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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:
B65F 1/12, 1/00, 3/00	A1	WO 93/12018
		(43) International Publication Date: 24 June 1993 (24.06.93)

(21) International Application Number: PCT/NL92/00228

(22) International Filing Date: 16 December 1992 (16.12.92)

(30) Priority data:
9102109 17 December 1991 (17.12.91) NL

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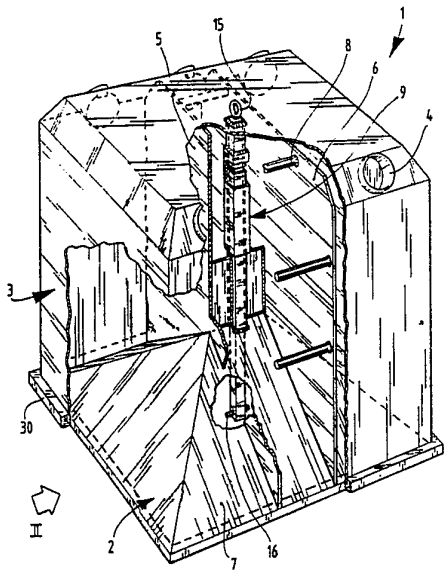
(81) Designated States: AU, BG, BR, CA, CS, FI, HU, JP, NO, PL, RO, RU, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
In English translation (filed in Dutch).

(54) Title: DEVICE FOR COLLECTING WASTE, IN PARTICULAR WASTE PACKING GLASS

(57) Abstract

The invention relates to a device for collecting waste, in particular waste packing glass comprising at least one intake container and at least one collecting container (1) and a lifting device (15) for raising an intake container into a discharging position above the collecting container (20), wherein the intake container comprises a bottom part (2) and a bottomless housing (3) part fitting thereon and provided with waste intake openings (4) that is movable relative to the bottom part between a closed position in which a lower edge of the housing part lies sealingly against the bottom and an open position in which the lower edge is situated at a distance from the bottom part, wherein a lifting-engaging member (16) for the lifting device is connected to the bottom part and the collecting container comprises a lifting device (25, 26) engaging on a lifting-engaging member (30) connected to the housing part.



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DEVICE FOR COLLECTING WASTE, IN PARTICULAR WASTE PACKING GLASS

The invention relates to a device for collecting waste, in particular waste packing glass. Such devices are known and comprise a number of intake containers arranged distributed in the collection area and at least one collecting container mounted on a truck. The truck is provided therein with a lifting device with which an intake container can be raised above the collecting container. For emptying the intake container is then opened and the collected waste packing glass flows into the collecting container. After emptying the intake container is re-placed.

The invention now has for its object to provide a device of the stated type which has wider application options and in particular has the possibility of being adapted for separate collection of different types of waste.

This is achieved with the device characterized in claim 1.

In order to empty the intake container it is suspended hanging from the lifting-engaging member above the collecting container, whereafter the lifting device of the collecting container is set into operation and the housing part is moved upward relative to the bottom part suspended from the lifting-engaging member. For this purpose an opening is made available between the bottom edge of the housing part and the bottom part wherethrough the contents of the intake container can flow into the collecting container.

A very favourable further development is characterized in claim 2. Different sorts of waste can now be collected in the different compartments. Particularly when used for waste packing glass, a separate compartment can be formed for each type of glass, in particular for each

colour. During emptying the different compartments are positioned by the aligning means above the different compartments of the collecting container, so that the different types of waste, in particular different types of glass, also fall into the separate compartments of the collecting container.

A favourable embodiment is characterized in claim 3. The intake container can be positioned at a random location in lengthwise direction of the rails so that the collecting container can be evenly filled. The rails simultaneously form the aligning means.

A simple embodiment is characterized therein in claim 4.

Application of the step of claim 5 achieves that the waste thrown into the intake container falls entirely and without leaving remnants into the collecting container during emptying.

The step of claim 6 has the advantage that the housing part is well positioned relative to the bottom part when the intake container is re-closed. The reliable closing of the intake container does not hereby depend on any special vigilance on the part of the operative.

A further favourable development is characterized in claim 7. The rod-like lifting member is pushed downward in the situation where the intake container is arranged standing outside. When the container is raised the rod-like lifting member slides out so that space is created for the housing part to move upward relative to the bottom part.

The invention likewise relates to and provides an intake container and a collecting container evidently intended for a device according to the invention.

The invention will be further elucidated in the following description of an embodiment shown in the figures.

Figure 1 shows a partly broken away perspective view of an intake container according to a preferred embodiment of the device.

Figure 2 shows a sectional side view in the direction of arrow II of figure 1.

Figure 3 shows the intake container of the preceding figures placed on a collecting container of the device.

Figure 4 shows a view corresponding with figure 3 wherein the housing part of the intake container is raised for emptying this container.

The intake container 1 comprises a bottom part 2 and a housing part 3 fitting thereon. The bottom 7 of the bottom part 2 is substantially pyramid-shaped. The bottom part 2 comprises in this embodiment two vertical transverse walls 5, 6 which divide the interior space of the intake container 1 into three compartments. Each of these compartments is provided with two intake openings 4. The intake container 1 shown in figure 1 is particularly intended for collecting waste packing glass. To enable re-use of this waste glass it is desirable to collect the different types separately, in particular glass of different colours. The three compartments of the intake container 1 are therefore intended respectively for white, green and brown glass. Suitable indications on the outside of the housing part make it clear to the user which sort of glass can be placed into which of the intake openings 4.

The transverse walls 5, 6 are arranged in a position such that the volumes of the thereby defined compartments are such that these are mutually in proportion in accordance with the ratio in which the different glass types usually occur in the waste glass.

A number of connecting strengthening members 8 are arranged between transverse walls 5 and 6.

The housing part 3 can move vertically relative to the bottom part 2. A slide guide 9, which is shown more clearly in figure 2, is arranged for good guiding of the two parts 2 and 3 relative to each other. This slide guide 9 comprises a tube portion 11 fixedly connected to the bottom part and in line therewith a tube portion 12 connected to the housing part 3. Fixedly welded to tube portion 12 is a tube portion 13 which has a slightly larger size and which falls slidably over tube portion 11. The tube portions 11,

12 and 13 are square tube portions so that a substantially non-rotatable slide guide is obtained.

A lift rod 14 extends through the slide guide 9, that is, through tube portions 11 and 12. This lift rod has a length approximately equal to the height of the housing part 3 so that a lifting eye 15 arranged at the top end of the lift rod 14 normally lies closely against the upper surface of the container. At the bottom end the lift rod 14 is provided with a stop pin 16 which, when the lift rod 14 is moved upward, comes into engagement with the lower surface of the bottom 7. When the intake container 1 is thus raised, for example by hooking a lifting hook 27 into the lift eye 15 as shown in figure 3, the lift rod will first slide out until the stop pin 16 comes into contact with the bottom 7. With further lifting the bottom part 2 is thereby also raised and, because the housing part 3 lies on the bottom part 2 and in particular because the tube portion 12 lies on the tube portion 11, the whole container 1 can be raised.

In addition to the at least one intake container 1 as shown in figures 1 and 2 the device according to the invention comprises a collecting container, an example 20 of which is shown in figures 3 and 4. The collecting container 20 can be mounted on a truck and can be driven in the usual manner to a number of intake containers arranged distributed in a collection area in order to empty them at their location.

In that case the truck is likewise provided for the emptying with the lifting device also forming part of the device according to the invention.

As shown particularly in figure 3, the collecting container 20 is also provided with transverse walls 21, 22 which correspond to the transverse walls 5 and 6 in an intake container 1.

According to the invention the collecting container 20 is provided with a lifting device with which the housing part 3 of the intake container can be lifted relative to the bottom part 2. In the embodiment shown the lifting device is

formed by two rails 23 disposed at a mutual distance parallel to each other and to the transverse walls 21, 22, which rails are supported by hydraulic jacks 25 arranged in the collecting container 20. As is shown, the embodiment is such that each rail 23 is supported by two jacks 25. The cylinders 26 of jacks 25 are connected to the rail 23. By feeding hydraulic oil under pressure to the cylinders 26 in the usual manner the rail 23 can thus be moved upward. The jacks 25 of the two rails are provided via a per se known hydraulic tracking circuit with hydraulic oil under pressure so that the rails 23 can move synchronously up and downward on either side.

The rails 23 are formed in the embodiment by angle profiles with mutually facing legs. On the top side of the upward protruding leg of the angle profile is arranged a slanting guide surface which facilitates positioning of the container 1 on the rails 23. The rails 23 are arranged at a mutual distance such that the mutually facing horizontal flanges thereof engage precisely under edge profiles 30 of the intake container. The bottom part 2 however remains free of the rails 23.

Emptying of the intake container proceeds as follows: Using the lifting device the intake container 1 is positioned above the collecting container 20 such that the said edge profiles 30 comes to lie in rails 23. From that moment the lifting device can remain in engagement or can be wholly released, so that the bottom part comes to rest on the transverse walls 21, 22. In any case, for the purpose of emptying the intake container 1, the jacks 25 are then activated, whereby the rails 23 move upward and the housing part 3 of container 1 is moved upward relative to the bottom part 2. Thus created between the lower edge of the bottom part 2 and the lower edge of the housing part 3 are openings 31, through which waste thrown into the compartments of the container 1 can flow into the corresponding compartments in the collecting container 20.

The rails 23 form aligning means which determine the position of the intake container 1 transversely of the

transverse walls 21, 22. The transverse walls 5, 6 of the intake container 1 are thereby positioned substantially in the same plane as transverse walls 21, 22 of collecting container 20. The compartments of container 1 thus empty into the separate compartments of the collecting container 20.

Once all the waste, in particular waste glass, has flowed out of the container 1 the hydraulic jacks 25 are again retracted and the lifting device activated whereby the intake container is lifted from the rails 23 and can be replaced in its set position.

As shown, the rails 23 have a greater length than the intake container 1 so that the intake container can be placed in different positions on the rails 23 in lengthwise direction of the collecting container 20. This enables even filling of the container 20.

The collecting container 20 is further provided in the usual manner with discharge doors (not shown), via which the different compartments can be separately emptied.

CLAIMS

1. Device for collecting waste, in particular waste glass packing, comprising at least one intake container and at least one collecting container and a lifting device for raising an intake container into a discharging position above the collecting container, wherein the intake container comprises a bottom part and a bottomless housing part fitting thereon and provided with waste intake openings that is movable relative to the bottom part between a closed position in which a lower edge of the housing part lies sealingly against the bottom and an open position in which the lower edge is situated at a distance from the bottom part, wherein a lifting-engaging member for the lifting device is connected to the bottom part and the collecting container comprises a lifting device engaging on a lifting-engaging member connected to the housing part.

2. Device as claimed in claim 1, wherein the bottom part comprises at least one vertical transverse wall which connects along its periphery in the housing part and which divides the intake container into compartments each provided with its own intake openings, the collecting container is provided with a corresponding number of transverse walls and has aligning means for positioning the intake container such that during emptying the transverse wall(s) thereof lies or lie substantially in the same plane as the corresponding transverse wall(s) of the collecting container.

3. Device as claimed in claim 1 or 2, wherein the lifting device comprises two rails which are disposed at a mutual distance parallel to each other and to the transverse wall(s) and each of which can be moved upward by a number of hydraulic cylinders and wherein each intake container has on two opposite sides, along the lower edge, parts protruding outside the bottom part and co-acting with the rails.

4. Device as claimed in claim 3, wherein the rails are formed by angle profiles having a mutually facing leg.

5. Device as claimed in any of the foregoing claims, wherein the intake container has internally an approximately pyramid-shaped bottom.

6. Device as claimed in any of the foregoing claims, wherein the housing part of the intake container is movably connected to the bottom part by a vertical slide guide.

7. Device as claimed in claim 6, wherein the lifting-engaging member connected to the bottom part is a rod-like member extending slidably over a distance through the slide guide and protruding above the housing part and provided at its bottom end with a stop which in the extended position comes into engagement with the bottom.

8. Intake container evidently intended for a device as claimed in any of the foregoing claims.

9. Collecting container evidently intended for a device as claimed in any of the foregoing claims.

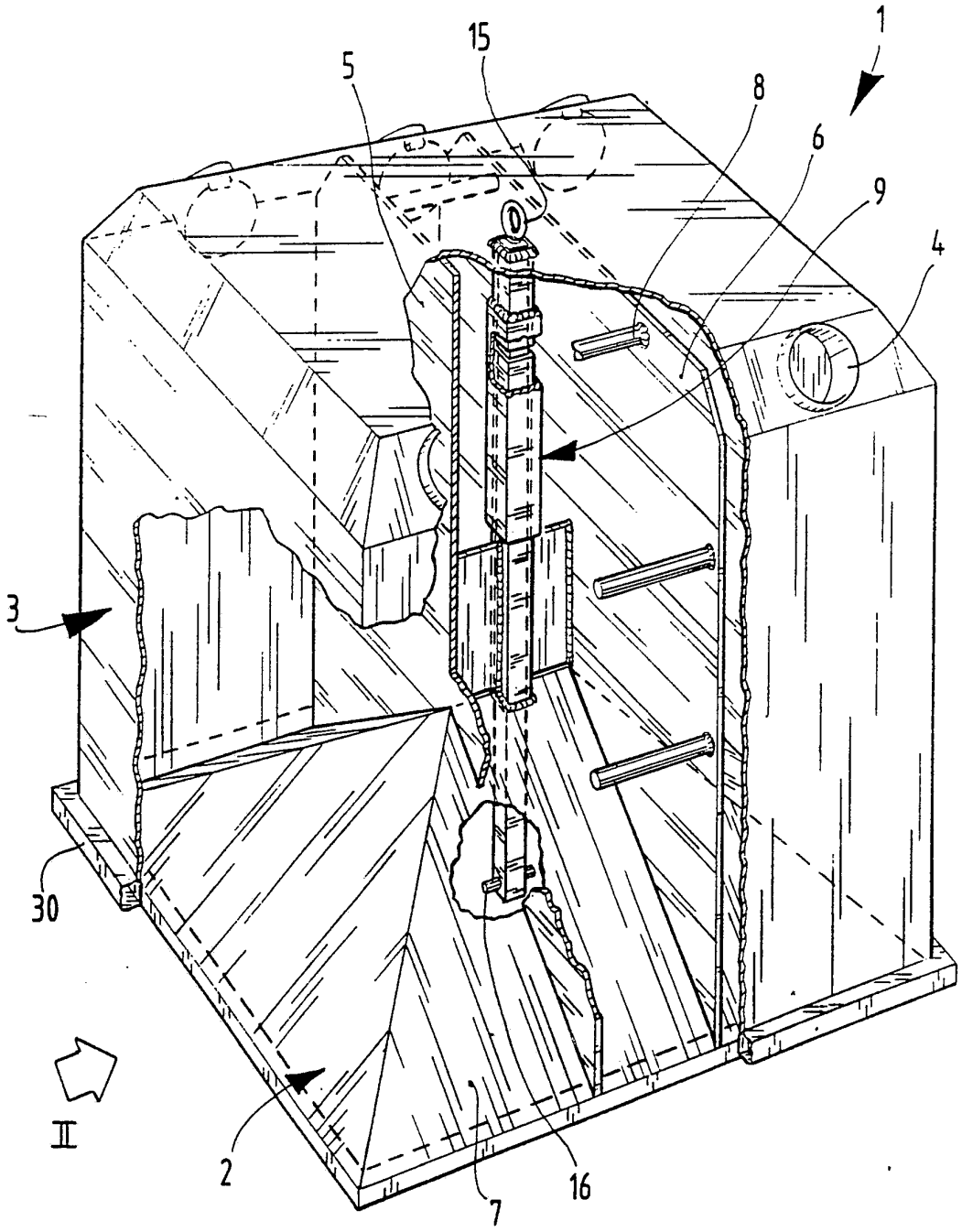

FIG. 1

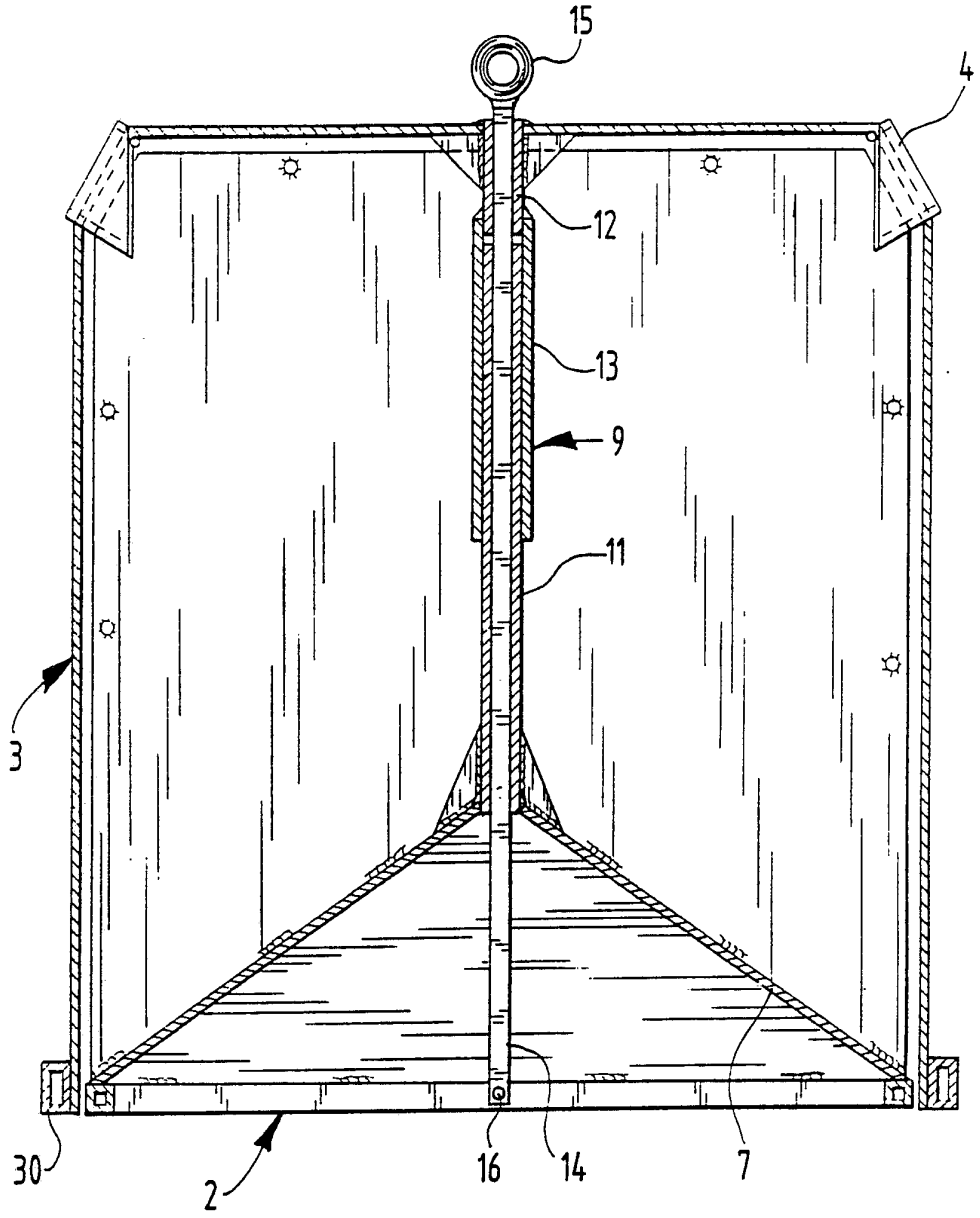

FIG. 2

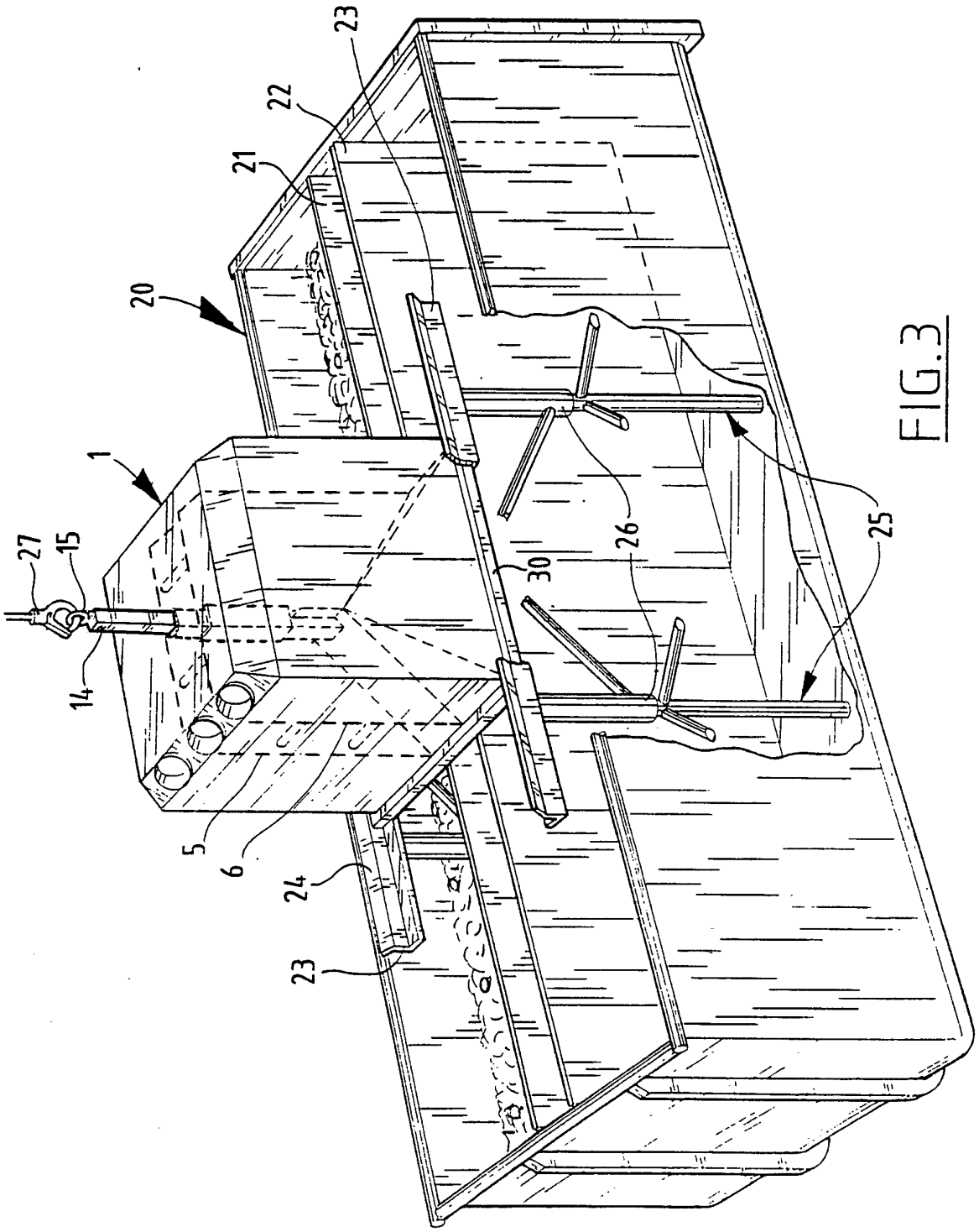

FIG.3

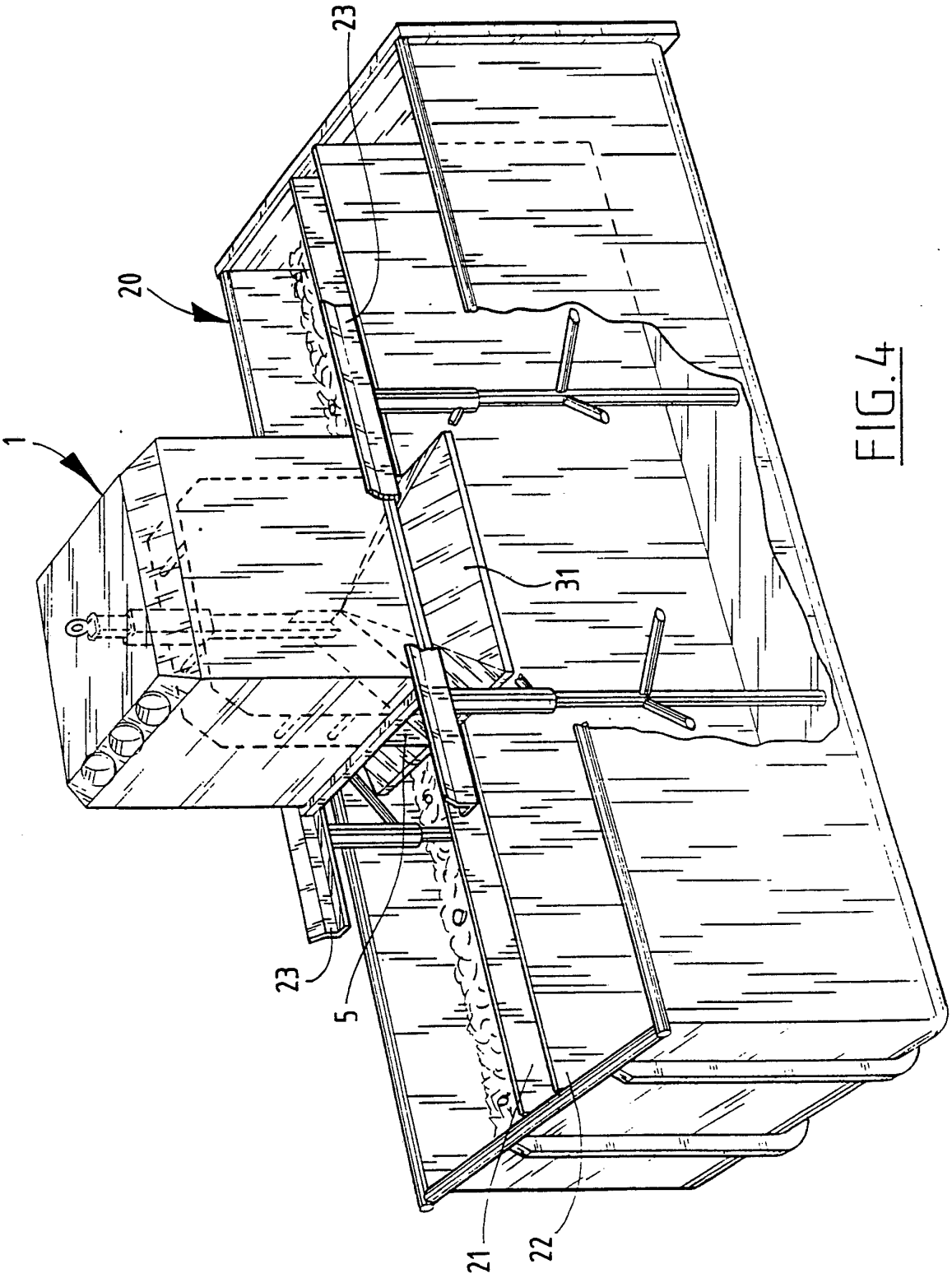

FIG.4

INTERNATIONAL SEARCH REPORT

International Application No PCT/NL 92/00228

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 B65F1/12; B65F1/00; B65F3/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	B65F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	AU,B,559 326 (PAMMENT) 5 March 1987 see claims 1,8; figures 1-4	1,5,6,8, 9
Y		2
X	EP,A,0 045 930 (OLBRICH) 17 February 1982 see page 16, line 25 - page 17, line 22; figures 7-9	1,8
Y		2
A	EP,A,0 166 072 (RUHLAND) 2 January 1986	
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
22 MARCH 1993	- 8. 04. 93
International Searching Authority	**Signature of Authorized Officer**
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

NL 9200228
SA 68594

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
AU-B-559326	05-03-87	None	
EP-A-0045930	17-02-82	DE-A- 3029982	18-02-82
EP-A-0166072	02-01-86	DE-A- 3403824	14-08-85
EP-A-0356833	07-03-90	DE-C- 3829076	28-12-89