

[54] **APPARATUS FOR DAMPENING
GARBAGE IN A GARBAGE LOADING
TRUCK**

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[22] Filed: **Feb. 2, 1971**

[21] Appl. No.: **111,893**

[30] **Foreign Application Priority Data**

Feb. 9, 1970 Germany.....P 20 05 793.6

[52] U.S. Cl.34/227, 34/37, 100/73

[51] Int. Cl.F26b 19/00

[58] Field of Search34/36, 37, 227, 228; 100/73

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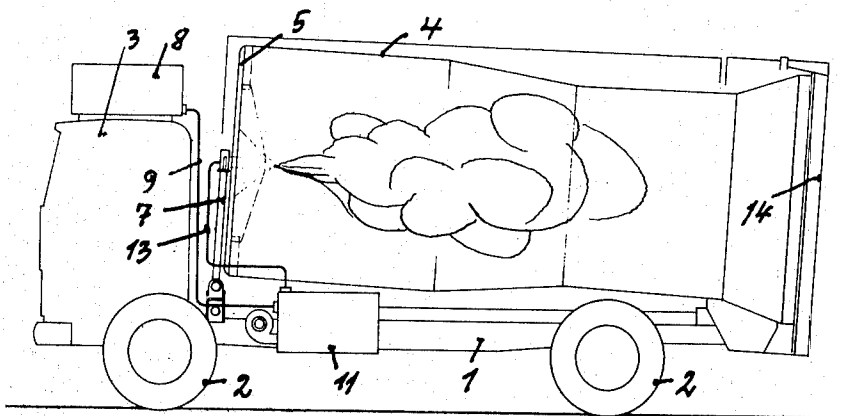
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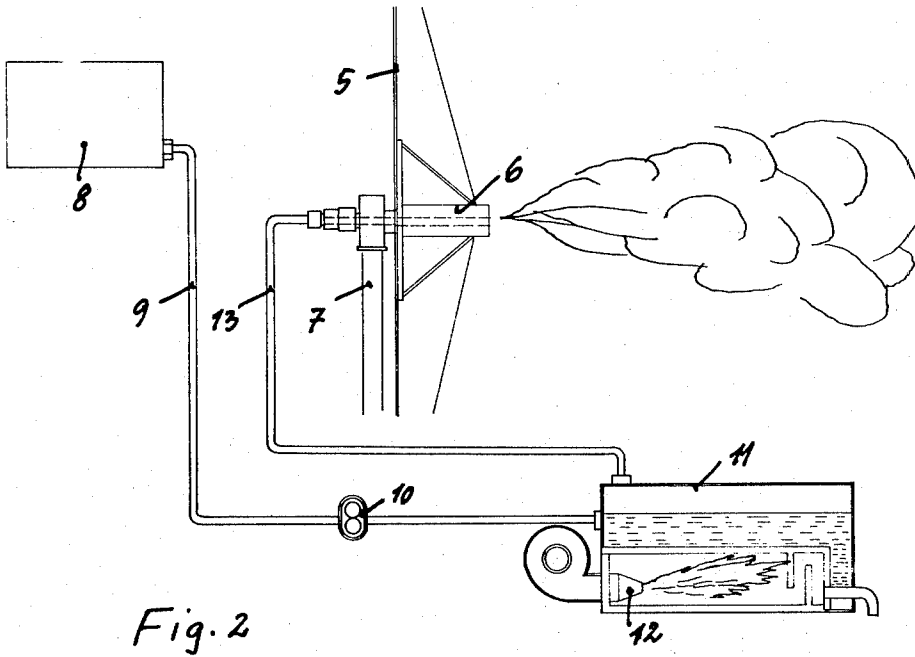
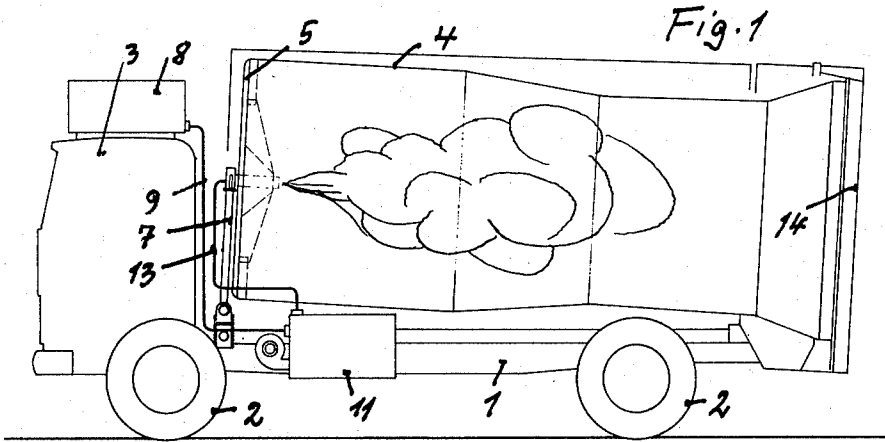
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[57] **ABSTRACT**

A means for dampening and disintegrating garbage including means introducing the garbage by means of a conveyor, such as a screw into a container, under pressure from one end of the container, and passing steam into and through the garbage from a pipe entering the other end of the container. The steam may be superheated and supplied under pressure from a steam generator located on a garbage truck carrying the container and a water supply tank.

2 Claims, 2 Drawing Figures





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APPARATUS FOR DAMPENING GARBAGE IN A GARBAGE LOADING TRUCK

The invention relates to a method of dampening garbage in the interior of the collecting container of a garbage loading truck, and a garbage loading truck therefor. The dampening of the garbage assists in its disintegration.

In conventional containers, a spray distribution system located below the ceiling of a nonrotatable garbage collection container is fed with garbage by a screw conveyor extending longitudinally over its floor. The screw conveyor simultaneously has a tamping effect on the garbage in the container. This tamping action by the screw is increased by the disintegration caused by the addition of water. The tamping effect of the screw, however, is limited by its diameter. But in the region beyond the screw, which has the greatest proportion of the container space, there is little cooperation between the screw and water supply, so that to tamp the main portion of the load, only the water sprinkling is effective. This requires a very considerable water supply. During the progressive rise of the level of the load, the lower regions are over-saturated with water and form a sludge. The weight of the water compared with the weight of the payload thus becomes so considerable that the capacity of the collecting container becomes limited which makes the advantages of tamping to be ineffective.

In an alternative conventional method for dampening garbage, water is sprayed by a pump into the outer space of a hollow cone which, as part of a nonrotatable cover, closes the open end face of a rotary drum acting as the collecting container. The drum is fitted with right angle bends and provided below with a charging opening. Domestic garbage is the main bulk of material to be disintegrated, so that 40-45 percent by weight or more of water must be fed into the rotary drum within about 2 loading hours. Moreover, the weight of water used becomes excessive, and additionally loads the truck so that the capacity of the vehicle, with the rather heavy domestic garbage, is not fully utilized. A further disadvantage is that the storage container for the water to be carried has to be large. The storage container in this case must hold a considerable amount of water, because during spraying into the outer space of the hollow cone, a large amount of water flows through the charging opening downwards into the part of the outwardly enlarged rotary drum, and does not reach the interior of the container.

Neither of these conventional methods and loading truck embodiments has been very satisfactory.

In the present invention, an apparatus is provided whereby the water used is reduced to such an extent that it only insignificantly increases the overall loading weight. Thus, even with heavy garbage, such as domestic garbage, disintegration is effected so as to prevent cavities in material dumped on a garbage pile, which would have the undesired result of a fire risk or housing rat colonies. Above all, lightweight garbage of paper, cardboard or the like should be extensively softened or soaked to allow the tamping to be increased in the collecting container, so that the carrying capacity of the vehicle is utilized to a maximum extent and without the weight of the added water being a noticeable proportion of the contents. In the present invention,

this advantage is effected by introducing steam, preferably superheated steam, into the interior of the collecting container.

In the method and apparatus of the present invention, the steam, because of its gaseous state, fills the whole container and penetrates its load, so that all particles of garbage are dampened as required for disintegration without causing excessive wetting. The heat of the steam increases the disintegration effect, and the use of superheated steam has a particular advantage. It also increases the putrefaction effect, and thus causes the garbage to reach the pile or dump in a pre-compost-like state. The weight of the water precipitated in the garbage from the steam is only about one-fifth of the weight of water which would have been required if added as a liquid to the container. The stock of water required to be carried by the vehicle is accordingly reduced. In the case of heavy domestic garbage the full volumetric capacity of the container can be used; in the case of light-weight garbage, the increased compressibility, which is about twice that of undampened light-weight garbage, can be utilized to the fullest.

A garbage loading truck for carrying out the new method in accordance with a feature of the invention, includes a steam connecting pipe at the closed end face of the collecting container. The pressurized steam tends to flow towards the opposite end face of the container, at the loading side, which communicates with the outer atmosphere. During this flow, the steam traverses the entire container space and thus permeates all of the contents thereof.

In garbage loading trucks which are filled when stationary, the new method is readily carried out in that the steam connecting pipe of the collecting container is connected to a stationary steam generator, such as remote steam heating installation. For other types of garbage loading trucks, the invention utilizes a steam generator adjacent to the water storage container. Due to the relatively small amount of water to be carried, small steam generators are available the weight of which is so low that it amounts to only a fraction of the water to be carried.

The use of the invention is independent of the type of collecting container. It is, however, particularly effective when a known rotary drum is used, the pivot pin of which is located at the closed end face wall and is provided with an axial bore used to introduce the steam. Here the steam, during the garbage tumbling action of the rotary drum, penetrates all garbage particles. Even during loose filling, the volume of the material loaded is reduced to such an extent that the tumbling movement causes considerable tamping. When the loading device of the rotary drum is fitted with a known compacting device, e.g., in the form of a helical thread inwardly rising inside the wall of the cover, the invention provides a very high degree of compacting.

It is therefore an object according to the present invention to provide a method and apparatus for tamping garbage in a garbage loading truck which utilizes pressurized steam within the truck container to dampen the garbage.

It is another object according to the present invention to provide a method and apparatus for tamping garbage which is simple in design, efficient, and inexpensive to operate.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawing which discloses the embodiments of the invention. It is to be understood, however, that the drawing is designed for the purpose of illustration only and not as a definition of the limits of the invention.

In the drawing, wherein similar reference characters denote similar elements throughout the several views:

FIG. 1 is an overall schematic view of the garbage truck; and,

FIG. 2 is an enlarged view of the means for steam introduction. The garbage truck has a frame 1 with road wheels 2 and a driving cab 3, as shown in FIGS. 1 and 2. On frame 1, there is a rotary drum container 4 and its closed end face wall 5 is connected to the frame by means of a bearing support. There are bearing rollers, not shown, at the other end of the drum.

On the roof of the driving cab 3 there is a water storage container 8. From this container, a pipe 9 leads to a pump 10, and then to a steam generator 11, which is heated by an oil burner 12. A steam pipe 13 rising therefrom leads to an axial bore in the pivot pin 6, as shown in detail in FIG. 2. The opposite end rotary drum 4 is closed by a cover 14, cooperating with a conveyor and compacting device, the cover being hinged open when garbage is to be introduced.

Cover 14 provides a sufficiently tight seal on the back end of drum 4 so that superheated steam may be introduced into the container under pressure. When cover 14 is hinged open, a conveyor, such as shown in applicant's copending application, Ser. No. 841,199, filed on July 14, 1969, and now U.S. Pat. No. 3,598,262, may be attached to the back of the vehicle to move garbage into drum 4. The compacting device may consist of a helical screw or tamper disposed within drum 4.

While only a few embodiments of the present invention have been shown and described, it will be obvious that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention.

What is claimed is:

1. in a garbage collection truck having a rotatable collection container for tumbling garbage disposed therein, apparatus for dampening and disintegrating the garbage contained in the collection container, comprising:

a water storage container mounted on the garbage truck;

an oil-fired steam generator, coupled to said water storage container, and mounted on the garbage truck;

a water pump, coupled to said water storage container and said steam generator, for pumping water from said container to said steam generator; and

a steam supply pipe, disposed through one end of the garbage truck collection container, and coupled to said steam generator, for admitting steam into the collection container of the garbage truck, said collection container of the garbage truck is cylindrical in shape, and is supported at one end by a cylindrical pivot pin about which the collection container rotates, said pivot pin including a cylindrical bore through which said steam supply pipe is disposed for admitting steam into the garbage collection container.

2. The apparatus as recited in claim 1, wherein the garbage collection container further comprises a loading door for sealing the collection container loading opening during treatment of the garbage in the collection container with said steam.

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