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(54) APPARATUS AND METHOD FOR PRESSING VEGETABLE PRODUCTS UNDER CONTROLLED ATMOSPHERE

VORRICHTUNG UND VERFAHREN ZUM AUSPRESSEN VON GEMÜSEPRODUKTEN UNTER KONTROLLIERTER ATMOSPHÄRE

APPAREIL ET PROCEDE DE PRESSAGE DE PRODUITS VEGETAUX SOUS ATMOSPHERE CONTROLEE

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Description

[0001] The present invention concerns an apparatus and a method suitable for pressing several kinds of fruit, particularly grapes, keeping the latter under controlled atmosphere, specifically a poor in oxygen atmosphere.

[0002] In the field of wine-making technology, grapes are pressed so as to separate the solid fraction, corresponding with the so called "marcs", from the liquid fraction or "must", which subsequently undergoes vinification.

[0003] According to prior art, pressing is carried out through suitable pneumatic presses, comprising a cylindrical tank that is arranged in a horizontal position and motorized in order to rotate on a longitudinal axis thereof by means of end hubs. The inner wall of the tank is divided along a diametral plane of the tank by an anchoring portion of an expandable pressing membrane. The membrane defines, on one' side, an operating chamber having a variable volume and, on the other side, a pressing chamber for the material to be squeezed.

[0004] The pressing chamber holds a set of ducts for draining the squeezed product, said ducts being arranged longitudinally of the inner wall of the tank.

[0005] During pressing, the material to be squeezed is therefore held in the pressing chamber defined by the pressing membrane and the portion of inner wall of the tank that comprises the ducts. Each duct consists of a perforated curved plate having an L-shaped cross section.

[0006] The liquid squeezed product is convoyed by each duct towards a respective outlet leading outside the tank.

[0007] The material to be pressed (grapes, elderberries, raspberries or other kinds of fruit), which can be integral, crushed, stripped or picked off the bunch, is brought through at least one opening of the pressing chamber, said opening being positioned on the side wall of the tank.

[0008] Presses are also known in which the material to be pressed is brought into the pressing chamber through an opening that is positioned in one of the end walls of the tank substantially at one of the hubs (axial feeding).

[0009] These presses carry out a pressing cycle comprising at first insufflating compressed air into the operating chamber, i.e. opposite the material to be pressed in the operating chamber, so that the membrane, when becoming inflated, through pressures rising in a progressive manner compresses and squeezes the above-mentioned material, thus extracting therefrom a liquid that is drained outwards by the ducts. Then, the previously insufflated air is sucked by a vacuum pump and the membrane comes back to its starting position, i.e. sticking to the inner wall of the tank. In this phase, air is sucked from the outside through the openings of the tank. When the membrane is completely retracted, the press rotates in an axial manner so as to cause solid compressed material to crumble by falling towards the membrane, which clears the ducts from solid residues of squeezing. After the rotation, the position of the tank is reset in order to keep downward the vegetable material container therein. Thus a new pressing cycle starts, and compressed air is insufflated again into the operating chamber between membrane and wall. The membrane, when becoming inflated, pushes the air, which has been previously sucked, out of the tank through the openings of the latter. Therefore, working presses alternately suck atmospheric air into, and discharge atmospheric air from, the pressing chamber. The atmospheric air that comes there into contact with the material oxidizes the liquid squeezed product, thus causing, for example, a loss of polyphenols and aromatic substances, said loss negatively affecting the organoleptic characteristics of the subsequent product.

[0010] It has been tried to remedy this evident drawback, for example resorting to the expedient of injecting large amounts of nitrogen or carbon dioxide into the pressing chamber. Furthermore, anti-oxidizing products based on ascorbic acid and sulphur dioxide can be added in the pressing chamber, said anti-oxidizing products being dispensed by means of automatic bathing devices.

[0011] At last, it has been suggested adding dry ice in the pressing chamber, said dry ice emitting carbon dioxide.

[0012] Nevertheless, these expedients are ineffective, i.e. they do not prevent some oxidation of the liquid squeezed product from occurring anyhow.

[0013] Moreover, anti-oxidizing gases are "disposable", i.e. the amount of anti-oxidizing gas that is used for each pressing cycle is wasted whenever the membrane is expanded in the pressing chamber.

[0014] EP 0524373 discloses a method in accordance with the preamble of claim 1 and an apparatus including a pressing container, into which a product to be separated is fed, and constituted by a pressing chamber delimited by a flexible diagram and a discharge device. The flexible diagram is adjacent to a region which is substantially at atmospheric pressure: the pressing chamber is connected to a vacuum device, which is suitable to generate a negative pressure, so that the diagram acts on the product and presses the latter. An accumulation is provided of inert, i.e. anti-oxidizing, gas, which gas can be introduced into the pressing chamber at each pressing cycle by means of a fan. The amount of gas used during each pressing cycle comes out from the apparatus through a discharge.

[0015] FR 2624521 discloses a wine preserving tank containing a recoverable neutral gas and other liquids to be preserved under the neutral gas, i.e. a device for protecting and distributing wine under a reusable neutral gas. The device consists of: a rigid container containing the wine and provided with a tap; a flexible plastic pouch containing the neutral gas and attached to the upper part of the container. When the wine is withdrawn through the tap, the reduction in volume of the wine is compensated by the gas coming from the pouch and passing through

the tap. At the next filling-up through an orifice of the container, the wine sends the gas back into the pouch, ready to serve for a new cycle. The device according to the invention is particularly intended for protecting and distributing wine in bulk.

[0016] DE 2910170 discloses a press for squeezing a product, for example grapes, in which the squeezed product (juice) is moved to-and-fro between a pressing chamber of the press and a container to which the press is connected, so as to achieve a better degree of pressing and thus so as to extract the juice in a more complete manner. The container only contains the juice produced during pressing.

[0017] An aim of the invention is to improve methods for pressing fruit of various kinds, particularly grapes.

[0018] An other aim is to provide a method that enable fruit of various kinds to be pressed substantially avoiding exposing to atmospheric oxygen the vegetable mass that is subjected to pressing.

[0019] An other further aim is to substantially avoid that the liquid squeezed product is oxidized in the presses, so as to substantially limit consumption of anti-oxidizing gases.

[0020] A further aim is to provide a method that enable gaseous substances to be supplied to fruit subjected to pressing, said gaseous substances inhibiting oxidation of said fruit, and said apparatus and method also enabling said substances not to be wasted after a pressing cycle.

[0021] According to the invention a method for pressing groupes is provided, as defined in claim 1. Owing to the invention, it is possible to considerably limit the waste of not-oxidizing gas.

[0022] It is furthermore possible to efficiently produce a controlled environment of not-oxidizing gas, i.e. an environment without undesirable amounts of atmospheric oxygen, in the pressing chamber.

[0023] In order that the invention may be clearly and completely disclosed, reference will now be made, by way of examples that do not limit the scope of the invention, to the accompanying drawings, wherein:

Figure 1 is a schematic perspective view of a pneumatic press provided with an apparatus according to the invention, in a first version relevant to a configuration in which the not-oxidizing fluid is contained in the pressing chamber;

Figure 2 is a perspective view as in Figure 1, but relevant to a different configuration in which the not-oxidizing fluid is contained in the reservoir means;

Figure 3 shows a schematic front view of a pneumatic press provided with an apparatus according to the invention, in an other embodiment;

Figure 4 shows a schematic section, interrupted and enlarged, drawn along a longitudinal plane of the press of Figure 3;

Figure 5 shows a schematic front view of a pneumatic press provided with an apparatus according to the invention, in an further embodiment;

Figure 6 shows a schematic section, interrupted and enlarged, drawn along a longitudinal plane of the press of Figure 5;

Figure 7 shows a schematic view, interrupted and enlarged, of an inner end wall of a tank provided with an apparatus according to the invention, in another further embodiment;

Figure 8 is a schematic diverted section, drawn along the plane VI-VI of Figure 5;

Figure 9 shows a side view, interrupted and enlarged, of a pneumatic press provided with an apparatus according to the invention, in a yet further embodiment;

Figure 10 shows a schematic front view of the press of Figure 9;

Figure 11 shows an enlarged and interrupted section drawn along the plane V-V of Figure 10;

Figure 12 shows an interrupted side view of an upper front portion of the pneumatic press of Figure 9;

Figure 13 shows a view as that of Figure 12, but relevant to a different configuration.

[0024] Referring to Figure 1 and Figure 2, a pneumatic press 1 for grapes, known in itself and therefore not illustrated in detail, comprises a tank 5 consisting of a cylindrical casing 2 defined by a couple of end walls 4 that axially face each other and are reciprocally parallel.

[0025] One of the end walls 4 is affected by the outlet sections 6a of a plurality of axial ducts 6, which are peripherally arranged in order to affect half of the casing 2.

[0026] The press 2 has a pair of hubs 8, only one of which is shown for simplicity, said pair of hubs 8 determining a longitudinal axis of rotation of the tank 5.

[0027] Underneath the tank 5 a vat 10 is arranged through the upper opening of which the must is collected, said must coming out from the ducts 6 when grapes are pressed.

[0028] The vat 10 is below connected by a draining pipe 14 with a container 12, in which the must is collected in order to be sent to the subsequent processing phases through an exhaust duct 16.

[0029] An end portion of the tank 5, comprising the end wall 4, the adjacent portion of the casing 2 and the outlet sections 6a of the ducts 6, is isolated from the external environment by an isolating structure, which is altogether indicated by reference number 18. The isolating structure 18 has a first wall 20 that is arranged at a certain distance from the end wall 4 and faces the casing 2, and a second wall 21 that is parallel to the first wall 20, said second wall 21 being arranged at a certain distance from the end wall 4 and interfering with the casing 2.

[0030] The first wall 20 and the second wall 21 are peripherally connected by a side wall 24 and an upper lid 26 that can be opened, along the direction shown by the arrow F, so as to enter inside the isolating structure 18 for servicing and cleaning the latter at the end of duty.

[0031] The first wall 20 has a smaller central hole 28 for airtight coupling with the hub 8 that passes through

said first wall 20.

[0032] The second wall 21 has a larger central hole 30 for airtight coupling with the outer surface of the casing 2, said larger hole 30 having a diameter that is larger than diameter of the smaller hole 28.

[0033] It is to be noted that the airtight seals of the smaller hole 28 and the larger hole 30, respectively on the hub 8 and the casing 2, are slithering seals, since both hub 8 and casing 2 rotate on the longitudinal axis of tank 5 while the first wall 20, the second wall 21, the side wall 24 and the lid 26 are fixed.

[0034] The first wall 20, the second wall 21 and the side wall 24 end below in a mutual airtight sealing edge 32 on the upper opening of the vat 10.

[0035] The container 12 is airtight sealed on the draining pipe 14 by a lid 34.

[0036] The first wall 20 has a peripheral portion into which an end 38 of a transit duct 36 of a not-oxidizing inert gas, e.g. nitrogen or carbon dioxide, leads, said transit duct 36 having an other end 40 that leads into a reservoir 42 isolated from external environment.

[0037] The reservoir 42 has a flexible casing wall 44 that forms a bag hanging by a suspension frame 43, said flexible casing wall 44 being able to contract or expand, so discharging, or respectively receiving, amounts of inert gas exchanged with the isolating structure 18.

[0038] In order to promote the transit of inert gas along the transit duct 36, in an intermediate section of the latter a reversible fan 46 is installed.

[0039] It is to be noted that an operating volume is defined inside the isolating structure 18, said operating volume communicating below with the container 12 and with the pressing chamber of the press 1 through the outlet sections 6a of the ducts 6. This operating volume does not communicate with the external environment, but only with the reservoir 44 through the transit duct 36.

[0040] Therefore, the must produced inside the pressing chamber does not come into contact with the oxygen of ambient air and thus it does not undergo an undesired oxidation.

[0041] In order to prevent external air from polluting the operating volume by passing through the exhaust duct 16 of the container 12, the latter is provided with level sensors 226, or a siphon, not shown, which keep a certain amount of must inside the container 12 so closing any possible transit of external air through the exhaust duct 16.

[0042] By comparing Figure 1 with Figure 2, it is pointed out that when the press 1, as shown in Figure 1, is in the situation in which the membrane is retracted, i.e. not expanded, and the pressing chamber recalls gas from outside, the not-oxidizing gas is pushed along the transit duct 36 towards the press 1 by the fan 46, as shown by the arrow F1, which therefore causes the reservoir 44 to collapse.

[0043] On the contrary, when the membrane is expanded and occupies a substantial portion of the pressing chamber expelling the not-oxidizing gas previously contained in the latter, the not-oxidizing gas goes backward along the transit duct 36, as shown by the arrow F2, by the reverse action of the fan 46 or by simple push, said not-oxidizing gas flowing into the reservoir 42 and inflating the latter.

[0044] An other embodiment of the press shown in Figure 1 and Figure 2 will be now disclosed, referring to Figure 3 and Figure 4. Parts of the press shown in Figure 3 and Figure 4 that are common to parts already disclosed with regard to the press shown in Figure 1 and Figure 2 are indicated by the same reference numbers.

[0045] Each outlet section 6a of the ducts 6 of the press 1 is fitted into a respective intermediate duct 50 radially arranged outside the tank 5, said intermediate duct 50 leading into an external portion 52 of a rotary manifold 54, the structure of which will be disclosed more in detail afterwards.

[0046] A transfer duct 57 leads away from the rotary manifold 54, said transfer duct 57 leading into the container 12 in which the extracted must is collected. The container 12 has an its own upper portion into which an end 58 of the transit duct 36 leads, said end 58 being opposite to the end 40 that is connected to the reservoir 42.

[0047] Referring to Figure 4, the external portion 52 of the rotary manifold 54 and the intermediate ducts 50 are integral with the tank 5 and thus they rotate together with the latter. The external portion 52 develops in annular manner at a certain distance from the hub 8, said external portion 52 comprising an inner wall 58, fitted onto the hub 8, and an external wall 53, getting the intermediate ducts 50. A first annular wall 56, facing towards the end wall 4, connects the inner wall 58 and the external wall 53 of the external portion 52. Thus the latter has a C-like shaped cross section turned in a direction which is opposite to the end wall 4.

[0048] An inner portion 60 of the manifold 54 is held inside the external portion 52, at the opposite side of the first annular wall 56. The inner portion 60 has a C-like shaped cross section that faces the external portion 52 and is contained in the latter. This means that the inner portion 60 has a cavity turned towards the first annular wall 56 and defines, together with the latter, the axial development of an inner chamber 64 of the manifold 54, through a second annular wall 62. The inner chamber 64 is furthermore radially defined by the inner wall 58 and the external wall 53.

[0049] The inner portion 60 is fixed and enables the external portion 52 to rotate outside the inner portion 60 so that the must, which is collected from the inner chamber 64 through the intermediate ducts 50, can flow through the transfer duct 57, said transfer duct 57 leading into the second annular wall 62. An inner annular gasket 66 is placed between the inner portion 60 and an end portion of the external wall 53. An external annular gasket 68 is placed between the inner portion 60 and an end zone of the external wall 53.

[0050] The operation of the press shown in Figure 3

and Figure 4 is similar to the operation that has been already disclosed referring to Figure 1 and Figure 2, except that the not-oxidizing gas flows into the pressing chamber from the reservoir 42 through the container 12, the transfer duct 57, the rotary manifold 54 and the intermediate ducts 50, which define as a whole an isolating structure that isolates the pressing chamber from the ambient air.

[0051] It is to be noted that the embodiment shown in Figure 3 and Figure 4 has an isolating structure whose size is remarkably smaller than the embodiment shown in Figure 1 and Figure 2. Furthermore, the airtight seals are greatly simplified in the isolating structure.

[0052] Reference is now made to Figure 5 and Figure 6, which disclose a further embodiment of the press shown in Figure 3 and Figure 4. Parts of the press shown in Figure 5 and Figure 6, which have been already disclosed in relation to the press of Figure 1 to 4, are indicated with the same reference numbers.

[0053] Referring to Figure 5 and Figure 6, in the press 1 all the outlets sections 6a of the ducts 6 fit into a common further rotary manifold 154. The further rotary manifold 154 has a further external portion 152 that takes the form of a circular sector near to the end wall 4. The further external portion 152 comprises a further inner wall 158 fitted onto the hub 8, a rear wall 156 adjacent to the end wall 4 of the tank 5, a further external wall 153. The rear wall 156 develops in the shape of a circular sector surrounding the hub 8 and extending up to the periphery of the end wall 4, where said rear wall 156 reaches the outlet sections 6a of the ducts 6. These latter are tight inserted in a plurality of openings 130 made in the rear wall 156. A distal portion 153a, opposite the end wall 4, and a proximal portion 153b adjacent to the end wall 4, are defined in the further external wall 153. The distal portion 153a runs annularly and parallel to the further inner wall 158, said distal portion 153a finally continuing into the proximal portion 153b. The proximal portion 153b, which is circular sector-shaped, runs at first parallel and then orthogonal to the rear wall 156, finally joining on the latter. So, two rectilinear spouts, not shown, which converge near to the hub 8 and an interposed arched wall, not shown, which has a concavity turned towards the hub 8, are defined between the rear wall 156 and the proximal portion 153b.

[0054] A further inner portion 160 of the further rotary manifold 154 is admitted inside the further external portion 152, said further inner portion 160 being opposite to the rear wall 156. The further inner portion 160 has a C-like shaped section, said section being opposite to the external portion 152 and contained in the latter. This means that the further inner portion 160 has a cavity that is turned towards the rear wall 156, said further inner portion 160 defining, together with the rear wall 156, the axial development of a further inner chamber 164 of the further rotary manifold 154 through a further annular wall 162. Besides, the further inner chamber 164 is radially defined by the further inner wall 158 and the external wall 153, said further inner chamber 164 having a circular sector-shaped cross section.

[0055] The further inner portion 160 is fixed and enables the further external portion 152 to outwardly rotate so that the liquid product obtained by pressing, which is collected from the further inner chamber 164 through the peripherical openings 130, may then flow through the transfer duct 57 that emerges from the further annular wall 162. The transfer duct 57 carries the liquid product direct to a further container 19, whose structure and operation will be disclosed in detail hereinafter with reference to Figures 9 to 13.

[0056] The inner annular gasket 66 is placed between the further inner portion 160 and an end portion of the further inner wall 158. The external annular gasket 68 is placed between the further inner portion 160 and an end portion of the further external wall 153.

[0057] According to another further embodiment of the invention, shown in Figure 7 and Figure 8, the transfer ducts 50 are arranged inside the tank 5, i.e. near to the end wall 4, at the side of the latter facing the pressing chamber, said transfer ducts 50 being placed between an end portion of ducts 6 and a fixed manifold 70 that is placed inside the pressing chamber level with an axial outlet 72, which passes through the hub 8.

[0058] A yet further embodiment of the invention is shown in Figures 9 to 13. Parts of the press shown in Figures 9 to 13, which have been already disclosed in relation to the press shown in Figures 1 to 6, are indicated with the same reference numbers. The outlet sections 6a of the press 1 lead into an arched manifold 317 provided with a curved connecter 234. The latter arises from an approximately middle portion of the arched manifold 317 and forms a convexity that is turned towards the end wall 4. A terminal end 219 of the curved connecter 234, said terminal end 219 being opposite to the end wall 4, is made integral with a further curved connecter 210, which is arranged so as to point its concavity towards the end wall 4. A first flexible pipe 212 having a suitable length is placed between a further terminal end 211 of the further curved connecter 210, said further terminal end 211 being opposite to the terminal end 219, and a first roller 214, which is disk-shaped and forms part of a winding/unwinding device 215. The latter is positioned below the tank 5, near to the end wall 4, and made integral with supporting structures, not shown, of the tank 5. Near to a vertical axis 216 of the first roller 214, the first flexible pipe 212 leads into a curved drainpipe 217 that continues to a second flexible pipe 218. The second flexible pipe 218 leads into the further container 19 that is connected to a vacuum pump 222 through a flexible duct 221 and further connected to the reservoir 42, above disclosed with reference to Figures 1-3 and 5, through the transit duct 36.

[0059] An end 258 of the transit duct 36 leads into the further container 19 and is provided with an interception valve 228, e.g. a membrane valve. The liquid product obtained by pressing, once came out of the ducts 6, ad-

vances along a path comprising, in sequence, the arched manifold 317, the curved connecters 218 and 219, the first flexible pipe 212, the curved drainpipe 217, the second flexible pipe 218 and the further container 19. The liquid product comes out of the latter through a further exhaust duct 220 and is then conveyed to subsequent processing phases.

[0060] The first flexible pipe 212 is so long as to accompany the tank 5 during the rotating movements performed by the latter on its longitudinal axis during a pressing cycle. More exactly, the first flexible pipe 212 is so long as to enable the tank 5 to perform four turns altogether, two of which being clockwise and two being anticlockwise. These turns result sufficient to obtain an effective pressing of the vegetable material and a subsequent crumbling of the compacted solid residue that adheres to the inner walls of the tank 5. During the above-mentioned clockwise and anticlockwise movements, the first flexible pipe 212 is trailed by the curved connecter 234 that is integral with the arched manifold 317, said first flexible pipe 212 respectively winding round, or unwinding from, a second roller 227 that is coaxial with the hub 8. The movements of the first flexible pipe 212 are made possible by the winding/unwinding device 215 comprising the first roller 214. When the tank 5 moves clockwise, the first flexible pipe 212 unwinds from the first roller 214, and then it rewinds itself round the latter owing to the anticlockwise movements performed by the tank 5.

[0061] The assembly comprising the arched manifold 317, the curved connecter 234, the further curved connecter 210, the first flexible pipe 212, the curved drainpipe 217 and the second flexible pipe 218 defines an operating volume that communicates, at one end, with the further container 19 through the second flexible pipe 218 and, at the opposite end, with the pressing chamber of the press 1 through the outlet sections 6a of the ducts 6. This operating volume results isolated from the external environment and it only communicates with the reservoir 42 through the transit duct 36.

[0062] Therefore, the must that is produced inside the pressing chamber does not come into contact with the oxygen of the ambient air but with the inert gas contained in the reservoir 42, said must resulting not subject to undesired oxidation.

[0063] In order to avoid that external air may pollute the operating volume by passing through the further exhaust duct 220 of the further container 19, the latter is provided with the level sensors 226 that keep a certain amount of must inside the further container 19 so closing any possible transit of external air through the further exhaust duct 220.

[0064] When, in the press 1, the pressing membrane withdraws, i.e. it is not expanded, and the pressing chamber recalls gas from outside, the not-oxidizing gas is pushed by the fan 46 along the transit duct 36 towards the press 1, according to a direction F1, thus causing a partial emptying and subsequent collapse of the reservoir 42. This reversible configuration assumed by the reservoir 42 is shown by a broken line.

[0065] On the contrary, when the membrane is expanded and occupies a substantial portion of the pressing chamber expelling the not-oxidizing gas previously contained inside the latter, the not-oxidizing gas passes through the transit duct 36, under the reverse action of the fan 46 or by simple push, along a direction F2 opposite to previous direction F1, said not-oxidizing gas flowing towards the reservoir 42 that assumes a filling configuration shown by a continuous line.

[0066] When the membrane is still expanded, and thus when the vegetable material is pressed and the liquid product obtained by pressing subsequently progresses from the tank 5 to the further container 19, the vacuum pump 222 works speeding up the above-mentioned progressing. The vacuum pump 222 is stopped during the expansion and retraction of the membrane in order to avoid that the inert gas is accidentally removed from the operating volume previously defined. The membrane valve 228 is closed when the vacuum pomp 222 is working, thus excluding the transit duct 36 from the cavity of the further container 19 and then preventing the inert gas from being removed, in undesirable manner, from the reservoir 42. So, only a small amount of inert gas, which is inside the further container 19 when vacuum pump 222 is working, is removed, said small amount being easily restorable in the apparatus.

Claims

1. Method for pressing grapes, comprising supplying a pressing chamber of a pneumatic press (1) having a pressing membrane with said grapes and bringing an inert gas into said pressing chamber before pressing, in said pressing said inert gas being pushed out of said pressing chamber by said pressing membrane, **characterized in that** said inert gas is confined into reservoir means (42) from which said inert gas is recalled and conveyed into said pressing chamber, when subsequent pressing occurs, and said bringing involves sucking said inert gas from said reservoir means (42) by using said pressing membrane, said sucking causing said reservoir means (42) to deflate, said reservoir means (42) being inflated again while said pressing membrane is expanded in said pressing chamber.

2. Method according to claim 1, wherein said reservoir means (42) are inflated again by means of substantially the same amount of said inert gas previously brought in said pneumatic press (1).

Patentansprüche

1. Verfahren zum Auspressen von Trauben, mit folgen-

den Schritten:

Einspeisen der Trauben in eine Auspresskammer einer pneumatischen Presse (1) mit einer Pressmembran und Zuführen eines Inertgases in die Presskammer vor dem Auspressen, wobei das Inertgas beim Auspressen durch die Pressmembran aus der Presskammer gedrückt wird, **dadurch gekennzeichnet, dass** das Inertgas in einem Speichermittel (42) eingeschlossen ist, aus dem das Inertgas abgerufen und in die Presskammer befördert wird, wenn darauffolgendes Auspressen stattfindet, und wobei das Zuführen ein Saugen des Inertgases aus dem Speichermittel (42) mittels der Pressmembran einschließt, wobei das Saugen ein Entleeren des Speichermittels (42) bewirkt, wobei das Speichermittel (42) wieder gefüllt wird während die Pressmembran sich in der Presskammer ausdehnt.

2. Verfahren nach Anspruch 1, wobei das Speichermittel (42) durch die im Wesentlichen selbe Menge des Inertgases, welches vorher in die pneumatische Presse zugeführt wurde, wieder gefüllt wird.

Revendications

1. Procédé de pressage de raisins, comprenant la fourniture desdits raisins à une chambre de pressage d'une presse pneumatique (1) pourvue d'une membrane de pressage, et l'introduction d'un gaz inerte dans ladite chambre de pressage avant le pressage, lors dudit pressage, ledit gaz inerte étant poussé hors de ladite chambre de pressage par ladite membrane de pressage, ***caractérisé en ce que*** ledit gaz inerte est confiné dans des moyens de réservoir (42) depuis lesquels ledit gaz inerte est rappelé et amené dans ladite chambre de pressage lorsque le pressage qui suit se produit, et ladite introduction implique l'aspiration dudit gaz inerte hors desdits moyens de réservoir (42) en utilisant ladite membrane de pressage, ladite aspiration provoquant le dégonflement desdits moyens de réservoir (42), lesdits moyens de réservoir (42) se gonflant à nouveau pendant que ladite membrane de pressage est dilatée dans ladite chambre de pressage.

2. Procédé selon la revendication 1, dans lequel lesdits moyens de réservoir (42) sont à nouveau gonflés par sensiblement la même quantité dudit gaz inerte précédemment amené dans ladite presse pneumatique (1).

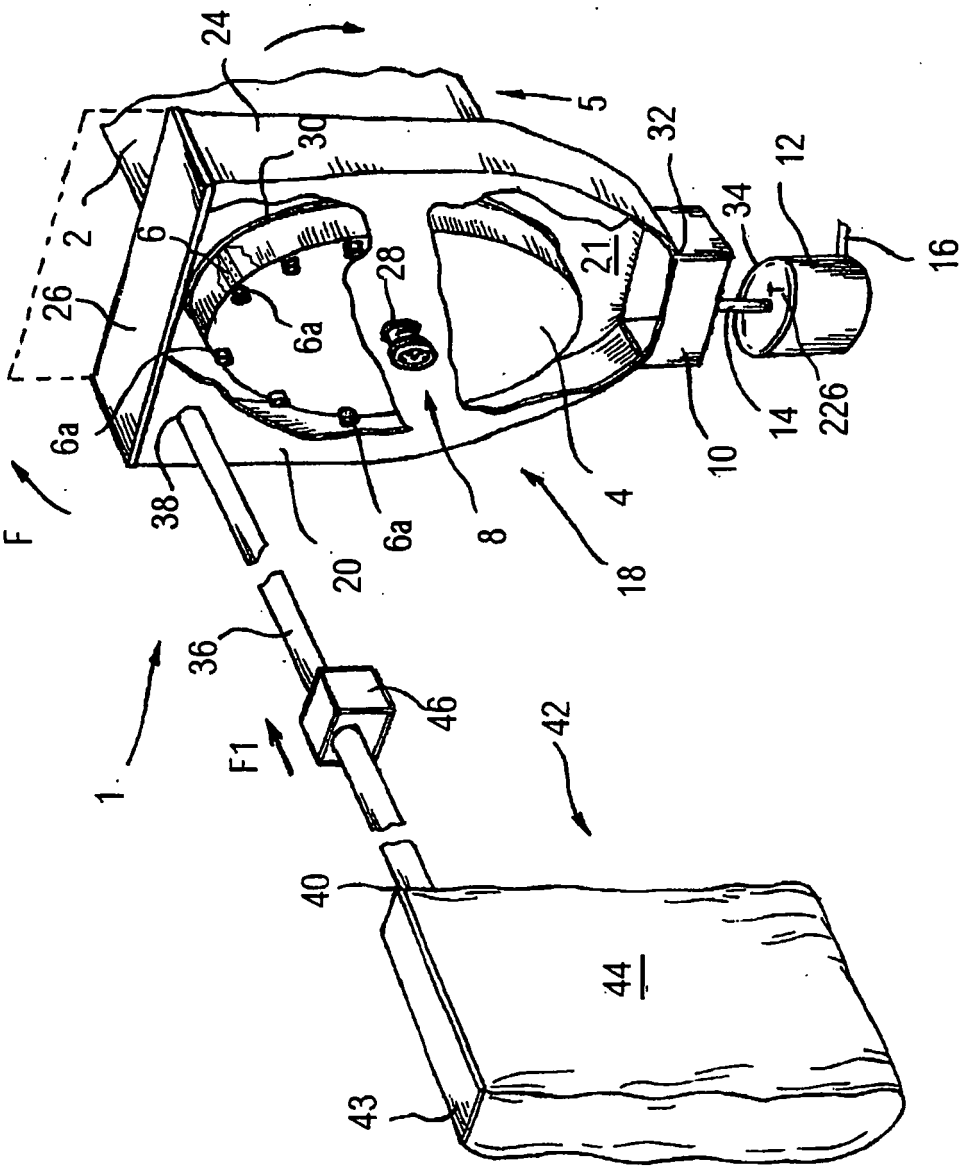

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Fig.1

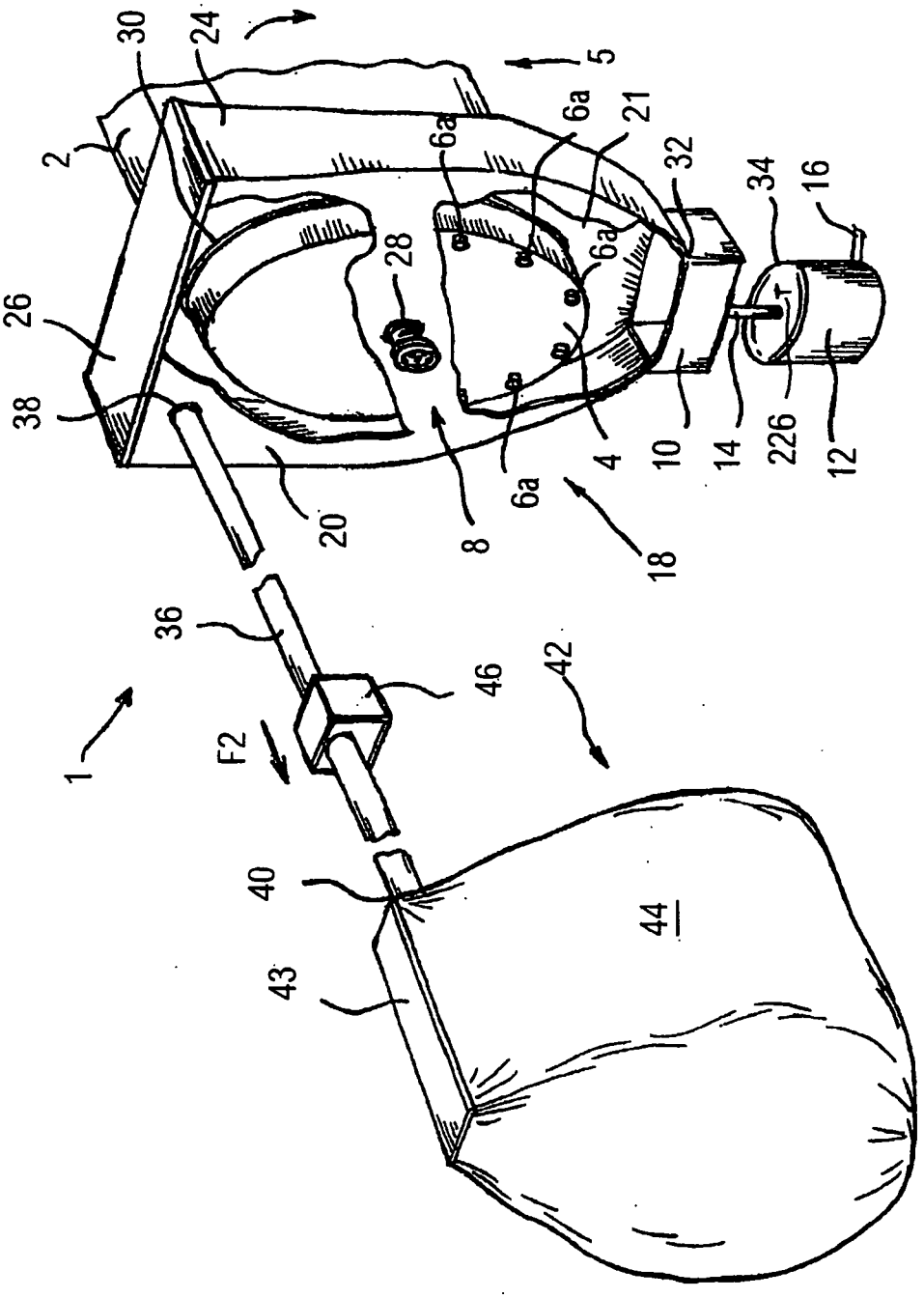

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Fig.2

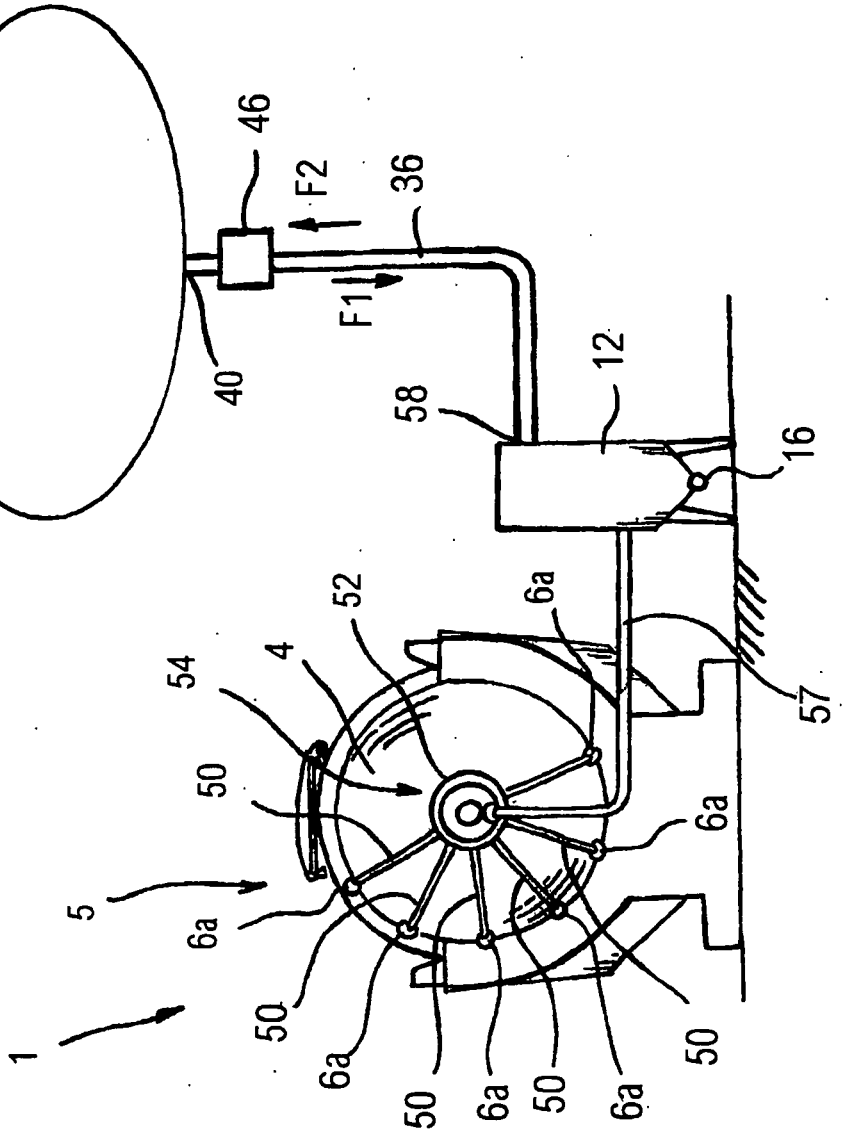


Fig.3

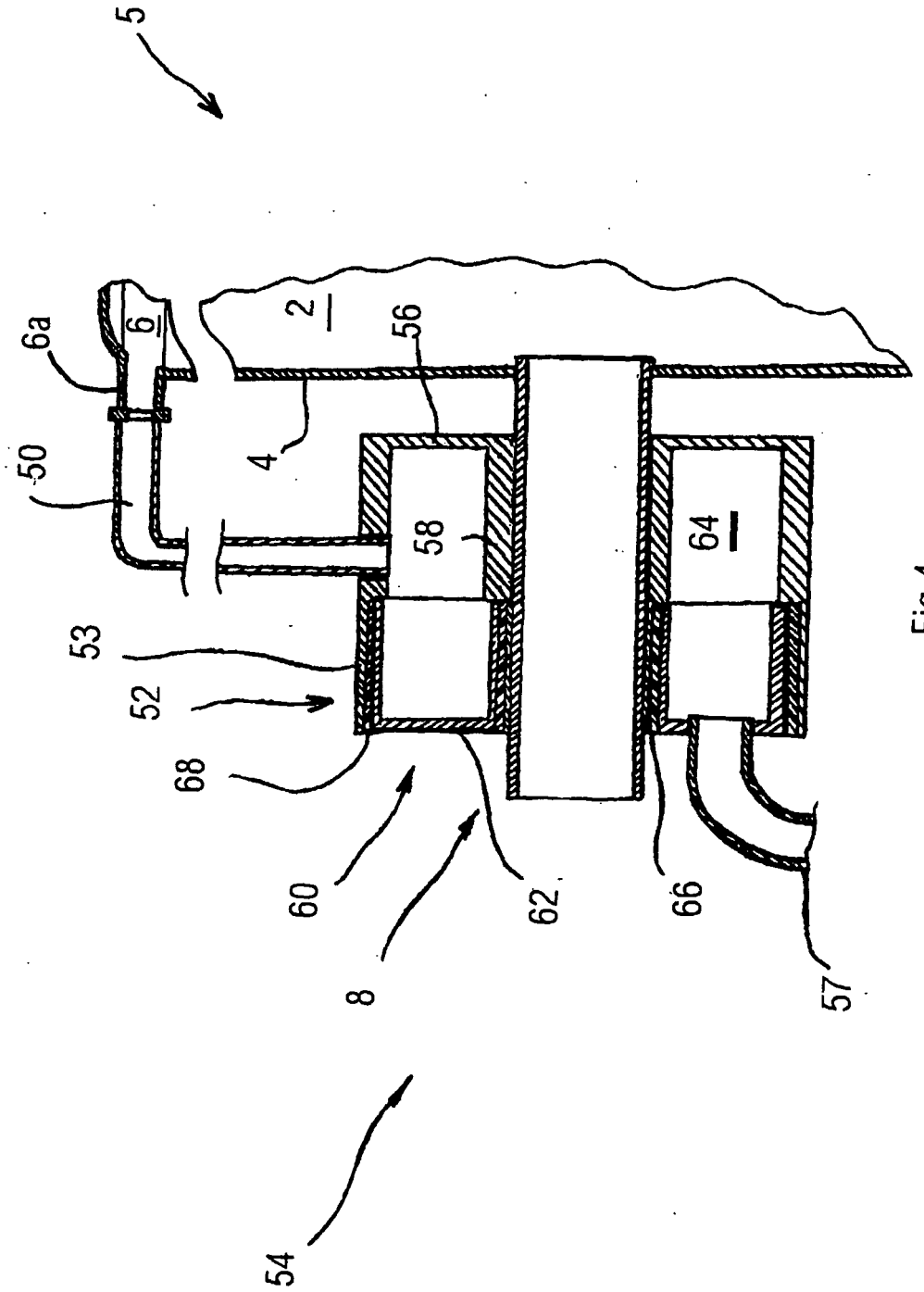
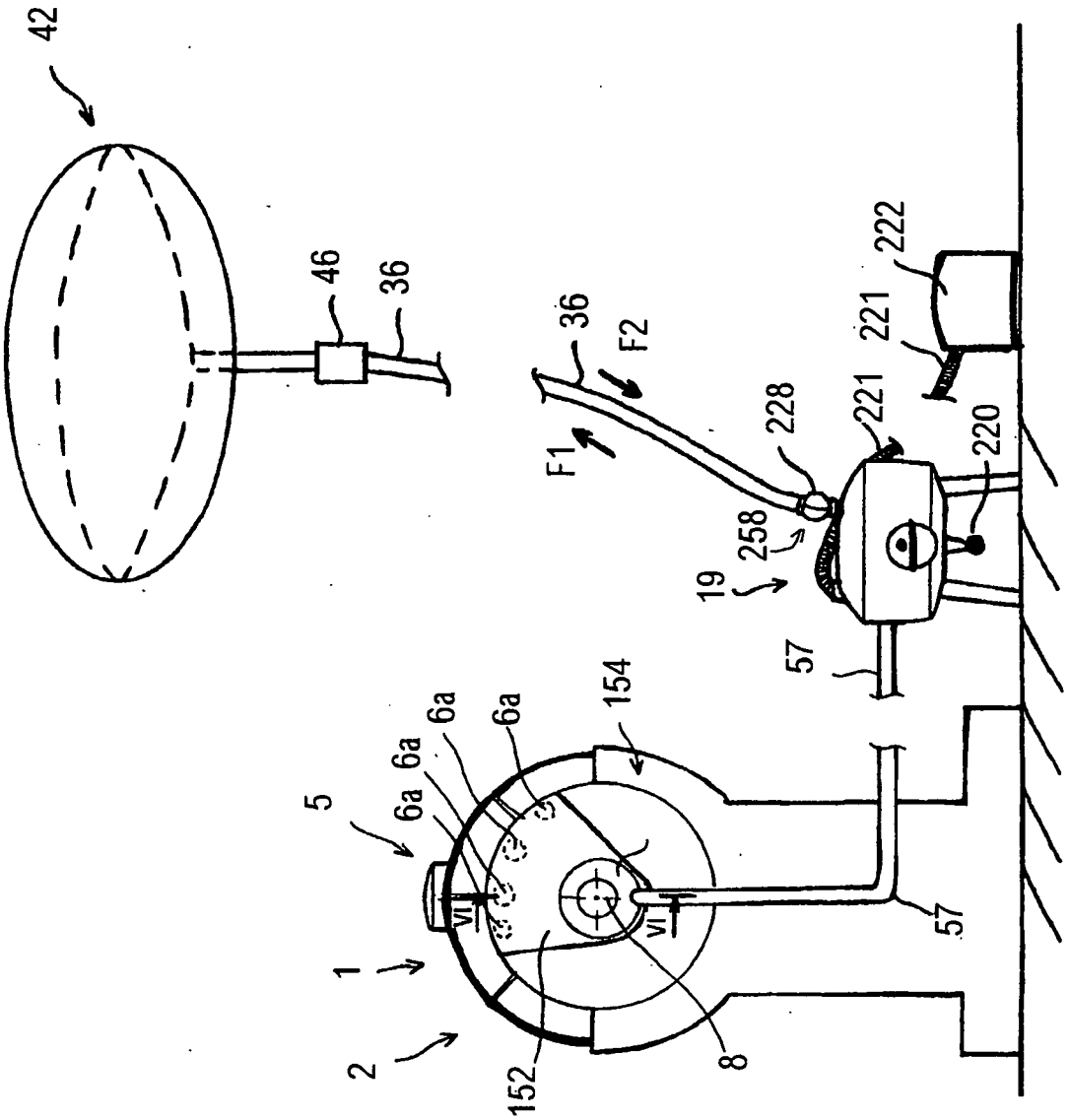


Fig.4


42
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36
F2
F1
228
221
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6a
6a
6a
5
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2
VII
VII
152
8
57

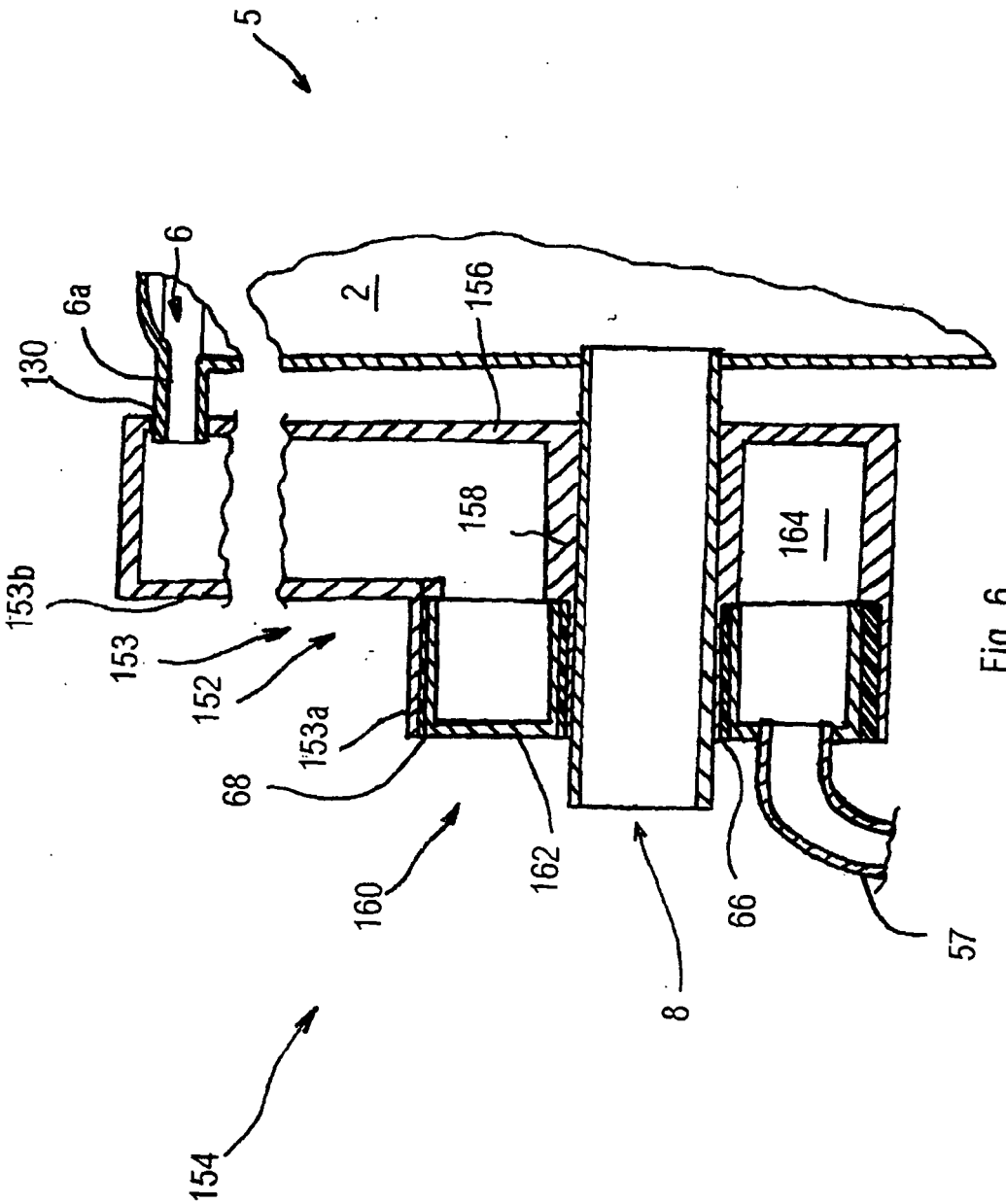


Fig. 6

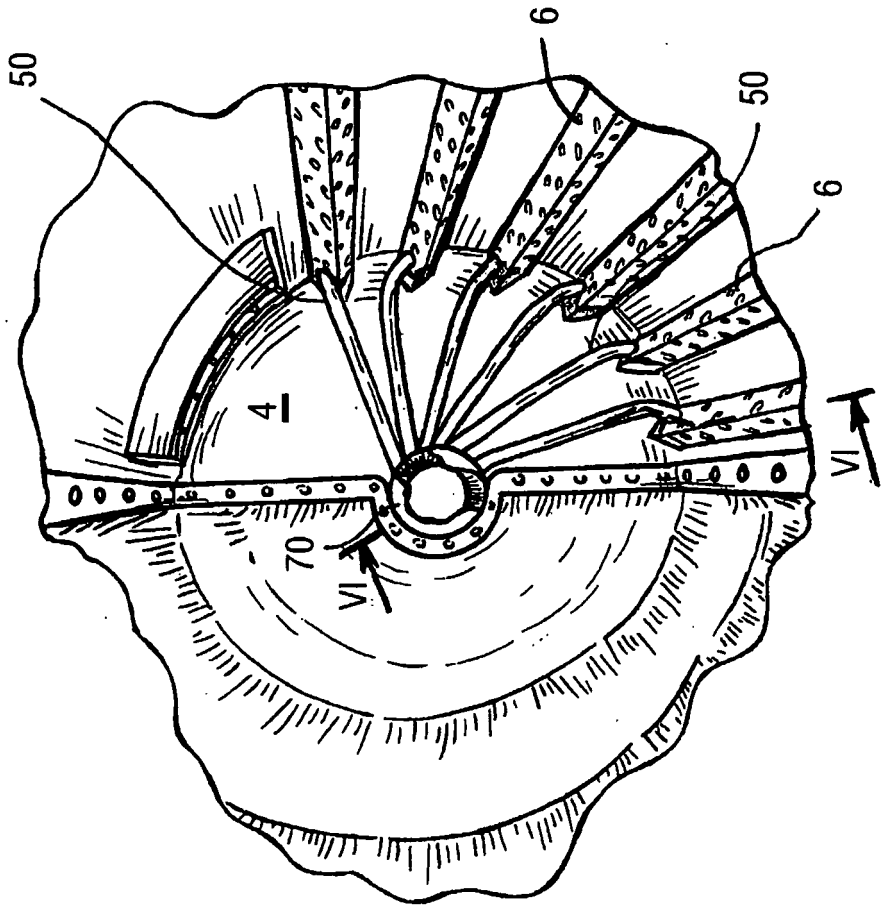


Fig. 7

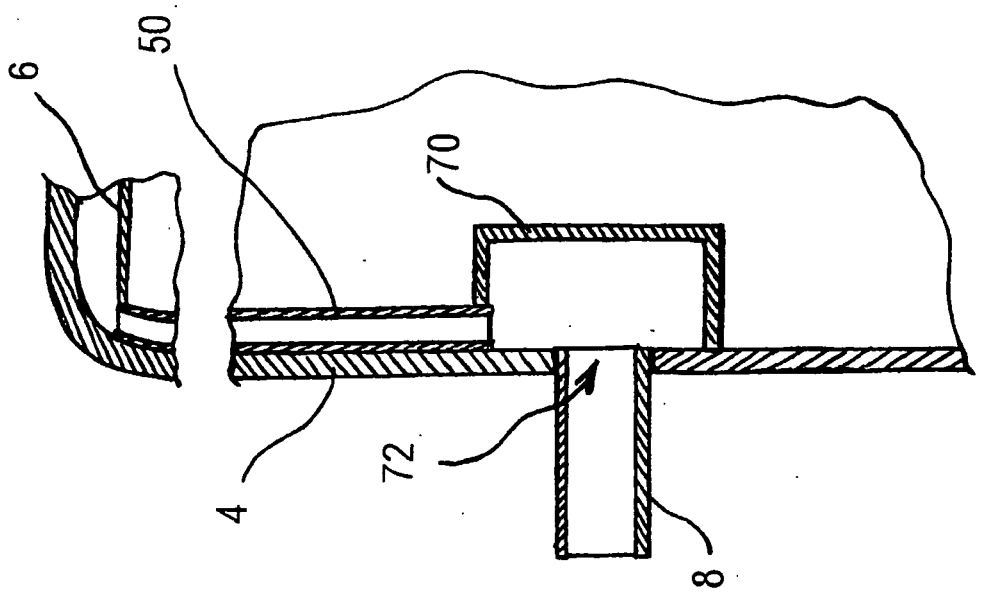


Fig. 8

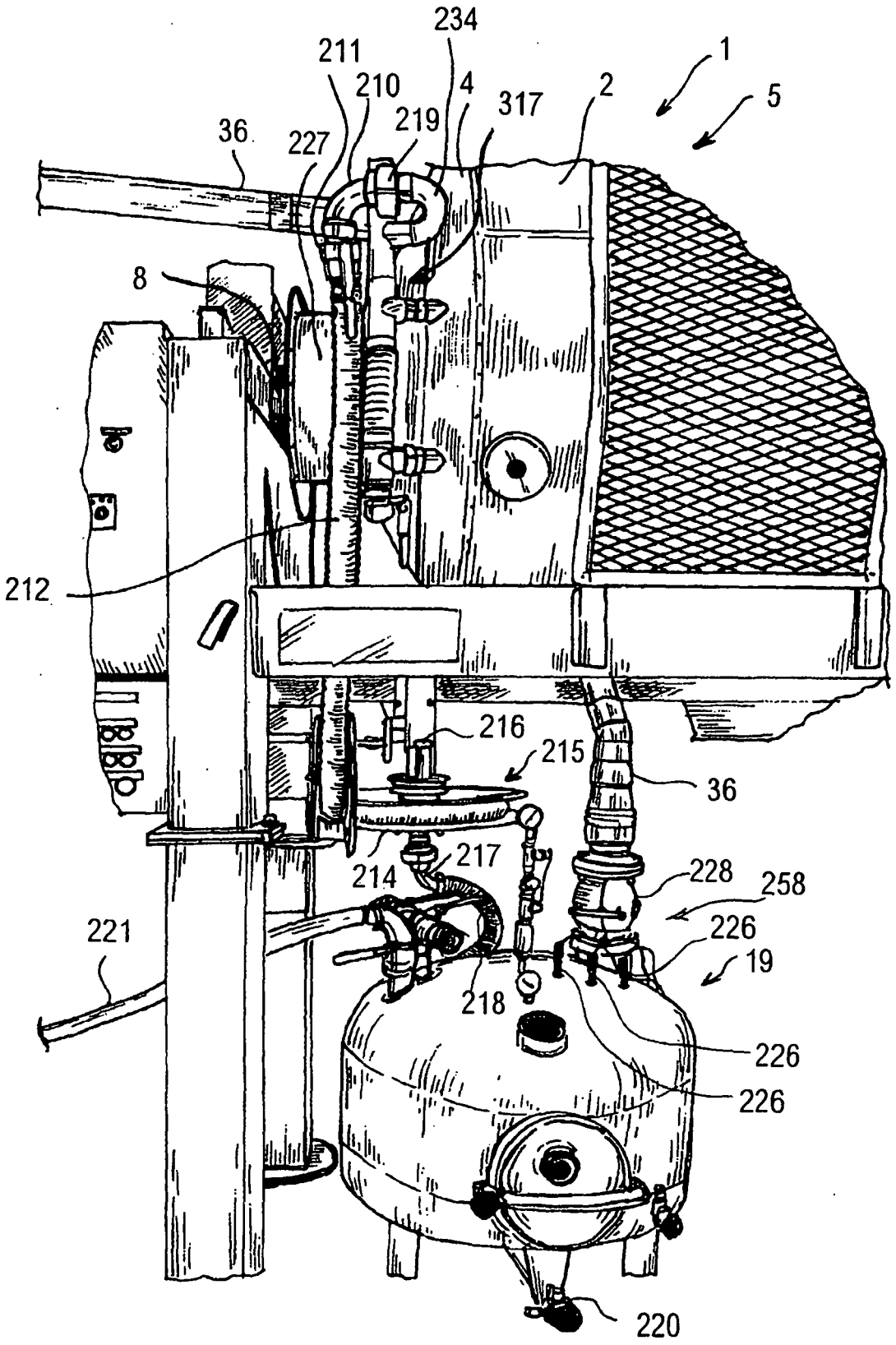

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Fig. 9

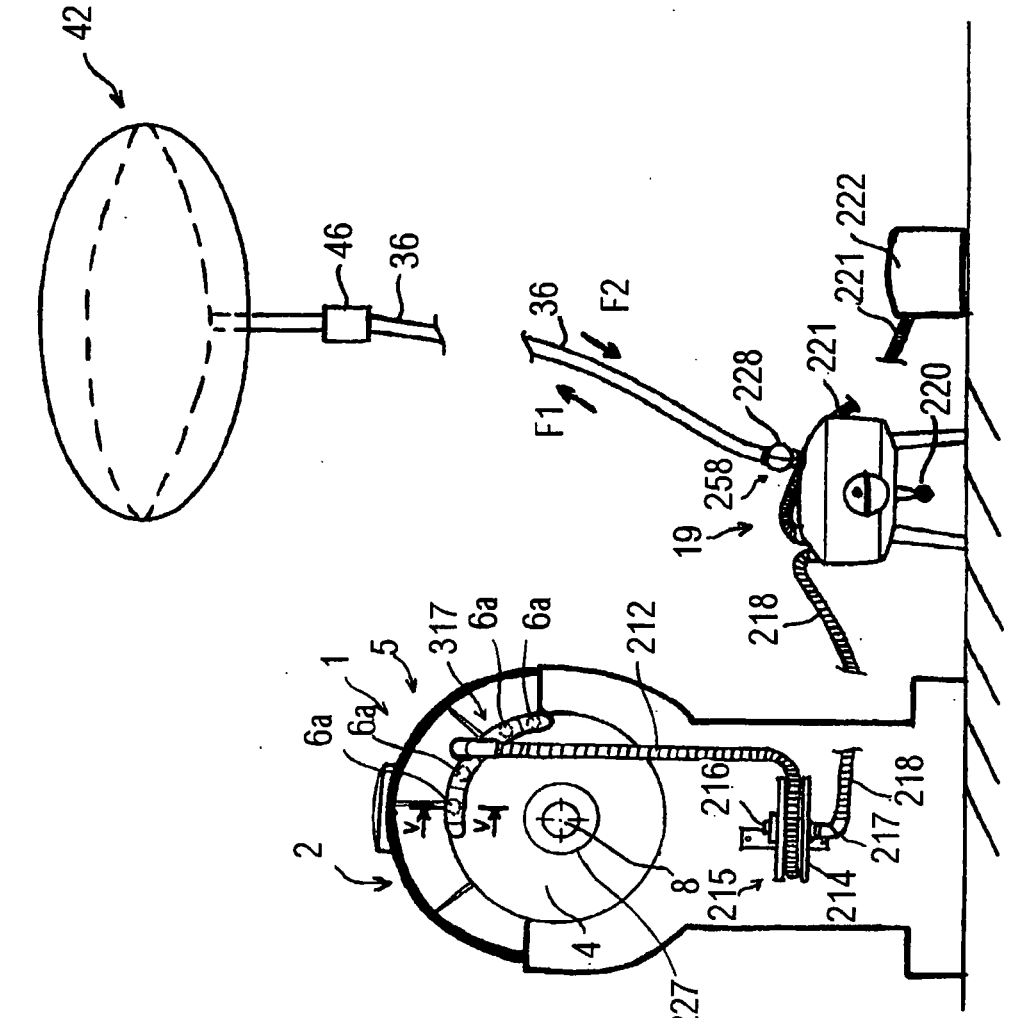

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6a
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227

Fig. 10

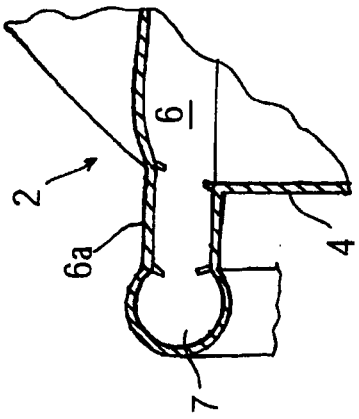

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Fig. 11

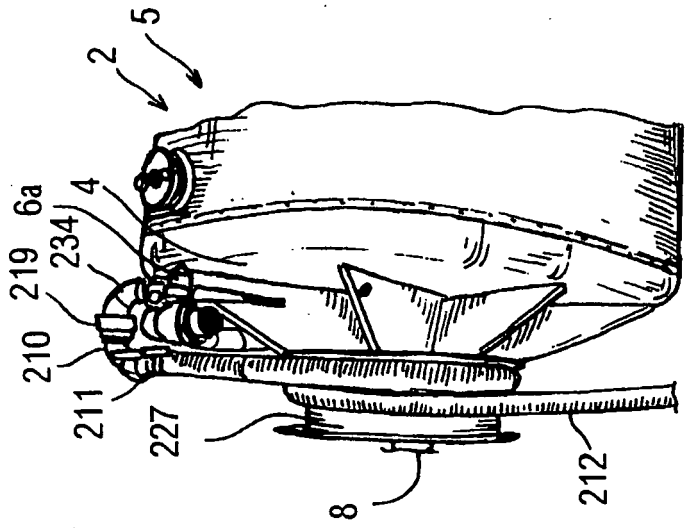


Fig. 13

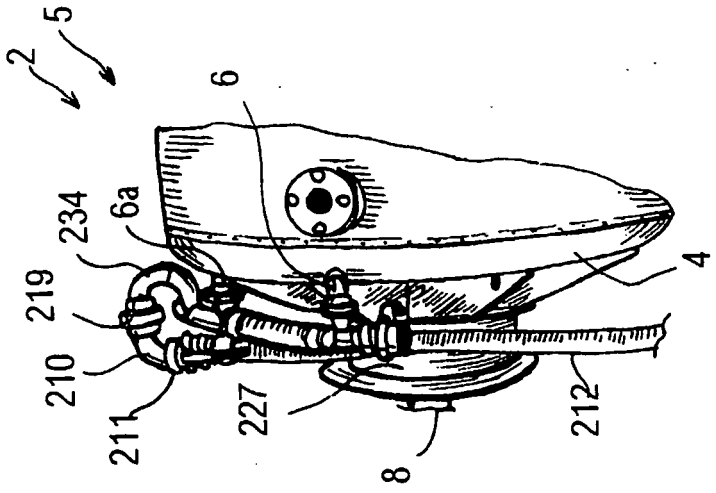


Fig. 12

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- FR 2624521 **[0015]**
- DE 2910170 **[0016]**