April 25, 1933. L. T. VELEN 1,905,321

SHOCK HANDLING MACHINE

Filed July 6, 1929 8 Sheets-Sheet 1

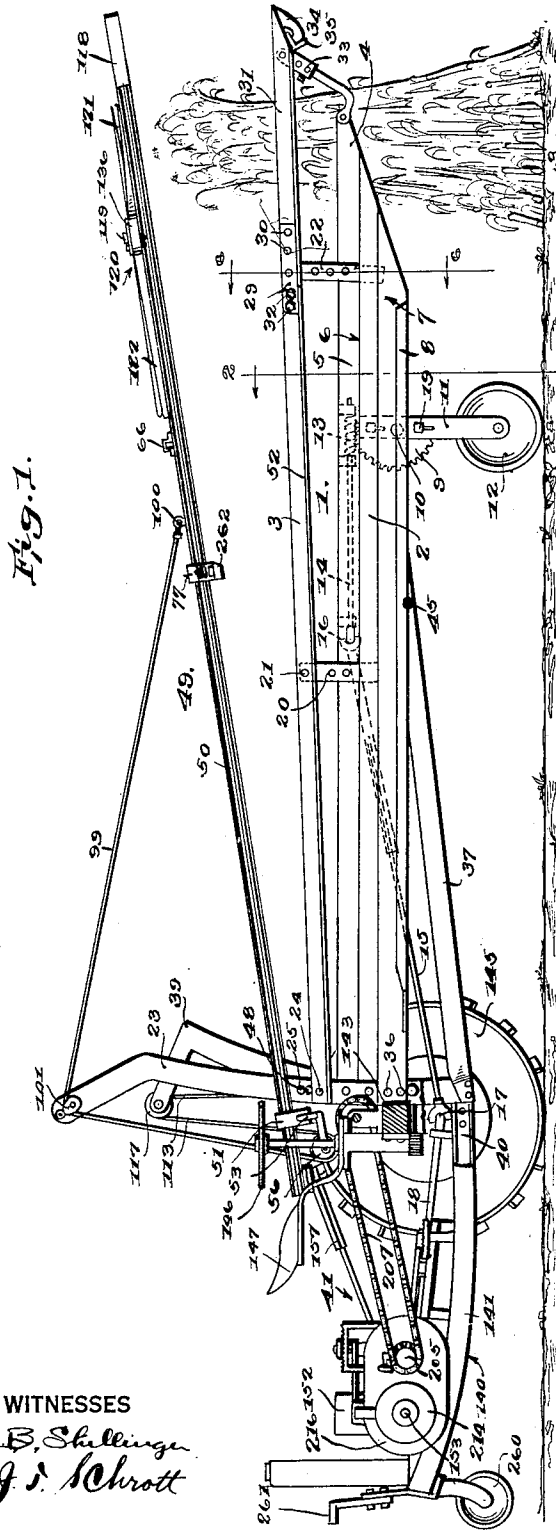


Fig. 1.

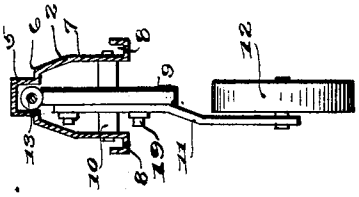


Fig. 2.

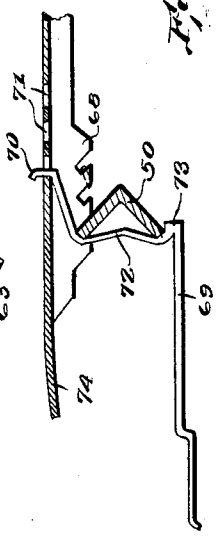


Fig. 8.

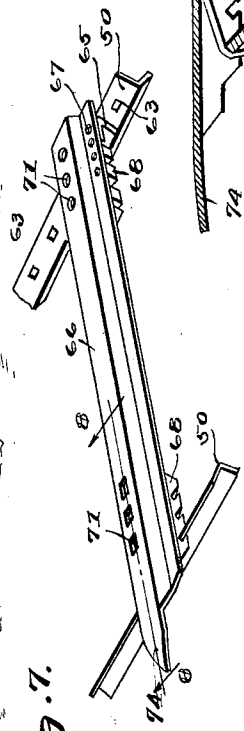


Fig. 7.

WITNESSES

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J. I. Schrott

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Luther T. Velen

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April 25, 1933. L. T. VELEN 1,905,321

SHOCK HANDLING MACHINE

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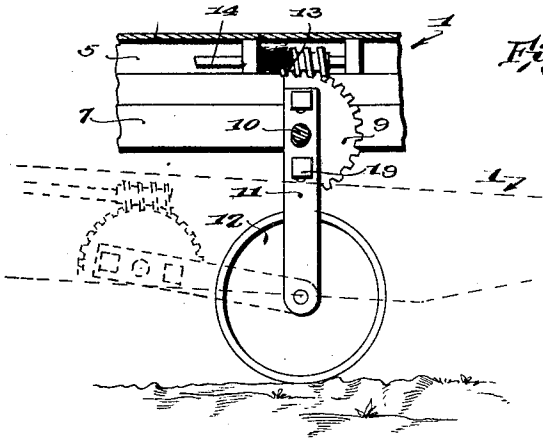


Fig. 3.

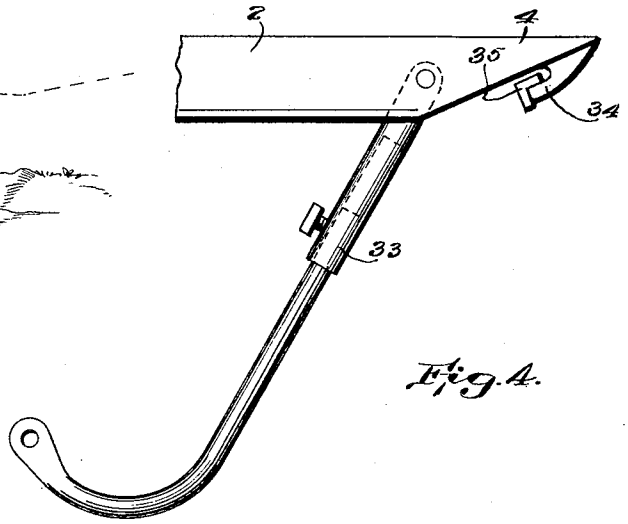


Fig. 4.

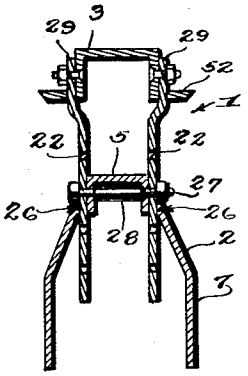


Fig. 6.

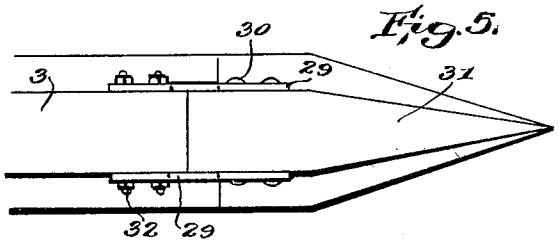


Fig. 5.

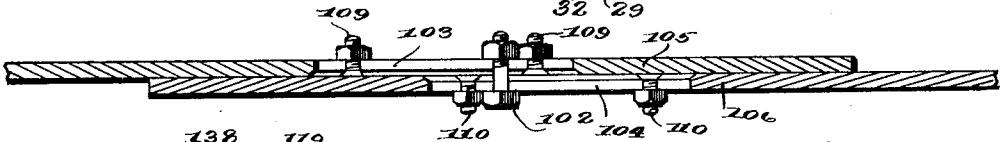


Fig. 11.

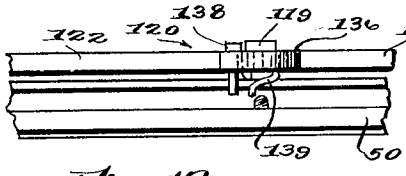


Fig. 12.

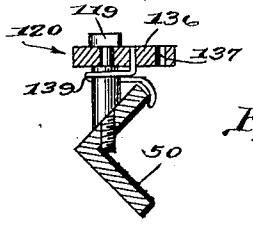


Fig. 13.

WITNESSES

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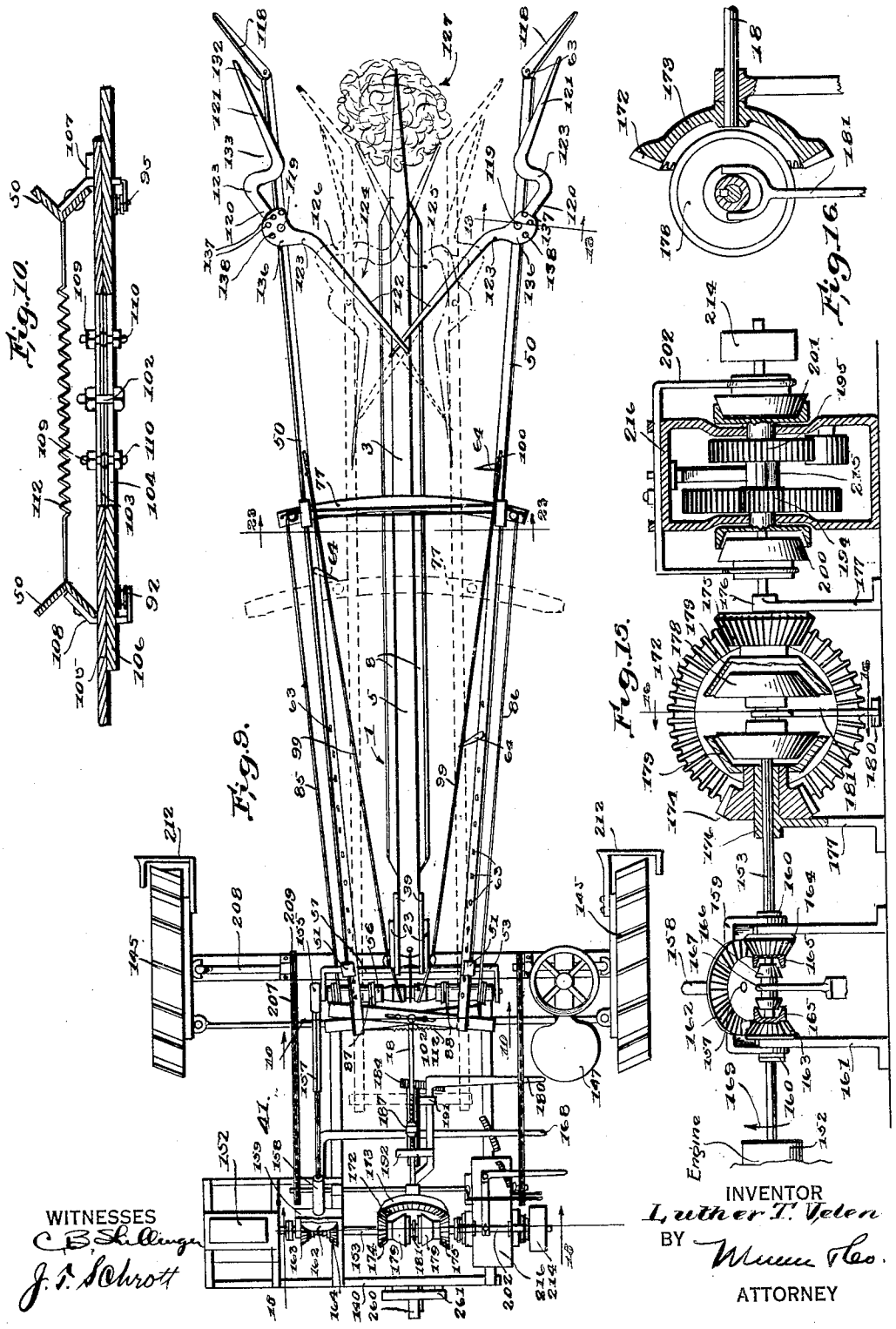
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SHOCK HANDLING MACHINE

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April 25, 1933. L. T. VELEN 1,905,321

SHOCK HANDLING MACHINE

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Fig. 19.

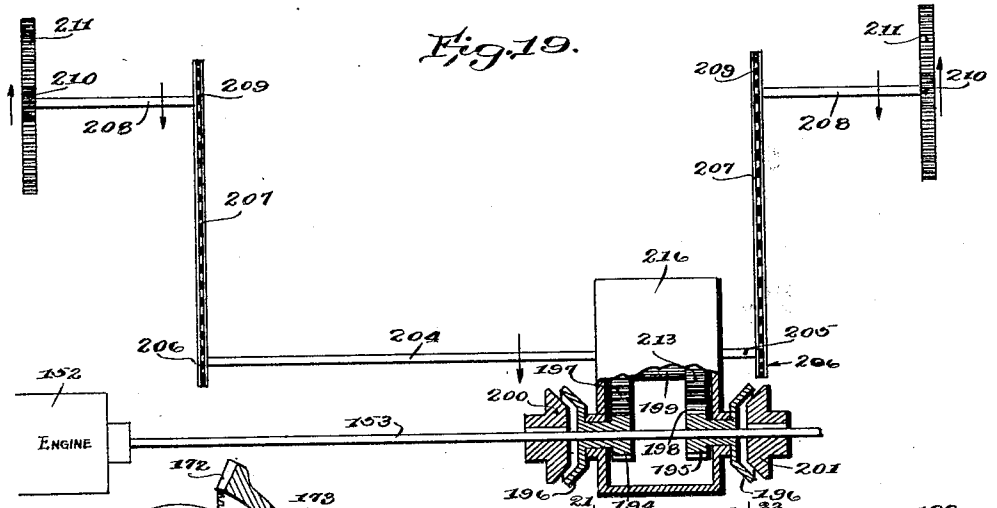


Fig. 20.

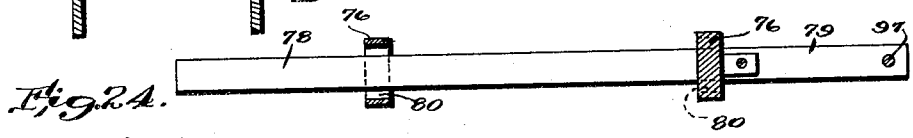


Fig. 24.

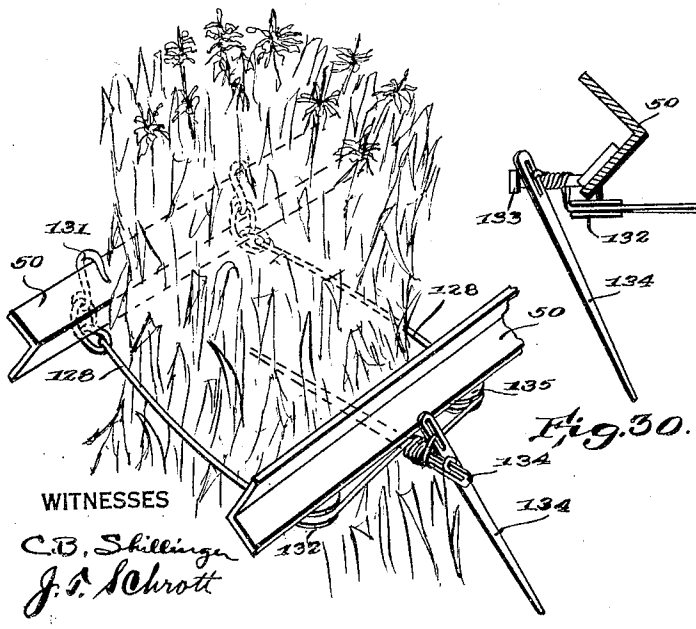


Fig. 30.

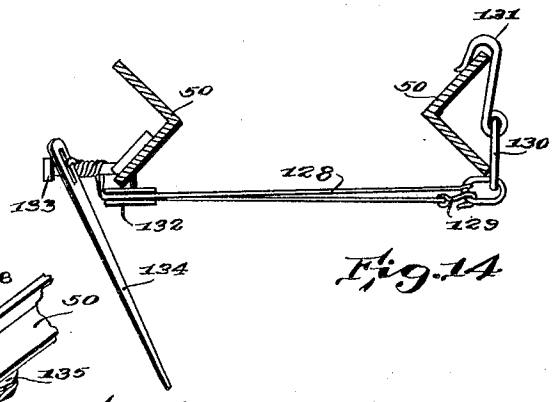


Fig. 14

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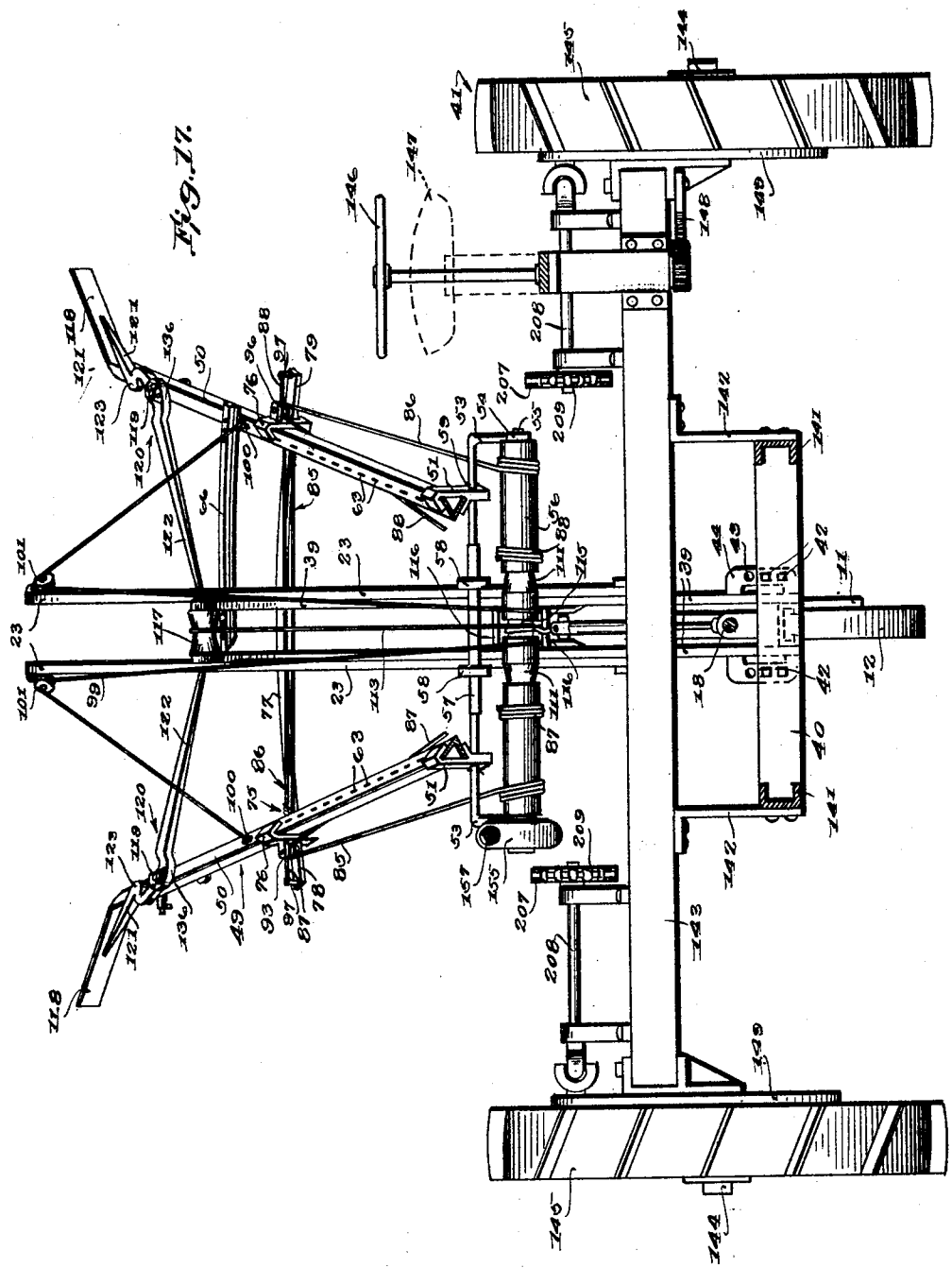
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SHOCK HANDLING MACHINE

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Fig. 17.



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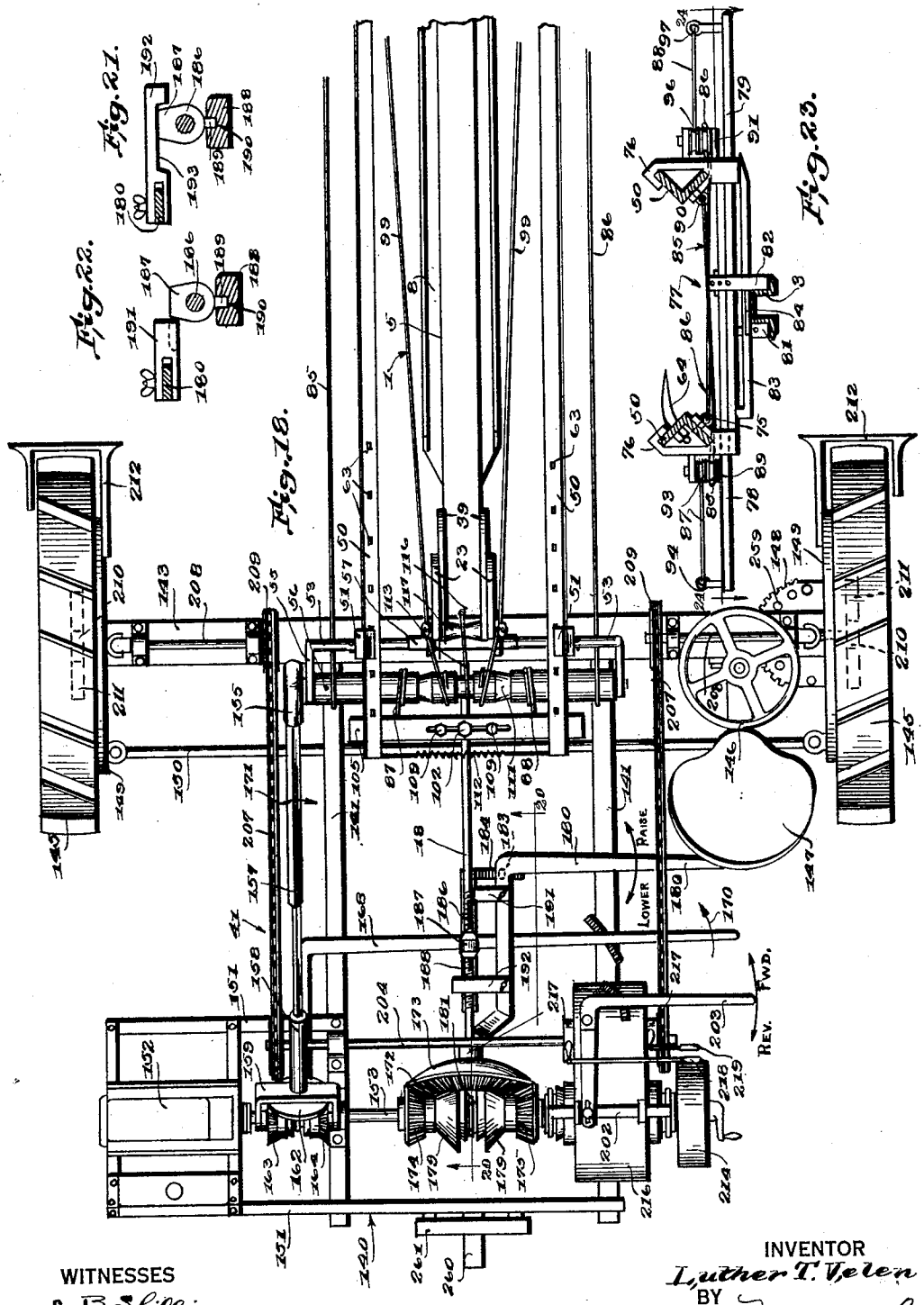
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April 25, 1933. L. T. VELEN 1,905,321

SHOCK HANDLING MACHINE

Filed July 6, 1929 8 Sheets-Sheet 6



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April 25, 1933. L. T. VELEN 1,905,321

SHOCK HANDLING MACHINE

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Fig. 23.

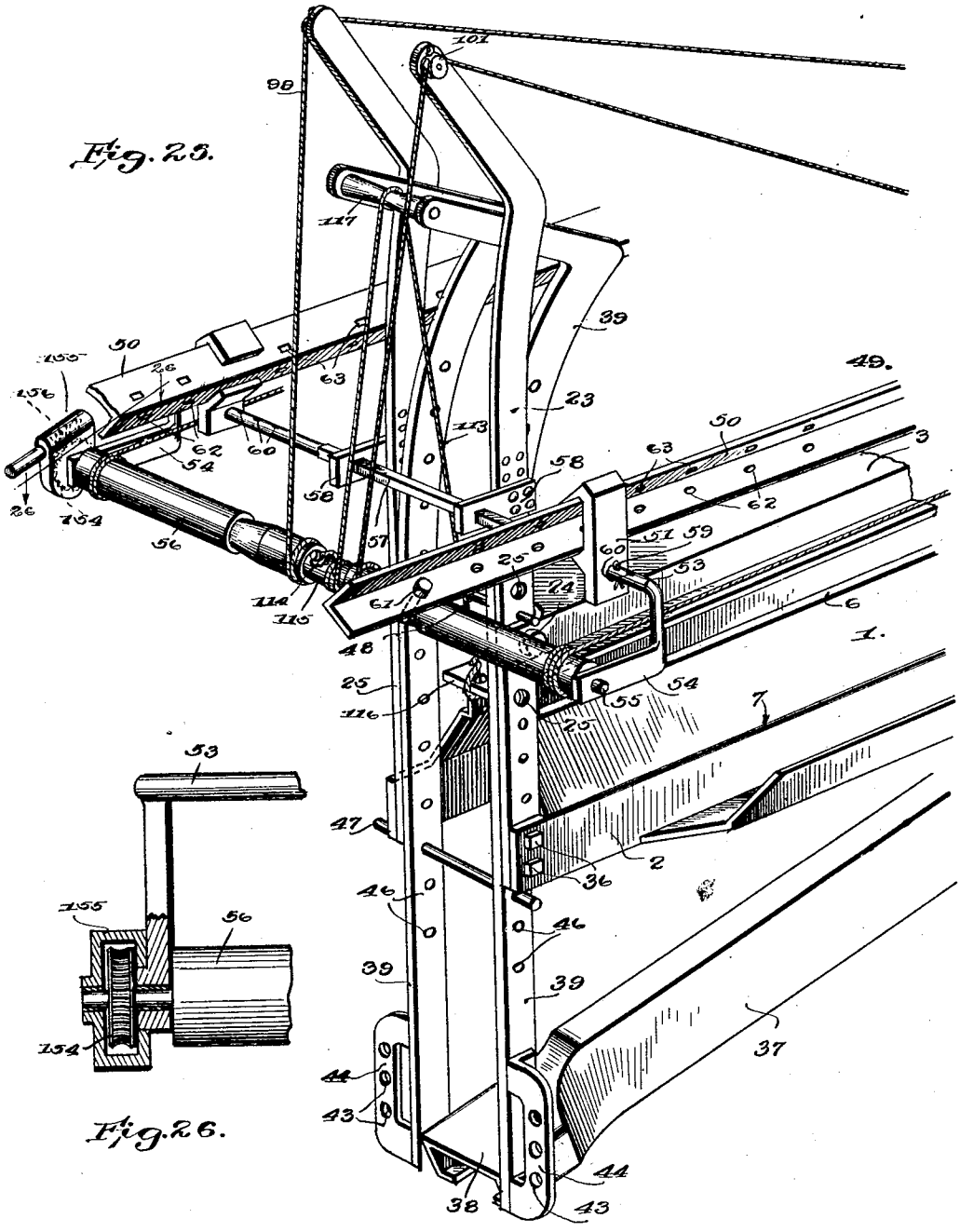


Fig. 26.

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SHOCK HANDLING MACHINE

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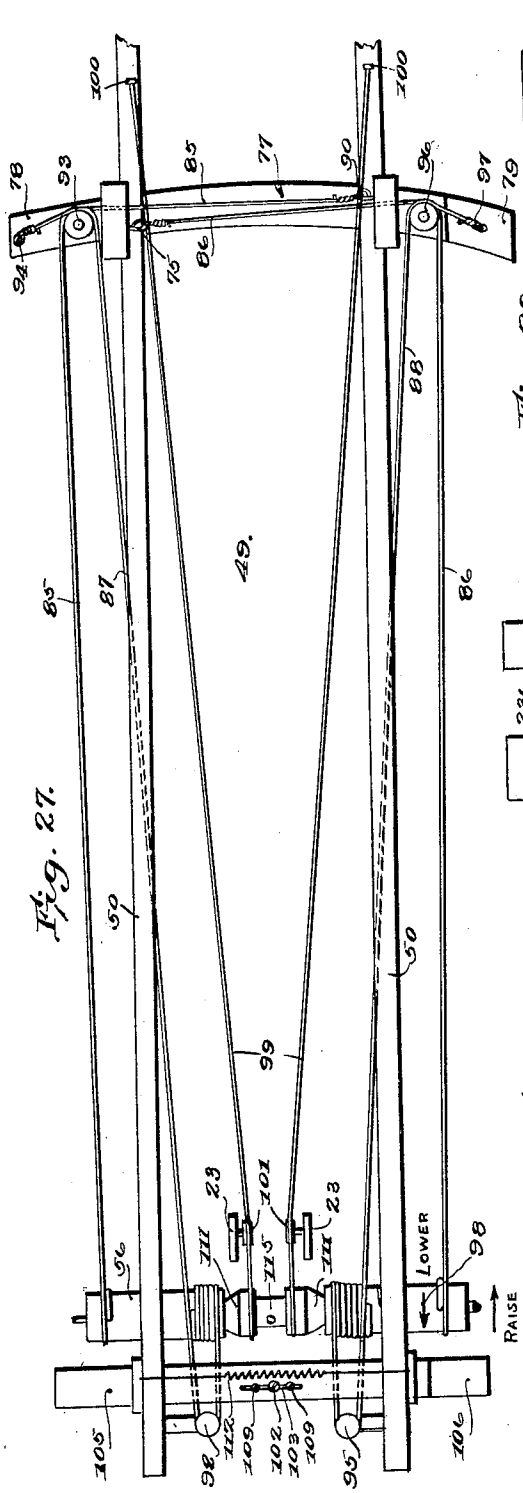


Fig. 27.

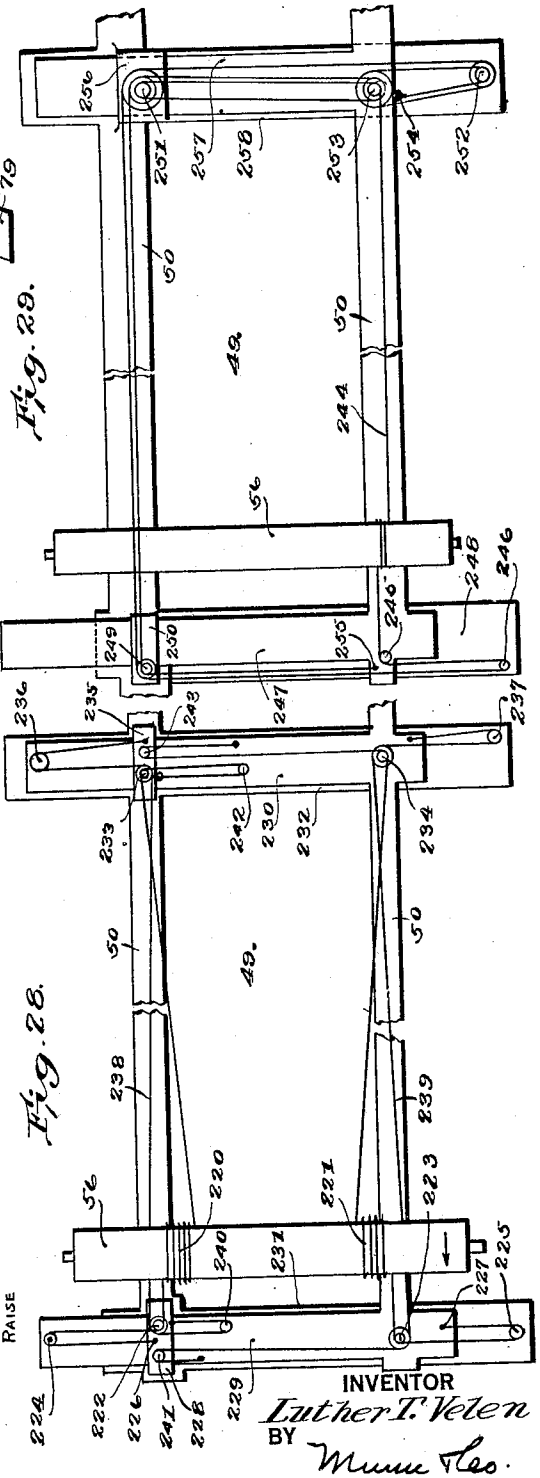


Fig. 28.

Fig. 29.

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Patented Apr. 25, 1933

1,905,321

UNITED STATES PATENT OFFICE

LUTHER T. VELEN, OF CHESWOLD, DELAWARE

SHOCK HANDLING MACHINE

Application filed July 6, 1929. Serial No. 376,463.

This invention relates to improvements in stock handling machines, and it consists of the constructions, combinations and arrangements herein described and claimed.

The foremost object of the invention is to provide a wheeled vehicle equipped with a pointed shock-supporting beam which is designed to be thrust into the shocks as found in various situations on the field, thus to pick them up one by one preparatory to transporting a load of the shocks to a point of disposal.

Another object of the invention is to provide a machine for the purpose described having facilities which are briefly enumerated as follows: first, to provide means for moving the shocks rearwardly and retaining them on the shock-supporting beam; second, to afford improved means for hoisting the load; third, to provide improved means for adjusting the height of the shock-supporting beam; fourth, to introduce in a motor-propelled machine arrangements whereby the tractor is used to steer the load as well as to relieve the weight on the front wheels; fifth, to embody instrumentalities whereby the tractor motor is used to furnish the necessary power for operating the various devices; sixth, to supply means for reversing the machine; and seventh, to provide ample clutching surfaces and associated automatically operative unclutching facilities.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation of the machine, the shock-supporting beam being shown in the raised position that it would assume if loaded, the compressor mechanism still being elevated;

Figure 2 is a cross-section taken on the line 2—2 of Figure 1 showing the mounting of the front carrier wheel;

Figure 3 is a detail side elevation illustrating a possible reversal of the worm gear segment for a purpose later explained;

Figure 4 is a detail side elevation of the point of the shock-supporting beam particularly illustrating the guard and loose retainer;

Figure 5 is a detail plan view of the auxiliary shock-supporting beam illustrating how the extension point is connected;

Figure 6 is a cross-section taken on the line 6—6 of Figure 1;

Figure 7 is a detail perspective view illustrating a span bar to be used in connection with the compressor mechanism;

Figure 8 is a detail section taken on the line 8—8 of Figure 7 but illustrating the use of a compression lever in connection with the span bar;

Figure 9 is a plan view of the machine, the compressor mechanism being shown in the wide open position for receiving shocks;

Figure 10 is a cross-section taken substantially on the line 10—10 of Figure 9, the base bars of the compressor mechanism being shown approximately midway of their limits of extension and contraction;

Figure 11 is a detail sectional view illustrating said bars at the limit of their contraction;

Figure 12 is a detail side elevation particularly illustrating the pivotal and resilient mounting of one of the retaining levers upon the associated side bar of the compression mechanism;

Figure 13 is a cross-section taken on the line 13—13 of Figure 9;

Figure 14 is a detail cross-section of the front extremity of the compressor mechanism, illustrating the use of a supplemental compressor device;

Figure 15 is a longitudinal section taken on the line 15—15 of Fig. 9 showing the three drives respectively for compressing, hoisting and propulsion, reading from left to right;

Figure 16 is a cross-section of the hoisting drive taken on the line 16—16 of Figure 15;

Figure 17 is a rear elevation of the shock handling machine, its support upon part of the tractor frame being shown;

Figure 18 is a plan view of but a portion of the machine, the various drives being shown in particular;

Figure 19 is a sectional diagram illustrating the directions of transmission of power

for the propulsion of the tractor and machine;

Figure 20 is a section taken substantially on the line 20—20 of Figure 18, particularly illustrating the automatic unclutching mechanism;

Figure 21 is a cross-section taken on the line 21—21 of Figure 20;

Figure 22 is a cross-section taken on the line 22—22 of Figure 20;

Figure 23 is a cross-section of the compressor mechanism taken substantially on the line 23—23 of Figure 9;

Figure 24 is a detail horizontal section taken on the line 24—24 of Figure 23;

Figure 25 is a perspective view of the rear end of the shock-supporting beam and its collateral structure;

Figure 26 is a detail sectional view taken substantially on the line 26—26 of Figure 25;

Figure 27 is a diagrammatic plan view of the compressor mechanism, the side bars being shown closed;

Figure 28 is an inverted plan view of a modification of the compressor mechanism illustrating arrangements for parallel double compression;

Figure 29 is a similar view illustrating arrangements for a triple compression;

Figure 30 is a perspective view illustrating the use of a modified shock compressor.

This invention is an improvement on the shock loader and conveyor disclosed in Patent No. 1,702,141, granted to Luther T. Velen, February 12, 1929, to the extent that it embodies a number of collateral structures for facilitating the perfect operation of a machine of this sort, one of the outstanding improvements being the compressor mechanism by which the shocks are pressed together so that more may be embraced by a single load.

Reference is made to the drawings: The shock-supporting beam, generally designated 1, actually comprises a main beam 2 and an auxiliary beam 3. The latter may or may not be used, depending entirely on the height of the shocks to be handled.

The main beam 2 is pointed at 4. It is composed of an elongated metallic structure cross-sectionally formed into the shape illustrated in Figure 2. This includes a top rib 5 which arises from shoulders 6 that merge into flaring sides 7. These, in turn, merge into parallel portions which end in flanged troughs 8, the purpose of which is to act as platforms to assist in supporting the shocks which are impaled by the shock-supporting beam.

As is observed in Figure 2, said beam defines a housing. It is by this housing that a segmental worm gear 9 is largely contained. It has an axle 10 by which it is pivotally mounted. It carries an arm 11 upon which a carrier wheel 12 is journaled. The purpose of the wheel is to assist in raising and lowering the front of the shock-absorbing beam 1.

To the latter end, a worm 13 meshes with the gear 9. This worm is carried by a shaft 14 which has connection with a square or other non-circular telescopic shaft 15 through a universal joint 16. This shaft has a universal joint connection 17 with a driver 18 (Figures 1, 9, 18 and 20) which has associated with it certain unclutching mechanism by which the driving power is disconnected when the shock-supporting beam 1 reaches the limits of its raising and lowering movements.

Adjustments of the wheel 12 in respect to the gear 9 are made possible by adopting any conventional slot and fastening bolt arrangement, for example, as illustrated at 19 in Figures 1 and 3. This same arrangement makes it permissible to reverse the gear 9 end for end. In turning the arm 11 upon its axle 10 only the upper quarter of the gear is used. Should wear of the teeth become noticeable, the gear can be reversed in position as just indicated. It is also proposed to reverse the position of the gear in respect to the front and rear of the machine. For example, when so reversed, as indicated by Figure 3, a slightly better lifting effort can be exerted especially when the machine is operated upon soft ground. With the arrangement in Figure 3, the natural forward motion of the machine will assist the gear 9 and wheel 12 in lifting the front end of the shock-supporting beam 1 with the load.

Arms 20 are attached to the auxiliary beam 3 at 21 at a point approximately midway of its points of connection with the brackets 22 (Figures 1 and 6) at the front and with a pair of outside vertical standards 23 at the rear (Figures 1 and 25). The purpose of the arm 20 is to furnish a mid-support for the auxiliary beam 3 to prevent sagging under a load. The connection 21 is ordinarily a fixture but will act as a pivot when the necessity for making adjustments of the auxiliary beam relatively to the main beam 2 arises. At such time, the rear connecting studs 24 will be screwed into appropriate ones of series of holes 25 in the vertical standards.

Also under that circumstance, the front brackets 22 will be slid in slots 26 in the shoulders 6 of the main beam 2, through which slots the brackets extend, as shown in Figure 6. A bolt 27 is inserted through the then registering holes to fix the adjustment. A bushing 28, assembled on the bolt between the insides of the top rib 5, prevents compressing the former. The brackets 22 have ears 29 at the upper ends extending both forwardly and rearwardly. The former are permanently secured at 30 to the extension point 31 of the auxiliary beam. The latter are temporarily secured at 32 to the auxiliary beam. In removing the extension point 31, which is done at times, the brackets 22 and other carried parts will be removed with it.

The primary purpose of the extension point 31, as well as of the auxiliary beam 3, is to adapt the machine to exceptionally tall shocks. When the machine is so adapted, it becomes necessary to support the front extremity of the extension point. A telescopic elbow 33 (Figures 1 and 4) which is pivotally connected to the point 4 of the main beam and to the point 31 serves the purpose. This also acts as a guard, preventing corn stalks from entering the space between the main and auxiliary beams at the front. While on the subject of the extension point, it is to be noted that this carries a hook 34 at the front. This is intended to receive and support an angle-iron 35. This iron extends transversely of the machine when used, and it will be used only when the machine is fully loaded with shocks and then inserted in the hook 34, in which position it will be held by the pressure of the shocks.

The main purpose of the angle-iron is to straighten the load prior to the discharge thereof at the point of disposal. The shocks will almost always assume a forwardly inclined position in reference to the shock-supporting beam 1 due to the fact that the bottoms of the shocks drag slightly on the ground in the forward propulsion of the machine. Just prior to discharging the shocks, the angle-iron 35 will be inserted behind the hook 34 and the machine reversed, whereupon the same dragging tendency of the bottoms of the shocks on the ground and the rearward pressure of the angle bar will straighten the load so that the shocks will stand upright.

Sometimes the auxiliary beam 3 and its point 31 will be removed entirely from the machine, as when handling ordinary and short shocks. But under such circumstances, it would not be impracticable to leave the auxiliary beam 3 on the machine, although at such time the extension point 31 and its appurtenances would be removed. The auxiliary beam will be let down upon the top rib 5, the latter fitting into the former. The front end of the auxiliary beam would then be secured by the bolt 27. Under the same condition, the rear end of the auxiliary beam is vertically adjustable along the standards 23 which are conformably struck on the arc to a circle centered upon the bolt 27. Such adjustment is especially useful when the machine is used as a shock horse.

The rear end of the main beam 2 is secured at 36 to the lower ends of the outside standards 23 (Figures 1 and 25). A strut 37 braces the shock-supporting beam 1. This strut preferably, although not essentially, comprises a rectangular tube which is flattened at 38 at the rear end (Figure 25) to fit between a pair of inside vertical standards 39 which are adjustably secured to the frame member 40 (Figure 17) of the tractor, generally designated 41. The adjustments are made by inserting the securing bolts 42 in appropriate ones of series of holes 43 in ears 44 outstanding from the sides of the standards 39. A bolt 45 (Figure 1), or its equivalent, provides a pivotal connection of the main beam 2 with the strut 37. It is upon this pivot that the shock-supporting beam 1 can be adjusted for variable elevations of the front and rear with respect to the ground. When so adjusted, the outside standards 23 will ride alongside of the inside standards 39. The inside standards are struck on the arc of a circle of which the pivot 45 is the center. They are bored with a series of holes 46 (Figure 25) across which a pin 47 is placed upon which the rear end of the beam will rest. A pin 48, set across other series of holes both in the outside and the inside standards 23 and 39, engages the auxiliary beam 3 to prevent the shock-supporting beam from jumping up at the rear.

Situated above the shock-supporting beam 1 is a compressor mechanism generally designated 49. This comprises a pair of side bars 50 (Figures 1, 9, 17, 18 and 25) which are right-angular in cross-section and are so set in blocks 51 that the apexes of the angles are directed inwardly. These apexes are thus capable of pressing into the shocks, indenting them somewhat so that they will be held up in position. While on this point, it is to be observed that the edges of flanges 52 which are formed along the bottom of the auxiliary beam 3 are sharpened by bevelling them under, the purpose of the sharpening also being to indent a sufficient number of the stalks inside of the shocks and also to assist in their support.

The blocks 51 are the mountings by which the side bars 50 are slidably carried. The blocks, in turn, are mounted upon a cross-bar 53, the ends of which are bent down, then rearwardly, and flattened at 54 to provide bearings for the trunnions 55 of a drum 56. The bar 53 constitutes the fulcrum upon which the compressor mechanism 49 swings in the lowering and raising movements of the latter preparatory to compressing the load and releasing it, respectively. A square medial portion 57 of the bar 53 is received by brackets 58 which are adjustably carried by the outside vertical standards 23 (Figure 25). Vertical adjustment of the rear end of the compressing mechanism is desirable for different heights of shocks. The bar 53 is permanently affixed to the brackets 58, and to that end the square portion 57 may be welded thereto.

Lateral adjustment of the side bars 50 relatively to the longitudinal center of the machine is accomplished by inserting cotter pins 59, or equivalents thereto, in appropriate ones of series of holes 60 near the ends of the bar 53. Longitudinal sliding movement of

the bars 50 in the forward direction is limited by the engagement of the blocks 51 by stop pins 61 (Figure 25) which are insertable in any one of a series of round holes 62 in the lower flange of each bar. On the same principle, stop pins inserted in these holes in front of the blocks 51 can be used to limit rearward sliding of the side bars. The upper flanges of the side bars are equipped with square or other non-circular holes 63. These have several purposes. The tines 64 (Figures 9 and 23) are secured in these holes for the purpose of preventing the shocks from slipping down. The number of tines to be used will depend upon circumstances. When loading, relatively few will be employed, and these near the front of the compressing mechanism. When using the machine to impale an entire rick of shocks, for example, as in re-loading, numerous tines may be fitted upon the side bars 50, even at the base or rear end, because then all of the shocks will be in line and the compressor mechanism can be let down upon the shocks with comparative ease, the tines not interfering. The inclination and length of the tines will be subject to discrimination in the operation of the machine.

Another purpose of the holes 63, at least of the series in one of the side bars 50, is to provide places of attachment of an angle bracket 65 (Figure 7) to which a straight or curved span bar 66 is adjustably secured at 67. This span bar serves the purpose of holding the shock under compression when the machine has been filled up to the point where the span bar appears in Figure 1. The span bar can be removed from the bracket 65 and manually set at any desired point across the compressor mechanism. For this purpose, the span bar has racks 68 near each end, with notches that agree in inclination with the upper flanges of the side bars. These racks are set over the edges of the flanges, and compression is gotten by use of a compression lever 69 (Figure 8).

The hooked point 70 of this lever is inserted in the most convenient one of either series of holes 71 in the top of the span bar, and the shoulder 72 of the lever is applied against the side bar so that the heel 73 engages the lower flange. Downward pressure upon the lever will pull the span bar over so that the successive notches of one of the racks engage the adjoining side bar. The lever remains in place until it is desired to remove the span bar. In the instance of the span bar being attached to the bracket 65, as in Figure 7, only the remote rack 68 will be operated in connection with one of the side bars, the rack nearest the bracket being idle at such time. One end of the span bar is pointed at 74 so that it can more readily be thrust through the load across the compressor mechanism.

A second purpose of the round holes 62 in the lower flanges of the side bars 50 is to receive eye-bolts 75 and 90 (Figure 23) by which base blocks 76 of a rope compressor 77 are secured. These blocks are adjustable so as to set the rope compressor 77 at any desired point along the compressor mechanism. The respective base blocks have integral or otherwise permanently attached bars 78 and 79 which bear and ride upon each other and extend to opposite sides of the machine, for which purpose, the base blocks are slotted at 80 (Figure 24) so that the bars can pass through. The slots 80 are elongated so that the arcuate motion to which the side bars 50 are susceptible will be compensated for, especially when the rope compressor 77 is set at points farther forwardly than indicated in Figure 1. The hood 262, carried by the compressor 77, is inclined upwardly and forwardly for the purpose of sliding over a shock and automatically raising the compressor 49 upon a forward motion of the compressor.

It is by means of the rope compressor 77 that the side bars 50 are mechanically drawn together in the usual operation of forming a load. During this operation, the side bars 50 are brought together from time to time to squeeze the shocks into a straight line. Sometimes some of the shocks will be out of line, as, for example, when the operator fails to impale the center of the shocks with the point 4 of the beam 1. Under this condition, it is a function of the rope compressor 77 to center the load so that it will not topple to one side or the other.

For the above stated purpose, the bars 78 and 79 (Figure 23) carry adjustable stops 81 and 82 which limit the distance to which the side bars 50 can be moved either toward the auxiliary beam 3 or the top rib 5, depending upon which conjunction the compressor mechanism is used with. The stop 81 is attached to a guide arm 83 that forms part of the bar 79 and both rests and rides upon the auxiliary beam 3, assuming this to be in use as shown. An extension 84 of the stop 81 reaches across the beam 3 and abuts the stop 82 to prevent the stops from closely contacting the sides of the beam and interfering with the free sliding motion of the beam.

Pairs of ropes 85, 86 and 87, 88 (Figures 17, 18, 23, 25 and 27), respectively close and separate the side bars 50 of the compressor mechanism. Taking the ropes in the order of their designation, one end of rope 85 is wound over the top of one extremity of the drum 56 and secured, the other end passing over a lower pulley 89 (Figure 23), through a slot in the block 76 and tied to the eye-bolt 90. One end of rope 86 is wound over the top of the other extremity of the drum 56 (Figure 27), while the forward end passes around a lower pulley 91 (Figure 23), through a slot in the adjacent block 76 and tied to the eye-bolt 75. Thus it is seen that

the forward ends of the ropes 85 are crossed and secured to the opposite bars 50. The rear end of rope 87 passes around a pulley 92, is wound on top of an inner portion of the drum 56 and secured, while the forward end of the rope passes around an upper pulley 93 and is tied to a stud 94 on the bar 78.

The rear end of rope 88 passes around a pulley 95, is wound over the top of an inner portion of the drum 56 and secured, while the forward end passes over an upper pulley 96 and is tied to a stud 97 on the bar 79.

The winding upon the drum 56 of the pairs of ropes described is opposite so that turning of the drum in the direction of the arrow 98 (Figure 27) will wind up the pair 85, 86 and unwind the pair 87, 88, thus to exert inward pulls upon the side bars 50 at the points 75 and 90 and by thus closing the side bars 50 exercise a compression upon the load. Figure 27 illustrates the closed position. Upon turning the drum 56 in the opposite direction, there will be an unwinding of the pair 85, 86 and a winding up of the pair 87, 88 so that inward pulls are exerted upon the bars 78 and 79 at the points 94 and 97, causing separation of the side bars 50 and a release of compression.

Raising and lowering of the compression mechanism is accomplished by a pair of ropes 99 which at one end are wound over the top of the medial portion of the drum 56 and secured, and at the other ends are secured to eye-bolts 100 on the side bars 50. These ropes are guided over pulleys 101 mounted upon the upper extremities of the outside standards 23. Raising of the compressor mechanism is accompanied by a separation of the side bars 50. Lowering of the compressor mechanism is accompanied by a closing of the side bars, this act producing the compression upon the load previously alluded to.

Assume that the machine has either been filled with shocks up to the point of the compressor 77 or that a shock has become stuck somewhere along the beam. In either case, the following would be the procedure: The compressor mechanism 49 will be lowered by turning the drum 56 in the direction of arrow 98 (Figure 27). The winding and unwinding of the respective cable pairs 85, 86 and 87, 88 will lower the side bars 50 over the shock or shocks. The front shock defines a point of resistance against which the rope compressor 77 acts. Continued turning of the drum 56 exerts forces upon the arms 78 and 79 of the compressor 77, which, in coaction with the point of resistance, cause the closure of the side bars and compression of the load. Further continued turning after the limit of compression is reached will pull the entire compressor mechanism rearwardly, causing the compressor 77 to force the shock or shocks rearwardly against the standards 23 and 39.

Turning of the drum 56 oppositely to the arrow 98 moves the entire compressor mechanism forwardly, causes separation of the side bars 50, and raises the compressor mechanism 49 to the original position in Figure 1. The first and third of these motions are accommodated respectively by the slidable mounting of the bars 50 within the blocks 51 (Figure 25) and by the rockable mounting of the blocks upon the cross-bar 53. The second motion, wherein the side bars separate, requires pivotal mounting which a bolt 102 affords. This bolt (Figures 9, 10, 11, 18 and 27) occupies slots 103 and 104 in superimposed bars 105, 106 which it loosely connects.

The side bars 50 are permanently connected to the respective bars 105 and 106 by brackets 107, 108, the latter extending under to a point of connection with the bar 106. Pairs of stop bolts 109 and 110 are adjustably fitted in the slots 103, 104, the purpose of these being to limit the closing and separating movements of the base of the side bars 50. Figure 11 shows certain ones of the stop bolts brought into play to limit the closing movement. Figure 10 illustrates a position approximately half-way between the extreme movements.

It is to the respective side bars that the pulleys 92 and 95 are connected. It is the action of the ropes 87 and 88 upon these pulleys that pulls the superimposed bars 105, 106 as well as the side bars 50 forwardly upon the aforesaid reverse turning of the drum 56. It is during the forward movement of the bars 105, 106 and 50 by virtue of the winding of the ropes 87 and 88 upon the inner ends of the drums 56, and somewhere near the end of such winding, that the hoisting ropes 99 will reverse in position in respect to the medial portions of the drum and begin winding up on their own account. It is the winding up of the ropes 99 from beneath the drum 56 during forward turning that tension is applied at the points 100 and the forward end of the compressor mechanism is raised. The wound ropes 87 and 88 also exert a tension at the points 94 and 97, thus aiding the ropes 99 in the raising effort.

Reverting to the act of compressing the load by virtue of the rearward movement of the compressor 77, a condition is conceivable under which the compressor 77 may necessarily be moved unusually close to the standards 23, 39. Under such condition, there is a tendency of the front end of the compressor mechanism to raise, the bar 53 being the pivotal point. This undesirable happening is offset by tapering the drum 56 at 111 at points adjoining the medial portions upon which the ropes 99 are wound. The medial drum portions will become filled with the ropes 99 as the compressor 77 approaches the standards, and thereafter the rope will

slip down upon the tapers 111, producing enough slack in the ropes 99 to prevent the aforesaid undesirable raising. If the ropes 99 continued under tension, they would raise the front end of the compressor mechanism, but the recesses afforded by the tapers 111 permit the ropes to slacken so that the forward end will not raise.

A spring 112 (Figure 10) connected at its opposite ends to the side bars 50 or some extensions thereof, tends to draw the base ends of the side bars together. In doing so, the spring tends to abut one of each of the pairs of stop bolts 109, 110 with the pivot bolt 102, as shown in Figure 11. The most important function of the spring is to keep the rear end of the load under compression, and when exceptionally large shocks are forced into the base end of the compressor mechanism, the spring yields so that the side bars 50 can readily adapt themselves.

A cable 113 (Figure 25) carries a pin 114 at one end, intended for insertion in a hole in the middle section 115 of the drum 56. The sole purpose of this cable is to provide a support for the rear end of the main beam 2 while fixing the adjustment of this in respect to the abutment standards. Even when the main beam is not under load it is sufficiently heavy to warrant the provision and use of the cable 113. The end remote from the pin 114 is tied to a lip 116 extending from the top rib 5, and upon giving the drum 56 a turn or so, the main beam will be held lifted until the operator has inserted the pin 47 through the desired holes. It may also prove necessary at times to use the cable 113 while the beam has a partly formed load bearing down thereupon. The operator may see the necessity of then making an adjustment. All he has to do is to tie the cable 113 on and connect the pin 114 with the drum, turn the latter, as stated, and raise or lower the main beam as much as necessary. The cable is trained over a roller 117 which is carried by the standards 39 and serves the added function of a spacer for the upper extremities.

The front extremities of the side bars 50 are outwardly flared at 118 to facilitate the entrance of the last shocks after the side bars 50 have been lowered prior to the final compressing operation. Pivoted upon bolts 119 upon the side bars 50 slightly to the rear of the flares 118 are retaining levers 120. These not only serve to retain certain shocks at the forward end of the load but more particularly serve to automatically lock the forward end of the compressor mechanism 49 together while transporting the machine forwadly. The same function is obtainable by said levers upon a reversal of the machine, but this at the sacrifice of two shocks unless the supplemental compressing device of Figure 14 is used. These levers have front and back arms or prongs 121 and 122 which perform the respective functions. These prongs are bent at 123 at the places where they branch from the levers 120, the bent portions generally defining a receptacle 124 when the levers assume the final closed position designated 125 in Figure 9.

Enlargements 136 of the levers 120 through which the pivots 119 extend have sets of holes 137 to receive stop pins 138 (Figures 9 and 12) which are engageable with the outsides of the bars 50 to limit the movement of the levers in one direction. The levers are resiliently mounted upon the pivots 119, that is to say, springs 139 (Figure 13) are so combined with the levers and side bars that the back prongs 122 will tend to normally assume a crossed position. The passage of a shock past the back prongs will obviously open them, but the tension of the springs 139 will restore the prongs to the original position. The stop pins can be set in any one hole of the sets of holes so as to regulate the amount of extension of the back prongs across the compressor mechanism.

Originally the levers 120 stand in reference to the side bars 50 approximately as shown in full lines in Figure 9. At this particular time, the side bars 50 are suspended well above the shocks so that no part of the compressor mechanism 49 will interfere with the shocks as they are threaded upon the main beam 1. It is not until the load has been completed approximately up to the rope compressor 77 that the compressor mechanism will be let down for an initial compression of the load by means of the compressor 77. At such time, the levers 120 will assume the dotted line position 126 (Figure 9). Succeeding shocks picked up by the machine will pass the then crossed back prongs 122, making room for approximately two shocks. The foremost one of these will be held in the receptacle 124 already referred to. Still another but last shock can be carried by the main beam in front of the now crossed front prongs 121 provided it is intended to propel the machine forwardly. Such shock would occupy the position 127 (Figure 9). The forward motion of the machine presses the shock between these prongs, tends to separate the points, and in doing so, will exert inward pressures upon the forward extremity of the bars 50, locking these closed.

A similar function obtains upon a reversal gof the direction of the machine when the shock foremost of the load will similarly exert pressure against the now crossed back prongs 122. The separating effect upon these prongs will produce inward pressures upon the side bars 50, locking these in the manner already indicated. But ordinarily, the advantage of the automatic locking function must be had at the expense of two shocks. If a shock were admitted to the receptacle 124, a reversal of the machine would proba-

bly result in the loss of the foremost shock because up to this time the shock in front of the rope compressor 77 is quite loosely situated. But this does not mean that advantage cannot be taken of the receptacle 124 nor of the crossed front prongs 121 for the holding of two additional shocks upon a reverse operation of the machine.

Under such a circumstance, use would be made of the supplemental compressing device illustrated in Figure 14. This comprises a rope 128, hooked at 129 at one end to a short chain 130 which, in turn, has a hook 131 intended to be fitted over one of the side bars 50. The opposite side bar carries a pulley 132 to which the rope is applied before it is threaded through one of the links of the chain, then carried back again to a drum 133 situated a requisite distance from the pulley. The free extremity of the rope carries a stout needle 134 which is used as a lever upon the drum after all available rope has been wound thereon, to forcibly wind up the rope on the drum and pull the rope taut across the front shock. It is by this means that the front extremity of the compressing mechanism is manually secured.

Supplemental compression can be had anywhere along the shock-supporting beam, and it is not always necessary to equip one of the side bars with a drum on which to wind the rope 128. But it is necessary to equip one of the beams with a pulley 132 wherever it is intended to use this device.

Under a condition such as this, a pair of the ropes 128 with their hook and needle accessories 134 will be used. Application will be made as pictured in Figure 30. Both hooks 131 will be applied to the inner side bar 50. The right rope 128 will be carried through the load, applied to an extra pulley 135, and the needle 134 will be thrust into the most convenient shock. The left rope 128 will be carried in front of the foremost shock and applied to the pulley 132, which we will assume is situated somewhere between the compressor 77 and the front of the compressor mechanism, and the otherwise loose needle 134 is then laid crosswise of the protruding end of the inserted needle and is turned around that end. This causes both ropes to be wound upon the protruding end of the needle, and the action is to compress the load by drawing the side bars 50 together. This keeps the load from sliding off.

Attention is now directed to the mode of propelling the machine as well as applying the power to various mechanical contrivances previously described. A tractor frame 140 comprises the foundation of the machine. This frame comprises longitudinal components 141 which at the forward end terminate at the frame member 40 previously alluded to (Figure 17). At this point these members are secured by means of brackets 142 to an axle bar 143 which at its ends pivotally carries stub axles 144 upon which the tractor wheels 145 are mounted. A caster 260 has appropriate bearing on the rear extremity of the tractor frame. Immediately above the axis is an adjustable rest 261 which is adapted to support the side bars 50 of the compressor mechanism 49 when the latter is displaced rearwardly for the purpose of clearing the machine for action to dislodge a shock on the point of the main beam, also for the purpose of more nearly balancing the machine upon the tractor wheels 145 preparatory to turning the machine upon the axis, using one of the tractor wheels as a pivot. A hand wheel 146 (Figures 1, 9, 17 and 18), situated within easy reach of the driver in a seat 147, has gear connection with a quadrant 148 attached to the inside plate 149 of one of the wheels. The quadrant has an arcuate series of holes 259 into any one of which a pin is insertable for stopping engagement with the axle bar 143. The seat 147 is revoluble on a bushing through which the shaft of the hand wheel 146 extends, permitting turning adjustment of the seat to any desired position in the operation of the machine. Uniform turning of the tractor wheels is accomplished by a reach bar 150 which has pivotal connection with corresponding inside plates.

At the rear end the tractor frame has lateral components 151 upon one extremity of one set of which the engine 152 is mounted. The engine is either equipped with an exceptionally long crank shaft or the latter is suitably connected with a main drive shaft 153 from which the three drives previously mentioned are taken. For the compression of the load as well as the performance of the incidental operations of which the drum 56 is capable, the latter carries a worm gear 154 upon one of its trunnions 55 (Figures 25 and 26). This gear is encased at 155, and the casing provides a bearing for a worm 156 on the forward end of a cross-sectional non-circular telescopic shaft 157. The rear end of this shaft has ample bearing in a rather long sleeve 158 which is part of a yoke 159 (Figures 15 and 18) which is journaled upon bushings 160 of bearing brackets 161 in which the shaft 153 has partial support. The vertical adjustments of which the rear end of the main beam 2 are capable as well as the minor adjustments of the cross-bar 53 in respect to the outside standards 23 are compensated for by the telescopic shaft 157 and the rockably mounted yoke 159 and bracket 155.

A gear 162 on the rear end of the shaft 157 meshes with pinions 163 and 164 loose on the shaft 153 (Figure 15). These pinions have clutch hubs 165 with either of which the clutch element 166, splined on the shaft 153, can be engaged by the fork 167 of a pivoted

lever 168 (Figures 9 and 18). It is assumed that the main shaft 153 always turns clockwise, looking at it from the right side of the machine, or in the direction of the arrow 169 (Figure 15.)

Forward shifting of the lever 168 (arrow 170, Figure 18) will clutch the pinion 164 to the shaft 153 and revolve the shaft 157 in the direction of arrow 171 (Figure 18) thus to turn the drum 56 in the direction of arrow 98 (Figure 27) to cause lowering of the compressor mechanism from the position in Figure 1 to a position for compressing a load. Reverse shifting of the lever 168 will clutch the pinion 163 to the shaft 153 to the reverse effect.

Next in order is the hoisting drive. This drive hoists the entire front end of the machine from proximity with the ground either during the process of forming a load or after a complete load has been formed. It acts directly upon the worm gear 9 of the carrier wheel 12. The rear end of the driver 18 (Figures 16, 18 and 20) fixedly carries a gear 172 which has a concave web 173. The gear meshes with pinions 174 and 175 that are journaled upon bushings 176 (Figure 15) of bearing brackets 177. The shaft 153 has bearing in these bushings. A clutch element 178, splined on the shaft 153, is engageable with the clutch hub 179 of either pinion. A lever 180 has a fork 181 by which the element 178 is shifted. The lever is pivoted upon a stud 182 (Figure 20), and at an appropriate distance from the pivot has a tooth 183 meshing with a stationary rack 184 (Figure 18).

The lever 180 has a resilient quality. It is designed to be put under tension by the act of moving it either forwardly or rearwardly in order to clutch one or the other of the pinions 174, 175 to the shaft 153. The tension stored in the lever under this position, in which it is held by the engagement of the tooth 183 with the rack 184, later becomes the agency by which the lever 180, and consequently the clutch element 178, is automatically restored to the neutral position indicated in Figures 15 and 18. This inherent quality of the lever is directly attributable to the vertical component 185 (Figure 20) which extends parallel to the pivot stud 182. This component is subject to a degree of torsion, due to the fact that the lever has bearing on the stud 182 at two points and that these points are noticeably separated.

The automatic neutralization of the clutch element 178 is intended to occur when the gear 9 has been turned to its extremities of raising and lowering movements of the front end of the machine. For these purposes, the driver 18 has a left-hand thread 186 (Figures 9, 18 and 20) by which a cam 187 is moved back and forth in reference to a fixed guide 188 when the driver 18 is turned in one or the other direction. The cam has a key 189 which runs in the groove 190 of the guide. The front and rear ends are bevelled to facilitate the lifting of front and rear lugs 191, 192 that are secured to the lever 180 by thumb screws or a suitable equivalent. The thumb screws afford adjustments of the lugs lengthwise of the lever so that the range of raising and lowering of the front end of the machine can be regulated.

One of the lugs, namely, the front lug 191, is shorter than the other. The long lug 192 has a recess 193 on the under side (Figure 21) so that the cam 187 will return to its original neutral position, assuming it to have been propelled to a point past the left side of the rear lug 192 by an operation of the lever 180 to additionally lower the machine more than a given setting provides for, and this without the striking of the lug 192 by the cam 187 on its way forwardly into engagement with the front lug 191 which is then positioned in readiness for an automatic neutralization of the lever 180. The operation of the lever 180 alluded to comprises a bearing down upon the lever 180 after it has been shifted rearwardly for a lowering of the front end of the machine. This shifting of the lever is followed by a rearward travel of the cam 187. When this is about to reach the rear lug 192, the operator will press down on the lever, as stated, thus giving the lever enough of a twist upon its pivot 182 to raise the inner end of the lug 192 out of range of the cam. The cam can then pass rearwardly of the lug 192, and the additional turning of the driver 18 thus represented is what produces the additional lowering of the machine not provided for by the initial setting of the lug 192.

Pinions 194, 195 having attached clutch hubs 196 and being loosely mounted on the main drive shaft 153, respectively mesh with the gear 197 and reverse pinion 198 of a differential mechanism 199 (Figure 19). The gear 197 and its companion 213, with which latter the pinion 198 meshes, are ring gears which, in practice, are connected with the differential case of a conventional differential mechanism. Clutch elements 200 and 201, splined and slidable on the shaft 153, are connected by a yoke 202 which is slidable by a lever 203 to produce forward or reverse propulsion of the machine. Shifting of the lever 203 in the forward direction (Figure 18) will engage the element 200 with the hub 196 of the pinion 194 causing forward propulsion of the machine. A shift of the lever to the rear will have the reverse effect.

The details of the differential mechanism 199 are not herein disclosed but in practice will be like any known differential mechanism. It serves to drive the separate shafts 204, 205, each of which carries a sprocket 206 to which a chain 207 is applied for the purpose of driving a counter-shaft 208 having

a sprocket 209 to which it is also applied. The counter-shafts have bearing on the axle bar 143 and through interposed universal joints carry pinions 210 which mesh with and drive gears 211 connected with the tractor wheels 145. The inside plates 149 carry guards 212 which extend around the fronts of the wheels to avoid tearing of the mud lugs on the wheels into the cornstalks when turning the tractor.

A fly-wheel 214 has stabilizing effect upon the main shaft 153. A bearing 215, situated intermediately of the pinions 194, 195, has its support upon the transmission housing 216 and provides a very necessary support for the shaft 153 in the region of the pinions mentioned because it is upon these that great strains are put in delivering the propelling power to the tractor wheels. Brake drums 217 on the shafts 204, 205 have individual levers 218, 219 for their operation (Figure 18).

Attention is directed to Figure 28 which discloses a so-called double leverage compressor mechanism. The view is an inverted plan. The arrangement of the ropes and pulleys is intended to produce parallel closing and opening motions of the side bars 50. The drum 56 has ropes 220 and 221 wound thereupon, the rear ends of each of these passing over double pulleys 222, 223 as well as single pulleys 224, 225 to points of connection 226, 227, respectively, made with a guide 228 and one of a pair of arms 229, 230 which extend in one direction from one of the side bars 50. The other side bar has a similar pair of arms 231, 232 which extend in the other direction. The pairs of arms overlap and are slidable relatively to each other.

The forward ends of ropes 220, 221 pass around double pulleys 233, 234, respectively, carried by a front guide 235 and the arm 230, then around single pulleys 236, 237, respectively carried by the arms 230, 232, finally ending at points of connection with the guide 235 and arm 230. The ropes 238, 239 of a second set respectively pass over the double pulleys 222 and single pulleys 240 to a point of connection with the guide 228 and over the double pulley 223 and a single pulley 241 to a point of connection with the arm 229. The front ends of the same ropes respectively pass over the double pulley 233 and a single pulley 242 to a point of connection with the front guide 235 and over the double pulley 234, around a single pulley 243 to a point of connection with the arm 230.

The purpose of the sets of ropes 220, 221 and 238, 239 is to spread and contract the compressor mechanism with a parallel motion, the drum 56 being turned either in one or the other direction to accomplish these purposes. Figure 29 illustrates a further modification of a so-called triple compression mechanism. The motion of the side bars 50 is somewhat on the order of those in Figure 27. Either end of the compression mechanism can be closed to exercise a compression upon the load. For simplicity in illustration and description, only one set of ropes is shown, but in practice the ropes illustrated in Figure 29 will be duplicated in order to properly perform the functions described.

A rope 244 is wound upon the drum 56, and has its rear end trained over single pulleys 245 and 246, respectively carried by the arms 247, 248 of the side bars 50, passed around a double pulley 249 carried by a rear guide 250, extended forwardly and passed around a triple pulley 251, twice around a double pulley 252, once around a second triple pulley 253, and finally connected at 254 with one of the side bars 50. The forward end of the rope 244 is passed twice around both the triple pulleys 253 and 251 before being extended rearwardly for passage around the double pulley 249 and finally connected at 255 to the same side bar 50. It will be borne in mind that with a duplication of the rope arrangement the ends of the companion to the rope 244 will be attached to the other side bar 50.

The front triple pulley 251 is carried by a guide 256. The double pulley 252 is carried by one of a pair of arms 257, 258 which correspond with the arms 247, 248. A proper turning of the drum 56 will close either the front or rear end of the compression mechanism.

The operation of the machine is as follows: Assume the field to be dotted with shocks as set up during harvesting. The shocks will be checked; that is to say, will stand at regular intervals apart. A pin will be set in one of the holes 259 of the quadrant 148 so that after a determined number of shocks have been speared by propelling the machine in a forward direction, a subsequent turn of the hand-wheel 146 and a corresponding turn of the machine in approximately a quarter circle will bring the pin into stopping engagement with the axle bar 143 and the machine in a position approximately 90° from that in which it started in readiness to unload the shocks in rick formation.

To load the machine, adjust the rear end of the beam 1 to the requisite height above the ground. This adjustment is determined by the run of the shocks. Low shocks must have a low adjustment of the beam 1, and vice versa. Lower the front end of the beam by pulling the lever 180 (Figure 18) rearwardly. This causes the worm gear 9 to revolve clockwise (Figure 1) for approximately a quarter circle. The cam 187 travels rearwardly at the same time, and when it engages the rear lug 192 will flex the lever 180 so that the tooth 183 is raised clear of the rack 184, permitting the stored tension in the vertical

component 185 (Figure 20) to automatically return the lever and the clutch element 178 (Figure 15) to the neutral position. Shift the lever 203 forwardly. This engages the element 200 (Figure 15) with the hub of the pinion 194 to propel the machine forwardly.

The compressor mechanism 49 (Figure 1) is raised. It stays so during the loading operation unless the operator should desire to pre-compress the load or dislodge some shock that may have become stuck somewhere along the main beam 1. Assume the main beam to have been loaded about half way and up to the point of the rope compressor 77. The operator thinks himself able to get another shock into this space. Shift the lever 168 forwardly. This clutches the pinion 164 (Figure 15) to the shaft 153 and turns the drum 56 counter-clockwise in the direction of the arrow 98 (Figure 27). As the compressor mechanism 49 is lowered, the side bars 50 travel rearwardly and close together by virtue of the resistance of the front of the load against the compressor 77. Having accomplished this pre-compression the lever 168 is reversed, and the reverse movements of the co-related parts restore the compressor mechanism to the original position in Figure 1. There will now be room for an additional shock in the region behind the compressor 77.

After the additional shock is admitted, the compressor mechanism 49 is again lowered and remains so until the load is completed. The retaining levers 120 now assume the dotted line position 126 (Figure 9). The crossed back prongs 122 will yield to let a single shock through and take up a position between the compressor 77 and the prongs which return to the crossed position. Another shock will be admitted into and held in the receptacle 124 (Figure 9). The pressure of this shock against the front base ends of the prongs 122 will close the levers 120 so that they assume the position 125. The crotch of the now crossed front prongs 121 will receive and hold the last shock during the continued forward motion of the machine. The pressure against the crotch will tend to apply compression forces to the side bars 50. Should a forwardly-leaning shock be encountered, the machine would be advanced thereupon and the compressor mechanism lowered and closed so that front tines, duplicates of the tines 64, may grip the shock and pull it to an erect position upon a reversal of the machine.

Assume that the place of unloading is now reached. The butts of the shocks drag upon the ground to some degree and the shocks may assume a forwardly inclined position by the time this place is reached. Unless there is some convenient fence or standing shock against which to push the load and straighten the shocks, the operator will use the loose angle-iron 35 (Figures 1 and 4) for the purpose. This iron is inserted behind the hook 34 and upon a reversal of the machine the load will be straightened. Raise the compressor mechanism 49. Reverse the machine. The main beam 1 will withdraw from the load, leaving the shocks standing in rick formation.

Re-loading is done for the purpose of removing the shocks from the field. The retaining levers 120 will now be removed. The rope compressor will be advanced along the compressor mechanism to a point at the front of the machine. After a rick is speared by the main beam 1 to pick up a load, the compressor mechanism 49 is lowered so that the compressor 77 assumes a position in front. The compressor 77 can then be used to straighten the load, or if it is preferred not to use the compressor mechanism 49 and compressor 77 for that purpose, the angle-iron 35 will be used to straighten the load, as already brought out.

Another use of the machine is that of a shock horse. In this instance, the first shock is built on both sides of the main beam 1. The troughs 8 support the butts of some of the stalks. After the shock is finished, any standard rope compressor will be used to tie the shock to the rear standards.

While on the subject of the use of the compressor mechanism 49, it may be stated that it is possible to elevate this mechanism to the position in Figure 1 by pulling on the hoisting ropes 99 (Figure 27) by hand. Preparatory to this, it is necessary to lower the compressor mechanism and to draw them rearwardly to some extent. It is upon reaching a rick that these ropes will be pulled upon by hand to raise the compressor mechanism. The ropes are then released to lower the compressor mechanism upon the rick, whereupon the machine is reversed for the purpose of compressing the rick. By reference to Figure 1, it will be understood that it is possible to balance the machine upon the tractor wheels 145. Upon shifting the compressor mechanism 49 to the rear into arresting position upon the member 261 the machine will be so balanced that it is readily turned in one or the other direction. At such time, either of the brakes 217 with which the differential shaft 151 is equipped will be pressed into use to lock either tractor wheel.

While the construction and arrangement of the improved shock handling machine is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. In a shock handling machine having a shock piercing and supporting beam, a framework upon which the beam is movably mounted, a carrier wheel having an arm movably connected with the beam, actuating

means to move the arm in reference to the beam and thus move the beam in reference to the ground and framework; means associated with the actuating means for limiting the movements of the arm in opposite directions thus limiting the movement of the beam in opposite directions.

2. A shock handling machine comprising a shock piercing and supporting beam, a bar located adjacent to one side of said beam arranged to engage a side of the shock, and means for pressing said bar against the side of the shock.

3. A shock handling machine comprising a shock piercing and supporting beam, a bar located at each side of said beam, means for actuating said bars in a lateral direction to perform closing and opening movements, and means for moving said bars in a vertical direction for presenting them to and removing them from the shock.

4. A shock handling machine comprising a shock piercing and supporting means, abutment means associated with the beam against which one of a series of shocks supported by the beam is rested, compressor mechanism comprising articulated side beams and cross arms, and means by which said beams and arms are moved into engagement with the shocks, moved in reference to the abutment means and moved in reference to each other to exercise lateral and longitudinal compressive forces upon the shocks.

5. A shock handling machine comprising a shock piercing and supporting beam, a bar so situated as to be operative against a side of a shock supported by the beam, and a retaining means carried by the bar for retaining the shocks as impaled by the beam.

6. A shock handling machine comprising a shock piercing and supporting beam, a compressor bar having means by which it is lowered and raised in reference to a shock supported by the beam, and retaining means movably and yieldably carried by the bar, including a prong extending across the beam and in the path of an incoming shock when said bar occupies the lowered position.

7. A shock handling machine comprising tractor wheels, a framework including a shock piercing and supporting beam extending to the front and rear of the wheels, a carrier wheel and a caster respectively at the front and rear of the framework, compressor mechanism normally assuming an operative position above said beam, at which time the carrier wheel engages the ground but being movable rearwardly to overbalance the framework so that the caster engages the ground, and independent brake mechanism associated with each tractor wheel for steering the machine when the front end of the framework is elevated.

8. In a shock handling machine, compressor mechanism comprising a pair of side bars, a span bar having racks to engage one or the other or both of the side bars to prevent them from spreading, a bracket attachable to one of the side bars to which bracket one end of the span bar is attachable when engaging the remote rack with the other side bar, and a lever fitted to the span bar and to said last-named side bar for exercising pressure to work said remote rack over the edge of said side bar.

9. In a shock handling machine, compressor mechanism comprising side bars, a rope attachable at one end to one of the side bars, and means for winding the other end of the rope to draw the side bars together and thus compress a shock.

10. In a shock handling machine, a shock piercing and supporting beam, an arm arranged on each side of said beam, and a hood disposed between said arms, said hood being inclined upwardly and forwardly and adapted to slide over a shock and raise said arms.

11. In a shock handling machine, a framework, shock supporting means, a horizontal swinging axle, a carrying wheel supported by said axle, and a guard mounted to swing with said axle arranged in advance of the wheel to engage a shock.

12. In a shock handling machine, a shock piercing and supporting beam, and a retainer located near the front end of said beam for supporting a bar and so designed that the turning of said bar will release the bar.

13. In a shock handling machine, a shock piercing and supporting beam, and a flange arranged on a side of said beam to engage sides of incoming stalks.

14. In a shock handling machine, a shock piercing and supporting beam and a platform arranged at one side of said beam to engage and support incoming stalks.

15. In a shock handling machine, a shock piercing and supporting beam, a bar arranged adjacent to one side thereof, shock engaging means carried by said bar, and means by which said shock engaging means is moved longitudinally of said bar.

16. In a shock handling machine, a shock piercing and supporting beam, shock retainer means located near one end of said beam, and means for tripping said retainer means to release the shocks.

17. In a shock handling machine, a shock piercing and supporting beam, a shock retainer overhanging said beam, and means for lowering said retainer into engagement with the shock to hold the shock on said beam.

18. In a shock handling machine, a shock piercing and supporting beam, a bar arranged adjacent to one side thereof, a prong projecting obliquely from said bar in engaging position with incoming shocks, and means for movably mounting the prong upon said bar.

19. In a shock handling machine, a shock piercing and supporting beam, a bar ar-

ranged adjacent to one side thereof, and a prong projecting from said bar, being yieldable when brought into contact with incoming shocks.

20. In a shock handling machine, shock supporting means, compression means to be engaged with a shock on said supporting means, and means to move the compressor means toward the shock and thus advance the shock along the supporting means.

21. In a shock handling machine, shock supporting means, an abutment associated with said supporting means, compressor means, suspension means by which the compressor means is held above the supporting means to clear the shocks during rick formation, and means to act upon the suspension means first to lower the compressor means into engagement with the shock then move the compressor means longitudinally of the supporting means to compress the shock against the abutment.

22. In a shock handling machine, a shock supporting beam, a cable secured to said beam, a pin carried by said cable, and a drum having a hole in a portion thereof for the reception of said pin.

23. In a shock handling machine, a shock supporting beam, means for moving the machine for the purpose of loading shocks on said beam, means for reversing the movement of the machine for the purpose of moving the shocks, a steering mechanism, a shaft for operating said mechanism, and a seat mounted to turn with said shaft as a fulcrum.

24. In a shock handling machine, a shock supporting beam, and a bar connected near the rear end of said beam and having a free forward end adapted to be moved against the sides of incoming shocks.

25. In a shock handling machine, a shock supporting beam, mechanism for steering the machine, and means for regulating the turning radius of the machine.

26. In a shock handling machine, shock supporting means, a bar arranged adjacent to one side of said means, and an arm projecting from said bar adapted to be engaged by a shock, said engagement moving a portion of said bar closer to said beam.

27. In a shock handling machine, shock supporting means, a bar arranged adjacent to each side of said means, a compressor connected to one of said bars, and means for connecting said compressor to the other bar.

28. In a shock handling machine, shock supporting means, a bar arranged adjacent to one side of said means, and means for adjusting said bar laterally.

29. In a shock handling machine, shock supporting means, a bar arranged adjacent to one side of said means, and a spring adapted to press said bar laterally.

30. In a shock handling machine, shock supporting means, a bar located adjacent to one side of said means, and a compressor member connected to said bar.

31. In a shock handling machine, shock supporting means, a projecting bar arranged adjacent to each side of said means, and means spanning said bars for keeping said bars from spreading.

32. In a shock handling machine, shock supporting means, a rotary member, a cable connected to said supporting means, and means for hitching said cable to said rotary member.

33. In a shock handling machine, a shock supporting beam, an auxiliary shock supporting beam arranged above said beam, and a guard member located between said beams.

34. In a shock handling machine having a shock supporting beam, and a carrier wheel having an arm movably connected with the beam; driving apparatus connected with said arm for moving it with reference to said beam and so raise or lower the beam, a source of driving power for said apparatus, and unclutching mechanism under control of the driving apparatus for self-disconnection of said driving apparatus from its power source when the beam reaches the limits of its raising and lowering movements.

35. In a shock handling machine having a shock supporting beam, and a carrier wheel having an arm movably connected with the beam; driving apparatus connected with said arm for moving it with reference to said beam and so raise or lower the beam, a source of driving power for said apparatus, clutch mechanism for connecting said apparatus with the power source, and means constituting a stop arrangement which becomes operative after a period of operation of said driving apparatus then to disconnect the clutch mechanism and so stop the movement of said arm.

36. In a shock handling machine having a shock supporting beam, and a carrier wheel having an arm movably connected with the beam; driving apparatus connected with said arm for moving it with reference to said beam and so raise or lower the beam, a source of driving power for said apparatus, clutch mechanism, a lever shiftable in one direction for connecting the clutch mechanism with said power source thus to operate the driving apparatus, and a cam member which is advanced with reference to the lever during the operation of said apparatus to cause a reverse shift of said lever and a disconnection of said clutch mechanism thereby to stop the movement of said arm.

37. In a shock handling machine having a shock supporting beam, and a carrier wheel having an arm movably connected with the beam; driving apparatus connected with said arm for moving it with reference to said beam and so raise or lower the beam, a source of driving power for said apparatus, clutch