E. PITCHER.

SHOCK LOADER.

APPLICATION FILED JUNE 23, 1915.

1,258,142.

Patented Mar. 5, 1918.

5 SHEETS—SHEET 1.

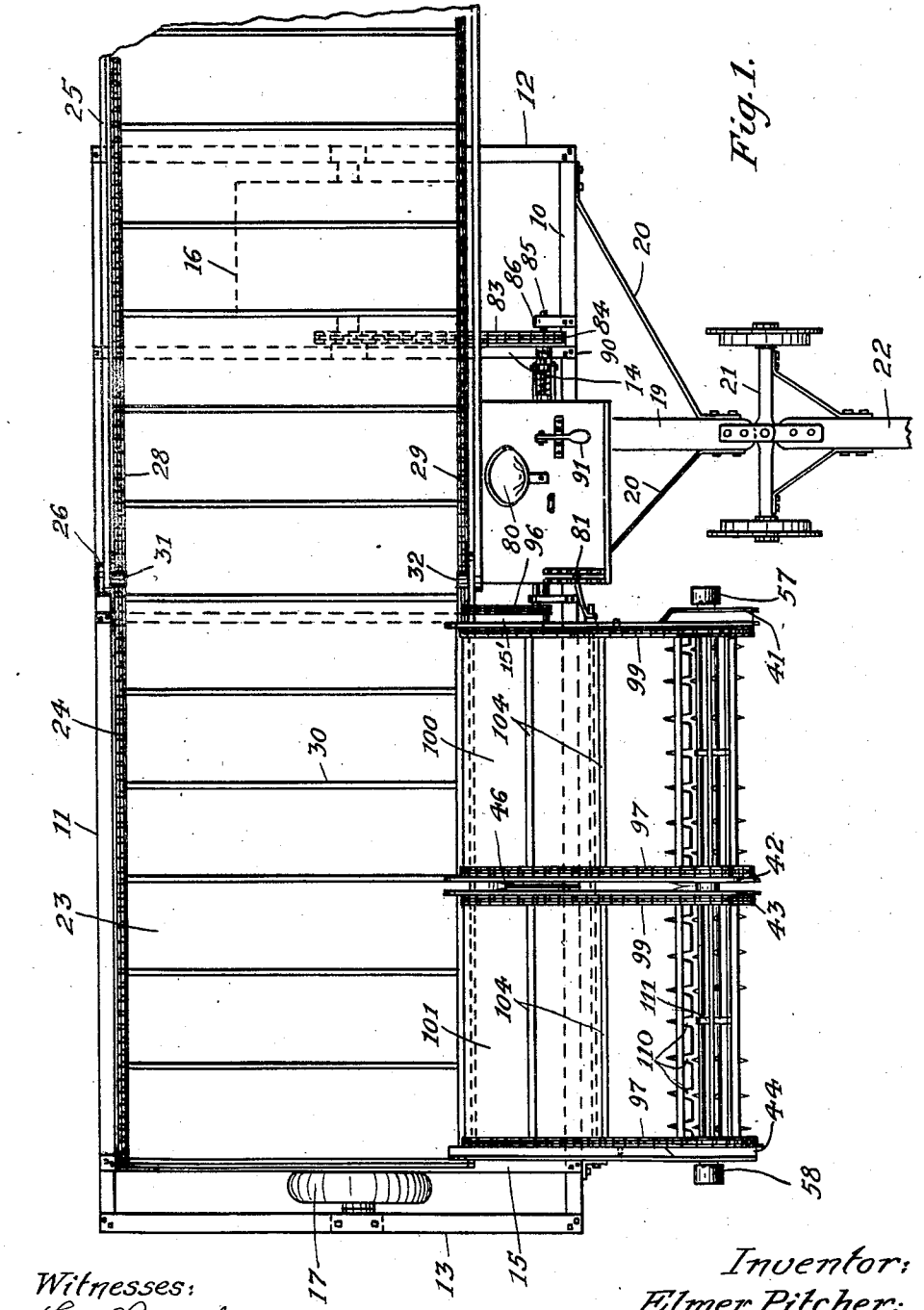


Fig. 1.

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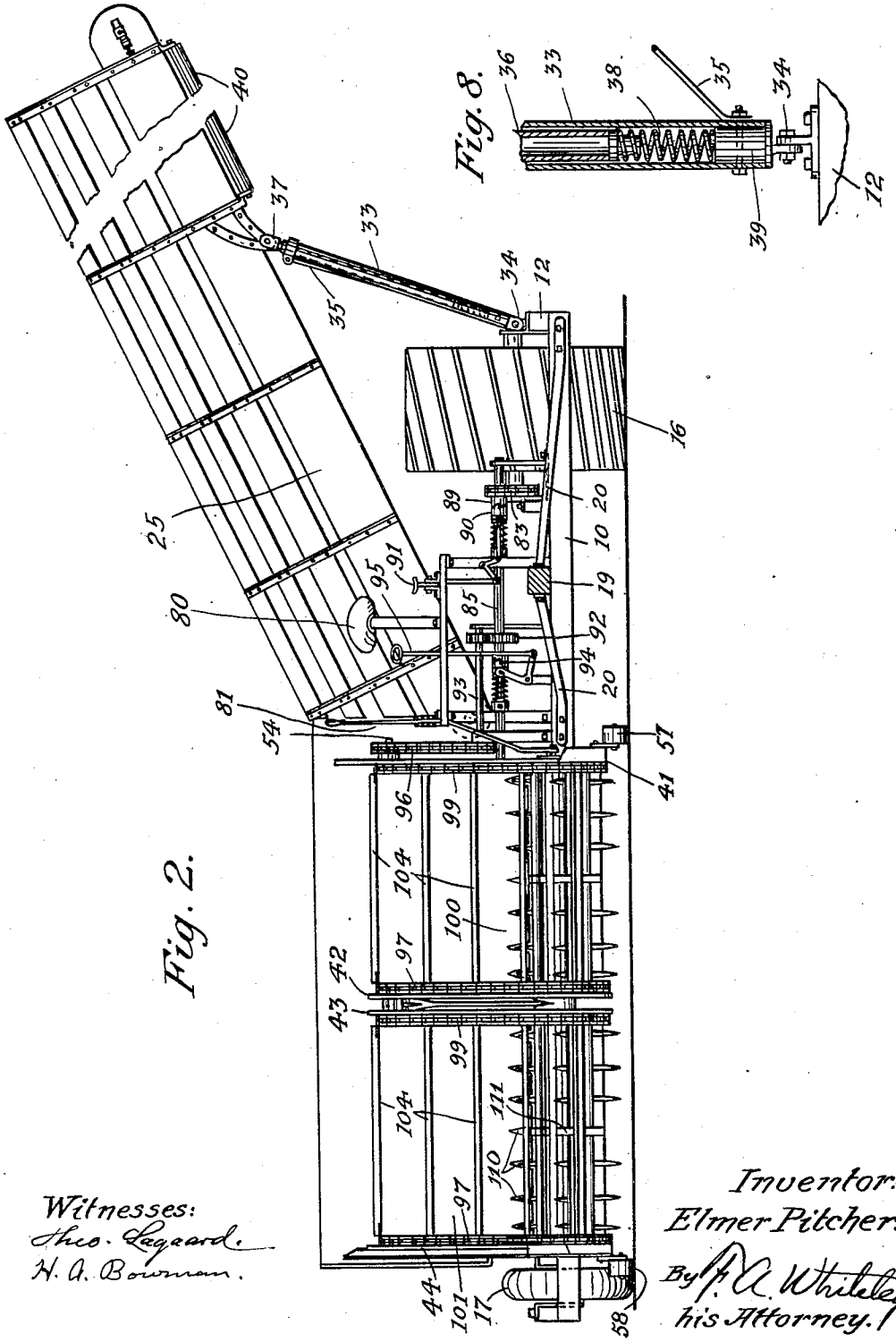


Fig. 2.

Fig. 8.

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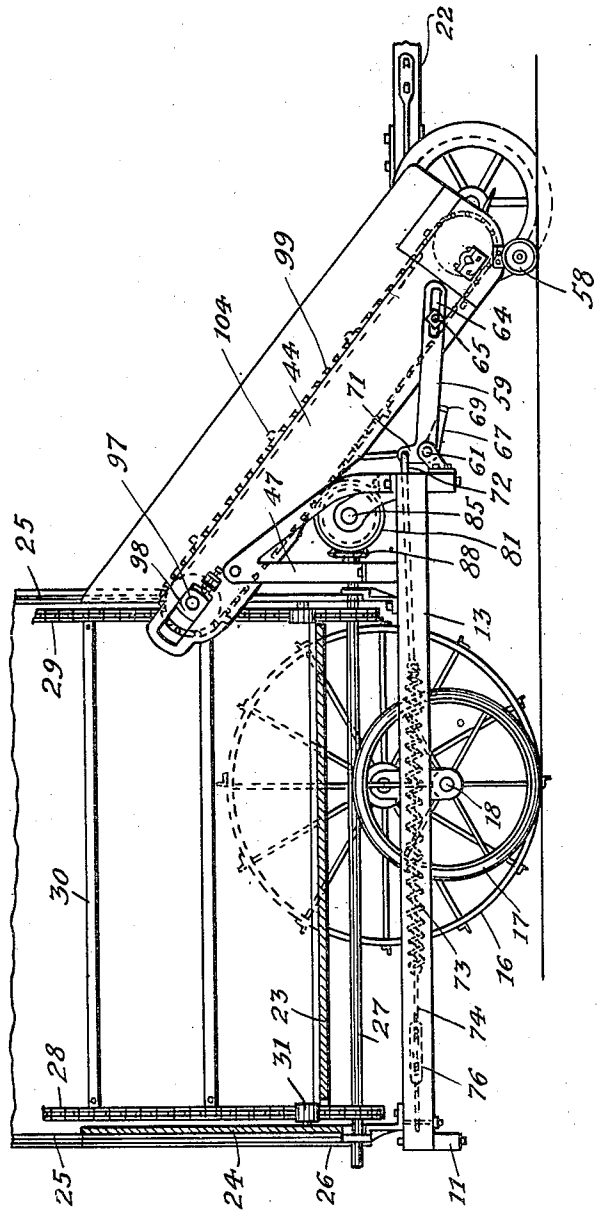
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5 SHEETS—SHEET 3.

Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 6.

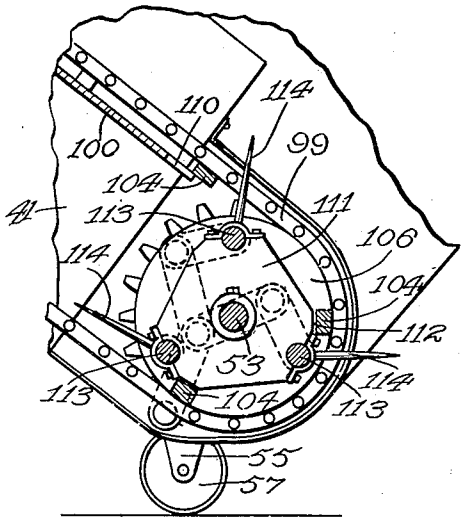


Fig. 7.

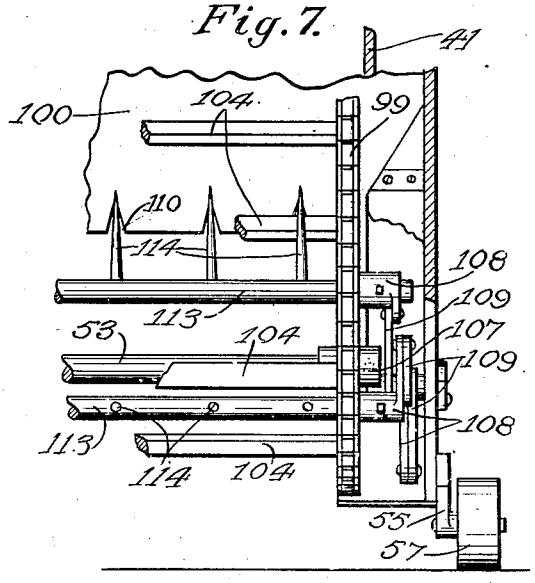


Fig. 4.

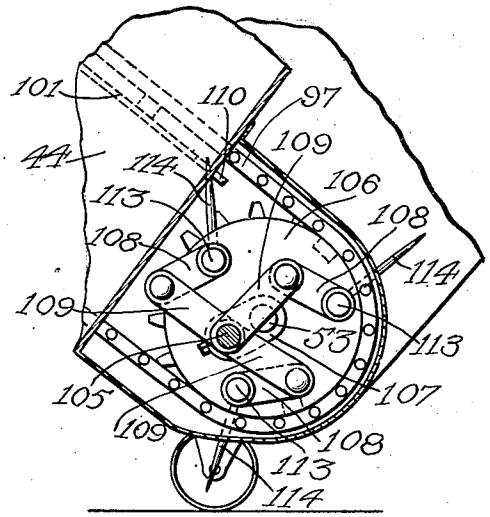
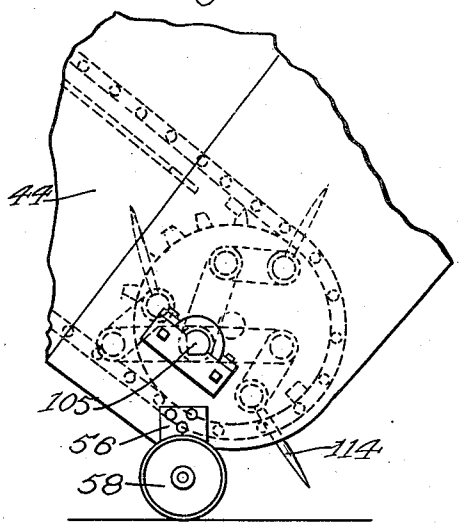


Fig. 5.



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5 SHEETS—SHEET 5.

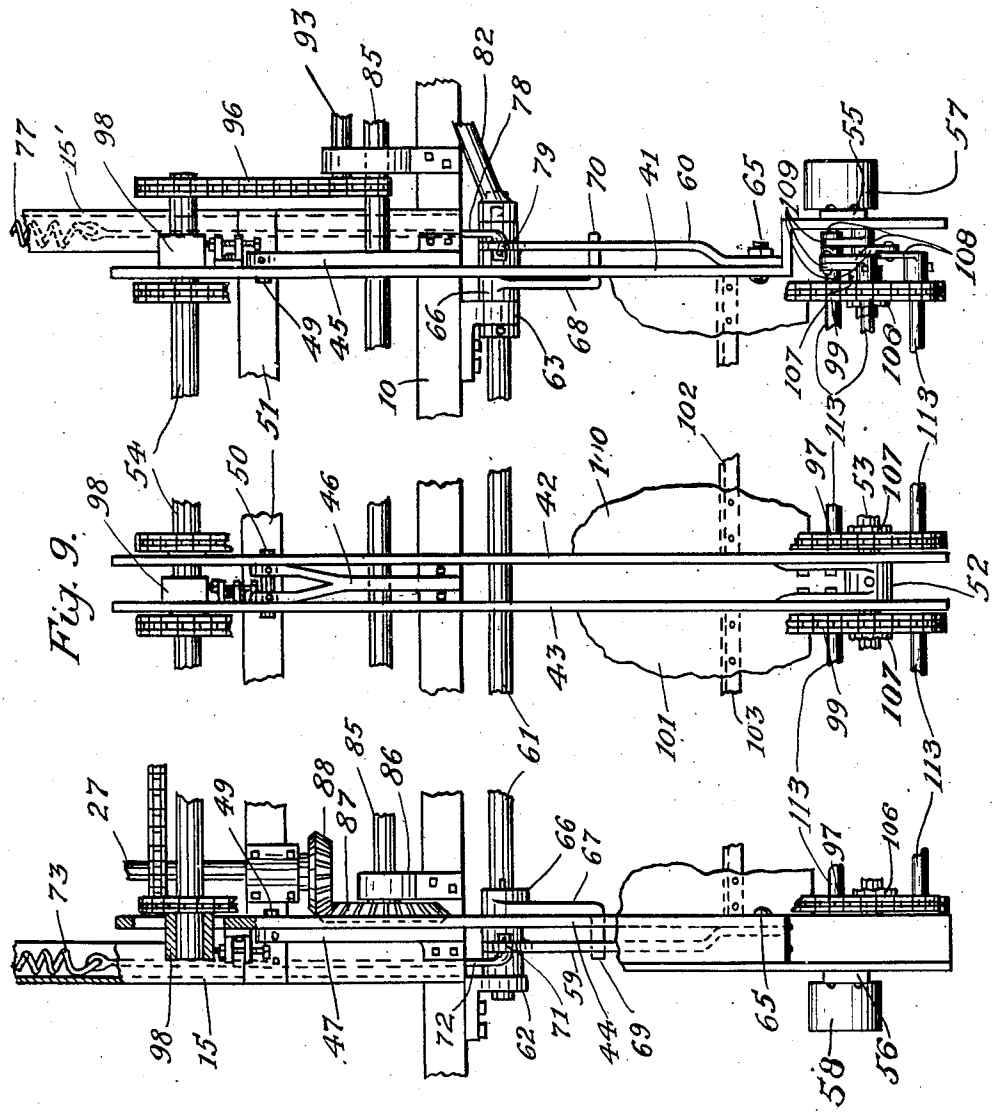


Fig. 9.

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UNITED STATES PATENT OFFICE.

ELMER PITCHER, OF MINNEAPOLIS, MINNESOTA.

SHOCK-LOADER.

1,258,142. Specification of Letters Patent. Patented Mar. 5, 1918.

Application filed June 23, 1915. Serial No. 35,831.

To all whom it may concern:

Be it known that I, ELMER PITCHER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Shock-Loaders, of which the following is a specification.

My invention relates to shock loaders and has for its object to provide improved means for supporting the pick-up platform and a novel and highly efficient device for engaging the shocks and lifting them bodily upon the pick-up platform. My invention also includes a novel and efficient organization of elements for connecting the pick-up and elevating platform with the draft mechanism and supporting the same for convenient discharge of the shocks.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and are particularly pointed out in the claims.

In the drawings, illustrating the application of my invention in one form—

Figure 1 is a plan view of a shock loader embodying my improvements with a portion of the elevating conveyer broken away. Fig. 2 is a front elevation of my shock loader. Fig. 3 is a side elevation of the shock loader with the elevating carrier broken away. Figs. 4, 5 and 6 are enlarged sectional views taken through the shock lifting mechanism showing the same in different operative positions. Fig. 7 is an enlarged front view of some of the parts shown in Fig. 4. Fig. 8 is a fragmentary part sectional view of the support for the elevating conveyer chute. Fig. 9 is an enlarged plan view of the pick-up mechanism with some parts removed.

As illustrated, I provide a main frame substantially rectangular in cross section consisting of front and rear channel beams 10 and 11, end channels 12 and 13 and intermediate channels 14, 15 and 15'. A bull-wheel 16 is journaled between channels 12 and 14 adjacent one end of the frame and a supporting wheel 17 is journaled in brackets 18 depending from the frame members 13 and 15. Upon these two wheels 16 and 17 the entire weight of the machine is supported. A drawbar or beam 19 is rigidly secured to beam 10 both directly and by means of braces 20. Pivotally connected with the end of the draw-beam 19 is a wheeled truck 21 having a tongue 22 to which the necessary number of horses, usually four horses, are hitched in any well known way. The draft thus applied to the end of drawbar 19 will draw the machine either straight ahead or about either wheel 16 or 17 as a pivot in turning the machine to the right or to the left.

The various instrumentalities comprising the shock lifting and loading mechanism are supported upon the frame construction above described. These comprise a horizontal platform 23 having a rear wall 24 and an elevator frame 25 having its side walls pivotally connected at 26 on a shaft 27 journaled transversely of frame members 10 and 11. The endless conveyer comprising sprocket chains 28 and 29 and connecting slats 30 runs over the platform 23 and the floor of elevator 25, being guided over rollers at the ends of said frame and platform in the usual way, said conveyer passing under guide rollers 31, 32 at the point of junction between platform 23 and the platform of conveyer 25. The conveyer 25 is supported from frame member 12 by a yielding device consisting of a pair of tubular members 33 each having a pivotal connection, as indicated at 34, with member 12 and being cross-braced together by means of brace rods 35 bolted to the top and bottom, respectively, of the tubular members 33. Within each of the tubular members 33 is slidably positioned a rod or tube 36 which is connected by a swivel joint 37 with a bracket fast on frame 25. The rods 36 slide within the tubular members 33 and engage at their bottoms with compression springs 38 between the ends of rods 36 and a plug 39 in the bottom of tube 33. The conveyer frame 25 is thus yieldingly supported in an obliquely upwardly extending direction which prevents undue shock or jar when the bull-wheel of the machine passes over obstructions or drops into depressions as the machine is driven over the field. Rollers 40 are mounted upon the edges of carrier frame 25 in position to engage the top of the rack of the wagon receiving the grain so as to roll along the same and prevent damage to either the shock loader or the wagon rack.

The pick-up frame, as shown in detail in Fig. 9, comprises a plurality of frame bars, here shown to be four in number, 41, 42, 43 and 44, respectively, supported upon brackets 45, 46 and 47, the frame bars 41 and 44 being at the ends and pivoted at 48 and 49,

respectively, to brackets 45 and 47, while the frame portions 42 and 43 are intermediate and are pivoted at 50 to the bifurcated end of the common bracket 46. The brackets are of the character indicated in Fig. 3, the end brackets being supported upon the frame pieces 15 and 15′ as well as upon the longitudinal frame member 10, and a second longitudinal frame member 51 which extends between members 15 and 15′, as best shown in Fig. 9. The intermediate bracket 46 is supported upon longitudinal frame members 10 and 51. The pivots 49 and 50 are, of course, in a line so that the frame members are adapted to oscillate about a common center. The intermediate frame members 42 and 43 are rigidly joined by a casting 52. A lower shaft 53 extends through and is journaled in the frame pieces 42 and 43, and is also journaled in supporting arms 107 fast to stub shafts 105, which shafts are V-shaped at their ends and are clamped in the frame members 41 and 44, as shown in Figs. 3 and 4. An upper shaft 54 is also journaled in the upper portion of the frame pieces 41, 42, 43 and 44 above the pivots 49 and 50. By these means the several frame pieces are held in substantial alinement and yet there will be a slight flexibility from one frame piece to another. The end frame pieces 41 and 44 each have secured to the lower portion thereof a bracket 55 and 56 to which are journaled broad-faced supporting wheels 57 and 58. The lower ends of the frames would be supported upon the ground from these wheels if it were not for the fact that nearly all of the weight of the forward end of the frame is sustained by yielding means which I will now describe.

As best shown in Figs. 3 and 9, links 59 and 60 are loose upon a rock shaft 61 journaled in ears or extensions 62 and 63 secured to longitudinal frame member 10. The links 59 and 60 are provided with slots 64 through which extend bolts 65 secured to frame members 41 and 44. The frame members 41 and 44 are thus adapted to be supported by the links 59 and 60 but are not rigidly secured thereto. Fast on shaft 61 are mounted the hubs 66 of arms 67 and 68 having projections 69 and 70 extending beneath the lower edges of links 59 and 60. Fast on the link 59 is an arm 71 with which is connected a bolt 72 which in turn is connected to a very stiff spring 73. The spring 73 extends alongside of crossbar 15 between bolt 72 and another bolt 74 secured to frame member 15 at a point near its junction with longitudinal member 11, said bolt 74 being provided with a turnbuckle 76 for regulating the tension of spring 73. Similarly, a spring 77 operates through a bolt 78 connected with a projecting arm 79 on the link 60, and spring 77 is tensioned by a turnbuckle similar to that shown in respect to spring 73. It is apparent that only one of the springs mentioned and connection may be employed if desired. The tension of such spring or of the springs 73 and 77, where both such are used, should be regulated so that the effect of such springs will tend to swing links 59 and 60 upwardly with a force sufficient to almost neutralize the weight of the forwardly extended frame members and the parts carried thereby. Thus the wheels or rollers 57 and 58 will be permitted to contact with the ground, but no more, and therefore the platform carried by the frame members is adapted to be passed readily over irregularities and depressions in the ground as the machine is driven in position to pick up the succeeding shocks.

Adjacent the driver's seat 80 is a hand lever 81 which is connected at its lower end, as indicated at 82, with the shaft 61. By this means the shaft 61 may be rotated, which, by swinging of links 59 and 60 through arms 67 and 68, will lift the connected frame bars 41, 42, 43 and 44 into an elevated position, which may be desirable in moving the machine to and from the field.

The driving mechanism is operated from the bull wheel 16 by means of a sprocket chain 83 which runs over a sprocket wheel 84 on a drive shaft 85. The drive shaft 85, as indicated in Fig. 9, is journaled in brackets 86 secured to frame member 10, and said shaft extends entirely across the carrier frames beneath the same and has thereon a beveled gear 87 meshing with a beveled gear 88 on shaft 27 by which the elevator carrier chains 28 and 29 are operated. The sprocket wheel 84 has fast thereon a clutch 89 and is geared to rotate shaft 85 by means of a clutch member 90 splined to said shaft which is operated by a foot lever 91, as best indicated in Fig. 2. Loose on shaft 85 is also a spur gear 92 in mesh with a spur gear on a short shaft 93, the spur gear 92 being clutched to rotate with shaft 85 by means of clutch member 94 controlled by a pull lever 95 near the seat 80. The shaft 93 has thereon a sprocket wheel over which runs a sprocket chain 96 which runs over a sprocket wheel on shaft 54 journaled in adjustable boxes 98 mounted in the frame members 41, 43 and 44 at the top of said members. The shaft 54 is therefore constantly driven from shaft 93 by means of sprocket chain 96 and may be disconnected by means of clutch 94 while the carrier and elevator devices at the rear continue to operate. Upon the shaft 54 are a series of sprocket wheels over which run pairs of sprocket chains 97, 99 which run over a corresponding series of sprocket wheels 106 on shaft 53. The sprocket chains 97, 99 run upon the top of platform 100, 101 secured between the pairs of frame

pieces 41, 42, and 43, 44, respectively, being supported by crossbars 102, 103, as best shown in Fig. 9. The pairs of sprocket chains 97, 99 have secured thereto a plurality of carrier bars or slats 104 for moving shocks up the platforms 100, 101 and discharging them over the tops of the same upon the elevating carrier platform 23 where they may be moved to the discharge end of the elevator by carrier bars 30.

As shown in detail in Figs. 4, 5, 6 and 7, the shaft 53 carries pairs of sprocket wheels 106 rigidly attached thereto. Two sets of three rods 113 are journaled and equilaterally spaced in the sprocket wheels 106 and carry at equally-spaced intervals along their lengths picker teeth 114. These picker teeth are of the shape shown in Figs. 4 and 7, being circular and tapering. Rods 113 extend beyond sprocket wheels 106 and terminate in arms 108 fast thereon. Arms 108 are pivotally connected by means of links 109 to the stub shafts 105. The relative positions and the operation of these parts is clearly shown in the drawings, where Figs. 4, 5 and 6 show the picker teeth 114 in three different positions. As these teeth come from in under the pick-up frame they have a forwardly-extending scooping position and are in a position to pick up the bundles. As the sprockets revolve said teeth are revolved with them and gradually tilted forward, positively taking the shocks with them in such a manner as to cause them to be deposited on the elevating carrier belts 104. Picker teeth 114 are now almost radially withdrawn from the shocks without tearing them to pieces and submerged beneath the platforms 100 and 101 in slots 110. Beneath platforms 100 and 101 picker teeth 114 are rapidly turned about to occupy the previously-described pick-up position. These various operations are positively and effectually carried out by means of the crank and link mechanism thus described attached to picker teeth rods 113. When rods 113 are constructed very long they are supported and journaled in additional bearings 111 fast to shaft 53. These bearings also serve as supports at the points 112 for the slats 104 where there is considerable strain in receiving the shocks prior to said slats reaching the platforms 100 and 101.

The advantages of my invention are manifest. The supporting of the weight of the pick-up platform by means of the springs 73 and 77, where both springs are employed, makes little or no weight upon the wheels 57 and 58 so that there is almost no side draft at all to the machine, since the added weight and tractive force upon the bull-wheel 16 equalizes the offset position of the side supporting wheel 17. The weight of the elevator carrier is directly supported upon the bull-wheel, which gives greatly added stability and effective construction for handling. The pick-up mechanism requires little power to operate, is positive and certain in its action. The bars 112, 113 are of spring material, which, together with the fact that the end of the carrier frames supporting said bars is held almost free of the ground, makes it practically impossible for any injury to occur to the machine by reason of engagement with the fingers 114 with stones, stumps or other obstructions in swinging from the position shown in Fig. 4 to that shown in Fig. 6. If any obstacle is encountered the finger-carrying bars will spring the frames upwardly so as to pass over the obstacle.

I claim:

1. A shock loader comprising a wheeled frame, a pick-up member pivotally connected at one end to said wheeled frame, a rock shaft journaled in said wheeled frame, a slotted link loosely mounted on said rock-shaft, a projection extending from the side of the pick-up member into the slot of said link, an arm secured to said rock-shaft, an off-set end on said arm extending beneath said link, an arm on said link at the end thereof opposite the slot, a spring connected at one end to said second arm, means for connecting the other end of the spring to said wheeled frame whereby the weight of the pick-up member is sustained by said spring and a hand lever secured to said rock-shaft.

2. A shock loader comprising a pick-up frame, a shaft journaled in one end thereof, sprocket wheels secured to said shaft, a plurality of rods extending loosely through said sprocket wheels, arms secured to the ends of said rods, stub shafts rigidly secured to the said pick-up frame, links connecting said arms to said stub shafts, picker teeth secured to each of said rods, and means for rotating said sprocket wheels.

3. A shock loader comprising a wheeled frame, a pick-up frame pivotally connected at one end to said wheeled frame, a shaft journaled in the other end of said pick-up frame, sprocket wheels secured to said shaft, a plurality of rods extending loosely through said sprocket wheels, arms secured to the ends of said rods, stub shafts rigidly secured to the said pick-up frame, links connecting said arms to said stub shafts, picker teeth secured to each of said rods, and means for rotating said sprocket wheels.

In testimony whereof I affix my signature in presence of a witness.

ELMER PITCHER.

Witness:

H. A. BOWMAN.