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54 **Container loading and emptying device for a refuse vehicle.**

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DE-C- 432 470
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Description

The invention relates to a loading and emptying device for a refuse vehicle comprising an endless carrier, running in a substantially vertical plane, one or more pick up members attached to the endless carrier and tilting means for tilting a container.

Such a device is known from the German Patent 432.470. This known device has an endless carrier, consisting of two parallel chains, running in the longitudinal direction around the body of a refuse vehicle. Pairs of T- or U- shaped hooks are fixedly connected to the chains, which serve as pick up members for refuse containers. A refuse container with a rod extending at both sides, is placed on a raised platform at the back of the refuse vehicle with the extending parts of the rod close to the endless carrier. The next pair of hooks pick up the container and transport it along the path of the endless carrier.

The container is brought into an inverted position by putting it over a steep bulge, whereby immediately after passing the top of the bulge it lands on a spring supported plate, in order to prevent it from falling out of the hooks. After passing the refuse collecting compartment of the vehicle the container reaches the downwardly directed part of the path of the endless carrier, where it falls out of the hooks and with the extending parts of the rod into a pair of arc shaped guides upwardly directed, where it returns to its starting position.

One of the disadvantages of this known device is that the pick up member consisting of a pair of hooks, is fixedly connected to the endless carrier, so that in order to tilt the container, the container has also to be repositioned relative to the pick up member. Furthermore the freedom of movement of the container is restrained by the chains of the endless carrier as a result of which the container has to be dropped out of the hooks in order to get it back to its starting position.

The container returns to its starting position at the front of the refuse vehicle. Because controlling the movement of the container requires a lot of space, tilting it through an angle of 180° and back again over the same angle; this known device is not suited to be placed at for instance the backside of a refuse vehicle.

In order to overcome these disadvantages it is provided according to the invention that the pick up member or pick up members are rotatably mounted on an attachment member or members, attaching the pick up member or members to the endless carrier by means of said attachment member or members, the axis of rotation being perpendicular to the plane of the endless carrier and the endless carrier having two horizontal parts and two vertical parts, and in that the tilting means consist of rolls on the pick up member or members and bosses and/or guides on the device, cooperating with said rolls, whereby the pick up mem-

ber or members rotate through an angle of 180° or more at the angular points between the upper horizontal part and the two vertical parts and/or along the beginning and end of the upper horizontal part, the pickup member or members turning through an angle of 360° along the path of the endless carrier.

Herewith it is possible to secure the container to a pick up member, which member can rotate freely relative to the endless carrier.

The container reaches its inverted position at the upper horizontal part of the path where it is emptied in a receiving member of the refuse vehicle. Because the container is tilted in two controlled steps through an angle of 360°, in order to empty the container and to bring it back in its starting position, the space needed for the device can be small enough to be able to locate the device at the backside of the refuse vehicle.

From U.S. Patent 4,090,626 a container loading device is known with two parallel endless chains and a pick up member with U-shaped hooks connected to each other by a beam. The hooks are to engage support means of a container which can be secured in the hooks. The container goes upwardly to an inverted position and back to its starting position along the same path.

Also with the device of U.S. Patent 4,219,298 the container goes the same way back as it was lifted. Here the pick up member moves up and down a chain by means of a hydraulic motor in the pick up member.

With both these devices the pick up member follows back the same path as it came up. This means that before the next container can be handled, the last container has to be brought back to its starting position and to put aside. In practice this means that the time passed between the emptying of two successive containers, equals the time needed to get the container down, take it away, collecting the next container and bringing it up to its inverted position.

With the invention there is no need to wait until a container is emptied and put back to its starting position before a next container can be handled. This means that the time between the emptying of two successive containers can be much shorter than with the systems of the U.S. patents mentioned above, and consequently a refuse vehicle with the device according to the invention can empty far more containers per day than with one of the other known devices.

According to a first embodiment of the invention it is provided that the tilting means consists of a boss in each of the corners between the upper horizontal and the two vertical parts of the path of the endless carrier and two rolls mounted on the pick up member on either side of the pivot point thereof, whereby the respective rolls engage the respective bosses with the movement of the pick up member through the upper bends of the path of the endless carrier.

Herewith, together with a guide for both rolls on

the pick up member mounted between the two tilting points, a controlled movement of the container is obtained.

The lower horizontal part of the path of the endless carrier is mounted at such a height, that there the pick up member is no longer in engagement with the container. A container is picked up at the beginning of a vertical part of the path of the endless carrier where guides may be mounted to guide the container to the right position and is put back at the end of the other vertical part of the path, because the container touches the ground before the pick up member reaches the lower horizontal part of the path.

Shortly after the container is picked up it is secured to the pick up member, for instance with a clamp over the pick up cam. The clamp is put into and out position when it passes certain points along the path of the endless carrier, which is a system known per se with refuse container loading devices.

Also a receiving member is provided, which is mounted beneath the upper horizontal part of the path of the pick up member and which is in downward direction at least partly funnel-shaped. The receiving member extends from one side of the loading device to the other side thereof, where it connects to the usual receiving section of the refuse vehicle.

In order to ensure that the cover of the container is only then released when the container is directly above the receiving member, the invention provides that at the upper bends in the path of the endless carrier guides for a cover of the container are mounted, extending from where the tilting starts to outside of the receiving member. With these guides the cover of the container is guided from a closed position to a totally opened position and back to a closed position before reaching the next tilting phase of 180°.

These guides also enable to operate the device in a clockwise direction as well as in a anti-clockwise direction.

According to a preferred embodiment of the invention it is provided that the tilting means consists of rolls on the pick up member, one at either side of its pivot point, a protruding part of the pick up member at a distance from the pivot point parallel to the pivot axis of the pick up member, which lies against the endless carrier along the vertical parts of the path thereof, and guides for the rolls and the protruding part of the pick up member which are mounted symmetrically with a vertical plane of symmetry intersecting the plane of the endless carrier perpendicular in the middle, whereby the guides for the protruding part are destined to tilt the pick up member from a normal or tilted position to an overturned position or vice versa and the guides for the rolls to tilt the pick up member from an overturned position to an inverted position or vice versa.

With this embodiment the top of the container is already above the receiving member when the con-

tainer is only just slightly tilted, so that the danger exists of refuse dropping besides the receiving member.

To increase the stability of the system it is provided that further supporting means are provided consisting of a roll between the pick up member and the endless carrier, rotatable around the pivot axis of the pick up member, a supporting beam therefor and an U-shaped guideway for the end of the attachment member or members, protruding at the other side of the endless carrier, the supporting beam and the U-shaped guideway extending at least along the greater part of the upper horizontal part of the path of the endless carrier.

This together with an endless carrier consisting of two endless chains, running in parallel planes and connected to each other with the protruding part or parts of the attachment member or members, provides that the movement of the container along the path of the endless carrier is very well controlled and that no dangerous swaying of the container in any position can occur.

Because the system is totally symmetrical it can be operated in a clockwise as well as in a anti-clockwise direction.

The invention also provides that the wall of the receiving member has at least one detachable part. Herewith it remains possible to collect refuse offered in any other way than in containers for example in bags, boxes or as big, separate items, whereby the refuse can be brought into the refuse vehicle at the usual height for this way of collecting refuse.

With the device according to the invention it is also possible to collect separated refuse, for example in a organic and a non-organic component at the same time.

A first possibility is to mount two loading devices next to each other, whereby each receiving member connects to its own compartment of the refuse vehicle. Herewith the number of pick up members per loading device have to be taken into account, and also a coupling between the two endless carriers of the devices has to be made, in order to let the different containers pass each other safely.

Another possibility is to provide a movable slide in the receiving member, which is suited for a system with a vertical separation or a system with a horizontal separation with control means to bring the movable slide in the correct position for each container. A simple embodiment hereof is a manual operated control system with control means in different colours corresponding to the colour of the different containers.

The invention also provides in a cleaning device for containers which comprises a reservoir for a cleaning liquid, a number of spray nozzles directed upwardly, means to spray under pressure the cleaning liquid and receptacle for the used cleaning liquid.

This cleaning device can be put through the de-

tachable part or parts in the wall of the receiving member into the receiving member and partly into the refuse vehicle.

Because of the increase in the number of containers that can be handled in a day with the device according to the invention, a number of refuse vehicles normally used can now be used as cleaning vehicle for containers.

With respect to most of the existing cleaning methods for containers, whereby the used cleaning liquid is generally discharged on to the street, the cleaning device according to the invention means a considerable improvement, which will meet the environmental demands to be expected in the future.

The invention is elucidated in the following on hand of the drawing, in which

fig. 1 shows a back view of a refuse vehicle with a device according to the invention without the receiving member;

fig. 2 shows a back view of a refuse vehicle with a device according to the invention with the receiving member;

fig. 3 shows a side view of the refuse vehicle of fig. 2;

fig. 4 shows a side view of a refuse vehicle with another embodiment of the loading device;

fig. 5 shows schematically the various tilted positions of the pick up member;

fig. 6 shows schematically a side view of the pick up member in an inverted position, and

fig. 7 shows a side view of a refuse vehicle with a device according to the invention provided with a cleaning device.

In fig. 1 a refuse vehicle is indicated with 1 where-to a framework 2 with an interposed framework 3 is mounted.

At the angular points of framework 2 sprocket wheels 4,5,6,7 are mounted, around which an endless chain is put, whereby one of the sprocket wheels, in the drawn example sprocket wheel 5, is provided with a driving member, which can be an hydraulic motor.

One or more pick up members 10 are attached to the chain 8. In fig. 1 one pick up member is indicated, but a framework of that size will operate in most cases at its best with four pick up members.

The pick up member 10 is attached to chain 8 in such a way, that the pick up member can move with respect to the chain parallel to plane wherein the chain 8 lies. Herewith the pick up member 10 pivots about a shaft 17, located at some distance from the chain 8.

The pick up member 10 has a pick up cam 11 at some distance of the plane wherein the chain 8 lies, intended to engage the pick up strip 12 of a container 13, whereby also a support arm 14 is provided, which abuts against the side of the container 13 when the container 13 is taken along with the pick up member 10.

Further at a smaller distance from the plane wherein chain 8 lies, the pick up member has tilting rolls 15,16, which are mounted at each side and at the same distance of the pivot axis 17 of the pick member 10.

The tilting rolls 15,16 are intended to cooperate with tilting bosses 18,19 mounted on the sprocket wheels 4,5, whereby tilting roll 15 engages with boss 19 and tilting roll 16 engages with boss 18. Regardless whether the endless chain 8 runs in a clockwise or anti-clockwise direction.

When the pick up member 10 reaches the upper part of a vertical part of the path, a tilting roll 15,16 engages a tilting boss 18,19 and the tilting movement is started with the further movement of the chain 8.

When the pick up member with the container 13 reaches a vertical position, the tilting 15,16 has not yet reached the highest point of the boss 18,19, so that the tilting continues and the pick up member 10 with the container 13 goes through the vertical position.

Between the bosses 18,19 a guide 20 for the tilting rolls 15,16 is mounted, which has a lower course near the tilting bosses 18,19 than in the central part of the guide 20 where the pick up member is moved in a vertical position.

In fig. 2 the receiving member is indicated with 27, which is more or less funnel-shaped, seen from the back as well as from aside, and connects to the usual receiving space in the refuse vehicle. In the backwardly directed side of the receiving member 27 doors 28 are mounted, through which other refuse then offered in containers, can be brought into the receiving space of the refuse vehicle without much effort.

Further guides for the container 13 are provided.

In fig. 3 the two guides 21,22 are indicated, which support the housing 23 of the container 13 with the guide 21 being mounted on the edge of the receiving member 27. The guides 21,22 engage the rims of the housing 23 of the container 13 at the moment the tilting movement starts.

A guide for the cover 26 of the container is provided, which is mounted near the upper corner point between the guides 21,22 for the housing 23 of the container. The cover 26 also engages this guide at the moment that the tilting movement starts. The guide runs obliquely downwards at the position where the container is entirely above the receiving member, so that the cover may pivot open. At the other side of the receiving member 27 the cover runs along an identical guide only in opposite direction as a result of which the cover closes again.

The guide may be formed from a part of the side-wall of the receiving member, that runs sufficiently oblique in the direction of transport.

Fig. 4 shows another embodiment of the device according to the invention. The endless carrier con-

sists of two endless chains 8,8', which run over sprocket wheels 4,4',5,5',6,6',7,7'. The pick up member 10 is attached to the two chains 8,8' by means of an attachment member 29, which also fixedly connects the two chains to each other. The combination of two chains 8,8', pairs of sprocket wheels and an attachment member 29 that connects the chain, ensure a very stable suspension and pivot point for the pick up member 10.

Besides the usual parts as cam 11 and support arm 14 the pick up member 10 further comprises a mounting plate 32, rolls 30,31, an extension part 33, in fig. 4 downwardly directed, and a protruding arm 34. The parts 11,14,32,33,34 form a rigid construction which is pivotable around the protruding part of the attachment member 29.

The rolls 30 and 31 are mounted at each side of the mounting plate 32. These rolls 30,31 and the protruding arm 34, which is located at the opposite side of the pivot point with respect to the rolls 30,31, form together with the guides 35-38 inclusive the tilting means for the pick up member 10.

The protruding arm 34 extends parallel to the pivot axis till near the chain 8' in the rear. During the vertical parts of the path of the endless carrier the protruding arm 34 abuts against chain 8. Near the upper corner points guideways 35,38 are mounted for the protruding arm 34. The lower ends of these guideways are partly located between the sprocket wheels 4,4' and 5,5'.

Between the upper sprocket wheels 4,4' and 5,5' guides 36 and 37 are mounted for the rolls 30 and 31 respectively.

Fig. 5 shows schematically the movements of the pick up member along the path of the endless carrier. The tilting movement starts when the attachment member 29 reaches the upper sprocket wheel 4 or 5, where the vertical movement changes in a horizontal movement along the path of the chains, while the protruding arm continues the vertical movement, lying against the vertical part of chain 8.

When the protruding arm 34 reaches the guideway 35 the movement of the protruding arm changes to a combined vertical and horizontal movement, resulting in an overturned position of the pick up member 10.

Before the protruding arm 34 gets out of engagement with the guideway 35, the rolls 30 and 31 engage the guides 36 and 37 respectively, continuing the tilting movement till the pick up member 10 and therewith the container 13 reach an inverted position.

At the end of the guides 36,37 the tilting movement starts again, now from an inverted position to an overturned position and with the protruding arm 34 in engagement with the guideway 38 from an overturned position to a tilted position, and finally at the other vertical side of the endless carrier after going through an angle of 360°.

At the downwardly directed side of the endless carrier after leaving the guideway 38 the protruding arm 38 also prevents the pick up member 10 with the container 13 from swaying against the receiving member 27.

Fig. 6 shows schematically a side view of the pick up member 10 in an inverted position, without the pick up cam 11 and the supporting arm 14.

The attachment member 29 is fixedly connected to the chains 8, 8' by means of plates 39-42. To one end of the attachment member 29, at the left side in the drawing, a roller 43 is fitted, which runs in a U-shaped runway 44.

Between the chain 8 and the mounting plate 32 another supporting roller 45 is mounted which runs over a guide 46.

The assembly of these rollers and guides provides a very stable pivot point for the pick up member 10, which is of particular importance for the part of the path of the endless carrier where the pick up member pivots. Consequently these guides are mounted along the greatest part of the upper horizontal path.

A roller 47 is fitted to the protruding arm 34, made of nylon for example, which is to run in the guideways 35, 38.

The attachment member 29 has the shape of a crankshaft, with the crank located between the two chains 8, 8'. This construction prevents the attachment member from engaging the guides 35, 38 for the protruding arm 34.

Finally fig. 7 shows the device according to the invention with a cleaning device mounted in the receiving member 27, so that the refuse vehicle may now be used as a cleaning device for containers.

The cleaning device, which can be mounted after the door or doors 28 are removed from the receiving member 27, comprises a reservoir 24 for a cleaning liquid, a receptacle 25 to receive used liquid and a pump 50 to wash out the containers with cleaning liquid through one or more spray nozzles 51. A grid 52 may be mounted above the receptacle 25 for used cleaning liquid to retain possible residual refuse from the containers.

Claims

1. Loading and emptying device for a refuse vehicle comprising an endless carrier, running in a substantially vertical plane, one or more pick up members attached to the endless carrier and tilting means for tilting a container, **characterized in that**, the pick up member or pick up members (10) are rotatably mounted on an attachment member or members (29), attaching the pick up member or members (10) to the endless carrier (8, 8') by means of said attachment member or

members, the axis of rotation being perpendicular to the plane of the endless carrier and the endless carrier having two horizontal parts and two vertical parts, and in that the tilting means consist of rolls on the pick up member or members (10) and bosses and/or guides on the device, cooperating with said rolls, whereby the pick up member or members (10) rotate through an angle of 180° or more at the angular points between the upper horizontal part and the two vertical parts or along the sections including an angular point and part of the upper horizontal part of the path adjacent to that angular point, the pick-up member or members turning through an angle of 360° along the path of the endless carrier.

2. Device according to claim 1, **characterized in that**, a receiving member (27) for the refuse is provided which, passing through the device, extends from one side of the device to the other side thereof into the refuse vehicle (1) and which is at least partly funnel-shaped.

3. Device according to claim 1 or 2, **characterized in that**, the tilting means consists of a boss (18, 19) in each of the corners between the upper horizontal and the two vertical parts of the path of the endless carrier (8, 8') and two rolls (15, 16) mounted on the pick up member (10) on either side of the pivot point thereof, whereby the respective rolls (15, 16) engage the respective bosses (18, 19) with the movement of the pick up member (10) through the upper bends of the path of the endless carrier (8, 8').

4. Device according to claim 3, **characterized in that**, between the bosses (18, 19) a guide (20) is mounted for the rolls (15, 16) on the pick up member or members (10).

5. Device according to claim 3 or 4, **characterized in that**, two parallel guides (21, 22) for a container are provided, which extend from where the tilting starts to where the tilting is completed.

6. Device according to claim 3, 4 or 5, **characterized in that**, at the upper bends in the path of the endless carrier (8, 8') guides for a cover (26) of the container (13) are mounted, extending from where the tilting starts to outside of the receiving member (27).

7. Device according to claim 1 or 2, **characterized in that**, the tilting means consists of rolls (30, 31) on the pick up member (10), one at either side of its pivot point, a protruding part (34) of the pick up member (10) at a distance from the pivot point

parallel to the pivot axis of the pick up member (10), which lies against the endless carrier (8, 8') along the vertical parts of the path thereof, and guides (36, 37) for the rolls (30, 31) and the protruding part (34) of the pick up member (10) which are mounted symmetrically with a vertical plane of symmetry intersecting the plane of the endless carrier (8, 8') perpendicular in the middle, whereby the guides (35, 38) for the protruding part are destined to tilt the pick up member (10) from a normal or tilted position to an overturned position or vice versa and the guides (36, 37) for the rolls (30, 31) to tilt the pick up member (10) from an overturned position to an inverted position or vice versa.

8. Device according to claim 7, **characterized in that**, further supporting means are provided consisting of a roll (45) between the pick up member (10) and the endless carrier (8, 8'), rotatable around the pivot axis of the pick up member (10), a supporting beam (46) therefor and an U-shaped guideway (44) for the end of the attachment member (10) or members, protruding at the other side of the endless carrier (8, 8'), the supporting beam (46) and the U-shaped guideway (44) extending at least along the greater part of the upper horizontal part of the path of the endless carrier (8, 8').

9. Device according to one or more of the preceding claims, **characterized in that**, the endless carrier (8, 8') consists of two endless chains (8, 8'), running in parallel planes and connected to each other with the protruding part or parts of the attachment member or members (29).

10. Device according to claim 2, **characterized in that**, the wall of the receiving member (27) has at least one detachable part (28).

11. Cleaning device for containers comprising a device according to one or more of the preceding claims, **characterized in that**, it further comprises a reservoir (24) for a cleaning liquid, a number of spray nozzles (51) directed upward, means (50) to spray under pressure the cleaning liquid, a receptacle (25) for the used cleaning liquid and that the device fits in the receiving member (27) through the detachable part (28) thereof.

Patentansprüche

1. Hub- und Kippvorrichtung für ein Müllsammel-fahrzeug, welche einen endlosen Mitnehmer, der in einer im wesentlichen vertikalen Ebene läuft, ein oder mehrere Aufnahmeglieder, die am end-

- losen Mitnehmer angebracht sind, und Kippmittel zum Kippen eines Behälters umfasst, dadurch gekennzeichnet, dass das Aufnahmeglied oder die Aufnahmeglieder (10) drehbar an einem Halteglied oder an Haltegliedern (29) befestigt sind, um das Aufnahmeglied oder die Aufnahmeglieder (10) durch Mittel des genannten Haltegliedes oder der Halteglieder am endlosen Mitnehmer (8, 8') zu halten, wobei die Drehachse rechtwinklig zur Ebene des endlosen Mitnehmers steht und der endlose Mitnehmer zwei horizontale Bereiche und zwei vertikale Bereiche aufweist, und dass die Kippmittel Rollen, angebracht auf dem Aufnahmeglied oder den Aufnahmegliedern (10), und runde Vorsprünge und/oder Führungen, welche mit den Rollen zusammenwirken, auf der Vorrichtung umfassen, wobei das Aufnahmeglied oder die Aufnahmeglieder (10) an den Scheitelpunkten zwischen dem oberen horizontalen Bereich und den beiden vertikalen Bereichen oder entlang der Abschnitte, welche einen Scheitelpunkt und Bereich des oberen horizontalen Bereiches des Weges, der dem Scheitelpunkt benachbart ist, einschliessen, um einen Winkel von 180° oder mehr drehen, so dass das Aufnahmeglied oder die Aufnahmeglieder entlang der Bahn des endlosen Mitnehmers um einen Winkel von 360° drehen.
2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass ein Aufnahmemittel (27) für den Müll vorgesehen ist, welches sich, die Vorrichtung durchdringend, von der einen Seite der Vorrichtung zur anderen Seite davon in das Müllsammelfahrzeug (1) erstreckt, und welches mindestens teilweise trichterförmig ist.
3. Vorrichtung nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, dass die Kippmittel einen Vorsprung (18, 19) in jeder der Ecken zwischen dem oberen horizontalen und den zwei vertikalen Bereichen der Bahn des endlosen Mitnehmers (8, 8') und zwei Rollen (15, 16), welche auf dem Aufnahmeglied (10) auf beiden Seiten des Drehpunktes angebracht sind, umfassen, wobei die entsprechenden Rollen (15, 16) mit der Bewegung des Aufnahmegliedes (10) durch die oberen Kurven der Bahn des endlosen Mitnehmers (8, 8') in die entsprechenden Vorsprünge (18, 19) eingreifen.
4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, dass zwischen den Vorsprüngen (18, 19) eine Führung (20) für die Rollen (15, 16), angebracht auf dem Aufnahmeglied oder den Aufnahmegliedern, angeordnet ist.
5. Vorrichtung nach Anspruch 3 oder 4, dadurch gekennzeichnet, dass zwei parallele Führungen (21, 22) für einen Behälter angeordnet sind, welche sich von da, wo das Kippen beginnt, bis da, wo das Kippen beendet ist, erstrecken.
6. Vorrichtung nach Anspruch 3, 4 oder 5, dadurch gekennzeichnet, dass an den oberen Kurven der Bahn des endlosen Mitnehmers (8, 8') Führungen für eine Abdeckung (26) des Behälters (13) befestigt sind, welche sich von da, wo das Kippen beginnt bis zur Aussenseite des Aufnahmegliedes (27) erstrecken.
7. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Kippmittel auf dem Aufnahmeglied (10) Rollen (30, 31), welche an beiden Seiten des Gelenkpunktes angeordnet sind, einen vorstehenden Teil (34) des Aufnahmegliedes (10), das mit einem Abstand vom Gelenkpunkt und parallel zu der Drehachse des Aufnahmegliedes (10) angeordnet ist und längs des vertikalen Bereiches der Bahn gegen den endlosen Mitnehmer (8, 8') anliegt, und Führungen (36, 37) für die Rollen (30, 31) und den vorstehenden Teil (34) des Aufnahmegliedes (10) umfassen, welche Führungen symmetrisch in einer vertikalen Symmetrieebene, welche die Ebene des endlosen Mitnehmers (8, 8') in der Mitte und rechtwinklig schneidet, angeordnet sind, wobei die Führungen (35, 38) für den vorstehenden Teil zum Kippen des Aufnahmegliedes (10) von einer normalen oder gekippten Lage in eine umgedrehte Lage oder umgekehrt, und die Führungen (36, 37) für die Rollen (30, 31) zum Kippen des Aufnahmegliedes (10) von einer umgedrehten Lage in eine umgekehrte Lage und umgekehrt bestimmt sind.
8. Vorrichtung nach Anspruch 7, dadurch gekennzeichnet, dass ferner Abstützmittel vorgesehen sind, welche aus einer Rolle (45), welche zwischen dem Aufnahmeglied (10) und dem endlosen Mitnehmer (8, 8') und rotierbar um die Drehachse des Aufnahmegliedes angeordnet ist, einem Träger (46) für die Rolle (45) und einer U-förmigen Führungsbahn (44), die an der anderen Seite des endlosen Mitnehmers vorragt und für das Ende des Aufnahmegliedes (10) oder Glieder vorgesehen ist, bestehen, wobei der Träger (46) und die U-förmige Führungsbahn (44) sich entlang mindestens des grösseren Teils des oberen horizontalen Bereichs der Bahn des endlosen Mitnehmers (8, 8') erstrecken.
9. Vorrichtung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass der endlose Mitnehmer (8, 8') aus zwei endlosen Ketten (8, 8') besteht, welche in parallelen Ebenen laufen, und welche gegenseitig mit dem vorstehen-

den Teil oder den Teilen des Haltegliedes oder der Halteglieder (29) verbunden sind.

10. Vorrichtung nach Anspruch 2, dadurch gekennzeichnet, dass die Wand des Aufnahmegliedes (27) mindestens einen lösbaren Teil (28) aufweist.

11. Reinigungsvorrichtung für Behälter, enthaltend eine Vorrichtung nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass sie ferner einen Behälter (24) für eine Reinigungsflüssigkeit, eine Anzahl von Sprühdüsen (51), welche nach oben gerichtet sind, Mittel (50) zum Sprühen der Reinigungsflüssigkeit unter Druck, und ein Sammelgefäß (25) für die gebrauchte Reinigungsflüssigkeit umfasst, und dass die Vorrichtung in das Aufnahmeglied (27) durch den lösbaren Teil (28) passt.

Revendications

1. Dispositif pour véhicule de ramassage d'ordures destiné à lever et vider des récipients comprenant un transporteur sans fin se déplaçant dans un plan sensiblement vertical, un ou plusieurs éléments d'accrochage fixés au transporteur sans fin et des moyens d'inclinaison pour incliner un récipient, caractérisé en ce que le ou les éléments d'accrochage (10) sont montés en rotation sur un ou des éléments de fixation (29) reliant le ou les éléments d'accrochage (10) au transporteur sans fin (8, 8') au moyen du ou desdits éléments de fixation l'axe de rotation étant perpendiculaire au plan du transporteur sans fin et le transporteur sans fin comportant deux parties horizontales et deux parties verticales, et en ce que les éléments d'inclinaison comprennent des rouleaux sur le ou les éléments d'accrochage (10) et des bossages et/ou des guides sur le dispositif en coopération avec lesdits rouleaux, de façon que le ou les éléments d'accrochage (10) tournent d'un angle de 180° ou davantage aux points angulaires entre la partie horizontale supérieure et les deux parties verticales ou le long de tronçons comprenant un point angulaire et une portion de la partie horizontale supérieure du trajet adjacente à ce point angulaire, le ou les éléments d'accrochage effectuant une rotation de 360° le long du trajet du transporteur sans fin.
2. Dispositif selon la revendication 1, caractérisé en ce qu'un élément receveur (27) d'ordures traverse le dispositif d'un côté ou de l'autre, pénètre dans le véhicule et a, au moins en partie, la forme d'un entonnoir.

3. Dispositif selon l'une des revendications 1 ou 2, caractérisé en ce que les moyens d'inclinaison comprennent un bossage (18, 19) dans chacun des virages entre la partie horizontale supérieure et les deux parties verticales du trajet du transporteur sans fin (8, 8') et deux rouleaux (15, 16) montés sur l'élément d'accrochage (10) d'un côté ou de l'autre de son point de pivotement, de façon que les rouleaux respectifs (15, 16) viennent en prise avec les bossages respectifs (18, 19) grâce au mouvement de l'élément d'accrochage (10) sur les coudes supérieurs du trajet du transporteur sans fin (8, 8').

4. Dispositif selon la revendication 3, caractérisé en ce qu'entre les bossages (18, 19) est monté un guide des rouleaux (15, 16) sur le ou les éléments d'accrochage (10).

5. Dispositif selon la revendication 3 ou 4, caractérisé en ce que deux guides parallèles (21, 22) de récipient sont installés entre le point où commence l'inclinaison et le point où s'achève l'inclinaison.

6. Dispositif selon l'une des revendications 3, 4 ou 5, caractérisé en ce que sur les coudes supérieurs du trajet du transporteur sans fin (8, 8') sont montés des guides pour couvercle (26) du récipient (13), qui s'étendent entre le point où commence l'inclinaison et l'extérieur de l'élément receveur (27).

7. Dispositif selon la revendication 1 ou 2, caractérisé en ce que les moyens d'inclinaison comprennent des rouleaux (30, 31) montés sur l'élément d'accrochage (10), dont l'un se trouve d'un côté ou de l'autre de son point de pivotement, une partie en saillie (34) de l'élément d'accrochage (10) à une certaine distance du point de pivotement, parallèle à l'axe de pivotement de l'élément d'accrochage (10), qui se situe contre le transporteur sans fin (8, 8') le long des parties verticales du trajet de ce dernier, et des guides (36, 37) pour les rouleaux (30, 31) et la partie en saillie (34) de l'élément d'accrochage (10) qui sont montés de manière symétrique et dont le plan de symétrie vertical coupe le plan du transporteur sans fin (8, 8') perpendiculairement au milieu, de sorte que les guides (35, 38) de la partie en saillie sont destinés à incliner l'élément d'accrochage (10) entre une position normale ou inclinée et une position retournée ou inversement et les guides (36, 37) des rouleaux (30, 31) sont destinés à incliner l'élément d'accrochage (10) entre une position retournée et une position inversée ou inversement.

8. Dispositif selon la revendication 7, caractérisé en ce qu'il comprend en outre des moyens supports comportant un rouleau (45) entre l'élément d'accrochage (10) et le transporteur sans fin (8, 8'), rotatif autour de l'axe de pivotement de l'élément d'accrochage (10), un élément support (46) pour ce rouleau et une voie de guidage en "U" (44) pour l'extrémité du ou des éléments d'accrochage (10) faisant saillie de l'autre côté du transporteur sans fin (8, 8'), le bras support (46) et la voie de guidage en "U" (44) s'étendant au moins le long de la majeure partie de la partie horizontale supérieure du trajet du transporteur sans fin (8, 8').
9. Dispositif selon l'une ou plusieurs des revendications précédentes, caractérisé en ce que le transporteur sans fin (8, 8') se compose de deux chaînes sans fin (8, 8') circulant dans des plans parallèles, et reliées entre elles par la ou les parties en saillie du ou des éléments de fixation (29).
10. Dispositif selon la revendication 2, caractérisé en ce que la paroi de l'élément receveur (27) comprend au moins une partie détachable (28).
11. Dispositif de nettoyage de récipients comprenant un dispositif selon l'une ou plusieurs des revendications précédentes, caractérisé en ce qu'il comprend en outre un réservoir (24) de liquide de nettoyage, un certain nombre de buses de pulvérisation (51) orientées vers le haut, des moyens (50) de vaporisation sous pression du liquide de nettoyage, un réceptacle (25) destiné à recevoir le liquide de nettoyage usé, et en ce que le dispositif se monte dans l'élément receveur (27) à travers la partie détachable (28) de ce dernier.

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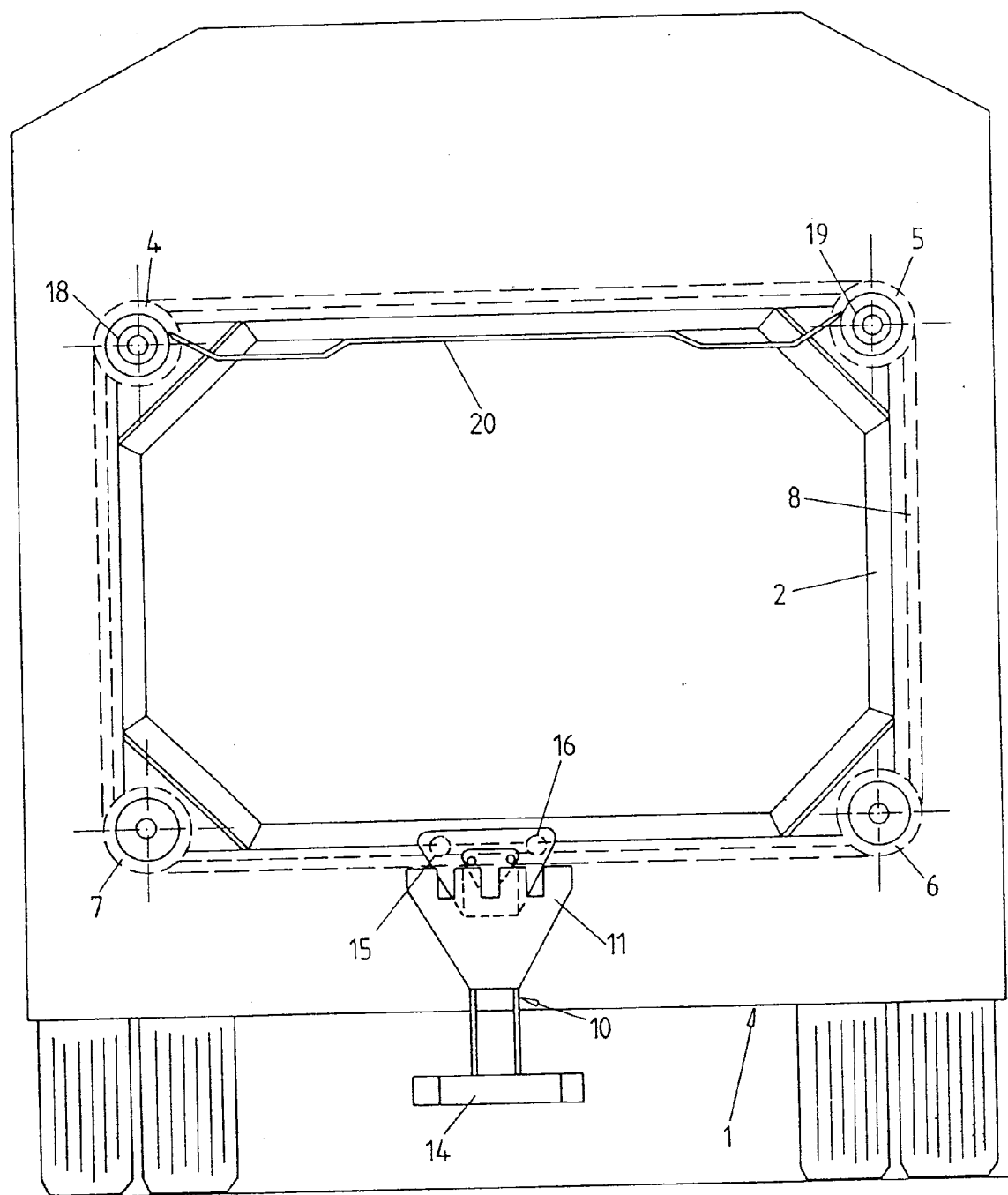


FIG. 1

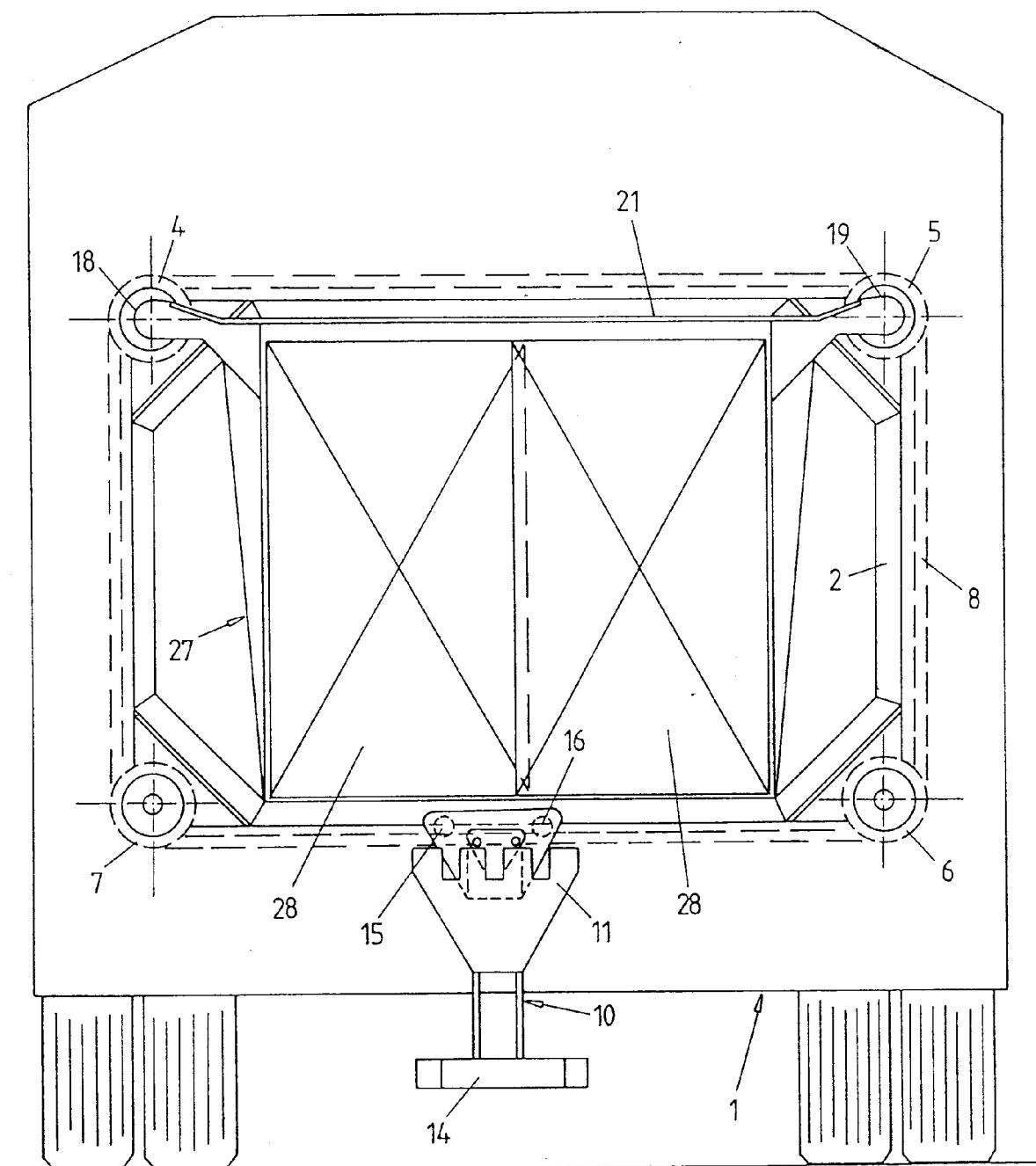


FIG. 2

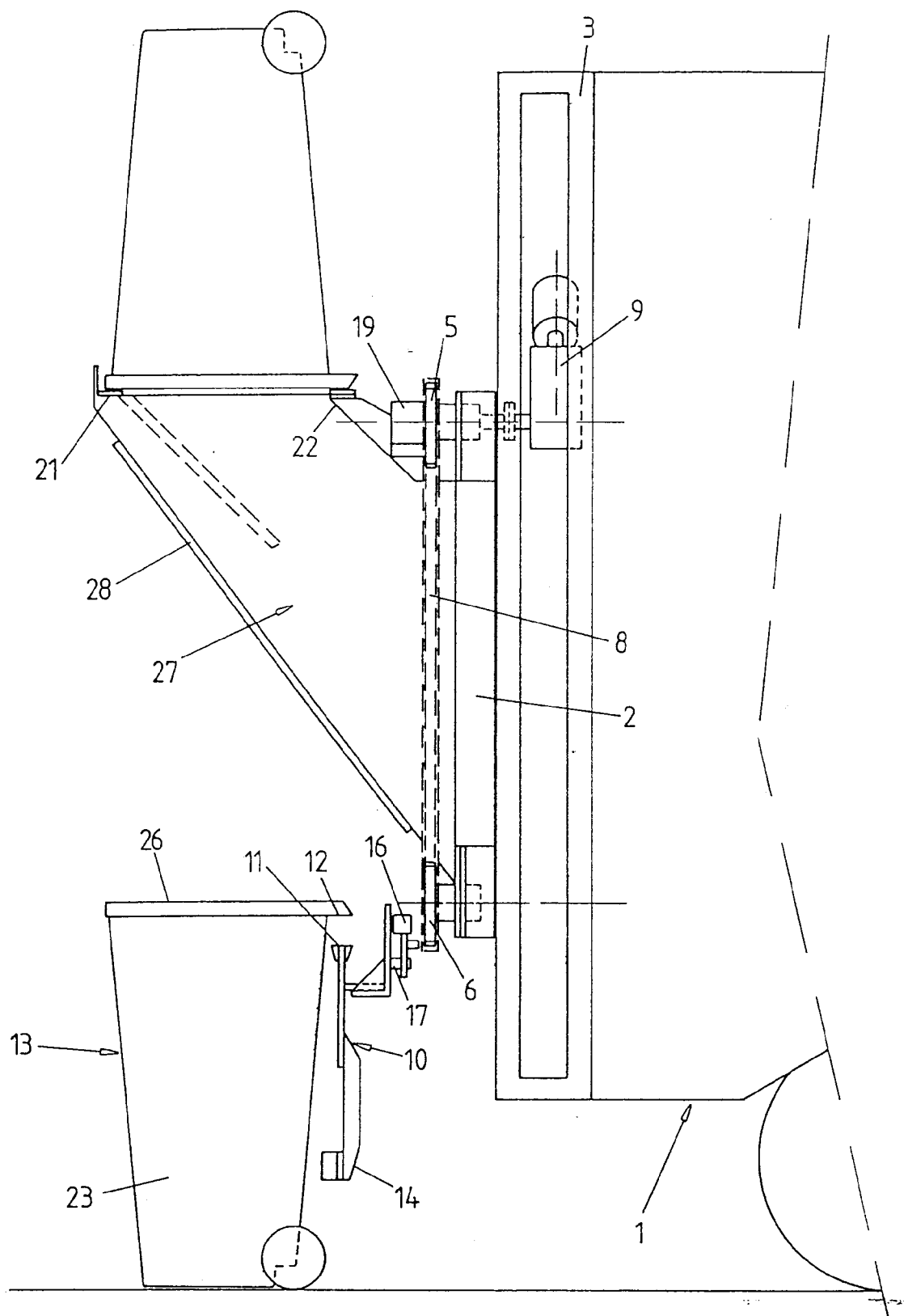


FIG. 3

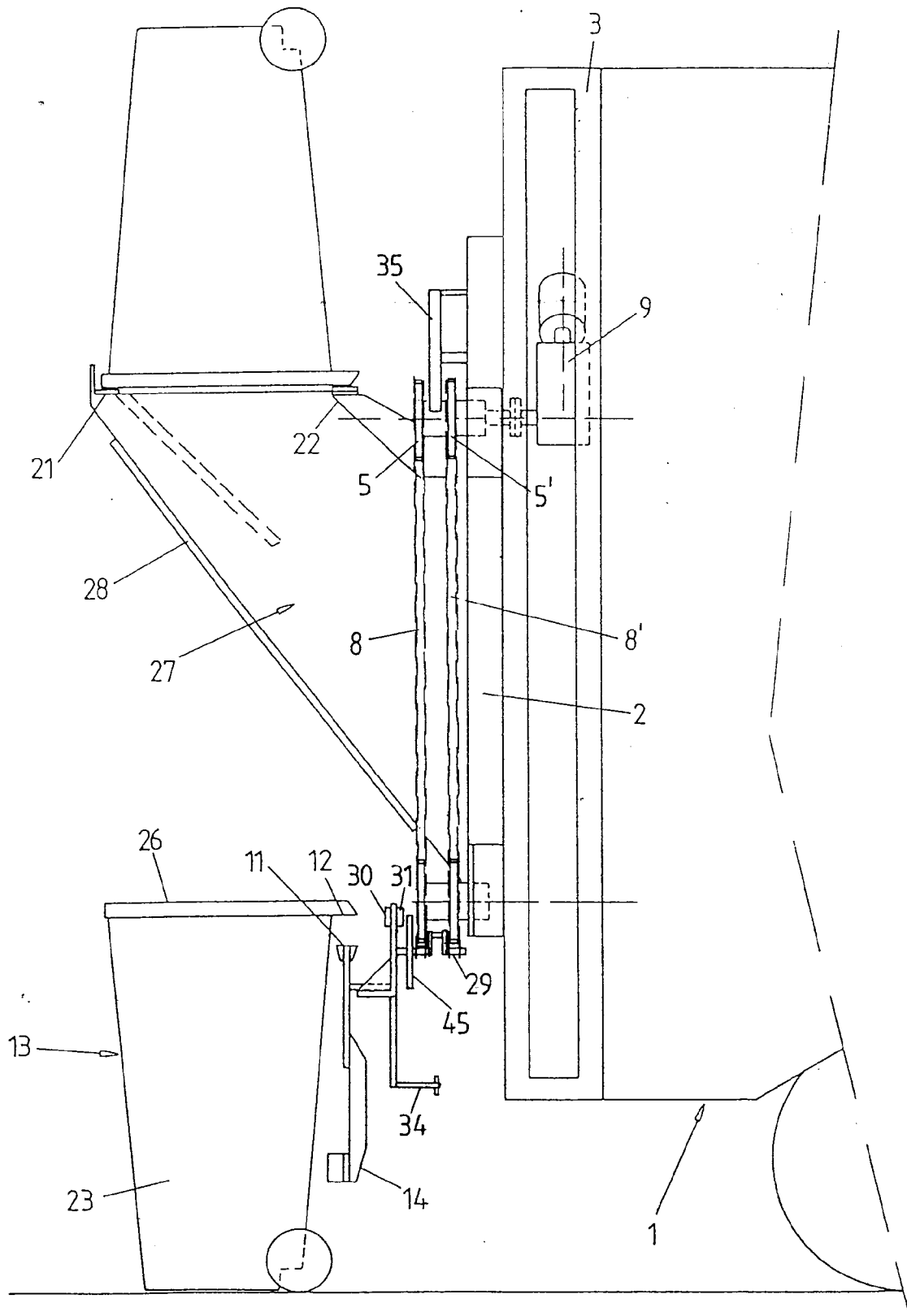


FIG. 4

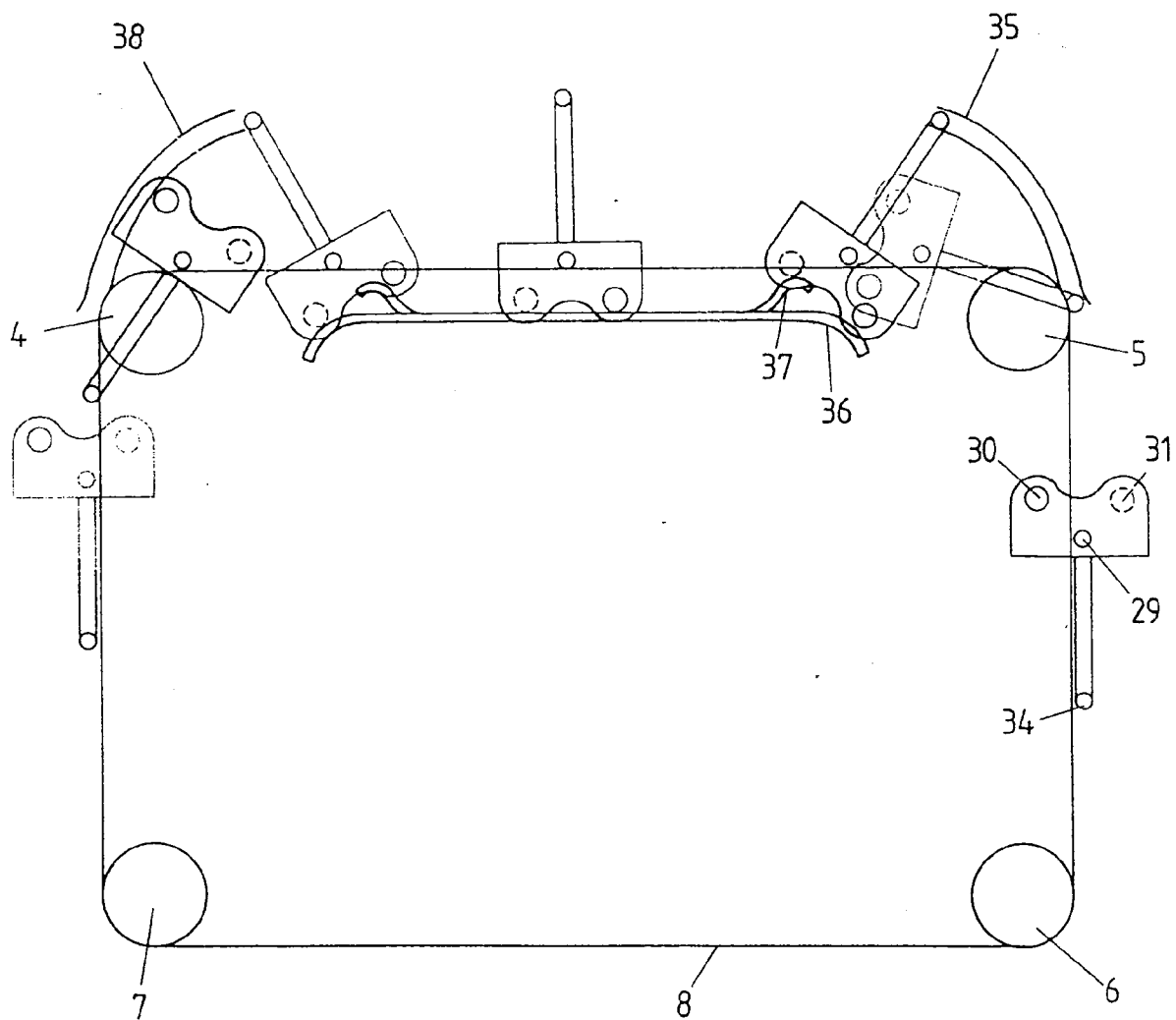
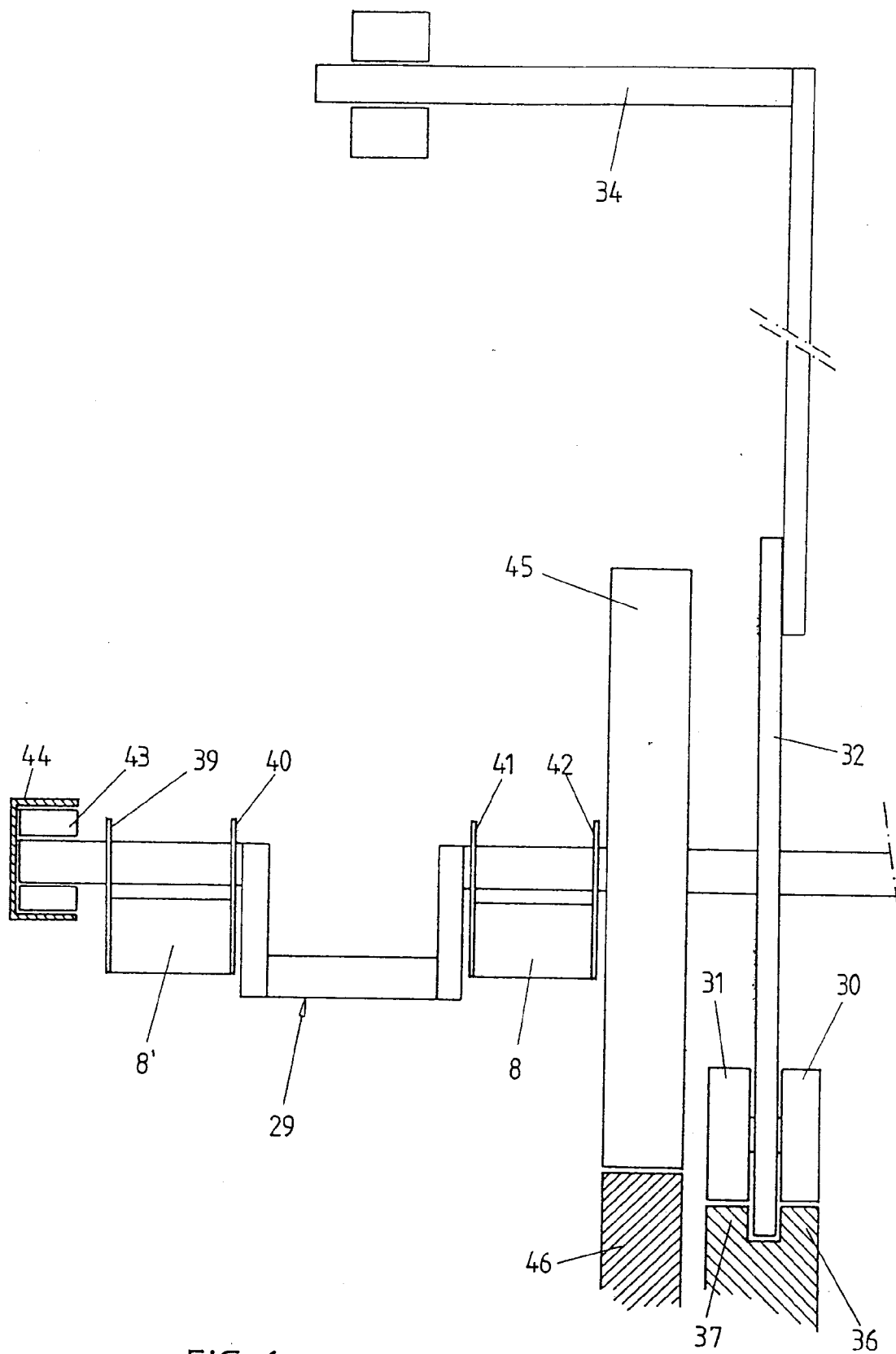


FIG. 5



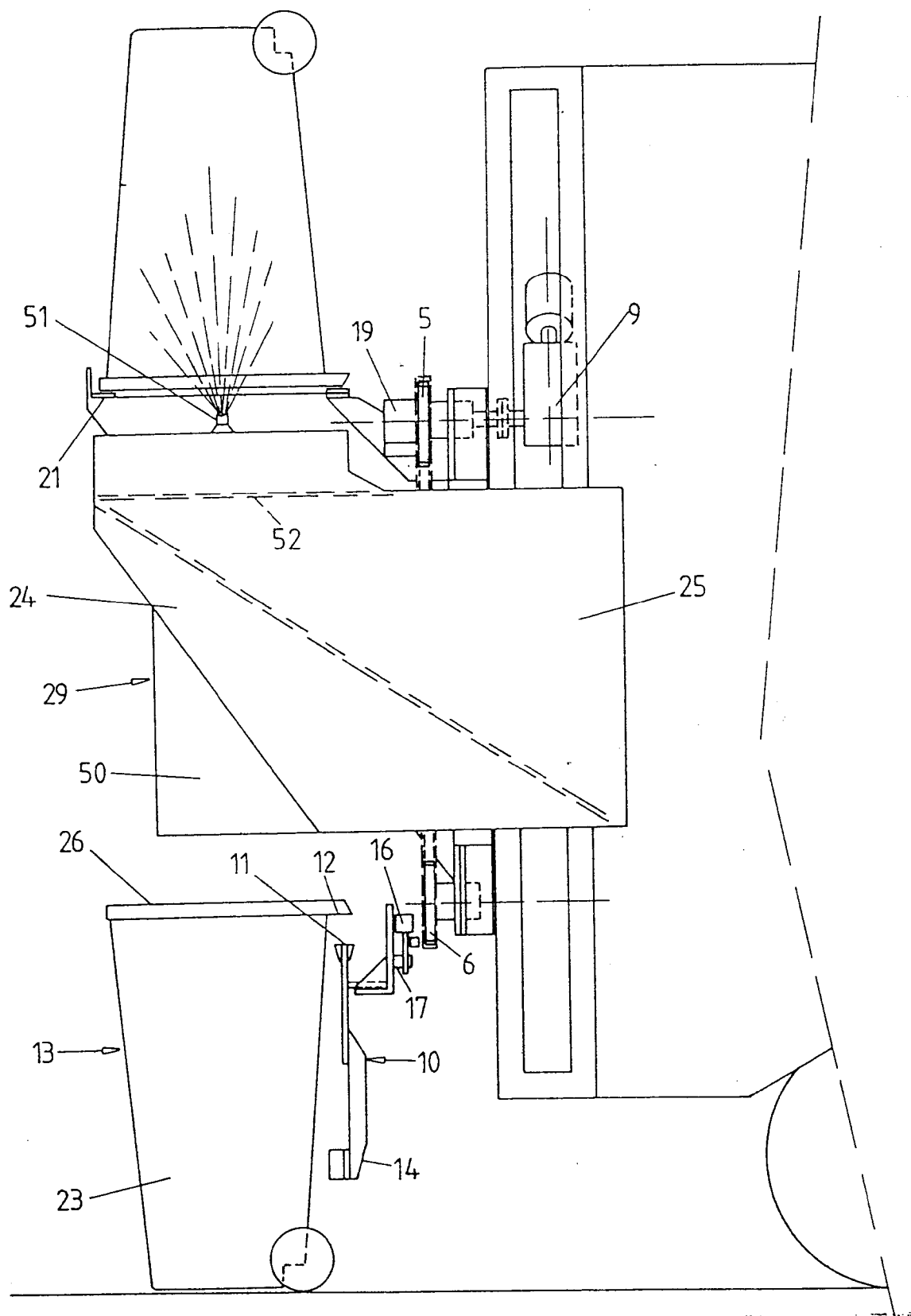


FIG. 7