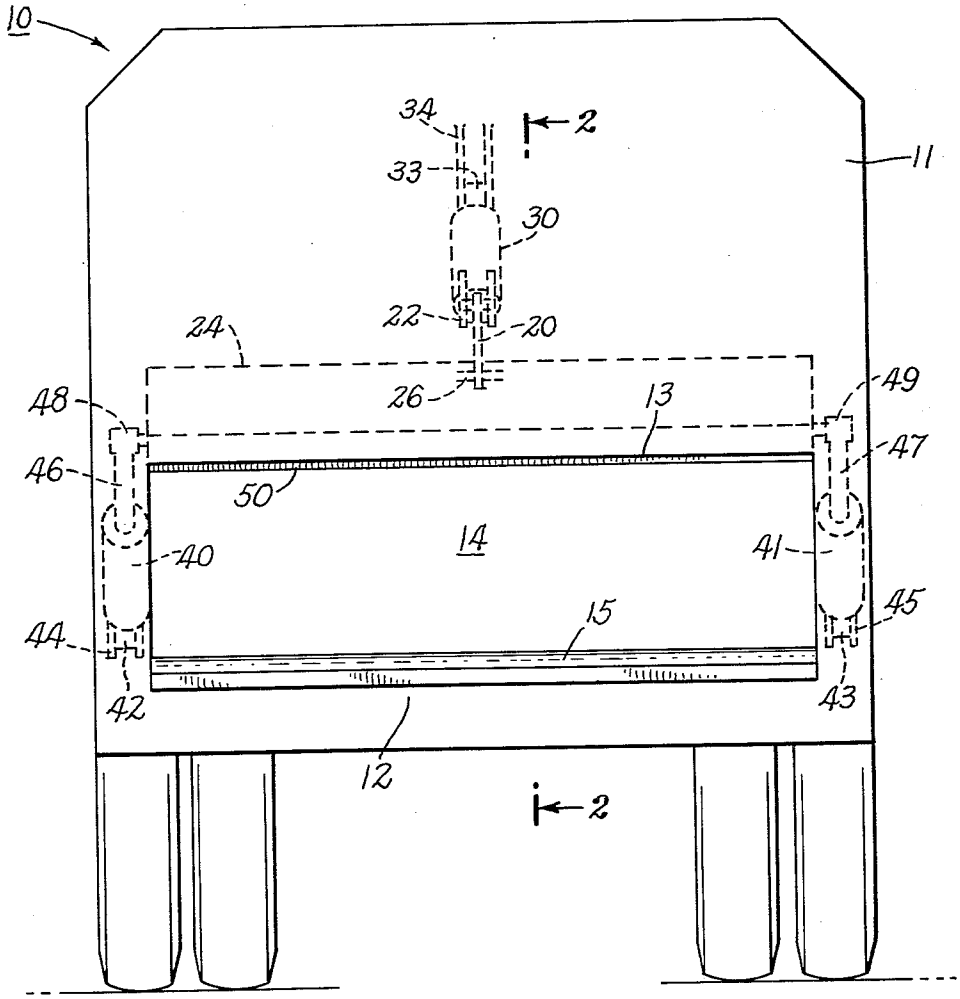
June 4, 1963 R. E. BROWN ETAL 3,092,269

PACKER ASSEMBLY

Filed April 28, 1959 8 Sheets-Sheet 1

Fig 1



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PACKER ASSEMBLY

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Fig 2

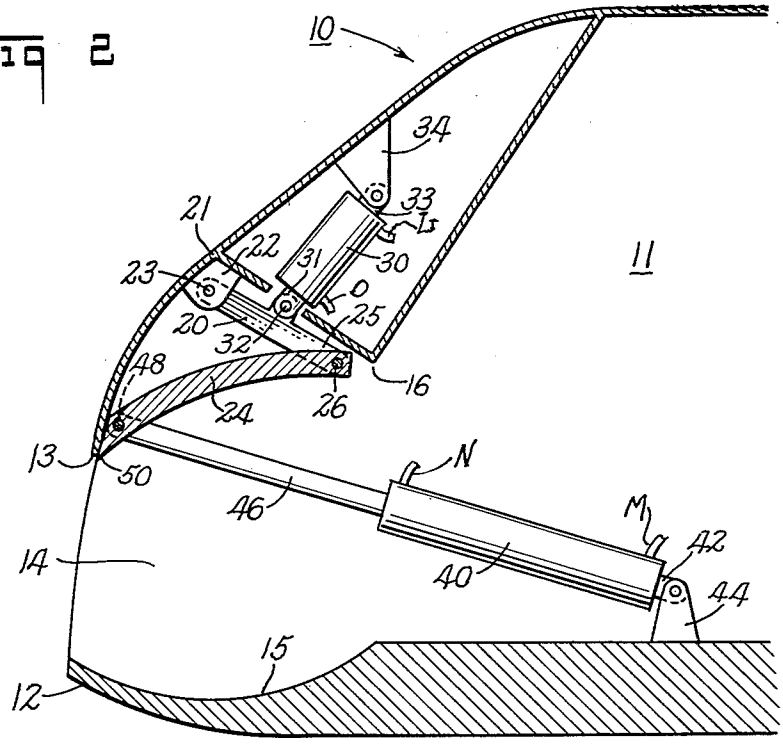
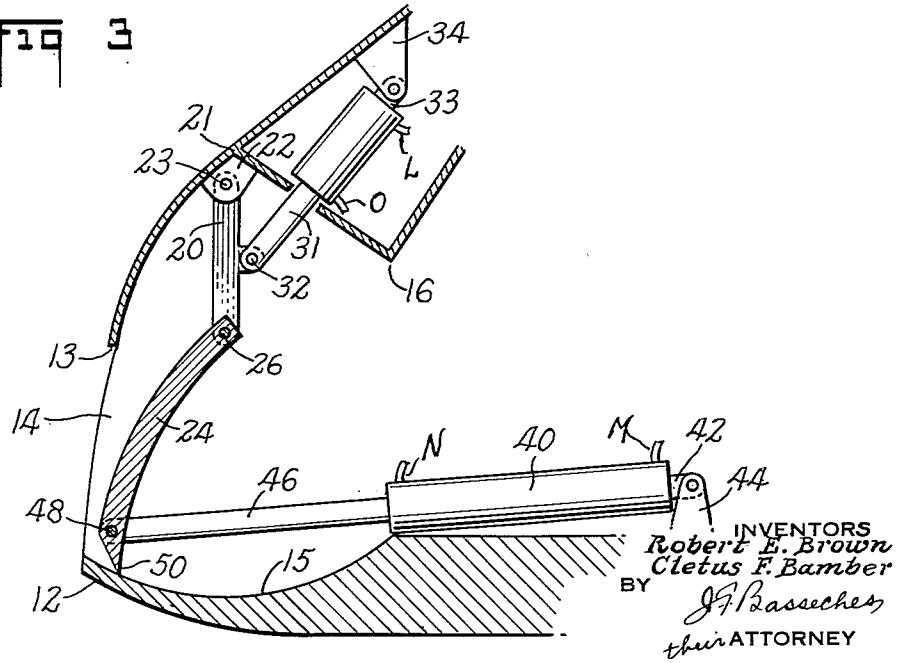


Fig 3



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PACKER ASSEMBLY

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Fig 4

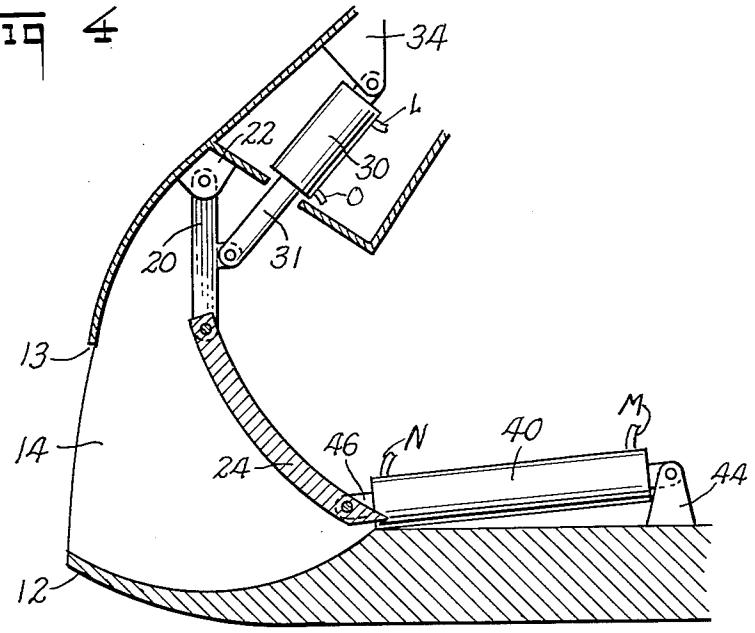
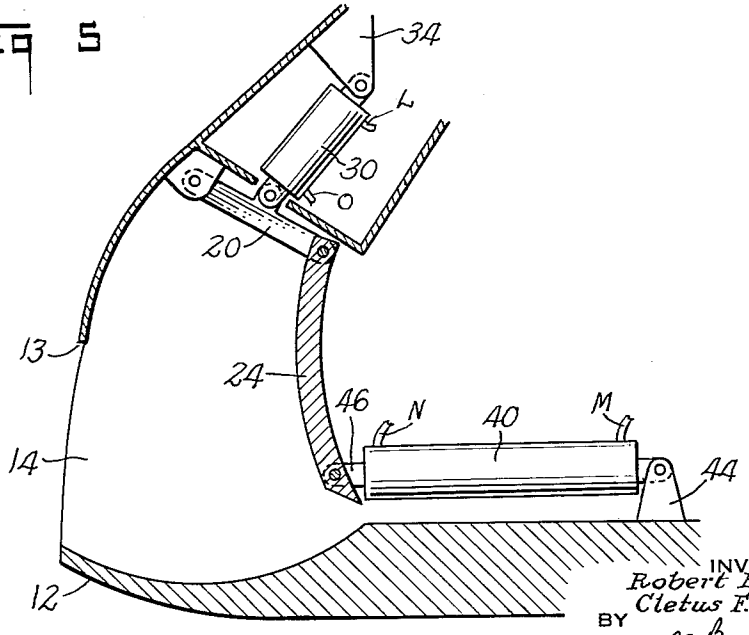


Fig 5



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PACKER ASSEMBLY

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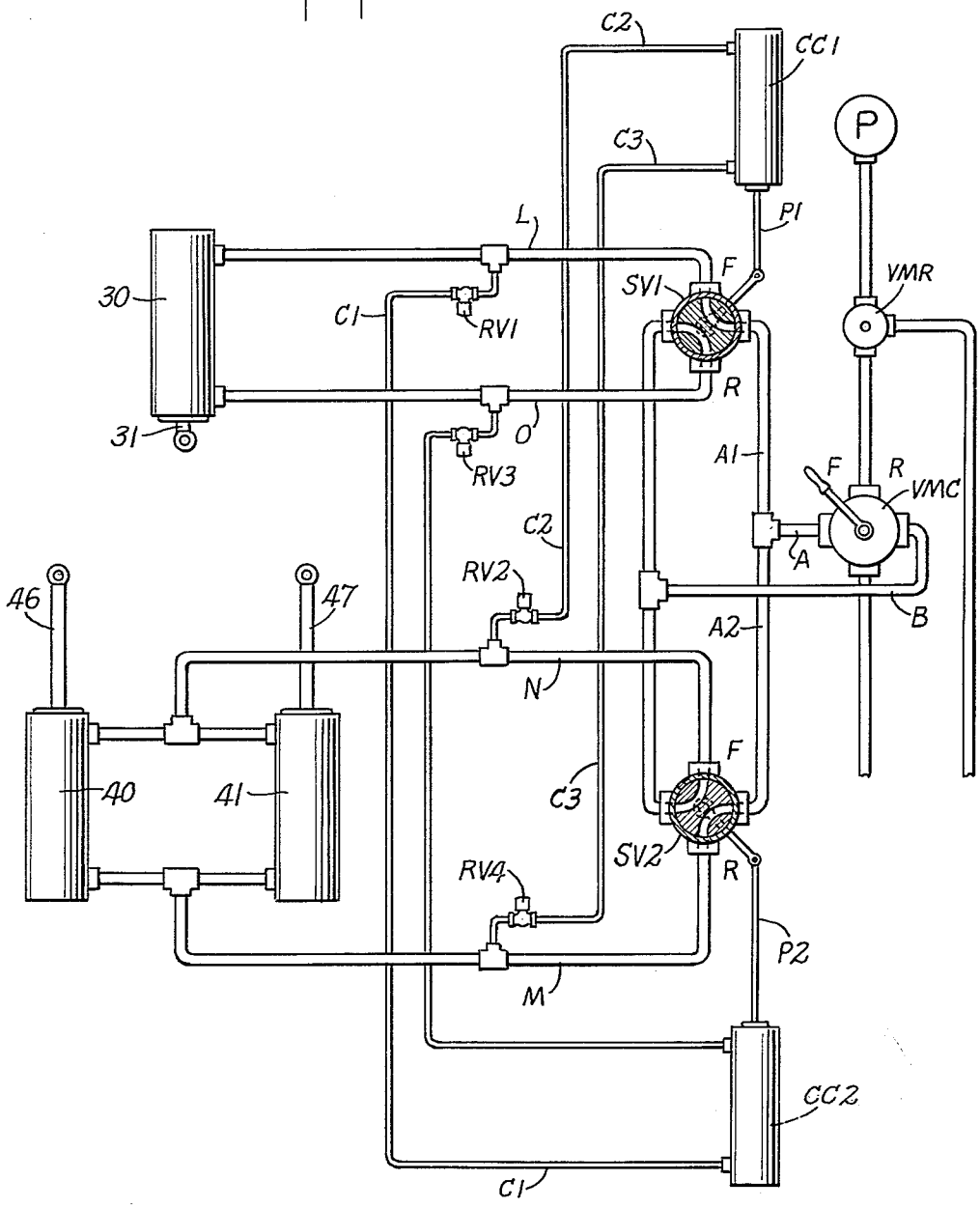
Fig 6



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PACKER ASSEMBLY

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Fig. 7

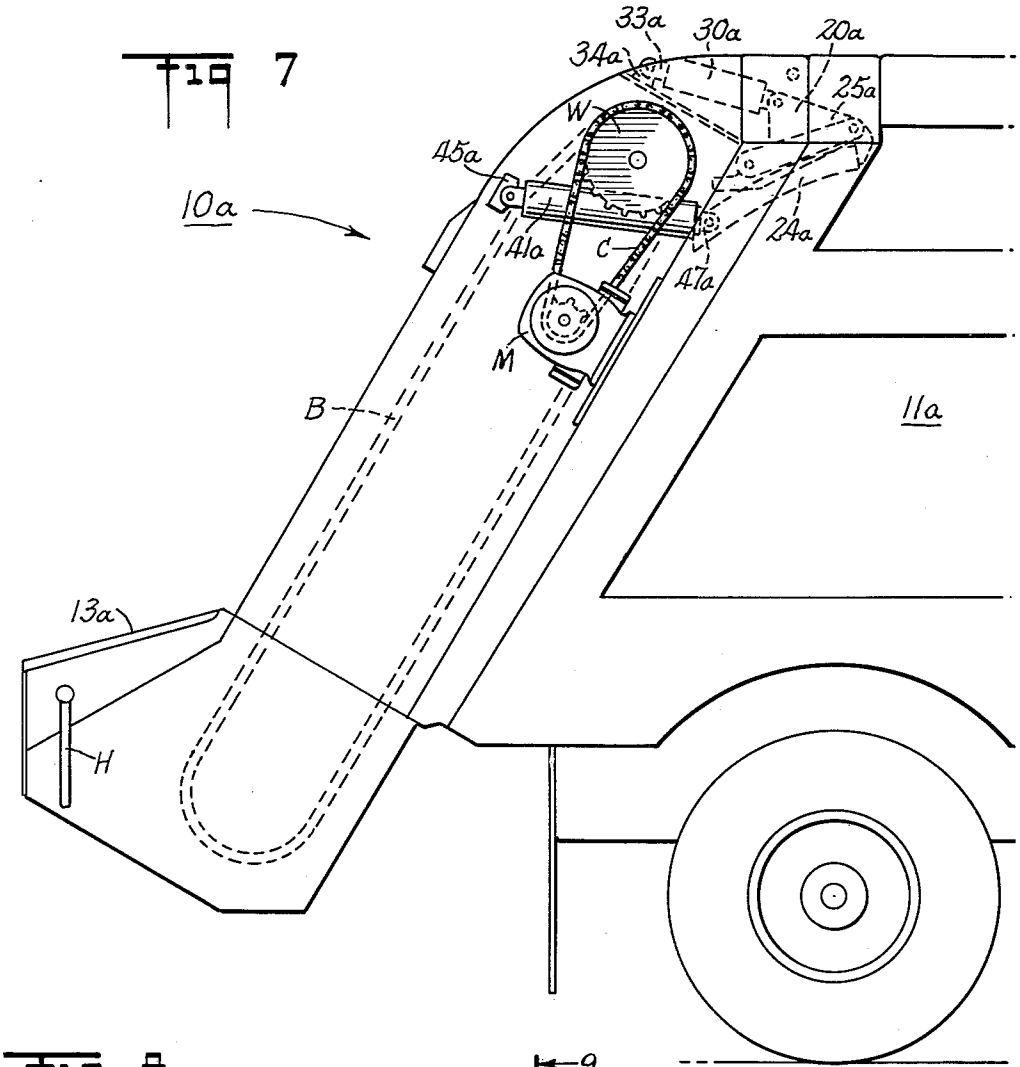
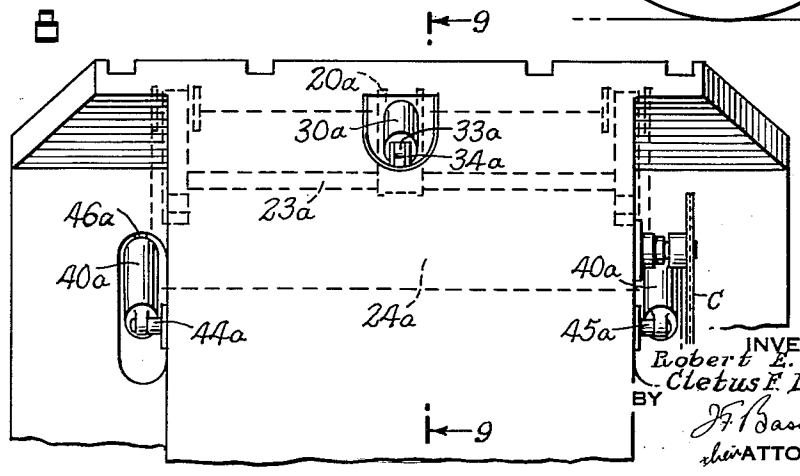


Fig. 8



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PACKER ASSEMBLY

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Fig 9

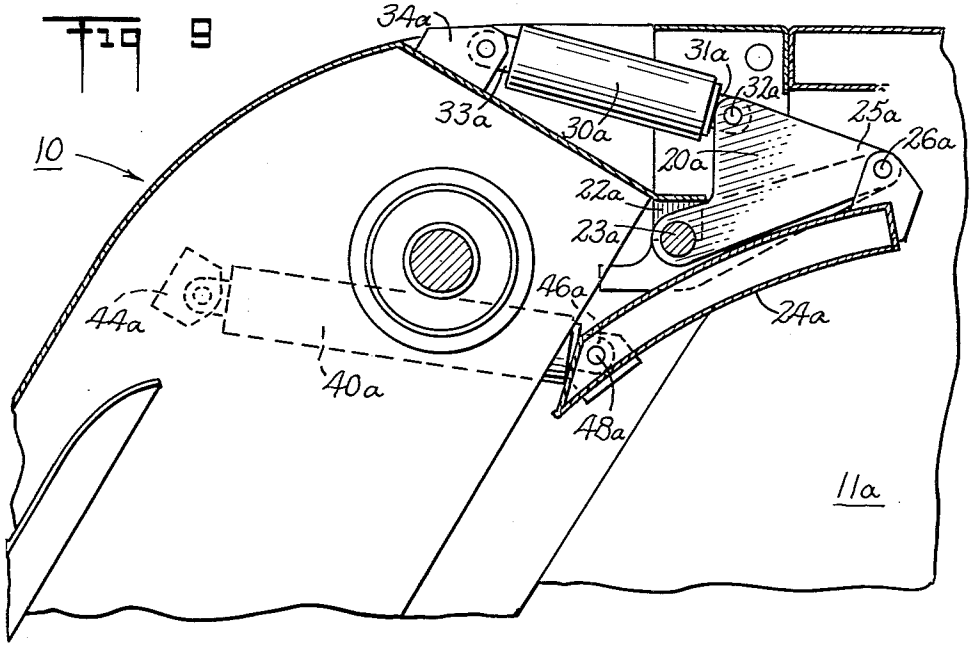
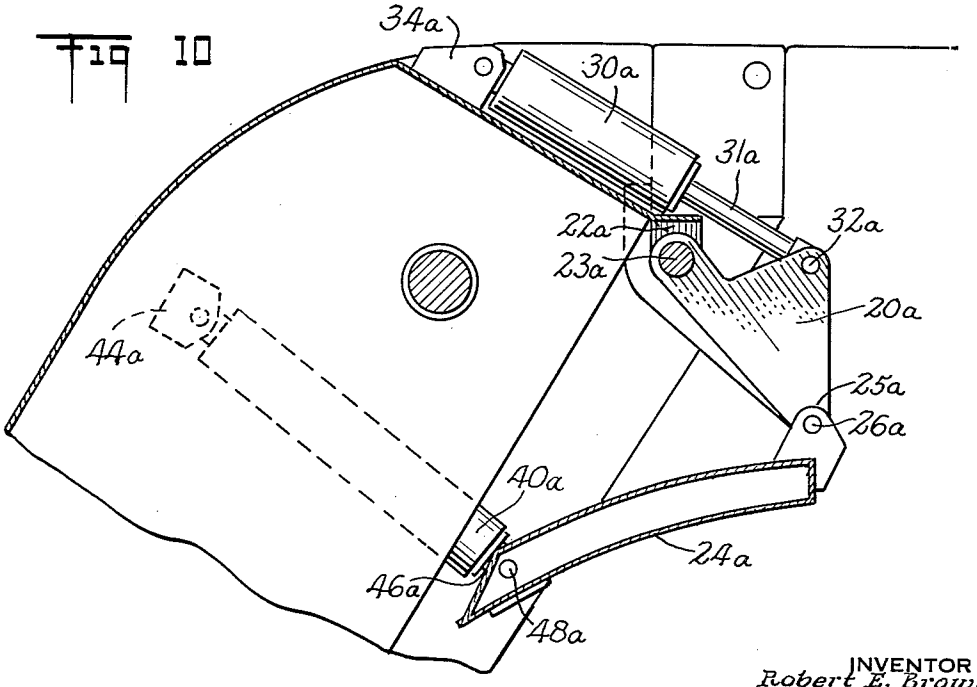


Fig 10



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PACKER ASSEMBLY

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Fig 11

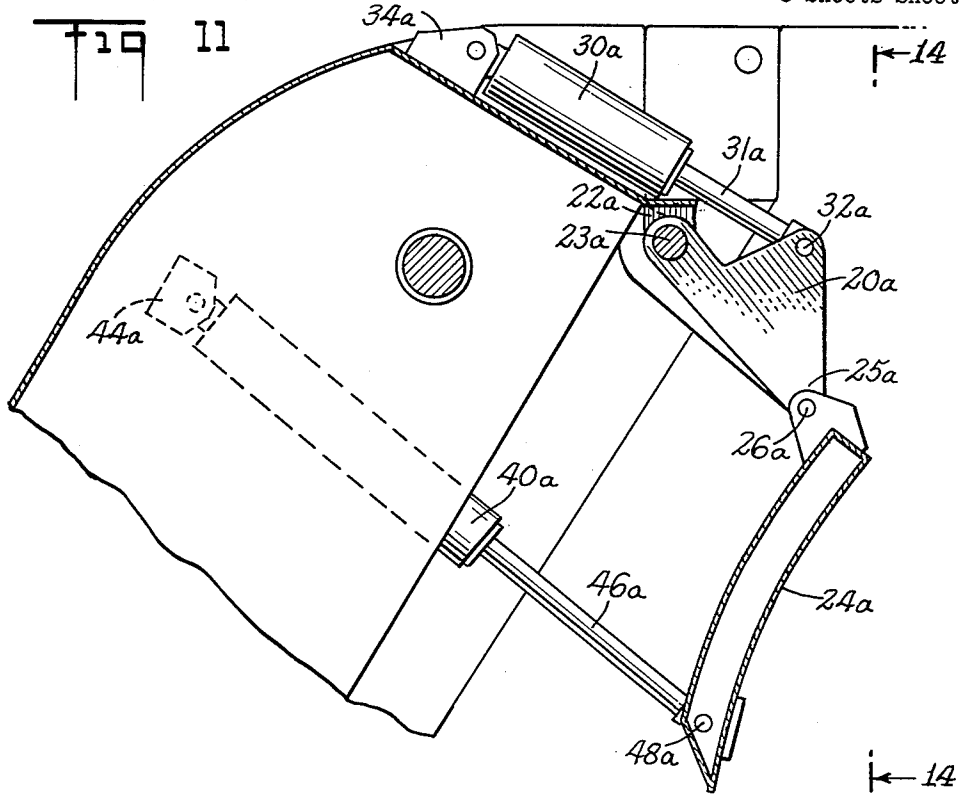
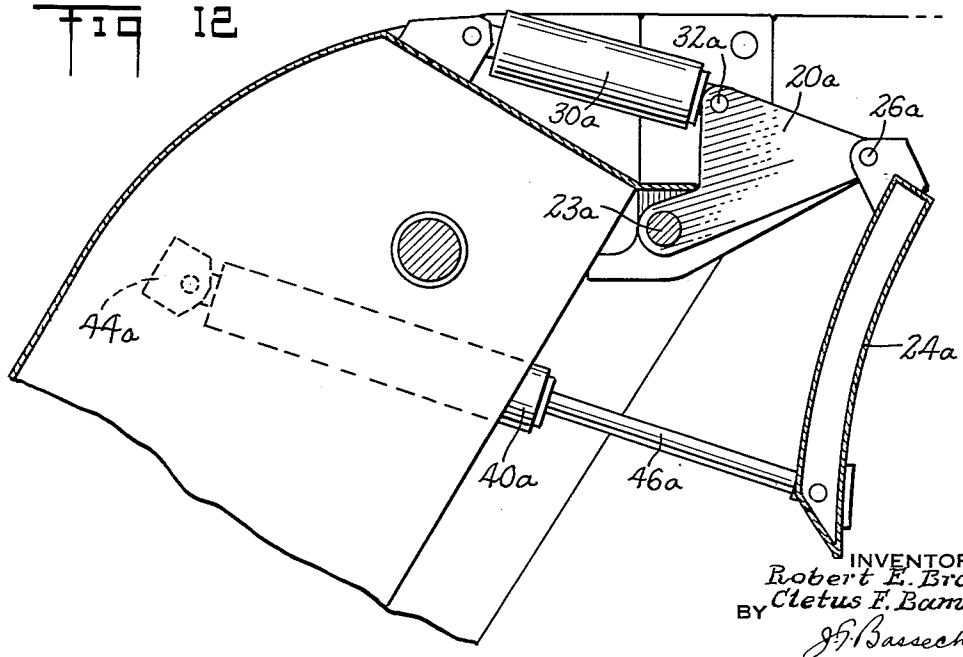


Fig 12



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PACKER ASSEMBLY

Filed April 28, 1959 8 Sheets-Sheet 8

Fig 13

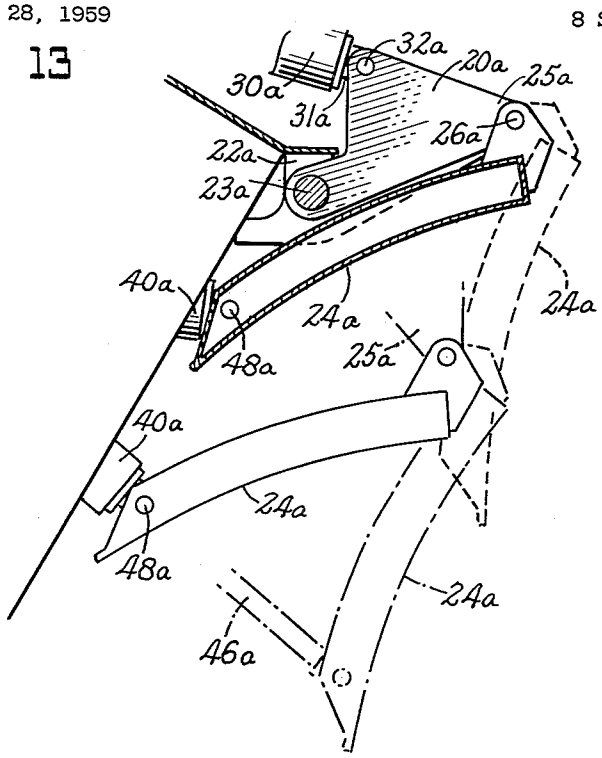
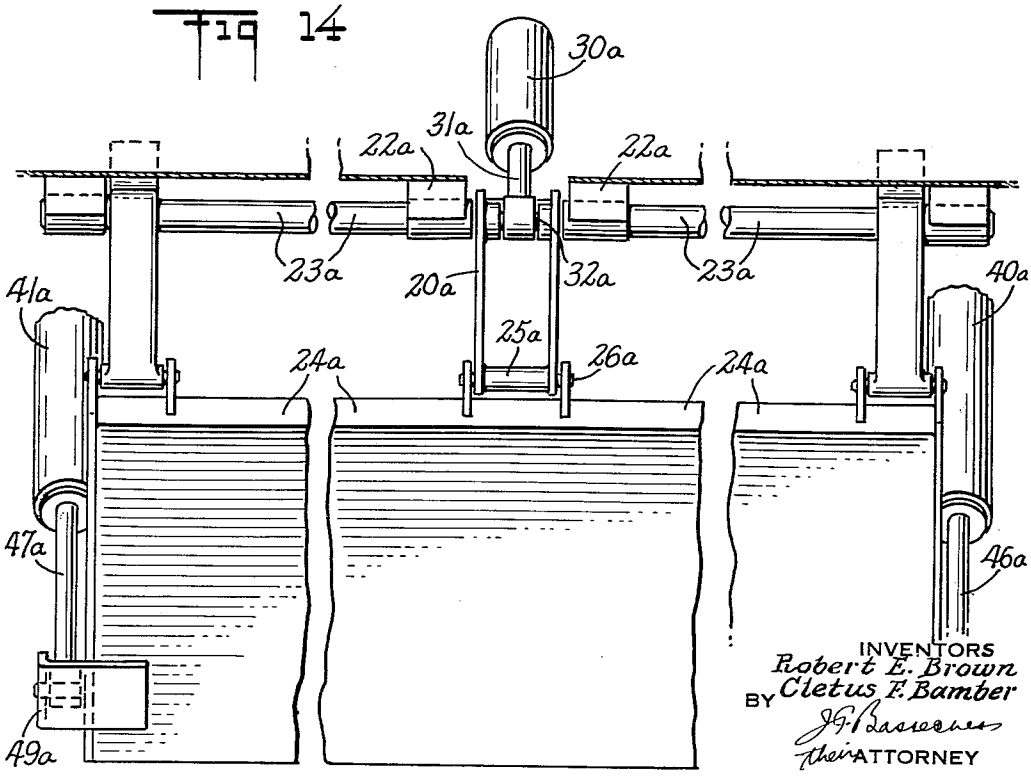


Fig 14



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United States Patent Office 3,092,269 Patented June 4, 1963

3,092,269

PACKER ASSEMBLY

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Filed Apr. 28, 1959, Ser. No. 809,435
3 Claims. (Cl. 214—83.3)

This invention relates to a packer assembly, and more particularly to a packer assembly adapted for use with a refuse collection truck of the type commonly employed to gather refuse from a plurality of collection points for transportation to a dump or incinerator. More particularly, this invention relates to a refuse packer assembly susceptible of extremely economical construction which is adapted to utilize fully the refuse carrying capacity of the collection truck by providing for highly efficient loading of the truck, and eliminating improper and uneconomical loading conditions encountered with the use of certain packer assemblies heretofore known, wherein voids or empty spaces remain unfilled in the body of the truck.

This invention relates further to a packing assembly as aforesaid which is automatically shifted through a cyclical packing movement without manual application other than the initial manual operation of actuating the assembly and the final operation of shutting off the assembly.

Still further, this invention relates to a cyclically operating packing assembly adapted, upon encountering of an obstruction in any cyclical movement, automatically to shift to the next cyclical movement without completing the prior obstructed movement, thereby preventing overloads on the packer assembly and its associated operating mechanism, and also eliminating the necessity for manually retracting the packer assembly from an obstructed movement, a procedure necessary with other packing assemblies heretofore known.

This invention relates further to a packer assembly adapted to be used in conjunction with a truck having an escalator type loader or the equivalent, the packer assembly functioning in such combination primarily as a load distributor to implement filling of the truck body portions, to avoid a condition often encountered with such escalator loaders wherein voids or waste payload spaces reduce the operating efficiency of the truck.

Accordingly, it is an object of this invention to provide a packer assembly for refuse trucks or the like which may be economically produced.

A further object of this invention is to provide a refuse packing device which, with a minimum of supervision, provides automatic loading and safety features which might be achieved in devices heretofore known only through constant supervision by operating personnel.

A still further object of this invention is to provide a refuse packing assembly adapted automatically to compensate for relatively infrangible, difficulty crushable or movable objects encountered in the path of the packer mechanism and to shift the said mechanism out of the path of the object encountered and continue the packing cycle, thereby preventing damage to the packing mechanism and associated operating members, which might otherwise occur if packing operations were continued without removing manually the interfering object from the path of the cycling packing member.

Still a further object of this invention is the provision of a hydraulic control means adapted to be initially manually operated and thereafter to cyclically shift a packer plate assembly through a cycle of packing movements arranged to transfer from a loading compartment outside of the body of the truck refuse manually deposited in such loading compartment, inwardly within the storage compartment of the truck body.

Still a further object of this invention is to provide a hydraulic actuating mechanism arranged to shift a packer plate through a cyclic series of packing movements, initiation of each successive movement being responsive to pressure increases or "build ups" in the hydraulic mechanism which actuated the packing plate through the prior movement.

Still a further object of this invention is to provide a packer plate cyclically movable by hydraulic means arranged to actuate said plate through a cycle of packing movements defined by the extensible and contractible limits of the hydraulic actuating means.

Still a further object of this invention is to provide a packer assembly wherein a packer plate actuated by a plurality of hydraulic motor means is sequentially shifted through a cycle of packer movements by alternate actuation of the said motor means, such alternate actuation being effected responsive to pressure increases in the motor means, such as occur in the limiting positions of said motor means, and such as occur also when said packer plate encounters a relatively immovable obstacle intermediate the limiting positions of said plate.

Still a further object of this invention is to provide a hydraulically operated packer plate arranged to be automatically shifted through a normal packing cycle and arranged automatically to abbreviate one or more movements of said normal packing cycle upon encountering, during such movement, a relatively immovable obstacle.

A further object of this invention is to provide a packer assembly having the aforesaid characteristics and being especially adaptable for use in combination with escalator or other high level type loaders as a distributing means to prevent the formation, adjacent the escalator discharge area, of blocking heaps, and to assure compaction and relatively even distribution in the body of the truck of refuse deposited by such high level type loaders.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, reference is made to the accompanying drawings, forming a part hereof, in which—

FIGURE 1 is a rear elevational view of the device applied to a refuse truck;

FIGURE 2 is a section taken on the line 2—2 of FIGURE 1;

FIGURES 3, 4 and 5 are sections similar to the section of FIGURE 2, diagrammatically illustrating the various cyclical positions assumed by the packer assembly, and operating mechanism therefor, assumed in the packing operation;

FIGURE 6 is a diagram illustrating schematically the hydraulic lay-out for operating the packer assembly shown in the preceding views;

FIGURE 7 is a side elevational view of an embodiment of the packer assembly used in conjunction with a refuse truck having a high level loader of the escalator type, with parts of the truck body broken away;

FIGURE 8 is a plan view of the embodiment of FIGURE 7, with parts broken away;

FIGURE 9 is a magnified section taken on the lines 9—9 of FIGURE 8;

FIGURES 10 to 12 are views similar to the view of FIGURE 9, illustrating the various positions assumed by the packer assembly and operating mechanism therefor during the packing operation;

FIGURE 13 is a diagrammatic view showing the positions of the plate in FIGURES 9 to 12 superimposed in one view;

FIGURE 14 is an end elevation taken in the direction of the line 14—14 of FIGURE 11.

Referring now to the drawings, there is shown a truck 10 having an interior storage compartment 11 provided

adjacent its rear end 12, with a loading opening 13 communicating with a temporary storage or loading compartment 14. The compartment 14, which forms the initial repository for refuse or the like manually dumped through the loading opening 13, is preferably provided with an arcuately formed bottom wall 15 for purposes which will become clear.

An opening 16 communicates with the storage compartment 11 within the body of the truck and the temporary loading compartment 14, thereby providing a means of access for refuse deposited through opening 13 to the interior of the truck.

A link 20 is secured to the frame 21 of the truck 10 at a point substantially aligned with the central longitudinal axis of the truck by a bracket 22, horizontally disposed trunnion 23 serving to support the said link 20 on the bracket 22 pivotally in a vertical plane. A packer plate 24, preferably having a curved or raked configuration, is pivotally secured to the lower end 25 of the link 20 my means of trunnion member 26. A double acting hydraulic motor member 30 is interposed between the link 20 and the truck frame 21, the end of the piston member 31 of the said hydraulic member being pivotally secured to a lobe 32 extending inwardly from the link 20, the other end 33 of the said hydraulic means being pivotally secured to the frame 21 of the truck by means of a bracket 34, welded or otherwise secured to the said frame.

A pair of double acting hydraulic motor means 40, 41 are pivotally secured at one of their ends, 42, 43, to brackets 44, 45, welded or otherwise secured adjacent the interior lateral edges of the frame of the truck. The hydraulic means 40, 41 are preferably spaced apart a distance slightly in excess of the width of the plate 24, the extensible and contractible piston elements 46, 47, being pivotally secured to said plate at points 48, 49 adjacent the lower marginal edge 50 of the plate 24.

The operation of the packer plate will now be described by referring to the schematic diagram of FIGURE 6 and the semi-diagrammatic illustrations of FIGURES 2 through 5.

In FIGURE 6 the element P represents a hydraulic pump and reservoir system for providing the hydraulic fluid under pressure necessary for driving the motors 30, 40 and 41. A main relief valve VMR is interposed between the pump P and the main control valve VMC to guard against accidental overload and consequent damage to the system. The diagram of FIGURE 6 illustrates the packer plate in the beginning or storage position shown in FIGURE 2, the control of the main valve VMC having just been thrust to the forward position thereof.

In connection with this operational description, the double active hydraulic cylinder members 30 and control cylinder members CC1 and CC2 each should be considered to comprise separate chambers of varying size, depending upon the positions within the cylinder of the piston head parts. In the ensuing description, reference to individual chambers has been avoided, the direction of movement of the pistons with respect to the cylinders being more readily understood by reference to the particular hydraulic line or conduit through which fluid is admitted to the cylinder.

As seen in FIGURE 2, the extensible members 46, 47 will be in the outward or extended position thereof and the piston element 31 of the motor member 30 will be in the inward or contractile position thereof. When the main control valve VMC is manually shifted to the forward or F position, hydraulic fluid is permitted to flow through the lines A, A1 and A2 to the sequence valves SV1 and SV2, respectively. When the packer assembly occupies the position shown in FIGURE 2, the valves SV1 and SV2 will lie, respectively, in the forward and rearward positions as shown in FIGURE 6.

With the sequence valves thus positioned, hydraulic fluid is permitted to pass through these valves to the lines L and M, causing the pistons 46, 47 to be maintained in extended position by the pressure in line M, and causing the piston member 31 to be extended from the contractile position shown in FIGURE 6 by the pressure in line L. During the extending cycle of the piston member 31, the packer plate 24 will gradually advance from the position shown in FIGURE 2 to the lowered position shown in FIGURE 3. Upon completion of the downward stroke of the piston 31, pressure sensitive control or relief valve RV1 will open responsive to the pressure increase in the member 30, occurring upon the extensible element 31 reaching its endwise limiting position defined by the stopping action of the piston head abutting the end portion of cylinder 30.

With the valve RV1 thus opened, fluid is admitted to the control line C1, thereby introducing fluid under pressure behind the piston in control cylinder CC2, causing extension of the piston P2, thereby advancing the operating member of sequence valve SV2 to the forward or F position thereof. With the valve SV2 thus in the forward position, fluid from the line A2 is permitted to flow to the line N and into the operating motor members 40, 41 at a position in advance of the piston members 46, 47, thereby actuating the said members from the extended position shown to the contractile position. The last described actuation of the members 40, 41 will cause the packing plate 24 to be shifted from the position shown in FIGURE 3 to a forward position depicted in FIGURE 4, the last mentioned forward movement of the said packing plate serving, as will be readily recognized, as the prime moving stroke of refuse from the storage portion 14 toward and into the body 11 of the truck.

When the members 46, 47 attain the limiting inward or contractile position, pressure built up in the line N will cause the pressure sensitive control or relief valve RV2 to open, diverting pressure from the line N to the control line C2. The flow of fluid through the line C2 and into the control cylinder CC1 behind piston P1 will cause the piston P1 to advance the operating lever of sequence valve SV1 to the R or reverse position thereof. This advancing of the valve SV1 diverts pressure from the line A1 to the line O, thereby causing the extended piston member 31 gradually to be retracted to the contractile position shown in FIGURE 5. The last mentioned movement, as will be readily recognized, imparts a forward and upward component of movement to such refuse as may remain against the face of the blade when in the position as shown in FIGURE 4, such upward component of movement serving, in a manner to be hereinafter described, to aid in the efficient distribution throughout the truck body of refuse shifted thereto by the packer plate 24.

When the piston 31 reaches its inward or contracted limiting stop position, pressure increases in the line O are sensed by the pressure sensitive relief valve RV3, opening of such valve serving to activate control cylinder CC2, causing the piston P2 to retract the operating lever of sequence valve SV2, thereby permitting fluid to flow through the line M and extending the piston members 46, 47 from the cylinders 40, 41, thus shifting the packer plate 24 to the initial position shown in FIGURE 2.

It will be readily recognized that if the operating handle of the main control valve VMC is left in the forward position, the packer plate 24 will continue to be cycled through the series of limiting movements depicted in FIGURES 2 through 5. The length of each cycled movement is determined by the extended or contracted limiting positions of the respective hydraulic motor members, and actuation of the motor member intended to move the plate 24 through the next packing cycle is effected responsive to pressure increases in the hydraulic motor means which occur when the said means are no longer able to

expand or contract by reason of their having reached a limiting or stop position. The relief valves RV1, RV2, RV3 and RV4 are set at a slightly lower pressure than the main relief valve VMR so that shifting or cycling may occur before the main hydraulic system relieves.

As heretofore pointed out, shifting from one cyclic movement of the packer plate to the next is effected responsive to pressure increases in the hydraulic moving means, which pressure increases are, during normal operation of the packer device, occasioned by limited expansibility or contractability resulting from a reaching of the end or limiting stroke of the hydraulic motor means. If, during a movement of the packer plate, a relatively incompressible object of refuse or the like is encountered or wedged by the packer plate against the frame of the truck, further expansion or contraction of the moving hydraulic cylinder will be impeded and pressure will increase in the cylinder in the same manner as above described at an end limiting stroke of a piston with respect to the cylinders. The reaction of such pressure increase upon the pressure relief valve will be the same as the reaction on reaching a limiting position of the hydraulic motor means, and in case of a blockage during any cyclic movement of the packer plate, the relief valve associated with the particular motor means actuating the plate toward the blocked position will advance the point at which the subsequent cyclical movement is effected, thereby shifting the plate out of the path of the obstacle encountered, or changing the effective direction of movement in respect of the obstacle.

The above described recycling action will now be illustrated in connection with the cycle of movement of the plate in which blockage is most likely to be encountered, namely, the movement of the said plate from the position shown in FIGURE 3 to the position shown in FIGURE 4.

Assuming that the plate **24**, positioned as shown in FIGURE 3, has been moved half way toward the position shown in FIGURE 4 by the partial contraction of the piston elements **46**, **47** and that an obstruction is encountered in such half way position, the limitation on the movement of the packer plate **24** will cause a premature pressure buildup in the members **40**, **41**, thereby causing the relief valve RV2 to divert the pressure from the last named motor members to control cylinder CC1 through the line C2, thereby shifting the position of sequence valve SV1 from forward (F) to reverse (R).

With the sequence valve SV1 thus shifted to the R or reverse position, fluid will be permitted to flow through line O, causing the piston **31** to be drawn upwardly into the cylinder **30**, thereby lifting the plate **24** over the blocking obstacle. Often the shifting of movement of the packer plate which results from recycling occasioned by a blockage as aforesaid, is sufficient to clear the blocking or jamming influence by causing the obstacle to be rolled or shifted in a plane of movement angularly opposed to the plane of movement in which the blocking occurred. Even if a clearing is not effected, however, the plate, upon reaching the position substantially as shown in FIGURE 5, will continue to cycle and will return to the position of FIGURE 2, etc. Even if the jamming or blocking influence is not cleared by the initial completion of the cyclical movement aforesaid, a continued series of such movements may be adequate to effect such clearing. In any event, the series of pressure sensitive relief valves RV1, RV2, RV3, RV4 may be set to act at a pressure sufficiently low to prevent damage to the hydraulic system and the operating and packing parts, without permitting pressure build ups sufficient to actuate the main relief valve VMR.

The packed plate **24** may be operated through a reverse cycle, such operation being desirable as an aid in clearing stubborn obstacles or the like rearwardly out of the temporary loading storage compartment **14**. To operate the packer plate through a reverse cycle, the operating handle of the main control valve VMC is moved to the R position, permitting fluid to flow through the line B to sequence valves SV1 and SV2. With the plate in the position shown in FIGURE 2, pressure flows through valves SV1 and SV2 to the lines N and O, causing the piston **31** to be maintained in contracted position and causing the members **46**, **47** gradually to contract until the plate **24** is in the position shown in FIGURE 5.

When the plate **24** reaches the position shown in FIGURE 5, relief valve RV2 opens, actuating the control cylinder CC1, causing sequence valve SV1 to be shifted to the R position, thereby permitting the flow of fluid through the line L to the cylinder **30** and extending the piston member **31**, gradually to move the packer plate to the limiting position shown in FIGURE 4. When the plate reaches such limiting position, relief valve RV1 will activate control cylinder CC2, extending piston P2 and shifting sequence valve SV2 to the F or forward position. In such position, fluid flows through line M to the cylinders **40**, **41**, extending the pistons **46**, **47** and gradually moving the plate **24** to the position shown in FIGURE 3. On reaching such position, relief valve RV4 is overloaded, thereby withdrawing the piston P1, shifting the sequence valve SV1 to the forward position, thereby permitting fluid to flow through line O, contracting the piston member **31** to a position within the cylinder **30**, and thus moving the plate to the final position shown in FIGURE 2, at which position the relief valve RV3 will function to cause control cylinder CC2 to withdraw piston P2 and valve SV2 to the R position, which is the initial position as shown in FIGURE 6.

A check valve (not shown) is connected in parallel, bypassing relation with each of the relief valves RV1, RV2, RV3, RV4. Such check valves are oriented to permit flow only in a direction opposite to the direction of flow permitted by the corresponding relief valve, but permits flow around such relief valve of fluids within the control cylinder chambers displaced upon shifting of the control cylinder pistons.

Thus, upon shifting of each of the pistons P1, P2 in control cylinders CC1, CC2, respectively, fluids displaced from such cylinders flow through the control line connected to the actuated cylinder which is not under pressure and through the check valve by-passing the relief valve of such unpressured control line.

A further important feature of the device which aids in its ability to clear itself of obstacles encountered during a stroke is the fact that even after encountering by the plate of an obstacle in a given path of movement and consequent recycling of the plate as heretofore described, the plate is nevertheless urged, during the recycles or short-cycled movement, in the direction of the blocking obstacle and, thus, for instance, if an obstacle is encountered by the plate **24** as it moves from the position shown in FIGURE 3 to that shown in FIGURE 4, thus causing premature withdrawal of the piston **31** to a position within the cylinder **30**, the pistons **46** and **47** nevertheless tend to contract during the upward movement of the piston **31**. Therefore, it will be seen that if an obstacle in close proximity to the curved floor portion **15** is encountered by the plate **24** in its movement from the position of FIGURE 3 to the position of FIGURE 4 and, accordingly, the piston **31** is prematurely actuated toward its contracted position within cylinder **30**, the plate **24** will nonetheless be urged by cylinders **40**, **41** toward its forward or contracted position during such upward movement.

In the event that the packer plate **24** is cleared above the blocking obstacle during such upward movement, the plate **24** will reach the exact position shown in FIGURE 5 since, if the members **46**, **47** had not contracted entirely within the cylinders **40**, **41**, the pressure build up necessary for tripping the release valve would not have been built up.

As previously indicated, the described packer assembly

may be used cyclically or alternately in conjunction with a high level loader assembly as a load distributor rather than as the prime loading member illustrated in the refuse truck of FIGURES 1 to 5.

The escalator parts shown in FIGURE 7 are similar to the escalator assembly shown more fully in the United States patent to Calamore No. 2,692,062. The features of such escalator do not form a part of this invention and, accordingly, the description thereof will be sufficient only for an understanding of the coaction of such escalator with the packer assembly herein disclosed. Moreover, the operation in the embodiment of FIGURES 7 to 14 of the operating members **30***a*, **40***a* and **41***a*, and the hydraulic control mechanism for actuating such members being substantially identical to the operation of the members **30**, **40** and **41** as previously described in connection with the embodiment of FIGURES 1 to 5, no purpose would be served by repeating a detailed description thereof. It should be noted, however, that the members **40***a* and **41***a* have been inverted, and thus the prime moving stroke exerted on the plate **24***a* is thus a pushing or extending stroke rather than a contracting stroke of the pistons **46***a* and **47***a*.

In the description of FIGURES 7 to 14, corresponding parts to the parts of the embodiment shown in FIGURES 1 to 5 are given the same reference numerals, followed in each case by the letter *a*.

In FIGURE 7 there is shown a fill opening **13***a*, leading to endless conveyor belt B. The conveyor B is engaged and supported at its upper end by sprocket wheels W and associated head shaft, which wheels are arranged to drive the said belt B when driven in turn by chain C linking the wheels W with motor. The motor, which is preferably hydraulically powered, is controlled by the handle H and may, by varying the position of such handle, be shifted to forward, reverse or stopping positions of said motor.

With the motor in the forward driving position of the conveyor belt B, it will be readily recognized that refuse deposited in the low level fill opening **13***a* will be carried upwardly by the belt and dropped in the interior of the truck body **11***a*.

A packer blade **24***a* is suspended to be swingable in a vertical plane by link member **20***a*, whose lower end **25***a* is pivotally connected to a bracket **26***a* at the upper end of the said plate, the upper end of said link being pivotally secured on a trunnion **23***a* to a bracket **22***a* welded to the frame of the truck.

A first double acting hydraulic motor member **30***a* is pivotally connected at one end to a bracket **34***a*, welded or otherwise secured to the truck frame, the piston end **31***a* of said motor member being pivotally secured to a lobe **32***a* extending from the link **20***a*.

A pair of double acting hydraulic motor members **40***a*, **41***a*, are pivotally mounted at one end to brackets **44***a*, **45***a*, respectively, adjacent the rear frame of the truck **10***a*, the pistons **46***a*, **47***a*, respectively, of the said motor means being pivotally secured to the brackets **48***a*, **49***a*, respectively, near the lower marginal edges of the plate **24***a*.

In the same manner described in connection with the packer assembly of FIGURES 1 to 5, the plate **24***a* may be cycled through a locus of movements depicted by the limiting positions of FIGURES 9 to 12, and the superimposed view of FIGURE 13. The hydraulic source of the packer assembly is preferably independent of the hydraulic source used to power the escalator lift so that the two systems may be alternately or simultaneously operated without either affecting the performance of the other.

The packer plate assembly in the embodiment of FIGURES 7 to 14 is not normally cycled until a quantity of refuse has been deposited in the body of the truck by the escalator or other loader expedient. Such refuse, when deposited into the body **11***a* of the truck **10***a* by the conveyor belt B tends to form piles or heaps directly beneath the drop point of the conveyor. When the heap reaches a height which might obstruct further deposit by the escalator assembly, the packer plate **24***a* may be set into operation although, in some instances, such as when relatively large articles of refuse are being collected, it may be desirable to cycle the packer plate **24***a* continuously during loading. The shifting of plate **24***a* cyclically and continuously through the positions shown in FIGURES 9, 10, 11 and 12 and back to the position of FIGURE 9 will be readily recognized to effect a compaction on the downward movement of debris heaped by the conveyor belt, and a forward urging of such collected debris. The action of the plate **24***a* under the influence of the motor members **30***a*, **40***a* and **41***a* results in highly efficient utilization of the storage space within the truck body by eliminating wasteful voids. Furthermore, the automatic recycling features of the packer plate assembly previously described are particularly useful where, as here, the assembly is relatively inaccessibly located within the truck body and, accordingly, manual clearing of debris jammed or wedged between the packer plate and portions of the conveyor or truck frame would be difficult.

The packer plate and operating assembly herein disclosed provides a highly efficient and largely self-operating mechanism for transferring refuse or the like into the body of a refuse collection truck. The novel pressure sensitive control means assure continuous cyclic operation and also give the packer assembly a high degree of flexibility in that the said assembly may accommodate itself to a variety of packing situations without requiring manual attention.

The self-clearing characteristics of the packer assembly as heretofore described render its use particularly advantageous in situations where there is a likelihood of encountering objects or obstacles which, in other packing assemblies heretofore known require manual stopping of the assemblies, removal of the blocking influence and recycling of the packing apparatus. Moreover, undue strain on the packing mechanism is avoided by reason of the novel pressure sensitive cycling mechanism employed.

As previously emphasized, the packer assembly is particularly suitable for use within the body of a refuse truck having a high level loader assembly as a distributor of debris introduced by such loader into the truck body.

The scope of this invention should not be limited to the positioning of the hydraulic actuating members shown, it being within the spirit of the invention to reverse the orientation of such members or to provide mechanical linkage between such members and the packer plate. Moreover, the dual hydraulic members **40**, **41** perform, in effect, the same function as a single hydraulic member and, accordingly, the said members are treated in the claims as one member.

Having thus described the invention and illustrated its use, what is claimed as new and is desired to be secured by Letters Patent is:

1. In a refuse truck having a frame, a packing assembly comprising a packer plate, link means pivotally connecting said plate to the frame of said truck, first double acting piston extensible and retractible hydraulic motor means interposed between said plate and said frame and pivotally connected to said plate and frame in a manner, upon expansion and contraction, to impart a primarily upward and downward component of movement to said plate, second piston extensible and retractible hydraulic motor means interposed between said plate and said frame and pivotally connected thereto in a manner, upon expansion and contraction, to impart a primarily forward and rearward component of movement to said plate, and pressure sensitive control means communicating with said motor means arranged alternately to actuate said first and second motor means to advance said plate through continuous repetitive cycles comprising sequential downward, forward, upward and rearward movements, actua-

tion of the motor means for accomplishing each succeeding movement being effected by said control means responsive to pressure increases in the motor means effecting the prior movement.

2. A refuse truck comprising a storage body, a loader assembly on said truck including a refuse loader compartment having an opening leading to said storage body, a packer plate movable in said compartment through said opening, first linearly extensible and contractible hydraulic motor means having its opposite ends pivotally fixed, respectively, to the plate and to the truck, and including a piston dividing said motor means into two chambers, said ends of said first motor means being positioned to shift said plate upwardly and downwardly upon expansion and contraction, second linearly extensible and contractible motor means having its opposite ends pivotally fixed, respectively, to said plate and to said truck and including a piston dividing said second motor means into two chambers, said ends of said second motor means being positioned to shift said plate forwardly and rearwardly upon expansion and contraction, a pressure line connected with each chamber of said first motor means, a pressure line connected with each chamber of said second motor means, a pressure sensitive valve connecting each of said lines with control means for a source of hydraulic fluid under pressure, each of said valves, upon the occurrence in its associated line of pressure in excess of a predetermined amount, being effective to shift said control means to admit pressure to a line of the motor means not having said excessive pressure, whereby said plate is moved automatically and repetitively through an orbital path.

3. A refuse truck comprising a storage body, a loader assembly on said truck including a refuse loader compartment having an opening leading to said storage body, link means pivotally mounted on said truck, a packer plate pivotally mounted on said link means to be shiftable with respect to said opening, first linearly extensible and contractible hydraulic motor means having its opposite ends pivotally fixed, respectively, to the link means and to the truck, and including a piston dividing said motor means into two chambers, said ends of said first motor means being positioned to shift said plate upwardly and downwardly upon expansion and contraction, second linearly extensible and contractible motor means having its opposite ends pivotally fixed, respectively, to said plate and to said truck and including a piston dividing said second motor means into two chambers, said ends of said second motor means being positioned to shift said plate forwardly and rearwardly upon expansion and contraction, a pressure line connected with each chamber of said first motor means, a pressure line connected with each chamber of said second motor means, a pressure sensitive valve connecting each of said lines with control means for a source of hydraulic fluid under pressure, each of said valves, upon the occurrence in its associated line of pressure in excess of a predetermined amount, being effective to shift said control means to admit pressure to a line of the motor means not having said excessive pressure, whereby said plate is moved automatically and repetitively through an orbital path.

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