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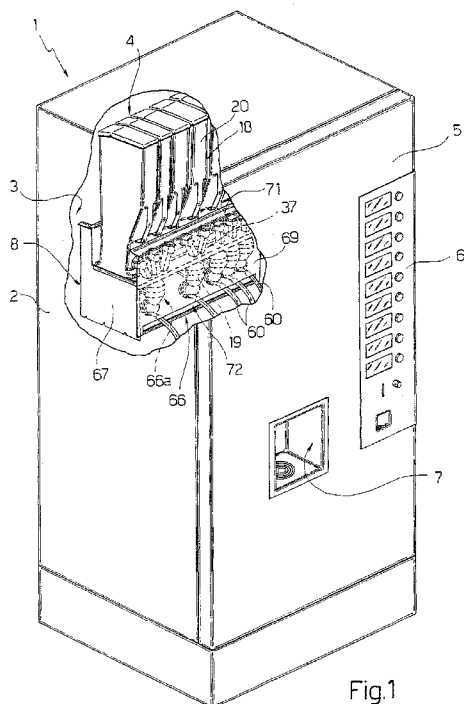


Fig.1

(57) Abstract: A beverage vending machine defined by a cabinet (2) housing at least one beverage -making assembly (4) having at least one container (18) for soluble material, and a mixer (19) located in a fixed position and which in use receives a measured quantity of the material and a measured quantity of pressurized water to produce a beverage; the cabinet (2) housing a cell (66) which defines a housing (66a) for the mixer (19), and has an opening (68) for access to the mixer (19), and a hatch (69) closing the opening (68).

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BEVERAGE VENDING MACHINE

TECHNICAL FIELD

The present invention relates to a beverage vending
5 machine.

The present invention is particularly advantageous
for use in so-called "instant" hot and cold beverage
vending machines, to which the following description
refers purely by way of example.

10 BACKGROUND ART

As is known, beverage vending machines of the above
type normally comprise a cabinet or similar casing
defining a compartment closed at the front by a door and
housing a number of beverage-making assemblies.

15 Each assembly normally comprises one or more
containers for respective soluble materials; and a mixer
connected to the outlet of each of the relative
containers, and to the outlet of a pressurized-water
supply pump, and normally comprising a blending member
20 normally defined by an impeller. In actual use, a
measured quantity of soluble material and a measured
quantity of pressurized water are fed to the mixer for
mixing and blending into the desired beverage.

The space in which the mixers are housed is a
25 critical part of the machine, where any leakage of
liquid or powdered material may impair operation of the
machine, and any contaminating material and/or climatic
changes may impair beverage quality or clog the machine.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a beverage vending machine that is cheap and easy to produce, is designed to prevent exposure of the mixers to external agents during operation, and, at the same time, allows easy access to the mixers for cleaning and maintenance.

According to the present invention, there is provided a beverage vending machine as claimed in Claim 1 and preferably in any one of the following Claims depending directly or indirectly on Claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective, with parts removed for clarity, of a preferred embodiment of the beverage vending machine according to the present invention;

Figure 2 shows a detail of Figure 1;

Figures 3 and 4 show axial sections of the Figure 2 detail in respective operating positions;

Figure 5 shows an exploded view of a detail in Figure 1;

Figures 6, 7, 8 show the Figure 5 detail in respective operating positions;

Figure 9 shows a larger-scale view, with parts removed for clarity, of the Figure 2 detail;

Figure 10 is similar to Figure 3, and shows a variation of the Figure 1 embodiment;

Figure 11 shows an exploded view of a detail of Figure 10;

5 Figure 12 shows a section along line XII-XII in Figure 3.

BEST MODE FOR CARRYING OUT THE INVENTION

Number 1 in Figure 1 indicates as a whole a beverage vending machine, in particular for so-called
10 "instant" hot and cold beverages made from a dose of soluble material.

Machine 1 comprises a cabinet 2 defining a compartment 3, which houses a number of beverage-making assemblies 4, and is closed at the front by a door 5
15 having a beverage selection panel 6, and a dispensing recess 7 from which the user removes a cup (not shown) of the selected beverage.

As shown in Figures 1 to 4, assemblies 4 are fitted to a frame 8 connected rigidly to cabinet 2 and
20 comprising a vertical wall 9 facing a rear wall 9a of cabinet 2 and having a top edge and bottom edge bent squarely towards rear wall 9a of cabinet 2.

Frame 8 also comprises a horizontal wall 10, which is on a level with the bottom edge of vertical wall 9,
25 is perpendicular to vertical wall 9, and is defined by a flat thin plate extending from vertical wall 9 towards door 5. Along its free edge facing door 5, horizontal wall 10 has an appendix 11 bent squarely downwards, and,

along its opposite free edge, has an appendix 10a bent upwards and towards appendix 11.

Beneath horizontal wall 10, frame 8 comprises a rigid member 12 defined by two perpendicular sheet metal plates 13 and 14. Plate 13 is parallel to vertical wall 9, has a bent top edge connected integrally to an intermediate point of the underside surface of horizontal wall 10, and defines, on horizontal wall 10, an end portion 15 bounded at the front by appendix 11. Plate 14 is connected rigidly to a bottom edge of plate 13, is parallel to horizontal wall 10, extends from plate 13 towards door 5, and faces end portion 15 of horizontal wall 10.

As shown in Figures 3 and 4, plate 14 is of the same transverse dimension as end portion 15 of horizontal wall 10, and has, along its free edge facing door 5, an appendix 16 which is bent squarely, with respect to plate 14, towards appendix 11, is coplanar with appendix 11, and defines, together with plate 14 and a bottom portion of plate 13, a seat for a removable tray 17.

As shown in Figures 2 and 3, each assembly 4 fitted to frame 8 comprises at least one container 18 for containing and dispensing, in use, a measured quantity of soluble material; and a mixer 19 for receiving the soluble material from relative container/s 18 and mixing and blending the material with a measured quantity of pressurized water.

More specifically, Figure 2 shows five side by side assemblies 4, of which the first three assemblies 4, from right to left, each comprise one container 18, the fourth assembly 4 comprises two containers 18, and the fifth assembly 4 comprises three containers 18.

As shown more clearly in Figure 3, each container 18 comprises a tank 20 for housing the soluble material and closed at the top by a removable cover 21, and at the bottom by a cup-shaped, downward-facing base 22. Base 22 is bounded at the bottom by an edge 23 supporting container 18 on horizontal wall 10, and is bounded at the top by a wall 24 defining the bottom of tank 20.

As shown in Figures 2 and 9, each tank 20 is the same height and the same length, measured crosswise to horizontal wall 10, as all the other tanks 20, and is of a width equal to or differing from the width of the other tanks 20 and defining the capacity of tank 20. This design of tanks 20 enables them to be positioned side by side and contacting one another on horizontal wall 10, and imparts a highly compact, versatile, modular structure to tanks 20 as a whole.

Each tank 20 has a substantially rectangular cross section, and, as shown more clearly in Figure 3, is bounded laterally by a vertical rear wall 25; two vertical major lateral walls 26 (only one shown in Figure 3) parallel to each other and perpendicular to rear wall 25; and a front wall 27 substantially parallel

to rear wall 25 and fitted with a handle 28 by which to handle container 18 for refilling and maintenance.

Just above wall 24, front wall 27 and rear wall 25 have respective externally threaded, tubular appendixes 5 29 and 30, which are coaxial along a horizontal axis 31 perpendicular to rear wall 25 and parallel to wall 24, project outwards of front wall 27 and rear wall 25 respectively, and define respective conduits 32 and 33 connecting an inner cavity 34 of tank 20 with the 10 outside.

In addition to tank 20, container 18 also comprises a dispensing device 35 which, in use, extracts measured quantities of material from cavity 34 along conduit 32, and comprises a screw 36 housed inside cavity 34.

15 As shown in Figure 12, screw 36 is housed movably, inside cavity 34, in a substantially semicylindrical seat coaxial with axis 31, defined by a curved portion 24a of wall 24, and connected to lateral walls 26 by two sloping portions 24b.

20 Container 18 also comprises a spout 37 located outside cavity 34, connected to tubular appendix 29, and fitted to and projecting from front wall 27 of tank 20.

Screw 36 is defined by a double-thread screw coaxial with axis 31 and connected for rotation to 25 tubular appendixes 29 and 30. More specifically, a front end of screw 36 engages conduit 32 of tubular appendix 29 in rotary manner, and a rear end of screw 36 is fitted integrally with a cup-shaped body 38, which is

coaxial with axis 31, is knurled axially inside, engages tubular appendix 30 in rotary manner to fluidtight seal conduit 33, and has, on its free end, an outer annular flange located outside tubular appendix 30 and held
5 axially contacting an outer free edge of tubular appendix 30 by a ring nut 39 screwed onto tubular appendix 30.

Cup-shaped body 38 defines a known fast-fit face coupling for connecting screw 36 to an axially knurled
10 output shaft 40 of a respective electric motor 41.

Electric motors 41 of all of containers 18 (Figure 6) are fitted to vertical wall 9, in the space between vertical wall 9 and the rear wall (not shown) of compartment 3, and are arranged side by side along
15 vertical wall 9; and respective output shafts 40 extend through vertical wall 9 and, in use, are coaxial with axes 31 of relative containers 18.

For fast connection of cup-shaped body 38 of each screw 36 to output shaft 40 of relative electric motor
20 41, the cup-shaped base 22 of each tank 20 defines an open-bottomed cavity 42 shaped internally to define, close to front wall 27, a straight guide 43 perpendicular to its own front and rear walls 27, 25, and which is engaged in sliding manner by a respective
25 hemispherical guide body 44 fitted to horizontal wall 10 and aligned with output shaft 40 of relative electric motor 41.

In the work position, each tank 20 rests on

horizontal wall 10, with its straight guide engaged by
respective guide body 44, with its cup-shaped body 38
engaged by shaft 40 of respective electric motor 41, and
with a shaped rear portion of respective cup-shaped base
5 22 engaged beneath appendix 10a, which, together with
the shaft 40/cup-shaped body 38 connection, acts as a
stabilizing device to keep tank 20 upright.

Conduit 32 of tubular appendix 29 defines an outlet
of tank 20, and tubular appendix 29 defines a connection
10 for spout 37, which comprises a connecting body 45 for
connection to tank 20, and a dispensing body 46.
Dispensing body 46 is fitted to connecting body 45, and
is movable, with respect to connecting body 45, between
an open dispensing position (Figures 1-3 and 8 and 9),
15 in which dispensing body 46 connects conduit 32 to the
outside to permit outflow of the material from cavity 34
when screw 36 is operated, and a closed position
(Figures 4-6), in which dispensing body 46 disconnects
conduit 32 from the outside.

20 Connecting body 45 comprises a sleeve 47, a free
end portion of which engages conduit 32, to which sleeve
47 is connected in rotary and axially fixed manner by a
ring nut 48.

At the end opposite the portion inserted inside
25 conduit 32, sleeve 47 is fitted with an annular appendix
49 of substantially rectangular cross section.

Dispensing body 46 comprises a tubular body 50,
which has an axis 51 perpendicular to axis 31, engages

appendix 49 in sliding and angularly fixed manner, and has a top axial end closed by a plate 52 crosswise to axis 31 and in the form of an arc coaxial with axis 31.

Tubular body 50 has an outlet 53 at the bottom axial end of tubular body 50; and an inlet 54 formed through the side of tubular body 50, close to plate 52 and on the side facing tank 20, and having a flow section roughly equal to the cross section of sleeve 47.

Tubular body 50 can be set selectively to a lowered position corresponding to said open dispensing position (Figures 1-3 and 8 and 9) and in which inlet 54 is coaxial with axis 31 and faces conduit 32; and a raised position corresponding to said closed position (Figures 4-7) and in which inlet 54 is raised with respect to conduit 32, which is thus disconnected from the outside by the lateral wall of tubular body 50.

Dispensing body 46 has a lock device 55 for clicking tubular body 50 selectively into the open dispensing position and the closed position. Lock device 55 is defined by a flexible tooth on annular appendix 49, and by two notches formed on the outer surface of tubular body 50 and into which the flexible tooth clicks selectively. Dispensing body 46 also comprises a stop device 56 defined by two tabs projecting radially from tubular body 50, and which rest on a top edge of annular appendix 49 when tubular body 50 is lowered by the operator into the open dispensing position.

As shown in Figures 3 and 8, when dispensing body

46 is set to the open dispensing position, tubular body 50 extends through a respective passage 57 formed through end portion 15 of wall 10. Passage 57 is located with its axis at the same distance from vertical wall 9 as axis 51 from the rear end of ring nut 39, so that, when container 18 is in the work position on horizontal wall 10, the axis of passage 57 lies in the plane in which axis 51 moves about axis 31, and passage 57 can be engaged by tubular body 50, which, when inserted through passage 57, is positioned with its outlet 53 facing a top inlet 58 of relative mixer 19.

As shown in Figures 4 and 7, when dispensing body 46 is set to the closed position, the whole of tubular body 50 is located above horizontal wall 10, and tank 20, if necessary, can be removed from horizontal wall 10 safely with no spillage.

Each mixer 19 is fitted to plate 13, and comprises a funnel-shaped body positioned with its inlet 58 facing end portion 15 of horizontal wall 10. At its narrow bottom end, mixer 19 has a beverage outflow pipe 59 communicating with the outside by a dispensing hose 60. Close to inlet 58, mixer 19 has two water inlets 61 communicating with the outlet of a pump (not shown) to supply mixer 19, in use, with pressurized water to dissolve the soluble material supplied to mixer 19 and so produce the relative beverage. Above inlets 61, mixer 19 has a steam suction pipe 62. Along outflow pipe 59, mixer 19 comprises a beverage blending device 63 in turn

comprising an impeller 64 powered by an electric motor 65 fitted to plate 13, on the opposite side to mixer 19.

As shown in Figure 2, in the case of assemblies 4 with more than one container 18, mixer 19 is positioned substantially centrally with respect to relative containers 18, and passages 57 engaged by respective spouts 37 are formed close to one another through portion 15 and facing inlet 58 of mixer 19. The position of passages 57 therefore also determines the tilt angle tubular bodies 50 of spouts 37 must assume, in the open dispensing position, with respect to horizontal wall 10, to permit insertion of the tubular bodies through respective passages 57.

As shown in Figures 2 and 3, mixers 19 of assemblies 4 are housed side by side inside a cell 66 defined by plates 13 and 14, by two lateral walls 67 of frame 8, and by end portion 15 of horizontal wall 10, and having an opening 68 facing door 5 and closed by a hatch 69.

Depending on the transverse dimensions of machine 1, both or only one of lateral walls 67 of frame 8 may be positioned contacting, or coincide with, the lateral walls of cabinet 2.

More specifically, with reference to Figures 2 to 4, hatch 69 is defined by a flat rectangular plate 70 which, along one long side, has an appendix 71 bent squarely with respect to plate 70 and of a width substantially equal to the distance between appendix 11

of horizontal wall 10 and a plane defined by the axes of passages 57. Along the opposite side to that with appendix 71, plate 70 is hinged to a free edge of plate 14 to rotate in use between a horizontal open position (Figure 4), in which plate 70 is coplanar with plate 14, fully opens opening 68, and is supported by lateral ties (not shown) interposed between plate 70 and lateral walls 67, and a vertical closed position (Figure 3), in which plate 70 rests against appendix 11 of portion 15 and appendix 16 of plate 14 to completely close opening 68, and appendix 71 is positioned horizontally directly over plate/s 52 of dispensing body/bodies 46.

Close to the hinged side, plate 70 has a slot 72 parallel to appendix 71 and through which respective hoses 60 of mixers 19 extend out of cell 66 to feed the relative beverages into a container (not shown) inside dispensing recess 7 of machine 1.

Figures 10 and 11 show a variation of machine 1, in the event machine 1 - as is usually the case, for producing hot beverages - comprises a boiler 73 housed inside compartment 3, beneath wall 10 and behind cell 66.

In this case, machine 1 may comprise an air-conditioning system, which uses the heat given off by boiler 73 to heat the area occupied by containers 18 and prevent the soluble material inside tanks 20 from forming lumps, on account of the inevitable moisture in this area.

As shown in Figure 10, the air-conditioning system is defined by a partition 74, which extends from one lateral wall 67 to the other and from rear wall 9a of machine 1 to horizontal wall 10 to define, together with lateral walls 67, a flue 75 located over boiler 73 and opening at the top through a number of slots 76 (Figure 11) formed through horizontal wall 10, behind plate 13, and extending parallel to axis 31.

The heat given off by boiler 73 and conducted by flue 75 to horizontal wall 10 thus flows through slots 76 in horizontal wall 10 into cavities 42 defined by relative cup-shaped bases 22 of tanks 20. In this connection, it should be pointed out that the particular design of bottom wall 24 of each tank 20 (Figure 12) allows the heat to penetrate between relative portion 24a and relative lateral walls 24b and so advantageously heat the area about screw 36, where the soluble material is compressed and so has a greater tendency to form into lumps.

More specifically, in the Figure 10 example, partition 74 comprises a vertical sheet metal plate 77 connected rigidly to wall 10 and facing plate 13; and a V-bent sheet metal plate 78 connected rigidly at the top end to plate 77, and at the opposite end to rear wall 9a of machine 1.

In actual use, spouts 37 are set to the open dispensing position, and cell 66 is closed to separate a housing 66a, housing mixers 19, from the rest of

compartment 3. As such, cell 66 protects the rest of compartment 3 of machine 1 from the dust formed as the soluble material is dispensed to mixers 19; creates about mixers 19 a constant microclimate with no sharp variations in temperature or moisture; and, at the same time, ensures any liquid particles escaping from mixers 19 are confined within housing 66a and at least partly collected in tray 17, thus enabling faster, more effective cleaning of cell 66 and compartment 3.

To clean and refill tanks 20, the operator opens hatch 69 into the horizontal open position, withdraws tubular bodies 50 from cell 66 through relative passages 57 into the closed position, and removes containers 18 off horizontal wall 10. Once containers 18 are detached, the temporary supporting surface defined by the open hatch 69 may conveniently be used by the operator to fill tanks 20. Hatch 69 also allows the operator easy access to housing 66a of mixers 19 for cleaning purposes.

Once cleaning and/or filling is completed and containers 18 are replaced on horizontal wall 10, tubular bodies 50 are reset to the open dispensing position, and hatch 69 is closed.

In this connection, it should be pointed out that appendix 71 also acts as a safety device, by preventing hatch 69 from being closed if even only one of tubular bodies 50 is not set to the open dispensing position. Given the curved shape of plates 52, this safety

function is performed by appendix 71 regardless of the tilt angle assumed in use by tubular bodies 50 about relative axes 31.

In connection with the microclimate produced by cell 66 about mixers 19, it should be pointed out that, in variations not shown, housing 66a of cell 66 may easily be heated or cooled, depending on whether machine 1 is used for making hot or cold beverages. In the event some of mixers 19 are used for making cold beverages, and others for making hot beverages, housing 66a of cell 66 may easily be compartmentalized by means of partitions perpendicular to plate 13, and some of the resulting compartments cooled, and others heated.

CLAIMS

1) A beverage vending machine comprising a cabinet (2) defining a compartment (3); and at least one beverage-making assembly (4) housed inside the compartment (3); the assembly (4) comprising at least one container (18) for soluble material, and a mixer (19) mounted in a fixed position inside the compartment (3) and which, in use, receives a measured quantity of said material and a measured quantity of pressurized water to produce a beverage; the machine (1) being **characterized by** also comprising a cell (66) housed inside the compartment (3) and defining a housing (66a) for the mixer (19); the cell (66) comprising a fixed frame (8) fitted integrally with the mixer (19), an opening (68) for access to the housing (66a) and to the mixer (19), and a hatch (69) closing the opening (68).

2) A machine as claimed in Claim 1, and comprising a door (5) closing the compartment (3); the opening (68) of the cell (66) facing the door (5).

3) A machine as claimed in Claim 1 or 2, wherein the hatch (69) is movable between a closed position and an open position; the open position being a substantially horizontal position.

4) A machine as claimed in one of the foregoing Claims, wherein the hatch (69) is mounted to rotate between the open position and the closed position about an axis located along a bottom edge of the opening (68).

5) A machine as claimed in Claim 4, wherein, crosswise to its axis of rotation, the hatch (69) is sized to define, in the open position, a temporary supporting surface for the container (18).

5 6) A machine as claimed in one of the foregoing Claims, wherein the cell (66) comprises a top wall (10) defining a supporting surface for the container (18).

7) A machine as claimed in one of the foregoing Claims, wherein the mixer (19) has an upward-facing
10 inlet (58) for the material; and the container (18) is fitted with a spout (37) having a tubular dispensing portion (50) extending down to the inlet (58) to feed the material to the mixer (19); the cell (66) comprising a top wall (15) facing the inlet (58) and having a
15 passage (57) for said tubular dispensing portion (50).

8) A machine as claimed in Claim 7, wherein the tubular dispensing portion (50) is movable through the passage (57) between a raised rest position and a lowered work position; the cell (66) having safety means
20 (71) for only allowing closure of the hatch (69) when the tubular dispensing portion (50) is in the lowered work position.

9) A machine as claimed in Claim 8, wherein said safety means (71) are on the hatch (69).

25 10) A machine as claimed in Claim 8 or 9, wherein the hatch (69) has a first edge hinged to a bottom edge of the opening (68), and a second edge opposite the first edge and located over the top wall (15) of the

cell (66) when the hatch (69) is in the closed position; said safety means (71) being defined by an appendix (71), which is connected to the second edge, extends squarely with respect to the rest of the hatch (69), and, when the hatch (69) is in the closed position, is positioned facing the passage (57) to prevent movement of the tubular dispensing portion (50) into the raised rest position.

11) A machine as claimed in Claim 10, wherein the tubular dispensing portion (50) is bounded at the top by a curved plate (52) which cooperates with said safety means (71).

12) A machine as claimed in one of the foregoing Claims, wherein the mixer (19) has a beverage outflow pipe (59); the cell (66) having a slot (72) for passage of the outflow pipe (59) to the outside.

13) A machine as claimed in Claim 12, wherein the slot (72) is formed through the hatch (69).

14) A machine as claimed in Claims 11 and 13, wherein the slot (72) extends along the first edge of the hatch (69).

15) A machine as claimed in one of the foregoing Claims, and comprising a number of assemblies (4); the housing (66a) being sized to accommodate all the mixers (19) in a fixed position, and allowing access to all the mixers (19) through the opening (68).

16) A machine as claimed in Claim 6 and any one of Claims 6 to 15, and comprising a heating device (73),

and conveying means (75, 76) for conveying the heat produced by the heating device (73) to and through the top wall (10).

17) A machine as claimed in Claim 16, wherein the
5 heating device (73) is located below the cell (66), and the conveying means (75, 76) comprise a flue (75) extending from the heating device (73) to the top wall (10), and a number of openings (76) formed, at the top
10 of the flue (75), through the top wall (10) to allow the heat to flow through the top wall (10) to the container (18).

18) A machine as claimed in Claim 16 or 17, wherein the heating device (73) comprises a boiler for heating infusion water.

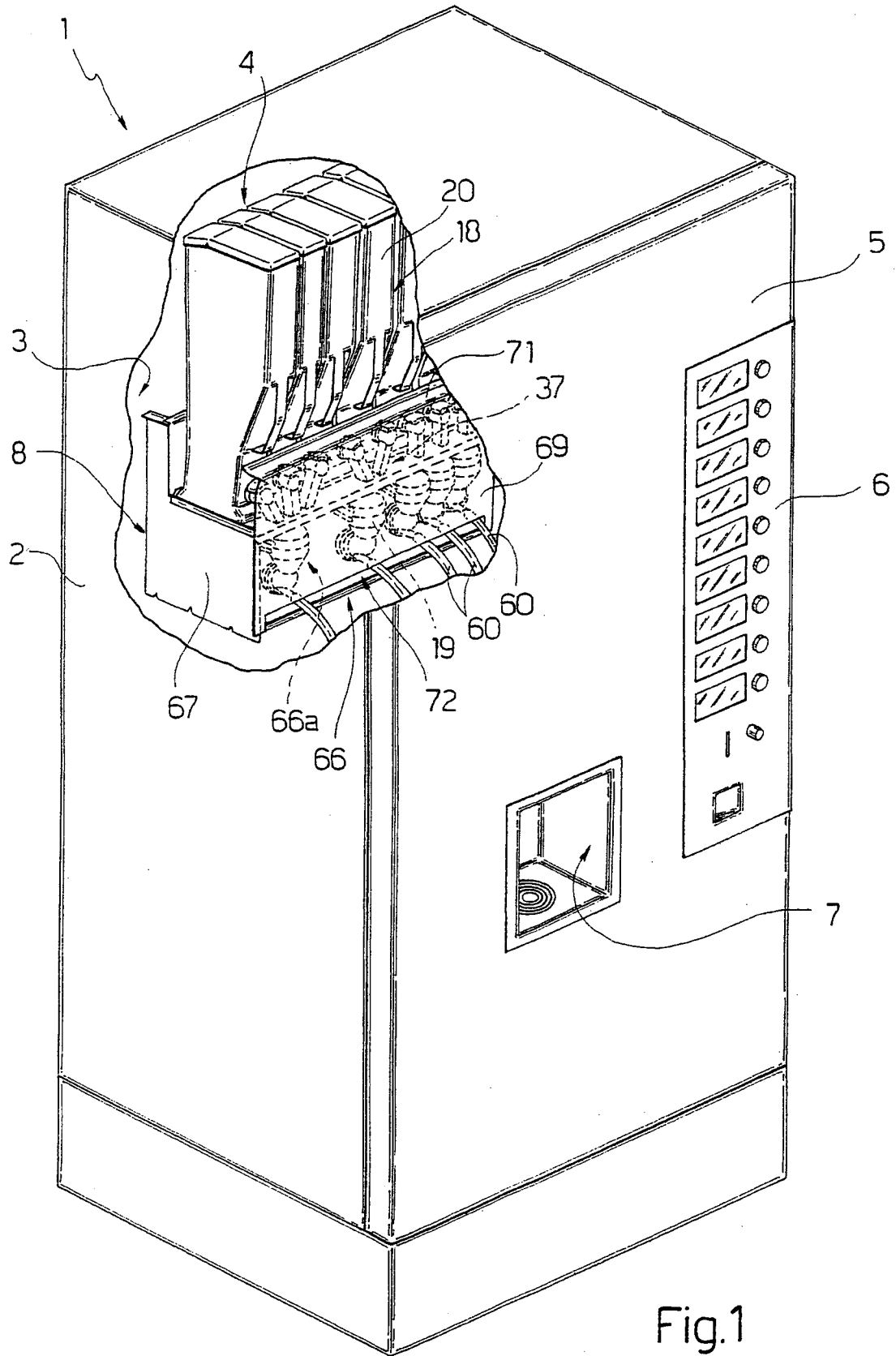


Fig.1

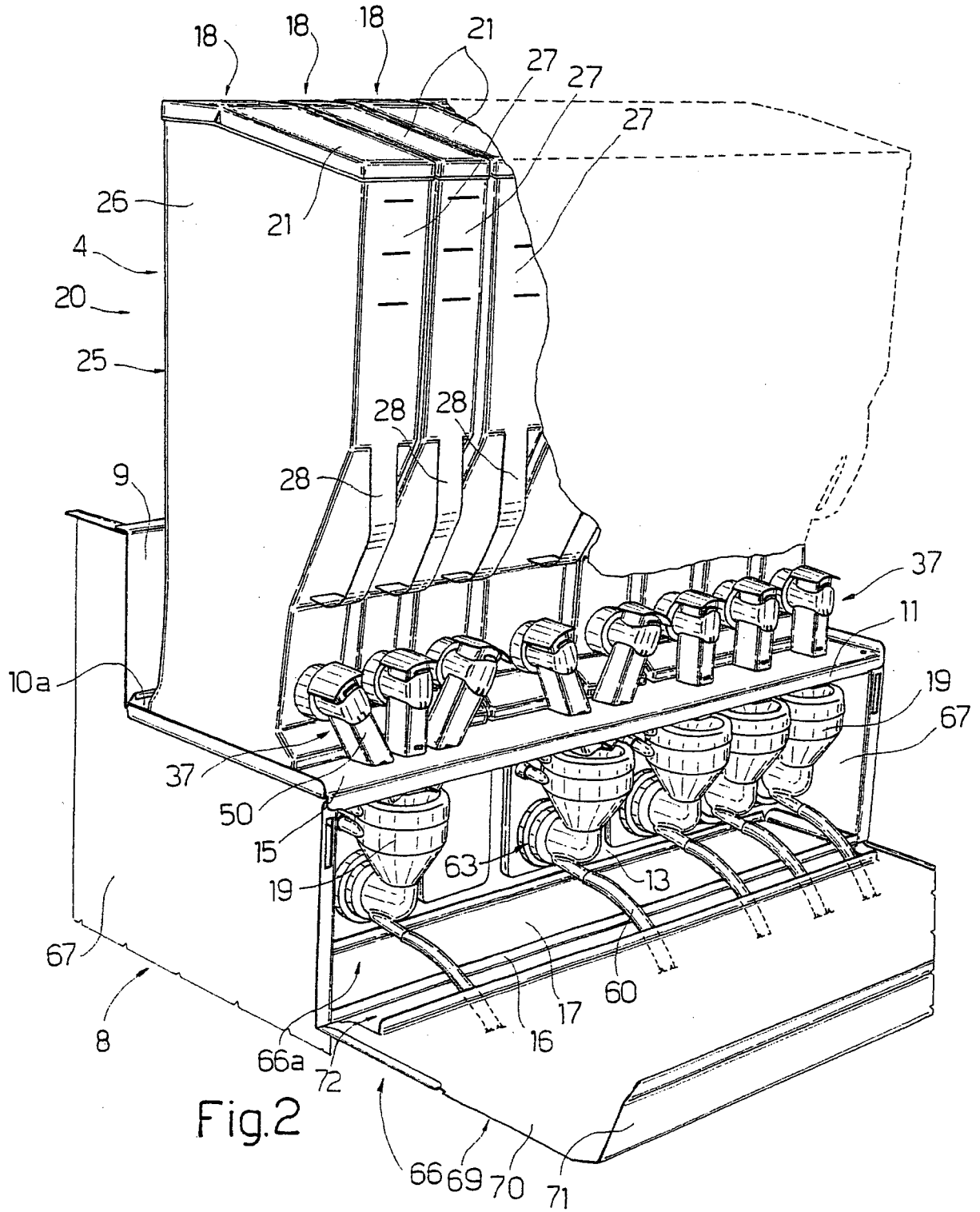


Fig.2

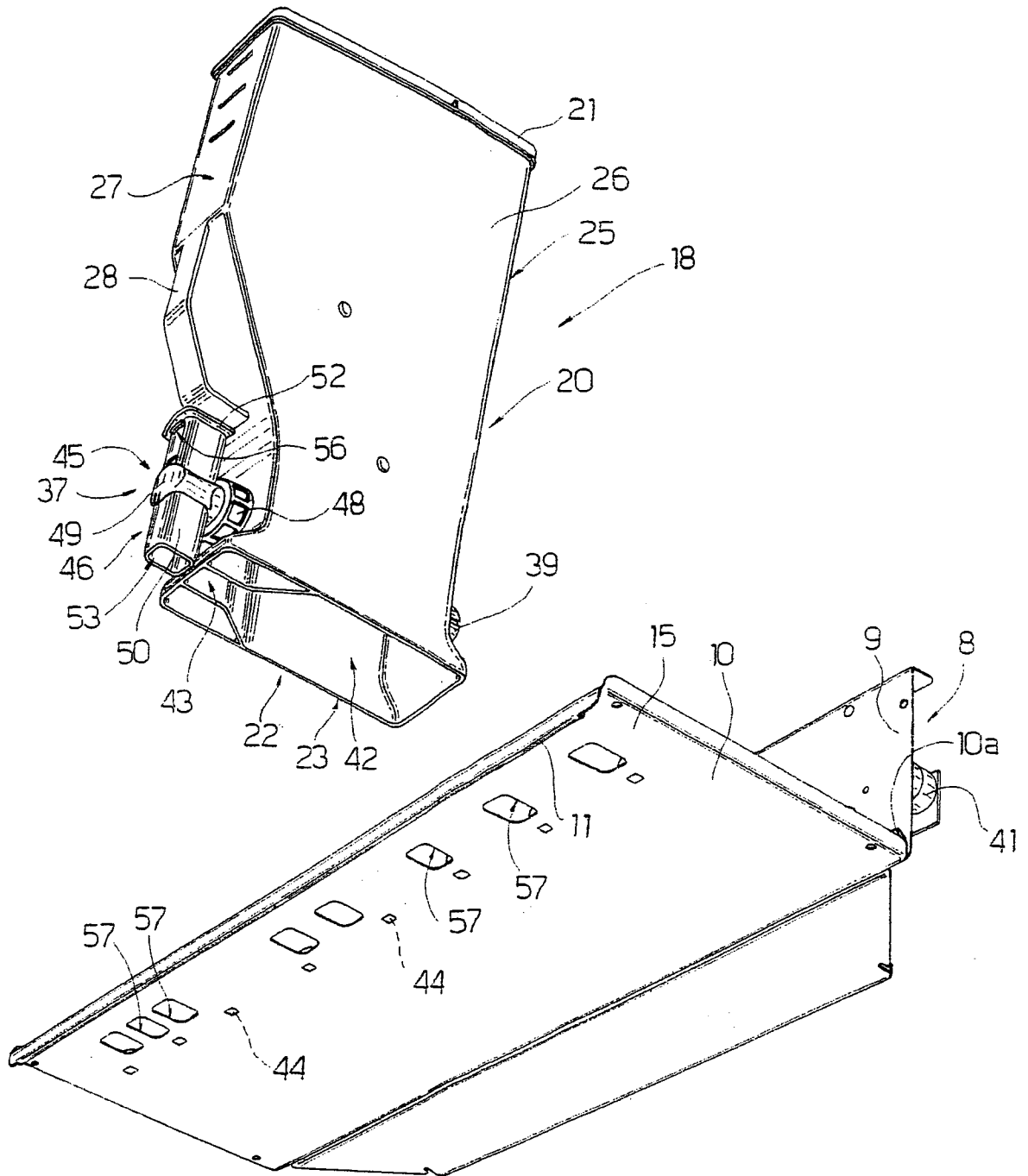


Fig. 5

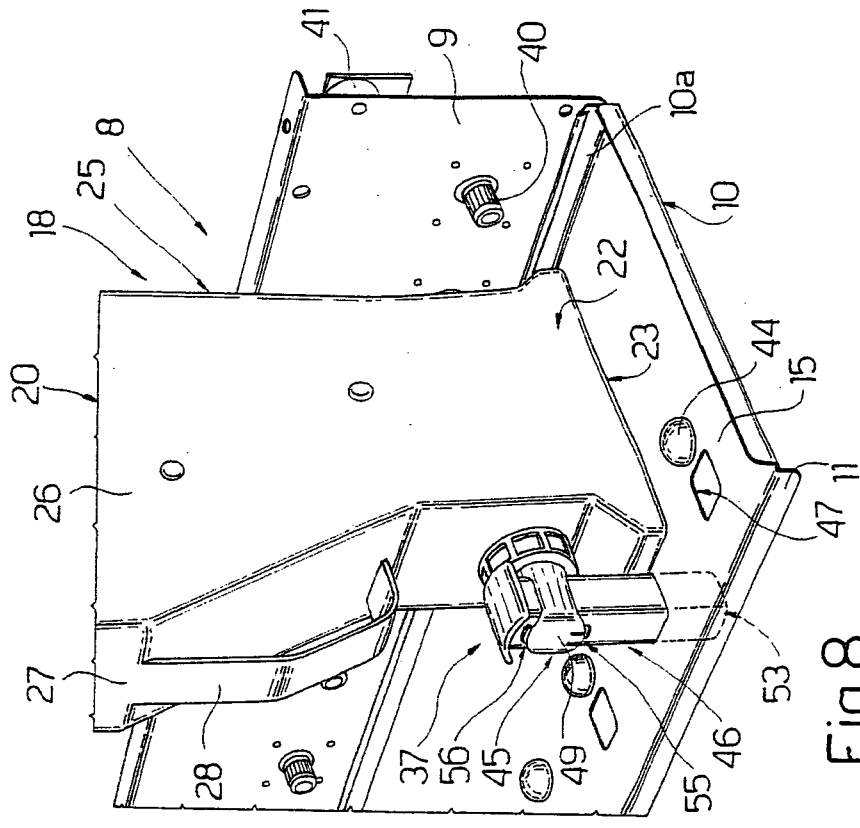


Fig.8

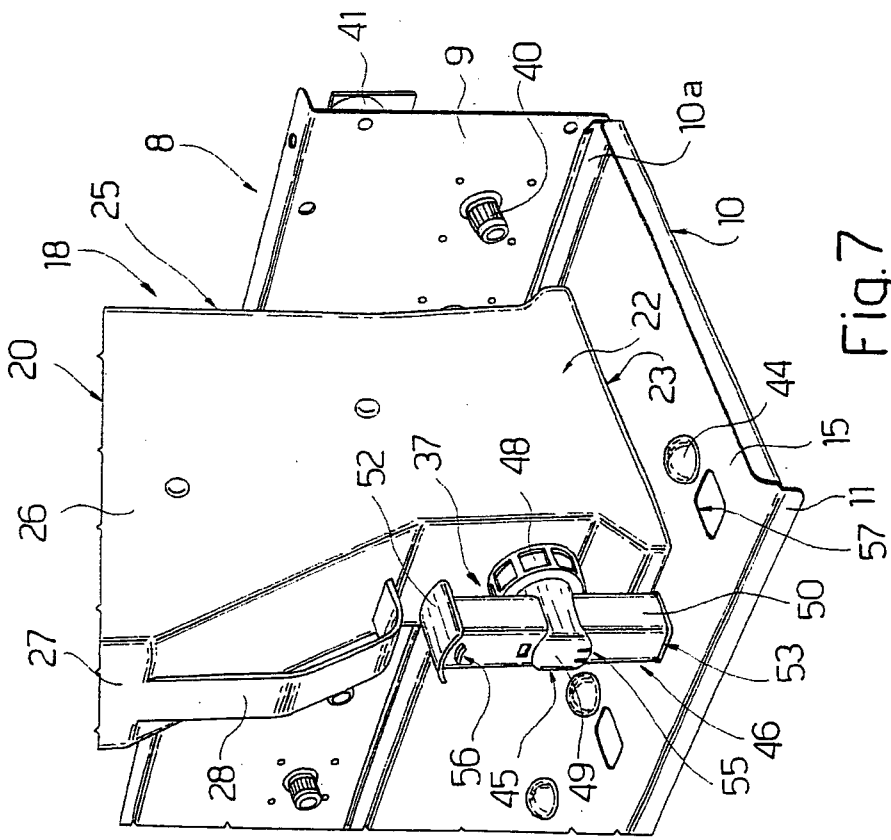


Fig.7

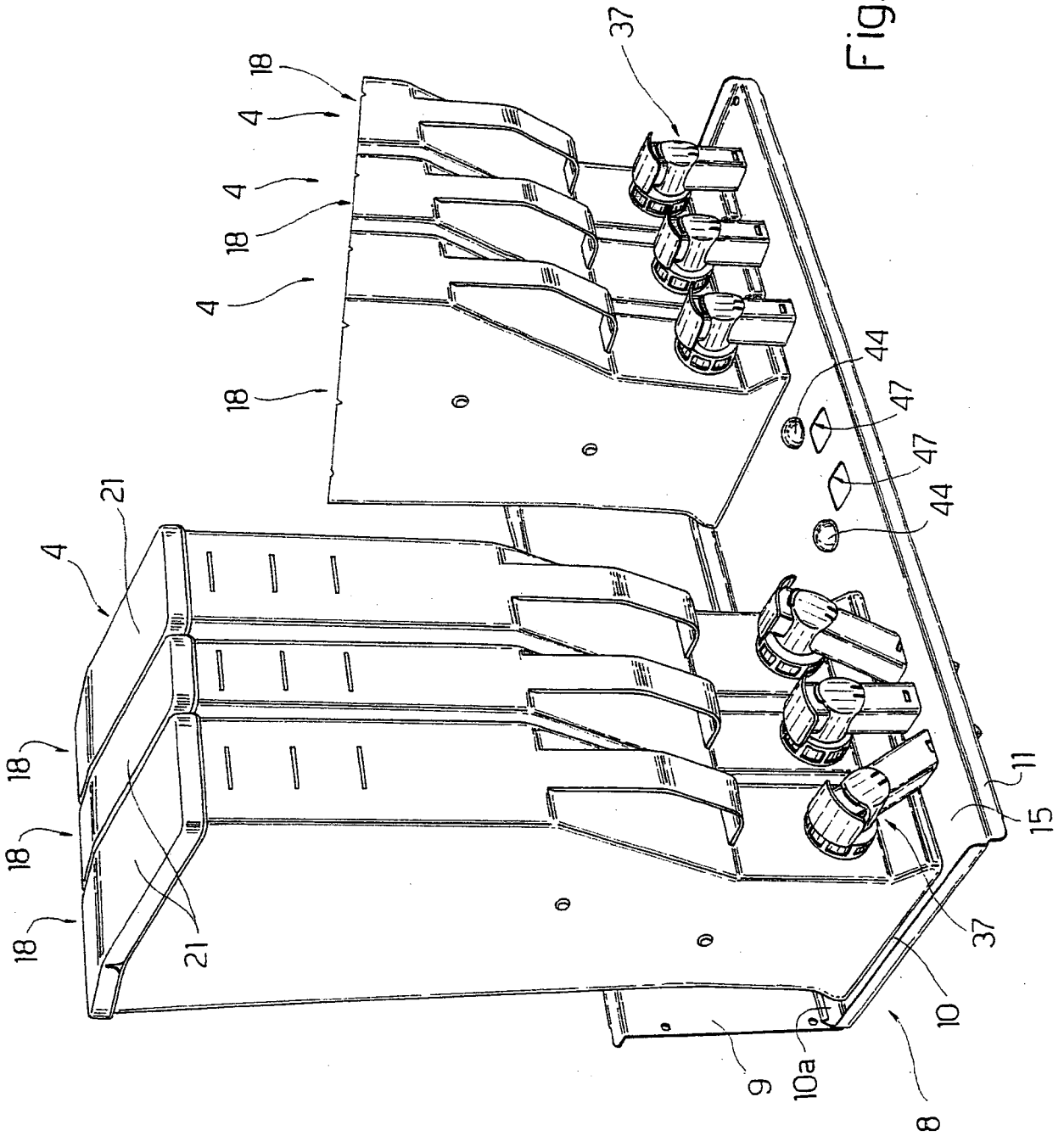
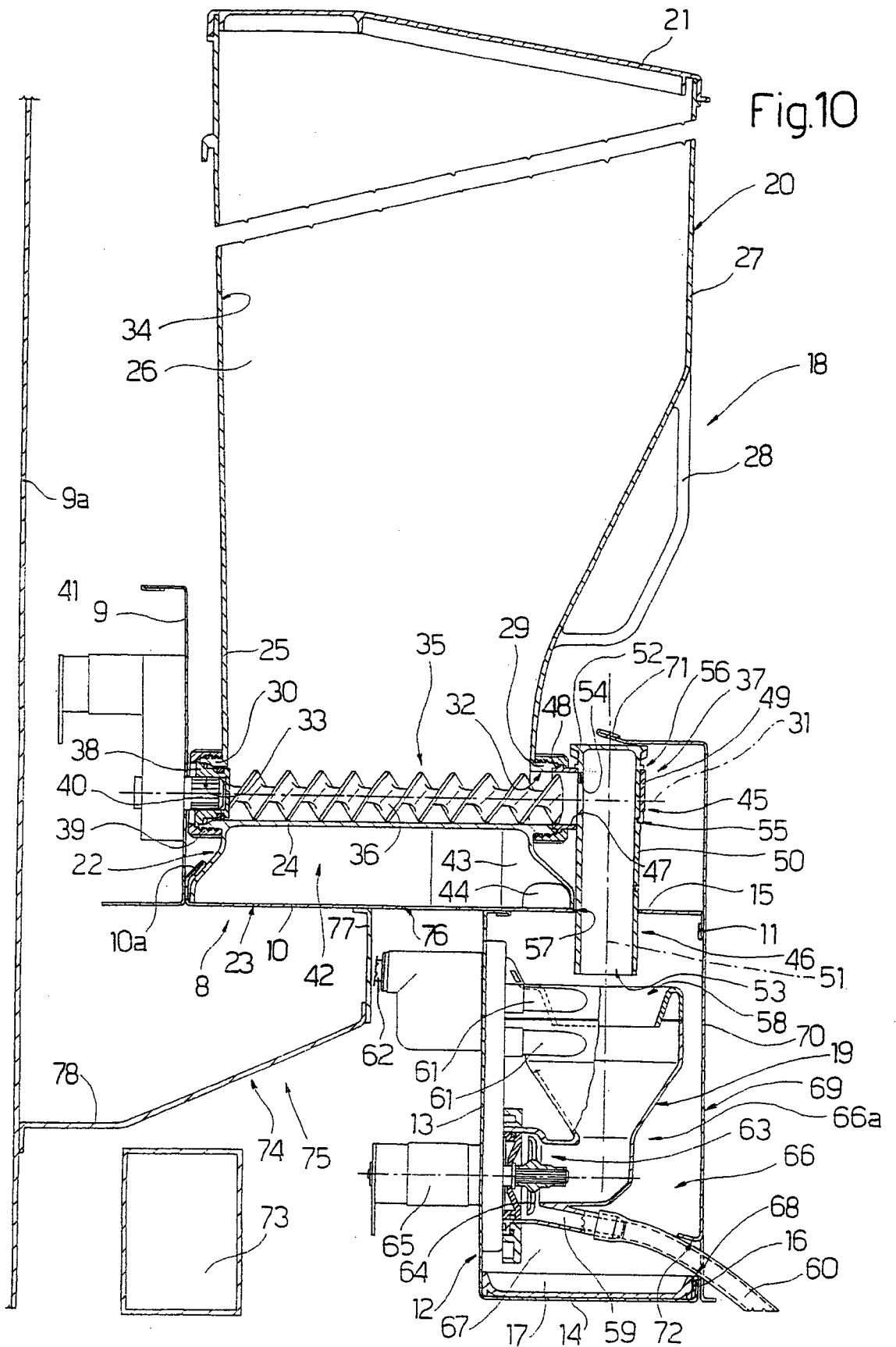


Fig.9

Fig.10



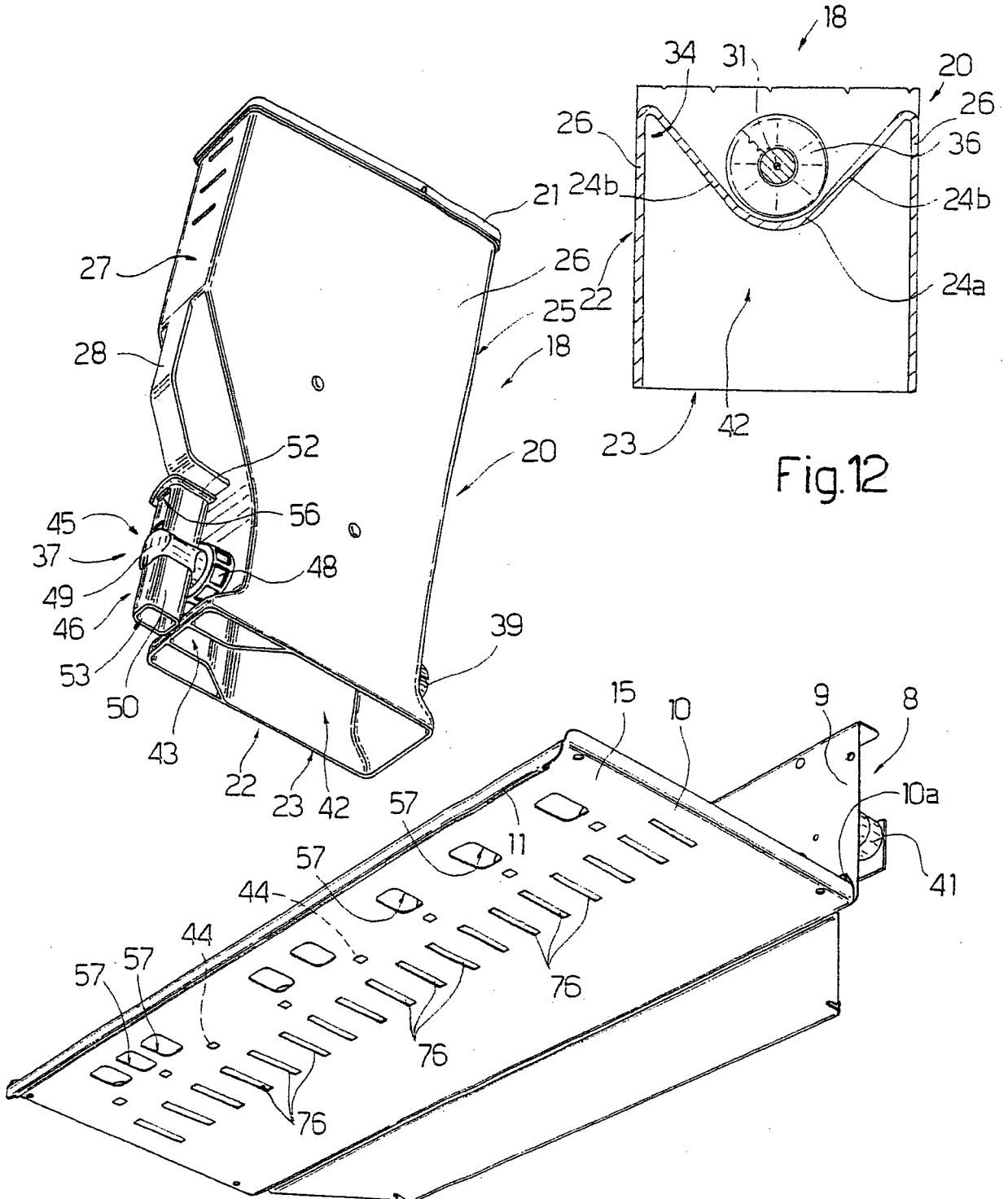


Fig.12

Fig.11

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2008/001202A. CLASSIFICATION OF SUBJECT MATTER
INV. A47J31/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/094681 A (RHEAVENDORS SPA [IT]; MAJER DOGLIONI LUCA [IT]) 20 November 2003 (2003-11-20) page 4, line 24 - page 8, line 7; figures	1-18
A	WO 2008/013452 A (BRAVILOR HOLDING B V [NL]; VERHOEVEN RAMON EDUARD [NL]; KOOPMAN CARLOS) 31 January 2008 (2008-01-31) page 6, line 19 - page 17, line 29; figures	1-18
A	US 5 952 032 A (MORDINI MAURO DOMINICK [US] ET AL) 14 September 1999 (1999-09-14) column 2, line 36 - column 4, line 59; figures	1-18
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Further documents are listed in the continuation of Box C.



See patent family annex.

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8 October 2008

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24/10/2008

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2007/142519 A (BRAVILOR HOLDING B V [NL]; VERHOEVEN RAMON EDUARD [NL]; VAN STEENDEREN) 13 December 2007 (2007-12-13) page 6, line 16 - page 9, line 13; figures -----	1-18
A	EP 1 088 505 A (SANYO ELECTRIC CO [JP]) 4 April 2001 (2001-04-04) paragraphs [0013] - [0028]; figures -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2008/001202

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03094681	A	20-11-2003	AT 300905 T 15-08-2005
			AU 2003230054 A1 11-11-2003
			CA 2484170 A1 20-11-2003
			CN 1668233 A 14-09-2005
			DE 60301212 D1 08-09-2005
			DE 60301212 T2 30-03-2006
			EP 1501397 A1 02-02-2005
			ES 2246475 T3 16-02-2006
			IT MI20020973 A1 10-11-2003
			JP 4097653 B2 11-06-2008
			JP 2005524459 T 18-08-2005
			NZ 536253 A 26-01-2007
			PT 1501397 T 31-10-2005
			RU 2319431 C2 20-03-2008
US 2006162569 A1 27-07-2006			
ZA 200408478 A 28-09-2005			
WO 2008013452	A	31-01-2008	NL 2000166 C2 29-01-2008
US 5952032	A	14-09-1999	CA 2224740 A1 15-03-1999
			US 5980969 A 09-11-1999
WO 2007142519	A	13-12-2007	NL 1031947 C2 04-12-2007
EP 1088505	A	04-04-2001	NONE