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(54) Benævnelse: **Maskine til fremstilling af is specielt til en disk til visning af varer**

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DESCRIPTION

[0001] The present invention relates to a machine for making ice particularly for a counter for displaying goods.

[0002] Machines for making ice have been present on the market for some time, of the kind comprising a tubular conduit for the formation of ice, coated by a refrigeration unit evaporator and having internally a screw conveyor for moving the ice towards its delivery end with which a ring nut is associated having drawing holes.

[0003] In particular, the machines to which reference is made are adapted to produce ice in small pieces, known in technical jargon as "nuggets" or "flakers" or in granules or cubes.

[0004] It is well known that the ice used for displaying products, particularly fish products, can be a source of secondary contamination for such products and the accumulation of contaminants and pollutants in the ice that is placed in a ground level container can increase the hygiene risk.

[0005] A disadvantage of these machines is their difficult application to a counter for displaying goods having a substantial height development, since the ice is only distributed in small areas of the counter, hence obliging the operator to intervene manually to uniformly distribute the ice onto the display surface, with the risk of increasing the contamination of the ice and consequently the products that will be displayed thereon.

[0006] Furthermore, the ice only falling into small areas of the counter leads to fast accumulation of ice which quickly reaches the dispensing nozzle of the machine dispenser causing blockages and therefore malfunctioning or even blocking of the machine itself.

[0007] The technical task of the present invention is, therefore, to provide a machine for making ice particularly for a counter for displaying goods which obviates the above-described technical drawbacks.

[0008] Within the scope of this technical task an object of the invention is to provide a machine for making ice particularly for a counter for displaying goods, which allows ice to be dispensed so as to cover a larger surface of the counter automatically, eliminating the operator's manual intervention.

[0009] Another object of the invention is to provide a machine for making ice which allows greater flexibility of use, allowing the operator the possibility to take the ice out of other points on the machine, also while the ice is being dispensed onto the counter.

[0010] Another object of the invention is to provide a machine for making ice that can be associated with a counter for displaying goods without obstructing the passage for personnel.

[0011] Another object of the present invention is to provide a machine for making ice that is structurally simple and cheap.

[0012] The technical task, as well as these and other objects, according to the present invention, are reached by providing a machine for making ice according to claim 1.

[0013] A machine for making ice of this type is known from US patent n.6324855 B1 and comprises its own container of ice which collects the ice that is produced by the dispensing means.

[0014] In this ice machine the ice falls into the container under the force of gravity alone, and therefore with a substantially vertical path with respect to the collection container of ice and the proximity sensor is positioned in the collection container of ice.

[0015] According to the invention, the machine for making ice comprises a sliding device of the cylinders of ice apt to subject the cylinders of ice to a propulsion force acting in combination with the force of gravity so as to distribute the cylinders of ice over a larger surface area of the counter.

[0016] In particular, the sliding device is a slide having an initial straight portion and an end portion having a lower inclination with respect to said initial straight portion.

[0017] In particular, the end portion has a curvilinear run.

[0018] Preferably the slide has a channel-like conformation defined by two lateral walls closed from above.

[0019] According to the invention, the proximity sensor is configured and arranged so as to detect the minimum distance between the end portion of the slide and the accumulation of the cylinders of ice on the counter.

[0020] According to the invention, the first sensor is positioned above the slide. More in particular, the machine for making ice comprises a safety sensor located on the lateral walls upstream from the first sensor.

[0021] Preferably the machine for making ice comprises second dispensing means positioned on one side of the machine accessible to the operator.

[0022] Preferably the first dispensing means and the second dispensing means are angularly staggered.

[0023] Preferably the machine for making ice comprises selective opening means of said first or second dispensing means.

[0024] Preferably the selection means comprise an operating lever of a shutter having an opening for the passage of the cylinders of ice.

[0025] In particular, the lever is mobile between a first working position in which the opening lines up selectively with the first dispensing means, and a second working position in which the opening lines up selectively with the second dispensing means.

[0026] Preferably the lever is positioned on a lateral boundary wall of the machine. Preferably the machine for making ice comprises a shovel adapted to direct the cylinders of ice that are formed by the machine towards the first or second dispensing means.

[0027] More in particular, the machine has a front boundary wall facing the counter on which said first dispensing means are located and at least one lateral boundary wall on which the second dispensing means are located.

[0028] Preferably the machine has a back boundary wall, on the opposite side to the front boundary wall, tapered in order to reduce the overall dimensions.

[0029] Further characteristics and advantages of the invention will more fully emerge from the description of a preferred but not exclusive embodiment of the machine for making ice according to the invention, illustrated by way of non-limiting example in the accompanying figures of the drawings, in which:

Figure 1 shows a broken away perspective view of the machine associated with the counter.

Figure 2 shows a section view along the line 1-1 of a detail of the machine of Figure 1, wherein the first dispensing means, the proximity sensor and the optical sensor are illustrated.

Figure 3 shows a partial perspective view of the machine of Figure 1 wherein the first dispensing means, the second dispensing means and the selection means, which selectively determine the dispensing of the cylinders of ice through the second dispensing means, are shown.

Figure 4 shows a perspective view of the machine of Figure 1 wherein the lever is in the first working position and the ice is dispensed by the first dispensing means.

Figure 5 shows a perspective view of the machine of Figure 1 wherein the lever is in the second working position and the ice is dispensed by the second dispensing means.

Figure 6 shows a perspective view of the inside of the machine of Figure 1 wherein the lever associated with the mobile circular element is shown as the opening of the mobile circular element matches up with the first dispensing means and the movement of the shovel transports the cylinders of ice towards the first dispensing means.

Figure 7 shows a perspective view of the inside of the machine of Figure 1 wherein the lever associated with the mobile circular element is shown as the opening of the mobile circular

element matches up with the second dispensing means and the movement of the shovel transports the cylinders of ice towards the second dispensing means.

Figure 8 shows a broken away perspective view wherein the essential components of the machine are illustrated.

[0030] With reference to the figures mentioned, a machine for making ice is shown indicated overall with the reference number 1.

[0031] The machine 1 is in particular intended for the production of "nuggets" which means cylinders of ice of the desired diameter.

[0032] The machine 1 comprises a gas inlet conduit 53 which takes the gas to an expansion valve 2 connected to the evaporator 3 having internally a screw conveyor 8 for moving the ice towards the ice-breaking device 10 from which through a plurality of holes 11 the "nuggets" of ice 121 are formed.

[0033] From the evaporator 3 the gas is then conveyed into the discharge pipe 4.

[0034] The machine 1 further comprises a refrigerating adjustment valve 5 and a shut-off valve 6, positioned on the gas inlet conduit 53 which prevents the gas returning backwards.

[0035] The machine 1 is further equipped with a basin 22 in which a float is provided for checking the water level, which must always be constant for the correct operation of the machine 1.

[0036] The supply of water to the basin 22 takes place by means of a water supply conduit 21.

[0037] The machine 1 is also provided with a conduit 20 for discharging excess water. From the basin 22 the water is transported to the evaporator 3 by means of the connection channel 23.

[0038] The cylinders of ice that are formed through the plurality of holes 11 are conveyed selectively, by means of a shovel 12 fixed through a screw 13 to the screw conveyor 8, towards the first dispensing means 16 or the second dispensing means 50.

[0039] According to the invention, the first dispensing means 16 comprise a sliding device adapted to subject the cylinders of ice 121 to a propulsion force acting in combination with the force of gravity so as to distribute the cylinders of ice over a wider surface area of the counter 120.

[0040] This sliding device is a slide 17 having an initial straight portion 108 and an end portion with a curvilinear run 107 having a lower inclination with respect to the initial straight portion

108.

[0041] The slide has a channel-like conformation defined by two lateral walls 111 closed from above.

[0042] The cylinders of ice that are formed and that slide along the slide 17, are distributed, by means of the propulsion force generated by the end portion 107 having a curvilinear run of the slide 17 onto a larger surface area of the counter 120 with respect to the surface area that the cylinders of ice would occupy if they were only subject to the force of gravity.

[0043] Furthermore the first dispensing means are associated with a proximity sensor 15 and a safety sensor 14.

[0044] The proximity sensor 15, located above the slide 17, detects the quantity of ice 121 accumulated on the counter 120, causing the machine to stop in the event of excessive accumulation of ice.

[0045] In particular, the proximity sensor 15 detects the minimum distance between the end portion having a curvilinear run (107) of the slide (17) and the accumulation of the cylinders of ice (121) on the counter (120).

[0046] For increased safety, the machine 1 also comprises the safety sensor 14 which is positioned on the lateral walls 111 of the slide 17 upstream from the proximity sensor 15.

[0047] In the event of malfunctioning of the proximity sensor 15, the presence of the safety sensor 14 ensures the correct operation of the machine for making ice 1.

[0048] In fact, the safety sensor 14 is an optical reader that detects the cylinders of ice 121 moving along the slide.

[0049] The machine for making ice 1 further comprises second dispensing means 50 positioned on one side of the machine 1 accessible to the operator.

[0050] The presence of said second dispensing means 50 allows greater operating flexibility of the machine for making ice according to the present invention, since it allows the operator to be able to exploit said second dispensing means 50 for the manual collection of the ice by means of a container, hence avoiding the need to take out and therefore partially contaminate the ice that falls onto the counter through the first dispensing means 16 or even having to move the machine 1, which would be particularly problematic and/or impractical if the machine for making ice were fixed to the counter 120.

[0051] For this precise reason, the machine 1 advantageously comprises selective opening means of said first or second dispensing means 16, 50.

[0052] In fact, the selective opening means comprise an actuating lever 51 of a shutter 55 having an opening 56 for the passage of the cylinders of ice that are formed.

[0053] The lever 51 is mobile between a first working position and a second working position.

[0054] When the lever is moved manually by the operator into the first working position, the shutter 55 activated by the lever 51 rotates so as to line up its opening 56 with the slide 17.

[0055] The cylinders of ice that are formed are thus conveyed by means of the shovel 12 selectively towards the slide 17 in order to be dispensed onto the counter 120.

[0056] On the other hand, when the lever 51 is manually moved by the operator towards the second working position, the shutter 55 activated by the lever 51 rotates until its opening 56 is lined up with the second dispensing means 50.

[0057] In this way, the operator can collect the cylinders of ice 121 that exit from the second dispensing means 50.

[0058] The machine for making ice 1 is fixed to the counter 120 and has an outer casing comprising a front boundary wall 125, two lateral boundary walls 127 and a back boundary wall 124.

[0059] The first dispensing means 16 are located on the front boundary wall 125 overlooking the counter.

[0060] The second dispensing means 50, on the other hand, are located on one of the two lateral boundary walls 127 of the machine 1.

[0061] The front boundary wall and the two lateral boundary walls 127 are arranged so as to form a 90° angle between them and in this way the first means 16 and the second means 50 are angularly staggered.

[0062] Furthermore the machine 1 has a back portion 124, on the opposite side to the front portion 125, tapered so as to reduce the dimensions of the machine 1 and facilitate the passage of the operator.

[0063] On the back portion 124 a general switch 31 for operating the machine 1 and a safety switch 30 for stopping the machine 1, if necessary, are also located.

[0064] On the back portion 124 a timer 33 is further envisaged, apt to set the operating times of the machine 1.

[0065] The machine for making ice as conceived herein is susceptible to many modifications and variations, all falling within the scope of the inventive concept; furthermore, all the details

are replaceable by technically equivalent elements.

[0066] The materials used, as well as the dimensions, may in practice be of any type according to requirements and the state of the art.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US6324855B1 [0013]

Patentkrav

1. Maskine (1) til fremstilling af is (121) i form af cylindre specielt til en disk (120) til visning af varer, der har en lodret udbygning egnet til at aktivere doseringen af nævnte is (121) direkte på nævnte disk (120), omfattende første doseringsanordninger (16) for nævnte is (121), hvortil mindst én nærhedssensor (15) er forbundet, egnet til at detektere mængden af is (121) akkumuleret på nævnte disk (120), **kendetegnet ved, at** nævnte første doseringsanordning (16) omfatter en glideanordning for nævnte cylindre af is (121) tilpasset til at underlægge nævnte cylindre af is (121) til en fremdrivningskraft, der virker i kombination med tyngdekraften for at fordele nævnte cylindre af is (121) over et bredere fordelingsoverfladeareal af nævnte disk (120), hvor nævnte glideanordning er en sliske (17) med en indledende lige del (108) og en endedel (107) med en lavere hældning i forhold til nævnte indledende lige del (108), og hvor nævnte nærhedssensor (15) er konfigureret og anbragt over nævnte sliske (17) for at detektere den minimale afstand mellem nævnte endedel (107) af slisken (17) og akkumuleringen af nævnte cylindre af is (121) på nævnte disk (120).

2. Maskine (1) til fremstilling af is ifølge krav 1, **kendetegnet ved, at** nævnte endedel (107) har et buelinjet løb.

3. Maskine (1) til fremstilling af is ifølge et hvilket som helst af kravene 1 og 2, **kendetegnet ved, at** nævnte sliske (17) har en kanallignende bygning defineret af to sidevægge (111) lukket ovenfra.

4. Maskine (1) til fremstilling af is ifølge krav 3, **kendetegnet ved, at** den har mindst én sikkerhedssensor (14) placeret på nævnte sidevægge (111) opstrøms for nævnte nærhedssensor (15).

5. Maskine (1) til fremstilling af is ifølge et hvilket som helst af de forrige krav, **kendetegnet ved, at** den omfatter sekundære doseringsanordninger (50) placeret på den ene side af nævnte maskine (1) tilgængeligt for operatøren.

6. Maskine (1) til fremstilling af is ifølge det forrige krav, **kendetegnet ved, at**

nævnte første doseringsanordning (16) og nævnte anden doseringsanordning (50) er vinkelforskudte.

7. Maskine (1) til fremstilling af is ifølge et af kravene 5 og 6, **kendetegnet ved, at** den omfatter selektive åbningsanordninger (130) af nævnte første eller anden doseringsanordninger (16, 50).

8. Maskine (1) til fremstilling af is ifølge det forrige krav, **kendetegnet ved, at** nævnte selektive åbningsanordninger (130) omfatter et betjeningshåndtag (51) af en lukker (55) med en åbning (56) til passagen af nævnte cylindre af is, nævnte håndtag (51) er mobil mellem en første arbejdsstilling, hvor nævnte åbning (56) flugter selektivt med nævnte første doseringsanordning (16), og en anden arbejdsstilling, hvor nævnte åbning (56) flugter selektivt med nævnte anden doseringsanordning (50).

9. Maskine (1) til fremstilling af is ifølge det forrige krav, **kendetegnet ved, at** nævnte håndtag (51) er anbragt på en lateral skillevæg på nævnte maskine (1).

10. Maskine (1) til fremstilling af is ifølge et hvilket som helst af krav 5 til 9, **kendetegnet ved, at** den omfatter en skovl (12) egnet til at rette cylindrene af is (121), der er dannet af nævnte maskine, mod nævnte første eller anden doseringsanordninger (16, 50).

11. Maskine (1) til fremstilling af is ifølge et hvilket som helst af de forrige krav, **kendetegnet ved, at** den har en skillevæg fortil (125), der vender mod disken (120), hvorpå nævnte første doseringsanordninger (16) er placeret, og i det mindste én lateral skillevæg (127), hvorpå nævnte anden doseringsanordninger (50) er placeret.

12. Maskine (1) til fremstilling af is ifølge det forrige krav, **kendetegnet ved, at** den har en skillevæg bagtil (124), på den modsatte side af nævnte skillevæg fortil (125), tilspidset for at reducere de overordnede dimensioner.

DRAWINGS

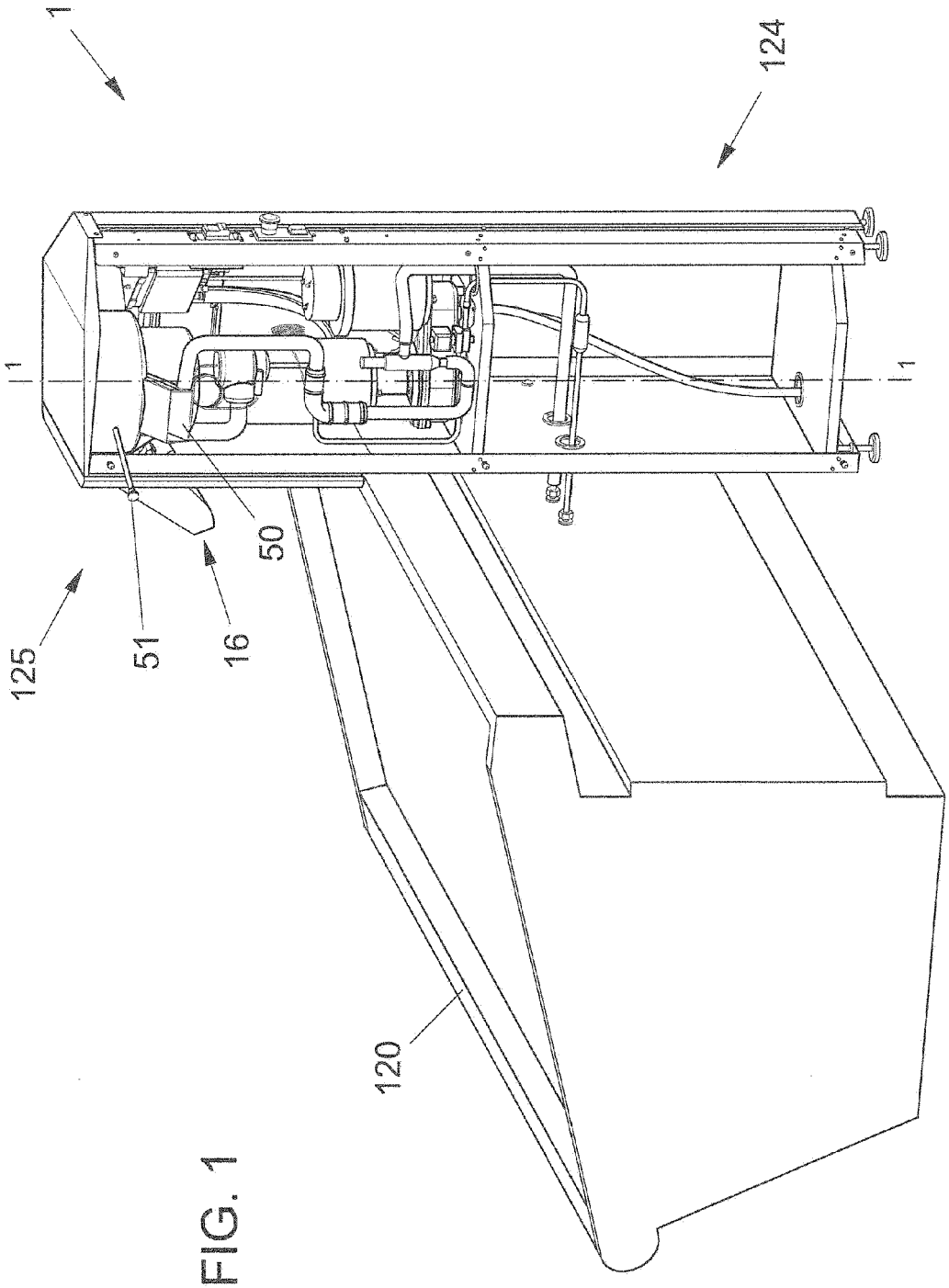

FIG. 1

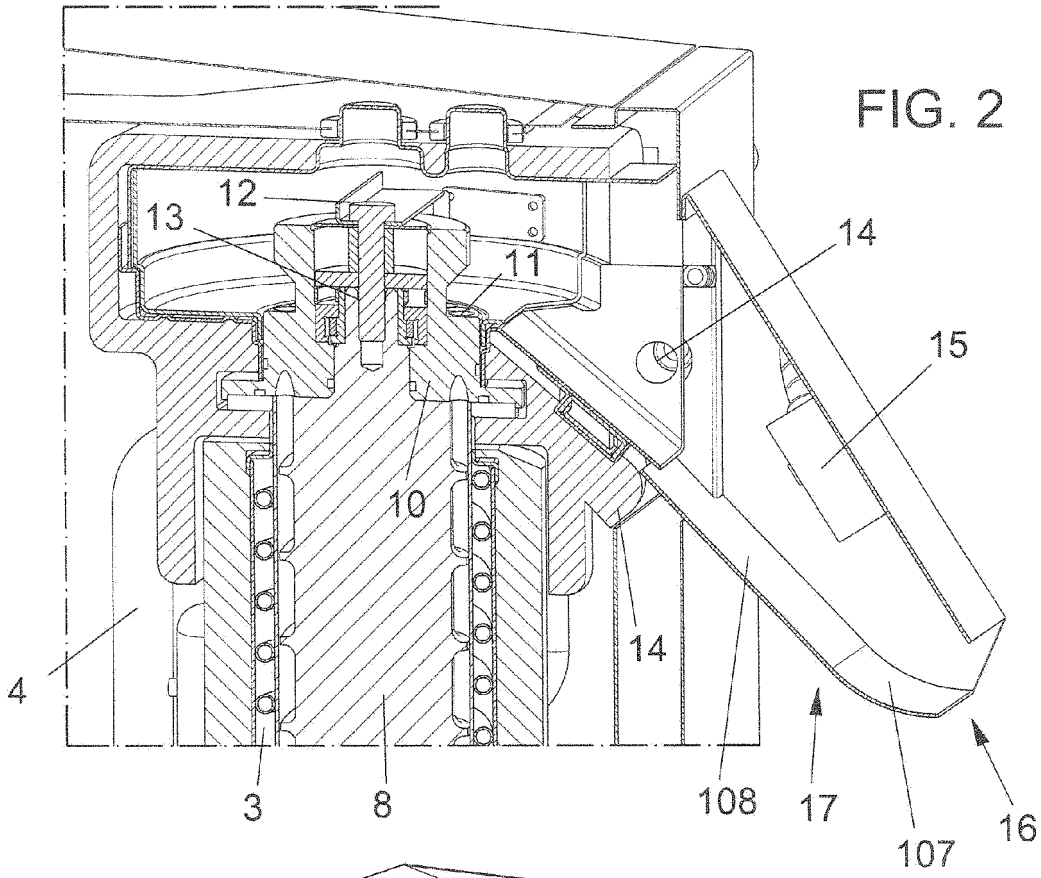

FIG. 2

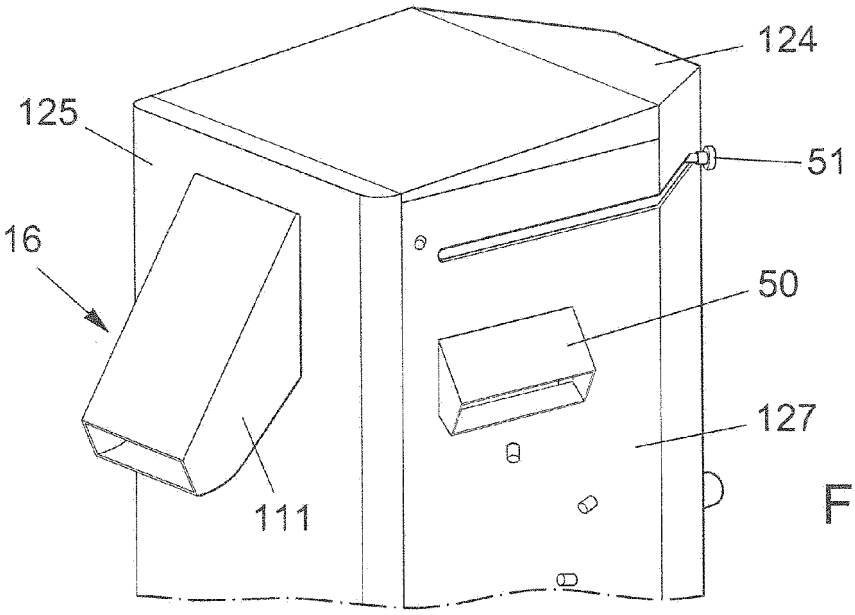

FIG. 3

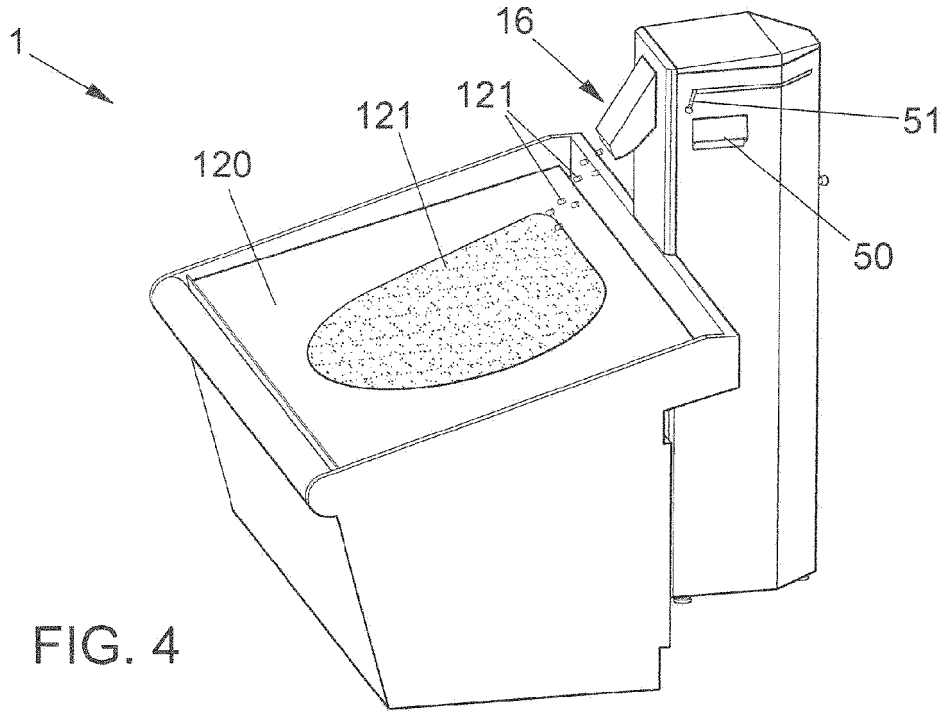

FIG. 4

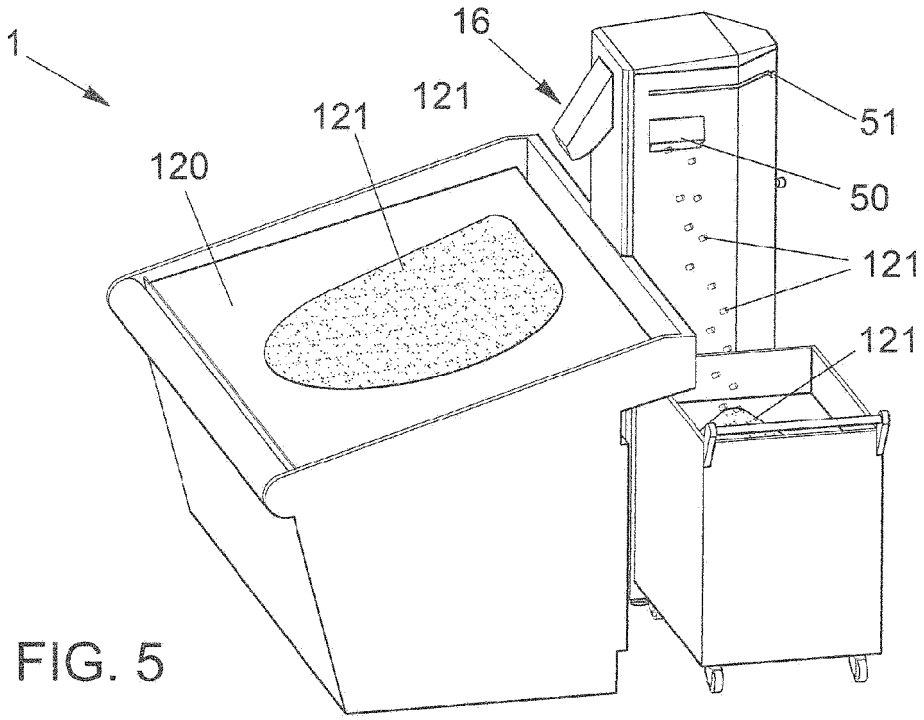

FIG. 5

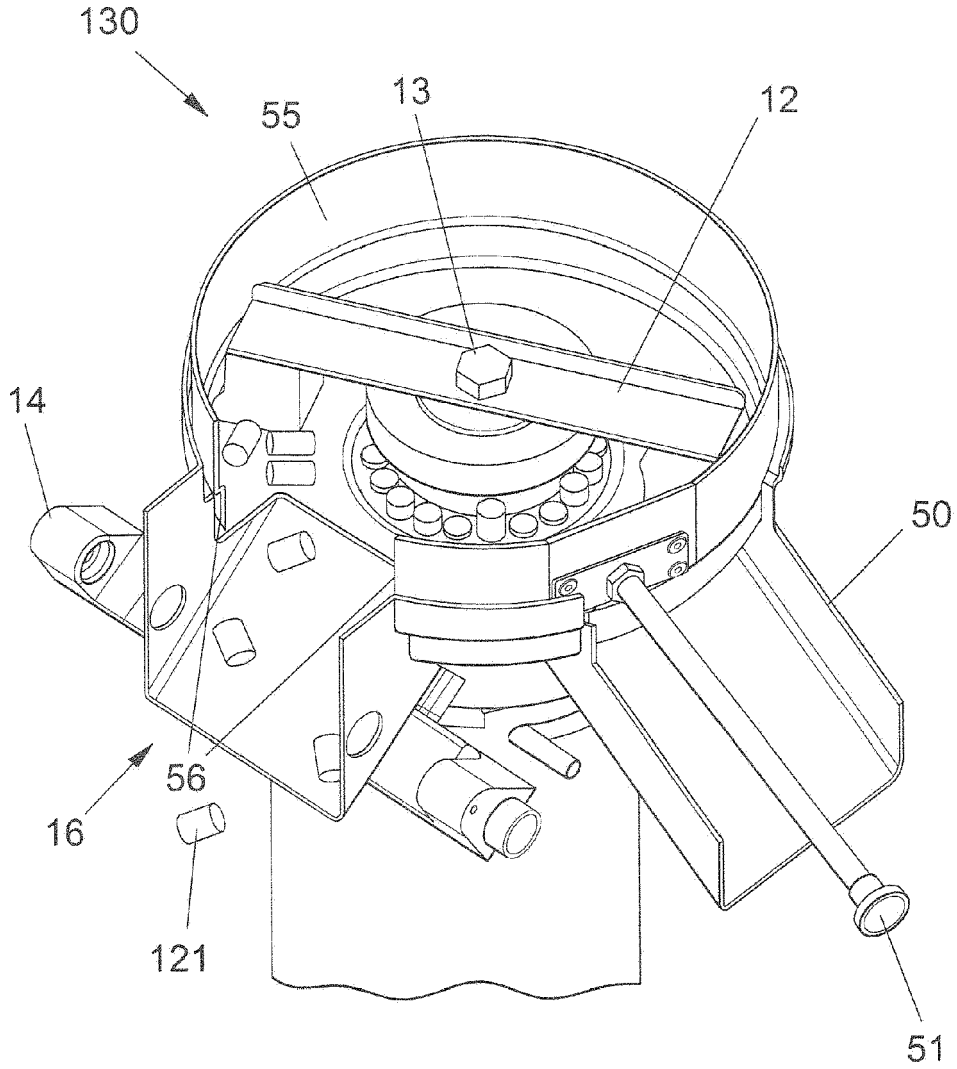

FIG. 6

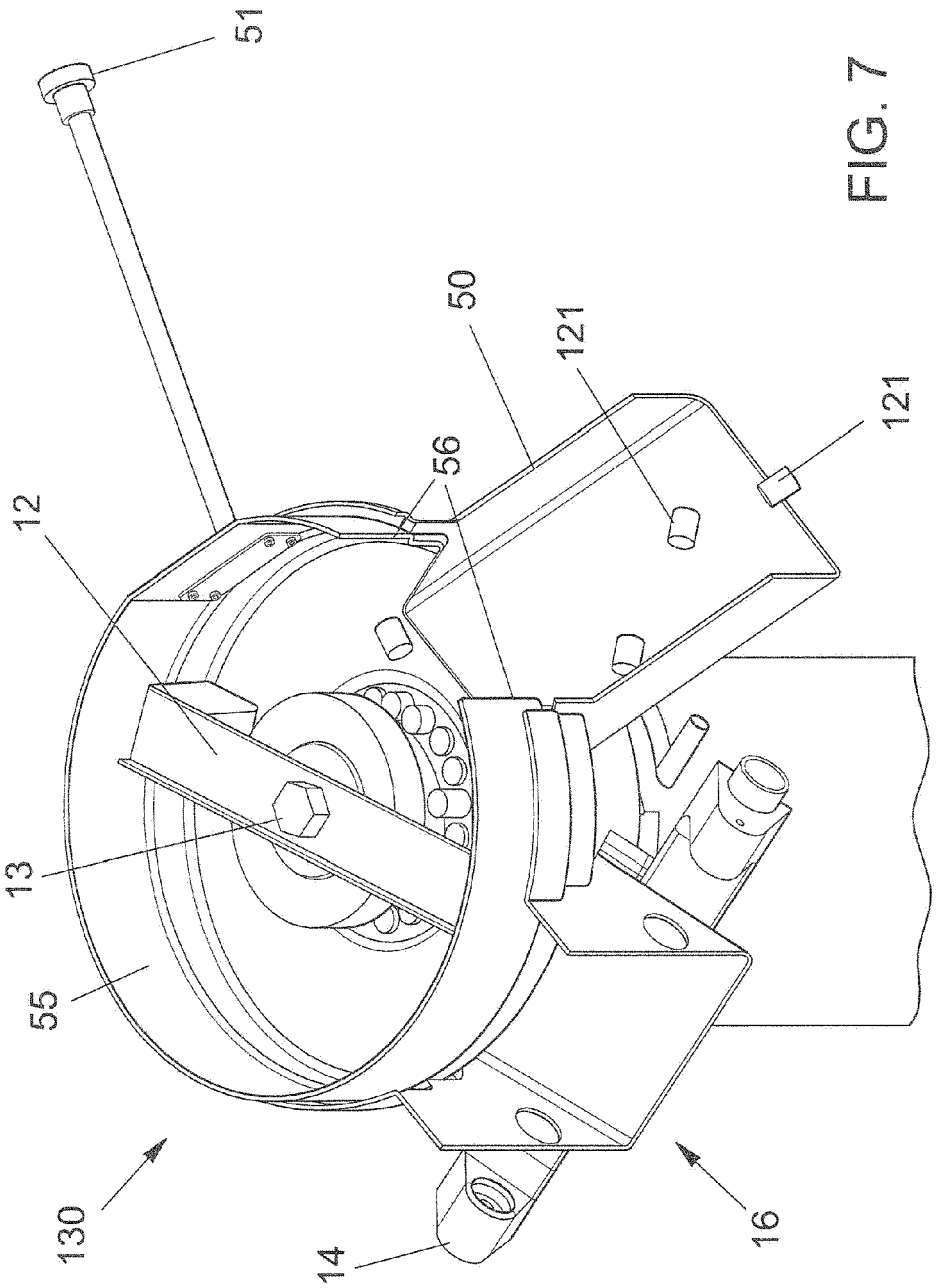

FIG. 7

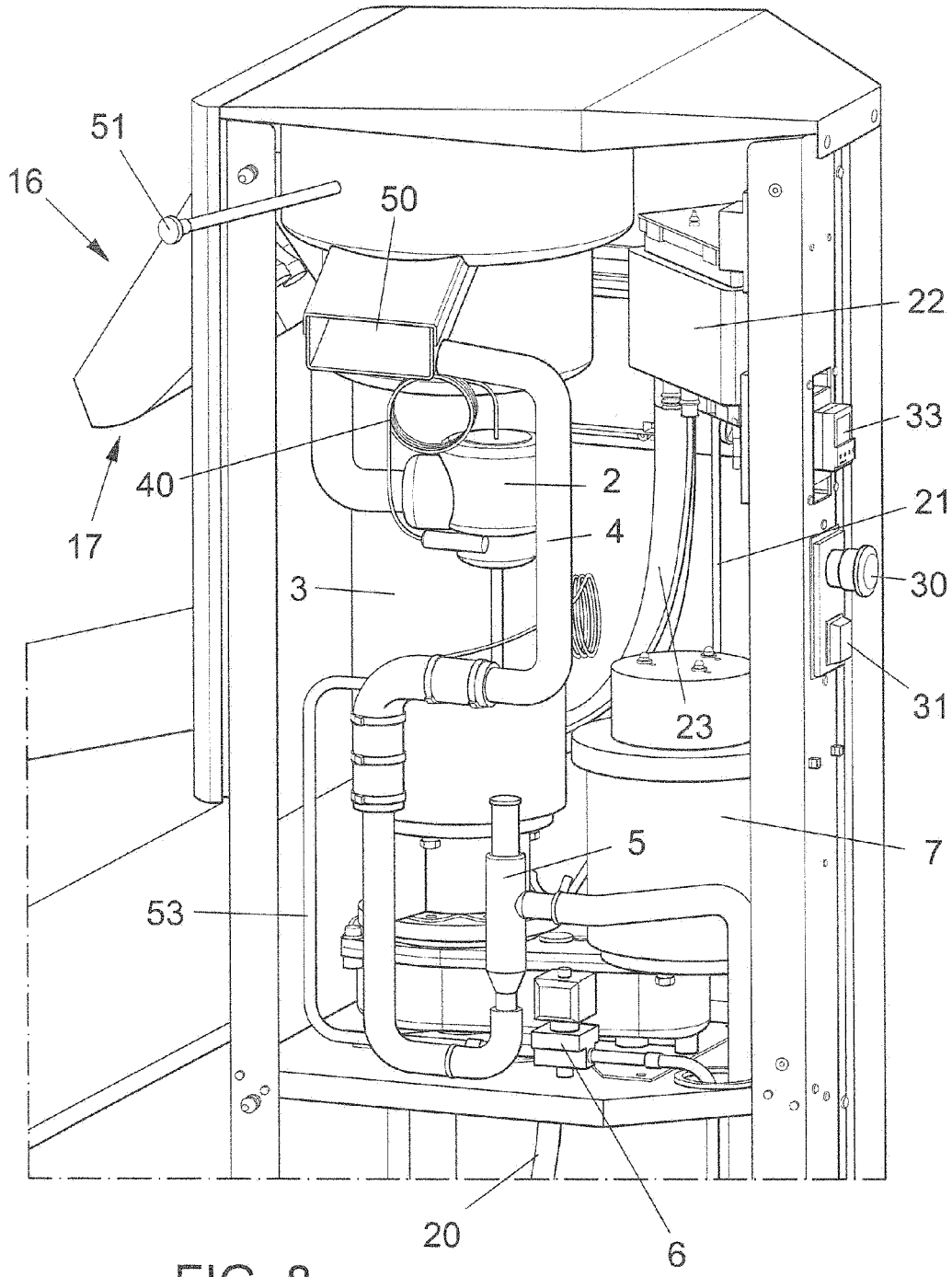

FIG. 8