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(54) GEARMOTOR GROUP FOR A VENDING MACHINE OF PRODUCTS

GETRIEBEMOTORGRUPPE FÜR EINEN PRODUKTVERKAUFSAUTOMATEN

GROUPE DE MOTEUR A ENGRENAGES POUR DISTRIBUTEUR AUTOMATIQUE DE PRODUITS

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Description

[0001] The present invention refers to a gearmotor group for a product vending machine which has considerable utility and ease of use characteristics.

[0002] In common solid product vending machines, the ejection mechanism of the products usually consists of a spiral element, in the spirals of which the products are inserted which are destined to be sold, controlled by a gearmotor group equipped with gearbox preferably made of plastic material, in order to reduce the manufacturing costs. When the user purchases a specific product, the gearmotor group makes the spiral element rotate around its own axis, such that the selected product is ejected from the spiral itself to reach the exit mouth of the vending machine.

[0003] Depending on the size and typology of the products to be dispensed, the spiral elements which support them can have different dimensions and pitch and above all their reciprocal distance can be varied. Consequently, the gearmotor groups coupled to such spiral elements are also organised so to be able to vary their position, increasing and decreasing the centre distances between gearmotor groups based on the typology and size of the product to be dispensed.

[0004] If the product has particularly large or particular dimensions and/or package typology, double gearmotor groups can be used. In practice, these are composed of a single gearbox with double centre distances comprising two spiral-carrier discs, with an internal gear system configured such that the two connected spirals, right and left, turn in an opposing manner. Based on this system, each product will be transported externally by both spirals, right and left, which respectively have clockwise and counterclockwise winding sense.

[0005] Up to now, the builders of these product ejection mechanisms for vending machines have always oriented towards the separate production of two different typologies of gearmotor groups, i.e. the single gearmotor group, which controls a single spiral, and the double gearmotor group, destined to control two separate spirals. This requires, then, the preparation of two different production lines and leads to the need to substitute the entire gearmotor group when it is desired to vary the typology or dimensions of the products destined for sale inside the same vending machine.

[0006] Object of the present invention is therefore that of making a gearmotor group for a product vending machine capable of operating both as single module and as double module, with evident advantages in terms of savings on the production costs and versatility of the vending machine itself.

[0007] Another object of the invention is that of making a gearmotor group for a product vending machine which is easily and rapidly adaptable for use modality based on the typology of the offered products, facilitating both the use of spare parts and the rapid configuration of the vending machine directly in the place of use.

[0008] These and other objects according to the present invention are achieved by making a gearmotor group for a product vending machine as set forth in claim 1.

[0009] Further advantageous characteristics of the invention are shown in the subsequent claims.

[0010] The characteristics and advantages of a gearmotor group for a product vending machine according to the invention will be more evident from the following description of a particular embodiment, provided as exemplifying and non-limiting and referred to the attached schematic drawings wherein:

Figure 1 is an axonometric view of a product-carrier drawer of a vending machine equipped with a plurality of gearmotor groups according to the invention;
Figure 2 is a front view of the gearmotor groups according to the invention and the related fixing grate:
Figure 3 is a front view of the gearmotor groups of figure 2, inserted in the related fixing grate according to several of the possible configurations;
Figure 4 is a top view of the gearmotor groups of figure 3;
Figure 5 is a rear side view of the gearmotor groups of figure 4; and
Figure 6 is a perspective view of the gearmotor groups of figure 4.

[0011] With reference in particular to figure 1, the product-carrier drawer 10 is shown of a generic solid product vending machine, in which a plurality of spiral elements 12 are installed with different pitch for receiving and dispensing different products. To avoid the accidental and undesired discharge of products from the lane defined by the related dispenser spiral 12, separation walls 14 can be possibly provided between one spiral and the other.

[0012] Each spiral element 12 is bound, by means of the interposition of a suitable spiral-carrier disc 18, to a gearmotor group 16 of double type, i.e. capable of simultaneously supporting and moving up to two spiral elements 12. Each gearmotor group 16 operates according to known functioning modes, being equipped with a system of internal gears configured so to make the two spirals 12 simultaneously rotate, spirals connected according to opposing rotation directions.

[0013] To sustain and lock in operating position the gearmotor groups 16 and the spirals connected to them, a support grate 20 is provided in comb form, placed on the rear side of the drawer 10. Such comb grate 20, which also supports the possible separation walls 14, is fixed to the drawer 10 of the vending machine by means of snap couplings or other equivalent fixing elements.

[0014] Advantageously, each gearmotor group 16 is equipped with a particular fixing system to the comb grate 20 composed of three blocks 22 of cubic form, visible for example in figures 2 and 6, made at regular centre distances on the front wall of the gearmotor group 16. Every

side of the block 22 has appropriate dimensions in order to be stably inserted inside the corresponding slots 26 of the grate 20 and possesses an upper flanged edge 24 which acts as anchoring element of the block 22 to the front wall of the slot 26.

[0015] The three flanged blocks 22 have the same centre distance as the slots 26 of the grate 20, so to permit installing the gearmotor group 16 both horizontally, using both the discs 18 and the related spirals 12, and vertically, being able in the latter case to operate as a single motor, and consequently with a single connected spiral 12, or also with two overlapping spirals 12, in a configuration particularly adapted for the movement of tall products such as for example the bottles.

[0016] In case of horizontal installation of the gearmotor group 16, all three blocks 22 are inserted inside three corresponding, adjoining slots 26, ensuring the perfect stability of the gearmotor group itself on the comb support grate 20. In case of vertical mounting, on the other hand, the stability of the gearmotor group 16 is in any case ensured by the fact that, due to the particular positioning and spacing of the blocks 22 with respect to the total height of the slots 26, at least two of such blocks 22 result inserted inside a single slot 26, as seen in particular in figures 1, 3 and 6.

[0017] It has thus been seen that the gearmotor group for a product vending machine according to the invention fully achieves the previously mentioned objects, since due to the particular fixing system, it is adapted to be used both as single motor and as double motor simply by modifying its positioning on the related support. Moreover, the operations of insertion and disconnection of the gearmotor group, both in horizontal and vertical position, are extremely simplified, not requiring the use of specific tools.

[0018] It must in any case be noted that the gearmotor group for a product vending machine according to the invention is susceptible to numerous modifications and variations, all falling within the same inventive concept.

[0019] Moreover, in practice the materials used, as well as their dimensions and the components, can be any according to the technical needs.

Claims

1. Gearmotor group (16) for a solid product vending machine, adapted to be sustained and locked in operative position on a support grate (20) of the product-carrier drawer (10) of said machine and adapted to sustain and move at least one spiral element (12) for the dispensing of products by means of the interposition of at least one spiral-carrier disc (18), said gearmotor group (16) being equipped with a fixing system to the slots (26) of said support grate (20), **characterized in that** said fixing system to the slots (26) of said support grate (20) is composed of at least three blocks (22) of cubic form, made at regular centre distances on the front wall of said gearmotor group (16).

2. Gearmotor group (16) according to claim 1, **characterized in that** each of said blocks (22) possesses a flanged upper edge (24) which acts as anchoring element of said block (22) to the front wall of the slot (26) of said support grate (20).

3. Gearmotor group (16) according to claim 1, **characterized in that** said at least three blocks (22) have the same centre distance as the slots (26) of said support grate (20).

4. Gearmotor group (16) according to claim 3, **characterized in that** all three blocks (22) are inserted inside thee corresponding, adjoining slots (26) of said support grate (20) in case of horizontal mounting of said gearmotor group (16) with respect to said product-carrier drawer (10).

5. Gearmotor group (16) according to claim 3, **characterized in that** at least two of said three blocks (22) are inserted inside a single slot (26) of said support grate (20) in case of vertical mounting of said gearmotor group (16) with respect to said product-carrier drawer (10).

Patentansprüche

1. Getriebemotorgruppe (16) für eine Verkaufsmaschine für Festprodukte, die zur Halterung und Verriegelung in einer Arbeitsstellung an einem Trägerrost (20) des Produktträgereinschubs (10) der Maschine ausgelegt ist und zum Festhalten und Bewegen mindestens eines Spiralelements (12) für das Ausgeben von Produkten mit Hilfe des Zwischenschaltens mindestens einer Spiralträgerscheibe (18) ausgelegt ist, wobei die Getriebemotorgruppe (16) mit einem System zur Befestigung an den Schlitzen (26) des Trägerrosts (20) ausgerüstet ist, **dadurch gekennzeichnet, dass** das System zur Befestigung an den Schlitzen (26) des Trägerrosts (20) aus mindestens drei Blöcken (22) mit kubischer Form besteht, die mit regelmäßigen Mittenabständen an der Vorderwand der Getriebemotorgruppe (16) ausgebildet sind.

2. Getriebemotorgruppe (16) nach Anspruch 1, **dadurch gekennzeichnet, dass** jeder der Blöcke (22) eine angeflanschte obere Umrandung (24) besitzt, die als Verankerungselement des Blocks (22) an der Vorderwand des Schlitzes (26) des Trägerrosts (20) dient.

3. Getriebemotorgruppe (16) nach Anspruch 1, **dadurch gekennzeichnet, dass** die mindestens drei

Blöcke (22) den gleichen Mittenabstand wie die Schlitze (26) des Trägerrosts (20) aufweisen.

4. Getriebemotorgruppe (16) nach Anspruch 3, **dadurch gekennzeichnet, dass** im Fall einer horizontalen Montage der Getriebemotorgruppe (16) alle drei Blöcke (22) in drei entsprechende benachbarte Schlitze (26) des Trägerrosts (20) mit Bezug auf den Produktträgereinschub (10) eingeführt sind.

5. Getriebemotorgruppe (16) nach Anspruch 3, **dadurch gekennzeichnet, dass** im Fall einer vertikalen Montage der Getriebemotorgruppe (16) mindestens zwei der drei Blöcke (22) in einen einzigen Schlitz (26) des Trägerrosts (20) mit Bezug auf den Produktträgereinschub (10) eingeführt sind.

Revendications

1. Groupe de moteur à engrenage (16) pour un distributeur automatique de produits solides, adapté pour être porté et verrouillé dans une position de service sur une grille support (20) du tiroir (10) de support de produits dudit distributeur, et adapté pour porter et mettre en mouvement au moins un élément en spirale (12), en vue de la distribution des produits, par le biais de l'interposition d'au moins un disque (18) porteur de spirale, ledit groupe de moteur à engrenage (16) étant équipé d'un système de fixation aux fentes (26) de ladite grille support (20), **caractérisé par le fait que** ledit système de fixation aux fentes (26) de la grille support (20) est composé d'au moins trois blocs (22) en forme de cubes, réalisés à des distances de centre à centre régulières sur la paroi frontale du groupe de moteur à engrenage (16).

2. Groupe de moteur à engrenage (16) selon la revendication 1, **caractérisé par le fait que** chacun desdits blocs (22) possède un bord supérieur (24) à collerette, qui agit comme élément d'ancrage du bloc (22) sur la paroi frontale de la fente (26) de la grille support (20).

3. Groupe de moteur à engrenage (16) selon la revendication 1, **caractérisé en ce que** les blocs (22), au nombre d'au moins trois, présentent la même distance de centre à centre que les fentes (26) de la grille support (20).

4. Groupe de moteur à engrenage (16) selon la revendication 3, **caractérisé par le fait que** les trois blocs (22) sont tous insérés dans trois fentes (26) contiguës correspondantes de la grille support (20), en cas de montage horizontal du groupe de moteur à engrenage (16) par rapport audit tiroir (10) de support de produits.

5. Groupe de moteur à engrenage (16) selon la revendication 3, **caractérisé en ce qu'**au moins deux des trois blocs (22) sont insérés dans une même fente (26) de la grille support (20), en cas de montage vertical du groupe de moteur à engrenage (16) par rapport au tiroir (10) de support de produits.

Fig. 1

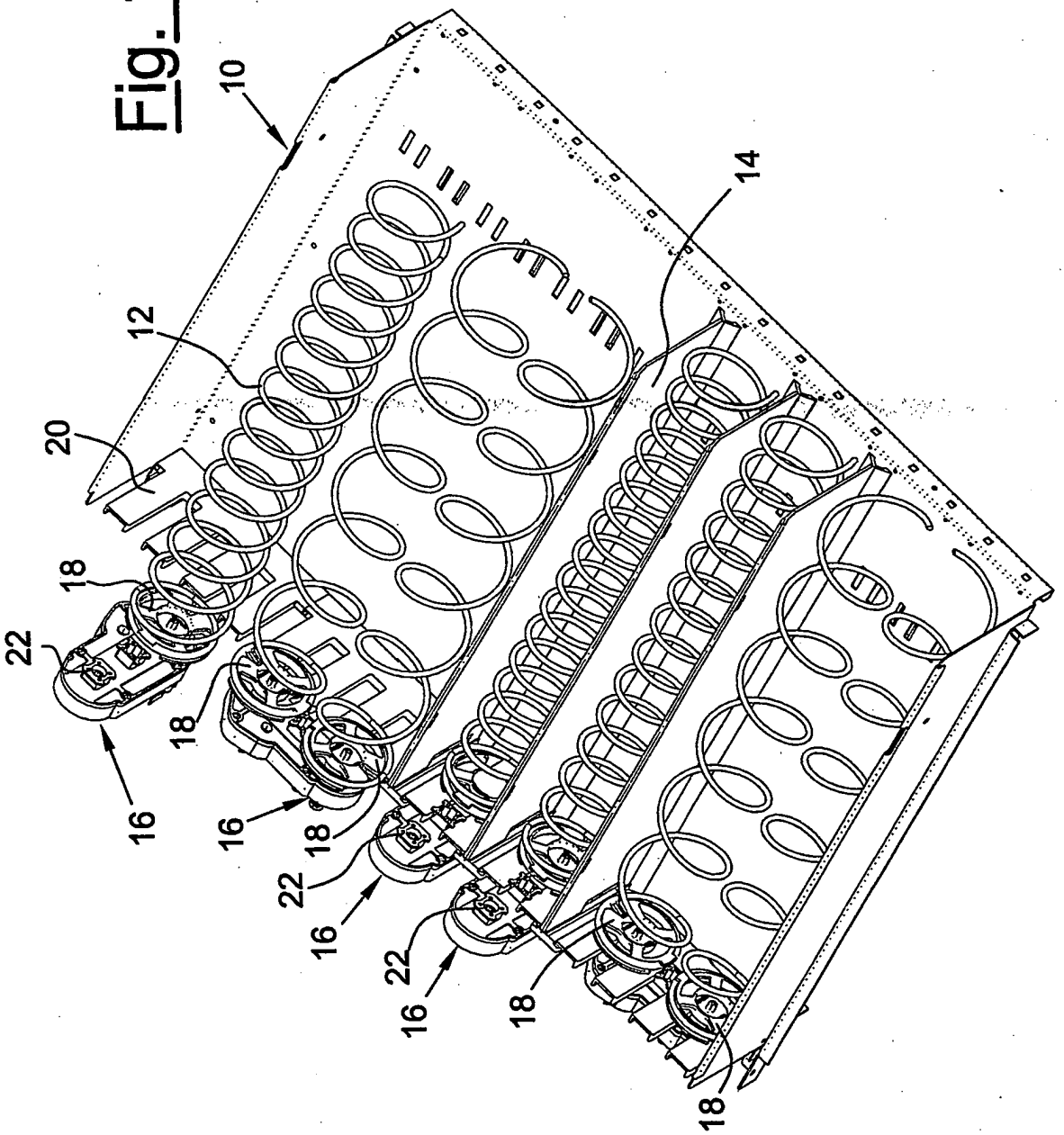


Fig. 5

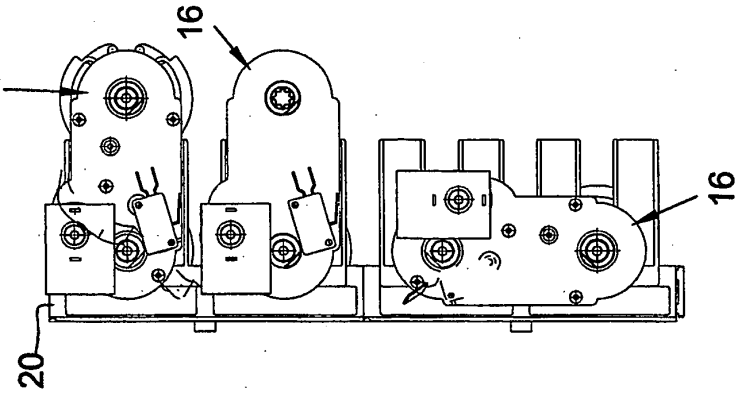


Fig. 4

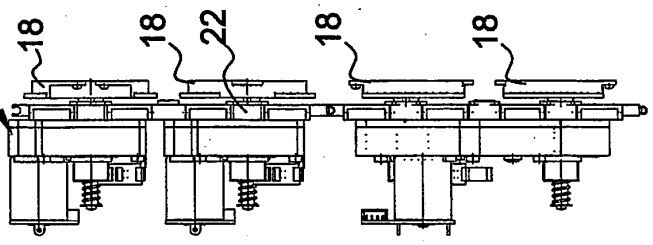


Fig. 3

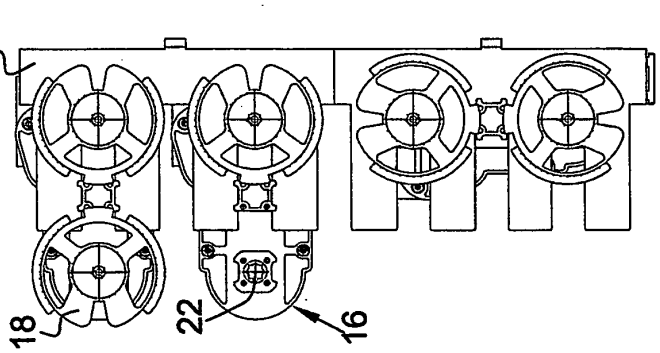


Fig. 2

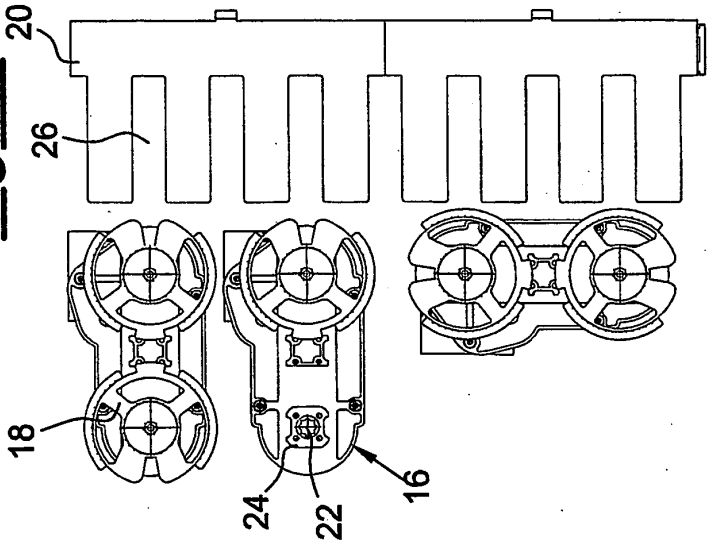


Fig. 6

