, by virtue of the presence of the ridges 19a, 19b located on the outside perimeter, engage the spine 12 of the newspaper in the fold side, thus making it fall onto the underlying tray 21.

[0034] If the second gearmotor 17 engages no newspaper, for example because such newspapers are still too distant to be reached by the ridges 19a, 19b, the first gearmotor 9 is activated and therefore actuates the movement of the panel 13 of the newspapers toward the end 15.

[0035] As soon as the newspapers arrive adjacent to the second rollers 16, such rollers engage a single newspaper or magazine, unloading it into the underlying tray; in this manner, the newspaper passes in front of the light sensor 22, which reports to the electronic board that the sale has occurred, removing power from both gearmotors 9, 17 or moving the panel 13 away from the front door 4.

[0036] The vending machine further comprises devices which are suitable to synchronize the movement of the first and second gearmotors; the ridges 19a, 19b furthermore have a height which is advantageously for example not greater than two millimeters, in order to be able to engage only one copy of the newspaper; moreover, engagement of one copy occurs only because the first pair of toothed belts pushes the newspapers toward the second rollers 16 at a lower speed than such second rollers.

[0037] It has thus been observed that the invention has achieved the intended aim and objects, a vending machine for newspapers and/or magazines having been provided which can work with any type of newspaper or magazine, regardless of the thickness thereof and further allowing to also dispense magazines enclosed in wraps which contain inserts or additional booklets.

[0038] It is also possible to sell road maps, brochures or computer magazines with compact discs, since the thickness of the material has no effect on the

operation of the vending machine.

[0039] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0040] The materials and the dimensions that constitute the individual components of the vending machine may be the most pertinent according to specific requirements. 5

[0041] The disclosures in Italian Patent Application No. TV99A000039 from which this application claims priority are incorporated herein by reference. 10

[0042] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs. 15

Claims

1. A newspaper and/or magazine vending machine, characterized in that it comprises a box-like container which has a swing-down front door and contains an inclined-plane lifting unit for newspapers and/or magazines arranged so that their base rests on a feeder, means being provided for selecting a single newspaper and/or magazine following preliminary selection and/or payment on the part of a user. 20 25 30
2. The vending machine according to claim 1, characterized in that said box-like container is formed by means of a metal body which has a curved shape, said container having said swing-down front door which is hinged at the base of said container and is constituted by a metallic frame and by a transparent sheet made of impact-resistant polycarbonate. 35
3. The vending machine according to claim 1, characterized in that said inclined-plane lifting unit is composed of a traction element, such as a first pair of toothed belts which are arranged parallel to each other and are tensioned between two pairs of first rollers which are arranged so as to form an acute angle with respect to a lower supporting surface of said vending machine, considering a counterclockwise rotation as positive. 40 45
4. The vending machine according to claim 3, characterized in that said first pair of toothed belts is moved by means of a first gearmotor which lies below a plane of arrangement of said first pair of toothed belts and is connected by means of a second belt to said first rollers. 50 55
5. The vending machine according to claim 3, characterized in that a first fixed surface is interposed

between said first pair of toothed belts, said first pair of toothed belts protruding outside said first surface so that part of spines of said newspapers and/or magazines rests on said belts.

6. The vending machine according to claim 5, characterized in that a panel is rigidly coupled to said first pairs of toothed belts, protrudes above said first surface, is arranged transversely to said first pair of toothed belts, and acts as a supporting base for the lateral surface of said newspaper and/or magazine.
7. The vending machine according to claim 3, characterized in that said first gearmotor turns in both directions, to move a panel from a position in which it is adjacent to said first pair of toothed belts of said container proximate to a higher end of said first pair of toothed belts.
8. The vending machine according to claim 3, characterized in that said means for selecting an individual newspaper are associated proximate to said first pair of toothed belts and are constituted by one or more second rollers which are moved by means of a second gearmotor which is connected to said second rollers by at least one third belt.
9. The vending machine according to claim 5, characterized in that said second rollers are provided with at least two ridges which protrude diametrically from its lateral surface to engage said spine of said newspaper or magazine which arrives at said adjacent end of said first pair of toothed belts, forcing a further forward movement thereof and thus conveying it at an adjacent inclined plane for releasing the newspaper at an underlying tray.
10. The vending machine according to claim 8, characterized in that it comprises a light sensor which is applied at said inclined plane to report to an electronic board that a newspaper has been dispensed, causing said first and second gearmotors to stop running.
11. The vending machine according to claim 10, characterized in that said light sensor activates an acoustic and/or luminous alarm.
12. The vending machine according to claim 7, characterized in that it comprises microswitches adapted to block the stroke of said first pair of toothed belts when said panel reaches the end of its stroke.
13. The vending machine according to claim 1, characterized in that it further comprises one or more buttons arranged on said container, and means for selection and payment which control the activation of a plurality of vending machines which are

arranged side by side and thus allow to purchase various kinds and numbers of magazines.

14. The vending machine according to claim 11, characterized in that said light sensor reports to said electronic board that a sale has occurred once a newspaper has been released onto a tray, removing power from said first and second gearmotors or making said panel move away from said front door. 5 10
15. The vending machine according to claim 8, characterized in that it comprises devices which are adapted to synchronize the movement of said first and second gearmotors. 15
16. The vending machine according to claim 8, characterized in that said first pair of toothed belts pushes said newspapers toward said second rollers at a lower speed than said second rollers. 20

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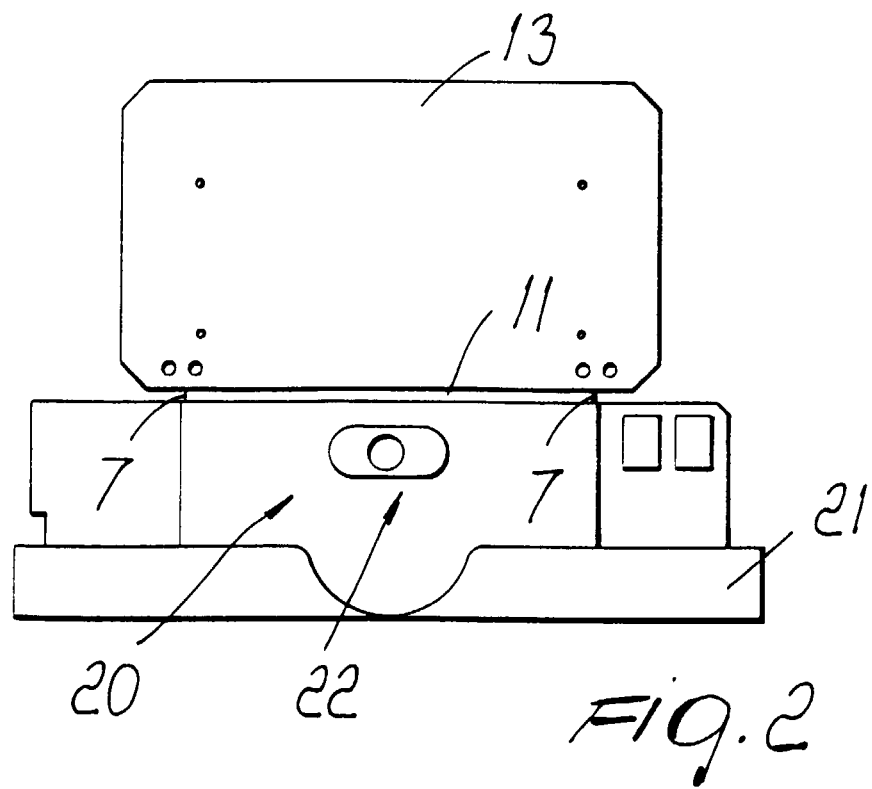
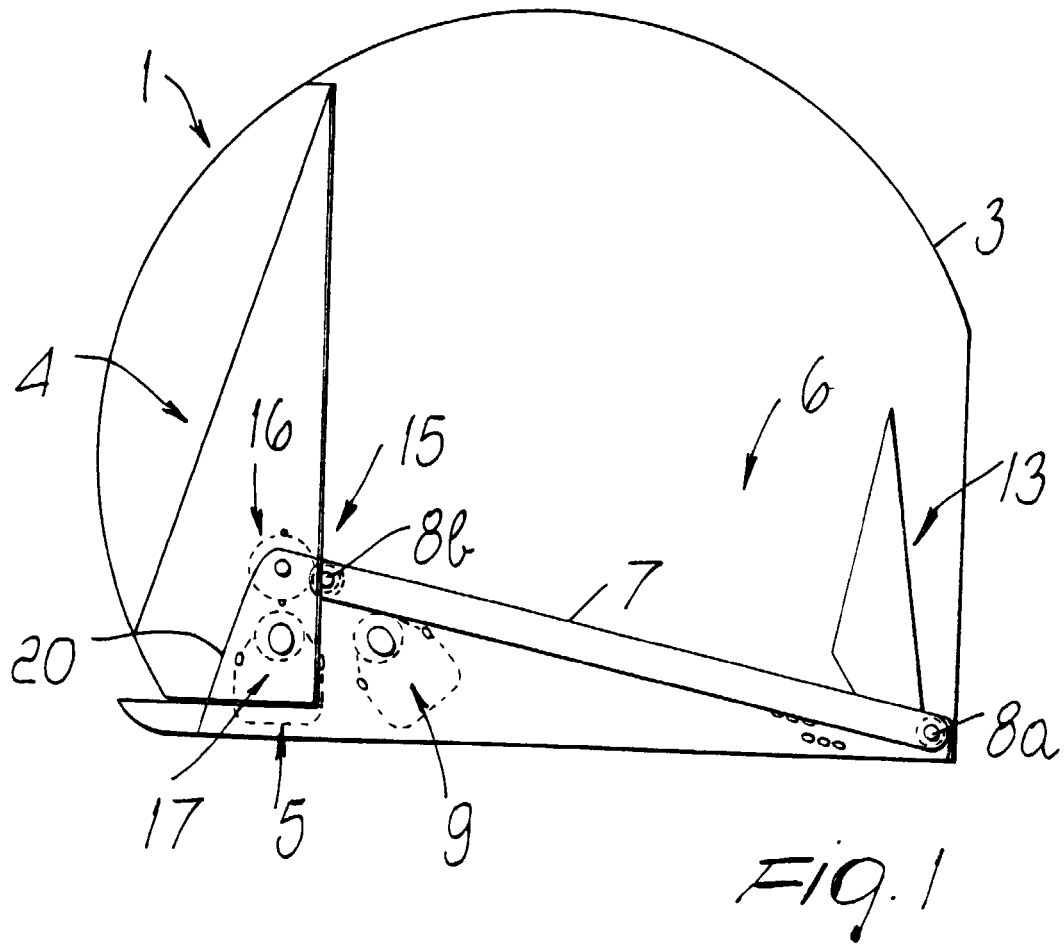
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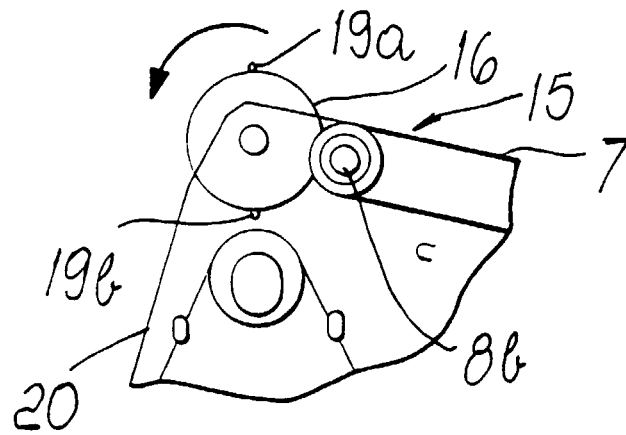


FIG. 3

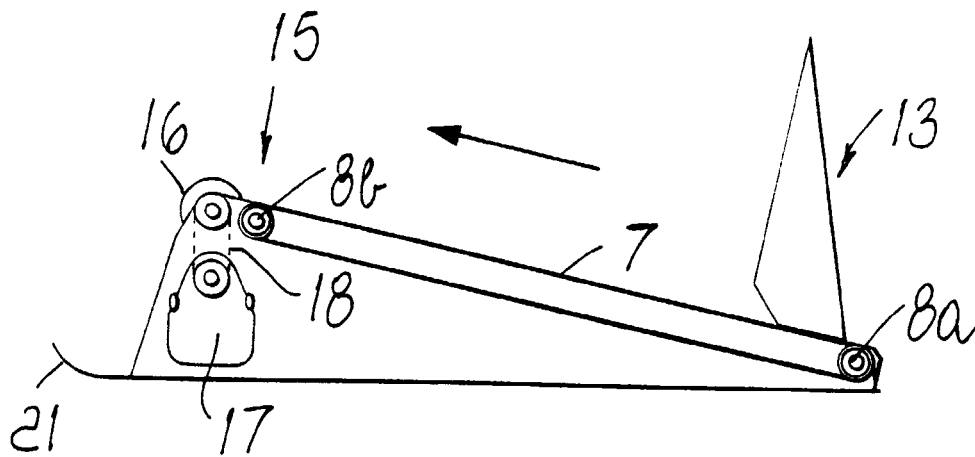


FIG. 4

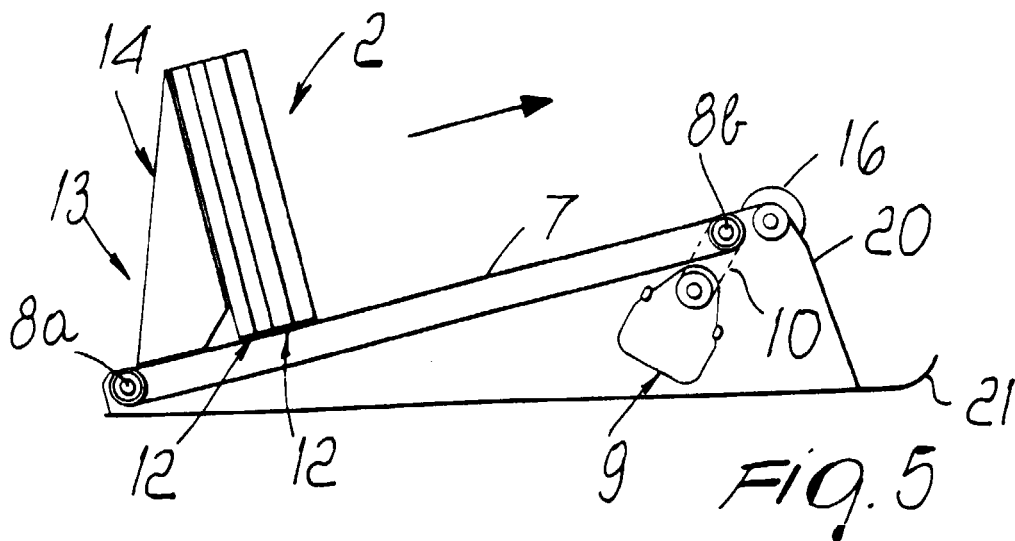


FIG. 5