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(54) **Refuse collection vehicle with side loading**

(57) A refuse collection vehicle comprises a chassis with a driver's cab and a load body mounted on the chassis for receiving collected refuse. The load body is provided on the rear end with a rear loader (5) with charging trough (6) and crushing mechanism for transferring into

the load body refuse thrown into the charging trough (6). The rear loader (5) is provided with a side-loading device (8) which can pick up refuse containers (13) disposed at the side of the refuse collection vehicle and empty them into the charging trough (6) of the rear loader (5).

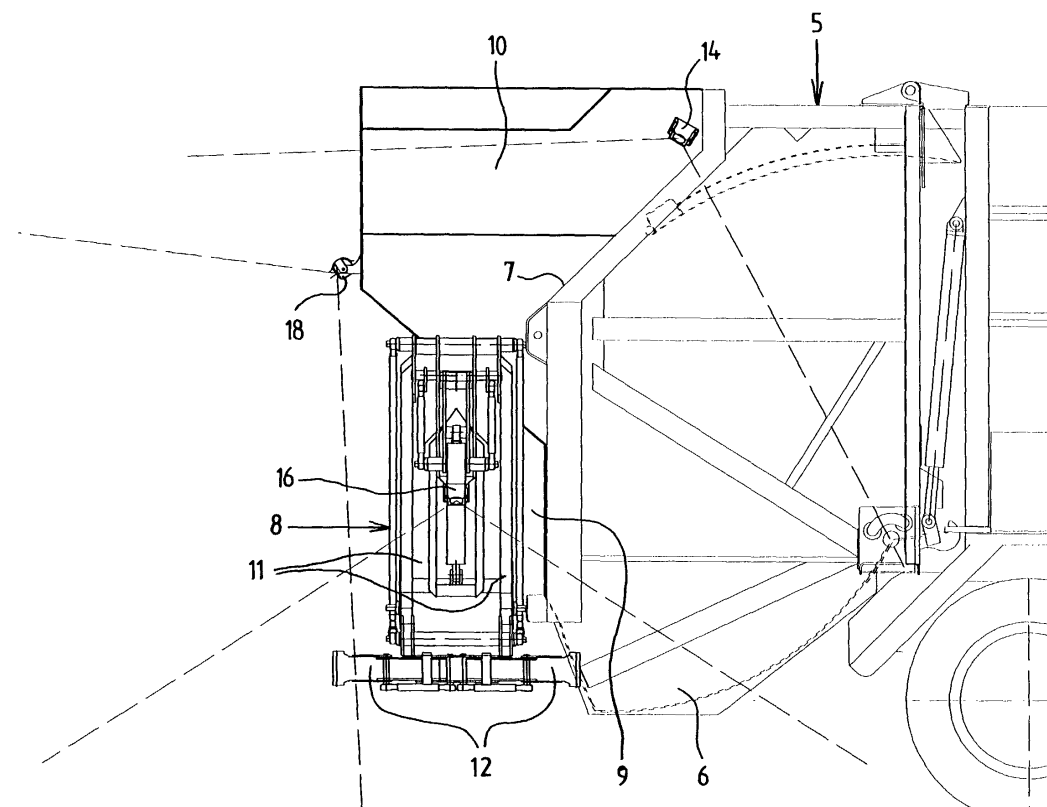


Fig 2

Description

[0001] The invention relates to a refuse collection vehicle, comprising a chassis with a driver's cab and a load body mounted on the chassis for receiving collected refuse, which load body is provided on the rear end with a rear loader with charging trough and pressing mechanism for transferring into the load body refuse thrown into the charging trough, and with a loading device fixed on the rear loader for picking up refuse containers and emptying them into the charging trough.

[0002] Such a refuse collection vehicle is known in various embodiments with various types of loading devices. The known loading devices fixed to the rear loader are designed in such a way that only refuse containers disposed or presented at the rear end of the vehicle can be picked up and emptied into the charging trough of the rear loader.

[0003] There are currently refuse collection systems in the case of which refuse containers disposed at the side of the road are picked up and emptied automatically by a refuse collection vehicle travelling along the road. The vehicles required for this are special vehicles with a side-loading device, the device for filling the load body being disposed with the side-loading device between the load body and the driver's cab. This means that useful space is lost.

[0004] The object of the invention is to make the known refuse collection vehicle with rear loader also suitable for side loading.

[0005] This object is achieved according to the invention by the fact that the rear loader is provided with a side-loading device which can pick up refuse containers disposed at the side of the refuse collection vehicle and empty them into the charging trough of the rear loader.

[0006] In this way a generally known refuse collection vehicle can be used universally both for the usual loading from the rear end and for side loading, which saves costs, since there is then no need for investment in special vehicles for side loading.

[0007] Preferred embodiments of a refuse collection vehicle according to the invention are described in the dependent claims.

[0008] The invention will be explained in greater detail below with reference to the drawing, in which:

Fig. 1 shows diagrammatically in side view a refuse collection vehicle with rear loader;

Fig. 2 shows the rear part of the refuse collection vehicle shown in Fig. 1, provided with a side-loading device;

Fig. 3 shows in rear view the rear part of the refuse collection vehicle shown in Fig. 2, with the side-loading device in the idle position.

Fig. 4 is a view corresponding to Fig. 3, in which the side-loading device is about to pick up a refuse container disposed next to the refuse collection vehicle;

Fig. 5 is a view corresponding to Fig. 3, in which a

refuse container picked up by the side-loading device is being emptied; and

Figs 6 and 7 each show in top view and on a reduced scale the rear part of the refuse collection vehicle shown in Fig. 2, in this case the range of cameras mounted on this rear part being shown.

[0009] Fig. 1 shows a known refuse collection vehicle 1, which comprises a chassis 2 with a driver's cab 3, and also a load body 4 mounted on the chassis 2, for receiving collected refuse. The load body 4 is provided on the rear end with a rear loader 5 which has a charging trough 6 and a pressing mechanism (not shown), for transferring into the load body refuse thrown into the charging trough 6. The rear loader is provided with a charging opening 7.

[0010] In Figs 2 and 3 the rear part of the refuse collection vehicle shown in Fig. 1 is shown in side view and in rear view, in this case the rear loader 5 being provided with a side-loading device 8. Said side-loading device 8 can be fitted next to or instead of the loading device(s) usually mounted on the rear loader 5. The side-loading device 8 is known per se for refuse collection vehicles specially designed for side loading. The side-loading device 8 is fixed on the side or on the rear end, or partly on the side and partly on the rear end, and preferably by means of an auxiliary frame 9, on the rear loader 5. The side-loading device is preferably fixed detachably on the rear loader 5.

[0011] The side-loading device 8 comprises a lifting arm 11 and a gripping device 12 fitted on the end of the lifting arm, for gripping a refuse container 13 disposed at the side of the refuse collection vehicle (see Fig. 3). The loading device 8 is in the idle position in Fig. 3.

[0012] During use of the side-loading device 8, refuse containers are tilted and emptied at a fairly great height. In order to make the refuse coming out of the refuse containers go into the charging trough 6 without any problems, the rear loader 5 is preferably provided on the rear end with a charging hopper 10, which connects to the charging opening 7, and thus opens out into the charging trough 6. In the embodiment shown, the charging hopper 10 extends over virtually the entire breadth of the rear loader 5. However, this is not necessary.

[0013] Fig. 4 shows the situation in which the side-loading device is about to pick up a refuse container 13 disposed next to the vehicle.

[0014] Fig. 5 shows the situation in which a refuse container 13 has been picked up, raised and tilted above the charging hopper 10, for emptying into the charging hopper 10. The refuse is guided through the charging hopper to the charging opening 7 of the rear loader 5, and in this way reaches the charging trough 6. From there, the refuse is taken in the usual manner through the crushing mechanism into the load body 4.

[0015] The invention is not limited to a side-loading device of the type shown in the drawing. Other types of side-loading devices could also be used.

[0016] Through use of the invention, conventional refuse collection vehicles with rear loader can be used on a wider scale, so that the purchase of refuse collection vehicles specially designed for side loading is not necessary.

[0017] In order to be able to check the functioning of the side-loading device 8 provided at the rear end of the refuse collection vehicle and to be able to ensure safety, the refuse collection vehicle can be provided with a first camera 14, which covers the working area of the side-loading device 8, and a first monitor disposed in the driver's cab and connected to the camera 14. The working area of the camera 14 is indicated by 15 in Fig. 6.

[0018] The side-loading device 8 can be provided with a second camera 16, which serves as a so-called collision camera. This camera 16 makes it possible to see by way of the first monitor in the driver's cab that the side-loading device 8 is in line with a container 13 to be picked up. The working area of the second camera 16 is indicated by 17 in Fig. 7. As soon as the side-loading device 8 is then activated, with the object of completing a loading cycle automatically, the first monitor switches over to the first camera 14, in order to be able to check the working area of the side-loading device.

[0019] The refuse collection vehicle is further provided with control means for controlling the side-loading device 8. With the aid of these control means, the driver of the vehicle can, insofar as is necessary, control the side-loading device and intervene should dangerous situations arise.

[0020] In order to allow the area behind the refuse collection vehicle to be checked, the refuse collection vehicle can be provided on the rear end with a third camera 18, which covers the area behind the vehicle, and with a second monitor disposed in the driver's cab and connected to the third camera. The working area of the third camera 18 is indicated by 19 in Figs. 6 and 7.

Claims

1. Refuse collection vehicle, comprising a chassis with a driver's cab and a load body mounted on the chassis for receiving collected refuse, which load body is provided on the rear end with a rear loader with charging trough and pressing mechanism for transferring into the load body refuse thrown into the charging trough, and with a loading device fixed on the rear loader for picking up refuse containers and emptying them into the charging trough of the rear loader, **characterized in that** the rear loader is provided with a side-loading device, which is fitted on the side or on the rear end, or partly on the side and partly on the rear end, and which can pick up refuse containers disposed at the side of the refuse collection vehicle and empty them into the charging trough of the rear loader.
2. Refuse collection vehicle according to claim 1, in which the side-loading device is fixed on the rear loader with the aid of an auxiliary frame.
3. Refuse collection vehicle according to claim 1 or 2, in which the side-loading device is fixed detachably on the rear loader.
4. Refuse collection vehicle according to one of claims 1-3, in which the rear loader is provided on the rear end with a charging hopper, which at the bottom end opens out into the charging trough.
5. Refuse collection vehicle according to one of claims 1-4, in which the refuse collection vehicle is provided with a first camera, which covers the working area of the side-loading device.
6. Refuse collection vehicle according to one of claims 1-5, in which the side-loading device is provided with a second camera, for detecting the position of the side-loading device relative to a container to be picked up.
7. Refuse collection vehicle according to one of claims 1-6, in which the refuse collection vehicle is provided with a third camera, which covers the area behind the vehicle.
8. Refuse collection vehicle according to one of claims 5-7, in which at least one monitor is disposed in the driver's cab and is connected to the camera(s).

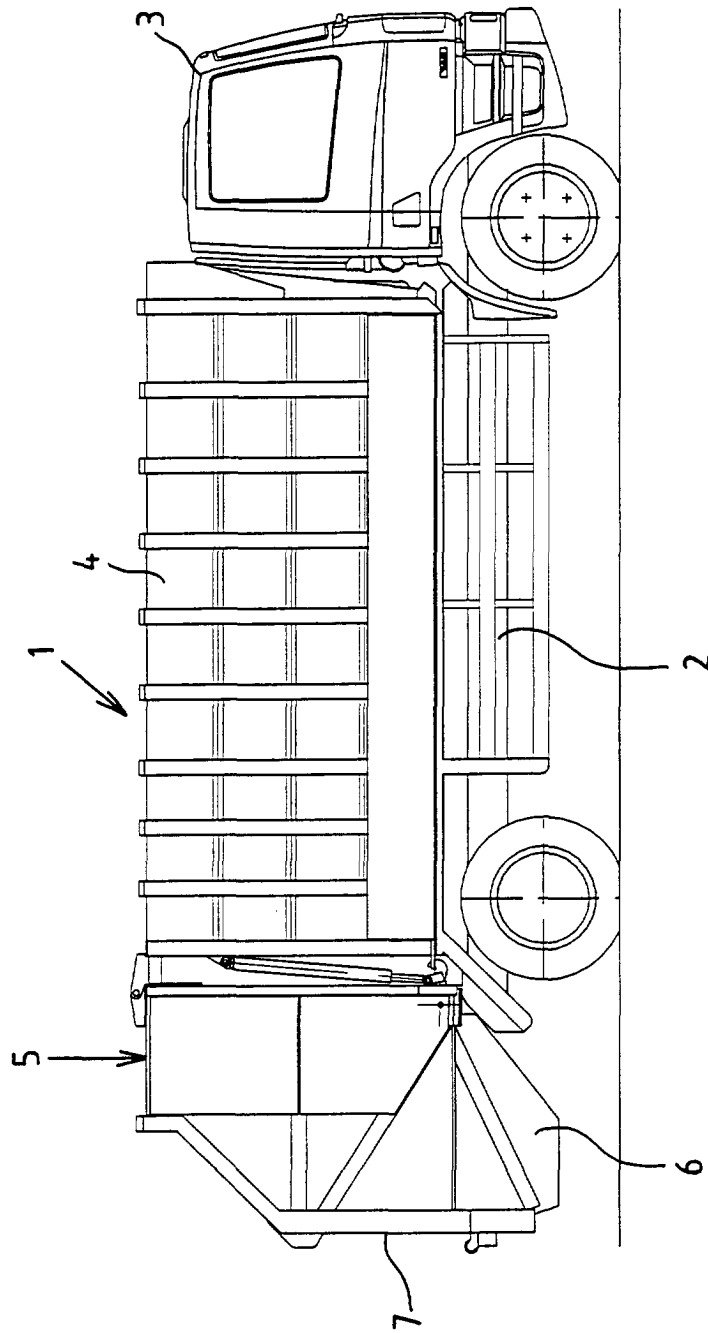
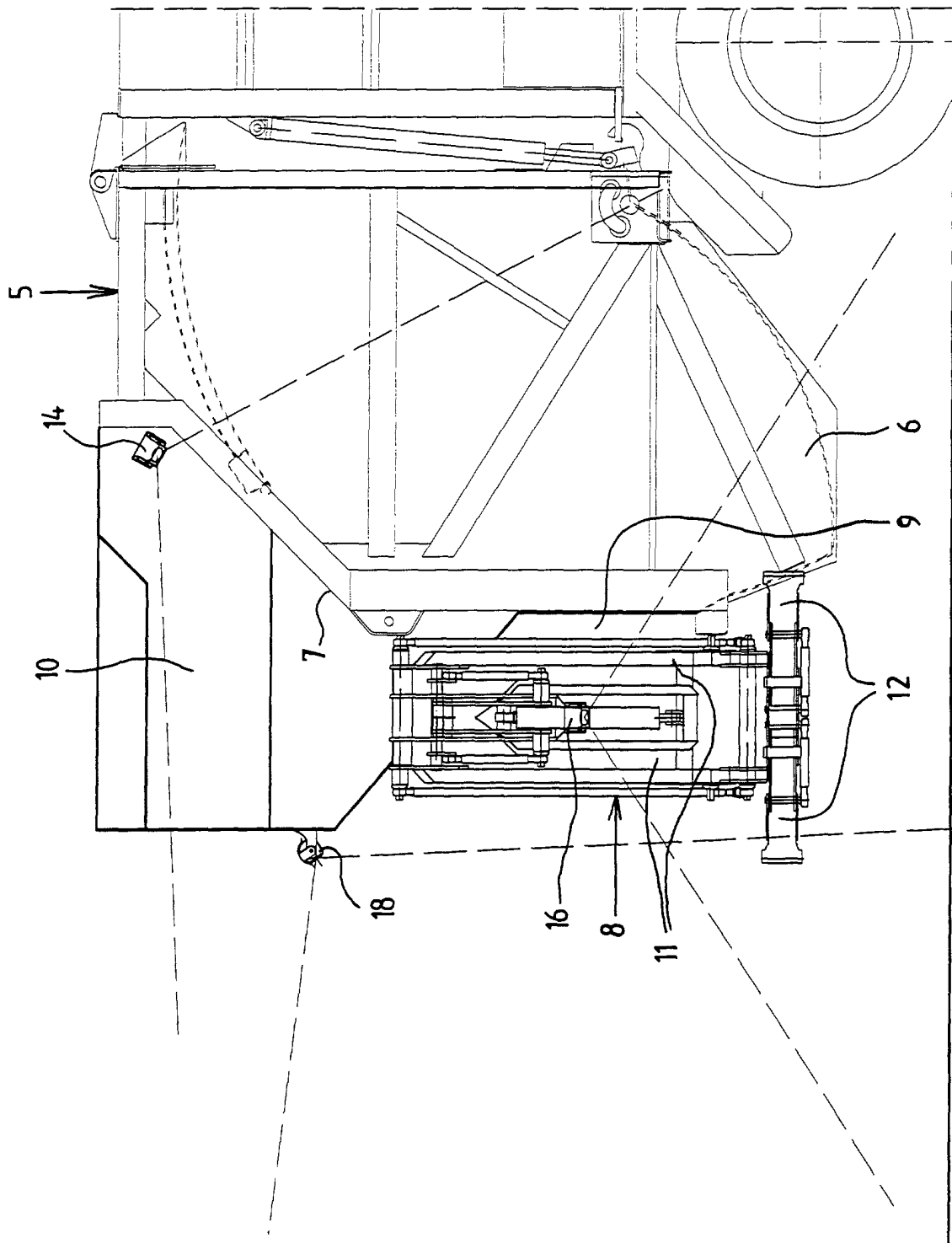


Fig 1



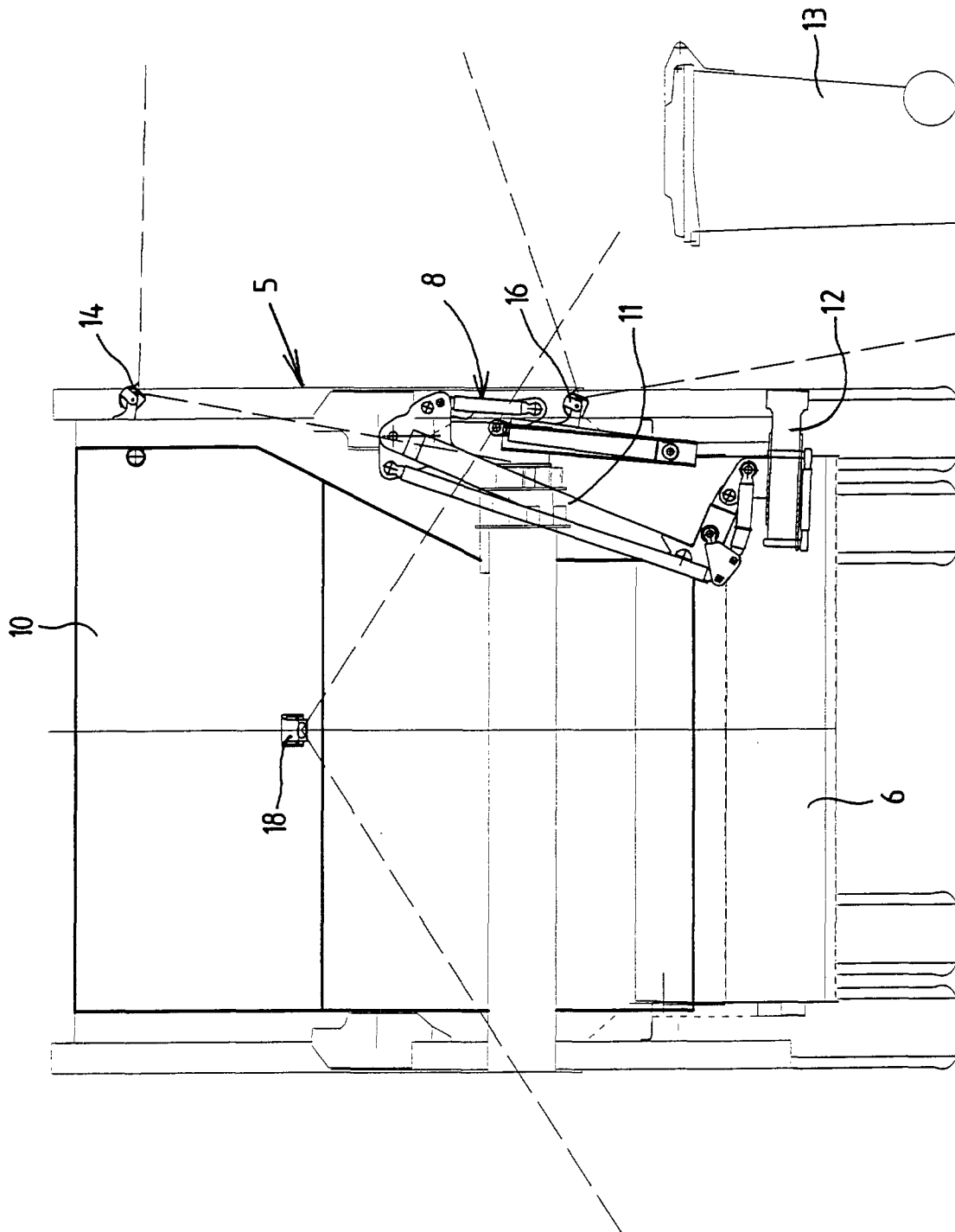
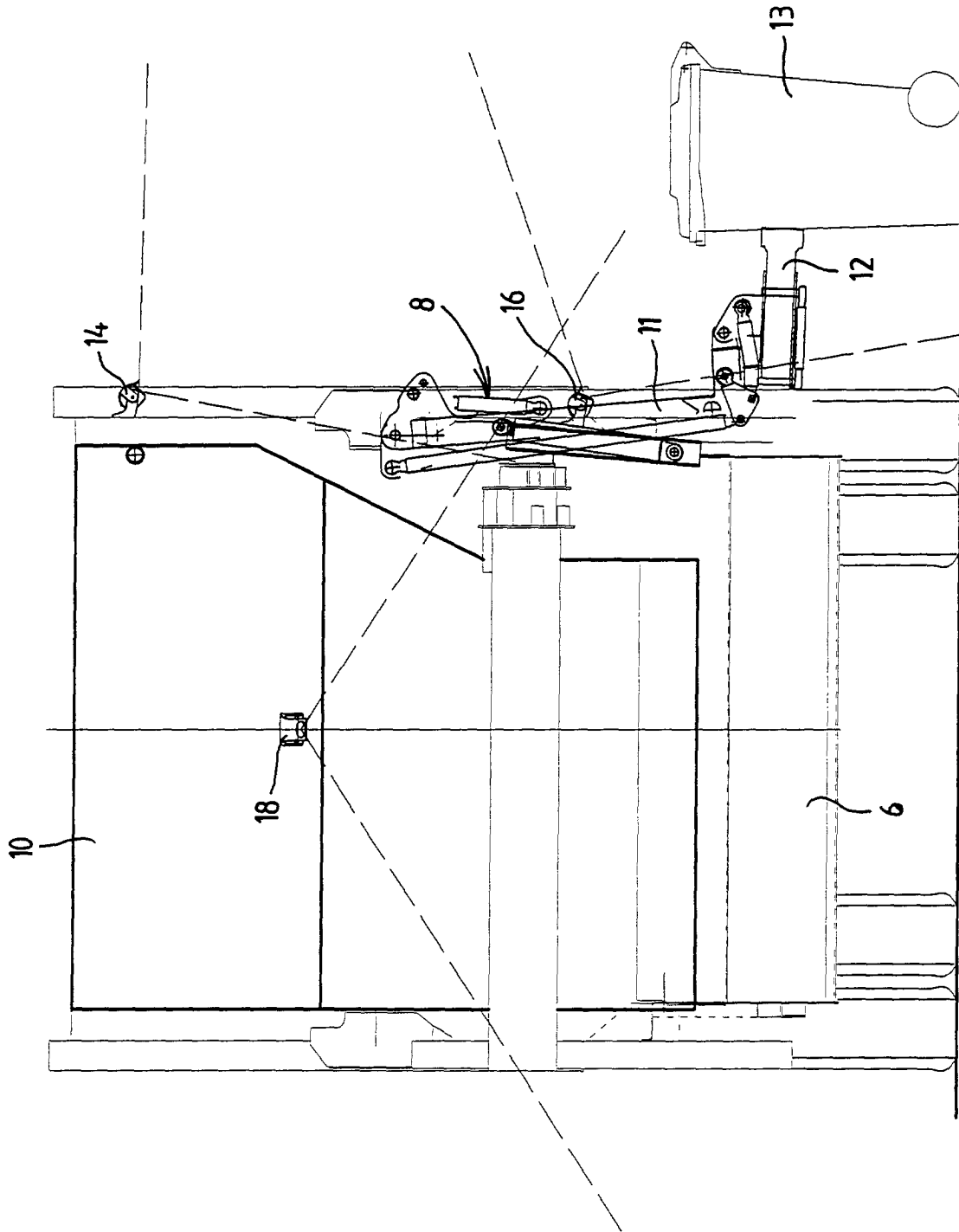


Fig 3



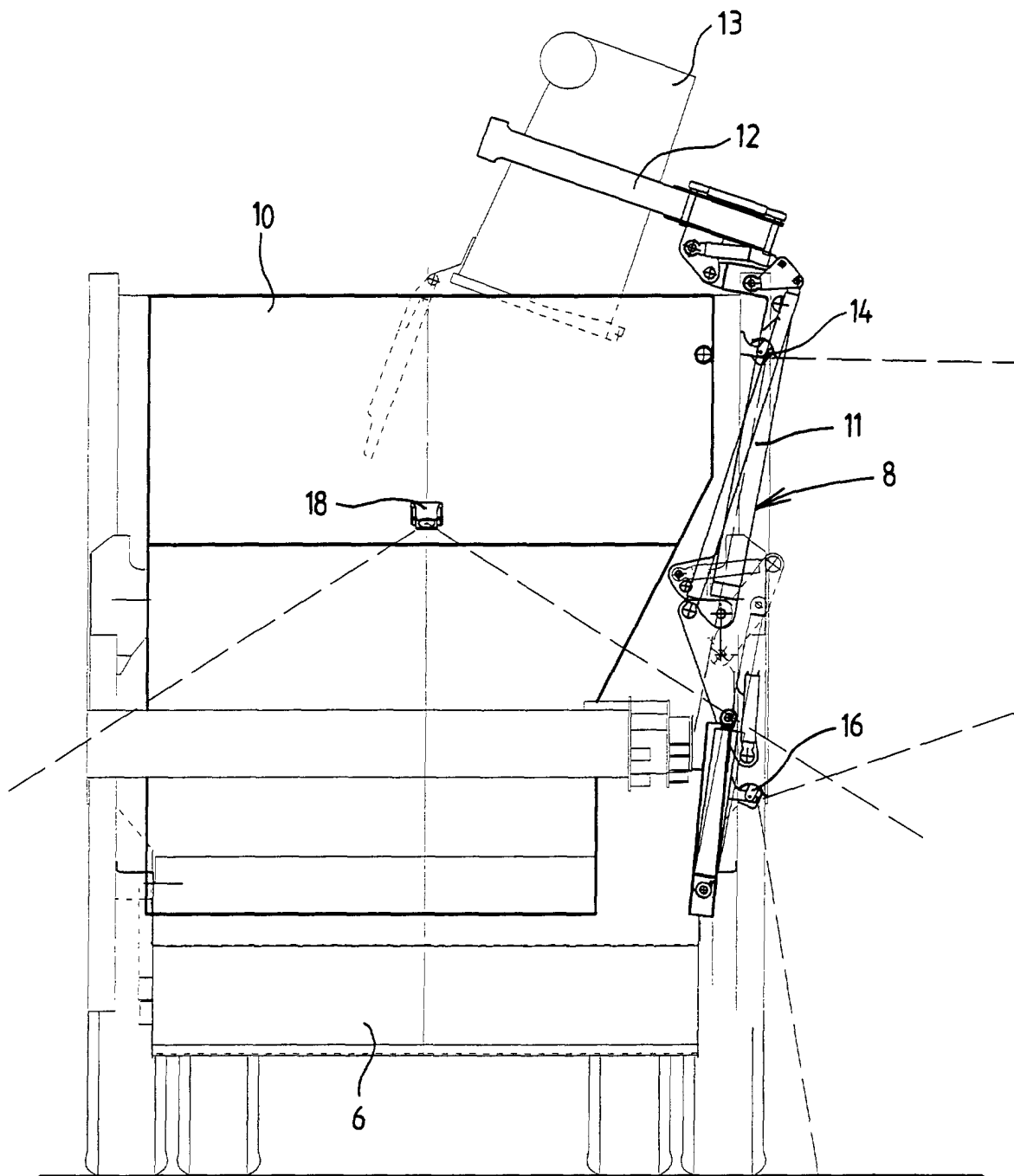
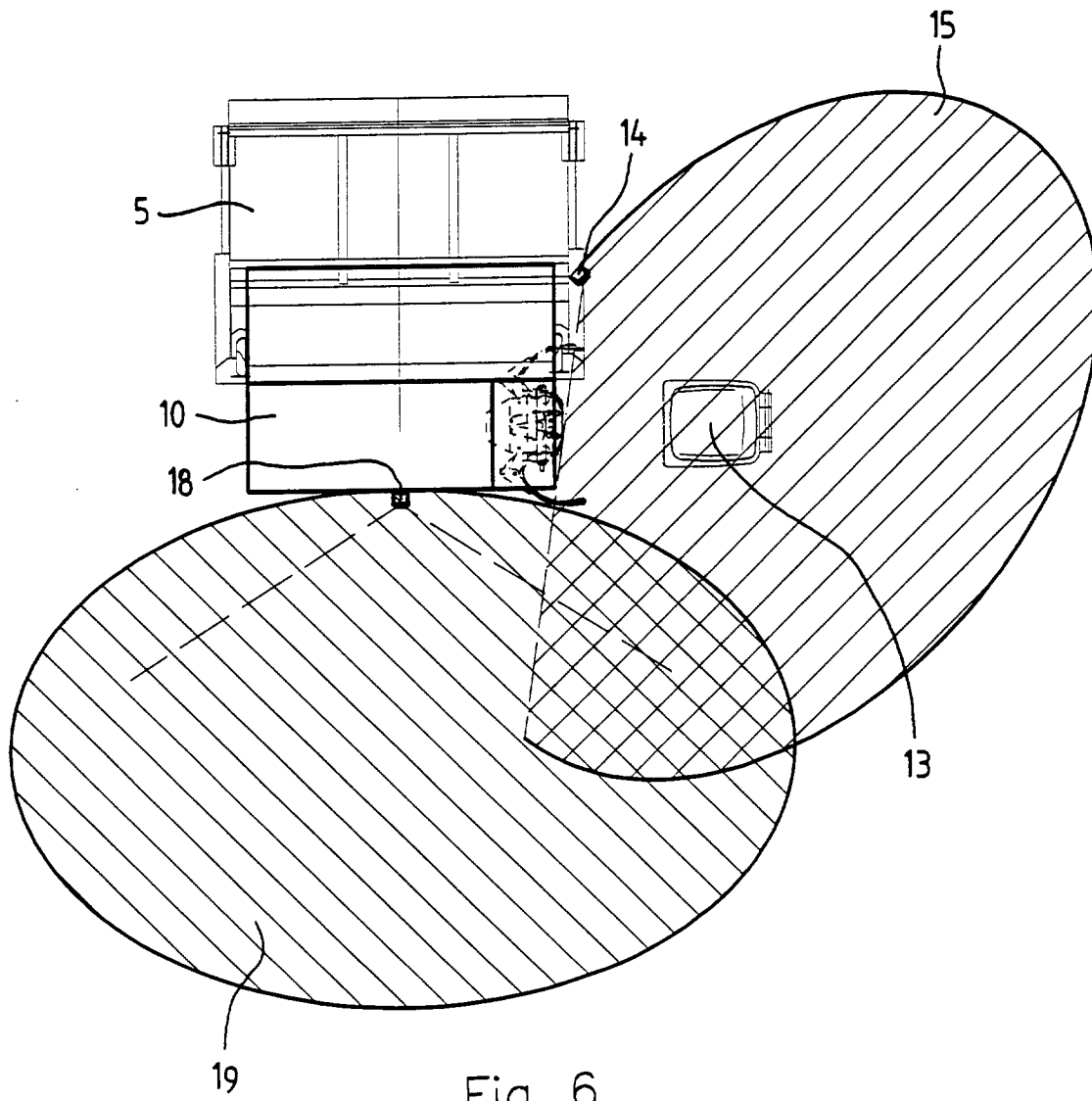


Fig 5



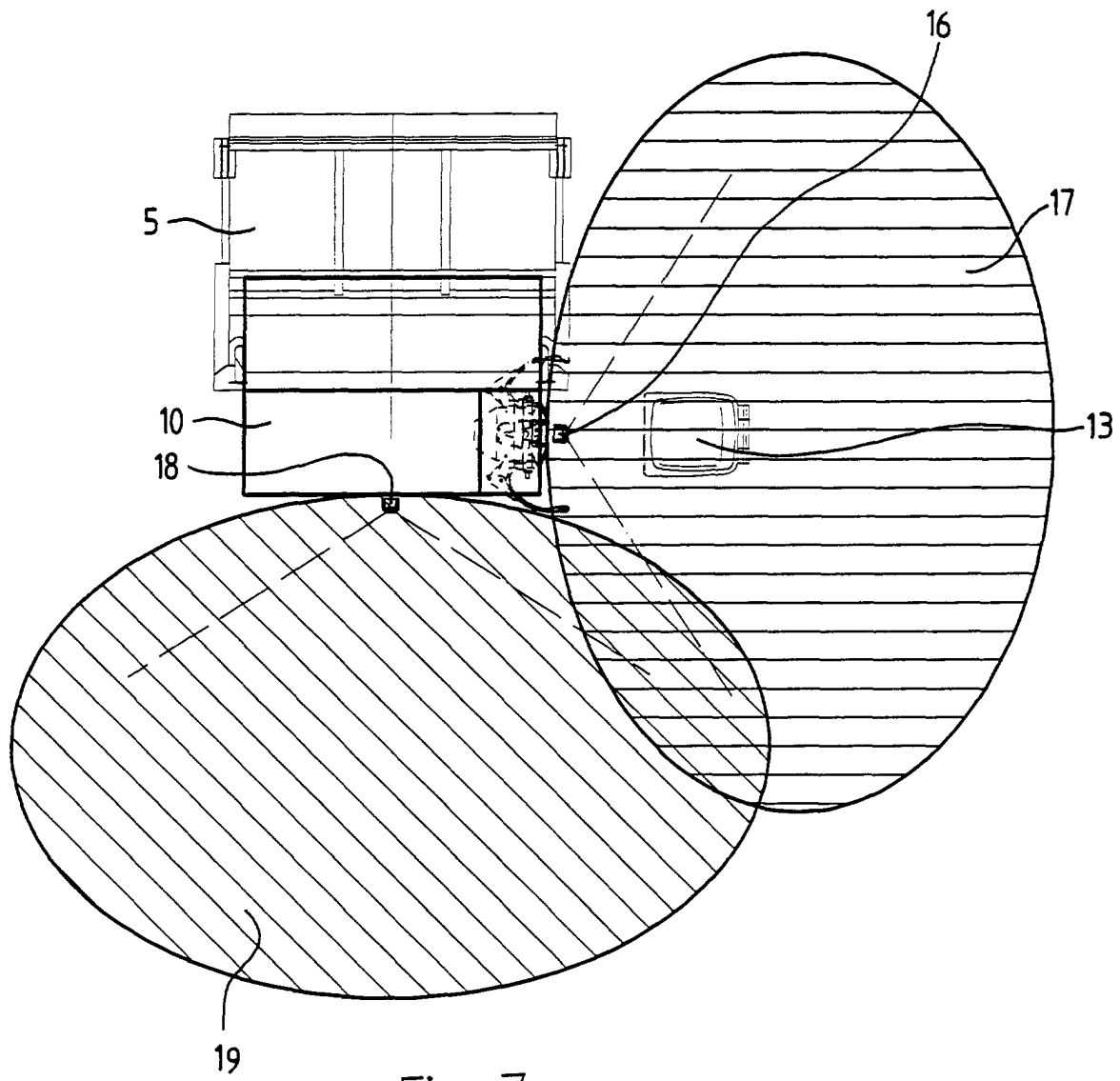


Fig 7



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 20 3022

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 2 November 2001	Examiner Smolders, R
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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