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(12) # EUROPEAN PATENT APPLICATION

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(54) **Automatic water transfer installation for the equipment used to wash the refuse bodies.**

(57) This invention relates to an installation adaptable to an equipment for washing de refuse bodies (21), the object of which is to solve the problem of transfering the washing water from the washing chamber (13) to the water collector reservoir (6). This problem is solved by creating, in the central compartment of the reservoir (6), a vacuum such as to suck the washing water through a pipe (12) which draws in the washing chamber (13) and debouches into the said central portion (6) of the reservoir; the flow is controlled by a spheric gate valve (11) mounted on the pipe.

The installation is completed by all the contrivances which render it safe and of easy maintenance.

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AUTOMATIC WATER TRANSFER INSTALLATION FOR THE EQUIPMENT USED TO WASH THE REFUSE BODIES.

This invention relates to an automatic water transfer installation for the equipment used to wash the refuse bodies.

Generally, the collection of the refuses is carried out by means of refuse bodies which are periodically emptied by special vehicles which carry out automatically the transfer of the refuses from the refuse body to the loading space of the vehicle.

In addition to the problem of the collection exists also an hygienic problem , inasmuch as the refuse bodies, in consideration of their function, have to be washed disinfected periodically; also this function is carried out automatically by special vehicles which withdraw the empty body, wash the interior and the exterior thereof by means of high pressure jets of water or a disinfectant solution and, once the washing has been terminated, depose again the refuse body on its place.

Said vehicles, called refuse body washers, are generally formed, in the portion inherent to their function, by a caisson,mounted on the chassis of the vehicle, which is divided into sections containing both the washing liquid and the liquid pumping systems and, in the rear portion, by a washing and washing water collecting chamber and by a refuse body lifting and overturning mechanism disposed within said washing chamber.

The whole forms, practically,a closed water circulation system.

A disadvantage of the known refuse body washers consists in that the transfer of the water from the washing chamber to the reservoir is carried our by means of centrifugal impeller pumps, of the self-priming or other type, which have the disadvantage of easily becoming clogged because of the continuous passage of water with the solid bodies suspended therein.

In addition, for a good operation of the pump it is necessary to have a certain quantity of water in the washing chamber, so as to avoid problems of cavitation at the suction pouth of the pump.

The presence of this water gives than rise to problems at the moment of the braking of the refuse body washing vehicles because of the subsequent lapping within the washing chamber.

The object of the device according to the invention is to provide a mechanism of easy maintenance and non-critical use by means of which it will be possible to avoid the disadvantages of delicacy and assiduous maintenance due to the transfer methods described above, and which, in addition, will attain the object of completely discharging the water which collects on the bottom of the washing chamber.

To attain this and further objects which will be more clearly apparent from the following description, the invention proposes to provide an automatic water transfer installation to be used for the washing of refuse collecting bodies, mounted on a motor vehicle having, in its front portion, a reservoir and, in its rear portion, a washing chamber for weshing the refuse bodies, said reservoir being divided into compartments for recovering the washing water and collecting the clean water intended to be used for the washing, characterized in that the installation is provided with a pump intended to create a vacuum in the interior of the washing water recovery compartment and a vacuostat operatively connected to said vacuum pump and to a floodgate inserted along a connection pipe between the water recovery compartment and the washing chamber, interconnected in such a manner that the vacuostat actuates the pump and closes the floodgate when the atmospheric pressure is attained in the recovery compartment, and subsequently closes the pump and opens the floodgate when the pre-established vacuum is attained in the recovery compartment.

The device according to the invention is described hereunder in a preferred, but not limiting, embodiment thereof, with reference to the annexed drawing which is a partially sectional sideview of the refuse body washing vehicle according to the invention.

Fixed to the chassis 1 of a motor vehicle are gigh pressure pump 2 for washing the refuse bodies 21, and a vacuum pump 3; the reservoir 4, mounted on the chassis 1, is divided into three compartments: two side compartments 5 and 7 for clean water and a central compartment 6 for the recovery of the water used for the washing.

Situated within the central compartment is the mouth 8 of a sucking conduit 9 which extends to the vacuum pump 3; situated above said compartment 6 is a maximum safety valve 10 for the vacuum.

Above the compartment 7 for the clean water there is situated a pneumatically controlled spherical cock 11 which regulates the inflow of the washing water, coming from the washing chamber 13, through the conduit 12, into the compartment 6.

An end 14 of the conduit 12 debouches into the compartment 6, and the other end 15 grazes the bottom of the washing chamber 13; the washing water is filtered in respect of the more coarse deposits by the filtering grid disposed within the chamber 13.

The washing chamber has a lower port 16 and an upper port 17, hinged in its rear portion.

Disposed adjacent the hinge of port 17 is a switch 18 connected to the floodgage 11.

Situated on the compartment 7 is a control station 19 into which there is inserted a double calibration (minimum and maximum)vacuostat 20, also connected to the floodgate 11.

The operation of the device according to the invention described hereinabove is as follows.

At the beginning of the service, within the central compartment 6 there is the atmospheric pressure; the vacuostat puts into action a hydraulic motor which actuates the vacuum pump 3. Thus initiates to the creation of the vacuum in the interior of the central compartment 6 of the reservoir 4.

Said compartment 6 is connected to the washing chamber 13 through the stainless steel pipe 12 intercepted by the spherical floodgage 11 which, during the development of the vacuum, obviously remains closed.

Once a suitable vacuum value, of about 40%, has been attained, which value is more than sufficient for the application required and which does not give to structural problems, to the polycentrical reservoir of the refuse body washer,the vacuostat 20, suitably calibrated for said value, stops the vacuum pump and closes the contact which consents the opening of the spherical floodgate 11; however, this consent is intercepted by the switch 18 which maintains open the circuit as long as the shutter remains closed.

This requirement is justified by the fact that otherwise, after all the water present at that time within the washing chamber 13 has been sucked, a vacuum would be created within this latter which would give rise to serious structural problems.

After the termination of the washing of the refuse body 21, the switch 18 is closed by simply opening the upper port 17, the switch 18 is closed; at this point, the electric consent signal may prosecute and, by means of the pneumatic electric valve, the spherical cock 11 is opened, thus starting the transfer of the washing water which is sucked into the compartment 6.

The pressure within the compartment 6 begins to increase till, after the minimum calibration of the vacuostat 20 has been attained, the vacuum has been re-established and the cycle begins again.

This system, in addition to the advantages described hereinabove, has the advantages of being completely automatic, since it is independent from the stages of washing of the refuse bodies, and above all absolutely safe since it depends only on the calibrations set on the vacuostat.

Furthermore, there being no possibility of clogging, the installation does not require any particular maintenance.

In addition,said installation may be applied and realized on a conventional refuse body washer equipment, without requiring modifications of the original equipment and, therefore, without requiring additional costs.

Claims

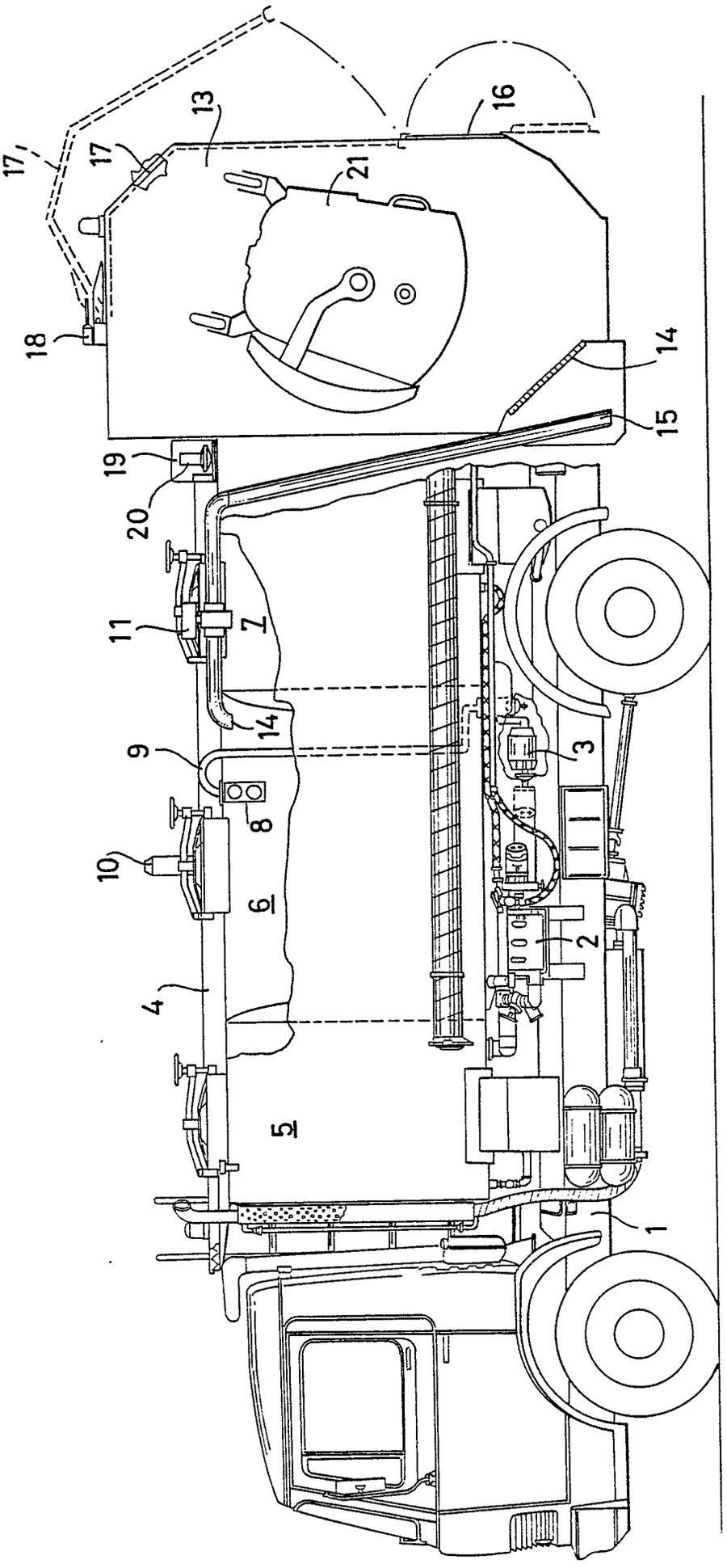
1.-An automatic water transfer installation intended to be used for the washing of refuse collecting bodies, mounted on a motor vehicle having, in its front portion, a reservoir and, in its rear portion, a washing chamber for washing the refuse bodies, said reservoit being divided into compartmente for recovering the washing water and collecting the clean water intended to be used for the washing, characterized in that the installation is provided with a pump intended to create a vacuum in the interior of the washing water recovery compartment and a vacuostat operatively connected to said vacuum pump and to a floodgate inserted along a connection pipe between the water recovery compartment and the washing chamber, interconnected in such a manner that the vacuostat actuates the pump and closes the floodgate when the atmospheric pressure is attained in the recovery compartment, and subsequently closes the pump and opens the floodgate when the pre-established vacuum is attained in the recovery compartment.

2.-An installation as claimed in Claim 1, characterized in that the command sent by the vacuostat to the floodgate is intercepted by a switch which habilitates the opening of the floodgate only when the shutter of the washing chamber is open.

3.-An installation as claimed in Claim 1, characterized in that the vacuostat is of the type with a double calibration (maximum and minimum).

4.-An installation as claimed in Claim 1, characterized in that the water recovery compartment is provided with safety means which are apt to take part in exceeding the pre-established maximum of the vacuum within the compartment in case of a failure if the vacuostat.

5.-An installation as claimed in Claim 1, characterized in that the end of pipe end inserted into the washing chamber draws on the bottom of this latter.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EUROPEAN SEARCH REPORT

Application number

EP 87 20 0249

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE-A-2 536 774 (HALLER) * The whole document *	1,5	B 08 B 09/08
A	US-A-4 525 277 (POULIN) * Column 4, lines 21-65; figure 2 *	1,5	
A	GB-A-2 150 926 (SCHOFIELD)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 08 B
C 02 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05-06-1987	VOLLERING J.P.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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