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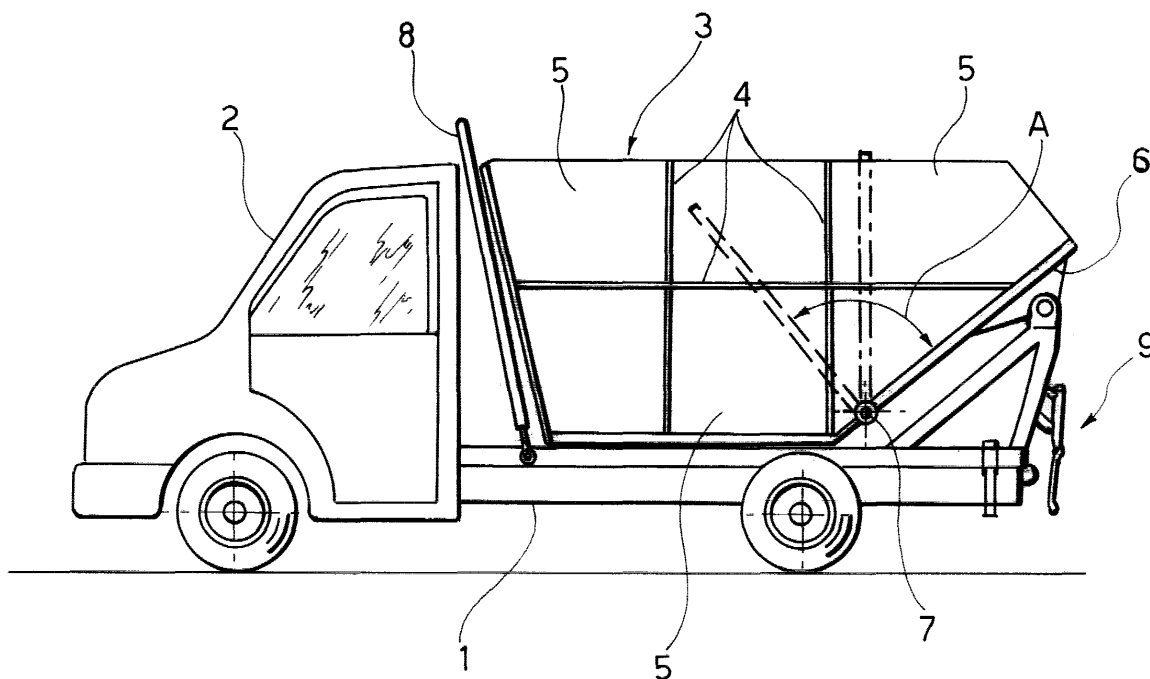
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(54) **Light truck for waste collection particularly within an urban environment**

(57) A lightweight vehicle for refuse collection, particularly in urban areas, having a dump body (3) which defines a tank for containing refuse. The rear part (6) of

the dump body (3) can at least in part be made to advance, conveniently by rotation about a bottom horizontal axis (7), towards the front part of the dump body (3) to carry out an action of compacting refuse.



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Description

[0001] The present invention relates in general to vehicles for refuse collection.

[0002] More in particular, the invention relates to a light weight lorry for refuse collection, particularly in urban areas, of the type comprising a dump body which defines a tank for containing refuse that is unloaded inside it by a device for lifting and tipping up trolleyed refuse bins, the said device being set in an area adjacent to the rear wall of the dump body.

[0003] Such vehicles must meet certain fundamental requirements.

[0004] In the first place, according to current standards, the total weight of the lorry, understood as the sum of the empty weight of the vehicle together with the corresponding equipment and of the load corresponding to the carrying capacity, must not exceed 3500 kg. This is in fact the limit both for the vehicle to be driven without the need for a licence for driving heavy lorries and for it to be able to circulate in any urban area. In order to ensure an economically acceptable carrying capacity, it is therefore necessary to reduce as much as possible the empty weight of the vehicle with its equipment, and in particular the weight of the dump body and the corresponding tipping system.

[0005] On the other hand, with the aim of improving the operative functionality of the vehicle by optimizing the space available, i.e., the loading space of the tank for containing refuse, it is advantageous to equip the dump body with apparatus for compacting refuse. In certain currently known solutions which envisage the use of such a compacting apparatus, the increase in weight renders absolutely disadvantageous the ratio between the empty weight of the vehicle and its carrying capacity.

[0006] The purpose of the present invention is to provide a simple and functional solution for reconciling the above-mentioned requirements, namely for providing a lightweight vehicle for refuse collection of the type specified above, arranged for carrying out a function of compacting of refuse inside the refuse-containing tank without increasing significantly the empty weight of the vehicle, and hence without appreciably reducing its carrying capacity, given the same total weight.

[0007] According to the present invention, the above purpose is achieved essentially thanks to the fact that the rear wall of the refuse-containing tank can, at least in part, be made to advance towards the front part of the dump body.

[0008] Thanks to this solution idea, the vehicle according to the invention is able to carry out sufficient compacting of the refuse inside the refuse-containing tank without the need to resort to traditional compacting apparatus, which is complex from the constructional standpoint and in any case heavy, at the same time maintaining the carrying capacity substantially unaltered as compared to that of a vehicle not equipped with compacting apparatus.

[0009] According to the preferred embodiment of the invention, the aforesaid rear wall of the refuse-containing tank is able to turn about a bottom horizontal axis, and actuating means are provided for controlling rotation of said rear wall between a moved-backward position and a moved-forward position.

[0010] In order to further reduce the empty weight of the vehicle, the dump body is conveniently made up of a load-bearing framework to which containment plates are fixed. The said containment plates are preferably made of aluminium or alloys thereof, whilst the load-bearing framework and the rear wall that performs the function of compacter are preferably made of high-strength steel.

[0011] The invention will now be described in detail with reference to the attached drawing, which is provided purely by way of non-limiting example and which is a schematic side elevation of a lightweight lorry for refuse collection according to the invention.

[0012] With reference to the drawing, the lorry according to the invention basically comprises a chassis 1 which carries at the front a driving cab 2 with the engine, and at the rear a dump body 3 which is at least partially open upwards and which defines a refuse-containing tank.

[0013] The dump body 3 can, in a way generally of itself known, be tipped between the lowered position illustrated in the drawing and a raised position for unloading the refuse contained inside the tank. In the vehicle according to the invention, tipping of the dump body is actuated by means of a single long hydraulic jack 8 set in front of the dump body 3 in a substantially vertical condition.

[0014] Likewise in a way of itself known, the vehicle is provided at the rear with an assembly 6 for picking up, lifting and tipping up trolleyed refuse bins, for example of the type having a capacity of between 120 and 1100 litres.

[0015] The dump body 3 is made up of a load-bearing framework 4 consisting of high-strength steel elements on which are applied, conveniently by means of a special adhesive-bonding agent (namely, without hot welds), containment walls 5 made of aluminium or its alloys. Thanks to the above structure, the weight of the dump body 3 is considerably contained.

[0016] According to the fundamental characteristic of the invention, operatively associated to the dump body 3 is a compacting apparatus having a simple and essential conformation, but at the same time a high level of functionality. The said compacting apparatus simply consists of the rear wall itself of the dump body 3, designated by 6, which can be displaced for most of its extension between a moved-backward position, in which it delimits the refuse-containing tank at the rear, and a moved-forward position inside said tank, in such a way as to subject the refuse contained therein to an albeit modest compacting, as a result of which the loading space of the tank can be exploited in an optimal way.

[0017] According to the preferred embodiment of the invention as represented in the drawing, the displacement of the rear wall 6, which is also normally made of high-strength steel, is obtained by means of rotation of said rear wall 6, about a bottom horizontal pivot 7 carried by the framework 4, from the position indicated by a solid line in the figure (where the rear wall 6 is inclined upwards and backwards) to the position indicated by a dashed line (where the rear wall 6 is inclined upwards but forwards), passing through the intermediate vertical position indicated by a dashed-and-dotted line. The angular amplitude of the operative displacement of the rear wall 6 is indicated by A in the figure.

[0018] The angular displacement of the rear wall 6 from the moved-backward position to the moved-forward position, as a result of which the refuse contained in the tank is displaced and compacted in the direction of the front part of the dump body 3, is obtained by means of any suitable actuating system, which is within the reach of any person skilled in the branch and which is not illustrated for reasons of simplicity. Purely by way of example, the said actuating system may be made up of a pair of lateral hydraulic jacks set between special appendages of the load-bearing framework 4 and the opposite sides of the rear wall 6.

[0019] It will appear evident that the increase in weight resulting from the presence of the rotation pivot 7 and of the two hydraulic jacks (or of an equivalent actuating system) is altogether negligible, a fact that enables the vehicle according to the invention to maintain substantially unaltered the ratio between total weight and carrying capacity as compared to a similar vehicle not equipped with compacting apparatus. Hence, it is foreseeable that, with a total full load of approximately 3500 kg, the vehicle according to the invention is able to ensure a carrying capacity in the region of 1000 kg.

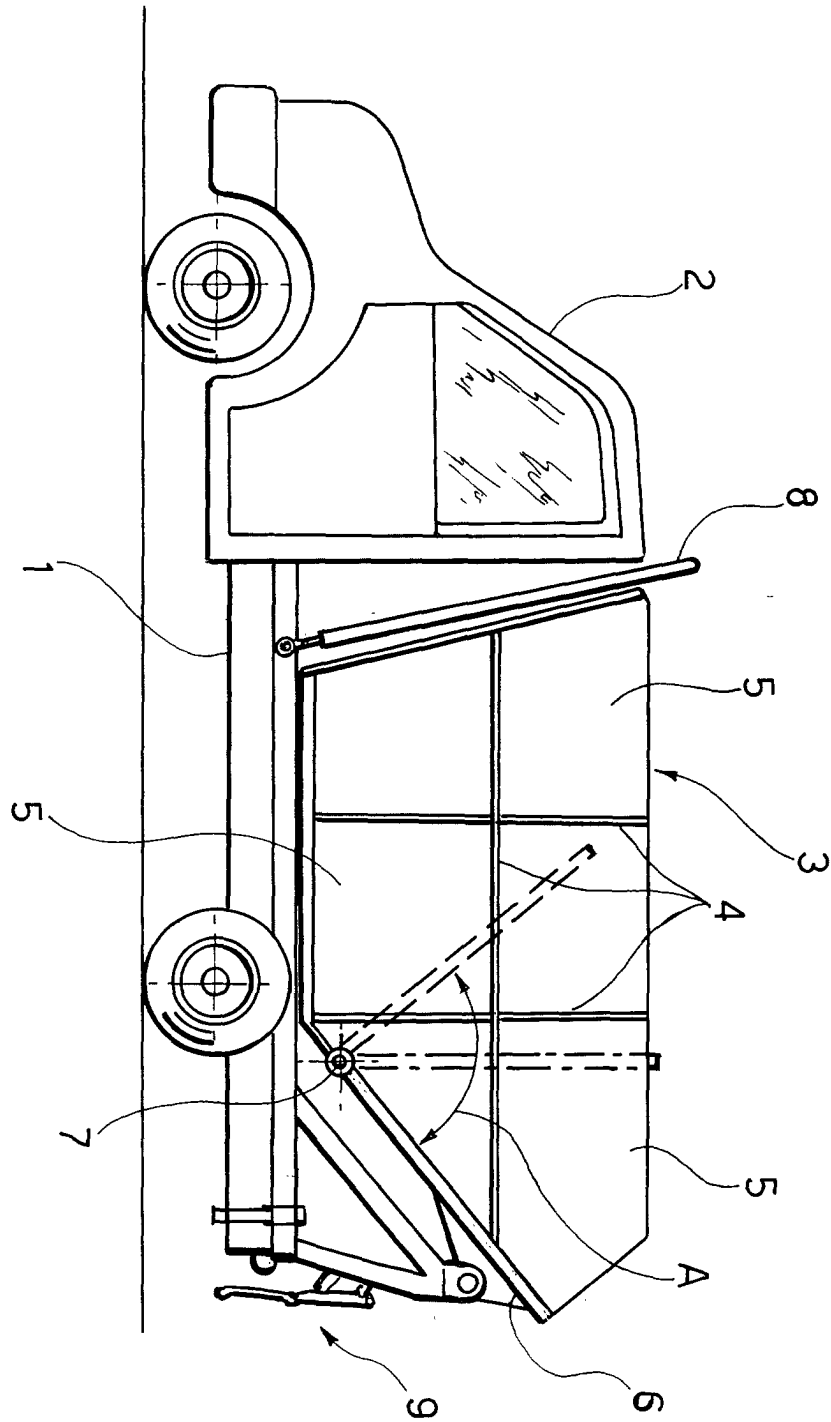
[0020] Of course the details of construction and the embodiments may vary widely with respect to what is described and illustrated herein, without thereby departing from the scope of the present invention as defined in the ensuing claims.

Claims

1. A lightweight vehicle for refuse collection, particularly in urban areas, having a dump body (3) which defines a tank for containing the refuse unloaded inside it by means of a device (4) for lifting and tipping up trolleyed refuse bins, the said device (4) being set in a position adjacent to the rear wall (6) of the dump body (3), **characterized in that** said rear wall (6) can at least in part be made to advance towards the front part of the dump body (3).
2. The vehicle according to Claim 1, **characterized in that** said rear wall (6) is able to turn about a bottom horizontal axis (7), and **in that** actuating means are

provided for controlling rotation of said rear wall (6) between a moved-backward position and a moved-forward position.

3. The vehicle according to Claim 1 or Claim 2, **characterized in that** said dump body (3) is made up of a load-bearing framework (4) to which containment plates (5) are fixed.
4. The vehicle according to Claim 3, **characterized in that** said containment plates (5) are fixed to the load-bearing framework (4) by means of an adhesive-bonding agent.
5. The vehicle according to Claim 4, **characterized in that** said containment plates (5) are made of aluminium or alloys thereof, and said load-bearing framework (4) and said rear wall (6) are made of high-strength steel.
6. The vehicle according to any one of the preceding claims, **characterized in that** said dump body can be tipped by means of a single hydraulic jack set substantially vertical in front of said dump body (3).
7. A lightweight vehicle substantially as described and illustrated and for the purposes specified herein.



Application Number

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INCOMPLETE SEARCH The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : Claims searched incompletely : Claims not searched : 7 Reason for the limitation of the search: Rule 29(6) EPC.			
Place of search		Date of completion of the search	Examiner
THE HAGUE		6 July 2001	Smolders, R
CATEGORY OF CITED DOCUMENTS		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	
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			



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PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0171

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