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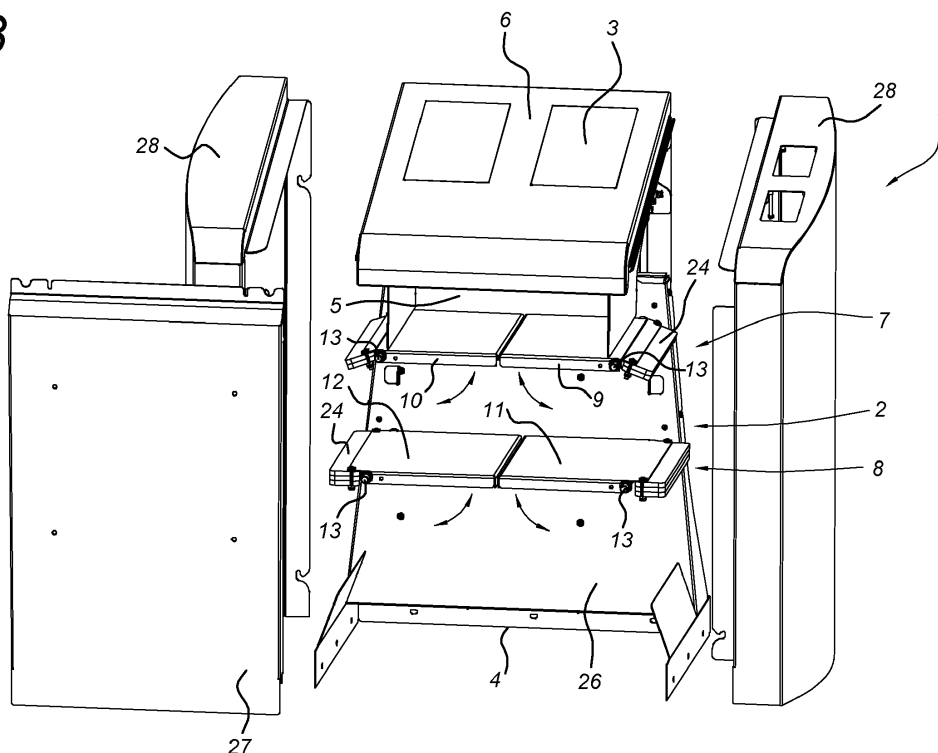
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(54) **Filling lock**

(57) A filling lock (1) for interacting with a receiving container for inserting products, such as waste, comprises a housing (2) with a passage (19), at the upper end (3) of which there is a lid (6). At a distance below the upper end (3) closure means (7,8) are provided. The lid (6) is displaceable between an open position for inserting waste and a closed position. The closure means (7,8) are displaceable between a closed position for determining

ing a holding volume between the upper end (3) and the closure means (7,8) which are in the closed state, and an open position for discharging waste from the passage (19). Furthermore, the closure means are provided with at least two closing elements (7,8) which are situated at different distances below the upper end (3) of the passage (19) for determining different holding volumes associated with those different distances.

Fig 3



Description

[0001] The invention relates to a disposal lock, which can be made to interact with a receiving container for inserting products, such as waste, which disposal lock comprises a housing with a passage, at the upper end of which there is a lid and at a distance below which upper end closure means are provided, which lid is displaceable between an open position for inserting waste and a closed position, and which closure means are displaceable between a closed position for determining a holding volume between the upper end and the closure means which are in the closed position, and an open position for discharging waste from the passage, as well as means for varying the holding volume.

[0002] Such a disposal lock is known from European patent application 915,035. The closure means of this known disposal lock consist of two mutually opposite flaps which are in a horizontal position in the closed state and are directed vertically in the open state. These flaps can also be moved up and down by means of a special control device. As a result thereof, the total available volume for holding waste in the disposal lock can be varied. If the flaps are moved to a high position, only a relatively small amount of waste can be accommodated in the disposal lock each time. By contrast, a relatively large amount of waste can be accommodated in the disposal lock if the flaps are situated in a lower position.

[0003] These different positions can be selected by the user; depending on the selected volume, the costs for disposing of the waste can be charged to the user. Although this known disposal lock thus offers the possibility of charging differentiated costs, depending on the amount of disposed waste, this known device has several drawbacks. For the purpose of varying the volume, a separate adjustment device is required which, inter alia, comprises electric motors with associated switches and the like. In addition, the adjustment device has to be sufficiently strong and solid to be able to resist the forces which occur when waste is being inserted. Furthermore, it is a drawback that controlling the adjustment device requires a relatively large amount of energy, as a result of which the disposal lock is less suitable to be used with a battery and disconnected from the electricity network.

[0004] In view of these requirements and the rough conditions which prevail in the area where the adjustment device is situated, there is a considerable risk of failures. Thus, the adjustment device may become blocked by trapped waste. In addition, the costs of such an adjustment device are rather high.

[0005] It is therefore an object of the invention to provide a disposal lock of the type mentioned in the preamble which offers the possibility of differentiating according to the amount of waste to be inserted, and which furthermore has a strong and trouble-free construction and requires little power for its operation. This object is achieved by the fact that the closure means comprise at least two closing elements which are situated at different distances

below the upper end of the passage for determining the different holding volumes associated with those different distances.

[0006] Depending on the number of closing elements which are situated above one another, it is possible to select a corresponding number of different holding volumes for the waste with the disposal lock according to the invention. However, the closing elements used for this purpose are at a fixed level, so that no separate adjustment means are required in order to vary the volume for the waste to be inserted. Although this volume is not continuously adjustable, it is sufficient, in practice, if the user can choose, for example, from two different holding volumes. Of course, it is also possible to provide a correspondingly larger number of holding volumes by placing three or more closing elements above one another.

[0007] In order to ensure that the disposal lock is protected against molestation and the like, one of the closing elements can be permanently closed. Thus, free access to the receiving container from outside is prevented at all times.

[0008] For the purpose of controlling the closing elements, only the proven, known control mechanisms are required, thus making it possible to largely eliminate the risk of failures. In addition, the costs of such standard components are relatively low.

[0009] Preferably, regulating means are provided for regulating the closing elements in such a manner that in the closed position of a closing element which is situated at a greater distance from the upper end of the passage than another closing element, said other closing element is opened in order to provide a relatively large holding volume. When the holding volume with the smallest volume is selected, only the associated closing element has to be closed and the remaining closing elements can be open or closed. When disposing of the waste in said receiving element with the smallest volume, all other closing elements will obviously also have to be opened. To this end, the regulating means are programmed in such a manner that such a procedure takes place automatically.

[0010] The closing elements may be configured in different ways; preferably they comprise at least one flap which is pivotable about a substantially horizontal axis. In particular, each closing element may also comprise two such flaps. Alternatively, however, it is also possible to use sliding flaps. The flaps may be flat, but a variant in which the flaps are dish-shaped is possible. Such a dish may, for example, have a convex or an elliptic shape or the like. Shapes produced by connecting flat flap parts at an obtuse angle to one another are likewise possible.

[0011] The operation of closing elements situated one above the other may be effected in a relatively simple manner. By way of example, the embodiment in which each flap is connected to a lever, the free end of which is connected, via a rod, to a tumbler which can be driven by means of an electric motor. In this case, the a tumbler may have two mutually opposite ends on either side of

its rotary shaft, each of which is connected to a lever of a respective flap via a rod. Such an embodiment has the advantage that little noise is generated during use, due to the controlled movements of the closing elements during opening and closing.

[0012] An embodiment is known in which a control element is provided which is displaceable along the housing. With the invention, it is possible to move a flap at a relatively large distance from the upper end of the passage into the closed state by placing said control element in a first position and by placing it in a second position which is offset with respect to the first position, a flap at a relatively small distance from the upper end of the passage can be moved into the closed state.

[0013] In addition, the control element as such may be configured in such a manner that it keeps the flap at a relatively large distance from the upper end of the passage in the closed state while controlling the flap at a relatively small distance from the upper end of the passage using said control element.

[0014] For the purpose of achieving the desired operation of the disposal lock, the lid is preferably coupled to the closing elements in such a manner that the lid can only be moved into the open position if at least one of the closing elements is closed. Furthermore, the lid and the closing elements may be controlled by means of an electronic reading device.

[0015] If more than two closing elements are used one above the other, these may also be controlled by means of one of the abovementioned control elements, in which case the holding volume can again be selected by keeping the lower closing elements closed and keeping the upper closing elements open. If each closing element has a separate control mechanism which operates independently from the other control mechanisms, it is possible to only close that closing element which is associated with the selected holding volume, and to always keep the other closing elements in the open position.

[0016] The invention furthermore relates to a waste-collection device which comprises a disposal lock as described above and a receiving container, wherein the lower end of the disposal lock cooperates with the receiving container.

[0017] The disposal lock may be powered by means of a solar panel and a battery; alternatively, the disposal lock may also be powered by the electricity network.

[0018] The invention will now be explained in more detail with reference to an exemplary embodiment illustrated in the figures, in which:

Fig. 1 shows a front view in perspective of the disposal lock according to the invention;

Fig. 2 shows a rear view in perspective of the disposal lock according to the invention;

Fig. 3 shows a variant of the housing, in perspective with the parts separated;

Fig. 4 shows a further variant of the control device.

[0019] The disposal lock 1 illustrated in Figs. 1 and 2 consists of a housing 2 which extends between the upper end 3 and the lower end 4. The upper end also comprises the disposal opening 5, which is closed off by the lid 6.

[0020] A first closing element 7 is attached to the housing 2 at a relatively high level, and a second closing element 8 at a relatively low level. It is possible to fit further closing elements at lower levels. The first closing element 7 consists of the flaps 9, 10 while the second closing element consists of the flaps 11, 12. Each flap 9-12 is attached to a pivot pin 13, in such a manner that these can be moved between the open, vertical position illustrated in the figures, and a horizontal, closed position. At one end of each pivot pin 13, there is an arm 14 for moving the flaps 9-12 between their open and closed position.

[0021] The control plate 15 is provided for the purpose of moving the flaps 9-12. This control plate 15 has two lugs 16. The control plate 15 can be moved up and down inside the guide rails 17 which are attached to the housing 2. The control plate 15 can be moved up and down by means of the motor 18 and a transmission (not shown).

[0022] In the position illustrated in Figs. 1 and 2, the control plate 15 is in the lower position. Both closing elements 7, 8 are then in the open position. When the control plate 15 is pushed upwards, the lugs 16 come into contact with the arms 14 of the flaps 11, 12 of the lower closing element 8. As a result thereof, the lower closing element 8 closes, in such a manner that a relatively large holding volume in the passage 19 in the housing 2 is defined. When the control plate 15 is moved further upwards, more of its lugs (which are situated at a higher level on the other side of the control plate 15 than the side on which the lugs 16 are situated) come into contact with the arms 14 of the flaps 9, 10 of the upper closing element 7, which consequently also closes. Thus, a relatively small holding volume in the passage 19 is defined.

[0023] In the variant from Fig. 4, another control mechanism for the flaps 9, 10 and 11, 12, respectively, is illustrated. This control mechanism consists of the electric motor 20 which, via a reduction 30, crank 29 and connecting rod 21, is connected to the twin-armed tumbler 22. On both arms of said tumbler 22, an actuating rod 23 is attached, the other end of which is coupled to the lever 25 of a respective flap 9-12. By operating the electric motor in a suitable manner, the associated flaps 9, 10 and 11, 12, respectively, can be opened or closed. Masses 24 are also attached to the flaps which have a balancing effect.

[0024] As is illustrated in the cross section of Fig. 3, the passage through the housing 2 may be configured to widen from the top to the bottom. The pivot pins 13 of the lower flaps 11, 12 are therefore further apart than the pivot pins 13 of the upper flaps 9, 10. As a result thereof, the risk of blockages in the passage when waste passes through has been significantly reduced. Such a downwardly widening passage is also possible in the case of the embodiment from Figs. 1 and 2.

[0025] In the exploded view of Fig. 3, the flaps 9, 10

of the upper closing element 7 are shown in the open position, flaps 11, 12 of the lower closing element 8 of the lower closing element 8 are closed, so that, in said position, the disposal lock 1 is suitable for accommodating a relatively large amount of waste. The flaps 11, 12 of the upper closing element 7 in said position thus form the lateral boundary of the disposal volume. In the open position, they diverge slightly in the downward direction, thereby determining the thus widening passage.

[0026] As has already been mentioned, Fig. 3 shows the disposal lock 1 in the exploded state. In the assembled state, the back wall 26, the front wall 27 and the flaps 11, 12 of the upper and lower closing element define the passage through the disposal lock. Furthermore, the disposal lock has side walls 28 which adjoin the front wall 27 and the back wall 26.

[0027] Although a specific embodiment has been described above for driving the flaps, this can also be configured in different ways. Thus, it is, for example, also possible for the tumbler to be driven by means of a tooth sector which is attached thereto, and which is in engagement with a pinion which is mounted on the shaft of the electric motor, possibly via a reduction.

List of reference numerals

[0028]

1. Disposal lock
2. Housing
3. Upper end of housing
4. Lower end of housing
5. Disposal opening
6. Lid
7. Upper closing element
8. Lower closing element
- 9-12. Flap
13. Pivot pin of flap
14. Arm
15. Control plate
16. Lug
17. Guide rail
18. Drive motor

19. Passage in housing
20. Electric motor
21. Connecting rod
22. Twin-armed tumbler
23. Rod
24. Mass
25. Lever
26. Back wall of disposal lock
27. Front wall of disposal lock
28. Side wall of disposal lock
29. Crank
30. Reduction

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Claims

1. Disposal lock (1) which can be made to interact with a receiving container for inserting products, such as waste, which disposal lock comprises a housing (2) with a passage (19), at the upper end (3) of which there is a lid (6) and at a distance below which upper end (3) closure means (7, 8) are provided, which lid (6) is displaceable between an open position for inserting waste and a closed position, and which closure means (7, 8) are displaceable between a closed position for determining a holding volume between the upper end (3) and the closure means (7, 8) which are in the closed position, and an open position for discharging waste from the passage (19), as well as means for varying the holding volume, **characterized in that** the closure means comprise at least two closing elements (7, 8) which are situated at different distances from the upper end (3) of the passage (19) for determining the different holding volumes associated with those different distances.
2. Lock (1) according to Claim 1, wherein control means are provided for regulating the closing elements (7, 8) in such a manner that in the closed position of a closing element (8) which is situated at a greater distance from the upper end (3) of the passage (19) than another closing element (7), said other closing element (7) is opened in order to provide a relatively large holding volume.
3. Lock (1) according to Claim 1 or 2, wherein each closing element (7, 8) comprises at least one pivoting

flap (9-12).

4. Lock (1) according to one of the preceding claims, wherein each closing element (7, 8) comprises at least two opposite pivoting flaps (9-12). 5
5. Lock (1) according to Claim 3 or 4, wherein the distance between the pivot pins of the flaps (9-12) of different closing elements (7, 8) is at least equal to the dimensions of a flap (9-12) transversely to the pivot pin. 10
6. Lock (1) according to one of Claims 3-5, wherein each flap (9-12) is connected to a lever (25), the free end of which is connected, via a rod (23), to a tumbler (22) which can be driven by means of an electric motor (20). 15
7. Lock (1) according to Claim 6, where dependent on Claim 4, wherein the tumbler (22) has two mutually opposite ends on either side of its rotary shaft, each of which is connected to a lever (25) of a respective flap (9-12) via a rod (23). 20
8. Lock (1) according to one of Claims 3-5, wherein a control element (15, 16) is provided which is displaceable along the housing (2), by means of which control element (15, 16) it is possible to move a flap (11, 12) at a relatively large distance from the upper end (3) of the passage (19) into the closed state by placing said control element in a first position and by placing it in a second position which is offset with respect to the first position, a flap (9, 10) at a relatively small distance from the upper end (3) of the passage (19) can be moved into the closed state. 25
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9. Lock (1) according to Claim 8, wherein the control element (15, 16) is configured to keep a flap (11, 12) at a relatively large distance from the upper end (3) of the passage (19) in the closed position and to operate a flap (9, 10) at a relatively small distance from the upper end (3) of the passage (19). 40
10. Lock (1) according to one of the preceding claims, wherein the lid (6) is coupled to the closing elements (7, 8) in such a manner that the lid can only be moved into the open position if at least one of the closing elements is closed. 45
11. Lock (1) according to one of the preceding claims, wherein the lid (6) and the closing elements can be controlled by means of an electronic reading device. 50
12. Lock according to one of the preceding claims, wherein the passage, viewed from the top down, is configured to become wider. 55
13. Lock according to Claim 12, wherein the lower clos-

ing elements (8) are larger in size than the upper closing elements (7).

14. Lock according to Claim 12 or 13, wherein the pivot pins (13) of flaps (11, 12) which are situated in a lower position are at a larger mutual distance than the pivot pins (13) of the flaps (9, 10) which are situated in a higher position.
15. Waste-collection device, comprising a disposal lock (1) according to one of the preceding claims and a receiving container, wherein the lower end of the disposal lock cooperates with the receiving container.

Fig 1

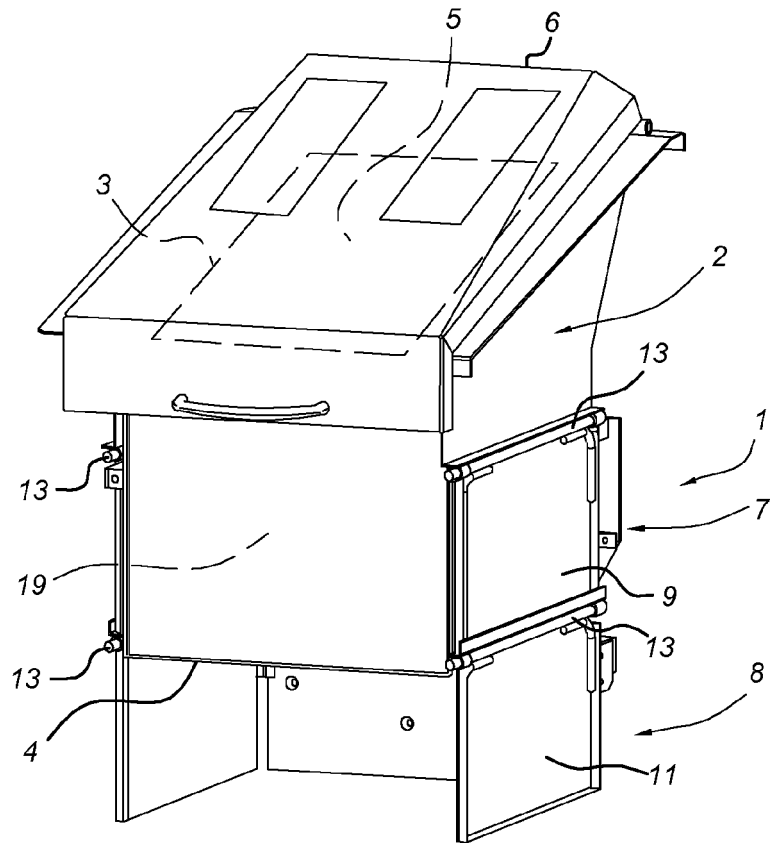
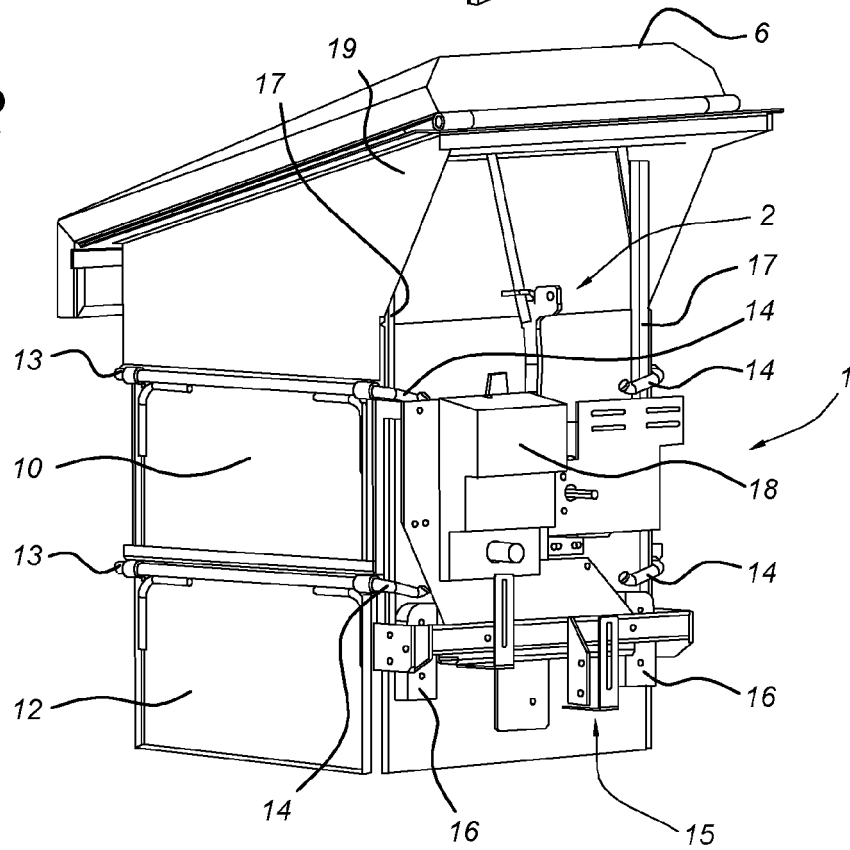


Fig 2



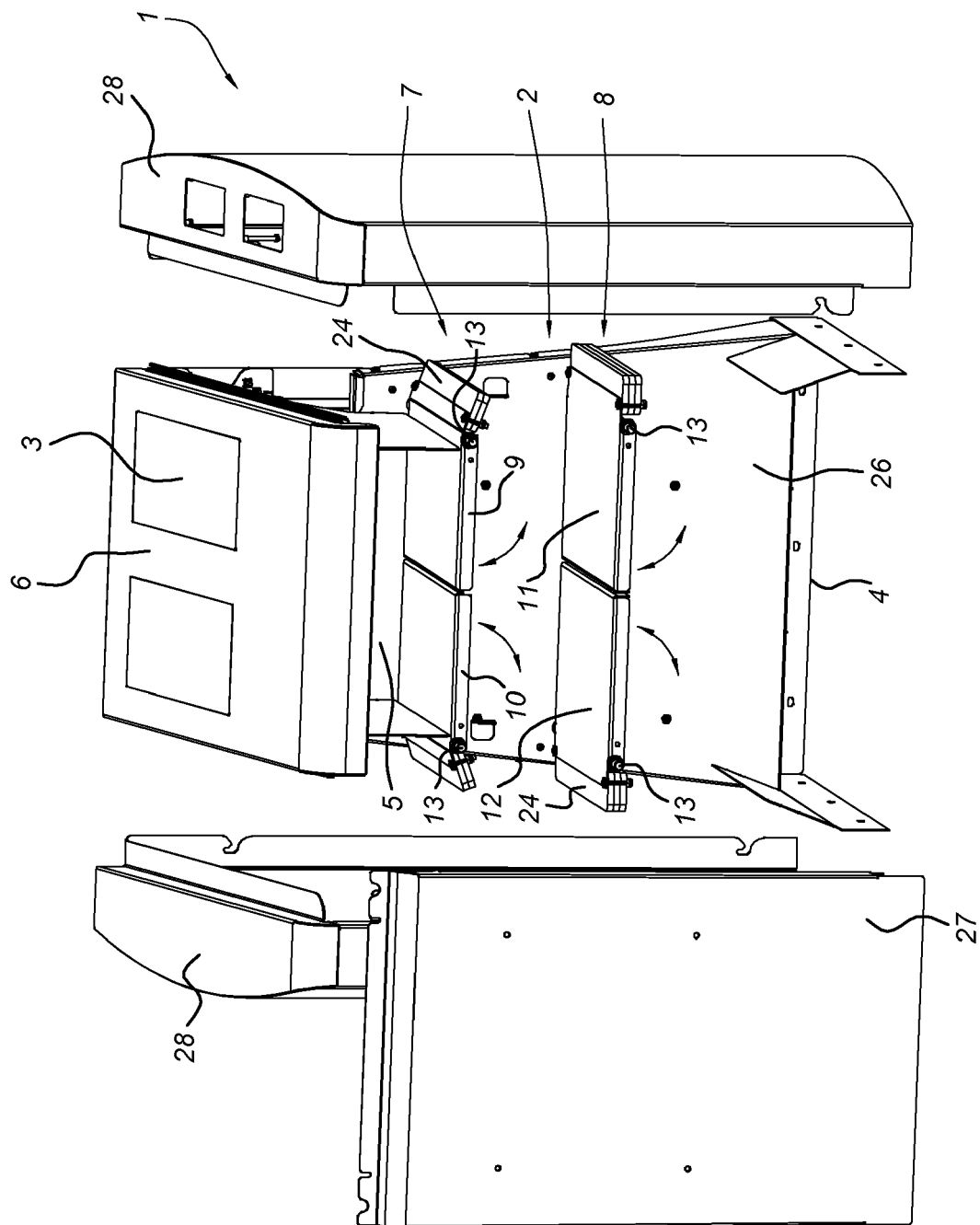
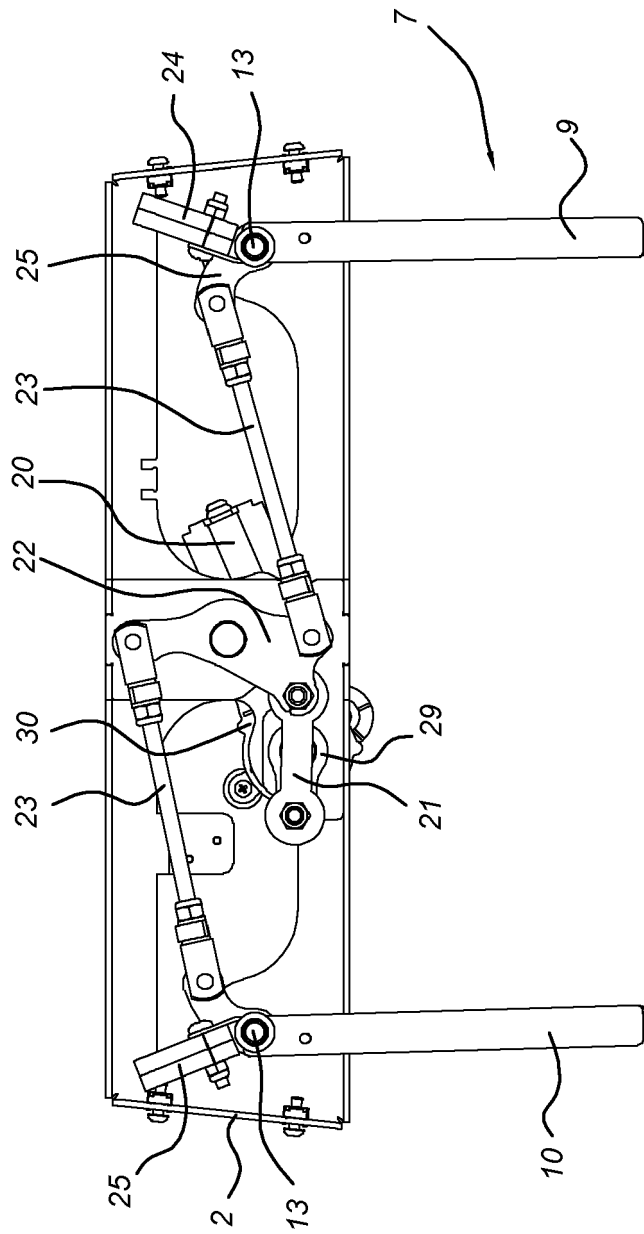


Fig 3

Fig 4





EUROPEAN SEARCH REPORT

Application Number
EP 11 18 4586

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	EP 0 915 035 A1 (MONDOTECH S.A.) 12 May 1999 (1999-05-12) * paragraph [0028] - paragraph [0034] * * figures 1-3 * -----	1,15	INV. B65F1/10
			TECHNICAL FIELDS SEARCHED (IPC)
			B65F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 January 2012	Examiner Smolders, Rob
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (F04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 18 4586

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19-01-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0915035	A1	12-05-1999	NONE

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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