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(54) A device being designed for picking up containers and applicable to garbage collecting trucks

(57) The device comprises a cross member (1) having laterally fitted to each of its lateral portions a respective arm (2,3) being provided with container picking up means (13,14) and with gripping means (26,27), complementary fastening means (28) being centrally fitted to the cross member (1). The lateral arms (2,3) are fitted in a sliding arrangement onto the cross member (1), and the central fastening means (28) comprise two subarms (29,30) being apt to adopt an active position being parallel to said arms (2,3) and a passive position being parallel to the cross member (1). The gripping means (26,27) are formed by two halves (37,38) at their mutually opposite edges being each linked in a pin-jointed connection to a respective pin (39,40) being fixed to a support (41) being solid with the corresponding arm (2,3), said halves (37,38) being mutually related with means (42) being actuated by a cylinder (43) in order to thus have said halves (37,38) acting as a gripper.

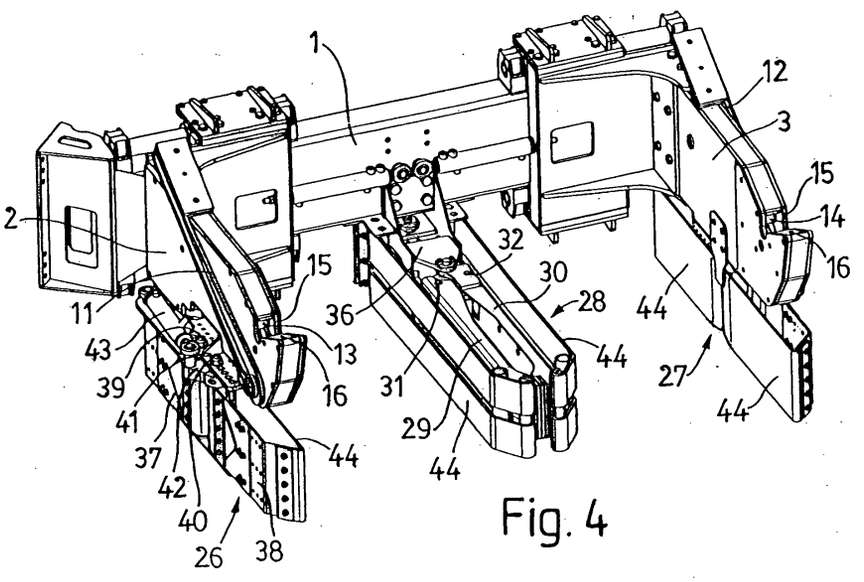

Fig. 4

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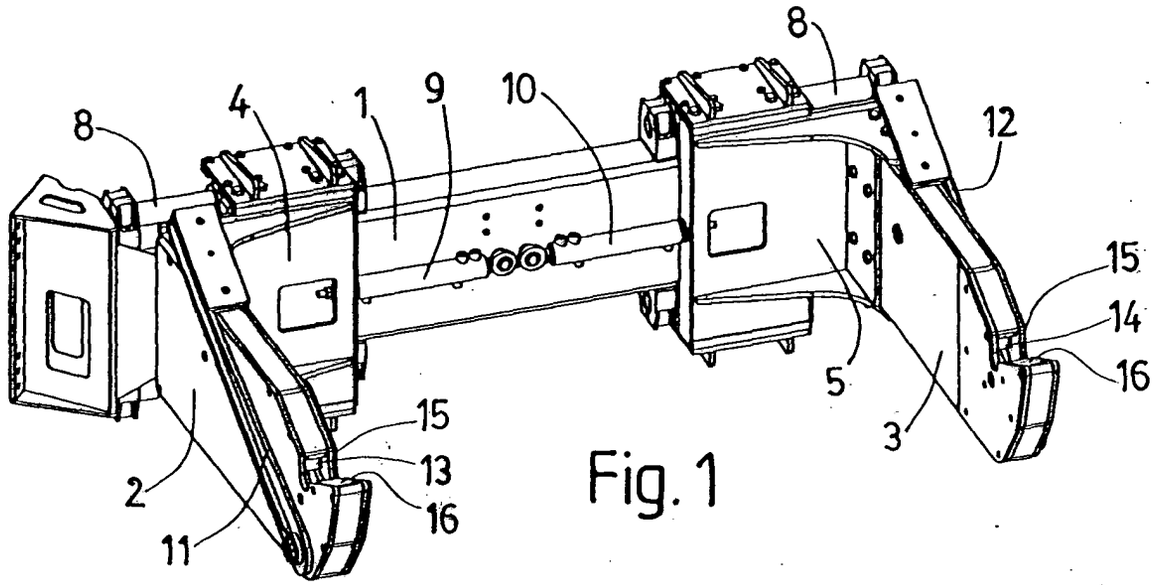

Fig. 1

Description

OBJECT OF THE INVENTION

[0001] A device being designed for picking up containers and applicable to garbage collecting trucks.

BACKGROUND OF THE INVENTION

[0002] Several types of refuse and garbage collecting trucks have been known for years, said garbage trucks dumping into their body the contents of containers being distributed along the streets in the cities and built-up areas.

[0003] There are several devices for picking up and loading the containers, said devices being generally made up by a cross member being laterally provided at each of both its lateral portions with an arm being provided with the means being used for picking up the containers.

[0004] In order to achieve a proper connection of the picking up means to the container labourers are needed who will be in charge of approaching the containers and positioning them between the arms so as to thus have them grabbed and ulteriorly lifted and tipped in order to thus have their contents dumped into the truck body.

[0005] There exist as well several types of devices for gripping garbage containers, from among said devices those being mostly used nowadays being those comprising two lateral supports, each of these latter in its end region having a notch determining a by way of fork being apt to receive the corresponding lateral pin of the container to be thus ulteriorly lifted in order to thereupon have its contents dumped into the truck body.

[0006] This very applicant is the holder of the Spanish Utility Model no. 200102133 having as its object a device of the aforementioned type being apt to fit different containers of smaller size in order to grab them and have them ulteriorly lifted.

[0007] This device is thus apt to individually pick up containers having a big holding capacity and being or not being provided with wheels, or to pick up two containers being for example provided with two wheels and having a smaller holding capacity, these latter containers being thereupon lifted together, and also to pick up only one of these smaller containers.

[0008] In this device the lateral supports are attached to a cross member thus forming a U-shaped assembly having linked to each of its lateral portions a lateral gripping member and comprising complementary means having a generally tiltable, U-shaped makeup and a central appendage for holding the smaller-sized containers.

SUMMARY OF THE INVENTION

[0009] It is the object of this invention to improve these container picking up devices in order to achieve their proper connection to the container being thus grabbed without for such a purpose requiring the assistance of labourers.

[0010] In order to achieve this connection a characterising feature of this device lies in the fact that the lateral arms are fitted in a sliding arrangement onto the cross member. The arms are each solid with a support that by means of bush bearings is apt to be slidingly shifted on guides being provided on the cross member, each of said supports being for such a purpose actuated by a respective cylinder. With this arrangement the arms are brought against the sides of the container, this latter being thereby more easily grabbed.

[0011] An also characterising feature of this device lies in the fact that the arms have fitted to them in an articulated arrangement levers being provided to actuate on the container lids and catches being provided to retain the lateral support pins of the container, the lever and catch of each arm being actuated by a common mechanism.

[0012] It is another object of this invention to improve the device corresponding to the aforementioned Utility Model no. 200102133 in order to obtain a greater safety in the gripping of the container both for those being of a bigger size and for those being of a smaller size while making the device very tough and robust and providing it with means being apt to separately actuate on the lateral arms or supports, on the gripping members being supported by said arms, and on the complementary, central fastening means.

[0013] A characterising feature lies for such a purpose in the fact that the lateral arms are preferably fitted in a sliding arrangement onto the cross member and the central fastening means comprise two subarms being apt to adopt an active position being parallel to the arms and a passive position being parallel to the cross member.

[0014] An also characterising feature lies in that the gripping means are formed by two halves being each linked in a pin-jointed connection to a respective pin, said pins being fixed at their mutually opposite edges to a support being solid with the corresponding arm, said halves being mutually related with means being actuated by a cylinder in order to thus have said halves acting as a gripper.

[0015] In order to better hold the containers resilient bands have been fitted to both the lateral gripping means and the central fastening means at their faces being used to press against the side walls of the containers.

[0016] These and other characteristics will be best made apparent by the following detailed description whose understanding will be made easier by the accompanying three sheets of drawings showing practical embodiments being cited only by way of example not limiting the scope of the present invention.

DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a perspective view showing the cross member and the sliding arms of the device being the object of the invention;
Fig. 2 is a perspective view showing a detail of the sliding supports being provided for the arms;
Fig. 3 is a side elevation showing a partially sectional view of one of the lateral arms and how are in detail fitted to it the lever being provided to actuate on the container lids and the catch being provided to retain the lateral support pins of said containers;
Fig. 4 is a perspective view showing the gripping device assembly;
Fig. 5 is a sectional plan-view showing the central fastening means in an active arrangement;
Fig. 6 is a plan-view showing said central fastening means in a passive arrangement; and
Fig. 7 is a partially sectional side elevation showing one of the lateral arms with the gripping means.

DETAILED DESCRIPTION

[0018] According to the drawings this garbage container picking up device comprises a cross member (1) having fitted to each of its ends in a sliding arrangement a respective lateral arm (2) and (3).

[0019] In order to allow the lateral arms.(2) and (3) to be slidingly shifted on the cross member (1) said arms are each fixed to a respective support (4) and (5) having fitted to it upper bush bearings (6) and lower bush bearings (7) (Fig. 2) running on the guides (8) being fitted to the upper and lower edges of said cross member (1). The supports (4) and (5) are shifted through the action of respective cylinders (9) and (10).

[0020] Each of the arms (2) and (3) has fitted to it in an articulated arrangement a respective lever (11) and (12) being provided to actuate on the container lids and a respective catch (13) and (14) being provided to retain the lateral support pins of the container when said pins have been fitted into the nests (15) being provided in said arms at the end of a downwardly slanting flat (16).

[0021] The arms (2) and (3) are hollow and each of them forms a housing housing the mechanisms being provided to actuate said levers (11) and (12) and said catches (13) and (14), said mechanisms (Fig. 3) comprising sensors (17), (18) and (19), a cylinder (20), a gear (21) and a return spring (22), a cam (24) acting on the carrier (25) carrying the catch (13) being fitted to the axle (23) of said gear.

[0022] Each of the lateral arms (2) and (3) inferiorly holds a respective gripping means (26) and (27) being apt to grip the containers, said cross member centrally supporting a complementary fastening means (28) being apt to grip containers of a smaller size.

[0023] The central fastening means (28) comprise two subarms (29) and (30) in their active arrangement (Figs. 4 and 5) being arranged in parallel to the arms (2) and (3) and in their passive arrangement (Fig. 6) being arranged in parallel to the cross member (1). Said subarms (29) and (30) are each linked at one of its ends in a pin-jointed connection to a respective pin (31) and (32) being linked through a respective connecting rod (33) and (34) to an actuating cylinder (35) being fitted in a sliding arrangement to a support (36) being fixed to the cross member (1).

[0024] The gripping means (26) and (27) are formed by two halves (37) and (38) at their mutually opposite edges being each linked in a pin-jointed connection to a respective pin (39) and (40) (Fig. 7) being fixed to a support (41) being solid with the corresponding arm, said halves being mutually related with means (42) being actuated by a cylinder (43) in order to thus have said halves (37) and (38) acting as a gripper.

[0025] Resilient bands (44) are fitted to both the lateral gripping means (26) and (27) and the central fastening means (28) at their faces being used to press against the side walls of the containers.

Claims

1. A device being designed for picking up containers and applicable to garbage collecting trucks, said device comprising a cross member (1) having laterally fitted to each of its lateral portions a respective arm (2) and (3) being provided with the container picking up means; **characterised in that** the lateral arms (2) and (3) are fitted in a sliding arrangement onto the cross member (1).

2. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 1, **characterised in that** the arms (2) and (3) are each solid with a support (4) and (5) that by means of bush bearings (6) and (7) is apt to be slidingly shifted on guides (8) being provided on the cross member (1), each of said supports being for such a purpose actuated by a respective cylinder (9) and (10).

3. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 1, **characterised in that** the arms (2) and (3) have fitted to them in an articulated arrangement levers (11) and (12) being provided to actuate on the container lids and catches (13) and (14) being provided to retain the lateral support pins of the container, the lever and catch of each arm being actuated by a common mechanism.

4. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 1, said device comprising a cross member (1)

having laterally fitted to each of its lateral portions a respective arm (2) and (3) being provided with respective gripping means (26) and (27), complementary fastening means (28) being centrally fitted to said cross member; **characterised in that** the central fastening means (28) comprise two subarms (29) and (30) being apt to adopt an active position being parallel to said arms (2) and (3) and a passive position being parallel to the cross member (1).

5. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 4, **characterised in that** the gripping means (26) and (27) are formed by two halves (37) and (38) at their mutually opposite edges being each linked in a pin-jointed connection to a respective pin (39) and (40) being fixed to a support (41) being solid with the corresponding arm, said halves being mutually related with means (42) being actuated by a cylinder (43) in order to thus have said halves acting as a gripper.

6. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 4, **characterised in that** the two subarms (29) and (30) are each linked at one of its ends in a pin-jointed connection to a respective pin (31) and (32) being linked to an actuating cylinder (35) being fitted in a sliding arrangement to a support (36) being fixed to the cross member (1).

7. A device being designed for picking up containers and applicable to garbage collecting trucks as per claim 4, **characterised in that** resilient bands (44) are fitted to both the lateral gripping means (26) and (27) and the central fastening means (28) at their faces being used to press against the side walls of the containers.

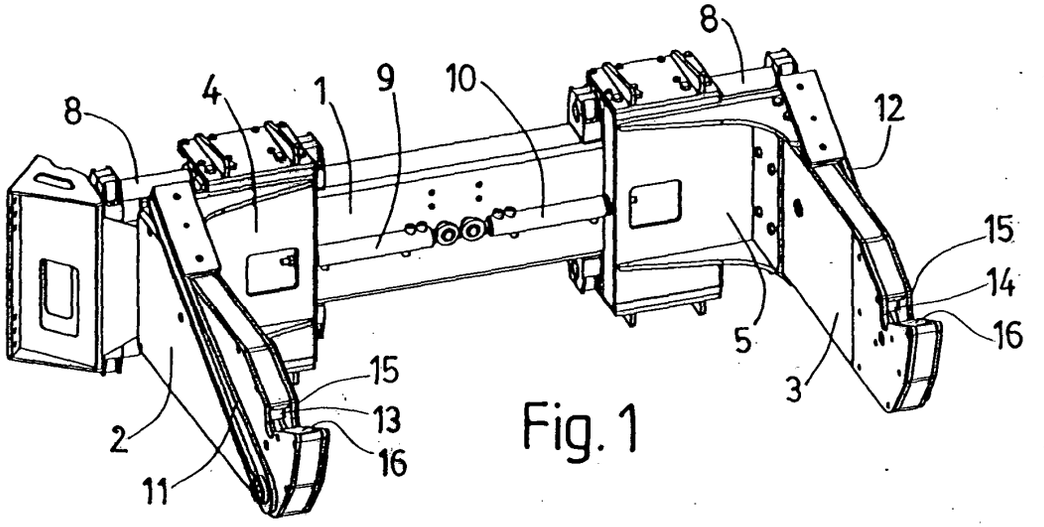

Fig. 1

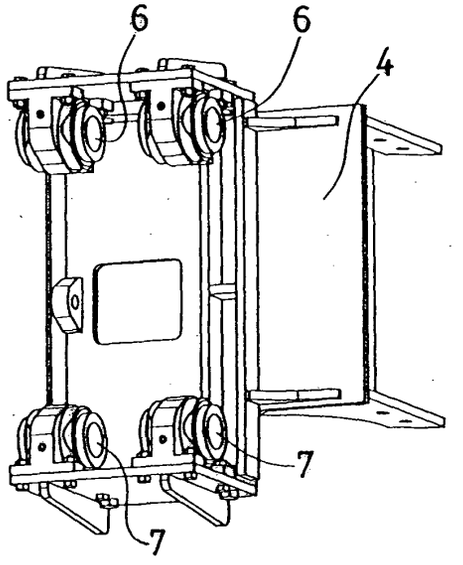

Fig. 2

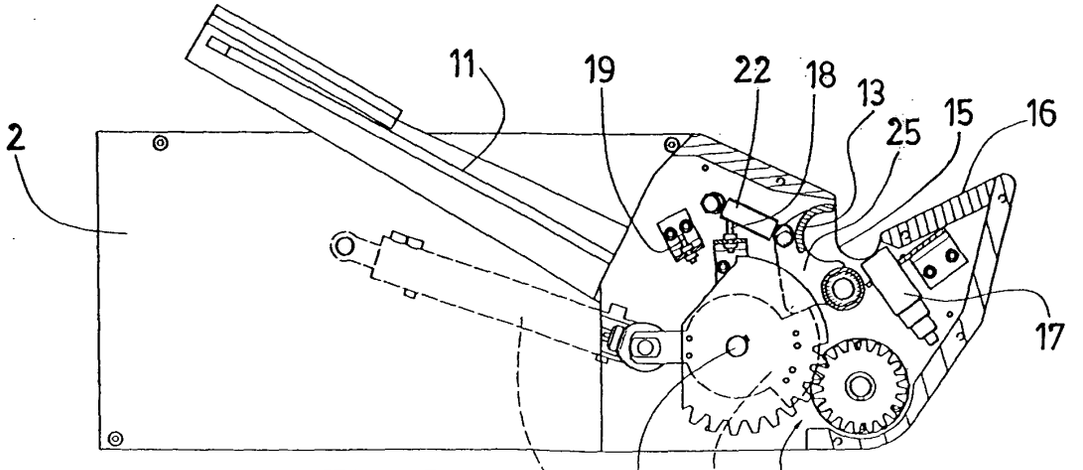

Fig. 3

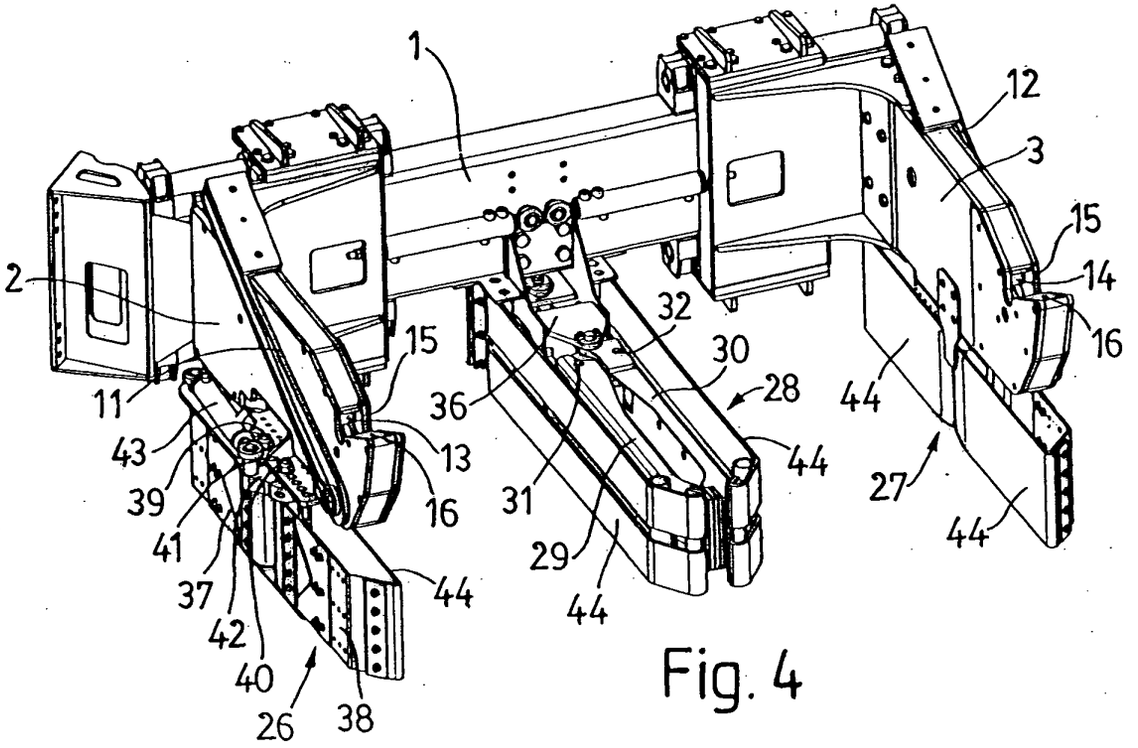
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Fig. 4

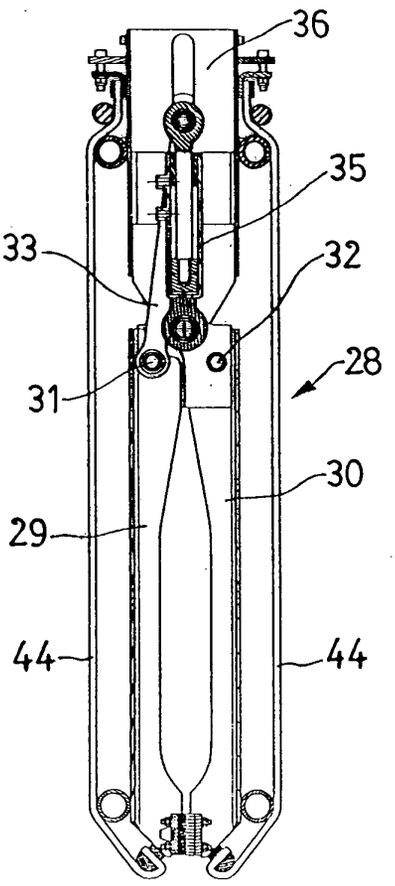
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Fig. 5

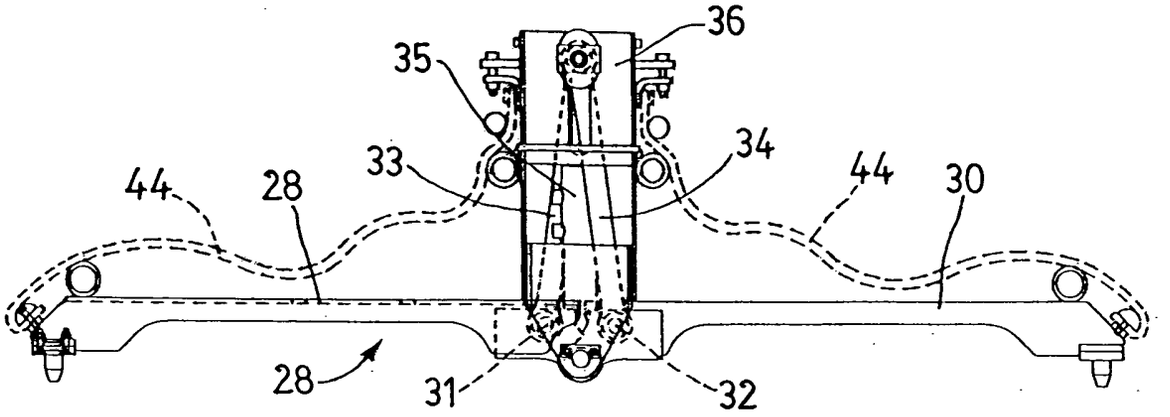

Fig. 6

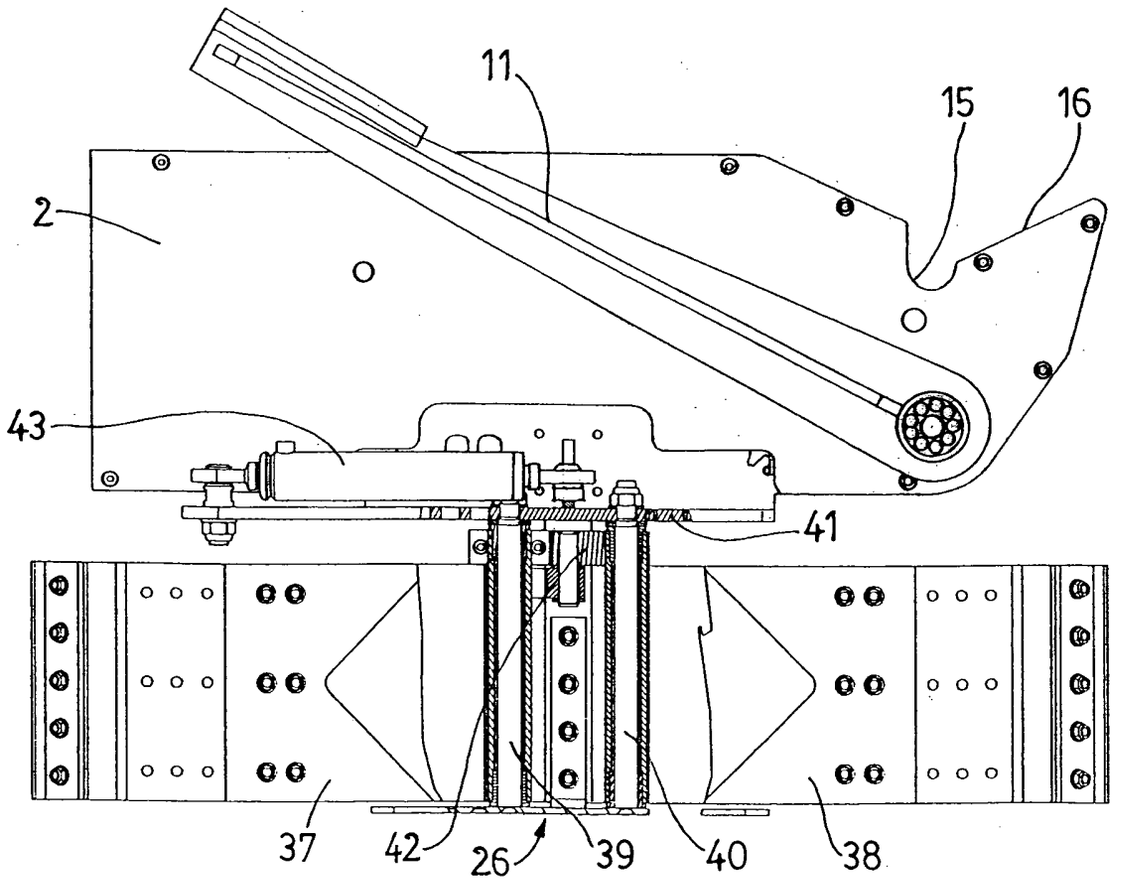

Fig. 7