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(54) **Automatic vending machine**

Warenausgabeautomat

Distributeur automatique d'objets

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Description

[0001] The present invention relates to an automatic dispenser, of the type consisting of a wheel mechanism which is used for storage and transport of the products to be dispensed to the outlet. The dispenser of the invention can be used, for example, as a vending machine for packaged products or articles.

[0002] Dispensers of the type mentioned consist of generally flat scoops which on their back side are provided with means of latching to the adjacent scoop in front and behind it, thus making up the links of the drive chain. That is, each scoop and the adjacent links of the drive chain make up a single piece. For example, GB1245048A discloses a vending machine of that type. If the size of the goods to be vended is not bigger than the length of the link, then each link will have a shelf moulded integrally with it, whereas if the goods to be vended are of a size greater than the length of the link, only alternate links may have a shelf moulded integrally with it.

[0003] With this arrangement, the relative position of the scoops with respect to the chain link is fixed, and the separation between consecutive scoops can only be an integer number of times the length of the chain link.

[0004] The object of the present invention is a wheel-type automatic dispenser, with scoop positions which can be adjusted at will, between set limits, so that the separation between consecutive scoops may vary, thus allowing transport of products of different sizes.

[0005] Another object of this invention is to obtain a dispenser of the above mentioned type where the wheel can be used with a duplicated transport capacity with respect to traditional wheels.

[0006] According to the present invention, each of the wheel scoops consists of an independent chain link and transportation pallet.

[0007] The link is provided with means for its articulation with adjacent links. In addition the link is provided with anchoring points for attaching the pallet at different points in it. This allows selection of the anchoring point for the pallet on the link, and thus of the separation or distance between the pallets of consecutive scoops.

[0008] The pallet of the links of the dispenser of the invention consists of a plate which may be introduced and attached by one of its edges on any of the link anchoring points.

[0009] The means of attaching the pallets to the link anchoring points can be any whatsoever. For example, the link anchoring points can consist of transverse recesses, as grooves, on the outer face of the links, of a width approximately the same as the thickness of the pallet edges to be introduced in these recesses. Both the link recesses and the pallet edge which is introduced can be provided with additional means of retention, in order to avoid an accidental separation of the pallets during the operation of the unit.

[0010] According to another characteristic of the in-

vention, the wheel made according to the invention can have a duplicated storage and transport capacity. For this, the pallets are provided at their free transverse edge with a longitudinal groove, which is situated on the same plane for all scoops. A partition passes through this groove defining two separate transport columns in the unit. The outlet of these columns is controlled by independent trapdoors with alternating opening, which may consist of independent tabs, each of which crosses the outlet of one of such columns at a different height, so that during operation of the first mechanism the product or article will be released which is placed on the part of the pallet in the path of the shorter tab, with the article on the other side of the partition being retained by the longer tab for the following service.

[0011] With the above mentioned structure a wheel-type dispenser is obtained where the separation between scoops can be adjusted at will, allowing storage and transport of products of different sizes.

[0012] In addition, the dispenser of the invention allows using the wheel in a duplicated capacity when the size of the products dispensed allows so.

[0013] The characteristics and advantages of the dispenser of the invention can be better understood with the following description, made with reference to an attached set of drawings where a non-limiting example of an embodiment is shown.

[0014] In the drawings:

[0015] Figure 1 is a perspective view of an automatic dispenser, wheel-type, constructed according to the invention.

[0016] Figure 2 is a perspective view of the transport chain of the dispenser of figure 1 including the scoops and links of the drive chain.

[0017] Figure 3 is a side elevation of the set of scoops and links shown in figure 2.

[0018] Figure 4 is a plan view of a scoop, constructed according to the invention.

[0019] Figure 5 is a side elevation of the scoop of figure 4.

[0020] Figure 6 is a cross section of the scoop along the VI-VI line of figure 4.

[0021] Figure 7 is an enlarged section along the VII-VII line of figure 4, in a greater scale, of the anchoring elements of the scoop.

[0022] Figure 8 is a front elevation of one of the links which make up part of the wheel of the dispenser of the invention.

[0023] Figure 9 is a top plan view of the link of figure 8.

[0024] Figure 10 is a cross section of the link along the line of figure 8.

[0025] Figures 11 and 12 are front and rear perspective views showing the relative positions of the shovels which control the outlet of the last pallet of the wheel.

[0026] Figure 13 is a view similar to figure 11, showing two packages or objects on the pallet placed in front of the outlet opening.

[0027] Figure 14 is a view similar to figure 12, showing

two packages or articles on the last pallet and with the partition which passes through the pallet groove.

[0028] Figure 1 shows a dispenser which consists of a case (1), within which is a wheel mechanism (2), with scoops which store and transport the articles or products to be dispensed until they reach outlet opening (3), controlled by trapdoors.

[0029] The wheel which makes up the dispenser of the invention consists of scoops, made from independent pallets (4) and links (5) which make up the drive chain.

[0030] The scoops consist of a pallet of an approximately rectangular outline in the example shown in the drawings, which is provided with lateral reinforcement ribs, as can be seen in figures 4 to 7. Pallet (4) which makes up the scoop is attached by one of its side edges (6) to links (5). For this, this edge has anchoring tabs (7) with half-arrow tips, which can be introduced in the recesses made in link (5), as is later described with reference to figures 8 and 10.

[0031] Pallet (4) which makes up the scoop is also provided, in its free transverse edge, with a longitudinal groove (8) which nearly reaches the back edge.

[0032] As one can see, pallet (4) could have a different make-up, with anchoring points in its rear side for attaching the link.

[0033] Links (5) which make up the drive chain of the wheel shown in the drawings also have a basically flat shape and an approximately rectangular outline, as shown in figures 8 to 10. These links (5) are provided along their longitudinal edges with latching means to other links which consist of two end tubular bushings (9), which are placed on one of the longitudinal edges, and by a complementary longitudinal central bushing (10) placed on the opposite edge. Coupling of consecutive links is achieved by inserting central bushing (10) of a link between end bushings (9) of the following link, with both ending aligned axially in order to receive an articulation shaft.

[0034] The front face of link (5) has pairs of transverse partitions (11) leaving from it, defining recesses or grooves (12) of a width approximately equal to the thickness of the rear edge (6) of pallets (4), so that this edge is tightly fitted in them. In each pair of partitions (11) the upper one has a rear window (13) of a size which can receive the half-arrow tip end of anchoring tabs (7) of pallets (4).

[0035] With the described structure, in order to attach pallet (4) of a scoop to the corresponding link, the rear edge of this pallet is introduced in groove (12) made in partitions (11), by gently pressing the pallet against the link. Anchoring tabs (7) of pallet (4) which makes up the scoop will be slightly deformed, due to their structure, when they enter the pair of partitions (11), until they reach rear window (13) of the upper partition, at which time they elastically regain their position and partially enter window (13), making up retention elements which prevent an accidental separation of the scoop.

[0036] As each link (5) of the chain has two or more anchorings for pallets (4), the attachment position for the scoop may be selected and therefore so can the separation between consecutive scoops, adapting it to the size of the products to be dispensed.

[0037] Link (5) can be provided with reinforcement means (14) on the outer surface of partitions (11).

[0038] With the structure described, when the different pallets (4) are mounted, their longitudinal groove (8) is left in a co-planar location. In the path, at least when the wheel moves forward, a partition (15) can be placed between grooves (8), figure 1, defining two independent transportation columns. Outlet (3) of each column will be controlled by an independent trapdoor of alternating opening, labelled as (16) and (17) in figures 11 to 14.

[0039] For this, trapdoors (16) and (17) can consist of two independent tabs of different length, each of which will intercept the outlet of one of the above mentioned columns at a different height.

[0040] Figures 13 and 14 show pallet (4) in the lower position in the forward motion of the wheel, in front of trapdoors (16) and (17). Each pallet (4) carries two identical articles or packages, labelled (20) and (21), which will be separated by partition (15). When the machine is activated, in its initial forward motion article or package (20) opposite lower trapdoor (16) will be free to fall on the dispensing chute and opening, while package (21) will be retained by higher trapdoor (17). In the following activation this package (21) will be freed while package (20) of the following scoop is placed opposite trapdoor (16), in the position shown in figure 3, ready to be freed when the machine is next activated.

[0041] With the structure described, according to the invention, the traditional, fixed-position scoops are replaced by an independent shovel-and-link unit, so that the shovel, which makes up the scoop, can be set several positions with respect to the link, allowing to select the separation between consecutive scoops.

[0042] In the dispenser of the invention, in addition to adjusting the height or separation between the shovels the wheel capacity may be doubled by setting partition (15) through groove (8) of pallets (4).

45 Claims

1. Automatic dispenser, consisting of a wheel mechanism whose scoops carry the products to be dispensed towards an outlet (3) where said products meet a retention trapdoor, wherein each scoop consists of a link (5) of the chain and an independent transport pallet (4); whose link (5) is provided with means of articulation with adjacent links (5) and with anchoring points (11, 12, 13) to attach the pallet (4) at different points along link (5), in order to select the distance between pallets (4) of consecutive scoops; and whose pallet (4) is made up of a plate which can be inserted and attached by one of its

edges to one of the anchoring points of links (5).

2. Dispenser as in claim 1, **characterised in that** the anchoring points of links (5) for pallets (4) consist of transverse recesses or grooves (12) made in these links (5) on their outer face, of a width similar to the thickness of the edge of pallets (4) which are inserted in these recesses.
3. Dispenser as in claims 1 and 2, **characterised in that** the above mentioned recesses (12) of links (5) and the edge of pallets (4) which is inserted in these recesses are provided with complementary means of retention to prevent an accidental separation of these pallets (4).
4. Dispenser as in claim 1, **characterised in that** pallets (4) are provided, from their free transverse edge, with a longitudinal groove (8) which nearly reaches the opposite transverse edge.
5. Dispenser as in claim 4, **characterised in that** it contains a partition (15) which passes through the longitudinal grooves (8) of pallets (4) and defines two independent transportation columns, whose outlet is controlled by independent trapdoors (16, 17) which open alternately.
6. Dispenser as in claim 5, **characterised in that** independent trapdoors (16, 17) opening alternately consist of two independent tabs, each of which intercepts the outlet of one of the above mentioned columns at a different height.

Patentansprüche

1. Automatische Ausgabevorrichtung bestehend aus einem Radmechanismus, dessen Schaufeln die auszugebenden Erzeugnisse zu einem Auslaß (3) befördern, wo sie eine Rückhalte-Falltür vorfinden, wobei jede Schaufel aus einem Glied (5) einer Kette und einer unabhängigen Transportpalette (4) besteht; dessen Glied (5) an das benachbarte Glied (5) angelenkt und mit Ankerpunkten (11, 12, 13) zum Anbringen der Palette (4) an verschiedenen Stellen entlang des Glieds (5) ausgestattet ist, um den Abstand zwischen den Paletten (4) aufeinanderfolgender Schaufeln wählen zu können; und dessen Palette (4) aus einer Platte gefertigt ist, die mit einer ihrer Kanten eingeschoben und an einem der Ankerpunkte des Glieds (5) befestigt werden kann.
2. Ausgabevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Ankerpunkte der Glieder (5) für Paletten (4) aus querliegenden Vertiefungen oder Nuten (12) bestehen, die in diesen Gliedern

(5) auf deren Außenseite angebracht sind, und zwar mit einer Breite, die der Kantenstärke der Paletten (4), welche in diese Vertiefungen eingeschoben werden, ähnlich ist.

3. Ausgabevorrichtung nach den Ansprüchen 1 und 2, **dadurch gekennzeichnet, daß** die obenerwähnten Vertiefungen (12) der Glieder (5) und die Kante der Paletten (4), welche in diese Vertiefungen eingeschoben wird, mit aufeinander abgestimmten Rückhaltevorrichtungen ausgestattet sind, um ein ungewolltes Lösen dieser Paletten (4) zu verhindern.
4. Ausgabevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** in den Paletten (4) eine in Längsrichtung verlaufende Nute (8) vorgesehen ist, die vom freien Querende der Palette bis fast zum gegenüberliegenden Querende reicht.
5. Ausgabevorrichtung nach Anspruch 4, **dadurch gekennzeichnet, daß** sie eine Trennwand (15) enthält, die sich durch die Nuten (8) der Paletten (4) erstreckt und dabei zwei unabhängige Transportsäulen definiert, deren Auslaßöffnung durch unabhängige Falltüren (16, 17) gesteuert wird, die sich abwechselnd öffnen.
6. Ausgabevorrichtung nach Anspruch 5, **dadurch gekennzeichnet, daß** die sich abwechselnd öffnenden, unabhängigen Falltüren (16, 17) aus zwei unabhängigen Laschen bestehen, welche die Auslaßöffnung der obenerwähnten Säulen in jeweils verschiedenen Höhen unterbrechen.

Revendications

1. Distributeur automatique, se composant d'un mécanisme à galets dont les logements transportent les produits à distribuer vers un orifice de sortie (3) où lesdits produits rencontrent un trappe de retenue, dans lequel chaque logement se compose d'un maillon (5) de la chaîne et d'une palette de transport indépendante (4); lequel maillon (5) est équipé de moyens d'articulation avec les maillons adjacents (5) et avec des points d'ancrage (11, 12, 13) pour fixer la palette (4) en différents points le long du maillon (5), afin de sélectionner la distance entre les palettes (4) et les godets correspondants; et laquelle palette (4) se compose d'une plaque que l'on peut insérer et fixer par un de ses rebords à un des points d'ancrage des maillons (5).
2. Distributeur selon la revendication 1, **caractérisé en ce que** les points d'ancrage des maillons (5) pour des palettes (4) se composent de creux transversaux ou de cannelures (12) réalisés dans ces

maillons (5) de leur côté externe, d'une largeur identique à l'épaisseur du rebord des palettes (4) qui sont insérées dans ces creux.

3. Distributeur selon les revendications 1 et 2, **caractérisé en ce que** les creux mentionnés ci-dessus (12) des maillons (5) et le rebord des palettes (4) qui sont insérées dans ces creux sont équipés de moyens complémentaires de retenue afin de prévenir une séparation accidentelle de ces palettes (4). 5
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4. Distributeur selon la revendication 1, **caractérisé en ce que** les palettes (4) sont munies, à partir de leur rebord transversal libre, d'une fente longitudinale (8) qui atteint presque le rebord transversal opposé. 15
5. Distributeur selon la revendication 4, **caractérisé en ce qu'il** comprend une cloison (15) qui traverse les fentes longitudinales (8) des palettes (4) et définit deux colonnes indépendantes de transport, dont l'orifice de sortie est contrôlé par les trappes indépendantes (16, 17) qui s'ouvrent alternativement. 20
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6. Distributeur selon la revendication 5, **caractérisé en ce que** les trappes indépendantes (16, 17) s'ouvrant alternativement, comprennent deux languettes indépendantes dont chacune arrête l'orifice de sortie d'une des colonnes mentionnées ci-dessus à une hauteur différente. 30

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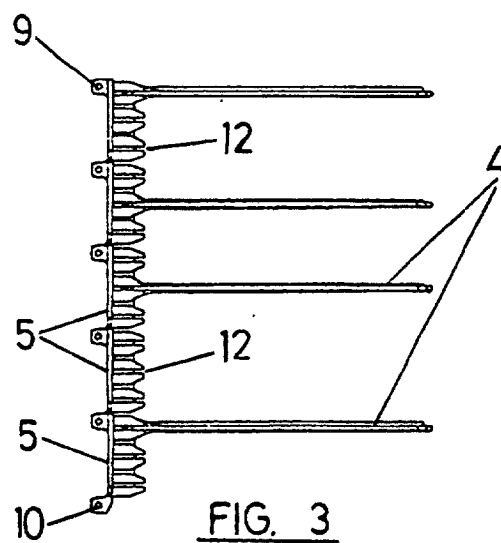
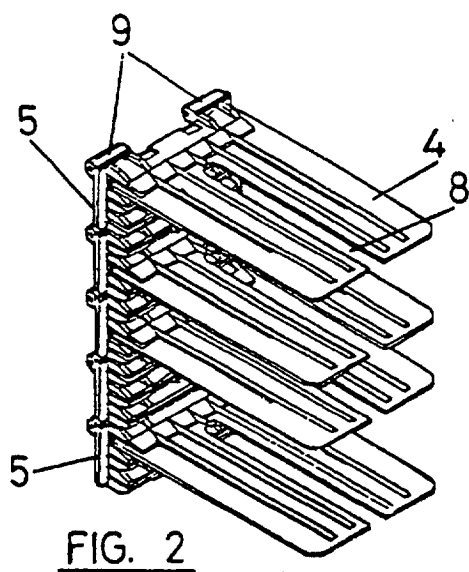
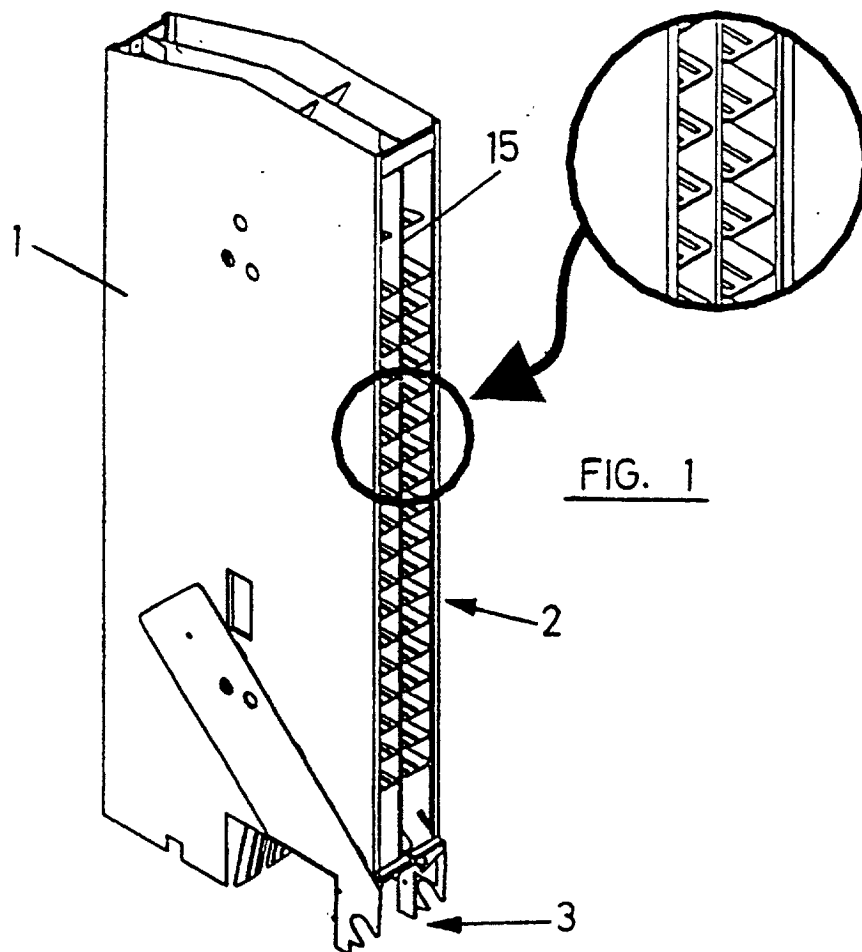




FIG. 5

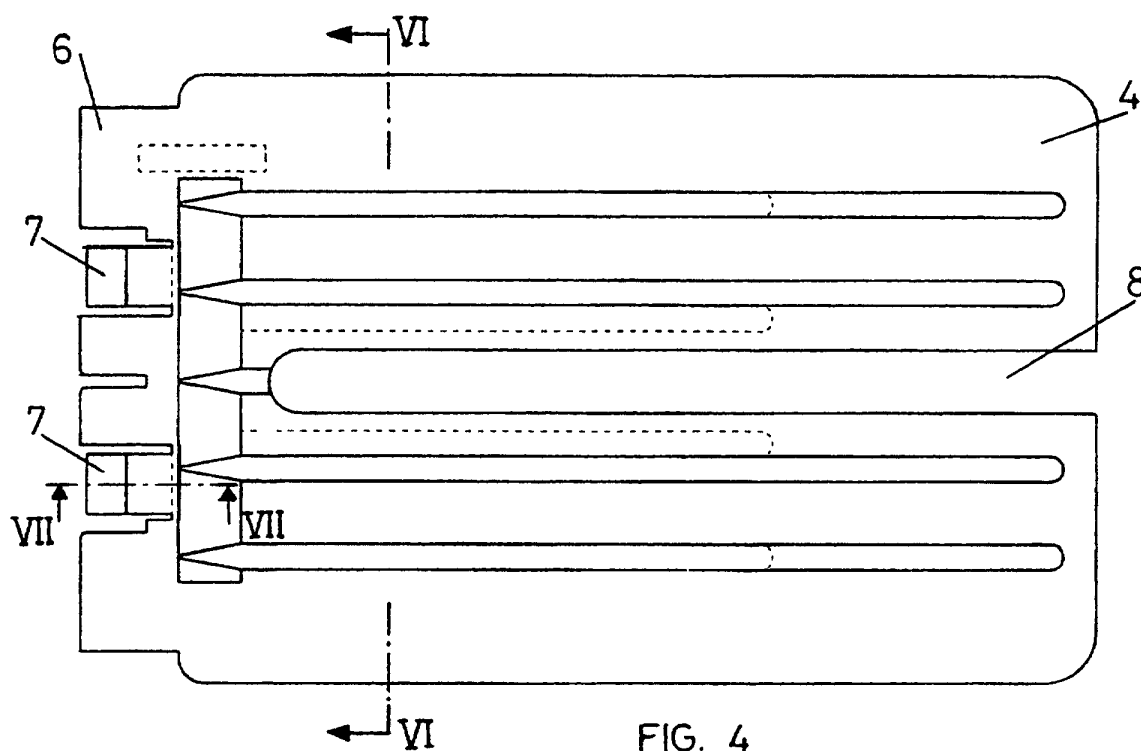


FIG. 4

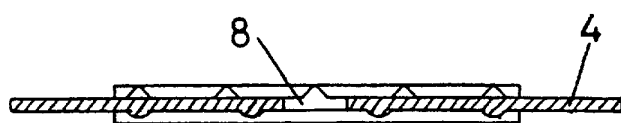


FIG. 6

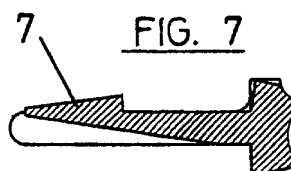


FIG. 7

