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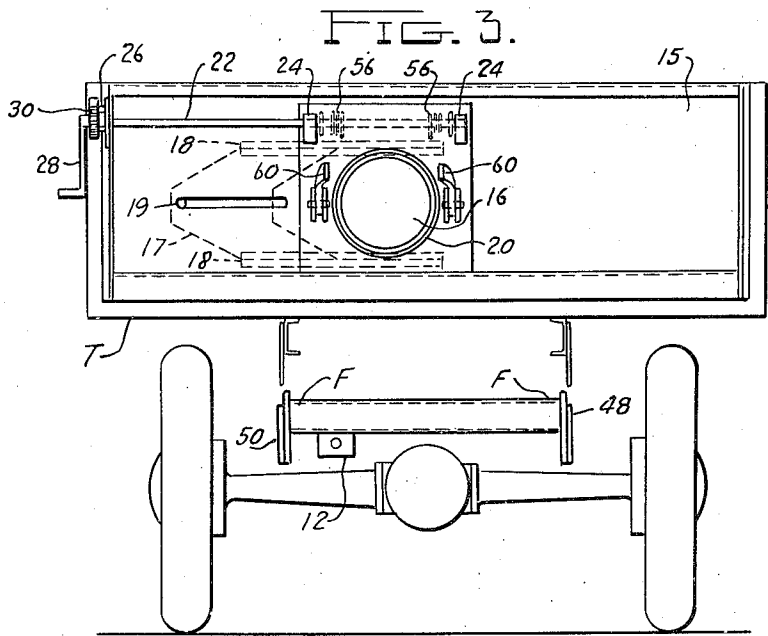
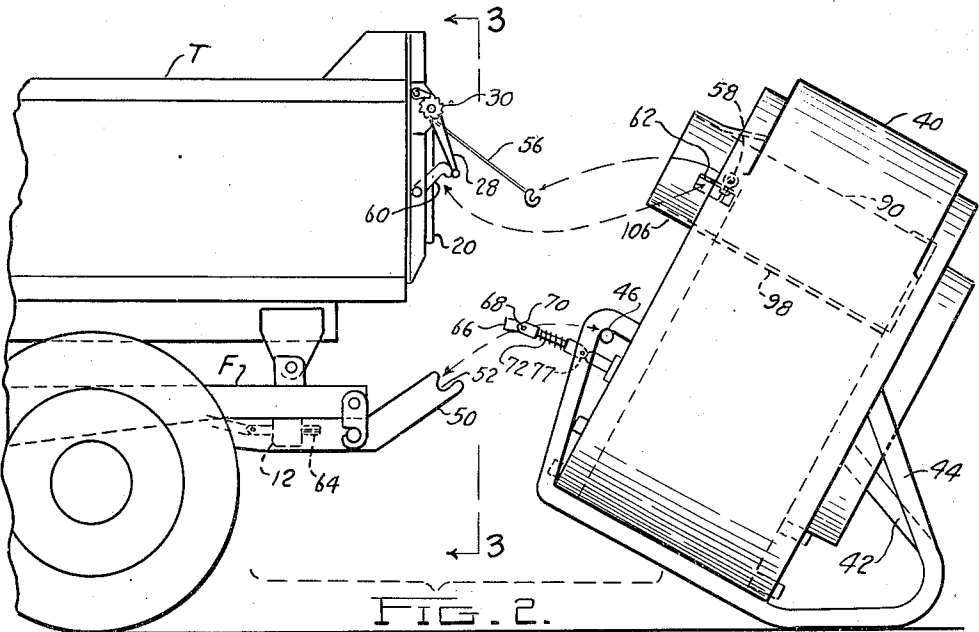
F. BISZANTZ ET AL

2,488,657

LOADING ATTACHMENT FOR TRUCKS

Filed March 15, 1948

4 Sheets-Sheet 2



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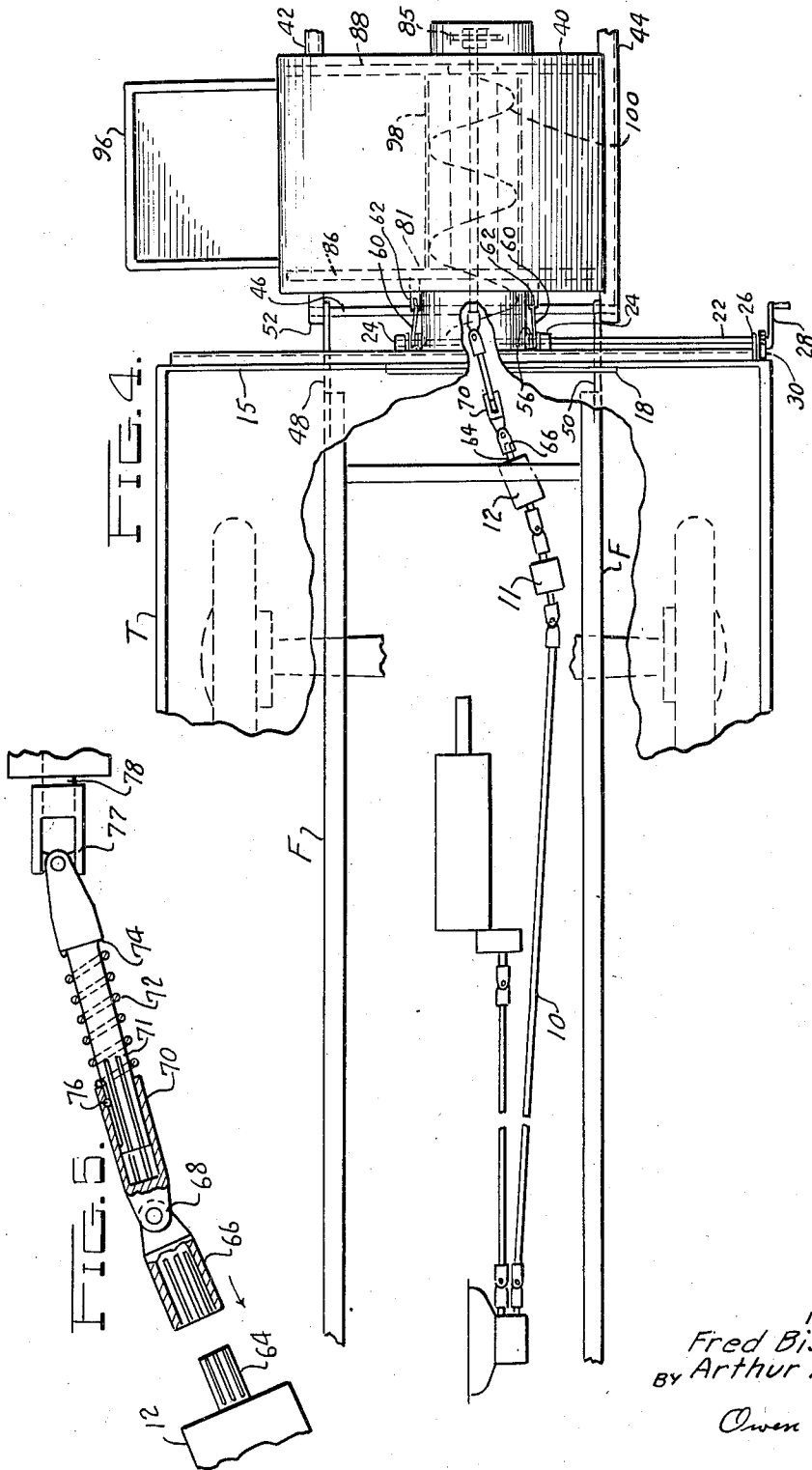
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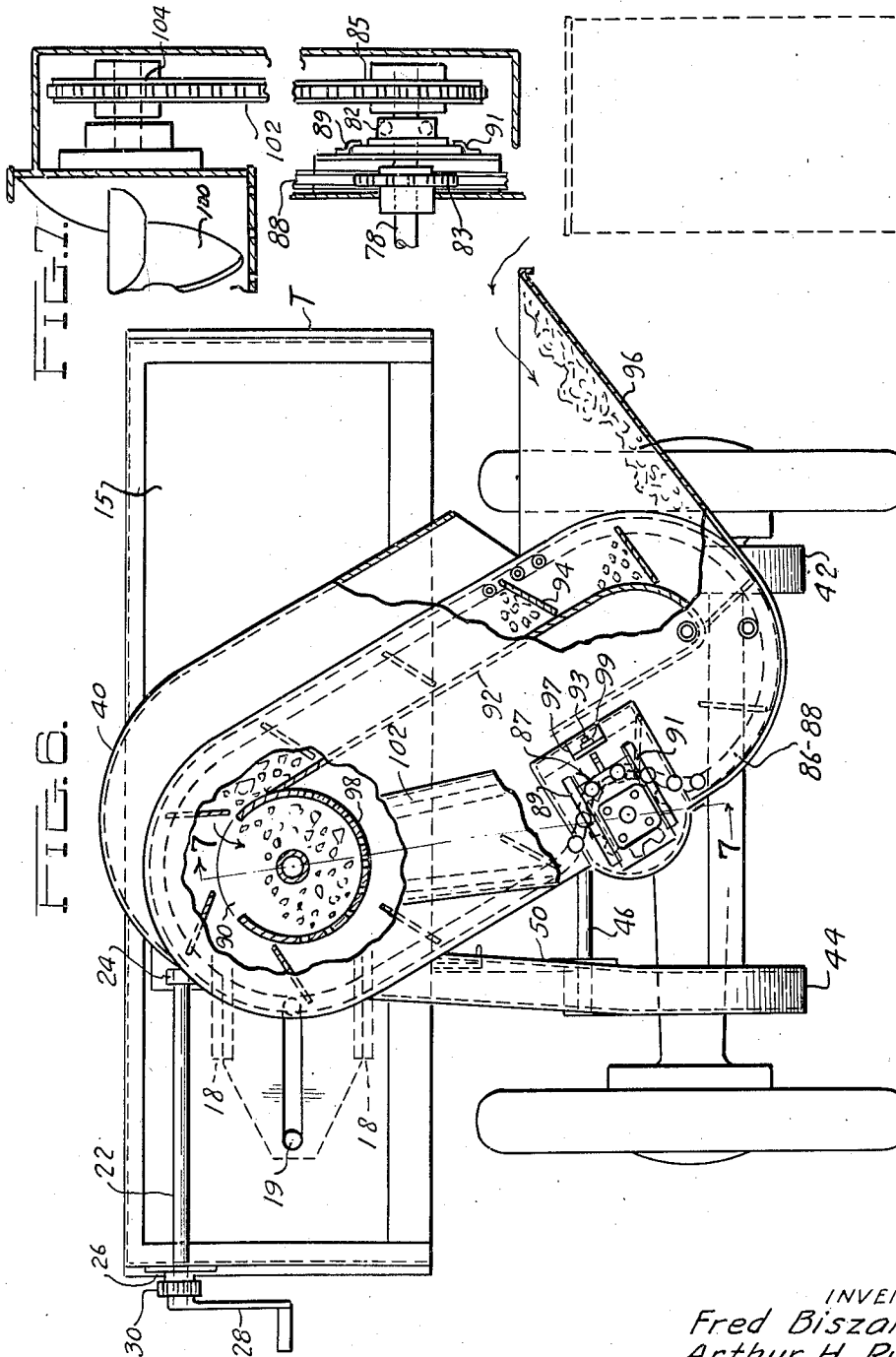
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4 Sheets-Sheet 4



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LOADING ATTACHMENT FOR TRUCKS

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5 Claims. (Cl. 214—83.26)

1

This invention relates to vehicle loaders and is particularly directed to a device which is capable of attachment to a standard dump truck body with a minimum of change necessary to the original body.

It has heretofore been the practice in municipalities to collect refuse in open-body trucks, by loading over the sides, or, by the same hand-loading method, using bodies having hinged or sliding covers, or, into closed bodies having mechanical loaders built into them. For this purpose various loaders have been designed into which the refuse is dumped and later carried intermittently to the interior of the body. In every instance with which we are familiar the loader is an integral part of the body mechanism and cannot be disconnected to render the body usable for another purpose than refuse collection. Also, the cost is high and often prohibitive. Further, most of the present loaders rely on gravity alone to distribute the refuse material in the body so that very loose packing of the material results.

It is the primary object of the present invention to provide a refuse loader which overcomes all of the above disadvantages and which comprises an inexpensive attachment to a standard closed-top or open-top dump body which may be easily detached.

Another object of the invention is to provide a continuously operating loader attachment which will pack refuse material into the body under pressure.

Still another object of the invention is to provide a loader having a low receiving chute or hopper so that the work required to introduce material into an associated truck is appreciably reduced.

Other objects and advantages of the invention will become apparent from the following description of a preferred form of the invention, reference being had to the accompanying drawings in which:

Figure 1 is a fragmentary side elevation of a truck having a refuse loading attachment constructed in accordance with the present invention; Fig. 2 is a side elevation of a loader in its detached position and a fragmentary side view of an associated truck; Fig. 3 is a rear view of a truck equipped to receive the loading attachment of the present invention, the view being a section on line 3—3 of Fig. 2; Fig. 4 is a fragmentary top plan view, with parts broken away of a truck and loader; Fig. 5 is a fragmentary view, with parts in section, of a suitable loader driving connection; Fig. 6 is a rear elevation, with parts

2

broken away, of a loader attached to a truck; and Fig. 7 is a partial section on line 7—7 of Fig. 6.

According to the present invention, the truck used to haul refuse may be any conventional dump type, preferably provided with a suitable cover. The truck is thus not limited to the use of refuse collection alone, but may also be of service in any other manner, as for the hauling of articles or materials which do not require a continuously operating loader.

In the drawings, the truck is designated generally T, and is shown only fragmentarily. It is assumed that it is provided with a conventional dump body and that a power take-off shaft 10 extends rearwardly from the transmission to terminate in a suitable clutch 11. This may be a slip clutch only and is used to protect the loading machinery in case some large piece of refuse jams or stops the equipment before getting into the body. This form of clutch is not operable by hand. The truck driver in the cab will engage or disengage the power by connecting or disconnecting the conventional power take-off drive gear. If desired, a speed reducer unit 12 may follow the clutch in the power train.

The truck T is modified only by altering the usual tail gate to provide a rear body member 15 having a central loading port 16 which may be closed by a sliding gate 17 guided in upper and lower tracks 18 and moved by a handle 19. Preferably the gate is disposed inside the body and handle 19 projects through a slot in the rear body member. A flange or lip extension 20 surrounds the loading port 16 and receives the loader discharge as hereinafter described.

A winch shaft 22 extends laterally of the upper end of the modified tail gate, and is journaled in bearings 24 at each side of the loading port and at the side of the body in a bearing 26. The shaft 22 is provided with an operating crank 28 and a ratchet and pawl mechanism 30 prevents the shaft from turning inadvertently in the wrong direction.

The loader attachment preferably comprises a housing 40 to which are attached legs 42 and 44 by which the device is supported when not in use. The conformation of the legs is such that the front of the loader is tilted upwardly when resting on the ground as shown in Fig. 2. A suitable cross bar 46 extends between the legs 42 and 44 or is otherwise disposed to be received in spaced supports 48 and 50 extending rearwardly from the truck frame F.

The loader is attached to the truck by resting the cross bar 46 in suitable recesses 52 in the

3

spaced support arms 48 and 50, and subsequently engaging suitable fastening elements. The support arms may be permanently attached to the truck frame, or they may be made detachable, at the selection of the truck owner. The weight of the loader is thus carried principally by the supporting arms. To move the loader into attached position the truck is backed toward the loader until the arms 48 and 50 are in position to receive the cross bar 46 when the loader is tilted forwardly on its legs 42 and 44. The loader body is then tilted towards the truck by attaching cables 56 to suitable eyes 58 on the loader and taking up on the cables by turning the winch shaft 22. As the loader tilts forwardly, the support arms are engaged, and continued movement raises the rear of the loader from the ground and brings the entire device to the attached position shown in Fig. 1. To hold the loader in position, spaced latches 60 are provided on the tail gate on each side of the loading opening which engage keepers 62 on the loader body. When the latches are in engaged position, winch cables 56 may be released if desired or may be left in the coupled position, since no tension in the cables is required to maintain the loader in its proper relation to the truck.

Once the loader has been raised and attached to the truck a power connection is established to the power take-off shaft 10 through speed reducer 12 as indicated in Fig. 5. As there shown the speed reducer 12 has an output shaft 64 which is splined to receive a mating drive member 66 which has a universal driving connection 68 with a longitudinally flexible driving connection 70. The connection 70 consists of an internal and external splined drive unit, the internal member 71 comprising a short shaft around which is disposed a spring 72 working against a shoulder 74 and against the external portion of the driving connection 70. A holding pin 76 crosses laterally of the connection 70 and works in a space cut longitudinally in one side of internal member 71. This pin is permanently in place and the cutout space in part 71 does not extend to the end. The purpose of the pin is thus to allow the assembly to be extensible but still to be held together when disconnected from speed reducer 12.

Shaft 71 enters a second universal driving joint 77 which is attached to one end of a conveyor drive shaft 78. Referring to Fig. 1 it will be seen that shaft 78 extends laterally of the loader housing 40 and is journaled at the front and rear of this housing in suitable bearings 80-82. The shaft extends rearwardly of the rear bearing 82 and carries driving sprockets adjacent each of the two bearing points as well as at its rear end. The driving sprockets are designated 81, 83, and 85 and sprockets 81, 83 engage driving chains 86, 88 which are disposed at the front and rear of a paddle type conveyor as shown in Fig. 6. Provision has been made for sliding bearings 80 and 82 in order to establish the proper tension in driving chains 86 and 88 which are associated with the paddle conveyor. The bearing blocks 80 and 82 are carried on slides 87 and 87-A which are mounted in spaced guides 89 and 91 and are adapted to be moved in the guides by adjusting screws 93 and 93-A. One end of each of the adjusting screws is fixed to the slide and its opposite end is passed through an opening in a fixed plate 97 and engages nut 99 so that if the nut is adjusted the position of the slides in their guides is changed and the total path of the chains 86 and 88 lengthened or shortened. The paddle

4

conveyor operates vertically in housing 40 and is adapted to carry material from the bottom of the housing to a point at the top thereof where it is dumped by the paddles through an opening 90. The housing 40 is provided with an interior partition 92 over which the paddle conveyor operates and which serves to confine the conveyed material to the space ahead of the separate paddles which are designated 94 in Fig. 6.

Material is loaded into the paddle conveyor by a chute 96 which is open at its top, the opening being at a conveniently low height above the street so that it is not necessary to lift containers more than waist height to dump them into the chute and hence into the loader.

As previously stated the paddle conveyor carries the material to an opening 90 in a cylindrical transverse housing 98 in which is disposed a screw conveyor 100. The screw conveyor is driven by a chain 102 from sprocket 85 and from an upper sprocket 104 at the rear of the screw conveyor. The screw extends forwardly into a tunnel extension 106 of the housing 98 which extension nests into the lip extension 20 surrounding the loading opening 16 in the tail gate. Material dumped into the opening 90 is thus conveyed forwardly into the truck body and, if the top of the body is closed, may be packed therein under considerable pressure so that the total load which may be carried by the truck is increased over the amount that could be carried loosely packed.

The lower portion of the cylindrical housing 98 which contains the screw conveyor is perforated so that liquid which may be expressed from the material during loading drops into an interior tank formed by partition 92 extended. Liquid may at will, be drained from the bottom of this tank, through pipes provided front and rear, into any sewer manhole. The total load is diminished by eliminating the necessity of carrying the entrained liquid. It will also be seen that the load is drier and will burn far more readily in an incinerator.

In operation, after the loader has been attached to the truck as previously described, its weight is carried in the cross-bar 46 and it is held in position by latches 60. The loader is then set in operation by the truck driver shifting into engagement the power take-off gear which drives shaft 10 from the truck engine. Power is then taken from the engine to drive both the paddle conveyor through shaft 78 and the screw conveyor 100 through chain 102 and sprocket 104. Material may then be dumped into chute 96 where it will be picked up by the paddles 94 and carried upwardly to be discharged through opening 90 above the screw conveyor 100. The material is then carried forwardly by the screw conveyor and delivered into the truck body. When the truck is full and packed to capacity it is driven to the point of discharge, the loader released by disengaging latches 60 from their keepers and lowering the conveyor by means of the winch after disconnecting the power shaft. The truck may then be dumped in the ordinary manner by elevating the body and the loader replaced and reconnected to receive a subsequent load.

It will be appreciated that the conveyors may take any suitable form, and that their drive may be accomplished in various ways, either from the truck engine through the power take-off shown, or by means of a small independent engine mounted either on the truck or on the loader. The foregoing description is specifically directed to a preferred embodiment of the invention, and numer-

5

ous changes may be made in the form and disposition of the parts without departing from the scope of the invention as defined in the appended claims.

What we claim is:

1. A loader attachment for a truck having a rear loading port and an otherwise closed body comprising, a loader body, a paddle-type elevating conveyor disposed in said loader body, a screw conveyor having a tunnel extending from front to rear of said loader body and opening at the front into registry with said loading port, said tunnel being open at the top to receive material from said paddle conveyor and having a perforate bottom whereby liquid may be drained from material discharged into said screw conveyor, a drive shaft extending through the lower portion of said body, chain drive means for said paddle-type conveyor, and for said screw conveyor both operating from said drive shaft, and a loading chute for said paddle-type elevating conveyor formed in said loader body adjacent the lower portion thereof.

2. A removable loader attachment for a truck having a rear loading port and an otherwise closed body comprising, a loader body, a paddle-type elevating conveyor disposed in said loader body, a screw conveyor having a tunnel extending from front to rear of said loader body and opening at the front into registry with said loading port, said tunnel being open at the top to receive material from said paddle conveyor and having a perforate bottom whereby liquid may be drained from material discharged into said screw conveyor, drive means for said paddle-type conveyor and for said screw conveyor, and a loading chute for said paddle-type elevating conveyor formed in said loader body adjacent the lower portion thereof.

3. A removable loader attachment for a truck having a rear loading port and an otherwise closed body comprising, a loader body, an elevating conveyor disposed in said loader body, a screw conveyor having a tunnel in registry with said loading port, said tunnel being open at the top to receive material from the elevating conveyor and having a perforate bottom whereby liquid may be drained from material discharged into said screw conveyor, a drive shaft extending through the body, drive means for said elevating

6

conveyor and for said screw conveyor both operating from said drive shaft, and a loading chute for said elevating conveyor formed in said loader body adjacent the lower portion thereof.

4. A removable loader attachment for a truck comprising, a body, an elevating conveyor disposed in said body, a loading chute for the elevating conveyor adjacent the lower portion thereof, a tunnel member in the body in open connection with the truck and having an opening in the top to receive material from the elevating conveyor, a screw conveyor in the tunnel member for moving material through the tunnel into the truck, perforate means in the bottom of the tunnel member for draining liquid from the material passing through the tunnel, a drive shaft, and means connected to the drive shaft for operating both conveyors.

5. A removable loader attachment for a truck having a rear loading port and an otherwise closed body comprising, a loader body, an elevating conveyor disposed in said loader body, a screw conveyor having a tunnel in registry with said loading port, said tunnel being open at the top to receive material from the elevating conveyor, a drive shaft extending through the body, drive means for said elevating conveyor and for said screw conveyor both operating from said drive shaft, and a loading chute for said elevating conveyor formed in said loader body adjacent the lower portion thereof.

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