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(54) **MACHINE FOR MAKING ICE PARTICULARLY FOR A COUNTER FOR DISPLAYING GOODS**

MASCHINE ZUM HERSTELLEN VON EIS, INSBESONDERE FÜR EINEN LADENTISCH ZUR
PRÄSENTATION VON WAREN

MACHINE POUR LA FABRICATION DE GLAÇONS EN PARTICULIER POUR UN COMPTOIR POUR
LA PRÉSENTATION D'ARTICLES

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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.

5 **[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.

10 **[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.

15 **[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.

20 **[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.

25 **[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.

30 **[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.

35 **[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.

40 **[0043]** Furthermore the first dispensing means are associated with a proximity sensor 15 and a safety sensor 14.

45 **[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.

50 **[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).

55 **[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.

5 [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.

10 [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.

Claims

- 20 1. Machine (1) for making ice (121) in the shape of cylinders particularly for a counter (120) for displaying goods, having a vertical expansion apt to promote the dispensing of said ice (121) directly on said counter (120), comprising first dispensing means (16) of said ice (121) to which at least one proximity sensor (15) is associated, adapted to detect the quantity of ice (121) accumulated on said counter (120), **characterised in that** said first dispensing means (16) comprises a sliding device of said cylinders of ice (121) adapted to subject said cylinders of ice (121), to a propulsion fore acting in combination with the force of gravity so as to distribute said cylinders of ice (121) over a wider distribution surface area of said counter (120), wherein said sliding device is a slide (17) having an initial straight portion (108) and an end portion (107) having a lower inclination with respect to said initial straight portion (108) and wherein said proximity sensor (15) is configured and positioned above said slide (17) so as to detect the minimum distance between said end portion (107) of the slide (17) and the accumulation of said cylinders of ice (121) on said counter (120).
- 25 2. Machine (1) for making ice according to claim 1, **characterised in that** said end portion (107) has a curvilinear run.
- 30 3. Machine (1) for making ice according to any of claims 1 and 2, **characterised in that** said slide (17) has a channel-like conformation defined by two lateral walls (111) closed from above.
- 35 4. Machine (1) for making ice according to any of claims 3, **characterised in that** it has at least one safety sensor (14) located on said lateral walls (111) upstream from said proximity sensor (15).
- 40 5. Machine (1) for making ice according to any of the
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previous claims, **characterised in that** it comprises second dispensing means (50) positioned on one side of said machine (1) accessible to the operator.

6. Machine (1) for making ice according to the previous claim, **characterised in that** said first dispensing means (16) and said second dispensing means (50) are angularly staggered. 5
7. Machine (1) for making ice according to either of claims 5 and 6, **characterised in that** it comprises selective opening means (130) of said first or second dispensing means (16, 50). 10
8. Machine (1) for making ice according to the previous claim, **characterised in that** said selective opening means (130) comprise an actuating lever (51) of a shutter (55) having an opening (56) for the passage of said cylinders of ice, said lever (51) being mobile between a first working position in which said opening (56) lines up selectively with said first dispensing means (16), and a second working position in which said opening (56) lines up selectively with said second dispensing means (50). 15 20
9. Machine (1) for making ice according to the previous claim **characterised in that** said lever (51) is positioned on a lateral boundary wall of said machine (1). 25
10. Machine (1) for making ice according to any of claims 5 to 9, **characterised in that** it comprises a shovel (12) adapted to direct the cylinders of ice (121) that are formed by said machine towards said first or second dispensing means (16, 50). 30
11. Machine (1) for making ice according to any of the previous claims, **characterised in that** it has a front boundary wall (125) facing the counter (120) on which said first dispensing means (16) are located and at least one lateral boundary wall (127) on which said second dispensing means (50) are located. 35 40
12. Machine (1) for making ice according to the previous claim, **characterised in that** it has a back boundary wall (124), on the opposite side to said front boundary wall (125), tapered in order to reduce the overall dimensions. 45

Patentansprüche

1. Maschine (1) zum Herstellen von Eis (121) in der Form von Zylindern, insbesondere für einen Ladentisch (120) zur Präsentation von Waren, aufweisend eine vertikale Ausdehnung, die geeignet ist, um die Ausgabe des Eises (121) direkt auf dem Ladentisch (120) zu fördern, umfassend erste Ausgabemittel (16) für das Eis (121), mit denen mindestens ein Nä-

herungssensor (15) assoziiert ist, geeignet, um die auf dem Ladentisch (120) angehäufte Menge an Eis (121) zu erfassen, **dadurch gekennzeichnet, dass** die ersten Ausgabemittel (16) eine Schiebevorrichtung für die Zylinder aus Eis (121) umfassen, die geeignet ist, um einen jeden Zylinder aus Eis (121) einer Antriebskraft zu unterziehen, wirkend in Kombination mit der Schwerkraft, sodass die Zylinder aus Eis (121) über einen weiteren Verteilungsoberflächenbereich des Ladentischs (120) verteilt werden, wobei die Schiebevorrichtung ein Schieber (17) ist, der einen anfänglichen gerade Abschnitt (108) und einen Endabschnitt (107) aufweist, aufweisend eine geringere Neigung im Vergleich zum anfänglichen geraden Abschnitt (108), und wobei der Näherungssensor (15) ausgelegt und über dem Schieber (17) positioniert ist, um den Mindestabstand zwischen dem Endabschnitt (107) des Schiebers (17) und der Anhäufung der Zylinder aus Eis (121) auf dem Ladentisch (120) zu erfassen.

2. Maschine (1) zum Herstellen von Eis nach Anspruch 1, **dadurch gekennzeichnet, dass** der Endabschnitt (107) einen gekrümmten Verlauf aufweist. 25
3. Maschine (1) zum Herstellen von Eis nach den Ansprüchen 1 und 2, **dadurch gekennzeichnet, dass** der Schieber (17) eine kanalähnliche Beschaffenheit aufweist, definiert durch zwei Seitenwände (111), die von oben geschlossen sind. 30
4. Maschine (1) zum Herstellen von Eis nach Anspruch 3, **dadurch gekennzeichnet, dass** sie mindestens einen Sicherheitssensor (14) aufweist, der an den Seitenwänden (111) vor dem Näherungssensor (15) platziert ist. 35
5. Maschine (1) zum Herstellen von Eis nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie zweite Ausgabemittel (50) umfasst, die an einer Seite der Maschine (1) zugänglich für den Bediener positioniert sind. 40
6. Maschine (1) zum Herstellen von Eis nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die ersten Ausgabemittel (16) und die zweiten Ausgabemittel (50) winkelig versetzt sind. 45

7. Maschine (1) zum Herstellen von Eis nach einem der Ansprüche 5 und 6, **dadurch gekennzeichnet, dass** sie selektive Öffnungsmittel (130) für die ersten oder zweiten Ausgabemittel (16, 50) umfasst. 50
8. Maschine (1) zum Herstellen von Eis nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die selektiven Öffnungsmittel (130) einen Betätigungshebel (51) für einen Verschluss (55) um-

fassen, aufweisend eine Öffnung (56) für das Durchführen der Zylinder aus Eis, wobei der Hebel (51) zwischen einer ersten Arbeitsposition, in der die Öffnung (56) selektiv bündig mit den ersten Ausgabemitteln (16) abschließt, und einer zweiten Arbeitsposition, in der die Öffnung (56) selektiv bündig mit den zweiten Ausgabemitteln (50) abschließt, beweglich ist.

9. Maschine (1) zum Herstellen von Eis nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der Hebel (51) an einer seitlichen Grenz wand der Maschine (1) positioniert ist.

10. Maschine (1) zum Herstellen von Eis nach einem der Ansprüche 5 bis 9, **dadurch gekennzeichnet, dass** sie eine Schaufel (12) umfasst, die geeignet ist, um die Zylinder aus Eis (121), die von der Maschine geformt werden, hinführend zu den ersten oder zweiten Ausgabemitteln (16, 50) zu lenken.

11. Maschine (1) zum Herstellen von Eis nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie eine frontseitige Grenz wand (125) aufweist, die dem Ladentisch (120) zugewandt ist, an der die ersten Ausgabemittel (16) platziert sind, und mindestens eine seitliche Grenz wand (127), an der die zweiten Ausgabemittel (50) platziert sind.

12. Maschine (1) zum Herstellen von Eis nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** sie eine rückseitige Grenz wand (124) an der der frontseitigen Grenz wand (125) gegenüberliegenden Seite aufweist, die verjüngt ist, um die Gesamtabmessungen zu reduzieren.

Revendications

1. Machine (1) pour la fabrication de glaçons (121) sous forme de cylindres, en particulier pour un comptoir (120) pour la présentation d'articles, comportant un développement vertical apte à promouvoir la distribution desdits glaçons (121) directement sur ledit comptoir (120), comprenant des premiers moyens de distribution (16) desdits glaçons (121) auxquels est associé au moins un détecteur (15) de proximité adapté pour détecter la quantité de glaçons (121) accumulée sur ledit comptoir (120), **caractérisée en ce que** lesdits premiers moyens de distribution (16) comprennent un dispositif coulissant desdits cylindres de glaçon (121) adapté pour soumettre lesdits cylindres de glaçon (121) à une force de propulsion qui agit conjointement à la force de gravité de sorte à distribuer lesdits cylindres de glaçon (121) sur une plus grande surface de distribution dudit comptoir (120), dans laquelle ledit dispositif coulissant est un

coulisseau (17) comportant une partie rectiligne (108) initiale et une partie terminale (107) comportant une inclinaison inférieure par rapport à ladite partie rectiligne (108) initiale et dans laquelle ledit détecteur (15) de proximité est configuré et positionné au-dessus dudit coulisseau (17) de sorte à détecter la distance minimum entre ladite partie terminale (107) du coulisseau (17) et l'accumulation desdits cylindres de glaçon (121) sur ledit comptoir (120).

2. Machine (1) pour la fabrication de glaçons selon la revendication 1, **caractérisée en ce que** ladite partie terminale (107) possède une course curviligne.

3. Machine (1) pour la fabrication de glaçons selon les revendications 1 et 2, **caractérisée en ce que** ledit coulisseau (17) a la forme d'un canal définie par deux cloisons latérales (111) fermées par le dessus.

4. Machine (1) pour la fabrication de glaçons selon la revendication 3, **caractérisée en ce qu'elle** comporte au moins un capteur de sécurité (14) situé sur lesdites cloisons latérales (111) en amont dudit détecteur (15) de proximité.

5. Machine (1) pour la fabrication de glaçons selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'elle** comprend des seconds moyens de distribution (50) positionnés sur un côté de ladite machine (1) accessible à l'opérateur.

6. Machine (1) pour la fabrication de glaçons selon la revendication précédente, **caractérisée en ce que** lesdits premiers moyens de distribution (16) et lesdits seconds moyens de distribution (50) sont décalés angulairement.

7. Machine (1) pour la fabrication de glaçons selon l'une quelconque des revendications 5 et 6, **caractérisée en ce qu'elle** comprend des moyens d'ouverture (130) sélective desdits premiers ou seconds moyens de distribution (16, 50).

8. Machine (1) pour la fabrication de glaçons selon la revendication précédente, **caractérisée en ce que** lesdits moyens d'ouverture (130) sélective comprennent un levier d'actionnement (51) d'un obturateur (55) comportant une ouverture (56) pour le passage desdits cylindres de glaçon, ledit levier (51) étant mobile entre une première position de travail dans laquelle ladite ouverture (56) s'aligne sélectivement avec lesdits premiers moyens de distribution (16), et une seconde position de travail dans laquelle ladite ouverture (56) s'aligne sélectivement avec lesdits seconds moyens de distribution (50).

9. Machine (1) pour la fabrication de glaçons selon la

revendication précédente, **caractérisée en ce que** ledit levier (51) est positionné sur une cloison de délimitation latérale de ladite machine (1).

10. Machine (1) pour la fabrication de glaçons selon l'une quelconque des revendications de 5 à 9, **caractérisée en ce qu'**elle comprend une pelle (12) adaptée pour orienter les cylindres de glaçon (121) étant formés par ladite machine vers lesdits premiers ou seconds moyens de distribution (16, 50). 5 10
11. Machine (1) pour la fabrication de glaçons selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**en son sein elle comporte une cloison de délimitation (125) antérieure faisant face au comptoir (120) sur lequel sont situés lesdits premiers moyens de distribution (16) et au moins une cloison de délimitation (127) latérale sur laquelle sont situés lesdits seconds moyens de distribution (50) . 15 20
12. Machine (1) pour la fabrication de glaçons selon la revendication précédente, **caractérisée en ce qu'**elle comporte une cloison de délimitation (124) postérieure sur le côté opposé à ladite cloison de délimitation (125) antérieure conique afin de réduire les dimensions globales. 25

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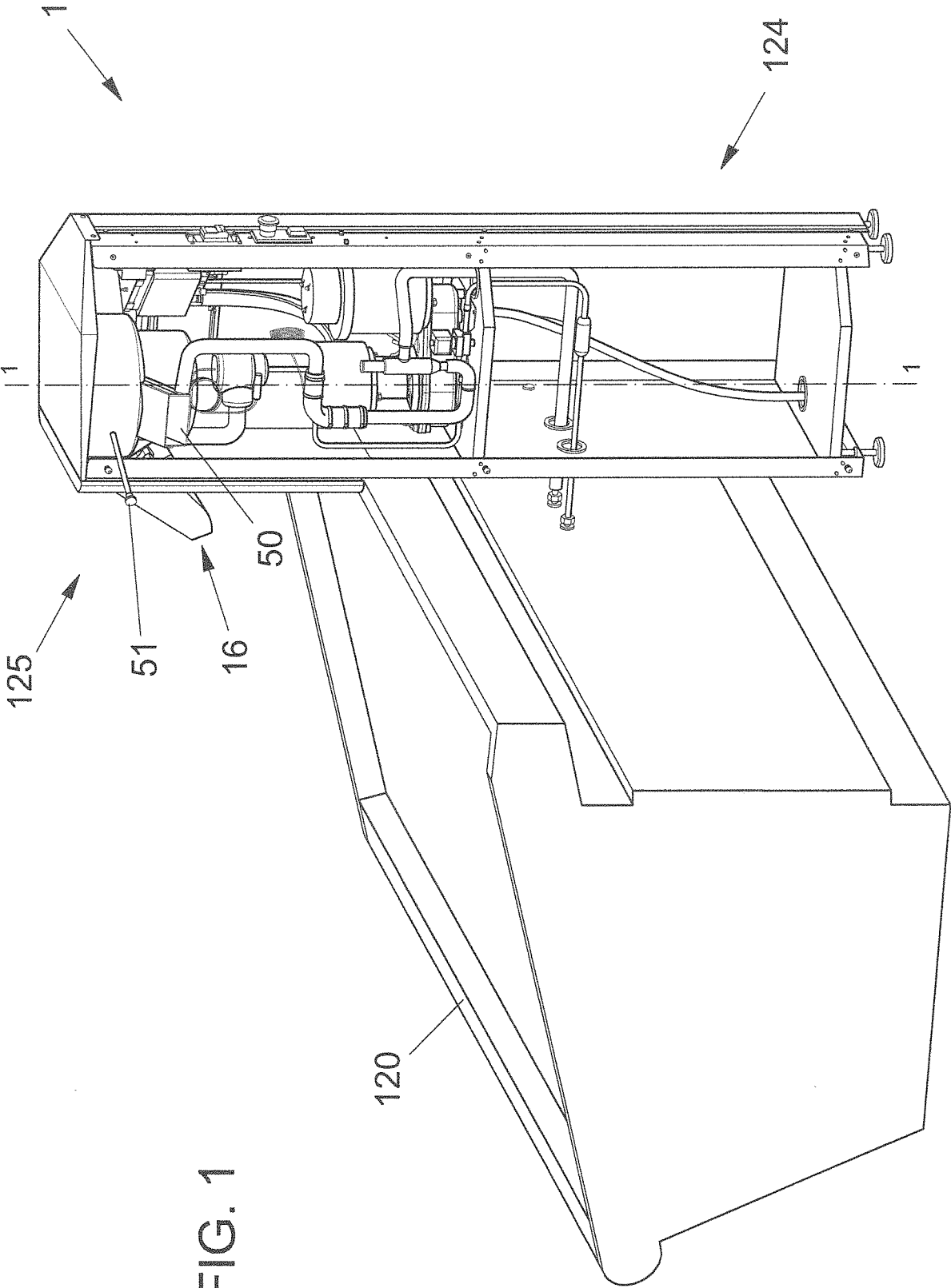
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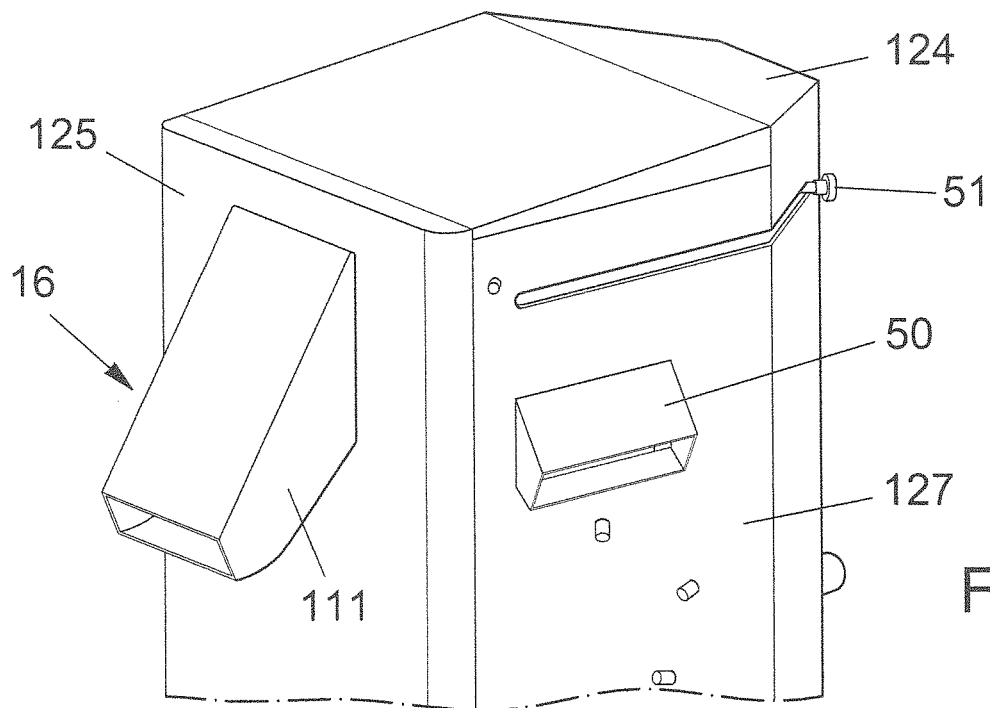
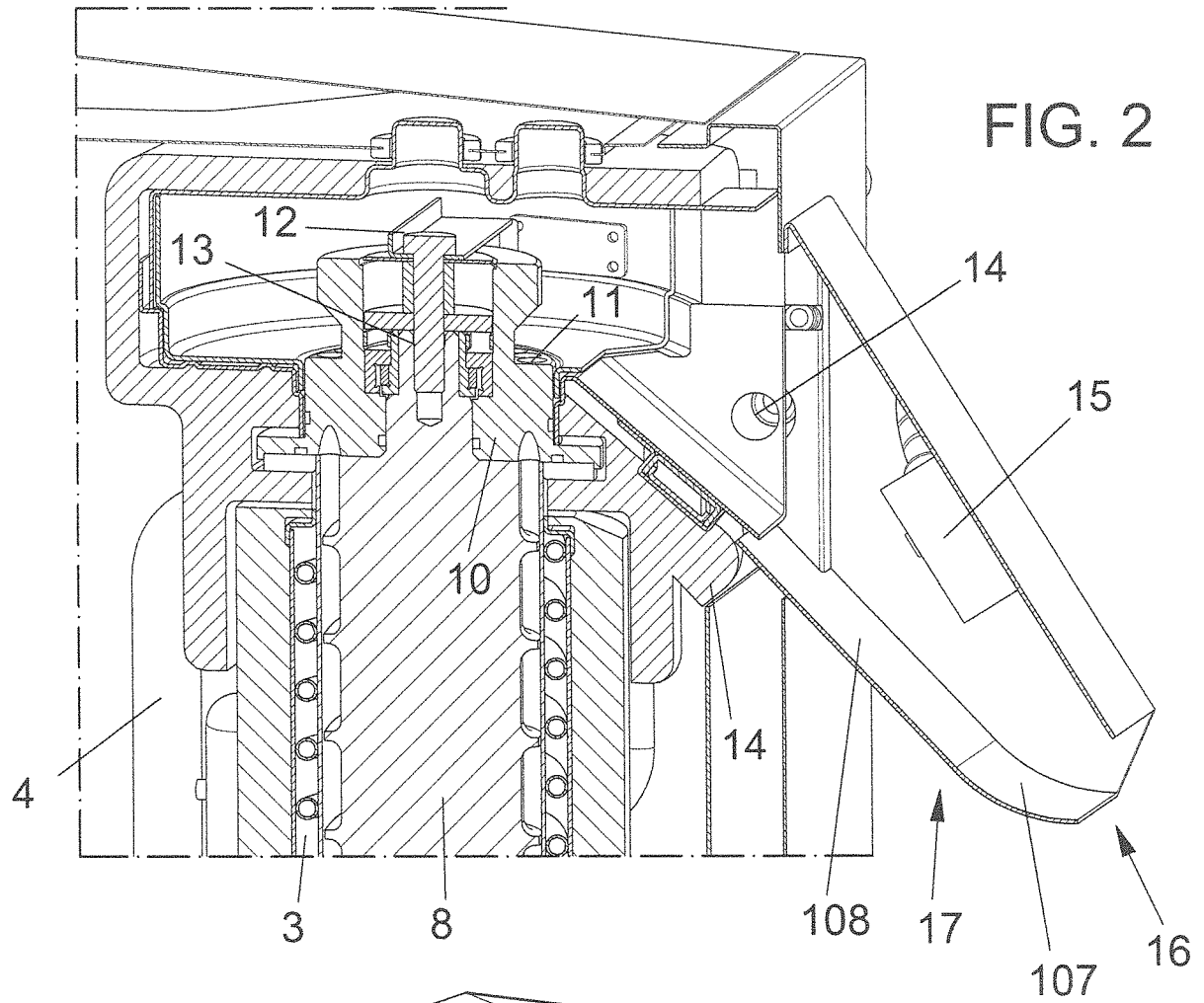
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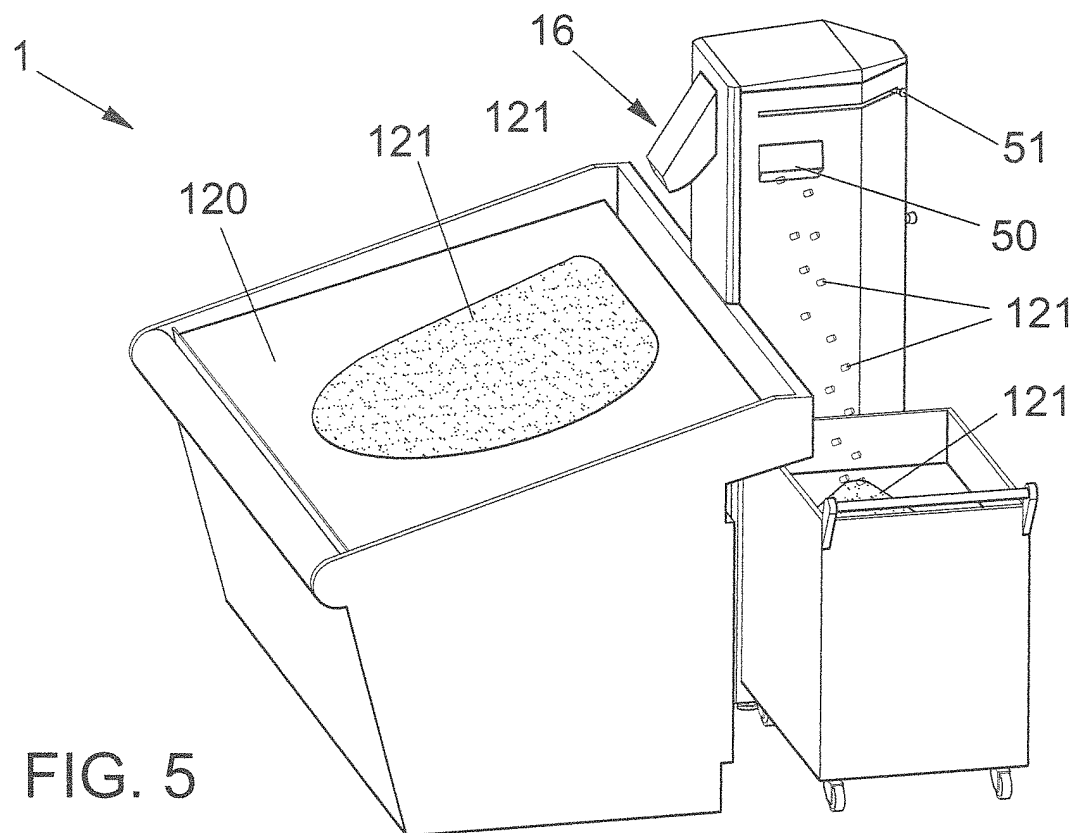
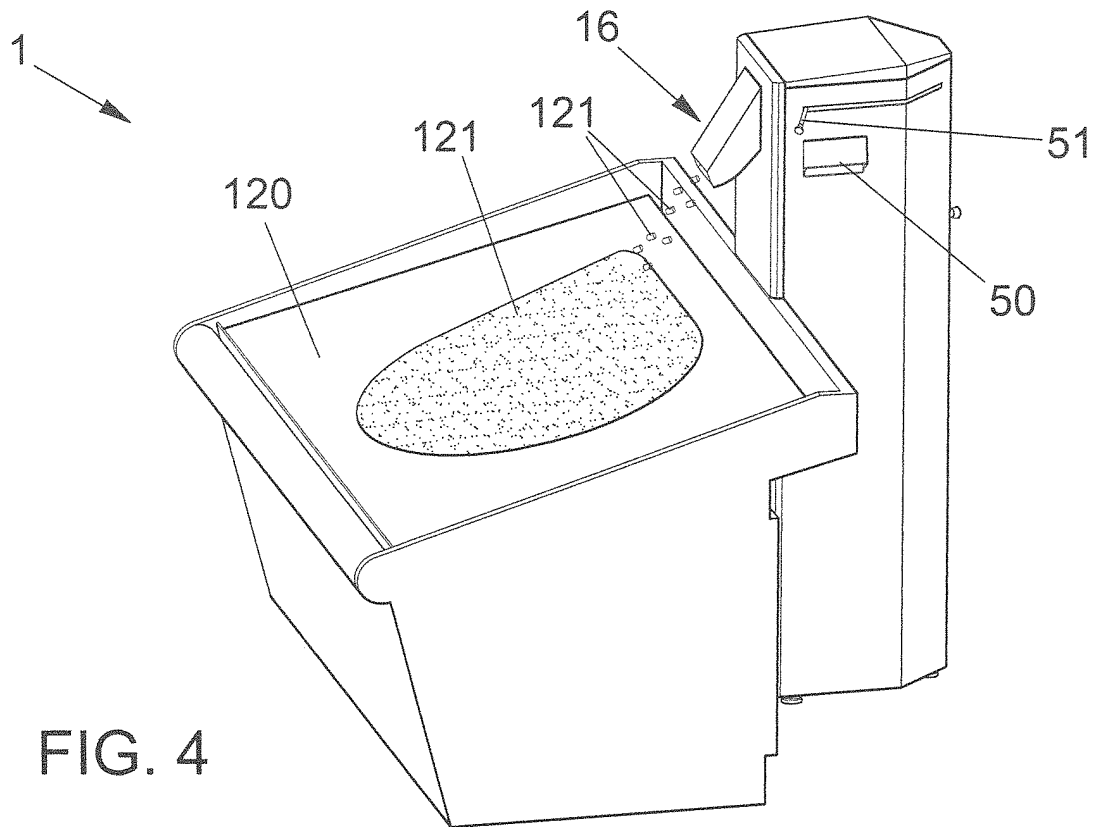
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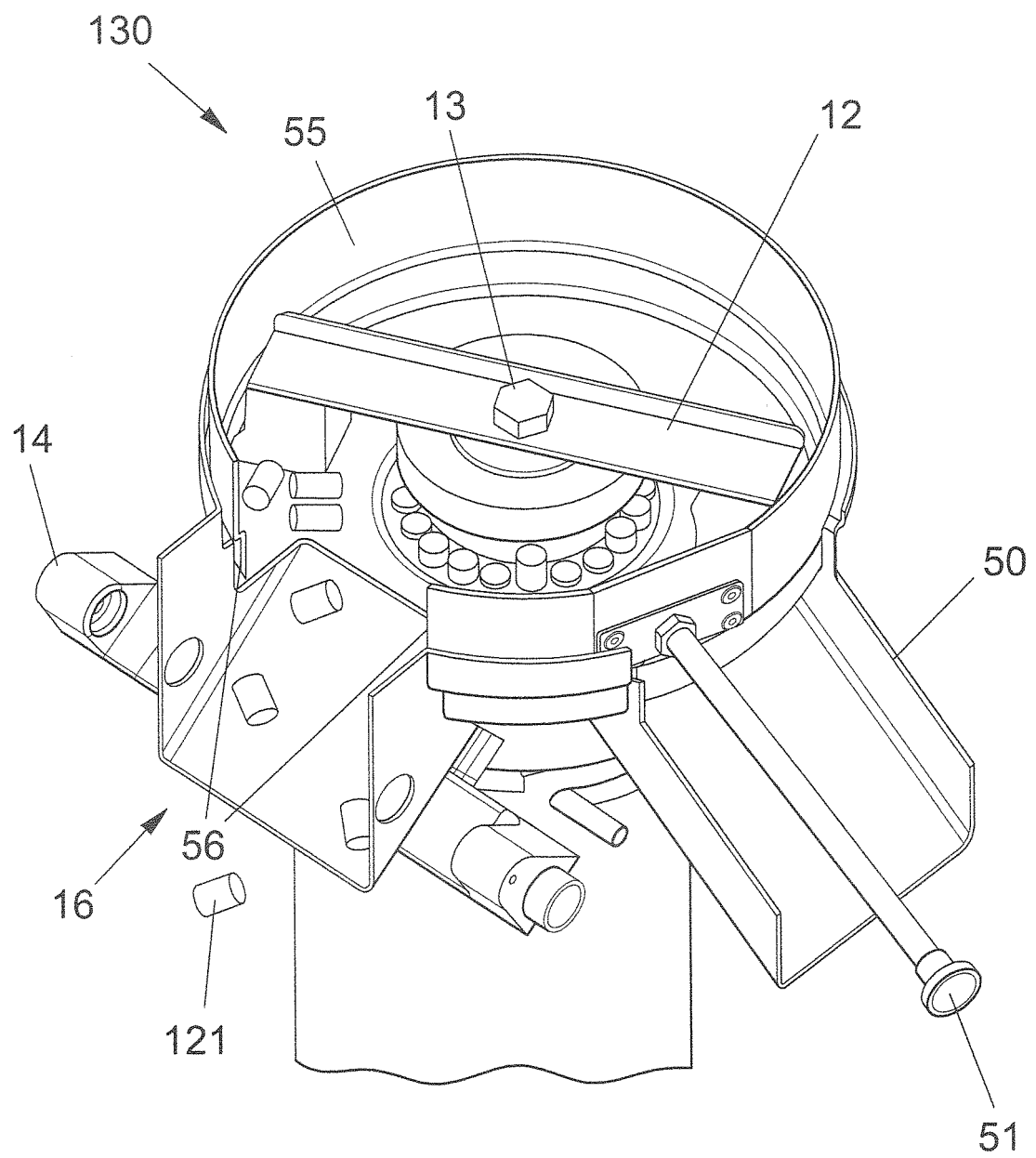


FIG. 6

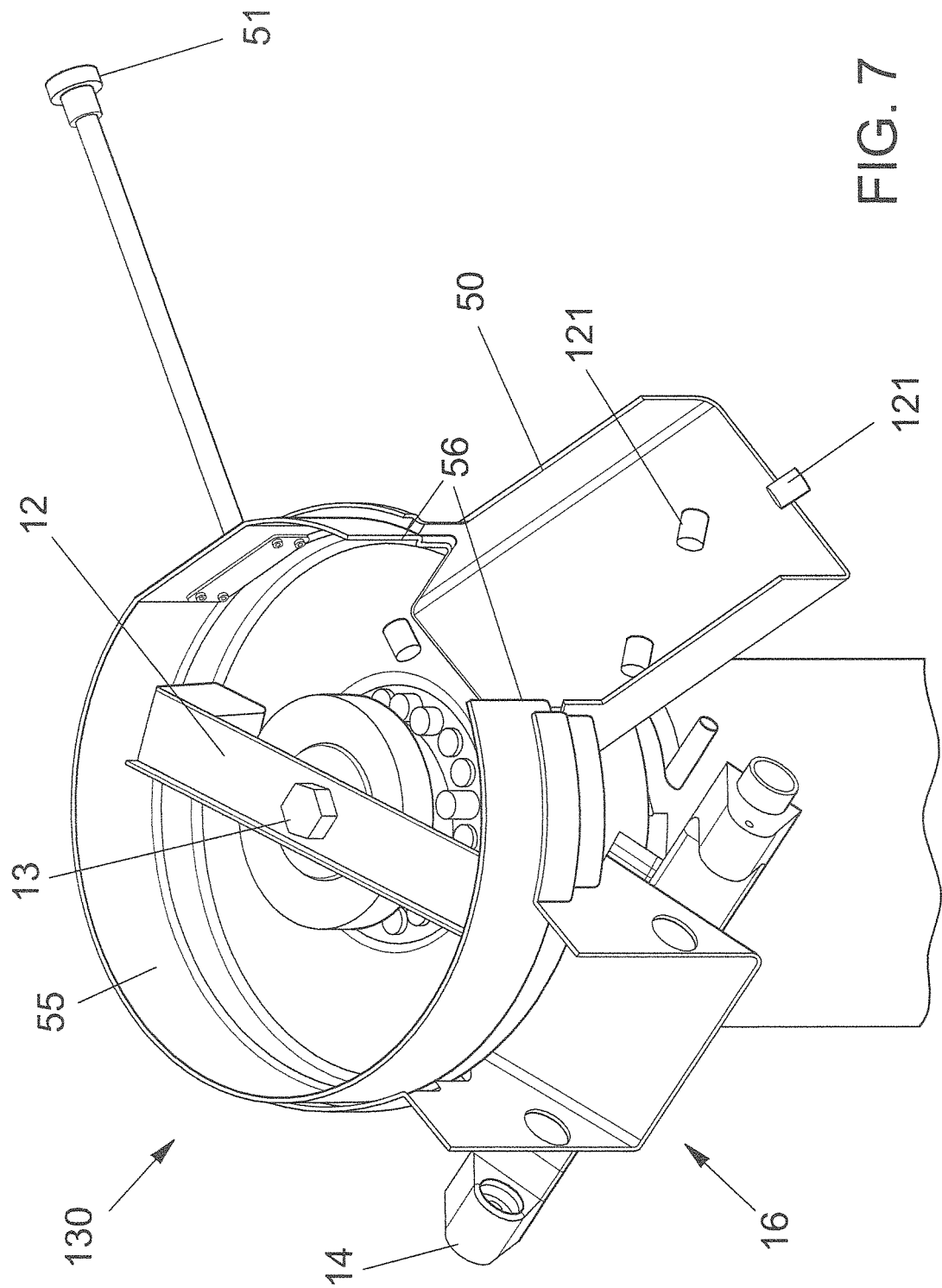


FIG. 7

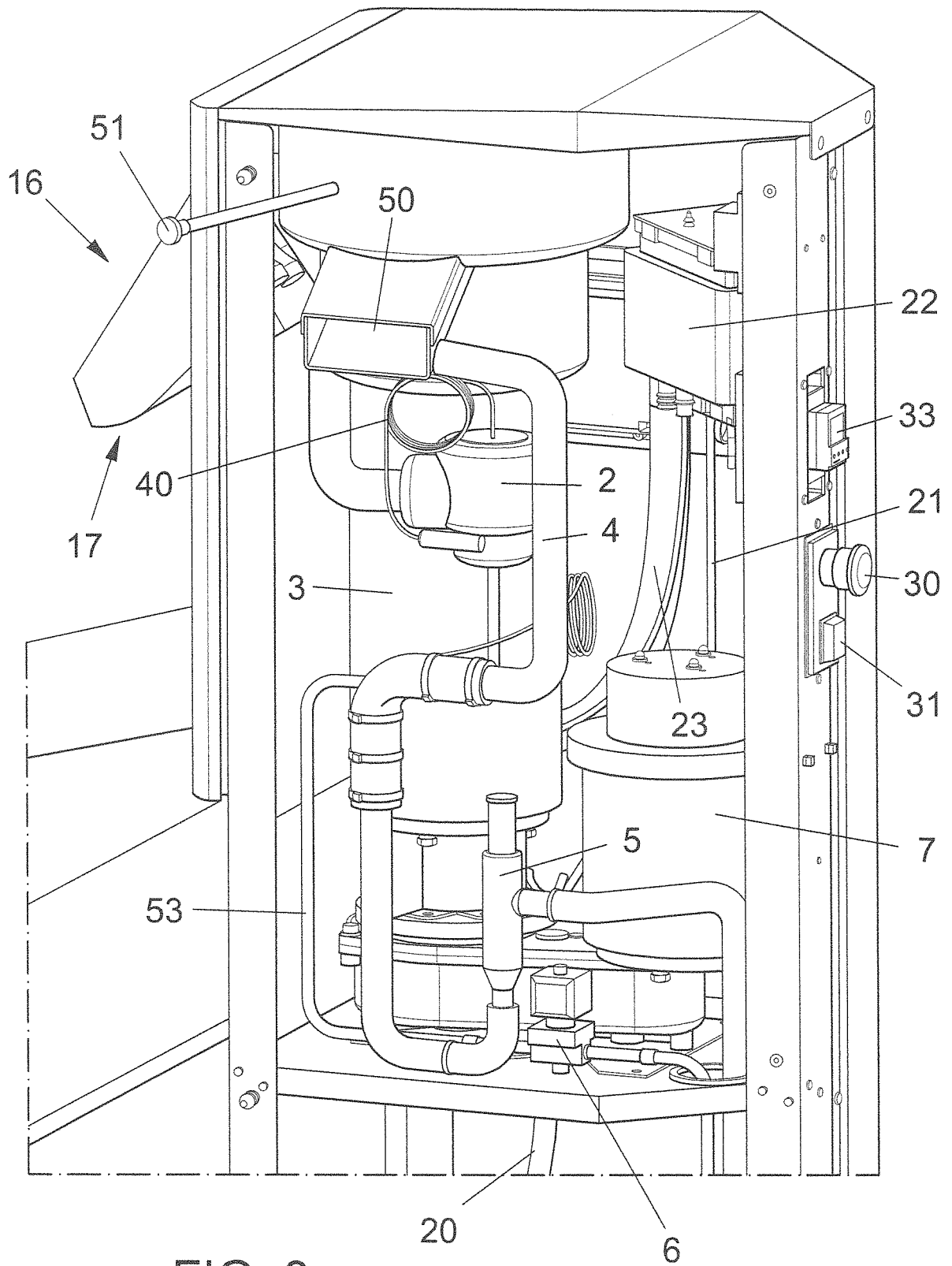


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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