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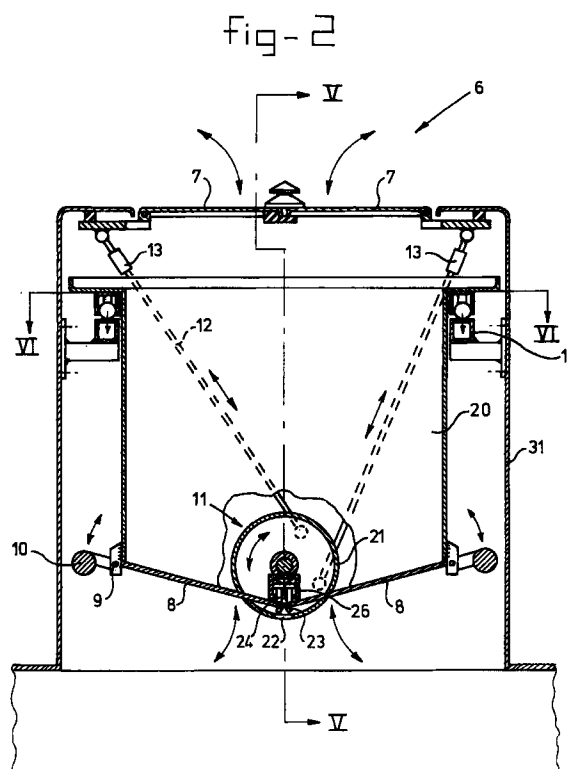
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(54) **Device for individualised introduction of articles such as domestic waste**

(57) Device (6) for individualised introduction of articles such as domestic waste. A lock-like construction is proposed with which, on opening the input flap (7), the discharge flap (8) is forcibly closed by mechanical means (11,12). Immediately after closing the input flap, the discharge flap can be opened, as a result of which domestic waste placed inside automatically falls into a main store (1) and the discharge flap moves back into the closed position by means of a counterweight (10). A locking mechanism (22,23) is connected to the input flap by the mechanical means and obstructs movement of the discharge flap in the rest position when the input flap is in the open position.



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Description

[0001] The present invention relates to a device according to the precharacterising clause of Claim 1.

[0002] A device of this type is disclosed in Swiss Patent 613 668. Waste storage systems which operate with lockable flaps and to which only specific persons have access are disclosed in the prior art. A disadvantage of such a system is that the specific persons can deposit an unlimited quantity of waste or other articles.

[0003] Lock-like constructions have therefore been proposed in the prior art, so that the volume available to the user is restricted. This is achieved by providing a so-called interim storage facility provided with some form of flap construction.

[0004] According to a known proposal on opening the input flap access is given to an interim storage facility and the rubbish sack can be placed therein. By performing a further opening operation for the input flap a mechanism is actuated, as a result of which the waste is deposited from the intermediate storage facility into the main storage container, before the input flap is actually opened.

[0005] Although a system of this type solves the problems outlined above, it has a number of disadvantages. Firstly, it is expensive to construct this and relatively complex. Moreover, the domestic waste remains in the intermediate storage facility between two successive loading cycles. This can lead to odour nuisance.

[0006] In the abovementioned Swiss Patent 613 668 a construction is described wherein movement of the discharge flap is coupled with that of the input flap. That is to say when the input flap is open the discharge flap is forcibly closed and when the input flap is closed the discharge flap is forcibly opened. A complex coupling mechanism is necessary in order to achieve this coupled movement. Moreover, such a mechanism should preferably be constructed such that the closing movement of the discharge flap is effected during the first part of the opening movement of the input flap, because otherwise it is not possible to prevent waste and the like being thrown inside when the input flap is partially open, which waste disappears through the partially open discharge flap into the storage facility underneath.

[0007] This makes the operating mechanism even more complicated. Because the weight of the domestic waste to be introduced can vary appreciably and in general domestic waste is thrown roughly into the intermediate storage facility, a linkage of this type must meet particularly stringent requirements.

[0008] This is why a construction of this type has not been taken up as yet.

[0009] The aim of the present invention is to provide a construction with which the operation of the lock according to Swiss Patent 613 668 is improved, that is to say with which a more lightweight construction can suffice and with which, on the other hand, it is possible in a simpler manner to ensure that the discharge flap is always

completely closed on partial opening of the input flap.

[0010] This aim is realised by means of a device having the characterising features of Claim 1.

[0011] As a result of the use of a locking mechanism, the load on the mechanical linkage is very much lower. After all, when domestic waste is thrown onto the closed discharge flap it is the locking that takes the weight and not the linkage mechanism as in the prior art. Moreover, with a locking mechanism it is easy to create an 'on-off' state, that is to say locking can take place in a simple manner on slight movement of the input flap, so that it is not possible for material to move through the partially open input flap and a discharge flap which is not yet completely locked into the storage facility underneath.

For this purpose it is, of course, necessary that the discharge flap is in the closed position. However, by matching the weight of the domestic waste and the restoring force which acts on the discharge flap to one another in such a way that, under normal conditions, domestic waste always moves into the storage facility after closing of the input flap, it is ensured that, after the input flap has been closed and the latter has been moved in downwards direction, the discharge flap is always in the closed position after the intermediate storage facility has been emptied. This effect can be further intensified by selecting the characteristics of the means for driving back the discharge flap in such a way that, after overcoming an initial movement from the rest position, further opening takes place relatively easily, as a result of which it is ensured that domestic waste resting on the discharge flap is discharged. This is, of course, promoted by the inclined position which the discharge flap will assume on opening. The means for driving the discharge flap into the rest position can be any means known from the prior art, such as springs and the like. However, a particularly robust construction is obtained by means of a balance weight and optimum characteristics can be provided by suitably defining the path of the balance weight in relation to the path followed by the discharge flap on opening.

[0012] The linkage between the input flap and the locking mechanism can be any construction known in the prior art, such as a chain, belt or the like and in an advantageous embodiment consists of a rod assembly.

[0013] The locking mechanism can likewise comprise any known construction, such as a straight path provided with a recess along which a ridge, connected to the discharge flap, moves in such a way that movement of the ridge is not possible when the input flap is in the open position, as a consequence of this opening, and is possible when the input flap is in the closed position.

[0014] According to an advantageous embodiment of the invention, the locking mechanism is, however, constructed as a locking cylinder or locking disc provided with an opening. Elements connected to the discharge flap move (roll) in said cylinder. The discharge flap can be opened only by movement of these elements through the opening in the locking disc. In the closed

position, which is determined by the angular position of the disc or cylinder, forces acting on the discharge flap are transmitted to said disc or cylinder without, however, putting the linkage between input flap and locking device under load. Consequently the linkage can be of relatively lightweight construction.

[0015] Preferably there are two such locking discs or cylinders, one on either side of the flap. Of course, the discharge flap can consist of two discharge flap halves.

[0016] With the construction described above it is not possible to fill the volume of the intermediate storage facility more than once per loading operation. If the number of loading operations is monitored it is possible in this way to charge the particular user of the device.

[0017] According to a further advantageous embodiment, the device described above, and more particularly the intermediate storage facility, is connected to the surroundings via weighing means. In addition to an indication of the volume it is now possible also to obtain an indication of the weight and the user can be charged on the basis of the weight and/or the volume.

[0018] The invention will be explained in more detail below with reference to an illustrative embodiment shown in the drawings. In the drawings:

Fig. 1 shows a general view of a storage device for domestic waste;

Fig. 2 shows a section of the top part of Fig. 1 with the input flap in the closed position;

Fig. 3 shows a section corresponding to Fig. 2 with the input flap open;

Fig. 4 shows a section corresponding to Fig. 2 on closing the input flap and the associated opening of the discharge flap;

Fig. 5 shows a cross-section along the line V-V in Fig. 2;

Fig. 6 shows a cross-section along the line VI-VI in Fig. 2;

Fig. 7 shows a cross-section along the line VII-VII in Fig. 6 and

Fig. 8 shows a detail of part 13 in cross-section.

[0019] In Fig. 1 a storage device is indicated by 1. This device consists of a main storage facility, located below ground level 2, provided with discharge flaps 5 which can be opened, in some manner not shown in more detail, when main storage facility 4 is moved out of opening 3 and positioned above a lorry.

[0020] The input device 6 according to the invention extends above ground level. It can be seen in Fig. 1 that the device is accessible via two hinged lids or input flaps 7. Details of the construction of the input device 6 can be seen from Fig. 2 and the other figures.

[0021] It can be seen from Fig. 2 that the input flaps 7 are hingeably attached to a housing 31. There are discharge flaps 8 at the bottom of housing 31. An intermediate storage facility or chamber 20 is delimited between the input flap 7 and discharge flaps 8. Housing 31 is

anchored via a U section 15, the opening of which faces downwards, such that it is supported on thrust blocks 18 (see Fig. 7), which blocks, in turn, extend through opening 17 made in a relatively rigid pipe 16 in which a hose 27 filled with fluid is located. An inlay plate 28 which counteracts swelling of the hose 27 is located between the hose 27 and pipe 16. As can be seen from Fig. 6, the hose 27 is fitted such that it extends all round and is connected to a pressure sensor 19. That is to say the weight of housing 31 can be recorded via pressure sensor 19.

[0022] Input flap 7 is provided with operating rods 12 fitted close to the ends. Adaptors 13 are incorporated in said operating rods 12 to prevent the position of input flap 7 having an effect on the weight registered. Part 13 is shown in more detail in Fig. 8. It can be seen from this figure that one rod half 32 is provided with a head 33. A sleeve 35 with opening 36 is screwed onto the other rod half 34. The free play in rod 12 can be set by adjusting sleeve 35 with respect to rod half 34. At the other end, operating rods 12 are connected to a disc 11. The latter is provided with a peripheral ring 21 which is completely closed except for an opening 22. In the rest position shown in Fig. 2 this opening 22 faces downwards. Of course, it is possible to position this opening in a different position or to make more openings in alternative embodiments. Opening 22 is sized such that it is able to receive two pins 23, which pins extend close to the ends of the opposing discharge flaps 8. A corresponding disc 11 is fitted at opposing sides of chamber 20.

[0023] The discharge flaps 8 are hingeably attached at 9 and provided with a balance weight 10 which is constructed such that in the non-loaded state the discharge flaps, with the pins 23, strive to make a movement in the upward (closing) direction. During this movement these pins 23 are able to pass through the opening 22 in ring 21 and are in the position shown in Fig. 2.

[0024] Casings 26, in which slidable locking pins 24 loaded with a spring 25 are arranged, are located inside ring 21 and joined to housing 31.

[0025] In the position shown in Fig. 2, the locking pins 24 are pushed upwards by pins 23 and are not operative.

[0026] If, starting from the position according to Fig. 2, the input flaps 7 are opened into the position shown in Fig. 3, the two discs 11 are rotated by operating rods 12. Because the pins 23 are located above the lower boundary of the ring and opening 22 is moved as a result of rotation of ring 21, the pins 23 are no longer able to move downwards because of the lack of an opening in ring 21 and discharge flaps 8 are correspondingly no longer able to move into the open position. A rubbish sack 30 is then placed in chamber 20. Because the shape of the input flap 7 and discharge flaps 8 can be arbitrarily chosen it is possible to take account of the most common form in which the articles concerned are presented.

[0027] After chamber 20 has been filled with, for

example, domestic waste, the increase in weight of the housing 31 can be measured and the weight introduced by the user can thus be determined and, optionally, he can be charged for this. On closing input flaps 7, disc 11, and thus ring 21, rotate back into the position shown in Fig. 2. During this movement the opening 22 moves into the position shown in Fig. 2 but, because the weight on the discharge flaps 8 is greater than the effect of balance weights 10, the discharge flaps 8 will move downwards. As the pins 23 move downwards, the locking pins 24 also move downwards because of the low spring force or as a result of gravity. Consequently it is not possible to open input flaps 7 when the discharge flaps 8 have moved downwards. After all, rotation of ring 21, and thus of disc 11, is prevented because locking pins 24 fill opening 22 and casings 26 are firmly attached to the surroundings.

[0028] It will be understood that by means of an appropriate construction it is possible to obtain a linkage from operating rod 12 and rotation of disc 11 such that locking of the discharge cover 8 actually takes place on slight movement of the input cover in the upward direction. Conversely, on closing the input flap the latter will have to be at least essentially closed in order to release the discharge flap.

[0029] The weighing described above can take place during this closing movement.

[0030] It will be understood that further counterweights and auxiliary (gas) springs can be fitted in order to make both the input flap and the discharge flap easier to operate or better controllable.

[0031] It will also be understood that rubber strips and the like can be present in order to provide as good as possible a seal with respect to the main storage facility 4, as a result of which stench and vermin are given no opportunity in the auxiliary storage facility or chamber 20. Separate ventilation can also be provided. These and further variants are obvious to those skilled in the art after reading the above description and are within the scope of the appended claims.

that said discharge flap cannot be moved out of the closed position when said input flap is in the open position, and wherein said discharge flap is provided with means which drive said flap into the closed position.

2. Device according to Claim 1, wherein said means comprise a balance weight (10).
3. Device according to one of the preceding claims, wherein said mechanical linkage comprises a rod assembly (13).
4. Device according to one of the preceding claims, wherein said rod assembly is connected to at least one locking disc (11).
5. Device according to one of the preceding claims, wherein said intermediate storage facility (20) is connected to the surroundings via weighing means (15-19).
6. Device according to one of the preceding claims, comprising two interacting input and/or discharge flaps.

Claims

1. Device (6) for individualised introduction of articles, such as domestic waste (30), into a container (4) comprising an intermediate storage facility (20) to be fitted on said container, which intermediate storage facility is accessible from the outside via at least one hinged input flap (7) and is provided at the bottom with a hinged discharge flap (8), wherein an operating mechanism (11, 13) is present, comprising a mechanical linkage (13) which is connected to said input flap and controls movement of said discharge flap, characterised in that the operating mechanism (11, 13) comprises a locking mechanism acting on said discharge flap, constructed such that said discharge flap is freely movable when said input flap is in the closed position and

fig- 1

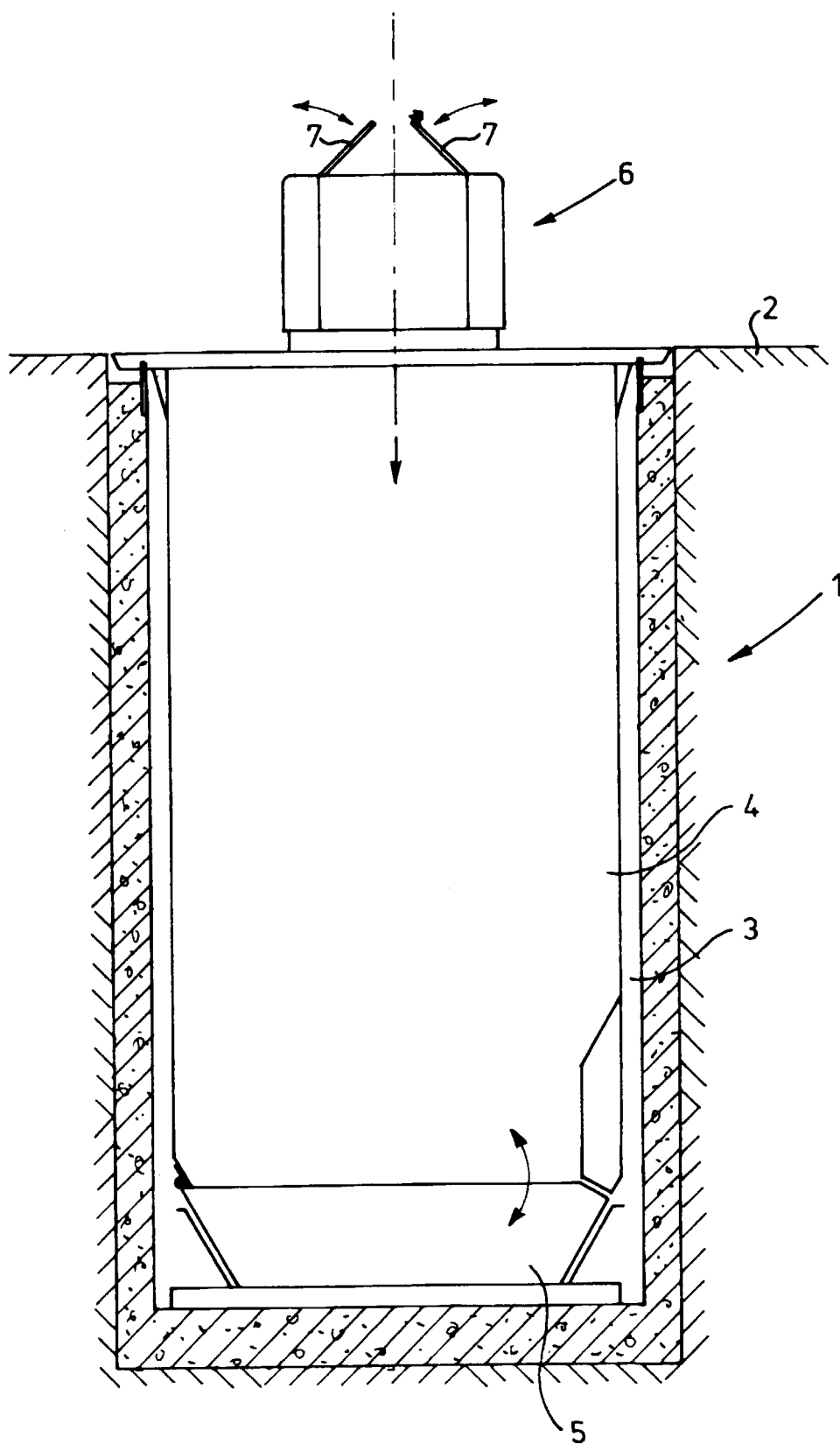


fig- 2

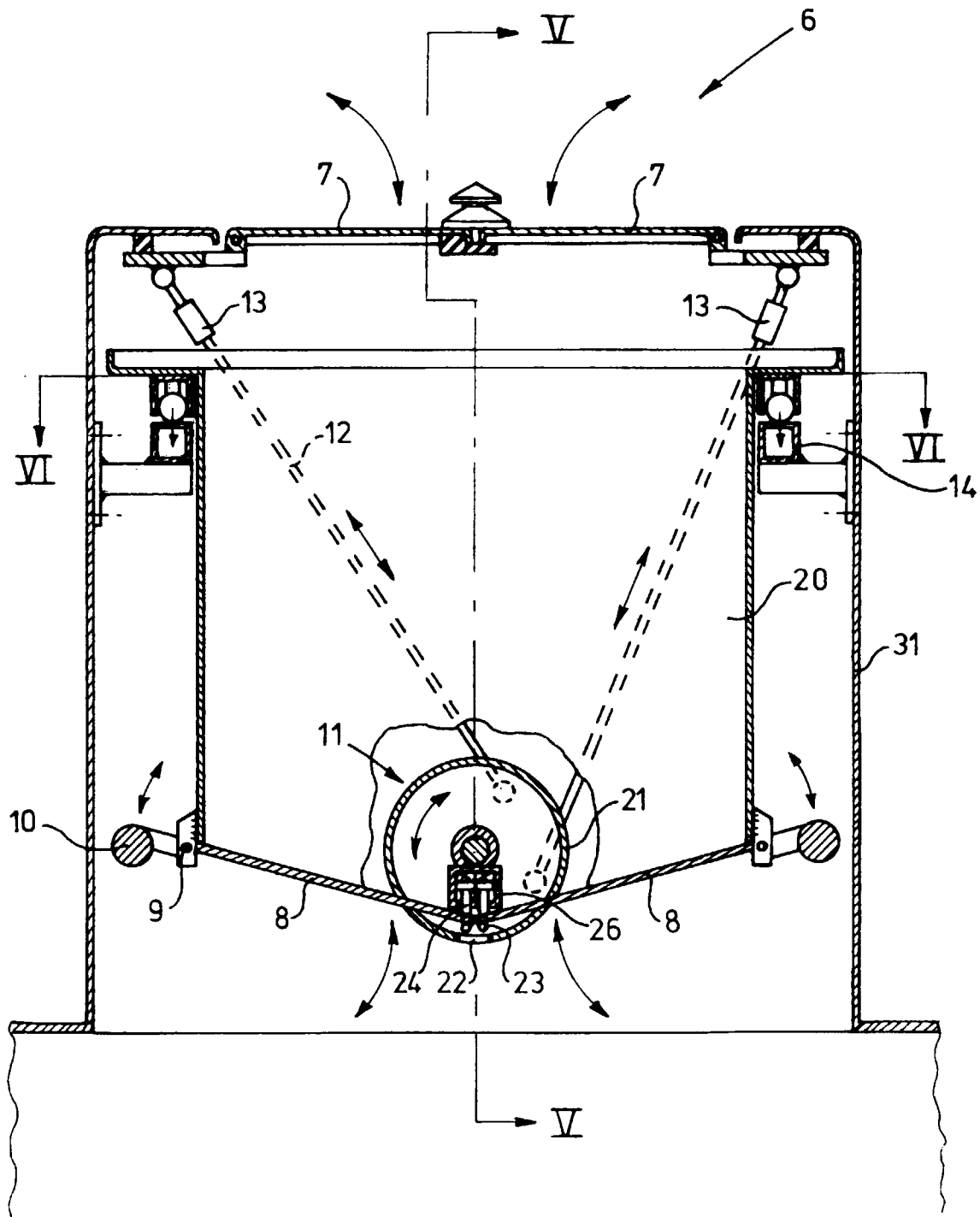


fig - 3

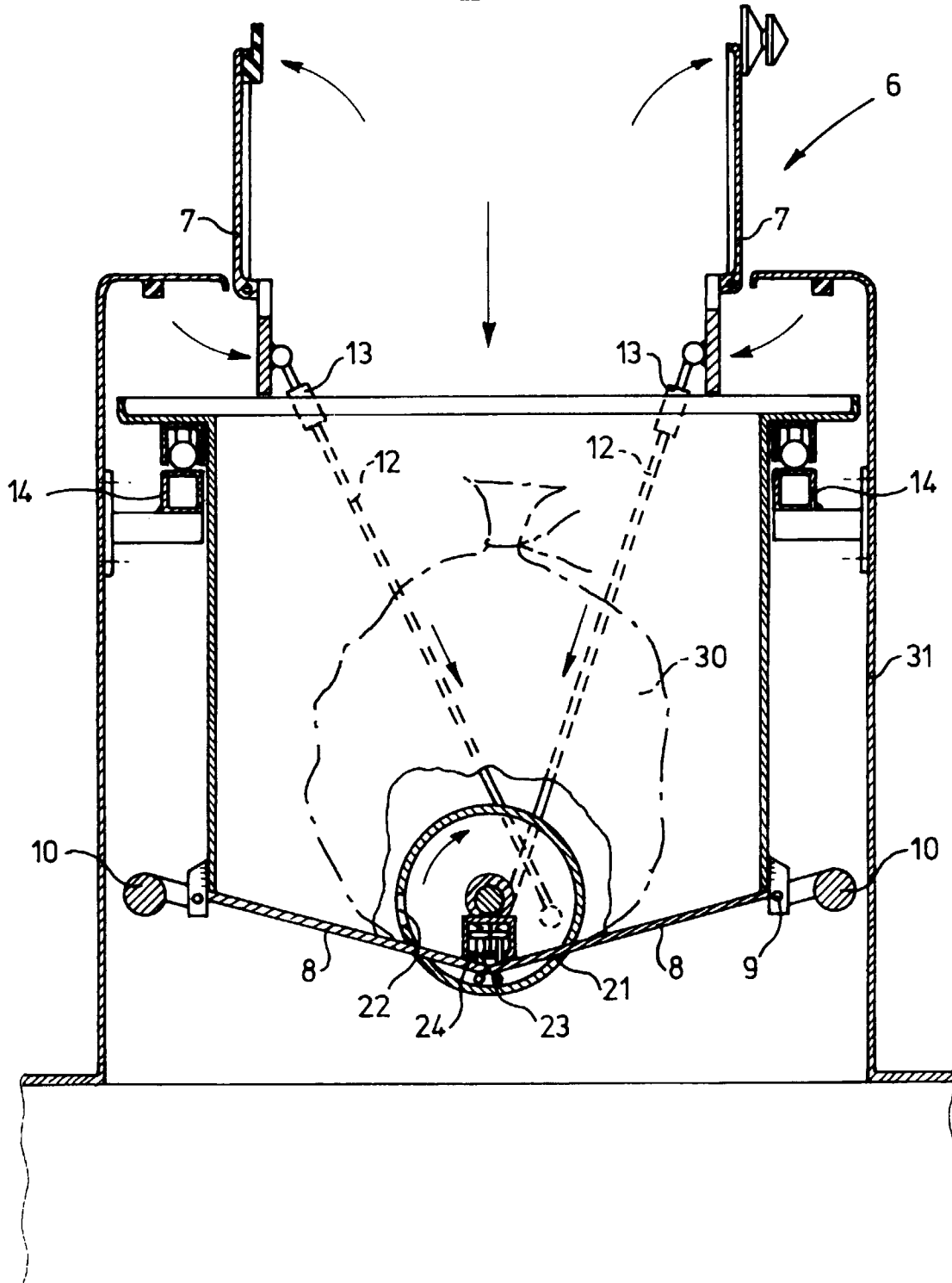


fig - 4

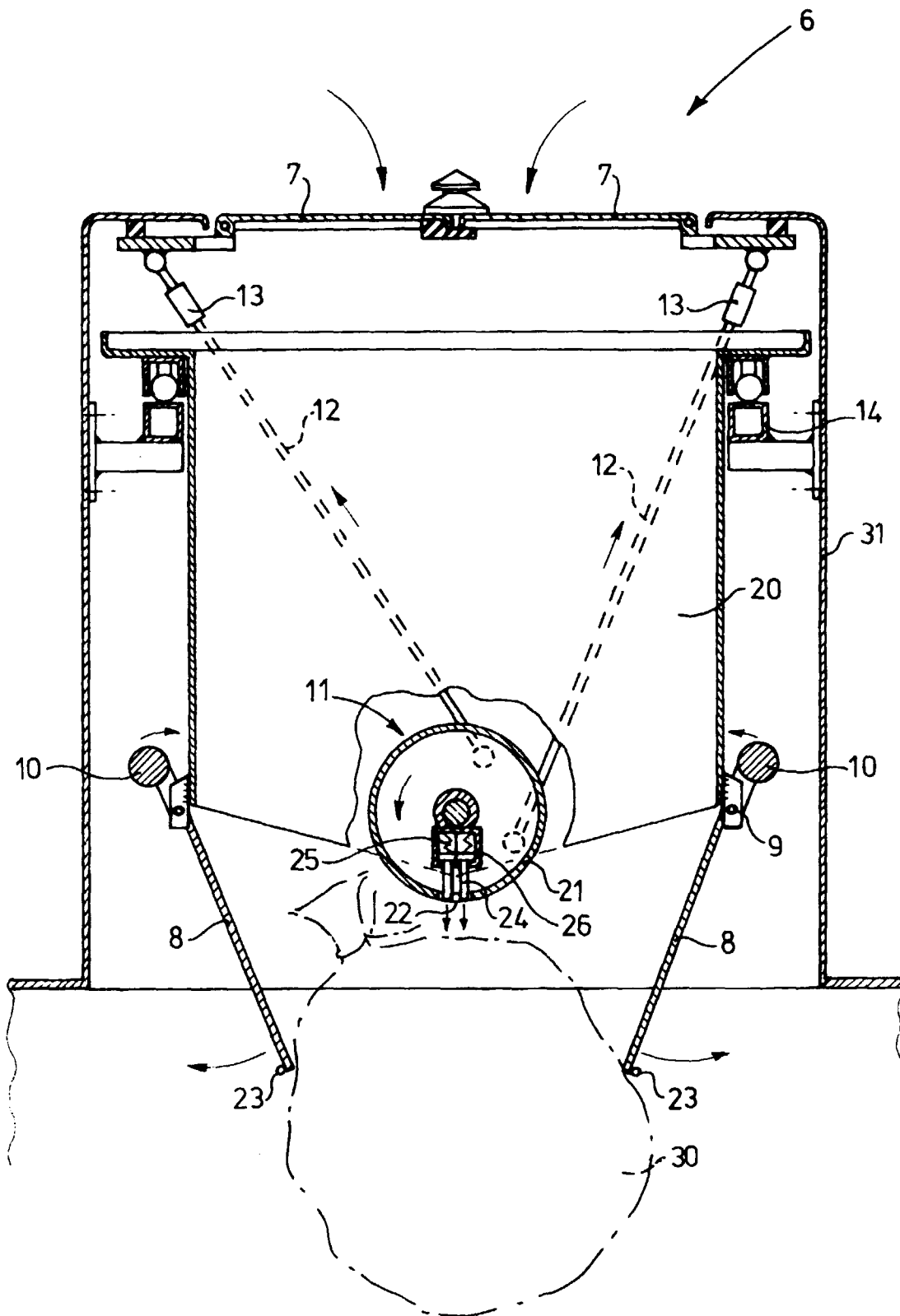


fig - 5

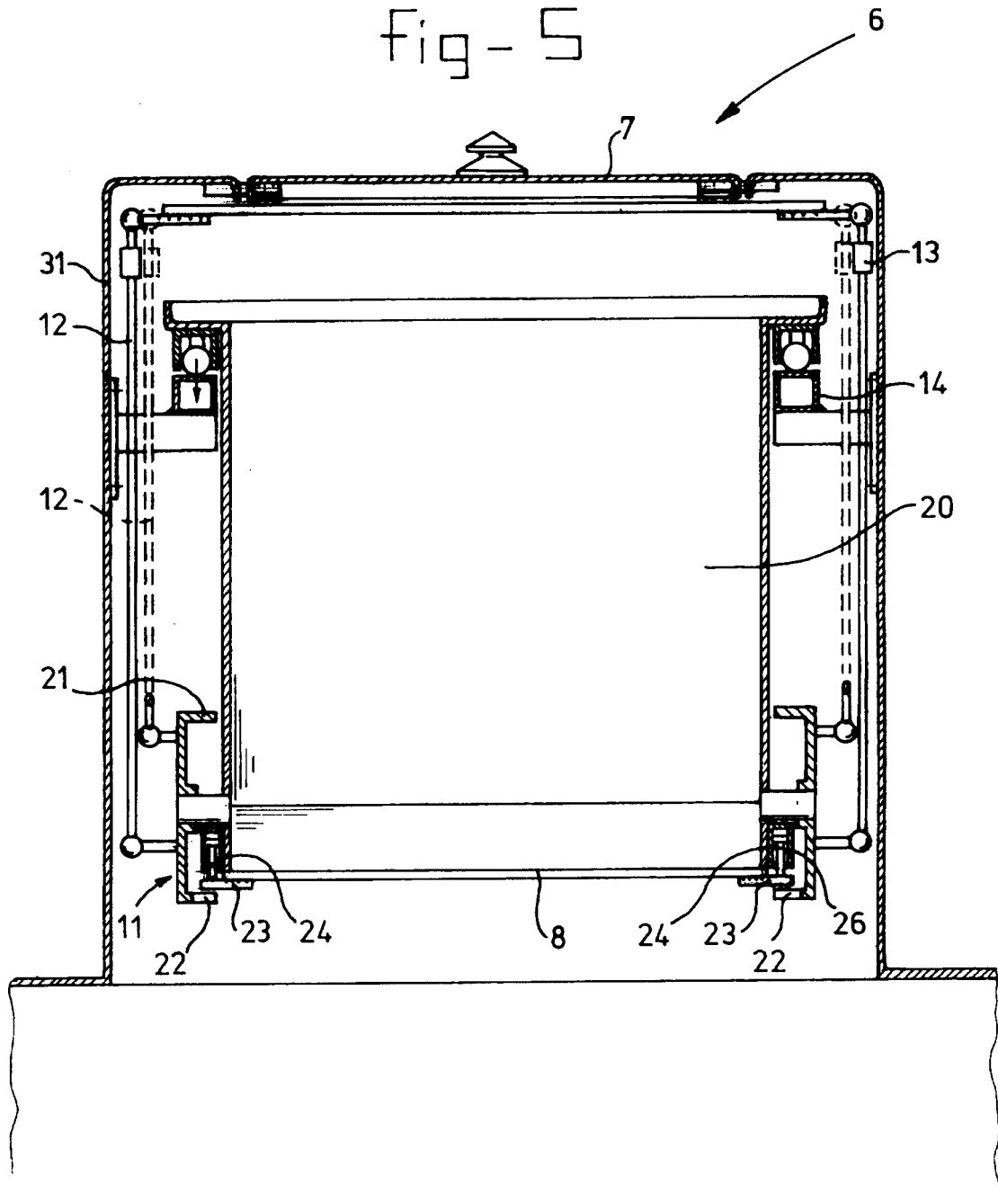


fig - 6

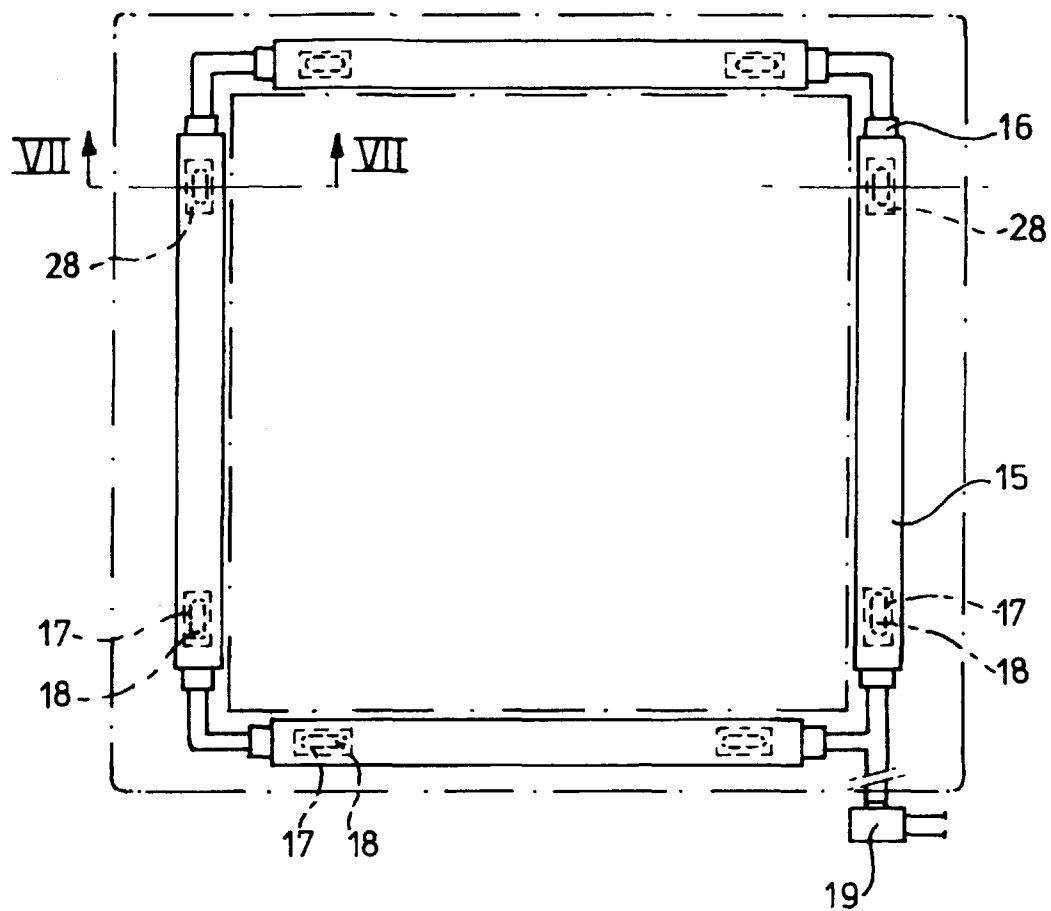


fig - 7

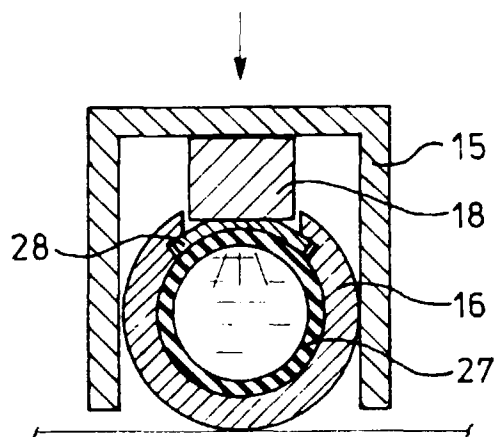
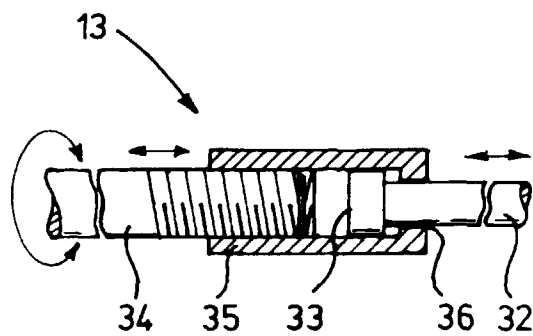


fig - 8





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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 4158

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,X	CH 613 668 A (W. SCHWEIZER) 15 October 1979	1,3,4,6	B65F1/10
Y	* page 3, right-hand column, line 38 - page 4, right-hand column, line 20 * * figures 10,11 *	2,5	
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Y	DE 296 11 870 U (ALOIS PÖTTINGER MASCHINENFABRIK GMBH) 29 August 1996 * page 5, line 13 - page 7, line 26; figure 2 *	5	
A	DE 44 39 503 A (M. EISELSBERGER) 9 May 1996 * column 2, line 59 - column 3, line 63 * * figures 1A,1B *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65F
Place of search THE HAGUE		Date of completion of the search 6 April 1999	Examiner Smolders, R
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 98 20 4158

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06-04-1999

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