July 23, 1946. G. E. COATS 2,404,619

LOADING MACHINE

Filed March 31, 1945 4 Sheets-Sheet 1

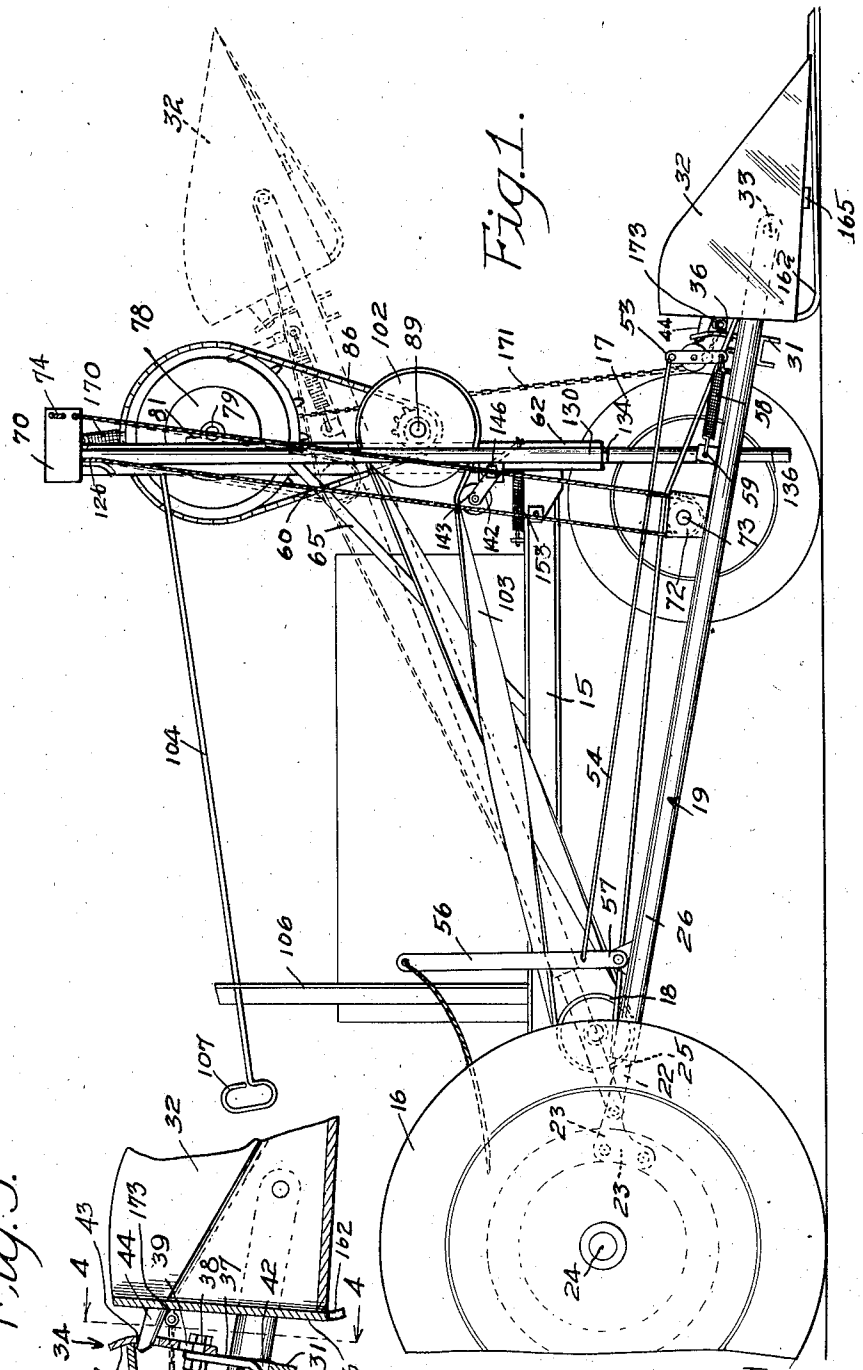


Fig. 1.

Fig. 3.

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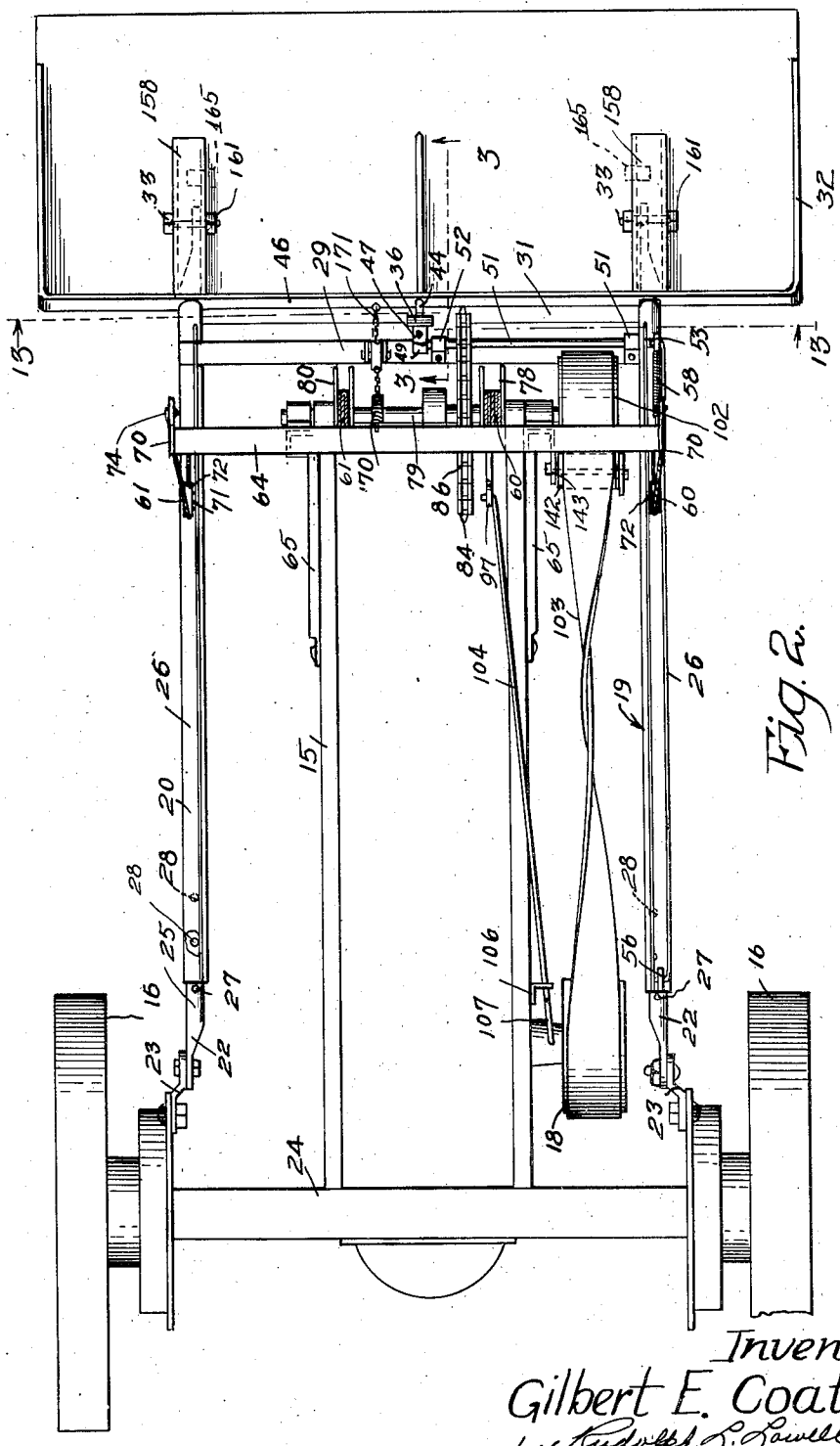


Fig. 2.

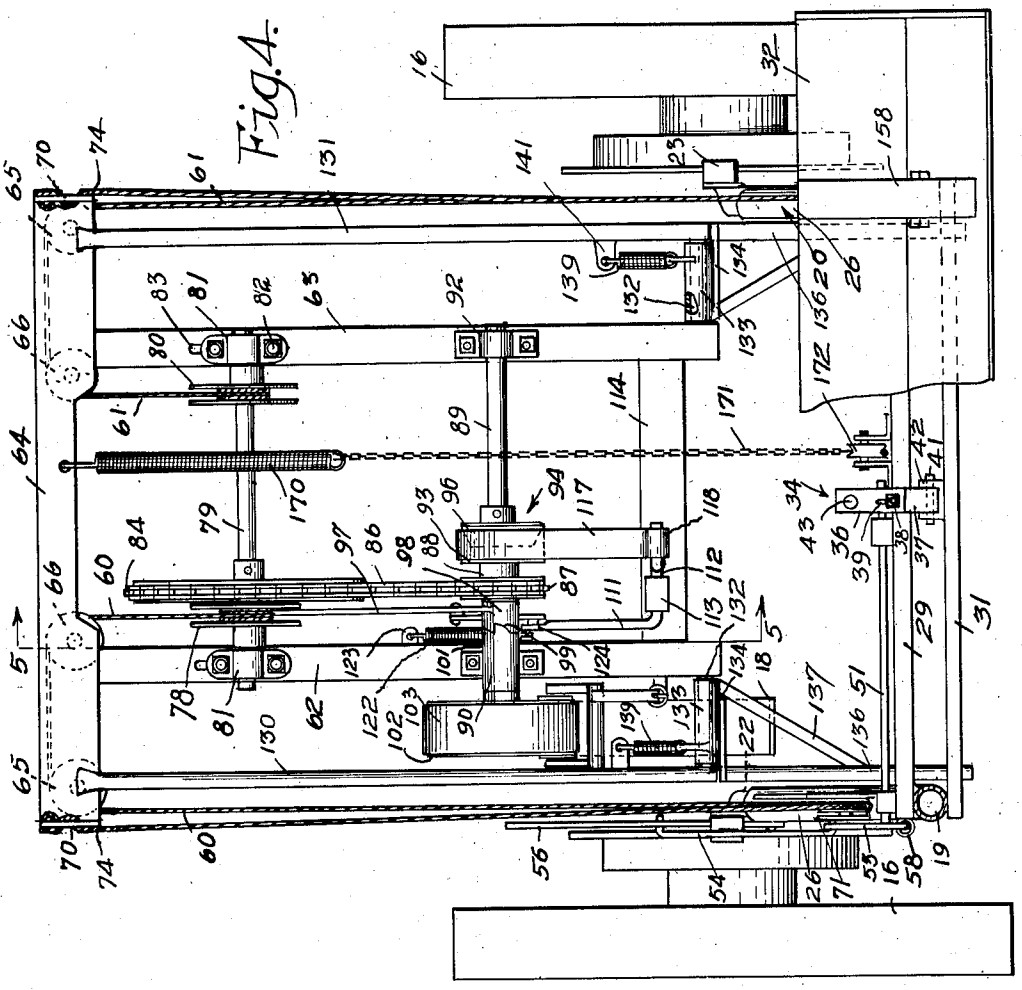
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Fig. 4.



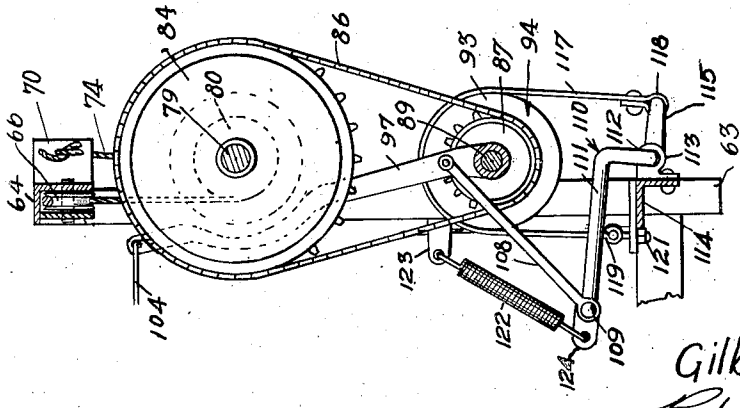


Fig. 5.

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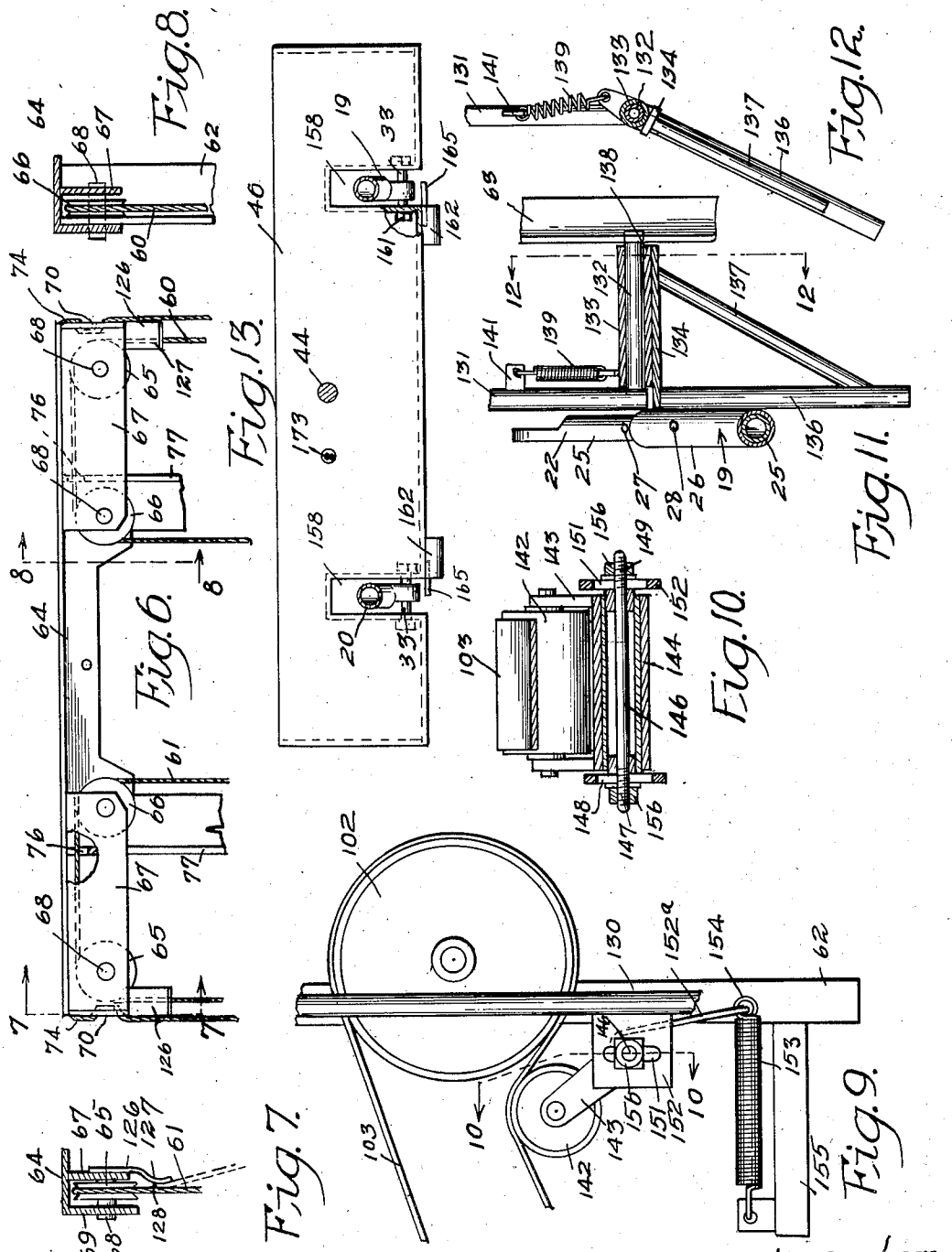


Fig. 8.

Fig. 13.

Fig. 12.

Fig. 11.

Fig. 6.

Fig. 10.

Fig. 7.

Fig. 9.

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Patented July 23, 1946 2,404,619

UNITED STATES PATENT OFFICE

2,404,619

LOADING MACHINE

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Application March 31, 1945, Serial No. 585,881

7 Claims. (Cl. 214—141)

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This invention relates generally to loading machines and in particular to a loading attachment for a tractor for picking up and stacking or loading hay, manure, snow and like material. This application is an improvement of co-pending application Serial No. 537,945 filed on May 29, 1944.

An object of this invention is to provide a loading machine in which a load-carrying unit is supported on telescoping pivoted lifting arms which are extended, as they are elevated, by the action of arm lifting cables.

A further object of this invention is to provide a tractor mounted loading attachment which can be quickly and easily mounted on and removed from different types of farm tractors and operated by the usual side belt pulley on a tractor.

Another object of this invention is to provide an improved latch and trip mechanism for the load-carrying unit in a loading machine.

Yet a further object of this invention is to provide a snow scoop, for a tractor mounted loading attachment, which is readily interchangeable with other load-carrying units for the attachment.

Another object of this invention is to provide a tractor mounted loading attachment having an upright frame and a pair of pivoted lifting arms arranged at opposite sides of the frame, in which a load-carrying unit on the front end of the arms is maintained substantially adjacent the forward side of the upright frame at all elevated positions of the arms.

A feature of this invention is found in the provision of a tractor mounted loading attachment having a pair of extendible lifting arms arranged at opposite sides of the tractor, and an upright frame at the forward end of the tractor for supporting lifting cables, in which the lifting cables are inclined rearwardly and downwardly from the upright frame at all pivotally moved positions of the arms.

A further feature of this invention is found in the provision of a tractor mounted loading attachment having a pair of oppositely arranged pivoted load-lifting arms, in which an upright means for guiding the arms in their up and down movement is provided with a pivoted extension at its lower end movable in a forward and rearward direction to accommodate changes in elevation in a ground surface over which the tractor is travelling.

Further objects, features and advantages of this invention will become apparent from the following description when taken in connection with the accompanying drawings in which:

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Fig. 1 is a side elevational view of the loading attachment of this invention in assembly relation with a farm tractor of a usual type;

Fig. 2 is a plan view of the loading attachment and tractor assembly;

Fig. 3 is a sectional view taken on the line 3—3 in Fig. 2;

Fig. 4 is a front elevational view of the loading attachment and tractor assembly with certain parts broken away to more clearly show the construction of the attachment;

Fig. 5 is a sectional view taken on the line 5—5 in Fig. 4 showing the clutch mechanism for controlling the arm lifting cables;

Fig. 6 is a fragmentary rear elevational view of the top portion of the upright frame of the attachment showing the pulley supports for the arm-lifting cables;

Fig. 7 is a sectional view as seen along the line 7—7 in Fig. 6;

Fig. 8 is a sectional view taken on the line 8—8 in Fig. 6;

Fig. 9 is an enlarged elevational detail view of a tightening device for the drive belt connected with the tractor belt pulley;

Fig. 10 is a sectional view as seen on the line 10—10 in Fig. 9;

Fig. 11 is a fragmentary rear detail view, partly in section, of a lower end extension on one of the guides for guiding the up and down movement of the pivoted lifting arms;

Fig. 12 is a sectional view as seen on the line 12—12 in Fig. 11 showing the parts thereof in changed positions; and

Fig. 13 is a sectional view taken on the line 13—13 in Fig. 2 showing the assembly of the lifting arms with a load-carrying scoop.

With reference to the drawings the loading attachment of this invention is illustrated in Figs. 1 and 2 mounted on a farm tractor of a usual type having a body frame or chassis 15, rear wheels 16 and front steering wheels 17. A usual side belt pulley is indicated at 18 in operative association with the tractor transmission mechanism (not shown).

The loading attachment of this invention includes a pair of pivoted telescoped lifting arms 19 and 20 arranged at opposite sides of the tractor frame 15 and pivotally supported at their rear ends 22 on brackets 23 carried on the tractor rear axle 24. Each lifting arm 19 and 20 is comprised of a pair of pipe or arm members 25 and 26 arranged in a telescopic relation, with the arm member 26 telescoped over the forward portion of the arm member 25 which has its rear end

22 pivoted on a bracket 23. The arm member 25 is thus axially or longitudinally movable relative to the arm member 26, with the rearward longitudinal movement of the arm 26 being limited by the engagement of its rear end with a pin 27 extended through a selected pair of aligned openings 28 in the arm member 26. The pin 27 thus defines the contracted position of the arm members 25 and 26 with such contracted position being dependent on the length of the tractor upon which the loading attachment is to be mounted.

The front ends of the arm members 26 are projected forwardly of the tractor and connected together at such front ends by a frame structure comprised of a pair of channel beams 29 and 31 (Figs. 3 and 4) which are secured to opposite sides of the arm members 26, with the top beam 29 located rearwardly of the front side of the bottom beam member 31. A load-carrying scoop, indicated generally as 32, is pivotally supported at 33 on the front ends of the lifting arms 19 and 20 in a manner which will be later described.

In order to releasably hold the scoop 32 in a loading position there is provided a latching mechanism including an upright pivoted latch 34 (Figs. 3 and 4) comprised of an upper member 36 and a lower member 37. A bolt 38 extended through the lower member 37 is receivable in a slot 39 formed in the upper member 36 to provide for the adjustment of the length of the latch 34. The bottom end of the lower member 37 is of a loop form adapted to receive a pin 41 to support the latch in a bracket 42, carried on the top of the bottom beam member 31, for pivotal movement in a direction longitudinally of the tractor. The latch 34 adjacent its upper end is formed with an opening 43 of a size to receive, in releasable engagement, a catch member 44 projected rearwardly and slightly upwardly from the back side 46 of the scoop 32.

A rearward extension 47 adjacent the top of the latch 34 is formed at its free end with an opening 48 for slidably receiving the free end of a trigger or release member 49 which is projected radially from the inner end of a rock shaft 51 rotatably supported in bearings 52 carried on the upper side of the top beam member 29. The outer end of the shaft 52 carries a rock lever 53 (Figs. 1 and 2) which is pivotally connected at its upper end with one end of a rod 54, the opposite end of which is pivoted to a hand lever 56 pivoted at its lower end 57 on the top of the arm member 26 for the lifting arm 19. The lever 53, and in turn the shaft 52, are continuously biased in a clockwise direction as viewed in Figs. 1 and 3, by a tension spring 58 connected at one end to the lower end of the rock lever 53 and at its opposite end to a lug 59 carried on the arm member 26, of the lifting arm 19, at a position rearwardly of the shaft 52. This biasing action of the spring 58 acts to continuously urge the trigger member 49 forwardly, or in a clockwise direction, as viewed in Fig. 3, with the member 49 in turn acting on the latch 34 to move and yieldably maintain the latch opening 43 in a position for engaging the catch 44 on the scoop 32.

In the operation of the latching mechanism to release or dump the scoop 32 the hand lever 56 is pivoted rearwardly or to the left, as viewed in Fig. 1, to in turn rotate the rock shaft 52 in a counter-clockwise direction, as also viewed in Fig. 1, whereby the latch 34 is moved out of an engaging position with the catch member 44. By virtue of the action of the spring 58, on release of the hand lever 56, the latch member 34 is pivotally moved forwardly by the action of the trigger member 49 so as to be in a position to releasably engage the catch member 44 on the return movement of the scoop 32 to a loading position. Adjustment of the bottom of the scoop 32 relative to the ground is accomplished by adjusting the length of the latch 34 through the bolt 37 connecting the latch upper member 36 and lower member 37. Thus when it is desired to elevate the front end of the scoop 32 the latch 34 is shortened, while to lower the scoop front end the latch 34 is lengthened.

The lifting arms 19 and 20 are pivotally raised and lowered by means including a pair of lifting cables 60 and 61 (Figs. 1 and 4). The cables are supported from adjacent the top of an upright frame comprised of a pair of transversely spaced upright frame members 62 and 63 mounted at their lower ends on the front end of the tractor frame 15 and having their upper ends connected together by a transverse frame member 64, the ends of which project laterally outwardly from the frame members 62 and 63. The upright frame is held against any forward and rearward tilting movement by braces 65 extended rearwardly and downwardly from the upright frame members 62 and 63 for connection with the tractor frame 15. Each cable 60 and 61 is operatively associated with a pair of spaced pulleys 65 and 66 rotatably supported at the top of the upright frame for rotation in a plane transversely of the tractor frame 15. The pulleys 66 have their adjacent ends located inwardly of corresponding frame members 62 and 63 while the outer end of each pulley 65 is adjacent a corresponding end of the transverse frame member 64 for a purpose which will appear later.

As best appears in Figs. 6, 7 and 8 the frame members 62, 63 and 64 are of an angle iron construction, with the transverse frame member 64 having the angle thereof at the top and front side of the upright frame. A supporting plate 67 is welded to the bottom of the top horizontal leg of the frame member 64 over the end portion thereof defined by a pair of associated pulleys 65 and 66, with such pulleys being rotatable on pins 68 extended between the front leg 69 of the frame member 64 and a plate 67. Extended transversely across each end of the frame member 64 is a supporting plate 70.

The movable or telescoping member 26 of each lifting arm 19 and 20 has a bracket 71 of a substantially inverted U shape welded on its upper side at a position substantially intermediate the ends of an arm member 26. As clearly appears in Fig. 1 when an arm member 26 is in a telescoped or contracted position the bracket 71 is located rearwardly of the upright frame which is supported at the front end of the tractor frame 15. A pulley 72 is rotatably supported within each bracket 71 on a pin member 73. In one embodiment of the invention the arm member 26 is about eight feet long and the pulley pin 73 is located about three feet rearwardly from the free end of the arm member 26.

Since the assembly of each cable 60 and 61 with its associated pulleys 65 and 66 is the same only the assembly of the cable 60 will be referred to in detail in the following description. The cable 60 has one end 74 (Fig. 1) connected to the front end of the supporting plate 70, and is then extended downwardly for passage about the pulley 72 carried in the bracket 71, from which pulley the cable is passed upwardly over the pulley 65 and through an opening 76 in the

leg 77 of the upright frame member 62 over the pulley 66 (Fig. 6). From the pulley 66 the cable 60 extends downwardly for connection of its other end about a winding drum 78 (Fig. 4). The cable 61 has a corresponding winding pulley 80.

The winding pulleys 78 and 80 are mounted on a common transverse shaft 79 rotatably supported in bearings 81 carried on the forward side of the upright frame members 62 and 63. The bearings 81 are secured to a corresponding frame member 62 and 63 by bolts 82 extended therethrough and through slots 83 in the frame members whereby the shaft 79 is adjustable in an up and down direction on the upright frame for a purpose which will appear later.

Mounted on the shaft 79 between the winding drums 78 and 80 is a sprocket 84 connected by a sprocket chain 86 to a sprocket 87 carried on a sleeve member 88 which is rotatable on a driving shaft 89 located below the shaft 79 and rotatably supported in bearings 90 and 92 secured to the frame members 62 and 63, respectively, in the upright frame. Integrally formed with the sleeve member 88 is a shell member 93 which constitutes one of the units in a friction clutch mechanism indicated generally at 94. A second clutch unit 96 is of a conical shape, adapted to be received in frictional engagement within the shell member 93, and mounted on the driving shaft 89. By moving the shell member 93 axially of the shaft 89 into and out of frictional engagement with the second clutch unit or conical member 96, power is transmitted from the shaft 89 to the shaft 79 through the sprocket and chain assembly 84, 86 and 87 (Figs. 4 and 5).

This movement of the shell member 93 relative to the cone member 96 is accomplished by means including a clutch lever 97 integrally formed with a hub portion 98 which is rotatable on the driving shaft 89 at a position adjacent to the sleeve member 88. The lever 97 extends upwardly to a position adjacent the transverse frame member 64 of the upright frame and is of a form to be received within the winding drum 78 for movement radially of such winding drum without interfering with the wrapping and unwrapping of the cable 60 relative to the winding drum, as is clearly illustrated in Fig. 5. The hub 98 is formed with a cam surface 99 for operative association with a corresponding cam surface 101 formed on the inner side of the bearing member 90. Referring to Fig. 4 the bearing member 90, hub 98, and sleeve member 88 are seen to be in a stacked relation on the driving shaft 89.

Thus on pivotal movement of the clutch lever 97 in a direction rearwardly of the tractor, or toward the left, as viewed in Fig. 5, the sliding engagement of the cam surfaces 99 and 101 moves the hub 98 and sleeve 88 toward the right, as viewed in Fig. 4, to in turn move the shell member 93 axially on the shaft 89 into frictional engagement with the cone member 96. Since the cone member 96 rotates with the driving shaft 89 this frictional engagement of the members 93 and 96 connects the shaft 79 with the shaft 89 through the sprocket and chain assembly 84, 86 and 87. The shaft 89 has one end projected laterally from the upright frame member 62 which projected end carries a pulley 102 connected through a belt 103 with the tractor belt pulley 18 (Fig. 1).

The connection and disconnection of the shafts 79 and 89 to pivotally move the lifting arms 19 and 20, and to retain the scoop 32 at any elevated or moved position of the lifting arms, is controlled entirely by the manipulation of the clutch lever 97 in a manner now to be described. With reference to Fig. 1 the lever 97 is shown with its upper or free end pivoted to an actuating rod 104 which extends toward the rear of the tractor to a position conveniently accessible to the tractor operator. The rod 104 is slidably supported in an upright frame member 106 mounted on the tractor frame 15, and its rear end is formed with a hand grip 107.

Pivoted at one end adjacent the lower end of the lever 97 (Fig. 5) is a link 108 the opposite end of which is pivotally connected at 109 with the arm 111 of a bell crank 110 of an irregular shape. A shaft portion 112 connected between the crank arm 111 and a crank arm 115 is rotatably supported in a bearing 113 mounted on a bottom transverse frame member 114 extended between the upright frame members 62 and 63. The crank arm 115 is extended laterally and forwardly from the shaft portion 112 and then parallel and away from the shaft portion 112. A brake band 117 is positioned about the upper half of the clutch shell member 93 and has one end 118 pivoted to the crank arm 115 and an opposite end 119 pivoted on a bolt 121 secured to the bottom transverse frame member 114.

The brake band 117 is normally held in frictional engagement with the clutch shell member 93 by a spring 122 connected at one end to a bracket 123 on the upright frame member 62 and at its opposite end to the free end 124 of the bell crank arm 111. On actuation of the clutch lever 97 in a direction toward the rear of the tractor, or in a counter-clockwise direction as viewed in Fig. 5, the shaft portion 112 is rotated in a counter-clockwise direction, as also viewed in Fig. 5, by the action of the link 108 on the bell crank 110 whereby the end 118 of the brake band 117 is moved upwardly. This movement of the brake band 117 releases its frictional engagement with the clutch shell member 93. When the shell member 93 is thus released, the scoop 32 is free to move downwardly from any elevated position due to the action of gravity. On a continued movement of the clutch lever 97 in a counter-clockwise direction the cam surfaces 99 and 101 are relatively moved a distance sufficient to frictionally engage the shell member 93 with the cone member 96, in the manner above fully described, to provide for the driving of the shaft 79 from the shaft 89.

When the clutch lever 97 is released the brake band 117 is automatically moved into a braking position with the shell member 93 by the action of the spring 122. It is thus seen that the elevating of the scoop 32, its retention in an elevated position, and its release for falling downwardly to the ground by the action of gravity is controlled entirely by the actuation of the clutch lever 97.

In the operation of the loading machine of this invention assume the lifting arms 19 and 20 to be in their lowered and contracted positions shown in Fig. 1, that is with the arm members 26 moved to their rearward positions against the stop pins 27. With the lifting arms 19 and 20 thus positioned the pulleys 72 for connecting the cables 60 and 61 with the lifting arms are located rearwardly of the upright frame. On manipulation of the clutch lever 97, in the manner above described, to release the brake band 117 and connect the shaft 79 in a driven relation with the

shaft 89, the cables 60 and 61 are wound about their corresponding drums 78 and 80 to elevate the lifting arms 19 and 20. During the elevation of the lifting arms 19 and 20 the cables 60 and 61 tend to assume a position vertically downwardly from the pulleys 65 or a position within the plane of the upright frame as illustrated in dotted lines in Fig. 1. This action of the cables 60 and 61 in turn moves the pulleys 72 toward a position in the plane of the upright frame whereby the arm members 26 are extended forwardly of the upright frame. In other words, due to the action of the cables 60 and 61 on the pulleys 72 the arm members 26 are extended from their contracted or telescoped positions, shown in full lines in Fig. 1, to their dotted line positions, also shown in Fig. 1, concurrently with the elevating of the lifting arms 19 and 20, whereby the scoop 32 is retained in a position adjacent the forward side of the upright frame at all pivotally moved positions of the arms 19 and 20.

The scoop 32 may be dumped at any elevated position by the actuation of the hand lever 56 to move the latch 34 out of engagement with the catch 44 as was above fully described. The dumping movement of the scoop 32 is limited by the provision of a pair of lug members 165, welded or otherwise secured to the bottom of the scoop at a position forwardly of the scoop pivots 33, and adapted to engage the under side of the arms 19 and 20 to stop a dumping movement of the scoop. A tension spring 170 (Figs. 1 and 4) connected at one end to the top transverse frame member 64, and at its other end to a chain 171 is passed under a pulley 172 on the beam member 29 for connection at 173 with the scoop back wall 46. When the scoop 32 is dumped, its pivotal movement in a clockwise direction, to a position at which the lugs 165 engage the lifting arms, stores or builds up a pressure in the spring 170. When the load is dumped from the scoop the pressure thus stored in the spring acts to return the scoop to its loading position at which the latch 34 is releasably engaged with the catch 44. The spring and chain assembly 170—171 thus functions to automatically return the scoop to a loading position.

Since the cables 60 and 61 are normally extended rearwardly from their corresponding pulleys 65 to one side of the plane of rotation of the pulleys 65 means are provided to guide the cables 60 and 61 for their movable support at all times on the pulleys 65. This means includes a guide member 126 carried on the rear side of a supporting plate 67 at a position adjacent the outer end of such plate (Figs. 6 and 7). The lower end 127 of the guide member 126 is projected below the level of the supporting plate 67 and is of an arcuate shape bent inwardly under the supporting plate 67 so that the cable guiding surface 128 thereof is in substantial vertical alignment with the cable groove in a pulley 65. Thus when the cable 61, for example, is inclined rearwardly from the pulley 65 the guiding surface 128 retains the cable 61 in alignment with its pulley 65, as illustrated in dotted lines in Fig. 7, so that the rearward inclination of the cable 61 terminates with the guide member 126.

On lowering of the scoop 32 by gravity, the cables 60 and 61 are unwound from the drums 28. The lifting arms 19 and 20, when the scoop 32 is dropped to its lowermost position, may have the members 26 thereof in a partially extended position. However, on loading of the scoop 32, by a usual bucking operation, the arm members 26 are moved to their stop positions against the

pins 27 to in turn carry the pulleys 72 rearwardly of the upright frame. When the scoop 32, therefore, is to be lifted again the cables 60 and 61 are inclined rearwardly from the upright frame and positioned to extend the arm members 26 concurrently with an elevation of the scoop 32.

To stabilize the lifting arms 19 and 20 against movement laterally or transversely of the tractor at substantially all elevated positions of the arms, there is provided an arm guide means (Fig. 4) which is comprised of a pair of guide members 130 and 131 oppositely arranged in a spaced relation to the outside of the upright frame members 62 and 63, respectively. Each guide member 130 and 131 is of a pipe construction and is suitably secured at its upper end, as by welding or like means, to the transverse frame member 64. A brace member 132, also of a pipe construction, is welded between the lower end of an arm 130 and 131 and the lower end of a corresponding upright frame member 62 and 63. The spaced relation of the guide members 130 and 131 from the corresponding frame members 62 and 63 is such as to provide for their contact engagement with the inner sides of the lifting arms 19 and 20, and for a sufficient clearance relation of the pulley 102 between the guide member 130 and the frame member 62. It is seen, therefore, that the guide members 130 and 131 thus stabilize the lifting arms 19 and 20 against lateral movement at all lifted positions of the arms 19 and 20 over the distance defined by the length of the guide members 130 and 131.

Since the guide members 130 and 131, as shown in Fig. 1, terminate at a position above the front axle for the steering wheels 17 each guide member 130 and 131 has a pivoted lower unit to provide for a guiding of the lifting arms 19 and 20 at all pivotally moved positions thereof. Each lower unit includes a sleeve member 133 rotatably supported on a brace member 132 and extended between a guide member 130 and 131 and a corresponding frame member 62 and 63 (Figs. 4 and 11). Welded to the bottom side of the sleeve member 133 is a supporting plate 134 extended in a spaced relation below the lower end of a guide member 130 and 131. An extension 136 for a guide member 130 and 131 is welded to the bottom side of a supporting plate 134 in vertical alignment with an associated guide member. A brace member 137 is welded between the lower end of the extension 136 and the outer end 138 of the supporting plate 134. It is seen, therefore, that the extension 136 is pivotally movable about the pipe member 132, as an axis, in a direction forwardly and rearwardly of the tractor while being retained at all times in the vertical plane of an associated guide member 130 and 131. The pivoted lower unit is normally yieldably retained in an upright position by the provision of a tension spring 139 connected at one end adjacent the inner end of a sleeve 133, and at its opposite end to a bracket 141 projected outwardly from a guide member 130 and 131 at a position spaced upwardly from the brace member 132.

The extension 136 in conjunction with an associated guide member 130 and 131 provides for the stabilizing of the arms 19 and 20 against lateral movement for all pivotally moved positions of the lifting arms from substantially a ground level to the top of the upright frame. By virtue of the pivoted assembly of an extension 136 with a guide member 130 and 131 such extension is freely movable when it strikes an obstruction or the like in the path of advance of the tractor, as

indicated in Fig. 12 for a pivotally moved position of the extension 136. The projection of the lifting arm guide means to a position substantially adjacent the ground surface thus in no way interferes with the travel of the tractor over rough or uneven ground while providing a guiding action for the lifting arms 19 and 20 over their full pivotal travel.

As shown in Figs. 4 and 6 the cables 60 and 61 extend substantially vertically downwardly from their corresponding pulleys 66 for wrapping about the winding drums 78 and 80. In other words, even though a drum 78 and 80 and an associated pulley 66 are rotatable in planes normal to each other a cable 60 and 61 passes from one to the other in a straight line path so as to be always centered relative to a pulley 66 and a drum 78 and 80. In order to provide for this assembly of the cables 60 and 61 with the pulleys 66 and drums 78 and 80 it is necessary that the drums 78 and 80 be rotated in a counter-clockwise direction, as viewed in Fig. 1, to wind the cables thereon. Likewise the pulley 102 would be rotated in a counter-clockwise direction as also viewed in Fig. 1. Since the standard rotation of the belt pulley 18 in commercial type tractors is generally in a clockwise direction, as viewed in Fig. 1, the belt 103 for connecting the pulleys 18 and 102 is twisted to provide for a reverse rotation of the pulleys 18 and 102.

A belt tightener for the belt 103 (Figs. 9 and 10) includes an idler roller 142 rotatably supported between arms 143 supported in a spaced relation on a sleeve member 144. The sleeve member 144 is rotatable about a shaft 146 having one threaded end 147 extended through a slot 148 formed in the upright frame member 62 and an opposite threaded end 149 extended through a slot 151 formed in a lug member 152 secured to and extended rearwardly from the guide member 130. Welded at one end to the sleeve member 144 and extended forwardly from the sleeve member is an arm member 152a having a tension spring 153 connected to its free end 154. The opposite end of the spring 154 is connected to the free end of an arm member 155 which is secured to, and extended rearwardly from, the frame member 62. By virtue of the pivotal support of the sleeve member 144 on the shaft 146 the spring 154 acts to urge and yieldably maintain the roller 142 against the bottom side of the belt 103 as is clearly illustrated in Fig. 9. The extension of the shaft ends 147 and 149 through the slots 148 and 151, respectively, provides for a tilting adjustment of the idler 142 relative to the belt 103 to hold the belt against axial travel on the pulley 102 and in a substantially centered position on the pulley 102. An adjusted position of the shaft 146 is maintained by the tightening of nuts 156 threadable on the shaft ends 147 and 149 and against the frame member 62 and bracket 152, respectively.

The load-carrying unit 32 is illustrated in the drawings as being a snow scoop, although it is to be understood that a hay buck, manure scoop or the like may be substituted for the snow scoop 32. With reference to Figs. 2, 4 and 13 the snow scoop 32 is seen to be of a length substantially equal to the transverse width of the tractor, and to extend to the outside of the lifting arms 19 and 20. The back wall 46 of the scoop 32 is formed with a pair of longitudinally spaced forwardly and downwardly inclined housing members 158 constituting hollow brace members connected between the back and bottom of the scoop. The members 158 are of a size to receive the forward ends of the lifting arms 19 and 20 therein.

The scoop 32 is pivotally supported on the forward ends of the lifting arms 19 and 20 by means of the bolts 33 which are extended therethrough and through the side walls of the housing members 158. Nuts 161 for the bolts 33 are positioned to the outside of the housing members and readily accessible from the inside of the scoop. The stop lugs 165, for limiting the dumping movement of the scoop 32, are secured to the bottom of the scoop and extended across the open bottom sides of the housings 158 forwardly of the arms 19 and 20. Skids 162 extended transversely of the scoop to each side of a housing member 158 slidably support the scoop for travel along the ground surface during a bucking operation. It is seen, therefore, that the scoop is of a relatively large size for plowing and lifting snow and of a construction for ready assembly with and removal from the load-lifting arms 19 and 20.

From a consideration of the above description it is seen that the invention provides a loading attachment which is of a simple and rigid construction and readily attachable to different types of available commercial tractors. The assembly of the cables 60 and 61 relative to the telescoping lifting arms 19 and 20 provides for the function of the cables not only to lower and to raise the lifting arms, but to extend the arm members 26 concurrently with the elevation of the lifting arms so that the scoop 32 is maintained adjacent the forward side of the upright frame at all pivotally moved positions of the lifting arms. Further all of the control levers for dumping the scoop and operating the lifting arms are readily accessible to the operator so as to be conveniently manipulated and available at all times.

Although the invention has been described with respect to a preferred embodiment thereof it is to be understood that it is not to be so limited since changes and modifications can be made therein which are within the full intended scope of this invention as defined by the appended claims.

I claim:

1. A loading machine including a portable frame and an upright frame carried at one end of said frame, a pair of pivoted telescoped lifting arms arranged at opposite sides of said frame, means pivotally supporting said arms at their rear ends on said portable frame, with each of said arms including a telescoping member movable forwardly of said upright frame, a load carrying unit supported on the front end of said telescoping members, flexible lifting means for said arms, means supporting said flexible lifting means at one of their ends adjacent the top of said upright frame, means connecting the opposite ends of said flexible lifting means at positions on said telescoping members such that when said arms are telescoped and in a lowered position, said flexible lifting means are inclined rearwardly and downwardly from the top of said upright frame, and means for concurrently raising and lowering said flexible lifting means to pivotally move said arms, said lifting means, on raising thereof, being movable to positions substantially within the plane of said upright frame whereby said telescoping members are extended forwardly of said upright frame.

2. A loading machine comprising a portable frame and an upright frame supported at one end of said frame, a pair of pivoted telescoped lifting arms arranged at opposite sides of said frame,

means pivotally supporting said lifting arms at their rear ends on said frame, with a telescoping member of each arm being extendible forwardly of said upright frame, a pair of flexible lifting means corresponding to said arms, with each of said lifting means being movably supported adjacent the top of said frame and connected with a corresponding telescoping member at a position rearwardly of said upright frame when an arm is lowered and in a contracted position, and means for concurrently raising and lowering said lifting means including a winding drum for each of said lifting means rotatably supported on said upright frame, with said lifting means, on raising of said arms, being movable toward a position substantially within the plane of said upright frame to extend said telescoping members forwardly of said frame.

3. A loading machine including a portable frame with an upright frame thereon, a pair of pivoted arms arranged at opposite sides of said upright frame and pivoted at their rear ends on said portable frame, front members for said arms movable longitudinally of said arms to extended positions forwardly of said upright frame, and means for elevating and lowering said arms including a pair of flexible lifting means movably supported adjacent the top of said upright frame, and connected with said front members at positions rearwardly of said upright frame to provide for the extension of said front members concurrently with the elevation of said arms.

4. A loading machine including a portable frame and an upright frame at the forward end of said portable frame, a pair of pivoted lifting arms arranged at opposite sides of said portable frame, with each of said arms including a rear member and a front member movably supported on a rear member for relative longitudinal movement to extended and contracted positions, a load-carrying unit supported on the forward ends of said front members, means pivotally supporting each rear member on said portable frame, a pair of flexible lifting means for said arms, with flexible lifting means being connected with a corresponding front member at a position rearwardly of said upright frame when said front member is in a contracted position, means movably supporting said flexible lifting means adjacent the top of said upright frame including a pulley, means for retaining said flexible lifting means in operative association with said pulley at all moved positions of said corresponding front member, and means for concurrently elevating and lowering said lifting means, with a flexible lifting means,

on being elevated, acting to move a corresponding front member toward its extended position.

5. A loading machine comprising a portable frame and an upright frame at the forward end of said portable frame, a pair of pivoted lifting arms arranged at opposite sides of said frame, having their front ends projected forwardly of said upright frame, means pivotally supporting the rear ends of said arms on said portable frame, means for pivotally raising and lowering said arms, means for guiding the pivotal up and down movement of said arms comprising a pair of upright guide members positioned at opposite sides of said upright frame, pivoted extensions for the lower ends of said upright guides, and means pivoting said extensions on said upright guides for pivotal movement longitudinally of said portable frame.

6. A loading machine including a portable frame and a pair of pivoted lifting arms arranged at opposite sides of said frame, means for elevating and lowering said lifting means, means for guiding said arms against movement laterally of said frame comprising a pair of upright guide members positioned at opposite sides of said frame for contact engagement with the inner sides of said arms, pivoted lower extensions for said guide members pivotally movable longitudinally of said frame, and means for normally yieldably retaining said extensions in upright positions.

7. A loading machine comprising a portable frame and a pair of pivoted arms arranged at opposite sides of said frame, a load carrying unit pivotally supported on the forward ends of said arms, a catch member extended rearwardly from said unit, a transverse frame structure connected between said arms rearwardly of said unit, a pivoted upright latch pivotally supported on said frame structure for pivotal movement longitudinally of said frame, said latch having an opening adjacent the upper end thereof adapted to receive the free end of said catch member in releasable engagement, a transverse rock shaft on said frame structure having an upright radial member, a rear extension on said latch slidably engageable with said radial member to provide for pivotal movement of said latch in response to a rocking movement of said shaft, means for rocking said shaft in one direction to release said catch member from engagement with the latch at said opening, and tension means for rocking said shaft in an opposite direction to pivotally move and yieldably hold said latch in a position for engaging said catch member.

GILBERT E. COATS.