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(54) APPARATUS FOR PACKAGING A PASTY PRODUCT

VORRICHTUNG ZUM VERPACKEN EINES PASTÖSEN PRODUKTS

APPAREIL POUR PRODUIRE UN PRODUIT PÂTEUX

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Description

Technical Field

[0001] This invention relates to an apparatus for packaging a product.

[0002] This apparatus is particularly suitable for packaging a semi-solid pasty product, especially a food product such as yeast, stock cube paste or other product.

Background Art

[0003] Known in the prior art are apparatuses for packaging a semi-solid pasty product such as yeast or other product, where the product is packaged in a corresponding wrapper in the form of a sheet of foldable material.

[0004] These prior art apparatuses usually comprise means for feeding the container and a means, or device, for filling the container and which comprises respective means for dosing a predetermined product portion.

[0005] At present apparatuses of this kind, more commonly known as "form, fill and seal" machines, operating on food products, are equipped with dosing units consisting of a volumetric pump having a chamber which houses a piston and a control valve which feeds a predetermined quantity of product to a dosing spout. The dosing spout dispenses the product directly into the pre-formed wrapper or container, whilst cutting devices cut off the part of the product filled into the wrapper from the part upstream of it, which must not be filled into the wrapper or container.

[0006] These machines or apparatuses, which use dosing devices based on the prior art, have the disadvantage of requiring a considerable and excessive quantity of parts and also need seals which wear rapidly and must be periodically substituted.

[0007] Document WO 2007/138397 discloses a device for dosing a predetermined portions of a pasty product to be packaged, in particular a foodstuff such as processed cheese, a stock cube and other products, comprising a product dosing chamber having a product infeed opening and a product outfeed opening and means for propelling or dispensing a predetermined portion of product from the outfeed opening defined by screw feeder not provided on the terminal part of the respective supporting shaft.

[0008] Document FR 2671543 discloses an automatic device in accordance with the preamble of claim 1 for the stuffing or pressurised filling of a plurality of compartments, in particular of a freezer with plates, or of containers, with products of pasty consistency, in particular of granular or fibrous nature. This device comprises a stuffing head comprising a stuffing chamber containing a stuffing screw having a respective free end portion extending inside the conical terminal portion of the stuffing chamber and which has a spiral portion with a diameter that reduces progressively towards the terminal end of the screw feeder and with a conical outer profile so as to

match the conical profile of the inner surface of the end portion of the stuffing chamber.

[0009] Document DE 1268872 discloses a dosing device having a dosing chamber housing a screw feeder and having a cylindrical terminal part in which a terminal part of the screw feeder is inserted defining a respective helix that is not reducing in diameter.

Summary of the Invention

[0010] This invention proposes a novel solution, alternative to the solutions known up to now, and more specifically, aims to overcome one or more of the above mentioned disadvantages or drawbacks.

[0011] It is accordingly provided an apparatus for packaging a product, especially a semi-solid pasty product, in particular a food product such as yeast, stock cube paste or other product, the product being packaged in a corresponding container, especially in the form of a product wrapper comprising a respective sheet of foldable material; the apparatus comprises the structural features according to claim 1.

Brief Description of the Drawings

[0012] This and other innovative aspects are set out in the appended claims and the technical features and advantages are apparent from the detailed description which follows of a non-limiting example embodiment of it with reference to the accompanying drawings, in which:

- Figure 1 is a schematic perspective view of the steps in the production of the package;
- Figure 2 is a schematic perspective view of a preferred embodiment of the apparatus according to this invention, showing in particular the means for feeding the containers and the means for dosing a predetermined product portion into the containers;
- Figure 3 is a transversal cross section, at right angles to the cross section of Figure 2, through the line labelled III-III in Figure 2, of this preferred embodiment of the dosing device, or means;
- Figure 4 is a detail from Figure 3 and shows the lower part of the dosing means;
- Figure 5 is a longitudinal cross section, through the line labelled V-V in Figure 2, showing the lower part of the dosing device, or means, according to this invention;
- Figure 6 is an exploded perspective view of the lower part of the dosing means.

Description of the Preferred Embodiment of the Invention

[0013] Figure 2 shows a preferred embodiment 10 of an apparatus for packaging a product in a corresponding container, the container being in the form of a wrapper W containing the product and comprising a respective sheet of foldable material which, in use, is wrapped

around and in contact with the product P to be packaged.

[0014] As shown in Figure 1, the package W has, in use, a bottom wall W1, an upper wall or top W2, between which one or more peripheral side walls W3 extend and which together define an internal space for containing the product P.

[0015] During packaging, before the product is dosed, the flat wrapper or sheet W0, for example made from aluminium foil or plastic film, is partly preformed or folded into a cup shape, open at the top W', as illustrated in Figure 1, so as to receive the predetermined product portion P, and is then closed over the selfsame product by folding corresponding side wall portions W3' extending upwards from the sides of the product after the latter has been filled into the internal space and the upper tabs W3', W3' of the wrapper are folded down and joined or sealed to each other.

[0016] The product is in the form of a semi-solid paste, that is to say, a product which has a plastic, or deformable, consistency such as to maintain the shape given to it.

[0017] More specifically, the product is a food product such as yeast, margarine, butter, stock cube paste or the like.

[0018] As illustrated in Figure 2, the apparatus 10 comprises container feed means 11, which are in the form of a circular feed table but which might be embodied in any other suitable manner, for example an endless conveyor belt extending along a linear feed path.

[0019] The feed table comprises shaped seats or pockets, denoted by the reference numeral 13, which accommodate the cup-shaped container or wrapper.

[0020] As illustrated in Figures 2 and 3, the apparatus 10 also comprises a means, or device 12, for filling the respective containers W, the device 12 comprising respective means 14 for dosing a predetermined product portion, means 16 for feeding the product to the dosing means 14, in the form of a respective tank containing the product, and means 18 for loading the product into the feed means 16, the loading means 18 being, as illustrated, in the form of an upper hopper, whose bottom is in communication through corresponding holes 18' with the feed tank or means 16.

[0021] The means for dosing a predetermined product portion more specifically comprises a screw feeder 20 having a respective shaft 22 mounting a spiral 24 which engages and feeds the product, the screw feeder being housed in a perimetric surface 26 defining a dosing chamber 28.

[0022] As illustrated, the spiral 24 for engaging and feeding the product has a peripheral or outer edge 24' which extends at or in the vicinity of the perimetric surface of the dosing chamber 28, as may be easily inferred from Figures 3 and 4.

[0023] The screw feeder 20 is driven in rotation about its own axis between a first working condition, where product is fed until the predetermined product portion has been defined, and a second working condition, where

product feed is interrupted, in particular by stopping the screw feeder, after the predetermined product portion has been defined.

[0024] The screw feeder 20 might also be driven in an angular direction opposite to the product feed direction so as to back-feed the product for a short distance towards the dispensing mouth, thereby making it easier for only the predetermined product portion to drop out.

[0025] As illustrated, the dosing chamber 28 also has a terminal portion, or bottom end 30, with a tapered product conveying surface, more specifically in the form of a conical surface 31, converging downwardly towards the outlet of the dosing chamber, whilst the rest of the conveying chamber 28 is defined by a tubular body 32 forming a cylindrical inside surface 33, the conical end portion 30 being located on the bottom extension of the tubular body 32.

[0026] As illustrated, the tubular body 32 has a gap 33' which houses means for thermally conditioning the product inside the dosing chamber 28, being, more specifically, in the form of means for heating the product. That way, the product can be kept in optimum conditions for dosing.

[0027] The free bottom, or downstream, end 20' of the dosing screw feeder 20, as illustrated, extends into the conical end portion 30 of the dosing chamber, that is to say, into the conical end surface 31.

[0028] The free bottom, or downstream, end 20' of the dosing screw feeder 20 has a respective spiral portion whose diameter is reduced progressively towards the end of the selfsame screw feeder, and has a conical outer profile which mates with, that is to say, has the same taper as, the conical profile of the inner surface 31 of the end portion 30 of the dosing chamber 28.

[0029] As illustrated in Figure 4, at the main tubular body 32, the respective end portion 22' of the shaft 22 of the dosing screw feeder 20 is in turn smaller in diameter than the main shaft portion 22".

[0030] The respective end portion 22' of the shaft 22 of the dosing screw feeder at the end 20' of the dosing screw feeder has a reduced diameter.

[0031] As illustrated, the shaft also has a conical portion, or conical outer profile 22"', in particular having the same taper as the bottom part of the dosing chamber 31.

[0032] That way, the tapered diameter of the spiral also guarantees that the product flows towards the outlet in a sufficient quantity.

[0033] This screw feeder, having an end portion 20' with tapered diameter, makes it possible to position the feeding and dosing means 20 very close to the dispensing mouth so that the predetermined product portion can be effectively dosed using only the screw feeder.

[0034] In effect, the quantity of pasty product between the end of the screw feeder and the discharge mouth is in a compressed, reciprocally adherent condition such that the product feed motion, once the rotation of the screw feeder is stopped or reversed relative to the rotation direction of product feed, is modified or stopped. This

allows the pasty product to be effectively dosed without using any components other than the screw feeder.

[0035] As illustrated, the dosing means comprise a product discharge mouth 34.

[0036] Advantageously, the predetermined product portion is fed out of the dosing screw feeder 20 through the product discharge mouth 34.

[0037] The dosing means also comprise a spout 36 that terminates with the mouth 34 which dispenses the predetermined product portion.

[0038] The spout 36 extends downstream of the tapered conveying surface 31 and is in the form of a respective tube of quadrangular cross section and having an inlet opening 38 leading into the tapered conveying surface 31 and an outlet opening defining the discharge mouth 34.

[0039] The spout 36 extends downwardly from the dosing chamber 28, in particular downwardly from the end portion 30 of the dosing chamber.

[0040] Advantageously, there is a product bar cutting element 40' in the form of a thin rod movable between a rest position and an active position where it cuts the product bar once the predetermined product portion has been expelled from the discharge mouth 34 and placed in the container.

[0041] As may be clearly inferred from Figure 6, the product bar cutting element 40' is supported by arms 41,41 which are rotatably attached to the end portion 30 of the dosing chamber.

[0042] As illustrated, means 16 are provided for feeding the product to the dosing means, in the form of a tank 16 for containing the product and from which the dosing chamber 28 extends. Advantageously, as illustrated, the dosing chamber 28 extends downwardly from the tank 16.

[0043] Advantageously, the dosing screw feeder 20 has an upstream portion 20" for capturing the product to be fed to the dosing chamber 28.

[0044] In practice, the dosing screw feeder 20 has a portion 20" for inserting the product into the dosing chamber 28.

[0045] The dosing screw feeder thus has an upstream portion 20" for capturing the product or inserting the product into the dosing chamber and which extends into the product containment tank, and a downstream portion for compressing the product or dosing a predetermined product portion to be inserted into a respective container, in particular into a respective wrapper, the downstream portion of the screw feeder being housed in the dosing chamber 28.

[0046] Advantageously, the pitch of the product engagement and feed spiral of the dosing screw feeder 20 is variable.

[0047] More specifically, the dosing screw feeder 20 spiral pitch at the feed tank 16, that is, at the part of the screw feeder which extends into the feed tank 16, is greater than the pitch of the spiral in the dosing chamber 28, and more specifically, is greater than the pitch of the

screw feeder spiral at the bottom 30 of the selfsame dosing chamber 28.

[0048] In practice, as illustrated, the spiral pitch is greater in the capturing zone. As illustrated the spiral extends inside and at the side of the product containment tank 16.

[0049] As illustrated the spiral pitch is thus progressively reduced to reach a minimum pitch at the end portion of the dosing chamber, in particular at the conical end portion 31 of the dosing chamber.

[0050] That way, it is possible to conveniently capture or draw the product from the dosing chamber and then compress it in such a way as to expel any unwanted gases or air from the product portion, which is thus made compact and of the required weight before being expelled through the dispensing mouth 34.

[0051] More specifically, as illustrated, the spiral pitch in the capturing zone, that is, inside the feed tank, is between 1 and 10 times greater than the spiral pitch at the end, or bottom zone of the dosing chamber.

[0052] The dosing means, in particular, the product discharge mouth 34 and the container are movable relative to each other in such a way as to position the product dispensing end, or mouth 34 inside the product containment space in the container W.

[0053] More specifically, the container is movable towards the dosing means 12, which are, instead, vertically fixed.

[0054] More specifically, the container is movable vertically towards the dosing means 12, that is to say, it is movable axially relative to the dosing chamber 28 or to the dosing screw feeder 20.

[0055] Advantageously, the container feed means 11 comprise a seat for housing the container 13 and which has a movable bottom 15, the latter being, more specifically, slidable in the seat 13 under the action of a corresponding rod actuated by a cam, not illustrated in the accompanying drawings, between a lowered position for normal container feed and a raised position at the container filling station, where the container is close to the dosing means and the dispensing mouth 34 is positioned inside the container, or wrapper, in the folded condition.

[0056] In practice, this apparatus has means for feeding the containers which advance the containers stepwise to the stations, namely, a station for loading the sheet into a respective seat in a suitably folded condition to form a cup-shaped container, or wrapper, a container filling station which is located downstream of the container receiving station and where the open wrapper is filled with a predetermined product portion, and a container top closing station, which is located downstream of the container filling station and where the tabs extending upwards from the sides of the predetermined product portion are folded down onto the predetermined product portion which has been placed in the container.

[0057] The apparatus may also comprise, downstream of the closing station where the protruding side tabs of the wrapper are folded, a further station for closing, join-

ing or heat sealing the upper closing tabs of the wrapper, or container.

[0058] A still further station defines outfeed means from which the product package is conveyed to a further apparatus for packing the packages into cartons or the like.

[0059] As illustrated in Figure 3, advantageous means 40, 40' are provided for urging the product towards the dosing means.

[0060] For the purpose, as may be inferred from Figures 2 and 3, the dosing tank 16 comprises a plurality of peripheral containment walls and a bottom wall 16', in particular, a wall which is slightly inclined towards the dosing chamber, and is open at the top and communicates with the loading hopper 18 above it, through holes 18'.

[0061] The means 40, 40' for urging the product towards the dosing means are located inside the product feed tank 16.

[0062] The means 40, 40' for urging the product towards the dosing means comprise a respective blade rotor having a rotary shaft 42, in particular directed horizontally, from which radial blades 44 extend.

[0063] As illustrated, the shaft 42 of the respective urger with blades 40, 40' extends transversally to the shaft, or axis, of the screw feeder 20, and transversally to the axis of the dosing chamber 28.

[0064] More specifically, as illustrated, a first and a second means 40, 40' are provided inside the containment tank 16, at different heights, for urging the product towards the dosing chamber.

[0065] A first urger 40 is located near the corresponding dosing chamber.

[0066] Advantageously, a second urger with blades 40' is located in an intermediate zone between the inlet opening of the feed tank 16 and the bottom of the selfsame tank 16.

[0067] As may be inferred from Figures 2 and 3, the respective screw feeder 20 is driven by a corresponding motor 20a mounted at the top thereof and is suitably fixed at the top of, that is to say, the respective shaft 22 is fixed at the top of, the tank 16 so it can conveniently and easily be pulled out from below, through the dosing chamber 28, after disengaging respective screw feeder fastening means from the top when cleaning or maintenance has to be carried out on the screw feeder itself.

[0068] In practice, the screw feeder 20 is fixed to the device at the top, at 120, and can be removed by pulling it out from below, from the end corresponding to the product outlet mouth.

[0069] As may be inferred from Figures 2 and 5, this apparatus advantageously comprises first and second dosing means 20, 20 which are aligned with each other along the container feed direction and which allow a pair of containers to be filled simultaneously.

[0070] The first and second dosing means comprise respective dosing chambers 28, 28 which extend parallel to each other and which house respective screw feeders

20,20.

[0071] Advantageously, the first and second dosing means extend from the same, single product containment or feed tank 16.

5 **[0072]** As illustrated, the urgers with blades 40, 40' are suitably fixed to a respective side wall of the feed tank 16 through a corresponding ring nut 140, illustrated in Figure 2, which can be conveniently removed in order to pull out the corresponding urger 40, 40', in such a way that the latter can be cleaned or substituted for urgers more suitable for the product being packaged.

10 **[0073]** The body defining the dosing chamber 28 also comprises a cylindrical tube 50 for engaging the main part of the cylindrical body defining the dosing chamber 28 which forms a single part with the feed tank 16 and to the bottom of which the tube 50 is fixed.

15 **[0074]** The tube 50 is advantageously made of plastic material and has, at a bottom flange of it 52, holes 53 for corresponding screws 54 for fastening the bottom portion 30 defining the conical bottom end surface 31 of the dosing chamber 28.

[0075] As illustrated, the spout 36 defining the discharge mouth 34 is fixed to the body 30 defining the conical end chamber.

25 **[0076]** The plastic tube 50 has a cylindrical inside surface defining the lower part of the dosing chamber, upstream of the conical end portion 31 of the selfsame dosing chamber.

30 **[0077]** The plastic tube 50 may advantageously be substituted to obtain an inside surface 50' of a diameter suitable for the type of product to be packaged.

35 **[0078]** In practice, a tube 50 is provided which has a respective inside surface 50' defining the lower part of the dosing chamber 28, upstream of its conical end portion 31, the tube 50 being removably connected to the dosing means 28, that is, to the main body, or component 32 of the dosing chamber.

40 **[0079]** That way, the device of the invention can be adapted to the specific semi-solid product to be packaged. All that needs to be done is remove the tube 50 for one particular product and substitute it for another tube 50 whose inside surface has a different diameter and which is more suitable for another product to be delivered, or compressed, in the end part 50' of the dosing chamber.

45 **[0080]** As illustrated in particular in Figure 5, the spout for delivering the predetermined product portion to the dispensing mouth 34 is eccentric, or offset, relative to the axis of the dosing chamber and of the screw feeder along the container feed direction.

50 **[0081]** The invention described above is susceptible of industrial application. Moreover, it would be obvious to one skilled in the art that several changes and modifications can be made to the invention without departing from the scope of the invention, described in depth above. Moreover, it will be understood that all the details of the invention may be substituted by technically equivalent elements.

Claims

1. An apparatus (10) for packaging a food semi-solid pasty product, such as yeast, stock cube paste or other product, the product being packaged in a corresponding container, especially in the form of a product wrapper comprising a respective sheet of foldable material, the apparatus (10) comprising means (11) for feeding the product container (W) and a means, or device, (12) for filling the container comprising respective means (14) for dosing a predetermined product portion; the means for dosing a predetermined product portion comprise, or consist of, a screw feeder (20) with a spiral (24) for engaging and feeding the product, housed coaxially inside a perimetric surface (26) forming a dosing chamber (28), the screw feeder (16) being rotated between a first working condition, where product is fed until the predetermined product portion has been defined, and a second working condition, where product feed is interrupted after the predetermined product portion has been defined; in which the dosing chamber comprise a terminal portion (30) forming a conical product conveying surface (31) which is tapered towards the outlet opening or discharge mouth (34) of the dosing chamber (28) said dosing screw feeder (20) having a respective free end portion (20') which extends inside the conical terminal portion (30) of the dosing chamber (28) and which has a spiral portion having a diameter that reduces progressively towards the terminal end of the same screw feeder with a conical outer profile so as to match the conical profile of the inner surface (31) of the end portion of the dosing chamber, the product dosing means and the container mobile relative to each other to position the discharge mouth inside the container; **characterised in that** the shaft (22) of the dosing screw feeder (20) has a respective end portion (22') with a reduced diameter at the terminal portion of the screw feeder; and **in that** the container is mobile towards the dosing means (12).
2. The apparatus according to claim 1, **characterised in that** at the terminal portion of the screw feeder the respective end portion (22'') of the shaft (22) of the dosing screw feeder (20) has a conical profile.
3. The apparatus according to any of the foregoing claims, **characterised in that** the dosing means comprise a tubular body (32) forming a cylindrical product conveying surface and from the free end of which extends the terminal portion of the dosing chamber (28).
4. The apparatus according to any of the foregoing claims, **characterised in that** the dosing means comprise a spout (36) ending with the mouth (34) for discharging the predetermined product portion; and **in that** the spout (36) extends downstream of the tapered conveying surface and has an inlet opening (38) leading out of the tapered conveying surface (30) of the dosing chamber and an outlet opening forming the product discharge mouth (34).
5. The apparatus according to any of the foregoing claims, **characterised in that** the dosing means comprise a tank for containing the product and from which the dosing chamber (28) extends; and **in that** the dosing screw feeder (20) has a portion (20'') for introducing the product into the dosing chamber (28).
6. The apparatus according to any of the foregoing claims, **characterised in that** the spiral pitch of the dosing screw feeder (20) at the product feeding tank (16) is greater than the spiral pitch in the dosing chamber, in particular the spiral pitch in the lower part of the dosing chamber (28).
7. The apparatus according to any of the foregoing claims 5 or 6, **characterised in that** the dosing screw feeder (20) has a portion (20'') extending inside the product feeding tank (16).
8. The apparatus according to any of the foregoing claims, **characterised in that** means (40) are provided for urging the product towards the dosing means that are inside the feeding tank (16), in particular said means for urging the product towards the dosing means comprising a rotor with blades (40).
9. The apparatus according to any of the foregoing claims, **characterised in that** comprises first and second dosing means (20, 20').
10. The apparatus according to claim 9, **characterised in that** the first and second dosing means (20, 20') are aligned according to the direction of feeding the containers.
11. The apparatus according to any of the foregoing claims 9 or 10. **characterised in that** the first and second dosing means extend from the same product feeding tank (16).
12. The apparatus according to any of the foregoing claims, **characterised in that** the screw feeder (20) is fixed at the top and removable for extraction from the bottom or from the end at the product discharge mouth.
13. The apparatus according to any of the foregoing claims, **characterised in that** the screw feeder (20) is rotationally driven in the opposite angular direction to back-feed the product.
14. The apparatus according to any of the foregoing

claims, **characterised in that** it comprises a sleeve (50) having a respective inner surface (50') forming the lower part of the dosing chamber, the sleeve (50) being removably connected to the dosing means.

Patentansprüche

1. Vorrichtung (10) zum Verpacken eines halbfesten pastösen Nahrungsmittelprodukts wie Hefe, Brühwürfelpaste oder sonstige Produkte, wobei das Produkt in einen entsprechenden Behälter verpackt wird, der insbesondere die Form einer Produkthülle aufweist, umfassend eine entsprechende Folie aus faltbarem Material, wobei die Vorrichtung (10) Mittel (11) zum Zuführen des Produktbehälters (W) und Mittel oder eine Einrichtung (12) zum Füllen des Behälters umfasst, umfassend jeweilige Mittel (14) zum Dosieren einer vorgegebenen Produktportion, wobei die Mittel zum Dosieren einer vorgegebenen Produktportion eine Schraubenzuführeinrichtung (20) mit einer Spirale (24) umfassen oder daraus bestehen, um das Produkt zu greifen und zuzuführen, untergebracht koaxial in einer Umfangsoberfläche (26), bildend eine Dosierkammer (28), wobei die Schraubenzuführeinrichtung (16) zwischen einem ersten Betriebszustand, in dem das Produkt zugeführt wird, bis die vorgegebene Produktportion definiert ist, und einem zweiten Betriebszustand, in dem die Produktzuführung unterbrochen wird, nachdem die vorgegebene Produktportion definiert wurde, gedreht wird, wobei die Dosierkammer einen Abschlussabschnitt (30) umfasst, bildend eine konische Produktförderungsfläche (31), die sich zur Auslassöffnung oder der Entladeöffnung (34) der Dosierkammer (28) hin verjüngt, wobei die Dosierschraubenzuführeinrichtung (20) einen jeweiligen freien Endabschnitt (20') aufweist, der sich im konischen Abschlussabschnitt (30) der Dosierkammer (28) erstreckt und einen Spiralabschnitt aufweist, aufweisend einen Durchmesser, der progressiv zum Abschlussende der Schraubenzuführeinrichtung mit einem konischen Außenprofil hin abnimmt, sodass er passend zum konischen Profil der Innenoberfläche (31) des Endabschnitts der Dosierkammer ausgebildet ist, wobei die Produktdosiermittel und der Behälter zueinander beweglich sind, um die Entladeöffnung im Behälter zu positionieren, **dadurch gekennzeichnet, dass** der Schaft (22) der Dosierschraubenzuführeinrichtung (20) einen jeweiligen Endabschnitt (22') mit einem reduzierten Durchmesser am Abschlussabschnitt der Schraubenzuführeinrichtung aufweist und dadurch, dass der Behälter zu den Dosiermitteln (12) beweglich ist.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** am Abschlussabschnitt der Schraubenzuführeinrichtung der jeweilige Endabschnitt

(22'') des Schafts (22) der Dosierzuführeinrichtung (20) ein konisches Profil aufweist.

3. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Dosiermittel einen rohrförmigen Körper (32) umfassen, der eine zylindrische Produktförderungsfläche bildet, aufweisen, von deren freien Ende sich der Abschlussabschnitt der Dosierkammer (28) erstreckt.
4. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Dosiermittel einen Ausguss (36) umfassen, endend mit der Öffnung (34) zum Entladen der vorgegebenen Produktportion, und dass der Ausguss (36) sich nach der sich verjüngenden Förderungsfläche erstreckt und eine Einlassöffnung (38) aufweist, die aus der sich verjüngenden Förderungsfläche (30) der Dosierkammer hinausläuft, und eine Auslassöffnung, bildend die Produktentladeöffnung (34).
5. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Dosiermittel einen Tank zum Enthalten des Produkts umfassen, von dem sich die Dosierkammer (28) erstreckt, und dadurch, dass die Dosierschraubenzuführeinrichtung (20) einen Abschnitt (20'') zum Einführen des Produkts in die Dosierkammer (28) aufweist.
6. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Spiralsteigung der Dosierschraubenzuführeinrichtung (20) am Produktzuführungstank (16) größer ist als die Spiralsteigung der Dosierkammer, insbesondere als die Spiralsteigung im unteren Teil der Dosierkammer (28).
7. Vorrichtung nach einem der vorhergehenden Ansprüche 5 oder 6, **dadurch gekennzeichnet, dass** die Dosierschraubenzuführeinrichtung (20) einen Abschnitt (20'') aufweist, der sich im Produktzuführungstank (16) erstreckt.
8. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Mittel (40) bereitgestellt sind, um das Produkt zu den Dosiermitteln zu schieben, die sich im Zuführungstank (16) befinden, insbesondere umfassen diese Mittel zum Schieben des Produkts zu den Dosiermitteln einen Rotor mit Schaufeln (40).
9. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie erste und zweite Dosiermittel (20, 20) umfasst.

10. Vorrichtung nach Anspruch 9, **dadurch gekennzeichnet, dass** die ersten und zweiten Dosiermittel (20, 20) zur Zuführungsrichtung der Behälter ausgerichtet sind.
11. Vorrichtung nach einem der vorhergehenden Ansprüche 9 oder 10, **dadurch gekennzeichnet, dass** sich die ersten und zweiten Dosiermittel vom selben Produktzuführungstank (16) erstrecken.
12. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schraubenzuführeinrichtung (20) an der Oberseite fixiert und zum Herausnehmen von der Unterseite oder vom Ende an der Produktentladeöffnung entferntbar ist.
13. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schraubenzuführeinrichtung (20) drehbar in die entgegengesetzte Winkelrichtung gefahren wird, um das Produkt zurückzuführen.
14. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie eine Hülse (50) umfasst, aufweisend eine jeweilige Innenoberfläche (50'), bildend den unteren Teil der Dosierkammer, wobei die Hülse (50) entferntbar mit den Dosiermitteln verbunden ist.

Revendications

1. Appareil (10) pour emballer un produit alimentaire pâteux semi-solide, comme de la levure, de la pâte de bouillon cube ou d'autres produits, le produit étant emballé dans un récipient correspondant, plus particulièrement sous forme de papier d'emballage comprenant une feuille respective d'un matériau pliable, l'appareil (10) comprenant des moyens (11) pour alimenter le récipient de produit (W) et un moyen, ou un dispositif, (12) pour remplir le récipient comprenant un moyen respectif (14) pour doser une portion prédéterminée de produit; le moyen pour doser une portion prédéterminée de produit comprend, ou consiste en, un distributeur à vis (20) avec une spirale (24) pour prendre et distribuer le produit, logé coaxialement à l'intérieur d'une surface périphérique (26) formant une chambre de dosage (28), le distributeur à vis (16) faisant l'objet d'une rotation entre une première condition de fonctionnement, dans laquelle le produit est distribué jusqu'à ce que la portion prédéterminée de produit ait été formée, et une deuxième condition de fonctionnement, dans laquelle la distribution de produit est interrompue après que la portion prédéterminée de produit a été formée; dans lequel la chambre de dosage comprend une portion d'extrémité (30) formant une surface co-

nique de transport du produit (31) qui rétrécit en direction de l'ouverture de sortie ou de la bouche de décharge (34) de la chambre de dosage (28); ledit distributeur à vis de dosage (20) présentant une portion terminale libre respective (20') qui se développe à l'intérieur de la portion terminale conique (30) de la chambre de dosage (28) et qui présente une portion en spirale ayant un diamètre qui diminue progressivement en direction de l'extrémité terminale du même distributeur à vis ayant un profil externe conique de manière à correspondre au profil conique de la surface interne (31) de la portion terminale de la chambre de dosage, le moyen de dosage du produit et le récipient étant mobiles les uns par rapport aux autres pour positionner la bouche de décharge à l'intérieur du récipient, **caractérisé en ce que** l'arbre (22) du distributeur à vis de dosage (20) présente une portion terminale respective (22') avec un diamètre réduit au niveau de la portion terminale du distributeur à vis; et **en ce que** le récipient se rapproche du moyen de dosage (12).

2. Appareil selon la revendication 1, **caractérisé en ce qu'**au niveau de la portion terminale du distributeur à vis la portion terminale respective (22'') de l'arbre (22) du distributeur à vis de dosage (20) présente un profil conique.
3. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de dosage comprend un corps tubulaire (32) formant une surface cylindrique de transport du produit et à partir de l'extrémité libre de laquelle se développe la portion terminale de la chambre de dosage (28).
4. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de dosage comprend un bec (36) se terminant par la bouche (34) pour décharger la portion prédéterminée de produit; et **en ce que** le bec (36) se développe en aval de la surface de transport conique et présente une ouverture d'entrée (38) sortant de la surface de transport conique (30) de la chambre de dosage et une ouverture de sortie formant la bouche de décharge du produit (34).
5. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen de dosage comprend un réservoir pour contenir le produit et à partir duquel se développe la chambre de dosage (28); et **en ce que** le distributeur à vis de dosage (20) présente une portion (20'') pour introduire le produit à l'intérieur de la chambre de dosage (28).
6. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le pas hélicoïdal du distributeur à vis de dosage (20) au niveau

du réservoir de distribution du produit (16) est plus grand que le pas hélicoïdal dans la chambre de dosage, en particulier le pas hélicoïdal dans la partie inférieure de la chambre de dosage (28).

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7. Appareil selon l'une quelconque des revendications précédentes 5 ou 6 **caractérisé en ce que** le distributeur à vis de dosage (20) présente une portion (20") se développant à l'intérieur du réservoir de distribution du produit (1). 10
8. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le moyen (40) est prévu pour pousser le produit en direction du moyen de dosage qui se trouve à l'intérieur du réservoir de distribution (16), en particulier ledit moyen pour pousser le produit en direction du moyen de dosage comprenant un rotor avec des lames (40). 15
9. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend un premier et un deuxième moyen de dosage (20, 20). 20
10. Appareil selon la revendication 9, **caractérisé en ce que** le premier et le deuxième moyen de dosage (20, 20) sont alignés suivant la direction de distribution des réipients. 25
11. Appareil selon l'une des revendications 9 ou 10, **caractérisé en ce que** le premier et le deuxième moyen de dosage se développe à partir du même réservoir de distribution du produit (16). 30
12. Appareil selon l'une quelconque des revendications précédentes **caractérisé en ce que** le distributeur à vis (20) est fixé au sommet et **en ce qu'il** est amovible pour l'extraction depuis le fond ou depuis l'extrémité au niveau de la bouche de décharge de produit. 35
40
13. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le distributeur à vis (20) est entraîné de façon rotative dans une direction angulaire opposée pour distribuer le produit vers l'arrière. 45
14. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend un manchon (50) présentant une surface interne respective (50') formant la partie inférieure de la chambre de dosage, le manchon (50) étant raccordé de façon amovible au moyen de dosage. 50

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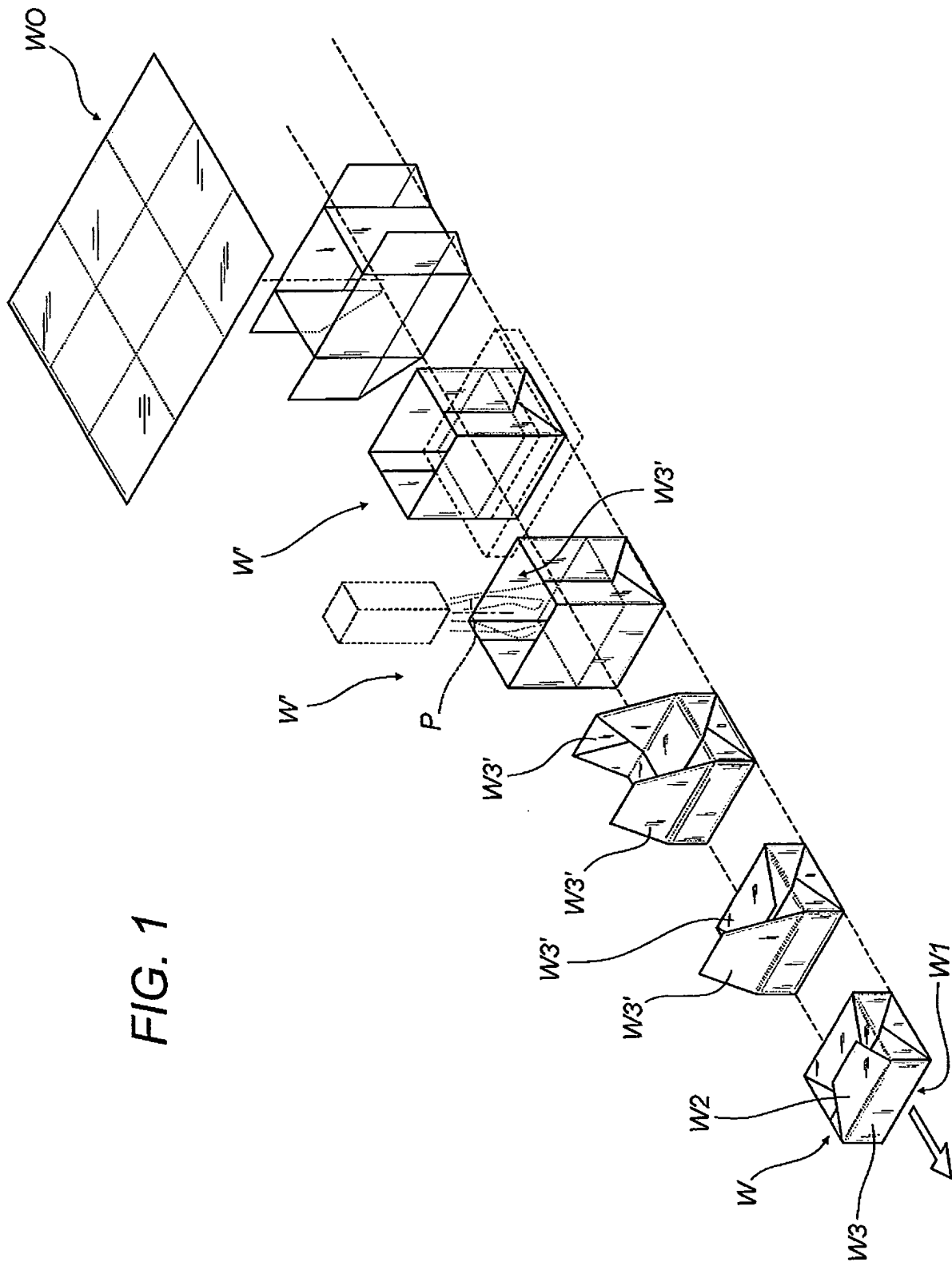
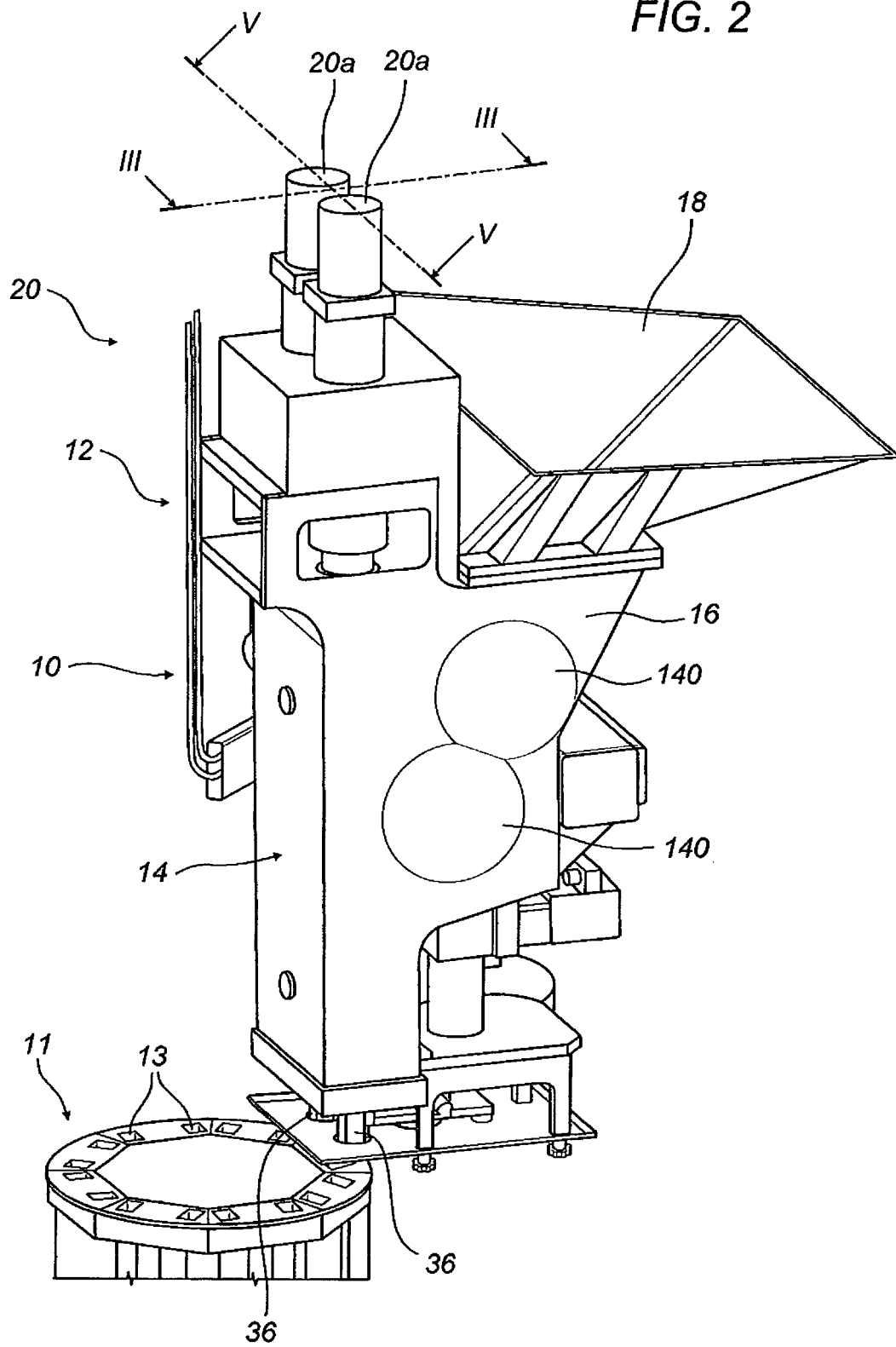


FIG. 2



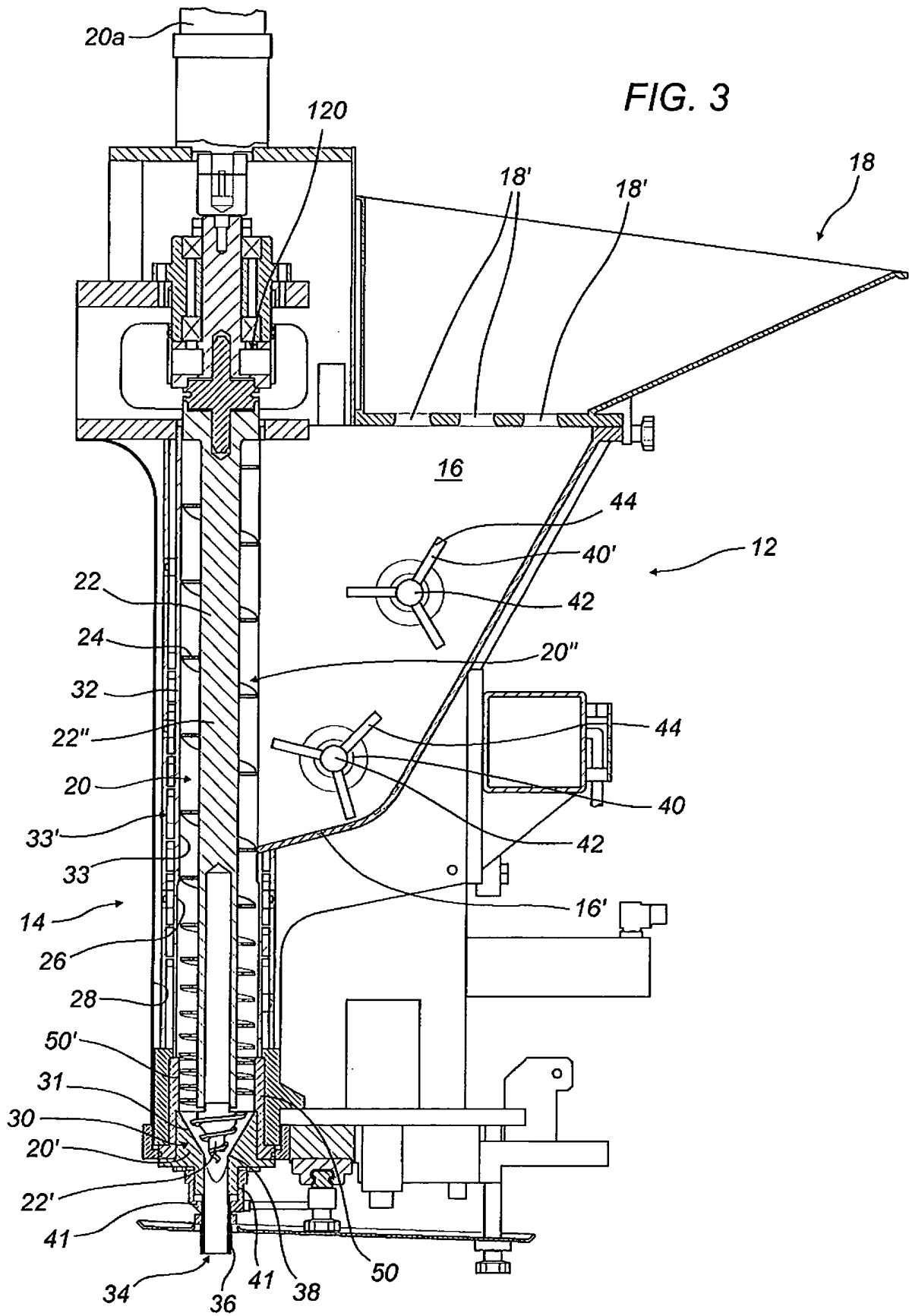


FIG. 4

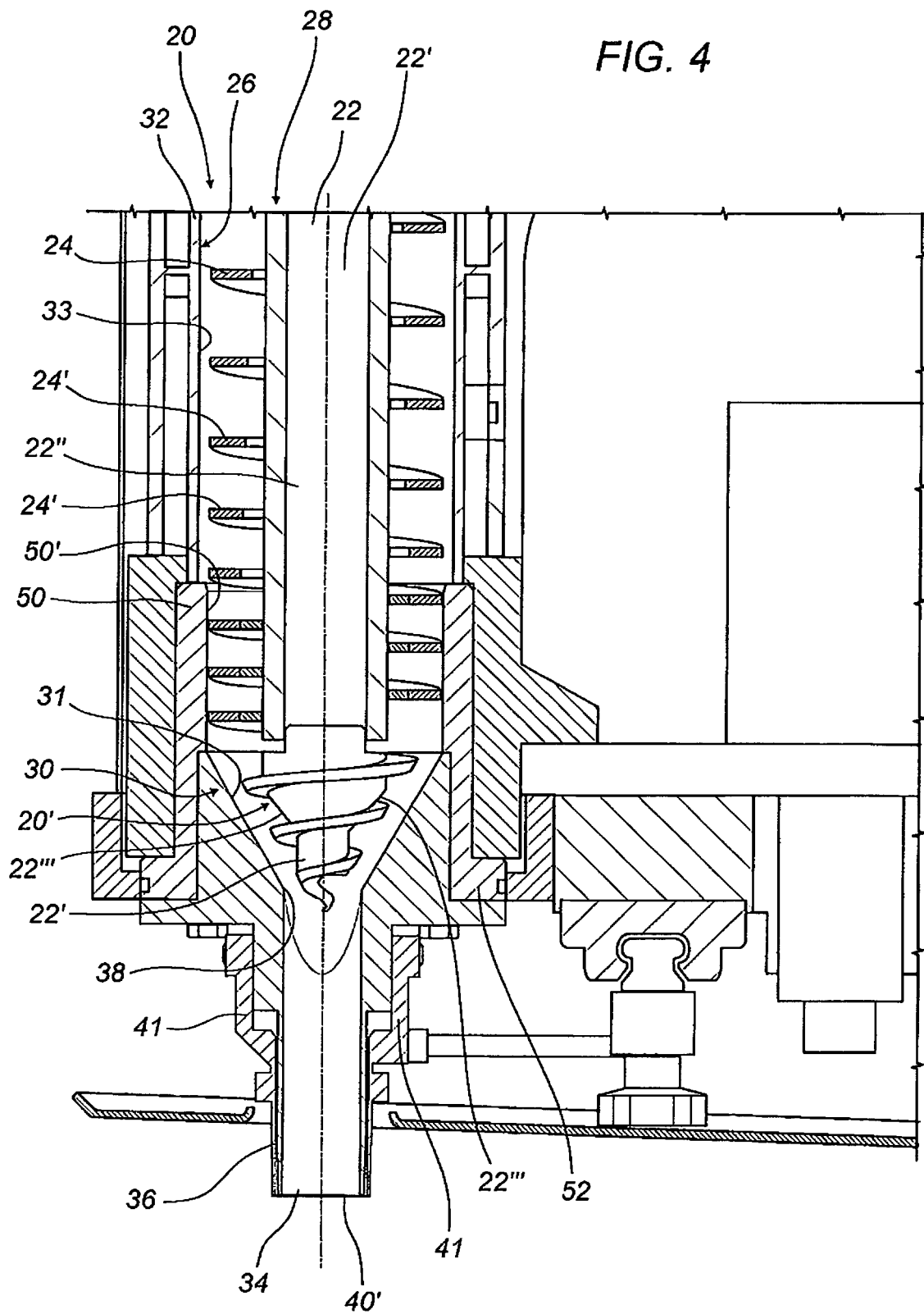
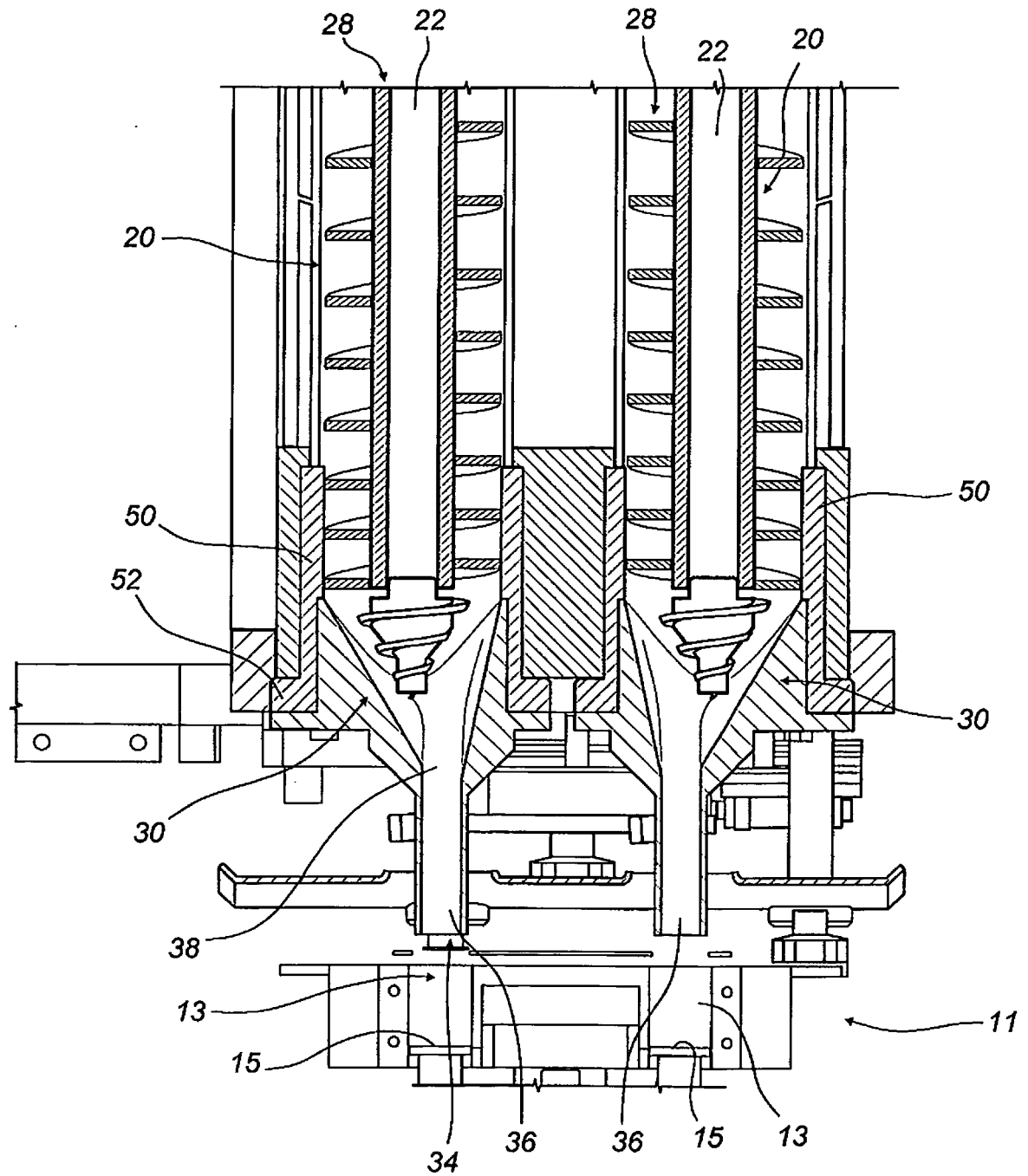
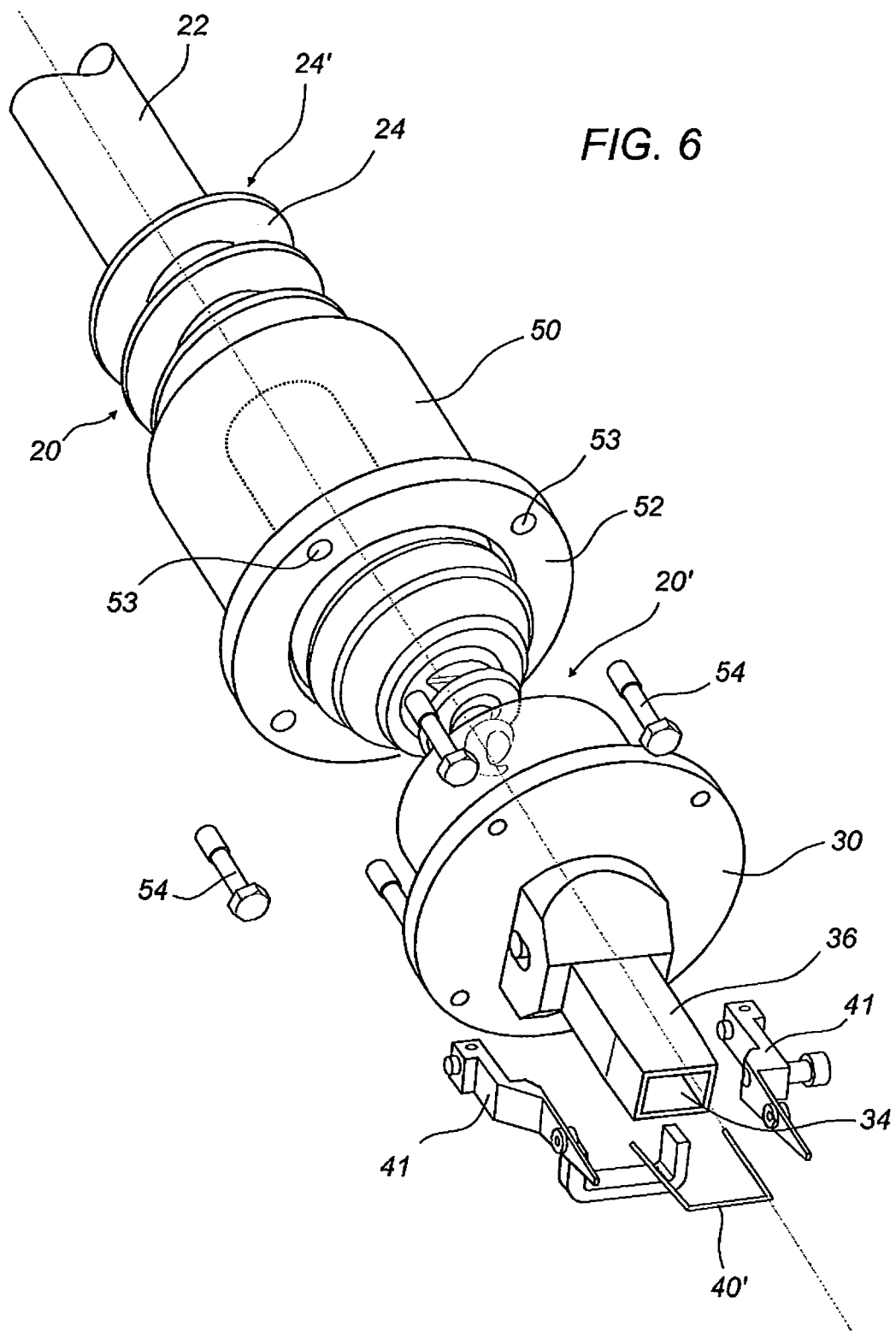


FIG. 5





REFERENCES CITED IN THE DESCRIPTION

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