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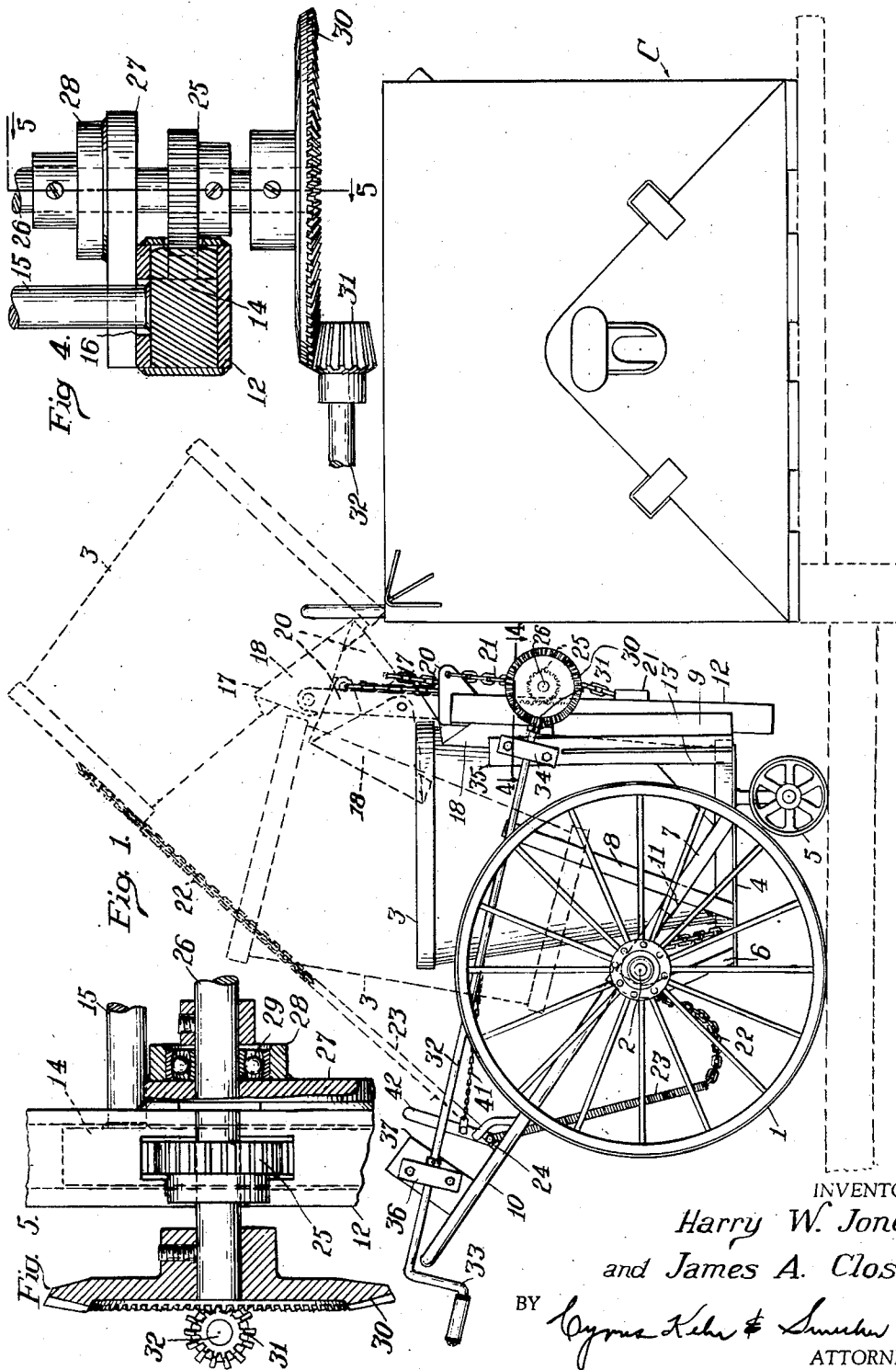
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2,855,243

MECHANICALLY LIFTED REFUSE CAN

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2 Sheets-Sheet 1



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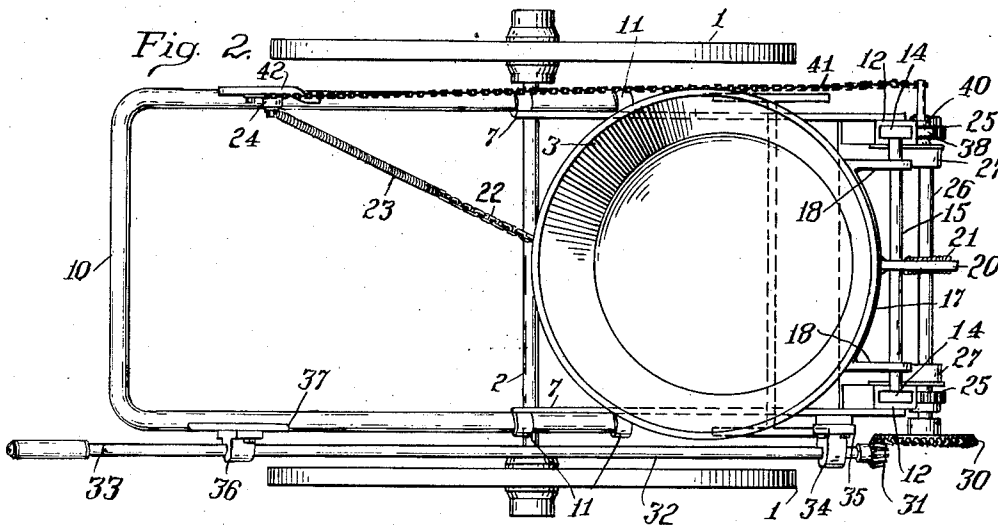
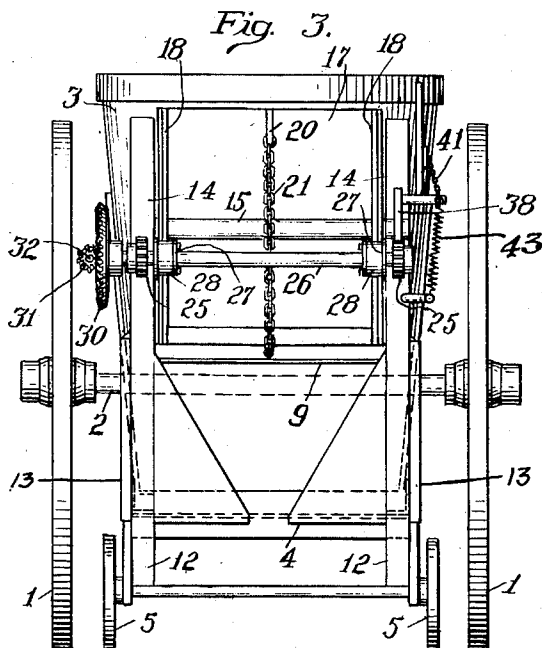
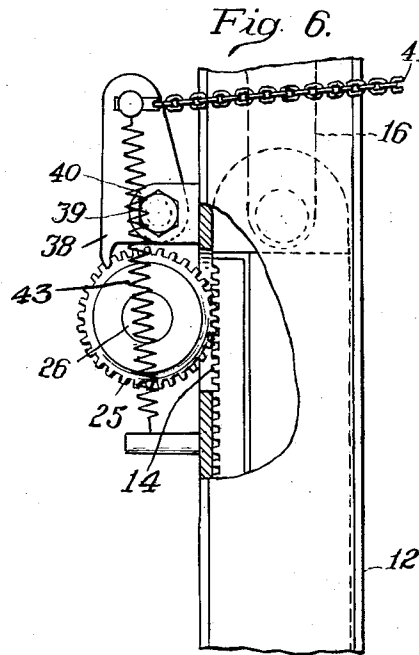
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MECHANICALLY LIFTED REFUSE CAN

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2 Claims. (Cl. 298—2)

This invention relates to improvements in refuse can assemblies, and more particularly to devices adapted for use by street sweepers for containing and dumping refuse, trash, etc.

It has been the practice heretofore for city governments to employ persons to sweep the streets and to remove refuse therefrom. Carts are usually provided having containers for the refuse, and these containers must be emptied into trucks or other vehicles. Frequently, physically handicapped persons are employed for this work who have insufficient strength to lift and empty the containers from the carts.

One object of this invention is to provide for mechanically lifting and dumping such refuse containers from street sweeper carts.

Another object of the invention is to improve the construction of a refuse can assembly by providing not only for supporting the can during filling and transportation, but also for dumping the contents of the container into a transport container.

These objects may be accomplished, according to one embodiment of the invention, by providing mechanism on a refuse cart for mechanically lifting and tipping over the refuse container into a transport container or vehicle. The refuse container is removably mounted on the cart to be lifted therefrom. Lifting mechanism is provided on the cart operatively connected with the refuse container for lifting and automatically tipping over the container in an elevated position.

Such lifting mechanism may comprise jacks and pinions manually operated by a hand crank or other operative means. Connections are provided with the refuse container to insure of tipping over of said container, as well as return thereof to its seated position on the cart after dumping. Safety means may be provided, if desired, such as a ratchet, to prevent accidental dropping of the refuse container before dumping or release of such means by the operator.

This embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of the refuse can assembly, showing, by dotted lines, the parts in different positions relative to a transport container;

Fig. 2 is a top plan view thereof;

Fig. 3 is a front elevation thereof;

Fig. 4 is a detail horizontal section on the line 4—4 in Fig. 1;

Fig. 5 is a detail vertical section therethrough, taken on the line 5—5 in Fig. 4; and

Fig. 6 is a detail vertical section, taken on the opposite side from Fig. 1 and showing the ratchet means for the gearing.

Referring to Figs. 1 to 3, the refuse can is shown as comprising a pair of supporting wheels 1 journaled on an axle 2 extending from side to side of the cart.

The refuse can is designated generally at 3, and is seated on a platform 4. The front end of the platform 4 is supported on caster wheels 5 journaled in suitable

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bearings on the platform 4. The rear end of the platform 4 is suspended by a frame from the axle 2.

This mounting frame for the platform 4 includes upright members 6 secured to the rear end of the platform 4 and projecting upward to the axle 2. These upright members 6 are shown as turned forward over the axle 2 and continued downward as, or are joined to, side members 7, which extend therefrom to the front end of the platform 4.

Upright guide members 8 are secured to the platform 4 and to the side members 7, and extend upwardly above the latter in embracing relation with the can 3, to guide the latter back onto the platform 4 after dumping. An upright front guide frame 9 is provided at the forward edge edge of the platform 4.

A U-shaped handle is shown at 10. The opposite sides of the handle 10 extend in side-by-side relation with the side members 7 and are secured thereto in any suitable manner, as by clamps 11.

The elevating mechanism is connected with the front end of the platform 4 and with the refuse can 3. This mechanism includes upright guides 12 at opposite sides of the platform 4, secured thereto by mounting brackets 13. The brackets extend upwardly along the guides 12 sufficiently to brace the latter effectively.

Each of the guides 12 is preferably tubular, of box construction, and slidably receives therein a rack 14 provided with gear teeth along one edge thereof. The upper ends of the racks 14 may project out of the guides 12 in the dotted line positions of the refuse can 3, in Fig. 1.

These upper ends of the racks 14 are connected together by a cross rod 15 fixed at opposite ends to the respective racks. The inner side of each guide 12 is notched or slotted, as indicated at 16, to receive the cross rod 15 in the lowermost position of the can 3.

The refuse can 3 is provided with a wrapper plate 17 secured to the outer face thereof adjacent the top and about sufficient circumferential area to provide a secure connection therewith.

Fulcrum hinge plates 18 extend upwardly along the opposite edge of the wrapper plate 17, substantially throughout the height thereof. These plates 18 are shown as triangular, with an opening in the apex thereof journaled on the cross rod 15 for mounting the refuse can 3 thereon.

An anchor plate 20 is secured to the outer face of the wrapper plate 17 adjacent the upper edge thereof. The plate 20 is elongated and extends outwardly from the face of the wrapper plate. A chain or other flexible device, designated 21, is secured at one end to the outer end of the anchor plate 20, while the opposite end of the chain 21 extends downwardly and is secured to the guide 9 intermediate the upright guides 12.

A chain or other flexible device 22 is anchored at one end to the bottom of the can 3, and at the opposite end thereof to one end of a coiled spring 23. The coiled spring 23, in turn, is anchored at its opposite end to a bracket 24 on one side of the handle 10. The combined length of the chain 22 and spring 23 is such as to tension the spring in the extreme forward position of the can 3, not only to cushion the forward motion of the can during dumping, but also to draw the can back toward an upright position.

The raising and lowering movement of the can 3 is provided by pinions 25 meshing with the respective racks 14. These pinions 25 are fixed on a cross shaft 26 that extends transverse of the guides 12. A fulcrum plate 27 is secured to each of the guides 12 and extends outwardly therefrom, being provided with a mounting boss 28 at one side thereof (Fig. 5). An anti-friction bearing 29 preferably is used in each boss 28 in which the cross shaft 26 is journaled.

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On one end of the cross shaft 26 is fixed a bevel gear 30 meshing with a bevel pinion 31 on one end of a power shaft 32. The opposite end of the power shaft 32 has a hand crank 33 thereon within convenient reach of the user at the handle 10. At its forward end, the power shaft 32 is journaled in a bearing 34 mounted on an upright bracket 35 secured beside one of the guides 12. A second bearing 36 is secured to a bracket 37 mounted on one side of the handle 10, as a journal for the power shaft 32 adjacent the hand crank.

A ratchet pawl is shown at 38, pivotally mounted at 39 on a bracket 40 secured to one of the guides 12, at the opposite side from the power shaft 32. A flexible device 41 is secured at one end to the pawl 38 and extends therefrom to a hand lever 42 mounted on the bracket 24 on one side of the handle 10 within convenient reach of the operator.

The engaging end of the pawl 38 is in position relative to the adjacent pinion 25 to ride freely thereon during raising movement of the refuse can 3 and normally pulled downward by a spring 43 to engage the teeth of said pinion until said pawl is released therefrom. Upon actuation of the hand lever 42 by the operator, the pawl will be released, allowing the weight of the can 3 and the racks 12 to lower the can onto the platform 4. The power shaft 32 will turn, upon release of the hand crank 33 by the operator, to allow this lowering action.

The several frame and structural parts may be secured together rigidly by any suitable means, preferably by welding. Projecting parts may be braced as desired, by gussets or otherwise.

In operation, the cart is used for gathering up refuse from the street with the parts substantially in the relation shown in full lines in Fig. 1. When it is desired to empty the refuse can 3, the cart is moved into proximity to a transport and dumping container, either on a vehicle or otherwise, an example of which is illustrated in Fig. 1, at C.

The hand crank 33 is operated by the user to turn the power shaft 32, rotating the cross shaft 26 and the pinions 25. The latter, in meshing engagement with the racks 14, cause upward sliding movement of the racks to positions projecting from the guides 12, as shown in the dotted line positions in Fig. 1.

As the refuse can 3 is moved upward by the racks 14, said can, being pivoted on the cross rod 15, will be drawn over by the chain 21 to its tipped-over position to dump the contents therefrom into the transport container C. This forward tipping movement of the can 3 will tension the spring 23 so as to return the can to an upright position on the cross rod 15. If desired, the can may be weighted to return by gravity upon lowering of the elevating mechanism, or the chain 22 may be pulled by the user to restore the can to its upright position.

The ratchet pawl 38 acts step by step as the elevating means is raised to prevent accidental dropping of the can in any position thereof. Upon release of the pawl 38 by the flexible device 41 and lever 42, the elevating means will lower by gravity or by operation of the hand crank 33, to restore the can 3 onto the platform 4.

This provides a refuse cart with power means for lifting and dumping the refuse can thereof, without requiring manual means for the purpose. The hand crank can be manipulated easily by crippled or physically handicapped persons or others who may be employed for the

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purpose. At the same time, the construction is simple and does not add appreciably to the weight or cost of the cart and can.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

We claim:

1. In a refuse can assembly, the combination with a wheeled cart having a platform thereon, of an upright refuse can seated on the platform, a pair of members arranged in an upright plane spaced laterally from the upright axis of the refuse can, means pivotally mounting the upper end portion of the refuse can at one side thereof upon the upper end portions of the members, power means for bodily raising the upright members relative to the cart and thereby lifting the can from the cart, a flexible device, and means connected with the can and connected with one end of the flexible device at the opposite side of the upright plane from the body of the can, said flexible device being connected at the opposite end thereof with the cart, the length of the flexible device being less than the distance between the pivot point of the can on the members and the platform when the pivot point is in its elevated position for causing the can to tip over on the pivotal mounting upon raising of the upright members relative to the cart.

2. In a refuse can assembly, the combination with a wheeled cart having a platform thereon with an upright frame at the forward end of the platform, said frame including upright guides, of a refuse can seated on the platform rearwardly of the upright guides, members slidably mounted in the guides and extending upwardly beside the can substantially to the upper end thereof, means pivotally mounting the upper end portion of the refuse can at one side thereof upon the upper end portions of the members, power means for bodily raising the upright members in the guides relative to the cart and thereby lifting the can from the cart, a flexible device, and means connected with the can and connected with one end of the flexible device at the opposite side of the guides from the can, said flexible device being connected at the opposite end thereof with the frame on the cart, the length of the flexible device being less than the distance between the pivot point of the can on the members and the platform when the pivot point is in its elevated position for causing the can to tip over upon the pivotal mounting upon raising of the upright members relative to the cart.

References Cited in the file of this patent

UNITED STATES PATENTS

25,424	Lash	Sept. 13, 1859
297,539	Shoemaker	Apr. 22, 1884
570,400	Hill	Oct. 27, 1896
588,882	Rodenhausen	Aug. 24, 1897
603,676	Clark	May 10, 1898
609,167	Richardson	Aug. 16, 1898
684,039	Bitner	Oct. 8, 1901
688,028	Palen	Dec. 3, 1901
803,470	Cope	Oct. 31, 1905
1,116,473	Oberle	Nov. 10, 1914
1,797,471	Jones	Mar. 24, 1931
1,997,259	Lameasure	Apr. 9, 1935