Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

The present invention relates to the field of cork agglomerated stoppers manufacturing machines. In particular, the invention concerns a cork granule batching machine for manufacturing agglomerated stoppers.

Cork stoppers are manufactured in a variety of ways, according to the quality of the raw materials available. High quality production involves manufacturing stoppers in one piece from a matrix of compact cork obtained directly from the tree bark, while products of lesser quality use agglomerated cork granules obtained from high quality stopper production waste, or from lots that do not possess the required quality for one-piece stoppers. Said granules are bonded with a non-toxic adhesive matrix.

A variety of methods are known for producing agglomerated stoppers. For example a certain amount of granules mixed with adhesive, herein referred to as "rod", can be extruded through an extruder comprising a heated tube, having the same diameter as the stopper to be manufactured, where the adhesive is solidified. A piston pushes the rod towards the extruder exit. This rod is cut to form the stoppers with the required length. The density of the stopper is obviously the same as the density of the "rod", that is, by the amount of granules in the volume that forms the "rod". This density depends on, to a certain extent, the compression force and the friction of the agglomerate against the walls of the extruder.

Another method for agglomerated stopper production involves the introduction of specific batches of granule agglomerate mixed with adhesive into moulds consisting of moulding bushes. The agglomerate with the adhesive is then pressed and successively transferred to an oven for the time required for solidification. After a suitable cooling period, the stopper is extracted from the moulding bush by pushing with a rod-shaped extraction element. The preparation of the correct granule batch to be introduced into the corresponding mould is carried out by batching machines.

A commonly known type of batching machine comprises a base frame that supports a box-like casing that extends in a longitudinal direction on a horizontal plane. A slide is arranged at the bottom of the box-like casing. The slide has a longitudinal shape, and on it a plurality of cradles are set, open on the upper side. Said cradles are arranged in a row along the longitudinal direction and are conceived to contain the cork granules mixed with adhesive which drop through gravity from a loading hopper located above the box-shaped casing. Then, fixed to the box-shaped casing there is a plurality of closing elements designed to close the upper side of the cradles. These closing elements are spaced in the same way as the cradles. The slide is attached to an oleodynamic cylinder that allows for a horizontal translation movement from a first position where the cradles are open at the top, to allow the granules to fall into the cradles, to a second position where the cradles are closed by the respective upper closing elements. The slide and the oleodynamic cylinder that allows its horizontal translation are attached to a same structure which can translate vertically by means of another oleodynamic cylinder when the cradles are in the second position, that is, when they are closed by the upper closing elements.

In this way the vertical size of the volume of the cradles can be varied from a predetermined load volume of granules (given by the volume of the cradles once moved under the closing elements) to a given granule compacting volume defined with the cradles when they reach the upper end of stroke of the vertical translation, thus forming the correct amount and density of the batch to produce the stopper. Once the granule batches have been compacted, these are pushed out of the cradles through corresponding openings defined on the side of the box-shaped casing.

In order to vary the granule batch density, the amount of granules must be varied before compacting. To achieve this, the volume of cradles with the load is adjusted by varying the width of the cradles through inserting metal plates between the side walls of the box-shaped casing and the said cradles.

However, this adjustment system presents a significant drawback. In order to ensure the insertion of the adjustment plates between the slide and the box-shaped casing, and the relative sliding action thereof, the positioning of the plates requires quite a considerable dimensional tolerance. This results in the fact that some cork granules enter between the plates, the slide and the box-shaped casing, this inevitably leading to seizure problems, making it necessary to stop the production in order to clean the machine.

The main aim of the present invention is to resolve the problem described in the aforesaid type of batching machine concerning to the adjustment of cradles load volume.

With this aim, an important object of the present invention is to provide a cork granules batching machine for manufacturing agglomerated stoppers that is able to reduce the number of machine stops caused by slide seizure problems.

Another important object of the present invention is to provide a cork granules batching machine for manufacturing agglomerated stoppers that is able to reduce the size tolerance around the cradles.

Another important object of the present invention is to provide a cork granules batching machine for manufacturing agglomerated stoppers that allows easy adjustment of the cradle load volume.

These objects are achieved with a cork granules batching machine for manufacturing agglomerated stoppers that comprises:

- a plurality of cradles for containing cork granules, arranged in a row along a common direction,
- a plurality of upper closing elements for said cradles,
- a first means of relative translation in a substantially...
horizontal direction for said cradles in relation to the closing elements, from a first position wherein the cradles are open at the top to a second position with the same cradles closed by the upper closing elements,

- a device for loading cork granules from the above into the cradles when these are set in the first position,

- a second means of relative translation in a substantially vertical direction for the cradles in relation to the closing elements from said second position to a third compaction position, said second relative translation means being able to vary the volume of the cradles vertically from a predetermined granule load volume defined in the second position, to a given granule compacted volume, defined in the third position,

- adjustment means for said predetermined load volume in order to adjust the amount of granules present in each batch formed by the machine,

characterised in that said adjustment means for the predetermined load volume comprise means for varying the height of the load volume.

[0013] Further characteristics and advantages of a cork granules batching machine for manufacturing agglomerated stoppers according to the present invention will be made apparent from the following description of an embodiment thereof provided as a non-limiting example with reference to the appended drawings wherein:

- Figure 1 shows a schematic front view of the machine according to the invention, illustrating the internal part concerning a slide with cradles, shown in a first position, that is, in the position the granule loading position;

- Figure 2 shows a schematic front view of a portion of the machine in figure 1, illustrating the internal part concerning the slide with the cradles, shown in a second position;

- Figure 3 shows a schematic side view, in partial cross-section, of the machine in the previous figures shown in said second position;

- Figure 4 shows a schematic front view of a portion of the machine in the previous figures illustrating the internal part concerning the slide with the cradles, shown in a third position referring to the cork granule compaction action.

[0014] With reference to the above figures, a cork granules batching machine, according to the invention, for use in the manufacturing of agglomerated stoppers by means of moulding bushes, is generally identified by the numeral 10 and comprises a support frame 11 for a box-shaped casing 12 that is developed in a longitudinal direction in a substantially horizontal orientation. As clearly shown in figure 3, said box-shaped casing 12 has a bottom 13 and two opposite longitudinal sides 14; the upper part of the box-shaped casing being open at the top. Inside the box-shaped casing 12 a slide 15 is arranged, also developed in a mainly longitudinal direction, wherein a plurality of cradles 16 are set, adapted to contain the cork granules; the cork granules are identified by the numeral 17. Said cradles 16 are arranged in a row along the longitudinal direction of the slide 15 and are defined by two vertical side walls 18, and by a bottom 19, in this embodiment having a substantially semi-cylindrical shape with the concave part facing upwards. In particular, the slide 15 has a longitudinal base 20 on which a plurality of parallelepiped elements 21 is arranged in a row, equally spaced, and whose opposite facing sides form the side walls 18 of the respective cradles 16. Respective intermediate elements 22 rest on the longitudinal base 20 between said parallelepiped elements 21. The upper ends of said intermediate elements 22 form the said bottoms 19 of the cradles 16. [0015] A device 23 for loading the cork granules 17 from above into the cradles 16 is positioned above the box-shaped casing 12 in direct communication with the interior of the same casing 12. In this embodiment, said loading device 23 comprises a hopper 24 positioned with the discharge opening over the upper opening of the box-shaped casing 11; commonly known granule mixing means (not shown in the figures) are associated to said hopper 24 that allow for an uniform distribution of the product.

[0016] A plurality of closing elements 25 for the cradles 16 is fixed on the box-shaped casing 12, spaced in the same way as the cradles. These closing elements 25 close the cradles 16 when these are set in a specific position, as will be described in more detail below. In particular, in this embodiment, said upper closing elements 25 have a semicylindrical shape with the concave part facing downwards.

[0017] The machine 10 also comprises a first means of relative translation 26 for the cradles 16 in a substantially horizontal direction, in relation to the closing elements 25, to run from a first position (visible in figure 1) wherein the cradles 16 are open at the top to receive the cork granules from the hopper, to a second position (visible in the figures 2 and 3) where the same cradles are closed by the upper closing elements 25. When the cradles are in the first position, the upper closing elements 25 are centred on the parallelepiped bodies 21 of the slide 15 between which the cradles are defined. In the example herein described, the first means of relative translation 26 comprise a translation actuator 27, such as an oleodynamic cylinder, attached with its own liner to a support plane 28 and with the actuation rod fixed to one end of the slide 15, the said slide being slidable along said support plane 28.

[0018] Furthermore, the machine 10 comprises a second relative translation means 29 for the cradles 16 in a substantially vertical direction in relation to the closing elements 25 to run from said second position to a third compacting position (visible in figure 4). Said second
means of relative translation 29 are able to vertically vary the volume of the cradles 16 from a predetermined load volume of granules, defined when the cradles are in the second position, to a given volume of compacted granules defined when the cradles are in the third position. In this embodiment, the second means of relative translation 29 comprise a translation actuator 30 such as an oleodynamic cylinder whose liner 30a is fixed to the support frame 11 and an end 30b of the vertical actuation rod is attached to the support plane 28 of the slide 15.

When the cradles are in the first position, that is when the upper closing elements 25 are centred on the parallelepipeds 21 of the slide 15, the granules from the hopper 24 fill the cradles 16 (because they are open at the top). The load volume of the cradles 16 is defined by the space delimited by the side walls 18 and the bottom 19 of the cradles and by the upper closing elements 25 when the slide 15 has been moved to the second position. The width of the upper closing elements 25 is basically the same as the distance between the side walls 18 of the cradles. Once this space has been delimitated, the slide 15 is moved upwards through the second means of vertical translation 29, so that the bottom 19 of the cradles 16 approaches the upper closing elements 25, this resulting in a compacting action on the cork granules 17. That corresponds to a variation of the load volume until the compacted volume defined in the third position is reached. The granules compacted in this manner for the "batch" that must be pushed out from the corresponding cradles through a corresponding opening 31 provided on the sides of the box-shaped casing 12, by means of thrusting elements not shown in the figures.

The machine also comprises adjustment means 32 for the predetermined load volume defined between each cradle 16 and the corresponding upper closing element 25, in order to adjust the amount of granules present in each batch. According to the invention, said adjustment means 32 comprise means for varying the height of the load volume, that is, means that can vary the relative vertical position of the bottom 19 in relation to the side walls 18 of the cradle 16 before the machine is started up.

In this embodiment, said means for varying the height of the load volume comprise one or more plates 33 (three are shown in the figures purely as an example) of a given thickness inserted between the longitudinal base 20 and the intermediate elements 22 (that define the bottom 19 of the cradles 16) to provide for a discrete adjustment. To increase the volume height, one or more plates 33 must be removed manually, whereas one or more plates must be added to lower the height of the volume; the maximum height of the load volume is obtained when no plates are present.

Referring to this example, the actuation rod of the translation actuator 30 has a first end 30b attached to the support plane 28 of the slide 15 and a second end 30c, projecting from the side of the liner 30a opposite the side from which projects the first end 30b, on which a vertical end of stroke abutment 34 is fixed. Advantageously, the means for varying the height of the load volume comprise further plates 35 of a given thickness, in number and thickness equal to those positioned between the longitudinal base 20 and the intermediate elements 22; said further plates 35 inserted between said end of stroke abutment 34 and the liner 30a of the translator actuator 30; a variation in the number of the plates 33 under the intermediate elements 22 must correspond to an equal variation of the further plates 35 between the end of stroke abutment 34 and the liner 30a.

The adjustment of the load volume of cradles, obtained by varying the relative vertical position of the bottom in relation to the walls, allows for an optimized dimensioning of the cradles and slide so that it is possible to perform a coupling between the box-shaped casing 12 and the slide 15 with sufficiently narrow lateral tolerances to prevent the penetration of the cork granules which would lead to machine seizure.

The use of plates with a given thickness for insertion under the bottoms to reduce the load volume (or for removal if the volume is to be increased) allows a very simple adjustment. Moreover, it is obvious that said means for varying the height of the load volume can be different from the illustrated example, as mentioned in the following examples (not shown in the figures). For example, a threaded element can replace the plates, screwed into a corresponding vertical hole formed in the longitudinal base, and presenting a support head for a respective intermediate element; by screwing said threaded element, the head will be translated vertically and therefore also the intermediate element on which the bottom is defined, thus obtaining a continuous adjustment instead of a discrete adjustment.

In the examples described, the load volume adjustment can be obtained only manually when the machine is stopped. However it is obvious that it is also possible to achieve automated load volume height adjustment. For example, the longitudinal base on which the cradles are positioned, can be structured in a manner to internally house an element that transversally connects all the intermediate elements with the bottom, which is connected cinematically with automatic vertical translation means, that can be of any type, oleodynamic, pneumatic, or electromechanical. Alternatively, considering the aforesaid example concerning the threaded elements positioned under the bottoms, it is possible to insert a horizontal worm screw that will engage with said threaded elements and that is actuated by an electric motor associated with the longitudinal base.

It is also obvious that the first and second means of translation described in the example above can comprise elements of different type and structure, such as pneumatic or electromechanical actuators.

The example described relates to a cork granules batching machine to be used in processes for manufacturing agglomerated stoppers by means of moulding bushes. The same inventive concept is also advanta-
geously applicable on batching machines for preparing the "rods" of cork granules for manufacturing stoppers through extrusion, as described in the introduction in relation to known art.

[0028] In practise, on condition that the materials employed are compatible with the specific use, all materials and dimensions can be of any type according to technical requirements and state of the art.

[0029] Where any of the characteristics and techniques described in any of the claims are followed by reference signs, these have been included for the purpose of providing examples simply to increase the clarity of the claims and consequently, they have no limiting effect on the interpretation of each element they identify.

Claims

1. Cork granules batching machine for manufacturing agglomerated stoppers, comprising

   - a plurality of cradles (16) for containing cork granules (17), arranged in a row along a common direction,
   - a plurality of upper closing elements (25) for said cradles (16),
   - first means of relative translation (26) in a substantially horizontal direction for said cradles (16) in relation to said upper closing elements (25) from a first position with said cradles (16) open at the top to a second position with said cradles (16) closed by said upper closing elements (25),
   - a device for loading (23) cork granules (17) from the above into said cradles (16) when said cradles (16) are set in said first position,
   - second means of relative translation (29) in a substantially vertical direction for said cradles (16) in relation to said upper closing elements (25) from said second position to a third compacting position, said second means of relative translation (29) being able to vary the volume of the cradles (16) vertically from a predetermined load volume of granules defined in said second position to a given compacted volume of the granules defined in said third position,
   - adjustment means (32) for said predetermined load volume in order to adjust the quantity of granules present in each batch formed by the machine,

   characterised in that said adjustment means (32) of said predetermined load volume comprise means for varying the height of the load volume.

2. Batching machine according to claim 1, characterised in that each cradle (16) comprises side walls (18) and a bottom (19), said means for varying the height of the load volume of said cradles (16) comprising means for varying the respective vertical position of said bottom, (19) in relation to said side walls (18).

3. Batching machine according to claim 2, characterised in that said cradles (16) are arranged in a row along a longitudinal slide (25) comprising a longitudinal base (20) on which there is positioned a plurality of parallelepiped elements (21) arranged in a row and equally spaced, and whose opposite facing sides form the side walls (18) of said cradles (16), respective intermediate elements (22) being positioned between said parallelepiped elements (21), the upper ends thereof (21) defining said bottoms (18), said means for varying the height of the load volume of said cradles (16) being positioned between said longitudinal base (20) and said intermediate elements (22).

4. Batching machine according to claim 3, characterised in that said means for varying the height of the load volume of said cradles (16) comprise, for each cradle (16), one or more plates (33) of a given thickness for insertion between said longitudinal base (20) and the corresponding intermediate element (22) provided with a bottom (19) to carry out discrete adjustment of the height of the cradles (16), it being necessary to remove said one or more plates (33) manually to increase the height of the load volume, and vice versa, one or more plates (33) being added to lower the height of the load volume.

5. Batching machine according to claim 3 or 4, characterised in that it comprises a support frame (11) for a box-shaped casing (12), open at the top, which extends in a longitudinal direction on a substantially horizontal plane, and inside which is contained said slide (15), a plurality of said upper closing elements (25) of the cradles (16) being fixed on said box-shaped casing (12) and spaced in the same way as the cradles (16), said upper closing elements (25) being centred on said parallelepiped elements (21) of said slide (15) when said cradles (16) are in said first position, the width of said upper closing elements (25) being substantially the same as the distance between the side walls (18) of said cradles (16), said slide (15) being positioned to slide on a support plane (28) on which are set said first means of relative translation (27), said second means of relative translation (29) being set between said support plane (28) and said frame (11).

6. Batching machine according to claim 4 or 5, characterised in that said second means of relative translation (29) comprise a vertical end of stroke abutment (34) to which there are associated further one or more plates (35) in number and thickness.
equal to the plates (33) positioned between said longitudinal base (20) and said intermediate elements (22).

7. Batching machine according to claim 6, characterised in that said second means of relative translation (29) comprise a translation actuator cylinder (30) whose liner (30a) is fixed to said support frame (11) and whose actuation rod presents a first end (30b) fixed to a support plane (28) of said slide (15) and a second end (30c), projecting from the side of said liner (30a) opposite the side from which projects said first end (30b), on which (30c) there is fixed said vertical end of stroke abutment (34) with said further one or more plates (35).

8. Batching machine according to one of the claims from 5 to 7, characterised in that said first means of relative horizontal translation (26), comprise a translation actuator cylinder (27) fixed by its own liner to said one support plane (28) with the actuation rod fixed to an end of said slide (15).

9. Batching machine according to one of the claims from 5 to 8, characterised in that said device for loading cork granules (17) from the above (23) for said cradles (16) comprise a hopper (24) positioned with its discharge opening over the upper opening of said box-shaped casing (11).

10. Batching machine according to one of the previous claims, characterised in that said bottoms (19) and said closing element (25) have a substantially semi-cylindrical shape with concave surfaces facing upwards and downwards respectively.

Patentansprüche

1. Korkgranulat-Dosiermaschine zur Herstellung von agglomerierten Pfropfen, enthaltend

   - eine Mehrzahl von in einer Reihe längs einer gemeinsamen Richtung angeordneten Wiegen (16) zum Aufnehmen von Korkgranulat (17),
   - eine Mehrzahl von oberen Schließelementen (25) für die Wiegen (16),
   - erste Einrichtungen für eine relative Translation (26) in einer im wesentlichen horizontalen Richtung für die Wiegen (16) in Relation zu den oberen Schließelementen (25) von einer ersten Position, bei der die Wiegen (16) an der Oberseite offen sind, zu einer zweiten Position, bei der die Wiegen (16) durch die oberen Schließelemente (25) verschlossen sind,
   - eine Vorrichtung zum Einladen (23) von Korkgranulat (17) von oben in die Wiegen (16), wenn die Wiegen (16) in der ersten Position eingestellt sind,
   - zweite Einrichtungen für eine relative Translation (29) in einer im wesentlichen vertikalen Richtung für die Wiegen (16) in Relation zu den oberen Schließelementen (25) von der zweiten Position zu einer dritten Verdichtungsposition, wobei die zweiten Einrichtungen für eine relative Translation (29) in der Lage sind, das Volumen der Wiegen (16) vertikal von einem vorgegebenen Granulatbeladungsvolumen, das in der zweiten Position definiert ist, zu einem gegebenen verdichteten Volumen des Granulats zu variieren, das in der dritten Position definiert ist,
   - Einstelleinrichtungen (32) für das vorgegebene Beladungsvolumen, um die Granulatmenge einzustellen, die in jeder Dosierung vorhanden ist, die von der Maschine gebildet wird,

   dadurch gekennzeichnet, dass die Einstelleinrichtungen (32) des vorgegebenen Beladungsvolumens Einrichtungen zum Varieren der Höhe des Beladungsvolumens enthalten.


3. Dosiermaschine nach Anspruch 2, dadurch gekennzeichnet, dass die Wiegen (16) in einer Reihe längs einer länglichen Führung (25) angeordnet sind, die eine längliche Basis (20) enthält, an welcher eine Mehrzahl von Parallelepipedelementen (21) positioniert ist, die in einer Reihe und gleich beabeutet angeordnet sind und deren entgegengesetzt weisenden Seiten die Seitenwände (18) der Wiegen (16) bilden, wobei entsprechende Zwischenelemente (22) zwischen den Parallelepipedelementen (21) positioniert sind, wobei die oberen Enden davon (21) die Böden (18) definieren, welche Einrichtungen zum Varieren der Höhe des Beladungsvolumens der Wiegen (16) zwischen der länglichen Basis (20) und den Zwischenelementen (22) positioniert sind.

4. Dosiermaschine nach Anspruch 3, dadurch gekennzeichnet, dass die Einrichtungen zum Varieren der Höhe des Beladungsvolumens der Wiegen (16) für jede Wiege (16) eine oder mehrere Platte(n) (33) einer gegebenen Dicke zum Einsetzen zwischen die längliche Basis (20) und das entsprechende Zwischenelement (22) enthalten, das mit einem Boden (19) versehen ist, um eine diskrete Einstellung der Höhe der Wiegen (16) auszuführen, wobei es erforderlich ist, die eine oder mehreren Platte(n) (33) manuell zu entfernen, um die Höhe des Bela-
5. Dosiermaschine nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** sie einen Halterahmen (11) für ein kastenförmiges, an der Oberseite offenes Gehäuse (12) enthält, welches in einer Längsrichtung auf einer im wesentlichen horizontalen Ebene verläuft und innerhalb welchem die Führung (15) enthalten ist, wobei eine Mehrzahl der oberen Schließelemente (25) der Wiegen (16) an dem kastenförmigen Gehäuse (12) befestigt und in derselben Weise wie die Wiegen (16) beabstandet sind, welche oberen Schließelemente (25) an den Parallellepipedelementen (21) der Führung (15) zentriert sind, wenn die Wiegen (16) in der ersten Position sind, wobei, eine oder mehrere Platte(n) (33) hinzugefügt wird/ werden, um die Höhe des Beladungsvolumens zu verringern.

8. Dosiermaschine nach einem der Ansprüche 5 bis 7, **dadurch gekennzeichnet, dass** die ersten Einrichtungen für eine relative horizontalen Translation (26) einen Translationsaktuatorzyliner (27) enthalten, der durch seine eigene Laufbuchse an der einen Halteebene (28) befestigt ist, und mit dem Betätigungsstab an einem Ende der Führung (15) befestigt ist.

9. Dosiermaschine nach einem der Ansprüche 5 bis 8, **dadurch gekennzeichnet, daß** die Vorrichtung zum Einladen von Korkgranulat (17) von oben (23) für die Wiegen (16) einen Füllschacht (24) hat, der mit seiner Ausgabeböning über der oberen Öffnung des kastenförmigen Gehäuses (11) positioniert ist.

10. Dosiermaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Böden (19) und das Schließelement (25) eine im wesentlichen halbzylindrische Form mit konkaven Oberflächen haben, die aufwärts bzw. abwärts gewandt sind.

**Revendications**

1. Machine pour le dosage de granules de liège pour la fabrication de butoirs agglomérés, comprenant :

   - une pluralité de berceaux (16) destinées à contenir des granules de liège (17), disposées en une rangée selon une direction commune,
   - une pluralité d'éléments d'obturation supérieurs (25) pour lesdits berceaux (16),
   - des premiers moyens de translation relative (26) selon une direction sensiblement horizontale pour lesdits berceaux (16) par rapport aux dits éléments d'obturation supérieurs (25), d'une première position dans laquelle lesdits berceaux (16) sont ouverts à leurs sommets à une deuxième position dans laquelle lesdits berceaux (16) sont obturés par lesdits éléments d'obturation supérieurs (25),
   - un dispositif de chargement (23) de granules de liège (17) par le dessus dans lesdits berceaux (16) quand lesdits berceaux (16) sont dans ladite première position,
   - des seconds moyens de translation relative (29) selon une direction sensiblement verticale pour lesdits berceaux (16) par rapport aux dits éléments d'obturation supérieurs (25), de ladite deuxième position à une troisième position de compactage, lesdits seconds moyens de translation relative (29) étant aptes à faire varier le volume des berceaux (16) verticalement depuis un volume de charge prédéterminé de granules défini dans ladite deuxième position jusqu'à un volume compacté donné de granules défini dans ladite troisième position, des moyens d'ajustement (32) pour ledit volume de charge prédéterminé afin d'ajuster la quantité de granules présents dans chaque dose réalisée par la machine, **caractérisée en ce que** dans lesdits moyens d'ajustement (32) du dit volume de charge prédéterminé comportent des moyens pour faire varier la hauteur...
2. Machine de dosage selon la revendication 1, caractérisée en ce que chaque berceau (16) comporte des parois latérales (18) et un fond (19), lesdits moyens pour faire varier la hauteur du volume de charge des dits berceaux (16) comportant des moyens pour faire varier la position verticale respective du dit fond (19) par rapport aux dites parois latérales (18).

3. Machine de dosage selon la revendication 2, caractérisée en ce que lesdits berceaux (16) sont agencés en une rangée le long d’une glissière longitudinale (15) comprenant une embase longitudinale (20) sur laquelle est positionnée une pluralité d’éléments parallélépipédiques (21) agencés en une rangée et équidistants les uns des autres, et dont les côtés en regard opposés forment les parois latérales (18) des dits berceaux (16), des éléments intermédiaires respectifs (22) étant positionnés entre lesdits éléments parallélépipédiques (21), les extrémités supérieures de ceux-ci (22) définissant lesdits fonds (19), lesdits moyens pour faire varier la hauteur du volume de charge des dits berceaux (16) étant positionnés entre ladite embase longitudinale (20) et lesdits éléments intermédiaires (22).

4. Machine de dosage selon la revendication 3, caractérisée en ce que lesdits moyens pour faire varier la hauteur du volume de charge des dits berceaux (16) comportent, pour chaque berceau (16), une ou plusieurs plaques (33) d’une épaisseur donnée pour être insérées entre ladite embase longitudinale (20) et l’élément intermédiaire correspondant (22) muni du fond (19) pour réaliser un ajustement discret de la hauteur des berceaux (16), étant nécessaire d’enlever manuellement ladite une ou lesdites plusieurs plaques (33) pour augmenter la hauteur du volume de charge, et vice versa, une ou plusieurs plaques (33) étant ajoutées pour diminuer la taille du volume de charge.

5. Machine de dosage selon l’une des revendications 3 et 4, caractérisée en ce qu’elle comporte un châssis de support (11) pour une enveloppe en forme de boîte (12), ouverte sur le dessus, qui s’étend suivant une direction longitudinale dans un plan sensiblement horizontal, et à l’intérieur de laquelle est contenue ladite glissière (15), une pluralité de dits éléments d’obturation supérieurs (25) des berceaux (16) étant fixés sur ladite enveloppe en forme de boîte (12) et espacés de la même façon que les berceaux (16), lesdits éléments d’obturation supérieurs (25) étant centrés sur lesdits éléments parallélépipédiques (21) de ladite glissière (15) quand lesdits berceaux (16) sont dans ladite première position, la largeur des dits éléments d’obturation supérieurs (25) étant sensiblement la même que la distance entre les parois latérales (18) des dits berceaux (16), ladite glissière (15) étant positionnée pour glisser sur un plan de support (28) sur lequel sont agencés lesdits premiers moyens de translation relative (27), lesdits seconds moyens de translation relative (29) étant agencés entre ledit plan de support (28) et ledit châssis (11).

6. Machine de dosage selon l’une des revendications 4 et 5, caractérisée en ce que lesdits seconds moyens de translation relative (29) comportent une extrémité verticale de butée de fin de course (34) à laquelle sont associées une ou plusieurs plaques (35) égales en nombre et épaisseur aux plaques (33) positionnées entre ladite embase longitudinale (20) et lesdits éléments intermédiaires (22).

7. Machine de dosage selon la revendication 6, caractérisée en ce que lesdits seconds moyens de translation relative (29) comportent un cylindre actionneur de translation (30) dont la chemise (30a) est fixée au dit châssis de support (11) et dont la tige d’actionnement présente une première extrémité (30b) fixée à un plan de support (28) de ladite glissière (15) et une seconde extrémité (30c) s’étendant à partir du côté de ladite chemise (30a) opposé au côté à partir duquel s’étend ladite première extrémité (30b), sur laquelle (30c) est fixée ladite extrémité verticale de la butée de fin de course (34) avec en outre ladite une ou lesdites plusieurs plaques (35).

8. Machine de dosage selon l’une des revendications de 5 à 7, caractérisée en ce que lesdits premiers moyens de translation horizontale relative (26) comportent un cylindre actionneur de translation (27) fixé par sa chemise au dit plan de support (28) et avec la tige d’actionnement fixée à une extrémité de ladite glissière (15).

9. Machine de dosage selon l’une des revendications 5 à 8, caractérisée en ce que ledit dispositif de chargement (23) de granules de liège (17) par le dessus dans lesdits berceaux (16) comportent un distributeur (24) positionné avec son ouverture de décharge au-dessus de l’ouverture supérieure de ladite enveloppe en forme de boîte (12).

10. Machine de dosage selon l’une des revendications précédentes, caractérisée en ce que lesdits fonds (19) et ledit élément d’obturation (25) ont une forme sensiblement semi-cylindrique avec les surfaces concaves se faisant face respectivement vers le haut et vers le bas.