

Nov. 23, 1943.

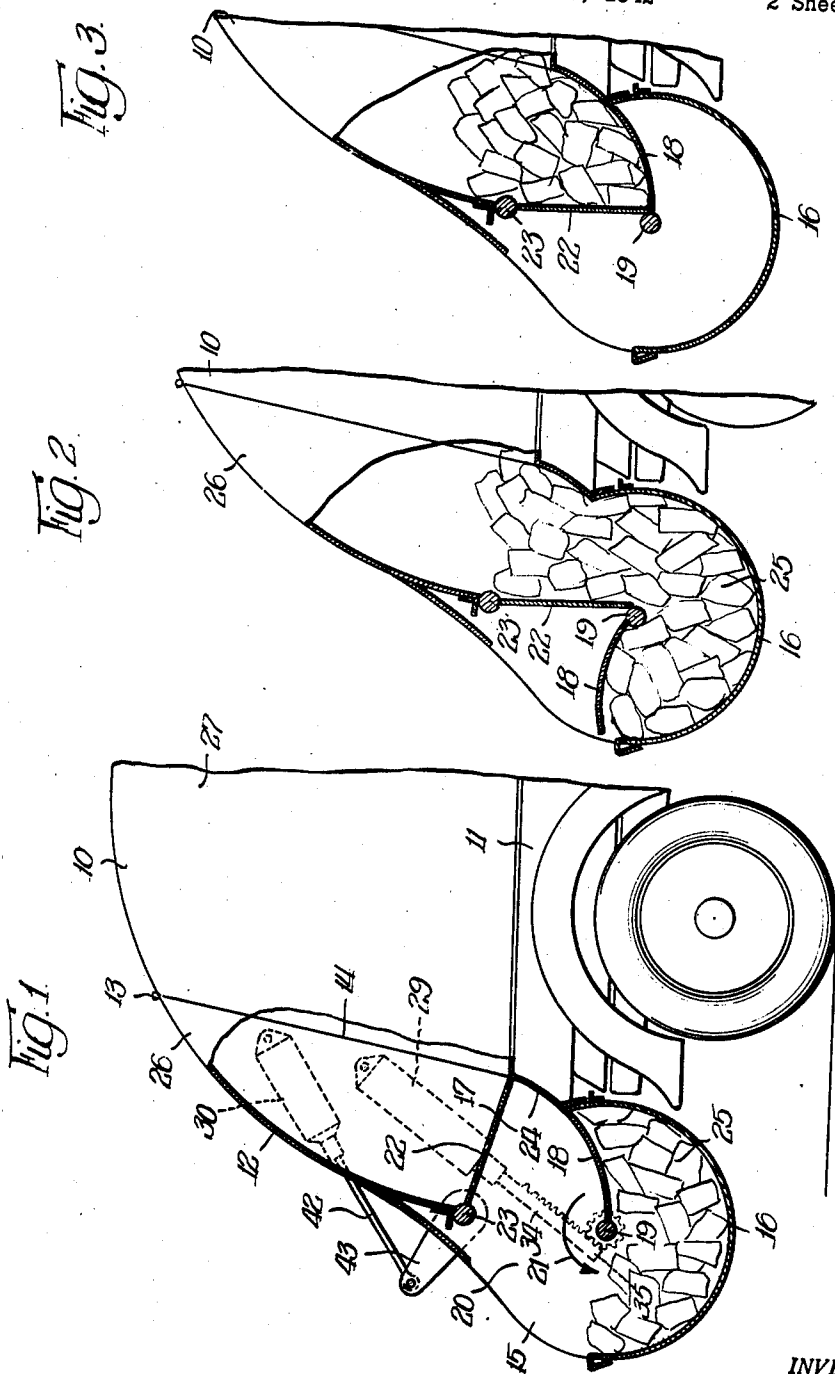
H. C. LEE

2,335,155

REFUSE COLLECTOR

Filed March 7, 1942

2 Sheets-Sheet 1



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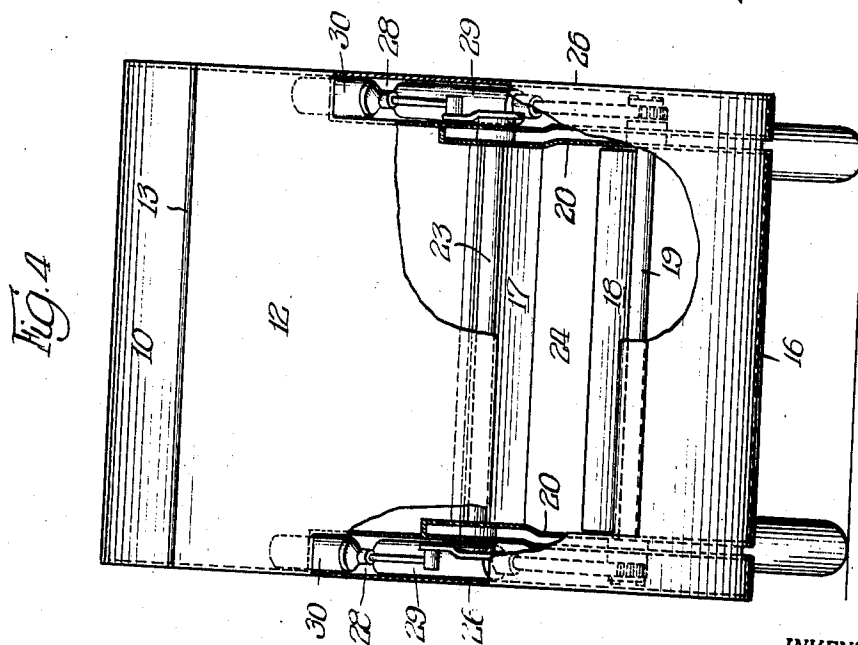
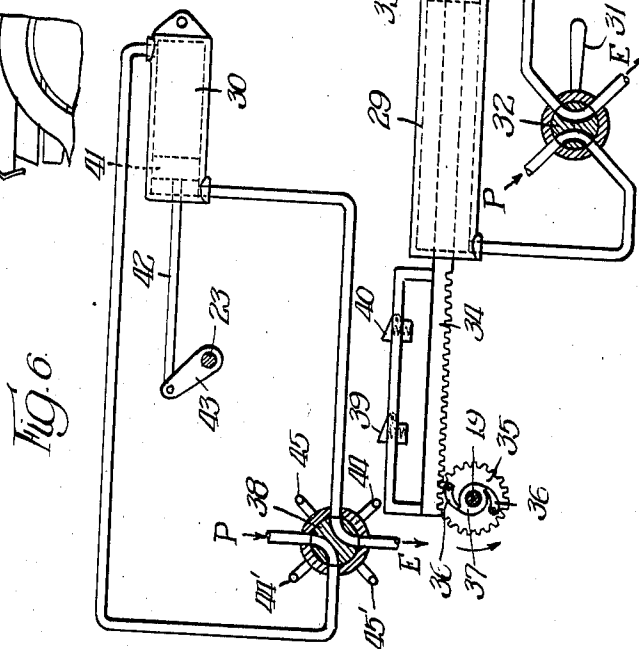
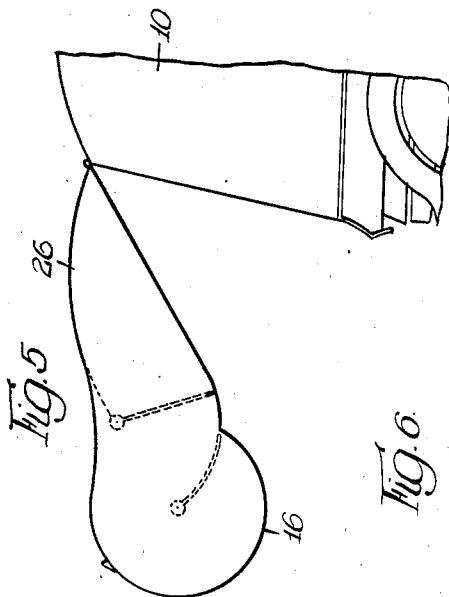
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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REFUSE COLLECTOR

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8 Claims. (Cl. 214-67)

The object of this invention is to provide an improved refuse collector of the type commonly used on city streets for making house-to-house collections of garbage, trash and other debris.

A preferred embodiment of the invention is presented herein by way of exemplification, but it will of course be appreciated that the invention is susceptible of incorporation in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is a partially sectioned side view of the rear end of the refuse collector, with the packing plates shown in the positions assumed by the same at the end of each packing cycle;

Fig. 2 is a similar view, showing the upper plate retracted and the lower plate about to force the refuse out of the trough past the upper plate;

Fig. 3 is a similar view showing the lower plate at the completion of its movement and the upper plate about to force the remainder of the refuse from the upper surface of the lower plate through the passage leading into the storage compartment;

Fig. 4 is an end view of the refuse collector, with certain portions of the casing broken away;

Fig. 5 is a side view of the rear end of the collector, showing the casing swung up out of the way in readiness for the body to be dumped; and

Fig. 6 is a schematic view of a hydraulic system for use in operating the packing plates.

As will be observed in the drawings, the improved refuse collector includes a large storage compartment 10 which is mounted on the chassis 11 of a motor vehicle. A casing 12, which contains the packing mechanism of the invention, is located at the rear end of the compartment 10. The casing is pivotally connected with the compartment at 13 and is adapted to separate from it along the line 14 when the compartment is tilted up in being dumped. Normally, the margins of the casing are sealed with the margins of the compartment and securely latched in that position by any suitable fastening means (not shown).

The casing 12 is provided with an opening 15 through which the refuse is dumped into the lower portion of the casing. The lower portion of the casing, below the opening 15, consists of a receiving trough 16 of generally semi-cylindrical form. From this trough a passage 17 extends into the upper portion of the casing 12 and the compartment 10. A packing plate 18

is secured to a shaft 19 which is pivoted in the end walls 20 of the trough 16. This plate extends radially from the shaft 19 to a point adjacent the inner surface of the trough 16, and is adapted to make one complete revolution in the direction of the arrow 21 upon each packing cycle of the mechanism, starting from and ending in the position shown in Fig. 1. A second packing plate 22 normally closes the passage 17 leading to the compartment 10 and is secured above the trough 16 to a shaft 23 which is pivoted in the upward extensions of the end walls 20 of the trough.

The free edge of the packing plate 18 stops at the end of its movement in register with the adjacent edge of the passage 17, and the face of such plate and the adjacent portion 24 of the passage 17 are curved in an arc about the axis of the shaft 23.

In operation, the plate 18 makes one complete revolution during each packing cycle, while the plate 22 oscillates from the position shown in Fig. 1 to the position shown in Fig. 2 and back again to the position shown in Fig. 1. The plate 22 remains in the position shown in Fig. 1 until after the plate 18 has rotated into the position shown in Fig. 2, whereupon the plate 22 swings downwardly into the retracted position shown in Fig. 2. As the plate 18 then continues to rotate, it forces all of the refuse 25 in the trough ahead of it up past the retracted plate 22, stopping when it has reached the final position shown in Fig. 3. As soon as the plate 18 has reached its final position, the retracted plate 22 swings back into its final position through the passage 17, sweeping the plate 18 and the passage clear of the refuse and again closing off the passage. With the plates 18 and 22 thus returned again to the positions thereof shown in Fig. 1, the trough 16 is again ready to be filled with refuse.

The sides 26 of the casing are preferably formed flush with the sides 27 of the storage compartment, but the end walls 20 of the trough 16 are preferably set inwardly from the side walls 26, whereby to leave narrow side compartments 28 for the accommodation of the plate operating devices. The packing plates are preferably operated by hydraulic cylinders, the shaft 19 of the lower packing plate 18 being operated by cylinders 29 located in the compartments 28 at the ends of that shaft, and the shaft 23 of the plate 22 being operated by cylinders 30. In Fig. 6 a hydraulic system is schematically shown for controlling the flow of the pressure liquid into and out of the cylinders 29 and 30, but it will of

course be appreciated that various other systems could be employed for that purpose. In Fig. 6, 31 is a handle for use in turning a four-way valve 32. This valve is designed to feed pressure oil or other liquid into first one end and then the other of the cylinder 29. When the handle 31 is in the position shown, the piston 33 of the cylinder 29 will have been moved to the right. The piston 33 carries a rack 34 which meshes with a pinion 35 journaled on the shaft 19. This pinion carries dogs 36 which effect a one-way clutching engagement with a disk 37 secured to the shaft 19. When the piston 33 travels toward the left, the shaft 19 will be caused to make one complete revolution, and when the piston 33 is returned from its left-hand position to its right-hand position the dogs 36 will ride over the disk 37 and the shaft 19 will remain stationary.

The cylinder 30 is connected up at its ends with a second four-way valve 38, which valve is operated by dogs 39 and 40 on the rack 34 of the cylinder 29. When the valve 38 is in the position shown in this view, the piston 41 of the cylinder 30 will have been moved into its left-hand position. The piston 41 is connected by a rod 42 with an arm 43 on the shaft 23, which shaft carries the packing plate 22. When the operating handle 31 is swung through 90°, the piston 33 in the cylinder 29 will start to move to the left, causing the packing plate 18 to start rotating in the direction of the arrow 21 in Fig. 1.

When the plate 18 approaches the position of the same shown in Fig. 2 the dog 39 will engage a projection 44 on the valve 38 and will rotate that valve 90°, causing the piston 41 in the cylinder 30 to move from its left-hand position into its right-hand position. This movement of the piston 41 will cause the packing plate 22 to swing from the position of the same shown in Fig. 1 to the position shown in Fig. 2. As the plate 18 reaches the end of its movement the dog 40 will engage with a second projection 45 on the valve 38 and rotate that valve another 90°, causing the piston 41 to return to its left-hand position, and thereby moving the plate 22 from the position shown in Figs. 2 and 3 back again to the passage closing position shown in Fig. 1. The valve 38 is provided with additional projections 44' and 45', in cruciform relation, for cooperation with the dogs 39 and 40 in the next operating cycle of the mechanism. To return the piston 33 in the cylinder 29 back to its initial position, the operating lever is swung back into the position shown in Fig. 6.

I claim:

1. In a refuse collector, a storage compartment, a casing associated with the compartment and provided with an opening, a receiving trough of generally semi-cylindrical form in the lower portion of the casing below the opening, a transfer passage between the trough and the storage compartment, a packing plate which is pivoted in the trough at the center of the latter and extends radially from such center to a point adjacent the inner surface of the trough, means for rotating said plate one revolution from a starting position in which the free edge of the plate is in register with the passage around to the same position again, a second packing plate which normally closes the passage between the trough and the storage compartment and is pivoted above the trough along one edge of the passage, and means for oscillating the second

packing plate from its passage closing position into a retracted position in which its free edge registers with the pivoted edge of the first plate, after the first plate has rotated a part of a revolution from its starting position, and for thereafter oscillating the second plate from said retracted position across the face of the first plate back into its passage closing position, after the first plate has returned to its starting position in register with the passage, whereby to cause all of the refuse swept from the trough by the first plate to be swept by the second plate from the surface of the first plate through said passage.

2. In a refuse collector, a storage compartment, a casing associated with the compartment and provided with an opening, a receiving trough of generally semi-cylindrical form in the lower portion of the casing below the opening, a transfer passage between the trough and the storage compartment, a packing plate which is pivoted in the trough at the center of the latter and extends radially from such center to a point adjacent the inner surface of the trough, means for rotating said plate one revolution from a starting position in which the free edge of the plate is in register with the passage around to the same position again, a second packing plate which normally closes the passage between the trough and the storage compartment and is pivoted above the trough along one edge of the passage, and means for oscillating the second packing plate from its passage closing position into a retracted position in which its free edge registers with the pivoted edge of the first plate, after the first plate has rotated a part of a revolution from its starting position, and for thereafter oscillating the second plate from said retracted position across the face of the first plate back into its passage closing position, after the first plate has returned to its starting position in register with the passage, whereby to cause all of the refuse swept from the trough by the first plate to be swept by the second plate from the surface of the first plate through said passage, the first plate being curved in an arc about the pivoted axis of the second plate.

3. In a refuse collector, a storage compartment, a casing associated with the compartment and provided with an opening, a receiving trough of generally semi-cylindrical form in the lower portion of the casing below the opening, a transfer passage between the trough and the storage compartment, a packing plate which is pivoted in the trough at the center of the latter and extends radially from such center to a point adjacent the inner surface of the trough, means for rotating said plate one revolution from a starting position in which the free edge of the plate is in register with the passage around to the same position again, a second packing plate which normally closes the passage between the trough and the storage compartment and is pivoted above the trough along one edge of the passage, and means for oscillating the second packing plate from its passage closing position into a retracted position in which its free edge registers with the pivoted edge of the first plate, after the first plate has rotated a part of a revolution from its starting position, and for thereafter oscillating the second plate from said retracted position across the face of the first plate back into its passage closing position, after the first plate has returned to its starting position in register with the passage, whereby to cause all

of the refuse swept from the trough by the first plate to be swept by the second plate from the surface of the first plate through said passage, the first plate and one edge of the passage being curved in an arc about the pivotal axis of the second plate.

4. In a refuse collector, a storage compartment for receiving a number of charges of refuse, a casing associated with the compartment and provided with an opening for receiving the charges, a stationary receiving trough of generally semi-cylindrical form in the lower portion of the casing below the opening, said trough having capacity for a single charge, a transfer passage between the trough and the storage compartment, a packing plate which is pivoted in the trough at the center of the latter and extends radially from such center to a point adjacent the inner surface of the trough, means for moving said plate through the trough into a position in which its free edge substantially registers with the lower edge of said transfer passage, whereby to cause all of the refuse in the trough to be swept from the trough by said plate, a second packing plate which normally closes said transfer passage and is pivoted above the trough, and means for moving said second plate from its passage closing position into a retracted position in which its free edge is adjacent the pivoted edge of said first plate and for thereafter moving said second plate from its retracted position across the face of the first plate back into its passage closing position, whereby to cause all of the refuse swept from the trough by the first plate to be swept by the second plate from the surface of the first plate through said passage.

5. In a refuse collector, a storage compartment for receiving a number of charges of refuse, a stationary receiving trough, said trough having capacity for a single charge, and two movable refuse handling members, one of which is located in the trough and upon each charging operation sweeps all of the refuse in the trough from the latter into a position intermediate the trough and the storage compartment, and the other of which is located above the trough and upon each charging operation sweeps such refuse into the storage compartment.

6. In a refuse collector, a storage compartment for receiving a number of charges of refuse, a stationary receiving trough into which refuse is adapted to be dumped prior to being transferred to the storage compartment, said trough having capacity for a single charge of refuse, and two movable refuse handling members, one of which members is located in the trough and upon each charging operation acts to sweep all of the refuse in the bottom of the trough from the surface of the latter into a relatively elevated position in-

intermediate the trough and the storage compartment, in which elevated position said charge of refuse is temporarily supported on the surface of the first mentioned member, and the other of which members is located above the trough and upon each charging operation acts to sweep said refuse from the surface of the first mentioned member toward the storage compartment.

7. In a refuse collector, a storage compartment for receiving a number of charges of refuse, a stationary receiving trough into which refuse is adapted to be dumped prior to being transferred to the storage compartment, said trough having capacity for a single charge of refuse, two movable refuse handling members, one of which members is located in the trough and upon each charging operation acts to sweep all of the refuse in the bottom of the trough from the surface of the latter into a relatively elevated position intermediate the trough and the storage compartment, in which elevated position said charge of refuse is temporarily supported on the surface of the first mentioned member, and the other of which members is located above the trough and upon each charging operation acts to sweep said refuse from the surface of the first mentioned member toward the storage compartment, and means for moving said members in sequence during each charging operation.

8. In a refuse collector, a storage compartment for receiving a number of charges of refuse, a stationary receiving trough into which refuse is adapted to be dumped prior to being transferred to the storage compartment, said trough having capacity for a single charge of refuse, two movable refuse handling members, one of which members is located in the trough and upon each charging operation acts to sweep all of the refuse in the bottom of the trough from the surface of the latter into a relatively elevated position intermediate the trough and the storage compartment, in which elevated position said charge of refuse is temporarily supported on the surface of the first mentioned member, and the other of which members is located above the trough and upon each charging operation acts to sweep said refuse from the surface of the first mentioned member toward the storage compartment, and means for moving said members in sequence during each charging operation, each of said members comprising a pivotally mounted pusher plate, the first mentioned member in performing its sweeping function moving through about a half turn in engagement with the refuse, and the second mentioned member in performing its sweeping function moving through about a quarter turn in engagement with the refuse.

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