

March 17, 1953

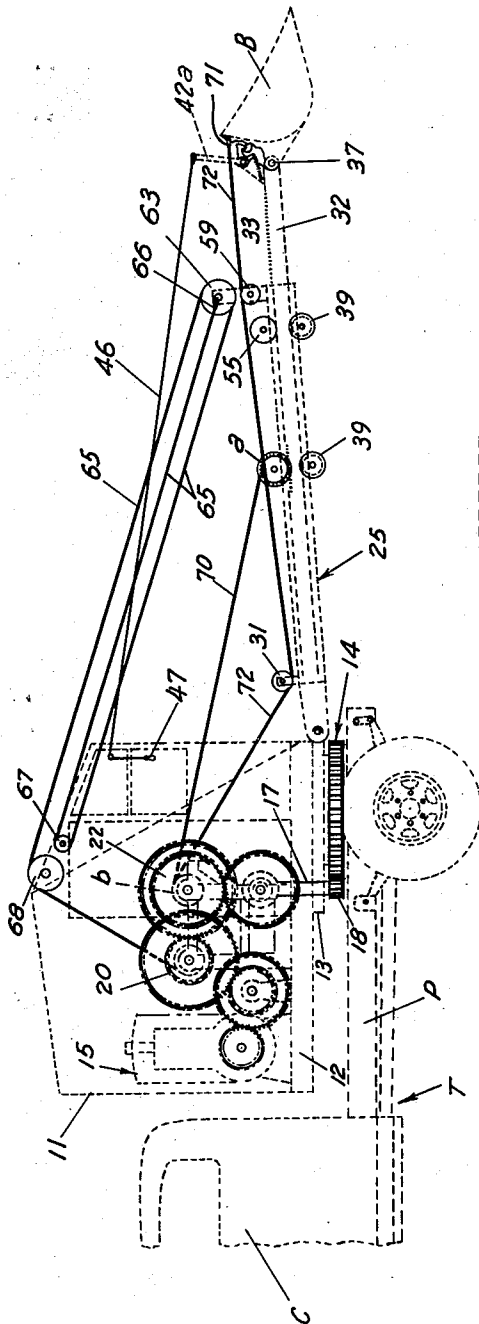
L. E. SMITH

2,631,744

CROWD UNIT FOR HORIZONTAL LOADERS

Filed Jan. 17, 1948

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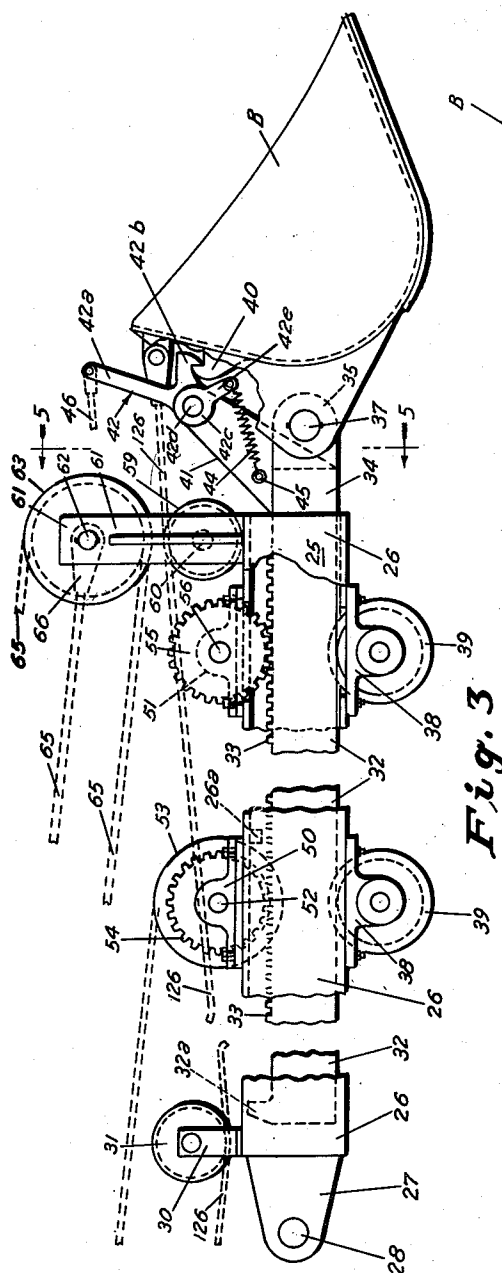


Fig. 3

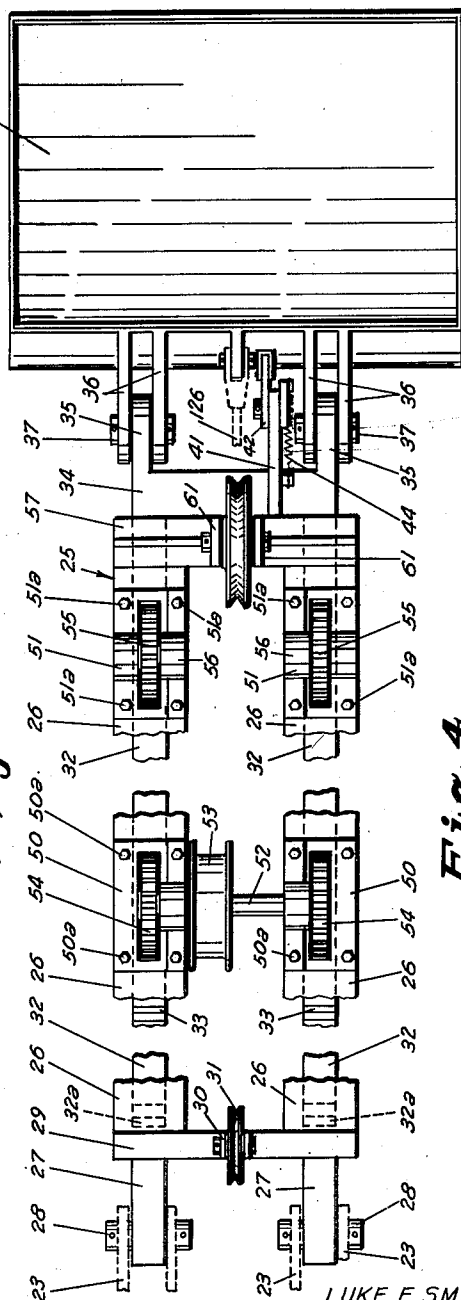


Fig. 4

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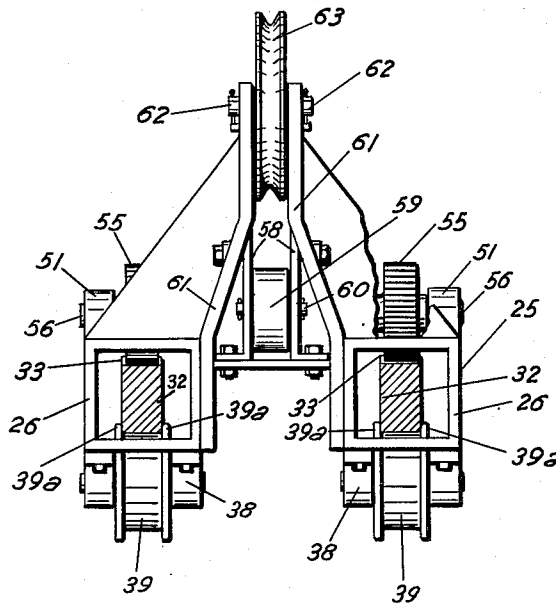


Fig. 5

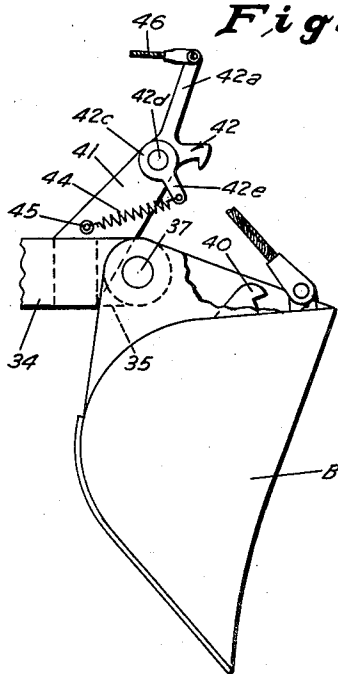


Fig. 6

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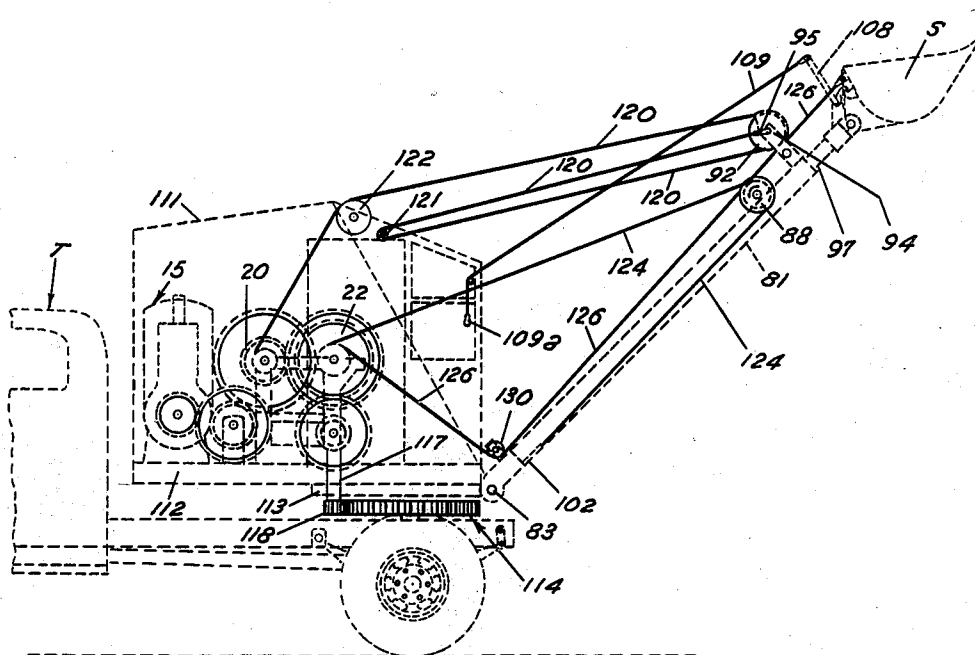


Fig. 9

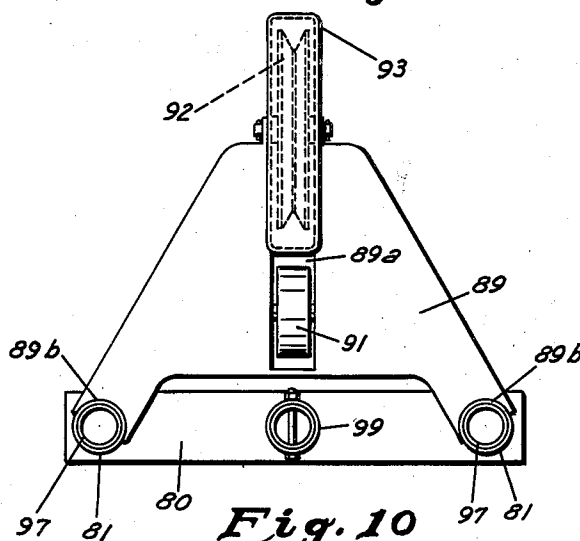


Fig. 10

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UNITED STATES PATENT OFFICE

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CROWD UNIT FOR HORIZONTAL LOADERS

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Application January 17, 1948, Serial No. 2,899

7 Claims. (Cl. 214-137)

1

The present invention relates to a crowd unit for horizontal loader. It has to do particularly, although not exclusively, with power-operated preferably horizontal loaders or crowds capable of being projected and retracted to handle and move or "crowd" earth, stone, and various other materials, without requiring the forward movement of the vehicle to which it is attached during the "crowding" operation.

One of the objects of the present invention is to provide an improved substantially horizontal loader unit whose scoop or bucket, or the like, and associated parts, as well as the power means and power-operated drum means for operating the unit, can be rotated relative to the vehicle by which it is supported and transported, through 360°.

Another object of the present invention is to provide an improved horizontal loader or crowd assembly or unit which is substituted for or replaces the usual or conventional boom and stick of a more or less conventional power shovel.

A further object of the present invention is to provide an improved loader or crowd of the foregoing character in which the bucket or scoop may be projected and/or retracted in a substantially horizontal plane.

Another and important object of the present invention is to provide an improved loader or crowd unit or assembly which is capable of being rotated in a complete circle, while being also capable of being projected and retracted at any of its positions within the circle, and one which may be mounted upon an ordinary motor truck chassis having, if desired, merely a one-man size cab or compartment.

Another object of the present invention is to provide an improved horizontal loader or crowd unit or assembly wherein manual means is provided for releasing the bucket or scoop; wherein power-operated means is provided for lifting the bucket or scoop to again latch it in position, and wherein the last-named means for lifting and thus re-latching the bucket serves to retract the previously projected sticks or other members of the loader or crowd carrying the scoop or bucket.

A further object of the present invention is to provide an improved horizontal loader or crowd capable of being operated by power means and power-driven drums mounted for rotation upon a self-propelled or other vehicle and cable means connecting the loader unit and drums for projecting twin sticks or the like members out of hollow non-projectable frame members, to force a scoop or bucket into a pile or material; sepa-

2

rate cable means for retracting the twin sticks, or the like members, which separate means also serves to lift and thus re-latch the scoop or bucket; separate power-driven drum and cable means for raising and/or lowering the entire loader or crowd assembly as a unit and including the bucket; and manually or mechanically controlled means for releasing the latched bucket.

The foregoing and other objects and advantages of the present invention will appear from the following description and appended claims when considered in connection with the accompanying drawings forming a part of this specification, wherein like reference characters designate corresponding parts in the several views.

In said drawings:

Fig. 1 is a side elevational view illustrating particularly the power-operating means for manipulating the loader or crowd assembly or unit of the present invention, being shown as mounted upon the chassis of a motor truck.

Fig. 2 is a top plan view of the structure shown in Fig. 1.

Fig. 3 is an enlarged fragmentary detail, parts being broken away to indicate length, of one form of horizontal loader or crowd assembly embodying the present invention.

Fig. 4 is a top plan view of and corresponding to the structure shown in Fig. 3.

Fig. 5 is a somewhat enlarged sectional elevation, partly in elevation, taken substantially along the line 5-5 of Fig. 3, looking in the direction of the arrows.

Fig. 6 is a fragmentary side elevational view, partly broken away, of the scoop or bucket of Figs. 3 and 4, showing the same in its released or down position.

Fig. 7 is a view similar to Fig. 4 and also partly broken away, of a somewhat modified form of loader or crowd unit or assembly embodying the present invention.

Fig. 8 is a side elevational view of the structure shown in Fig. 7.

Fig. 9 is a view similar to Fig. 1, but showing the modified form of loader or crowd assembly of Figs. 7 and 8, with the assembly in an elevated position; and

Fig. 10 is an enlarged detail elevation taken substantially along the staggered line 10-10 of Fig. 8, looking in the direction of the arrows.

Referring now particularly to Figs. 1 to 6, inclusive, of the drawings, there is shown in these figures one form of loader or crowd assembly or unit embodying the present invention. As best

seen in Figs. 1 and 2, the loader or crowd unit is mounted upon the platform P of a pick-up or tractor type of motor truck, shown as a whole at T. The front end of the truck is not shown, and only a fragment of the driver's cab C is illustrated in the partially phantom views of Figs. 1 and 2. The cab C, as shown, is of the one-man type.

The structure which carries the horizontal loader or crowd unit or assembly of the present form of the invention comprises, preferably, a compartment or enclosure 11 having a base or bottom 12 and a sub-base 13. An annular gear and turntable 14 are carried beneath the sub-base 13 and in turn, are mounted for rotation upon the platform P of the truck. The base or bottom 12 carries an engine or power plant, shown as a whole at 15, and including a suitable transmission and suitable gearing, shown as a whole at 16, and provided for the purpose of rotating or driving several power drums in either clockwise or counter-clockwise directions. The turntable 14 with its annular rack or series of external teeth is fixed to and adapted to rotate with the base portions 12 and 13 and the compartment 11 and is turned or revolved by means of a power-driven shaft 17. Shaft 17 carries a pinion 18 at its lower end which is in mesh with the annular rack of member 14. It will be seen that by driving shaft 17 and thus pinion 18, the entire compartment 11 and its contents will be rotated or revolved about a shaft 19 (see Fig. 2) which provides the vertical axis for the turntable 14, this movement being, of course, relative to the truck by which it is supported.

As will be seen hereinafter, the structure 11, 12, 13 carries a rack-type crowd assembly with a shovel or scoop and associated parts in accordance with the present form of the invention, all of which are revolved or rotated as if they were a single unit. In this connection, and by reason of the fact that a one-man capacity cab C is employed, as shown, the crowd and its associated parts can be rotated or revolved in nearly a complete circle while remaining in its lowered position, as seen in Fig. 1. The rotation may be completed throughout 360° by merely elevating the crowd unit to a position corresponding, for example, to that in which the modified crowd unit of Fig. 9 is shown.

There is shown as a whole at 20, a power-driven drum which is adapted to wind and unwind suitable cable to raise and/or lower the component parts of the crowd unit or assembly. The drum 20 has associated with it suitable clutches or clutching mechanism (not shown) which may be of conventional type and which serve to rotate drum 20 in the desired direction.

In addition to the drum 20, there is provided a pair of power drums 21 and 22 which, as shown, are smaller than the drum 20. The drums 21 and 22 are provided with suitable clutches of conventional nature (not shown) which permit them to be driven in either a clockwise or a counter-clockwise direction, as desired. As will be explained more fully below, the smaller drum 21 is provided primarily for the purpose of projecting or extending that portion or section of the horizontal loader or crowd unit which carries scoop B outwardly away from the compartment or enclosure 11, whereas the other smaller drum 22 is provided to perform the dual function of lifting and thus re-latching the bucket or scoop and of retracting the previously projected or extended portion of the loader or crowd unit.

In addition to the gearing 16 which serves to connect the power plant 15 with the drums 20, 21 and 22, the extended shafts of the several drums are also provided with suitable gearing which may be seen in Figs. 1 and 2, and which is of conventional nature and conventionally and operatively connected with the parts of the clutches and the drums so that the mechanism will perform the necessary and desired functions. It is to be understood that when the operator desires, he manipulates a control lever or handle (not shown) to bring into motion the proper gearing, shafts, clutch assembly or assemblies and drum or drums to perform the operation or operations which it is desired be performed. In this respect, the operation is generally similar to that of a conventional power shovel, wherein the operator is located within the compartment or machinery enclosure of the shovel and is thus enabled to handle the controls for the various parts of the mechanism.

It is not thought necessary herein to describe in detail the particular clutches or clutch mechanism employed, nor the gearing indicated generally at 16 and which is associated with the power plant 15 and the power drums 20, 21 and 22, for the reason that this gearing is of conventional nature and will be varied in accordance with the type of work to be performed by the loader or crowd. The clutches or clutching elements are likewise of conventional nature and any type of well-known clutch mechanism and associated parts may be employed.

In accordance with the present invention, the power drums, the clutches, and the power plant or engine 15 are associated one with the other in a manner which permits the desired handling of the new and improved horizontal loader or crowd unit embodying the present invention, and now to be described.

As best seen in Fig. 2, the base portions 12 and 13 of the compartment 11 carry brackets 23 which serve to support, for up and down swinging movement, the loader or crowd unit or assembly of the present invention.

This unit comprises, as shown, a substantially U-shaped frame 25 consisting of longitudinally extending spaced substantially parallel hollow members 26, 26. Extending outwardly beyond a cross bar 29 connecting members 26, 26 are brackets or extensions 27, 27, which fit between and swingably connect with the two pairs of brackets 23, being held to said brackets by means of removable pins 28, see particularly Figs. 3 and 4. The members 26 are preferably of square or rectangular cross section and, as shown, are hollow, see particularly Fig. 5. The cross bar or member 29 carries upon its upper surface a pulley bracket 30 which rotatably supports a pulley or sheave 31, see Figs. 3 and 4.

The U-shaped frame comprising the hollow members 26 and 27, provides means for supporting, so as to be projected outwardly and moved or retracted inwardly longitudinally with relation to said hollow members, a pair of spaced preferably parallel sticks or longitudinal bars 32, 32 which are telescoped within the members 26. The upper longitudinal edges or surfaces of said sticks are toothed to provide racks 33, 33, see Fig. 3. The forward or outer ends of the stick members 32 are preferably connected together by a cross bar or frame portion 34 which has at its opposite ends outwardly projecting portions or ears 35, 35. The projections provide spaced brackets for the mounting of a scoop or

5

bucket, such as that shown at B. The bucket B, see particularly Fig. 4, is provided at its rear portion with two spaced pairs of ears or extensions 36, 36 which are adapted to embrace the forward extensions 35 of the racked sticks and to be held to the crowd unit by means of removable pivot pins 37, 37. By so connecting the bucket with the unit, it is permitted to have up and down swinging movement relative to said crowd unit.

As best seen in Fig. 3, the inner ends of the stick members 32 are provided with upturned portions 32a, 32a, which are adapted to engage fixed stops such, for example, as the stops 26a (one only being shown) to prevent the rack-like dual stick unit from being projected outwardly beyond a predetermined point.

It is to be noted particularly in Figs. 3 and 5, that the hollow frame members 26 carry pairs of longitudinally spaced rollers 39 each of which is rotatably mounted in and carried by a bracket-like bearing 38 which is attached to the under side of a hollow member 26, projecting upwardly to openings in the members 26 and provide supportings for the stick members 32. As clearly seen in Fig. 5 of the drawings, the rollers 39 are flanged at 39a and thus provide means for maintaining and guiding the stick members 32 in a straight line path when being projected or retracted relative to the housing members 26. Moreover, these pairs of supporting and guiding rollers 39 permit easier or freer movement of the sticks 32 by reducing friction.

As best seen in Figs. 3 and 6, the bucket B is provided with a fixed hook-like member or catch 40. The transverse or cross frame member 34 carries an upwardly and outwardly extending member or bracket 41 which is provided with a manually controlled latch member, shown as a whole at 42. Latch 42 has an upwardly extending arm 42a and a hook-like catch-engaging member or portion 42b. The latch member includes a hub portion 42c mounted upon a shaft 42d which is journaled in the bracket 41. An offset arm or projection 42e provides means for holding one end of a coil spring 44 whose opposite end is fastened at 45 to the bracket 41. The purpose of the torsion spring 44 is to maintain the nose 42b of the latch in its normal down position, as shown in Figs. 3 and 6. When in this position, with the bucket elevated to its position of use, the latch 42 engages the catch 40 and holds the bucket in that position. In Fig. 6, the bucket has been released by the operator of the machine who has pulled the handle 47 of a rope or cable 46 whose outer or forward end is attached to the latch arm 42a. To release the parts 42 and 40, the cable 46 is pulled inwardly to rotate the hub portion 42c of the catch on the pivot pin 42d against the action of the torsion spring 44. By virtue of spring 44 maintaining the latch member 42 normally in its down position, it is always in readiness to automatically and releasably lock the bucket B when the same is moved or swung about pivot pins 37 to the position in which it is shown in Fig. 3.

The hollow frame members 26 of the inner section of the crowd unit are provided with journal boxes or bearings 50, 50 and 51, 51. These journal boxes or bearings are arranged in pairs and are secured to the frame members 26 in any suitable manner, as by bolts or the like 50a and 51a, see especially Fig. 4.

The pair of transversely spaced bearings or

6

journals 50 carry a shaft 52 upon which a flanged drum or power pulley 53 is fixedly mounted. The opposite end portions of the shaft 52 carry gears 54 each of which projects downwardly through a slot or opening formed in the top wall or surface of each of the members 26 so that the teeth of the gear will mesh with the teeth 33 of the rack on stick 32.

Each of the bearings or journals 51 carries a gear 55 mounted upon a short shaft 56. Each gear extends downwardly through a slot or opening formed in the upper wall of the hollow member 26 so that the teeth of the gear will also mesh with the teeth 33 on the sticks 32. The gears 55, 55 are idler gears and simply mesh with the racks to facilitate the movement of the racks longitudinally in opposite directions. They do not, as shown, serve to impart movement to said racks.

The forward or outer ends of the hollow members 26, as shown, are connected together by a transverse bar or cross member 57 which carries a pair of spaced upright members or standards 58 between which there is disposed a roller 59 rotatably mounted on a shaft 60 whose opposite ends are supported by the members 58. Mounted above the roller 59 and supported by a pair of upright arms 61, 61, is a pulley or sheave 63 carried by and freely rotatable on a shaft 62 which is supported by the members 61, see Figs. 3 and 5.

In Figs. 1 and 2 the parts of the horizontal loader or crowd unit are shown in a partially extended or projected position of use, with the scoop or bucket B in its raised and latched position and in readiness to be moved or power-projected into engagement with material to be handled by the machine. The entire unit, as shown, comprises the hollow substantially U-shaped frame portion 25 and the projectable frame portion including the racked sticks 32, together with the scoop B. All of these parts may be raised and/or lowered with relation to the ground surface, with the entire unit and the scoop thereof swinging about the two pivots or pin connections 28, 28. To permit this raising and lowering of the entire unit, one end of a cable 65 carries a clamp 66 which is fastened to the shaft 62, see particularly Fig. 3, and this cable extends rearwardly toward the vehicle compartment 11 and passes over a sheave or idler pulley 67 and then forwardly to and around the sheave or pulley 63. The cable 65 then extends rearwardly over another sheave or pulley 68 from which it passes to the power-driven drum 20. When the power plant or engine 15 is operated and the drum 20 driven in a counterclockwise direction, the entire loader or crowd and the scoop are elevated as a unit. By reversing the clutch (not shown) which operates in conjunction with drum 20, the drum may be rotated in the opposite or clockwise direction to lower the crowd unit. In its elevated position, the crowd unit and its scoop or bucket would be positioned at an angle generally similar to the angle of these members as shown in Fig. 9 of the accompanying drawings wherein a modification of the present invention is shown.

As will be understood, the racked sticks 32, 32 are power-projected out of their telescoped relationship with the hollow members 26 of the substantially U-shaped frame of the crowd unit and this is accomplished preferably by driving the shaft or axle 52 to rotate the gears 54 carried thereby in a counterclockwise direction which will force or move the members 32 outwardly or

7

forwardly away from the supporting vehicle or truck T. To accomplish this outward movement or projection, the shaft or axle 52 carries the fixedly-mounted drum 53 to which the end of a cable 70 is attached. This cable extends rearwardly to and is connected with the power drum 21. When the proper clutch mechanism (not shown) is shifted by the operator to drivingly connect the drive gearing with the engine 15, the drum 21 will be rotated in a counterclockwise direction to also rotate the drum 53 and the shaft or axle 52 in the same direction, thus causing counterclockwise rotation of the gears 54 to shift the pair of sticks 32, 32 outwardly to project the bucket or scoop B into the desired material-handling position. It is to be understood that a considerable length of the cable 70 has been wound around and secured to the drum 53 with the sticks 32, 32 in their retracted position within the hollow members 26. Thus, when the power drum 21 is operated in a counterclockwise direction, this length of cable around drum 53 will be unwound to cause the projection of the sticks 32 and the simultaneous outward movement of the scoop or bucket B.

When it is desired to retract the sticks 32 to their telescoped positions within the socket members 26, the power drum 22 (see Fig. 2) is driven in a counterclockwise direction to draw in and wind a cable 72 whose outer end is connected at 71 to the bucket or scoop B.

This cable 72 runs over an idler pulley or sheave 59 and under the idler pulley or sheave 31, see Figs. 1 and 3. When the retracting operation of the sticks and bucket is started, counterclockwise rotation of drum 22 will cause bucket B, through cable 72, to swing upwardly about its pivotal connections 37 to its elevated and latched position. Continued counterclockwise rotation of the drum 22 and shifting of cable 72 will move the sticks 32 and the scoop B inwardly until said sticks are telescoped within the hollow members or sockets 26 of the inner portion or section of the crowd unit. During the retracting movement, the drum 21 will be driven or rotated in a clockwise direction to permit the cable 70 to be rewound upon drum 53 which is being rotated in a clockwise direction by virtue of the inward movement of the racks 33 in mesh with the gears 54.

While the particular clutch or clutches and associated parts of the control mechanism located within the compartment 11 are not shown and described in detail herein, it is to be understood that suitable mechanism, and control means or members for said mechanism, are provided to perform the functions required to project and retract, the sticks 32 of the unit and to raise and/or lower the entire loader or crowd unit about its supporting pivot pins or members 28.

As stated above, the entire crowd unit is capable of being swung in a complete circle. This may be accomplished when the crowd is in its substantially horizontal or lowered position, as seen in Fig. 1, or when it is in an elevated position, in accordance with the showing of the modified form of the present invention which appears in Fig. 9 of the drawings. This swinging of the unit of the present form is accomplished by driving or rotating the pinion 18 carried by the upright shaft 17 which pinion is in engagement with the ring gear 14, see Fig. 1.

In Figs. 7, 8, 9 and 10 of the drawings, there is shown a somewhat modified form of horizontal

8

loader or crowd unit or assembly embodying the present invention.

As in the preceding form of the present invention, the modified form shown in Figs. 7 to 10, inclusive, also includes a two-part horizontal loader or crowd unit or assembly, one portion or section of which is mounted for swinging movement relative to the base or platform 112, 113, of the vehicle compartment 111, with the other or outer portion or section carrying a scoop or bucket S and being telescoped with the first-named portion and also being capable of being projected and/or retracted with relation to the first-named portion of the crowd unit or assembly. In all respects as to the power mechanism within the compartment 111 and the arrangement of cables and pulleys or sheaves for raising and lowering the unit and for projecting and/or retracting the extensible section or portion of said unit, the parts in the present form are the same, or substantially the same, as those shown and described in connection with the previous form of the invention. In other words, the power-operating mechanism, including the various power drums, their clutches (not shown) and control means (not shown) are the same, or virtually the same, in the present modified form of the invention as in the previous form thereof.

The swingable or non-extensible portion of the crowd unit comprises a transverse frame member 80 and two longitudinally extending preferably tubular members 81, 81. The frame member 80 is provided with rearwardly or inwardly extending ears or projections 82 which are pivotally mounted at 83, 83 to bracket members 84, 84, which latter are secured, in suitable manner, to the base portions 112, 113 of compartment 111. The members 80, 81, 81, together provide a substantially U-shaped longitudinally extending frame.

The tubular members 81 are provided with stops 85, see particularly Fig. 7, for a purpose to be described below. The members 81 carry journal boxes or bearings 86, 86 which support the opposite ends of a transverse shaft 87. Shaft 87 carries a pulley or sheave 88. The forward end portions of members 81 support transverse upright plates 89, 89 which are held together by a web 90, see Fig. 8. As best seen in Fig. 10, the plates 89 are provided with a central opening 89a within which is journaled an idler roller 91 and a relatively larger pulley or sheave 92 which is partially concealed by a combined guide and guard or housing 93. The lower ends of the plates 89 are shaped as shown at 89b in Fig. 10 so as to embrace and to be secured, as by welding, to the tubular members 81. The guide housing 93 carries a pair of inwardly or rearwardly extending bracket members 94, 94, which are adapted to receive an anchor member 95 carried by the adjacent end of a cable 120, as will be described below.

The extensible portion of the crowd unit or assembly comprises, preferably, a transversely extending frame member or cross bar 96 which is secured to the end portions of a pair of tubular members 97, 97 which are telescoped within the external tubular members 81, 81. The transverse frame member or cross bar 96 carries an inwardly or rearwardly extending tubular member 99 which extends rearwardly toward the transverse frame member 80 and whose inner end is attached to a transversely extending brace member or bar 100. The outer ends of

bar 100 carry curved plates or feet 101, 101 which engage the outer surfaces of the tubular members 81 and which are capable of sliding longitudinally on the latter. A cable anchor, or the like 102 is carried by the tubular member 99 adjacent the cross bar or brace 100. It will be understood that the cross bar 96 and the inside tubes 97, 97, together provide a U-shaped frame which interfits with the U-shaped frame consisting of the members 80, 81, 81 and which extends in the opposite direction. The extensible U-shaped frame also carries the tubular member 99 and the cross bar or brace member 100. It will be understood that when the extensible frame is moved outwardly or toward the right in Figs. 7 and 8, this outward movement will be stopped when the stop members 85 of the outer tubular members 81, 81 are engaged by the curved members or feet 101, 101, carried by the central tube 99 and which are slidable over the exterior surfaces of the outer tubes 81, 81.

As clearly seen in Figs. 7 and 8, the cross frame member 96 is provided with a pair of forwardly extending members or brackets 96a, 96a, which are embraced by pairs of ears or projections 103, 103 carried by the scoop or bucket S, these parts being connected together by pivot pins 104 so that scoop S may be swung up and down.

The rear wall of the scoop is provided with a catch 105 which is engaged by a swingable latch assembly including a latch 106 mounted upon brackets 107 and having an upright arm 108 to which the end of an operating cable 109 is secured. The latch member 106 is held normally in its lowered position by means of a spring 110 so that when the scoop or bucket S is swung up about its pivots 104, it will be automatically latched in its raised position. Cable 109 is preferably controlled by a handle 109a located within the enclosure or compartment 111, see Fig. 9.

The entire unit comprising the two opposed and telescoping U-shaped frames or sections, and the scoop or bucket S are raised and/or lowered by the operator within the compartment 111. He will set into operation, in a counter-clockwise direction, the power drum 20 which will wind a cable 120 whose outer end is anchored by anchor member 95 to bracket 94, with the cable extending rearwardly and passing over an idler pulley or sheave 121 and thence forwardly and around the pulley 92, thence rearwardly and over an idler pulley or sheave 122, and then to the power drum 20.

The extensible frame, comprising the members 96, 97, 97, 99 and 100, 101, is projected outwardly or forwardly by operating the power drum 21. The power drum 21 has secured to it a cable 124 which extends outwardly from the drum 21 and passes over pulley 88 and thence inwardly or rearwardly to the anchor 102. When the cable 124 is wound by drum 21, the anchor 102, being secured to the tubular member 99 adjacent the cross frame member 100, will cause the extensible frame section of the crowd unit to be projected outwardly or forwardly with the inner tubular members 97 moving outwardly from within the outer tubular members or sockets 81. This occurs, of course, during the counter-clockwise rotation of the drum 21. The outward movement of the tubular sticks 97, 97 and their associated parts, will cause the scoop or bucket S to be forced or moved into contact with material to be handled

by said scoop. The outward projection is limited by the contact of members 101 on the extensible frame portion of the unit with the stop members 85 on the non-extensible portion of said unit.

When it is desired to retract the tubular sticks 97 and their associated parts, a power drum 22, see Fig. 9, which corresponds to the power drum 22 of Fig. 2, is driven in a counter-clockwise direction. This operation will cause the winding onto said drum of a cable 126 whose outer end is attached at 127 to a lug 128 carried by the scoop A. The cable 126 travels over the idler roller 91 and under an idler pulley or sheave 130 carried by a bracket 129 mounted upon the cross frame member 89. From idler pulley 130, the cable 126 extends to the drum 22.

It is to be noted that when drum 22 is so operated to wind in cable 126, the scoop S, if unlatched, and in down position, is first elevated and automatically latched. Continued winding of the cable 126 on drum 22 will move the projected frame portion or section of the crowd unit inwardly to return the tubular sticks 97 to their retracted positions in which they are telescoped within the outer tubular members 81. While the retracting operation is being performed by the drum 22 and its cable 126, it will be understood that suitable clutch mechanism (not shown) will be shifted by the operator to permit drum 21 to simultaneously unwind its cable 124 which had previously been wound upon the drum to project or extend the tubular sticks 97.

In Fig. 9, a vertical power-driven shaft 117 carrying a pinion 118 and a ring gear 114 are provided to revolve the compartment 111 and its contents, the loader or crowd unit, and the scoop through 360°, while the vehicle chassis or platform upon which the unit is mounted remains stationary. The parts provided for revolving the structure in a complete circle correspond to similar parts shown in Fig. 1 of the accompanying drawings.

From the foregoing it will be seen that both forms of horizontal loader or crowd mechanism disclosed in the accompanying drawings, function in substantially the same manner and by means of the provision of substantially the same kind of power plant and power-operated mechanism within the operator's compartment or enclosure and by virtually the same arrangement of power-controlled cables and rollers, pulleys or sheaves over which said cables run.

It is to be understood that the two forms of crowd or horizontal loader mechanism herein disclosed are intended to supplant entirely the conventional boom and swinging bucket-stick of previously known conventional truck shovels.

While the foregoing invention has been described with reference to a truck shovel, it is to be understood that the invention can be used equally well in connection with other types of earth-working vehicles having a power unit capable of driving the mechanism. For example, the invention is equally well adapted for use in connection with vehicles of the crawler type or the trailer type.

Wherever the terms "inner" and "outer" as applied to the boom sections, are used above and in the claims, it is to be understood that reference is being made to the parts or sections nearer to and farther from the base of the structure, respectively.

Having thus described the invention what is claimed is:

1. A horizontal crowd unit adapted to be swing-

11

ably attached to a revolvable compartment containing a power unit and power-operated hoisting drums located above the platform of a vehicle, comprising a pair of telescopic inner and outer sections, the outer section being projectable and retractable in a substantially straight line path relative to the inner section, a movable scoop carried by the outer section, a cable and sheave means connecting the crowd unit with one of the power-operated drums for raising and/or lowering the entire crowd unit relative to the compartment, separate cable and sheave means connecting said unit and another of said power-operated drums for projecting the outer section and scoop, and a cable and sheave means for retracting the projected section, said last-named means also serving to elevate the scoop from a lowered position to a latched elevated position.

2. A crowd unit according to claim 1, wherein the inner section has longitudinally extending hollow members and driving gears, and wherein the outer section has longitudinally extending stick members provided with racks meshing with said gears.

3. A horizontal crowd unit according to claim 1, wherein the inner and outer telescoping sections have longitudinally extending substantially parallel interfitting tubular members.

4. A horizontal crowd unit according to claim 3, wherein the inner and outer sections have cooperating stop means to prevent the projection of the outer section beyond a predetermined point with relation to the inner section.

12

5. A crowd unit according to claim 1, wherein the inner and outer sections are provided with stop means for limiting the outward movement of the outer section with relation to the inner section.

6. A crowd unit according to claim 1, wherein scoop-latching means is provided to automatically lock the scoop when moved from a dumping position to an elevated position.

7. Structure according to claim 6, wherein said latching means is manually releasable.

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