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G. A. L. LUNDGREN

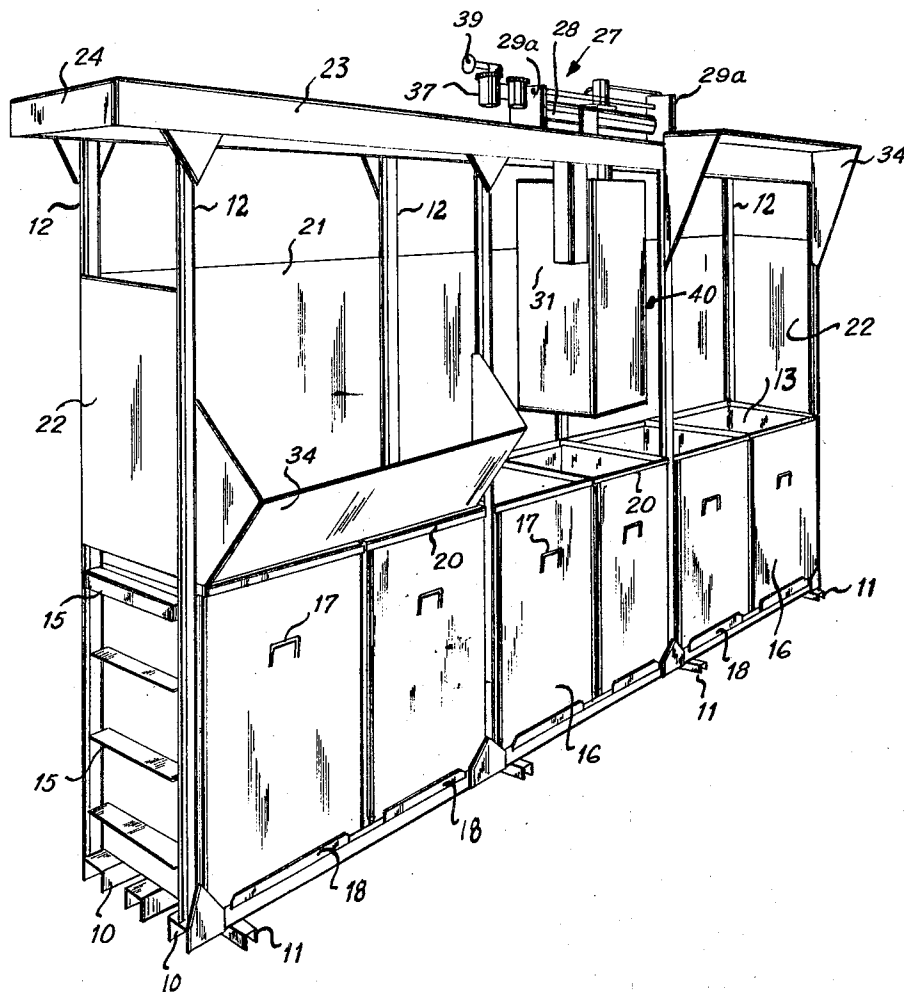
3,495,376

MACHINE FOR COLLECTING RUBBISH AND OTHER REFUSE

Filed Nov. 29, 1966

2 Sheets-Sheet 1

FIG. 1



INVENTOR.

G.A.L. Lundgren

BY

Richards & Geier

ATTORNEYS

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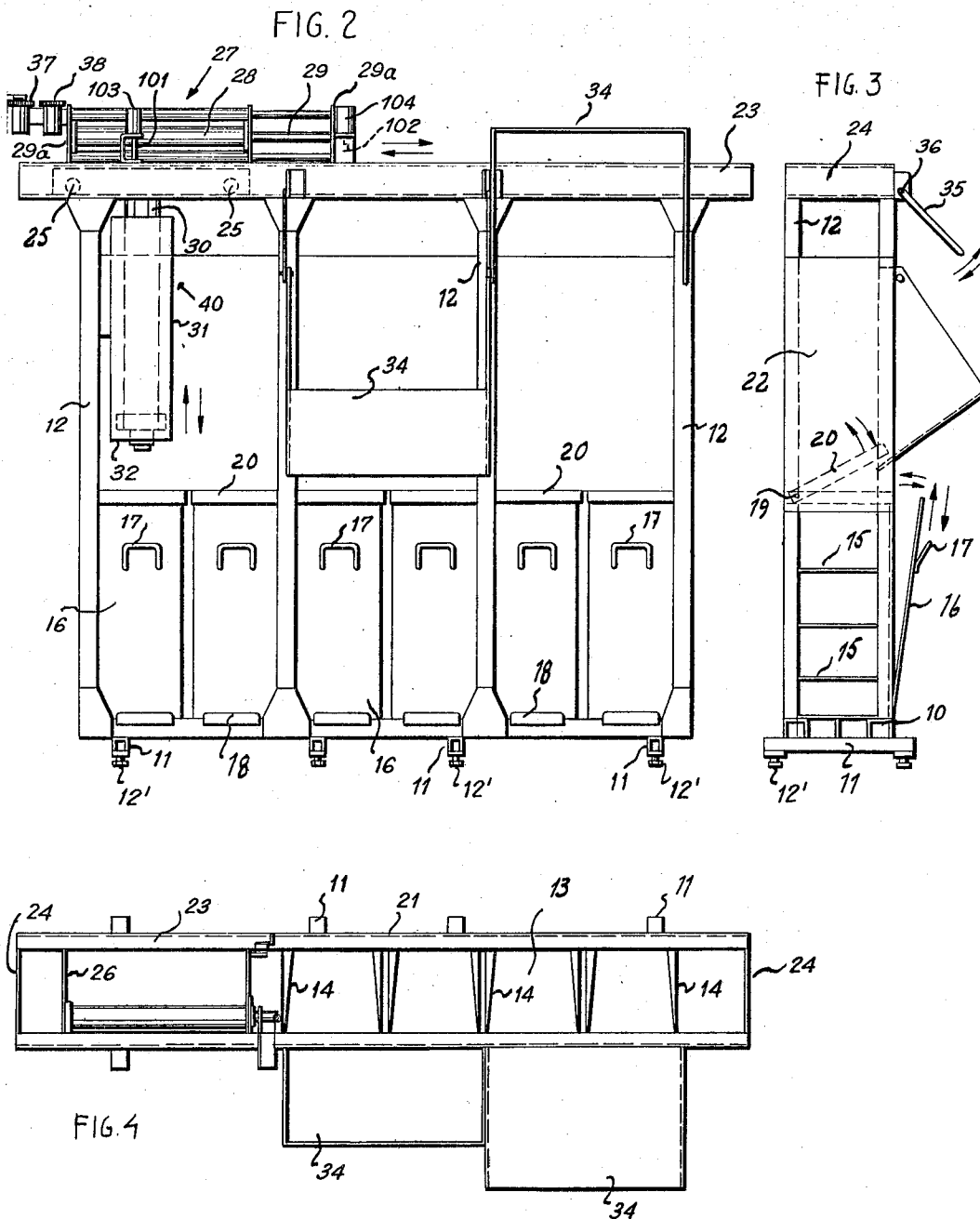
G. A. L. LUNDGREN

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INVENTOR.
G. A. L. Lundgren
BY *Richard & Geier*
ATTORNEYS

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MACHINE FOR COLLECTING RUBBISH AND OTHER REFUSE

Gunnar Arne Leonard Lundgren, Solna, Sweden, assignor
to Komprimator AB, Vallentuna, Sweden, a corporation
of Sweden

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1 Claim

ABSTRACT OF THE DISCLOSURE

A refuse compressing machine having a plurality of refuse-containing aligned compartments and a compressing device movable over these compartments and having a plate which can be pressed downwardly into each compartment to compress the refuse therein.

This invention relates to a machine intended mainly for collecting rubbish and other refuse.

The main object of the invention is to provide for hygienic, space-saving and easily operable collection of the very large quantities of rubbish and refuse left in warehouses, offices and storage premises. Rooms and premises of this kind are usually not provided with rubbish chutes and the handling of the rubbish is thus very troublesome, as large spaces are required. Besides, refuse in the form of large packages as found especially in warehouses cannot be passed through a chute even if there is any provided, but must be stored for subsequent transport in special rubbish lorries.

A further object of the invention is, therefore, to provide an automatically working machine which is not stationary but can be moved to any place offering sufficient space and which can receive the rubbish in separate containers and is provided with means for compressing the content of every container in order to reduce the volume of the rubbish in a very advantageous way.

According to the invention this problem has been solved by providing a machine comprising a structure frame with uprights between which a number of at least upwardly open containers for rubbish etc. are arranged in a linear row, and means for repeated compression of the content of each container until the said content has reached a predetermined level in the container.

Other objects and advantages of the invention will appear from the following description of an embodiment of the invention, reference being made therein to the accompanying drawings in which:

FIG. 1 is a perspective view of the machine according to the invention,

FIG. 2 is a more diagrammatic front view of the same machine, however with its compressing device and its driving mechanism shown in an initial or end position and with some details eliminated for better clarity,

FIG. 3 is an end view of the machine shown in FIG. 2, however without the mechanical means,

FIG. 4 is a top plan view of the machine according to FIG. 2, however without the mechanical means.

The machine shown in the drawings consists of a number of U-girders 10 which extend parallel to each other with their open side facing an underlying base, which may be a floor of a storage or cellar room, a yard or any place that offers sufficient space and is suitable for a machine of this kind.

The U-girders 10 are interconnected by cross-beams 11, which are provided with adjusting screws 12' for adjustment of the machine to variously sloping floor or ground conditions. The two outermost U-girders 10 also serves as attachment for uprights 12, which are arranged in pairs at some distance from each other in the longitudinal

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direction of the machine. The two extreme uprights 12 are provided with a number of spaces 15. Arranged in pairs between the uprights 12 are upwardly open containers, which are generally designated by the numeral 13. Depending on space conditions the containers 13 can be arranged in a linear or a curved row. Theoretically, the number of the containers can vary from two to any even number. Each container 13 consists of a bottom portion and side walls, two transverse wall portions 14 being conical except for the walls of the two extreme containers.

Each one of the containers 13 is adapted to accommodate a paper or plastic bag (not shown) in which the rubbish is dropped, and the conical shape of the wall portions 14 serves to facilitate the subsequent removal of the filled bags. This will be described below together with the functioning of the machine.

To allow removal of a filled rubbish bag from a container 13, each container is provided with a detachable front wall 16 with a handle 17. During operation of the machine the front walls 16 are locked at their bottom by means of a flange 18 behind which the lower edge of this wall is placed, and at their top by means of a loop 20 swingable about an axle 19.

The rear side of the machine is covered to a great extent by a protection shield 21, portions 22 of which are covering the end sides of the machine to a corresponding height.

The uprights 12 carry at their upper ends horizontal and parallel supporting beams 23 extending at a distance from each other outside the end shields 22. The beams 23, which may consist of angle iron, are interconnected at each end by a cross bar 24, which also serves as an end stop for a driving mechanism 27. Between said supporting beams 23 is a carriage 26 provided with rollers 25 and carrying the driving mechanism 27, which is movable in the horizontal direction by the action of a power source (not shown). The carriage 26 also serves as an attachment for a downwardly directed mechanism 40 intended for compression of the rubbish in the containers 13.

In the embodiment shown in the drawings an air compressor (not shown) is used as a power source. The driving mechanism 27 mounted on the carriage 26 consists in this embodiment of an air cylinder 28 and a piston rod 29 clamped between end plates 29a. The compressing device 40 consists of an air cylinder 30 with a piston rod. The cylinder 30 is enclosed in a jacket 31 the end plate 32 of which is shaped as a press plate that is dimensioned so as to suit the work it has to perform.

In operation the elements 27 and 40 are interconnected in the manner appearing from the following description of the working principle of the machine.

The rubbish, refuse or other material to be compressed is placed manually in the bags (not shown) provided in the containers 13. A collecting tray 34 hinged on an axle 33 covers each pair of containers 13 and prevents, together with the rear protective shield 21, the rubbish from dropping unintentionally outside the machine frame. When all containers are filled with non-compressed rubbish, the machine is started manually by means of a switch (not shown). At the moment of starting the mechanisms 27 and 40 are in one of the end positions, i.e. above one of the extreme containers in the row.

When the initial pulse has been given, the compressing device, i.e. the cylinder 30 and its piston rod will begin the work cycle. At that time the driving mechanism 27 is held stationary by a pin 101 which engages a hole in one of the supporting beams 23. The piston connected to the piston rod of the cylinder 30 is moved downwardly. The press plate, which is detachably connected to the piston rod and the jacket 31 and covers the major part

of the container opening, now compresses the rubbish in the bag of the extreme container 13 at a predetermined pressure that depends mainly upon the size of the cylinder. Having accomplished the compression of the rubbish in the extreme container 13, the cylinder 30 returns to the position shown in FIG. 2, and simultaneously the driving mechanism 27 on the carriage 26 begins its work cycle. Initially with the pin 101 still engaging the beam 23, the piston rod 29 is moved a predetermined distance that corresponds to the distance between the centers of two adjacent containers. When the piston rod 29 has occupied this position, a pin 102 is moved to the position shown by dotted lines in FIG. 2 and the pin 101 is retracted, while the cylinder 28 on the carriage 26 follows. Since the mechanism 40 is likewise secured to the carriage 26, this mechanism will also follow, and when the cylinder 28 has accomplished its stroke, the compressing device 40 will commence the working procedure as above described. The pin 101 is moved out again and the next working cycle of the device 40 is carried out. The pins 101 and 102 are parts of piston rods connected to the pistons of compressed air cylinders 103 and 104.

This cycle is repeated until the devices 27 and 40 have reached the opposite end of the machine. The machine now stops the working means of impulse means and the containers 13 can be filled with rubbish again, before the work cycle described above is repeated, only this time in the opposite direction. This course of filling and compression is repeated until the bags in the containers 13 are filled to a certain level with compressed rubbish. It will be noted that rubbish can be placed in the containers downstream of the devices 27 and 40 while these devices are moving along the machine. Then the bags are removed without difficulty from the containers 13 by swinging up the collecting tray 34 and locking it in its upper position (FIGS. 1 and 2) by means of a loop 35, which rotates about an axle 36. The front walls 16 are removed and the filled bags are taken out and replaced by empty ones. The filled bags are now closed and can be transported on a suitable lorry. In this way hygienic handling is ensured.

It is obvious that other driving means, by way of example, electric or hydraulic means can be used instead of the pneumatic ones, and thus it is not necessary to describe in detail the valves known per se controlling the operation of the cylinders 28, 30, 103, and 104. However, in order to indicate the pneumatic operation, a water eliminator is designated at 37 and an oil lubricating device

at 38, while the pipe 39 indicates a connection to a suitably placed power source, in this case a compressor.

I claim:

1. A machine for collecting and compressing rubbish and other refuse, said machine comprising a frame having uprights, a plurality of upwardly open rubbish receiving containers located between said uprights, horizontal supporting beams mounted upon said uprights, a carriage movable upon said beams, a reciprocating device carried by said carriage for compressing rubbish located in each container, and a driving mechanism carried by said carriage and operatively connected with said compressing device to move automatically and stepwise from a position directly above one container to a position directly above an adjacent container and to carry out the reciprocating compressing operation after each such stepwise movement, and wherein said driving mechanism comprises a cylinder carried by said carriage, a pressure actuated piston in said cylinder and a piston rod connected with said piston, and wherein said compressing device comprises another cylinder connected with the first-mentioned cylinder, another piston in the second-mentioned cylinder, another piston rod connected with the second-mentioned piston and a rubbish-compressing press plate carried by said other piston rod; and wherein said frame comprises U-shaped and T-shaped beams, wherein each of said containers comprises a detachable front wall and wherein said driving mechanism moves said compressing device stepwise from one end position above one end container to another end position above the opposite end container.

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