May 1, 1962 R. R. LOVE 3,032,220

SCOOP ATTACHMENT FOR FORK LIFT TRUCKS

Filed Jan. 30, 1959 4 Sheets-Sheet 1

Fig. 1

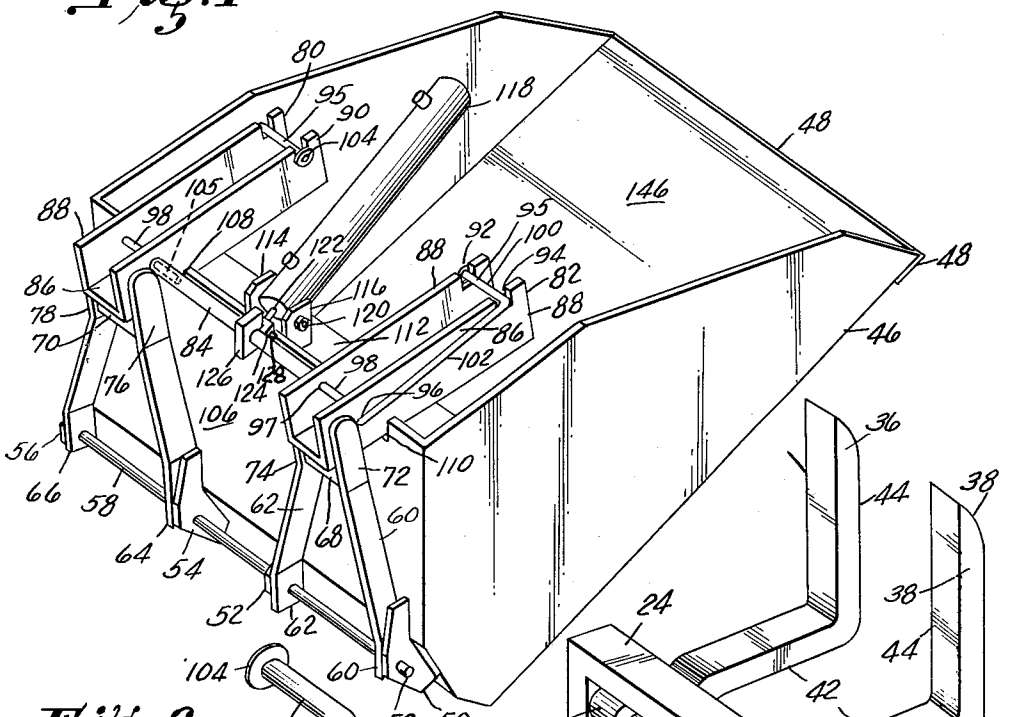


Fig. 2

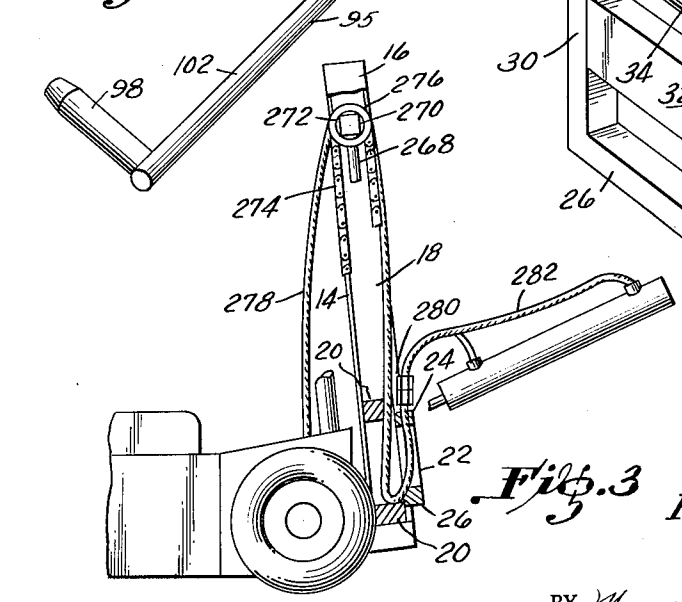


Fig. 3

Fig. 4

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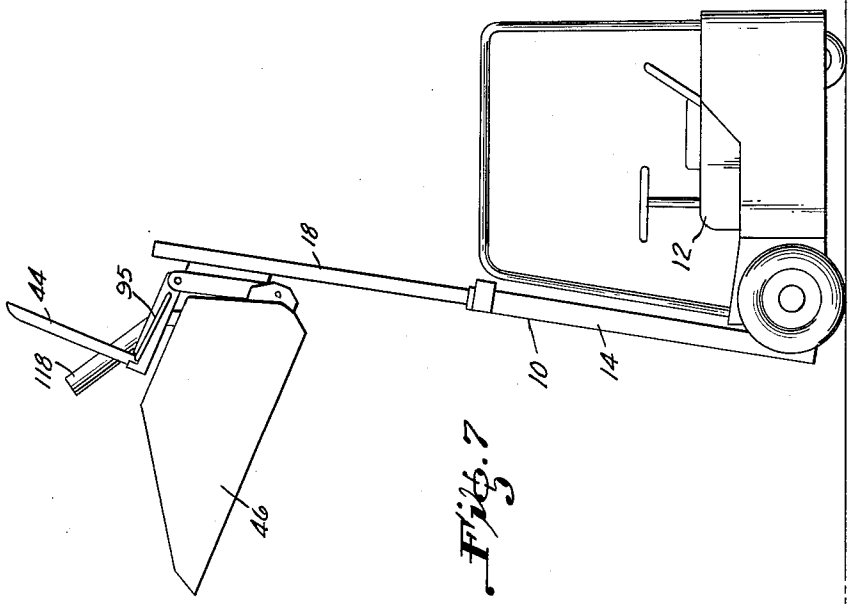
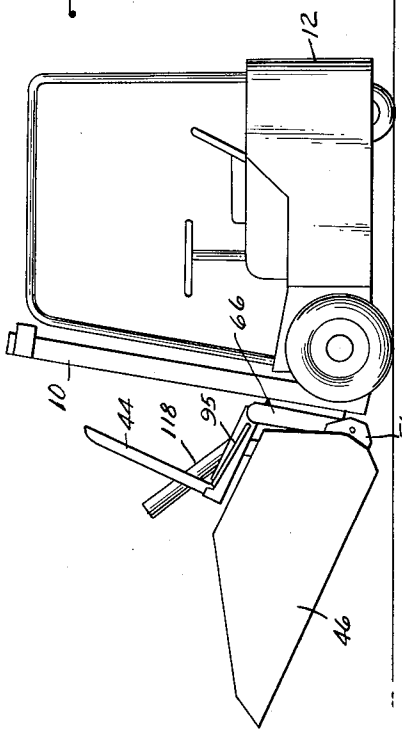


Fig. 7

Fig. 6



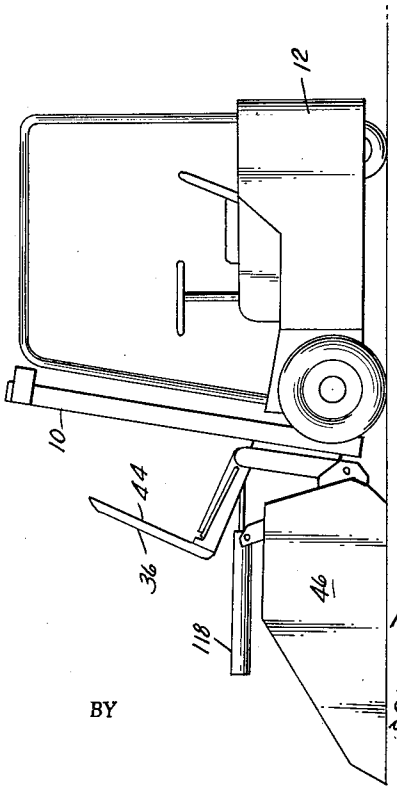


Fig. 5

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SCOOP ATTACHMENT FOR FORK LIFT TRUCKS

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Fig. 8

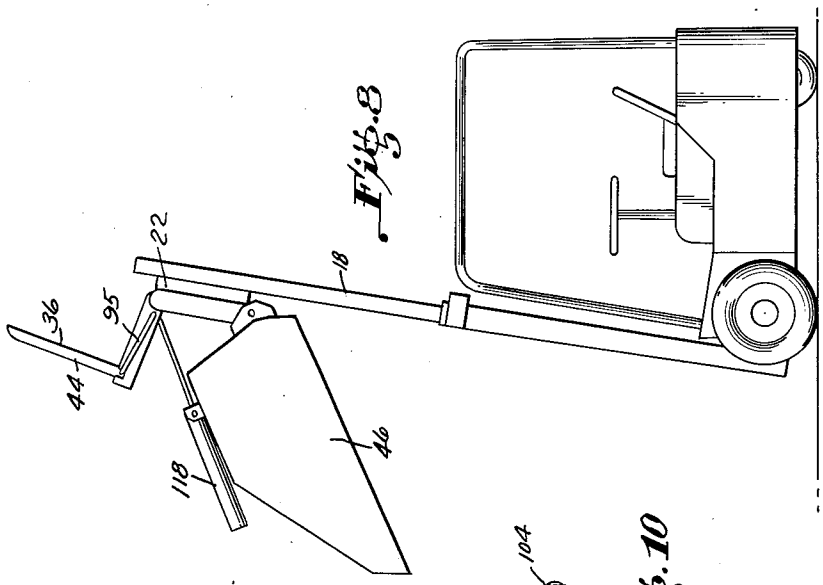


Fig. 10

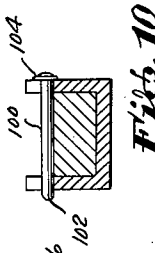


Fig. 11

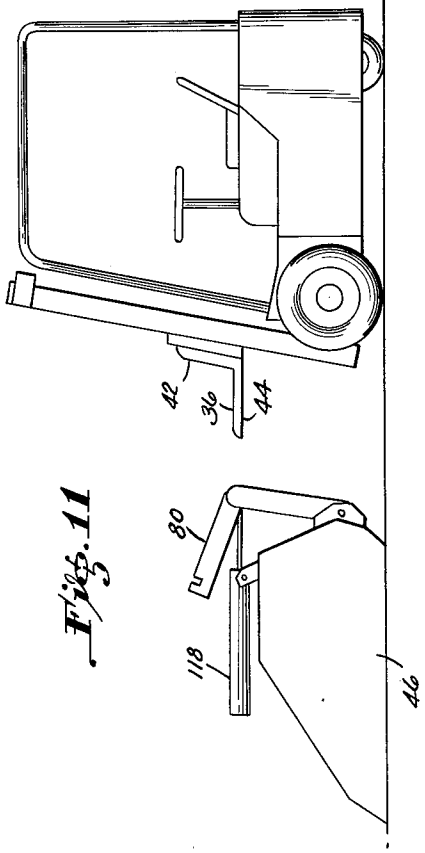
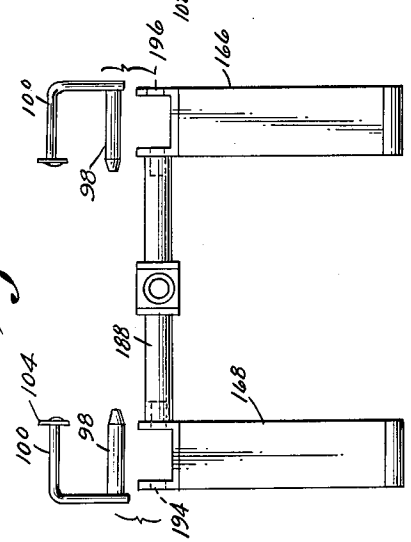


Fig. 13



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SCOOP ATTACHMENT FOR FORK LIFT TRUCKS

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Fig. 12

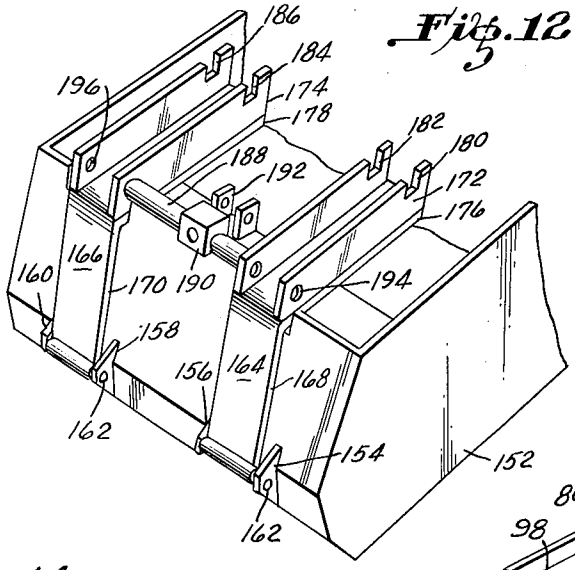


Fig. 14

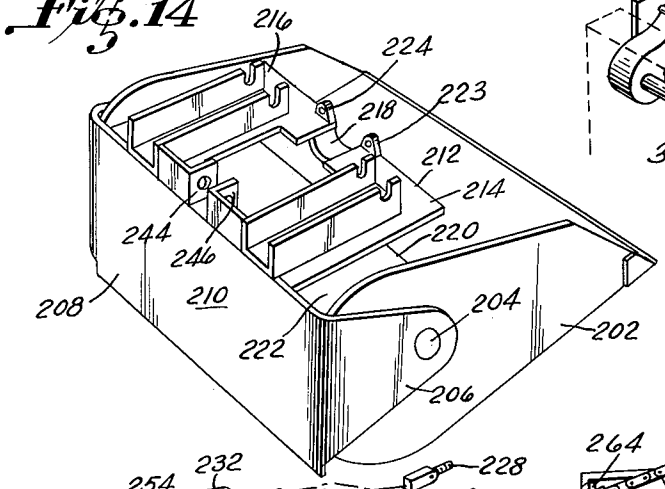


Fig. 9

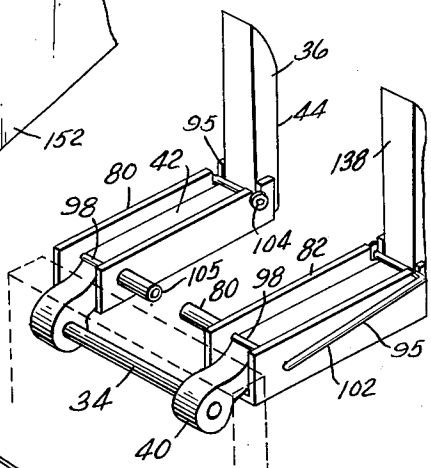


Fig. 15

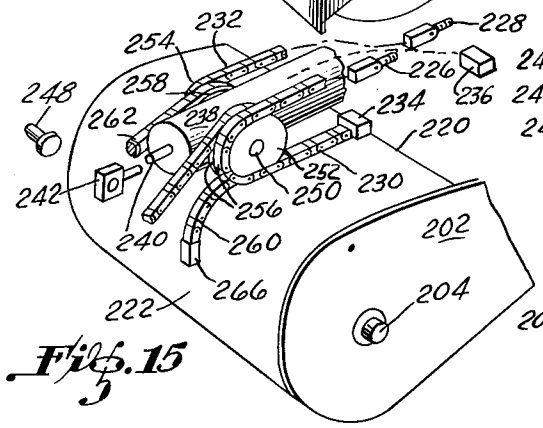
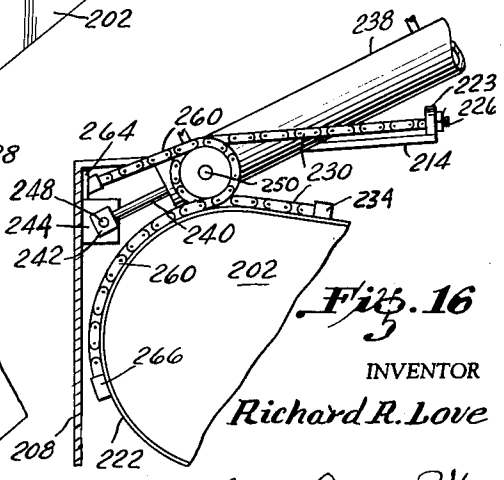


Fig. 16



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3,032,220

SCOOP ATTACHMENT FOR FORK LIFT TRUCKS

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Filed Jan. 30, 1959, Ser. No. 790,264
30 Claims. (Cl. 214—620)

This invention relates to scoops of the kind used in the construction and materials handling trades for scooping up loose or granular type materials such as coal, sand, etc. into containers. Many large types of scoops have been developed for use, for example, in road building or heavy construction projects. However, many scoops have also been developed for use in smaller operations and for occasional use. For example, bucket type scoops have been developed for use in loading sand and gravel in small road maintenance operations and for use by the farmer or small industries in occasional scooping of small amounts of material.

Among the latter type of devices there have been developed attachments which adapt inplements to multiple purposes for use where there is occasional need for this type of tool. For example, scoops have been developed which are adapted to be attached to fork lift trucks to adapt the truck to the purpose of scooping loose granular material as well as for lifting platform mounted cases, boxes, etc. Such scoops greatly extend the range of use of the fork lift truck and make it possible for the owner of the fork lift truck such as the owner of a warehouse to have at least stand-by equipment for handling materials that require a scoop instead of a fork lift. These scoops are adapted to be attached or hung on the fork lifting structure and to be raised and lowered by the same elements used in raising and lowering the fork. The present invention pertains to such a scoop attachment for fork lift trucks.

The heretofore known scoop attachments for fork lift trucks rendered them unacceptable except for use in a very limited manner. There is however a recognized demand for a scoop attachment which is versatile, that can be put on or taken off with relative ease, and which would otherwise be more acceptable to the business man and the mechanic and operator. Accordingly one object of the instant invention is to provide an apparatus adapted for connection to fork lift trucks which will expand the usefulness of the truck to scooping operations and which will be more satisfactory and acceptable than heretofore known attachments.

Another object of the invention is to provide a simple means of connecting and disconnecting the fork lift to the scoop wherein the fork lift can be simply driven into the scoop and the connection of the scoop then effected by the additional operation of attaching self locking pins and two quick hose couplings. According to the invention it is not necessary to disconnect or alter anything on the lift truck. The scoop is simply placed in position in front of the truck and the truck driven into it; then a pair of pins are inserted and the hydraulic connections made.

With heretofore known scoop attachments for fork lift trucks it was a difficult "mean" job to change the truck for operation as a scoop to operation as a fork lift, and vice versa. It was so difficult in fact that this was one big factor in the decision of many to purchase a separate tractor scoop instead of a means for adapting a presently owned fork lift truck. One unacceptable feature with the known scoop attachments available on the market is that it is necessary to remove the forks of the trucks before the scoop can be attached. This is not an easy thing to do. Accordingly an additional object of my invention is to provide a scoop attachment for a fork lift truck with which it is not necessary to remove the forks in attaching the scoop and the truck can be readily converted substantially instantly from a fork lift truck to a scoop truck or vice versa.

Another difficulty with heretofore known fork lift scoop adaptations is that the lift of the truck is reduced when the scoop is attached. An object of my invention however is to provide a fork lift scoop attachment whereby the lift is not decreased. No height whatsoever is lost with my scoop attachment for fork lift trucks. Materials can be lifted the same distance with the scoop as they could, if packaged, with the fork.

Another disadvantage with heretofore known constructions is that when the scoop is attached there is a dangerous overhang in the front of the truck. With one well known attachment the rear wall of the scoop bucket must be positioned forwardly of the fork lift apron a distance of approximately 11 inches. This obviously creates a dangerous overhang and must be accommodated for by use of a scoop whose capacity will not result in tipping of the truck. Further, the design of the tilting mechanism and the mountings in such prior known devices restricts the angles through which the scoop buckets can be tilted. For example, the limit of tilt of the scoop attachment's bucket bottom on such a truck would be reduced to 15 degrees upward and 30 degrees downward when the scoop is up from the ground. Such limitations are unsatisfactory for good operation. Accordingly another object of my invention is to provide a scoop attachment wherein greater angularity of tilt of the bucket can be used without danger.

A scoop should carry as high in front as in back to prevent slopping over in the front while carrying over rough ground. That is, its forward leading edge which is the edge which is forced into the earth or other material when on the ground, should, in the carrying position, when the truck is being moved over terrain, be up to the same level as the top of the back edge of the scoop. As stated above, with heretofore known scoops an angle of 30 degrees above the horizontal for the bottom of the scoop was considered a good maximum up angle and an angle of 45 degrees down below the horizontal was considered a good downward dumping angle. The 30 degree rise of the bottom limits the capacity of the scoop since it is obvious that a 30 degree angularity of the bucket bottom will cause the bottom to subtend a lesser vertical distance from the lowermost part of the bucket or scoop when it is raised than it would with a larger angle. Thus the outer end of the bucket will be up a shorter distance from the inner end than it would be if the angle of rise of the bucket bottom during carrying could be increased. Also if the angle of the bucket bottom could be lowered below say 45 degrees in dumping, wet material would be more satisfactorily dumped. Further, better flow of the materials into a large container, for example, will be obtained. It is for these reasons that the objects include providing greater angular movement for the bucket.

One limitation imposed on scoop attachments is that of the "operating length" of the hydraulic or other type motor employed to operate the scoop bucket relative to the scoop frame. The fork lifting structure and forward overhang problem limit the distance of travel of the powered means used to dump and lift the bucket. Accordingly a further object of the invention is to provide bucket operating mechanism which will extend and improve the operating range of the powered means used to effect the bucket positions.

A further object of this invention is to provide an hydraulic mechanism for actuating the scoop having a greater operating range than previously known mechanisms. Heretofore known scoops were mechanically or hydraulically operated but in hydraulically operated scoops the amount of travel of the rod of the operating cylinder was limited. According to this invention much

greater travel is possible than with the prior know scoops.

An additional object of the invention is to provide a top mounted operating means for a scoop for effecting hydraulic operation wherein the hydraulic motor (cylinder) and other operating mechanism does not interfere with the mounting of the scoop close to the fork lift channels and wherein there is less danger of the cylinder encountering dirt and other debris or water.

A further object of the invention is to provide quick attaching and detaching means for quickly attaching or detaching the scoop to or from the fork lift truck.

Yet another object of the invention is to provide a fork lift mounted scoop attachment with hydraulic operating means whereby the pivot point of the scoop is located adjacent the fork lifting mechanism and the apron for the forks and as close to the wheels as possible. This further limits the overhang of the scoop.

Still another object of the invention is to provide a relatively inexpensive scoop attachment having a greater load carrying capacity than with the heretofore known scoop attachments.

An additional object of the invention is to provide an attachment having a simple structure yet which is of adequate strength and rigidity for the intended purpose and which can be formed of relatively inexpensive stock.

These and other objects and advantages will become apparent from the following description and the accompanying drawings wherein:

FIGURE 1 is a perspective view of a scoop attachment constructed in accordance with the invention.

FIGURE 2 is a perspective view of a self locking pin.

FIGURE 3 is a fragmentary side elevational view of a fork lift truck embodying the instant invention.

FIGURE 4 is a perspective view showing the fork apron and the forks connected thereto as employed in the common fork lift truck and showing the forks in a raised position relative to the apron.

FIGURE 5 is a side elevational view of a fork lift truck showing the scoop attached thereto with the scoop in lowered position in which it will be pushed forward into a source of material to be scooped up.

FIGURE 6 is a side elevational view showing the scoop tilted through operation of the hydraulic operating cylinder after the load has been placed in the scoop and prior to raising the forks and the attached scoop.

FIGURE 7 is a side elevational view showing the fork lift mechanism extended to the top with the scoop at the uppermost position it can reach, and prior to dumping.

FIGURE 8 is a view similar to FIGURE 7 but showing the scoop released to dump the load. The substantial drop of the scoop is indicated and it is apparent that with this construction the scoop can be placed closer to a bin to more completely fill the latter and spread the contents.

FIGURE 9 is a fragmentary perspective view showing the connection of the scoop frame to the forks of the fork lift truck.

FIGURE 10 is a fragmentary sectional view taken along line 10—10 of FIGURE 9 showing the association of quick connecting pins to the scoop frame.

FIGURE 11 is a side elevational view illustrating the scoop in front of the truck prior to connection of the latter to the scoop.

FIGURE 12 is a fragmentary perspective view of another form of scoop constructed in accordance with the invention having a frame different from that of the scoop of FIGURE 1.

FIGURE 13 is an exploded fragmentary front elevational view of the frame of the scoop of FIGURE 12 and quick connecting self locking pins used therewith.

FIGURE 14 is a fragmentary perspective view of still another form of scoop constructed in accordance with the invention.

FIGURE 15 is another fragmentary perspective view of the scoop of FIGURE 14.

FIGURE 16 is a sectional elevational view showing the cooperation between the elements illustrated in FIGURES 14 and 15.

Referring now in particular to the drawings:

The usual fork lift truck comprises a vertically extending frame 10. This frame is attached to the forward end of a powered vehicle 12. A suitable hoist mechanism, known in the art, is supported within the frame 10 and connected to the power drive of the vehicle through suitable known control means. In a common construction the hoist mechanism comprises a pair of chains passed over a pair of sprockets attached adjacent the top of the frame to the upper end of an operating rod connected to the piston rod of an hydraulic cylinder mounted within the frame. This hydraulic cylinder is vertically disposed and the chains are connected to the frame and the fork lift apron. This construction doubles the effect of the hydraulic operating cylinder resulting in a rise of the forks through a distance of twice the movement of the piston. The frame 10 comprises side members 14 and 16. These are preferably in the form of channels and one of a pair of frame members 18 (see FIGS. 3, 7 and 8) are slidingly mounted within each of the channels so that they can freely slide vertically therein. The latter frame members are connected to cross braces 20 and to hoist operating structures so that they can be raised and lowered within the side members 14 and 16. The lower end of the frame member 18 is bridged by a box-like structure 22. The latter is customarily referred to as an apron. This structure is conventional, varying from manufacturer to manufacturer, and a detailed disclosure is not given herein. Way Patent No. 2,437,010, March 2, 1948, and Streb et al. Patent No. 2,762,518, September 11, 1956, are examples of patents illustrating such structure.

The apron structure comprises upper and lower members 24 and 26 and side frame members such as 28 and 30. (See FIGURE 4.) A central brace member 32 is also provided. At its upper end the apron has a horizontally extending axle 34. A pair of fork members 36 and 38 are rotatably supported on the axle 34. The forks have upper hubs 40 which are received on the axle and normally vertically disposed arms 42 and horizontally disposed arms 44. The arms 42 normally hang down parallel to and in front of the apron with the arms 44 extending forwardly and adapted to be inserted under the platforms having boxes, cartons, etc. stacked thereon. (See FIGURE 11.) The forks however can be swung upwardly to the position illustrated in FIGURE 4. The forks provide a convenient means for supporting buckets and numerous schemes have been devised for adapting fork trucks to the scooping of loose material. For example, Streb Patent No. 2,762,518 shows that a scoop can be supported on the upper surface of the outwardly extending lower arms of the forks. Kughler Patent No. 2,764,307 shows that buckets can be hung from the arms. The Way Patent No. 2,437,010 illustrates that the forks can be detached and special scoop constructions used in place thereof. Also the Way patent illustrates that powered operating means for controlling the buckets can be used. As pointed out heretofore however the instant invention provides attachable scoop structure which is readily and instantly attachable to the forks which provides powered operating and control means for the scoops and yet which provides maximum usefulness as well as the greatest flexibility in operation and control of the truck and scoop.

According to one form of the instant invention there is provided a scoop having a bucket 46. The latter comprises any suitable form of side and bottom walls and rear walls as well as a wear plate 48 at the front edge thereof. The rear wall has spaced pairs of brackets 50, 52, 54 and 56 secured thereto as by welding. These brackets support a shaft 58. A frame comprising spaced pairs of legs 60, 62, 64 and 66 is rotatably supported on the shaft 58. Each of these legs 60 and 62, and 64 and 66 extend

generally vertically upwardly from the shaft 58 and are formed so as to converge in pairs toward their upper ends. Adjacent their upper ends each pair of legs is provided with braces 68 and 70. The legs present parallel upper flanges 72, 74, 76 and 78.

Fork receiving channels 80 and 82 are mounted intermediate the paired flanges 72, 74, 76 and 78. The braces 68 and 70 are secured to the bottoms of these channels by welding or other suitable means. The channels extend at an angle of about 100 degrees with respect to the legs 60, 62, and 64 and 66. A brace 84 interconnects the channels. The rear wall 106 of the scoop has cutouts 108 and 110 in which the channels are received when the scoop is in its closed load carrying position. This is the position illustrated in FIGURES 1, 6 and 7. The channels comprise bases 86 and paired substantially parallel side walls 88. The latter are formed complementarily to the vertical arms 42 of the fork and are adapted to receive the latter fork arms.

Each of the channels has spaced opposed slots 92 and 94 adjacent their forward ends. Self locking pins 95 (see FIG. 2) are adapted to be mounted in these slots. The walls 88 further have pin receiving openings 96, 97 adjacent their rear ends. The self locking pins have a pair of parallel legs 98 and 100 and a base 102 which extends perpendicular to the legs 98 and 100. (See FIG. 2.) A locking disc 104 in the form of a washer is mounted on the leg 100. This locking disc is secured to the leg preferably by welding. The disc is positioned so that the distance between it and the base 102 is such that when the leg 100 is forced down into the slots 92 and 94 the base 102 and the locking washer 104 will be in frictional contact with the channel.

The brace 84 is tubular and its bore 105 (see FIG. 9) is adapted to receive the inner ends of the legs 98. The inner ends of the legs 98 are beveled (see FIG. 2) to facilitate their insertion and removal from the openings 96 and 97. As will be apparent from an examination of FIGURES 1, 2, 9 and 10 the legs 98 are inserted into the aligned openings 96 and 97 while the legs 100 are raised above the channels. When the legs 98 are fully inserted the legs 100 are then swung downwardly until the frictional contact with the side walls of the channels is achieved.

At its upper end within the interior of the wall 106 the scoop is provided with a platform 112 which can be, as illustrated in the drawings, a plate united to the scoop walls by welding. Brackets 114 and 116 extend vertically upwardly from the platform and are secured thereto and to the rear wall 106. These brackets are positioned centrally of the scoop at the rear and are spaced to receive an hydraulic motor having a cylinder 118 and stub shafts 120 which are supported in bearings in each of the plates 114 and 116. The piston rod 122 of the motor extends rearwardly of the cylinder and is connected to a U-bracket 124. The latter is in turn pivotally connected to a plate 126 by shaft 128. Plate 126 is fixedly connected to the brace 84 centrally thereof. The hydraulic motor is a double acting motor and has suitable hose connections as illustrated leading to a fluid supply and a control system mounted on the truck. Quick connecting type couplings known in the art are used for connecting the flexible hoses to the hoses mounted on the cylinder as explained hereinafter. The hoses are preferably extended over pulleys mounted on the fork hoist chain pulley shafts. These pulleys maintain the hoses out of the way of the operating mechanism and at the same time permit their movement to accommodate the movements of the cylnder and the apron. See FIG. 3.

In the form of the invention illustrated in the drawings the cylinder travels with the scoop bucket as illustrated in FIGURE 8. However, it is apparent that the reverse connection and operation can be achieved whereby the piston rod only moves with the bucket and the cylinder itself is maintained fixed to the axle 80. However, the construction shown achieves the greatest flexibility in the scoop and is usually to be preferred.

FIGURE 5 illustrates the truck ready to be driven forwardly into a pile of loose material. The scoop is seen to be tilted downwardly so that its bottom 146 is substantially parallel to the ground surface. When the scoop is in this position the truck is thrust forwardly into the material to be picked up. When a load has been received within the scoop the scoop is tilted to raise the bottom 146 until the wear plate is approximately at the height of the top of the rear wall 106. This of course provides the maximum load for the scoop. With the scoop in this position the truck can be backed off and the scoop raised sufficiently to permit handy carrying of the load to the location at which it is to be dumped. If the material is to be dumped into a container the fork lift mechanism is operated to raise the scoop. FIGURE 6 illustrates the scoop tilted to maintain a load in it, and FIGURE 7 shows the scoop raised to the top of the truck for dumping into a container. FIGURE 8 illustrates the scoop bucket released for dumping.

In dumping the motor is operated to release the bucket to obtain the maximum downward angle of the bottom 146. It is apparent with the particular mounting and construction which I have developed that a greater angle of rise of the bottom from the horizontal and a greater dump angle of the bottom from the horizontal can be obtained than heretofore possible. There are no limitations imposed by the hydraulic motor except the operative length of the latter. Further, the position of the center of load relative to the truck does not limit these angles as with the previously known constructions.

FIGURE 11 is a side view showing the scoop positioned in front of the truck with the fork lowered and the apron raised so that the horizontal arms 44 are in a horizontal position. The truck can then be simply driven forward with the scoop in alignment with the channels 80 and 82. The channels will tilt the fork upward from the horizontal as the truck is driven forward. It should also be noted that the scoop is adjusted so that the channels are out of the cutouts 108 and 110 and assume the relative position with respect to the scoop which would be normally assumed during a scooping operation when the scoop is being driven forwardly into the material to be picked up. (See FIG. 5.) Thus the channels extend upwardly and forwardly of the truck. As a result as the fork arms strike the channel they tilt. As they tilt the apron is lowered and this further tilts the arms. With the truck being driven forwardly while the apron is being lowered the arms are tilted up into the position they must assume for proper connection of the scoop attachment to the truck. When the apron has reached its lowermost position the fork is in final position and the self locking pins are inserted in the channels. (See FIG. 9.) The scoop can then be raised or lowered by the normal use of the fork lifting control system.

The saving in time and the wear and tear on the operator in connecting and disconnecting the scoop attachment is obvious.

FIGURES 12 and 13 illustrate another form of scoop constructed in accordance with the invention. In this instance the bucket 152 has the same general shape as the bucket 46. The frame for the scoop however is formed differently. The frame comprises the slender brackets 154, 156, 158 and 160 attached to the bucket by welding. These support axles 162. Channel arms 164 and 166 are received respectively between the paired brackets 154, 156, 158 and 160. These channel arms comprise legs 168 and 170. The channels 172 and 174 are mounted at the top of the legs 168 and 170.

According to this form of the invention the legs 168 and 170 are preferably formed of sheet stock and the latter is bent to form the bases 176 and 178 of the channels. The bases 176 and 178 are bent at the proper angle with respect to the legs 168 and 170 respectively so that the scoop will carry close to the "mast" or hoist apparatus of

the fork hoist. The angle depends upon the length and shape of the fork and will vary in accordance with the different fork lift trucks. The channels are completed by the attachment of the plates 180, 182, 184 and 186 to the bases 176 and 178. A crossbar 188 interconnects the two channels adjacent the rear thereof. Connecting block 190 is positioned centrally of the crossbar.

The bucket has a pair of flanges 192 similar to the flanges 116 and 114 and it is apparent that an hydraulic motor such as 118 is adapted to be connected between the flanges 192 and the block 190. The ends of the crossbar adjacent the plates 182 and 174 are hollow. Locking pin leg receiving openings 194 and 196 are provided in the plates 172 and 186 respectively. These are in alignment with the open ends of the crossbar. (See particularly FIG. 13.) The locking pin legs 98 are adapted to be inserted through the holes 194 and 196, and into the open ends of the crossbar as more clearly illustrated in FIGURE 13. FIGURE 9 illustrates that the locking pins are constructed so that they will bear against the curved portion of the horizontal arms of the forks as well as against the vertical arms. This not only prevents relative vertical motion between the fork arms and the scoop but also prevents sliding of the scoop outwardly from the apron.

FIGURES 14 and 15 illustrate yet another scoop constructed in accordance with the invention. In this instance the scoop has a bucket 202. The bucket has pivot pins 204 on opposite side walls and these are received in bearings on arms 206 of the frame 208. The frame comprises a flat plate having a base 210 from which the arms 206 extend outwardly toward the front of the scoop. The plate 210 and arms 206 can be formed of a single piece of sheet material.

A motor mounting plate 212 extends outwardly from the base plate 210 forwardly over the bucket. The latter is formed of two side plate members 214 and 216 joined by a flange 218 that is curved to conform to the shape of the bucket operating motor cylinder. The rear of the bucket 202 is curved substantially concentric to the axis of the pivots 204 and extends upwardly and forwardly to provide an upper forward edge 220. The latter edge has a re-enforcing flange extending therealong. The rear wall 222 of the bucket is positioned closely adjacent the front of the plate 210.

Chain anchors 223 and 224 are fixed to the plates 216 and 214. Each of the chain anchors comprises a boss having an opening adapted to receive one of the bolts 226 and 228 affixed respectively to the upper ends of the chains. The chains are also provided with blocks 234 and 236 at their lower ends. These blocks are secured by welding to the re-enforcing flange extending along the upper edge of the bucket.

A hydraulic motor comprising a cylinder 238 and operating rod 240 is positioned intermediate the two plates 214 and 216. The operating rod has a block 242 adapted to be received between the paired flanges 244 and 246 and to be connected thereto by pivot bolt 248. Cylinder 238 has a pair of stub shafts 250 each of which rotatably supports a sprocket 252 and 254 respectively. The chains 230 and 232 pass over these sprockets.

Each of the stub shafts 250 also rotatably supports a second sprocket 256 and 258, respectively, and a second pair of chains 260 and 262 extend over the second pair of sprockets. These chains are adapted to be connected to the frame (see FIGS. 15 and 16) and to the bucket. For this purpose the chains have anchors 264 at their upper ends which are welded to the frame and at their lower ends have blocks 266 which are welded to the bucket at a point spaced vertically beneath the point of connection of the upper ends of the chains.

The two pairs of chains support the cylinder of the hydraulic motor above the bucket as illustrated in FIGURE 16. The chains beneath the cylinder simply rest on the periphery of the rear of the bucket.

It is apparent that the hydraulic motor, which is a double acting motor, can be operated so as to cause the cylinder to move outwardly or inwardly with respect to the rod 240. This will respectively cause clockwise or counterclockwise movement of the bucket movement of the bucket (as viewed in FIGURE 16).

It is apparent that the sprockets are carried with the cylinder during movement of the latter and that the chain blocks 234, 236 and 266 will move twice the distance that the shafts 250 move, thus doubling the effect of the hydraulic motor.

The scoop of FIGURES 14 and 15 as well as the scoops of the other figures enable positioning of the center of load of the buckets close to the lift mechanism of the fork truck. The plate 208 can obviously be adjacent to and in contact with the apron. The channels for receiving the forks extend upwardly at an angle to the horizontal as they do with the other forms of the invention. Thus the forks can be raised, and the truck driven forward to drive the forks into the channels. The apron is lowered as the forks move into the channels and the forward movement of the truck is continued as the apron is lowered. This causes the forks to pivot into proper position. Thereafter the locking pins are placed in position.

FIGURE 3 illustrates a portion of the hoisting apparatus normally supplied in fork lift trucks. Piston rod 268 extends outwardly from the usual cylinder supported on the frame of the lift. Cross head 270 supports a pair of sprockets 272 and chains 274 are attached to the base of the lift and to the apron. When the piston rod is extended the apron is raised. The movement of the piston rod is doubled by the chain-sprocket structure. This is a common type of fork lift mechanism.

According to the insstant invention pulleys 276 are also supported on the shafts on which the sprockets 272 are supported. Hoses 278 extend from the fork lift truck over the pulleys 276 and down to the motor supplied with the scoop. The hoses 278 can thus follow the vertical movements of the scoop. Quick connecting type couplings 280 are used to attach hoses 278 to the hoses 282 on the scoop.

While I have shown and described a preferred form of my invention, it will be understood that variations in details of form may be made without departure from the invention as defined in the appended claims.

I claim:

1. In combination, a fork lift truck comprising a lifting mechanism and a fork, said fork being pivotally connected to said lifting mechanism, said fork comprising members having a pair of arms extending substantially at an angle with respect to each other, said arms being positioned with one arm extending vertically upwardly and the other arm extending substantially horizontally, said vertically extending arms being spaced outwardly from said lifting mechanism with respect to said horizontal arms, said horizontally extending arms being pivotally connected to said lifting mechanism, a scoop mechanism, means vertically supporting said scoop mechanism on said horizontal arms, said scoop mechanism comprising a bucket pivotally connected to the latter means.

2. The apparatus of claim 1 wherein said means for supporting said scoop on said arms comprises upwardly opening channel members receiving said horizontally disposed arms and means locking said channel members to said arms.

3. The combination of claim 1 wherein said scoop has hydraulic power driven operating means for operation of said bucket, said operating means being received between said fork members when said bucket is in a normal load carrying position, said bucket being operable out of said load carrying position for dumping and for receiving a load of material.

4. A scoop attachment for use with fork lift trucks comprising a bucket having a front edge adapted to be forced into a load of material to be scooped and a rear wall portion, a frame connected to said bucket, said bucket being pivotal with respect to said frame, means adjacent

the upper end of said frame for connecting said frame to a fork of a fork lift truck, the latter means extending forwardly with respect to said frame above said bucket and comprising a pair of upwardly opening channels adapted to receive the arms of the fork on a fork lift truck, means associated with said channels for connecting the latter to the arms.

5. A scoop as set forth in claim 4 including power operated means for rotating the bucket of the scoop with respect to said frame, the power operated means being mounted adjacent the top of said frame and intermediate said channels.

6. The scoop of claim 5 wherein said power operated means comprises a hydraulic cylinder.

7. The scoop of claim 6 wherein said cylinder extends over said bucket.

8. In combination, a fork lift truck having a fork and a scoop connected to said fork, said scoop including a bucket and a frame, means connecting said frame to said fork above said bucket, means pivotally connecting said bucket to said frame with said frame and said bucket being substantially adjacent said truck, power operating means for operating said scoop with respect to said frame, said operating means extending horizontally over said bucket outwardly from said truck.

9. In combination, a fork lift truck having a fork and a scoop connected to said fork lift truck, said scoop including a bucket and a frame, means connecting said frame to said truck adjacent the upper end of said frame only, means pivotally connecting said bucket to said frame adjacent the bottom thereof and immediately adjacent said truck, powered operating means for operating said scoop with respect to said frame, said powered operating means extending horizontally over said bucket outwardly from said truck.

10. A scoop attachment for a fork lift truck comprising a frame and a bucket, said frame presenting a rear face adapted to extend substantially vertically in contact with a fork lift truck apron, said scoop being pivotally connected to said frame adjacent said rear face, powered operating means interconnecting said frame and scoop for powered controlled rotation of said scoop with respect to said frame, said powered operating means extending horizontally over said bucket outwardly from said frame rear face.

11. The scoop of claim 10 including said powered operating means comprising an extensible and retractable hydraulic motor.

12. A scoop attachment for fork lift trucks comprising a frame and a bucket, means pivotally connecting said bucket to said frame, said frame presenting a rear surface adapted to be positioned vertically against the apron of a fork lift truck, said frame further comprising means extending forwardly of said surface and forwardly over said bucket and adapted to receive the arms of fork lift truck, the latter means extending forwardly of said surface outwardly over said bucket and upwardly at an angle with respect to said rear surface of said frame, and quick connecting means associated with said latter means for connecting the fork arms of a fork lift truck thereto.

13. A scoop attachment for fork lift trucks comprising a frame and a bucket, means pivotally connecting said bucket to said frame, said frame presenting a rearward surface adapted to be positioned vertically against the apron of a fork lift truck, said frame further comprising spaced paired means extending forwardly of said surface and forwardly over said bucket and adapted to receive the arms of fork lift truck, quick connecting means for quickly connecting the latter means to the fork arms.

14. The scoop of claim 13 including said means extending forwardly of said surface comprising substantially flat upwardly facing surfaces extending outwardly over said bucket and upwardly at an angle with respect to the rear surface of said frame, said quick connecting means being associated with said upwardly facing surfaces for connecting the fork arms in abutting relationship therewith.

15. The scoop of claim 14 including the latter said surfaces each forming the base of a channel, the channels having upstanding walls at the sides of said bases spaced apart a distance sufficient to receive one of the fork arms between the walls of each channel.

16. The scoop of claim 15 including said quick connecting means comprising arms and a base spacing the latter arms, the walls of each channel having spaced paired openings spaced above said bases adapted to receive said arms of said quick connecting means, the latter arms being adapted to extend laterally across said channel walls within said openings in spaced relationship with said bases, means for releasably locking said arms in the latter positions.

17. The scoop of claim 16 including a brace member extending between adjacent channels, each of the ends of said brace member adjacent said channel being open and in alignment with one set of paired openings in each channel, one arm of each said quick connecting means being adapted to be inserted through one of the latter openings and one of said ends and extend laterally across said channels in spaced relationship with said base.

18. A scoop adapted to be attached to a fork lift truck comprising a bucket and a frame, means for pivotally connecting said bucket to said frame, said frame presenting a substantially flat rear surface adapted to be vertically disposed, a spaced pair of channel like members connected to said frame above said bucket, said channel like members extending at an obtuse angle upwardly from said rear surface and over said bucket, said channel like members presenting rearwardly facing sloping surfaces with respect to said rear surface adapted to contact fork members of a fork lift truck, and means connected to the respective ends of said channel members for removably fixedly attaching said channel members to the fork members.

19. The scoop of claim 18 including means for pivotally connecting said bucket to said scoop substantially adjacent the base of said frame and adjacent said rear surface.

20. The apparatus of the scoop of claim 18 including said bucket having a rear wall, the rear wall being positioned substantially adjacent the rear surface of said frame, and means pivotally connecting said bucket to said frame.

21. The scoop of claim 20 including hydraulic motor means for pivoting said scoop with respect to said frame, said motor means comprising a cylinder extending outwardly with respect to said frame rear surface and over said bucket, a piston rod connected to said cylinder, said rod being connected to said frame, means pivotally connecting said cylinder to said bucket.

22. The scoop of claim 21 including said means for pivotally connecting said cylinder to said bucket comprising a sprocket, a chain extending over said sprocket and having one end connected to said frame and the other end connected to said bucket.

23. A frame for a scoop for a fork lift truck comprising a rear member presenting a substantially vertically extending surface, a pair of channel members connected to said rear member and extending outwardly and forwardly thereof, said channel members each presenting a rearwardly facing forwardly and upwardly sloping surface adapted to slidingly contact the arm members of a fork lift truck, means associated with said channel members for clamping said channels to the latter arm members.

24. A scoop adapted to be attached to a fork lift truck, said scoop comprising a frame and a bucket, means pivotally connecting said bucket to said frame, said frame comprising elements forming a substantially flat rear surface adapted to be positioned vertically against the apron

of a fork lift truck, said bucket comprising a bottom, means for positioning said frame rear surface in a substantially vertically disposed position while said bucket bottom is resting on a substantially flat surface, said frame further including a pair of spaced upwardly opening channels extending at an obtuse angle upwardly and outwardly with respect to said rear surface, said channels being spaced from each other a distance conforming to the spacing of a pair of fork members on a fork lift truck and each being adapted to receive one of the latter said channels having upwardly facing bases therein sloping upward and outward from said rear surface.

25. The scoop of claim 24 including quick connecting means adapted to be positioned in connection with said channels and extend across the latter at a position above said bases of said channels and being adapted to supportingly bear on fork members received within said channels.

26. A loading scoop attachment for the hoisting mechanism of lift trucks having a fork including at least a pair of individual fork members pivoted to the hoisting mechanism and horizontal tynes, said attachment including a scoop body having bottom, side and rear walls, a supporting frame pivotally connected to the lower portion of the back wall of the scoop, fork attaching members carried by the upper portion of the supporting frame, a bar on the supporting frame, means for connecting said attaching members to the fork tynes, a fluid cylinder carried by the back wall of the scoop, a piston in the cylinder having a rod connected to said bar, and fluid control means communicating with said cylinder to operate the piston to change the angular position of the scoop to pick up or empty cargo.

27. A loading scoop attachment for the hoisting mechanism of lift trucks having a fork including at least a pair of individual fork members having vertical shank portions pivoted at their upper ends to the hoisting mechanism and horizontal tynes, said attachment including a body having bottom, side and rear walls, a supporting frame for the body including opposite leg members comprising spaced structural elements having openings, brackets on the rear wall of the scoop body and also having openings registering with the openings in the brackets, a rod passing through the registering openings in the structural members and brackets to pivotally connect the legs to the lower portion of the back wall of the scoop, fork attaching members rigidly carried by the upper portion of the supporting frame and extending forwardly over across the rear wall of the scoop, a bar connecting the upper portions of the legs, means for connecting said attaching members to the shanks of the fork tynes, a fluid cylinder mounted transversely of the back wall of the scoop and having a piston connected to said bar, and fluid control means connected with said cylinder to operate the piston to change the angular position of the scoop to pick up or empty cargo.

28. A loading scoop attachment for the hoisting mechanism of lift trucks having a fork including at least a pair of individual fork members having vertical shank portions pivoted at their upper ends to the hoisting mechanism and horizontal tynes, said attachment including a body having bottom, side and rear walls, a supporting frame having its lower end pivotally connected to the lower portion of the back wall of the scoop, fork attaching channel shaped coupling members rigidly carried by the upper portion of the support, a bar rigidly associated with said coupling members, means for connecting said attaching members to the shanks of the fork tynes, a fluid cylinder carried by the back wall of the scoop, a piston in the cylinder having a rod connected to said bar, and fluid control means communicating with said cylinder to operate the piston to change the angular position of the scoop to pick up or empty cargo.

29. A loading scoop according to claim 28, wherein the side walls of the channel shaped attaching members have opposite registering holes and opposite registering notches and the means for connecting the attaching members to the shanks of the fork is a coupling pin having one arm offset to axially enter said holes and the other arm is also offset parallel with the first-mentioned arm to enter the notches, and the last-mentioned arm is provided with a head.

30. A scoop attachment for lift trucks, comprising a body having a bottom wall, side walls and a back wall having a vertical portion and whose upper portion is inclined forwardly, brackets having openings registering with the openings in the brackets, a pivot rod passing through said registering openings, attaching members rigidly connected to the upper ends of the legs, a bar rigidly associated with said attaching members, a fluid cylinder mounted on the upper portion of the inclined back wall, a piston in said cylinder having a rod connected to said bar, fluid connections leading from a source of fluid under pressure to said connections, and means for controlling fluid to opposite sides of piston, whereby the scoop body may tilt through an arc limited by the legs of the support and the inclined back wall.

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