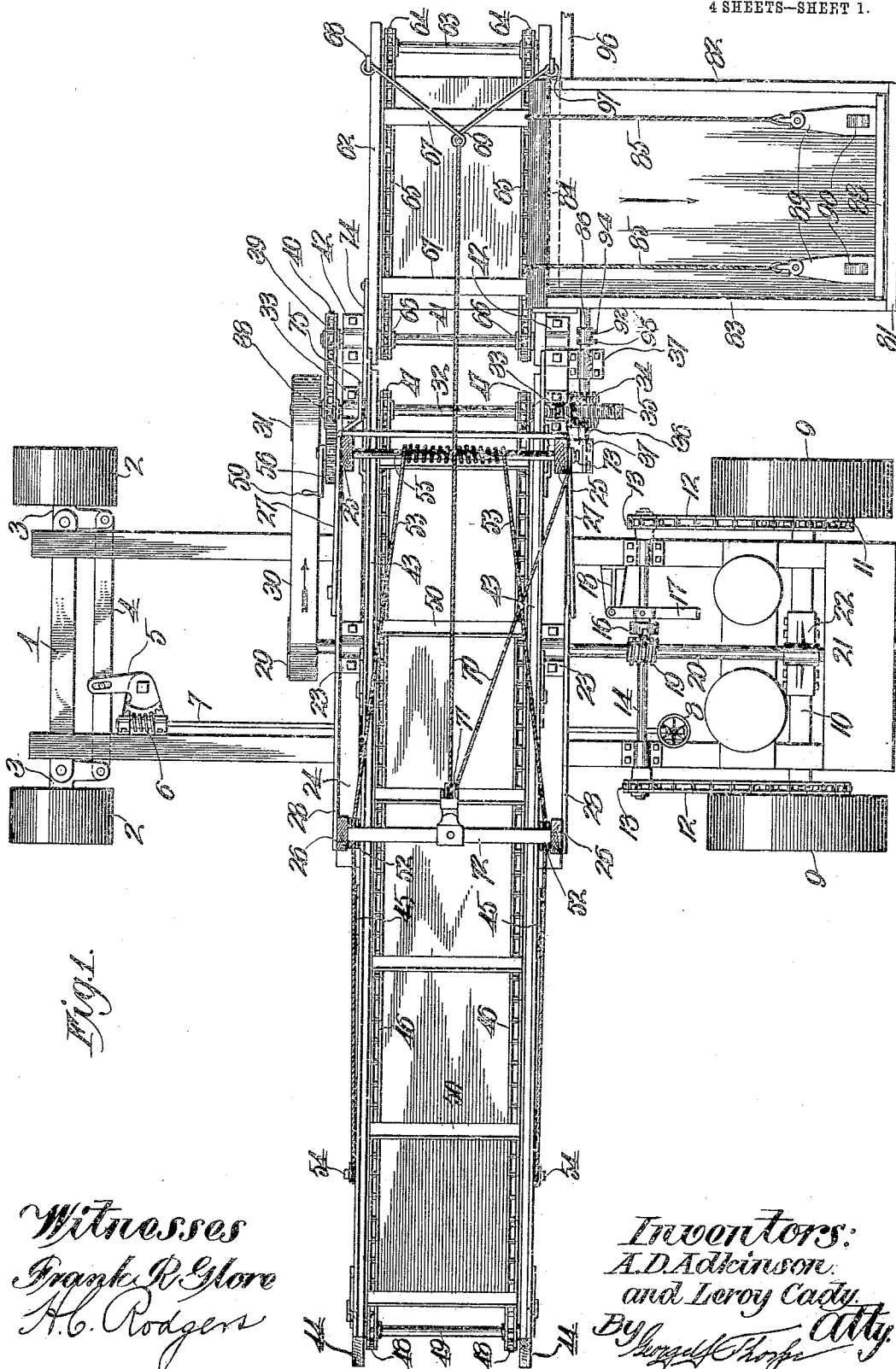


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GRAIN STACKING APPARATUS.
APPLICATION FILED MAR. 29, 1909.

953,679.

Patented Apr. 5, 1910.

4 SHEETS—SHEET 1.



Witnesses
Frank P. Glor
H. C. Rodgers

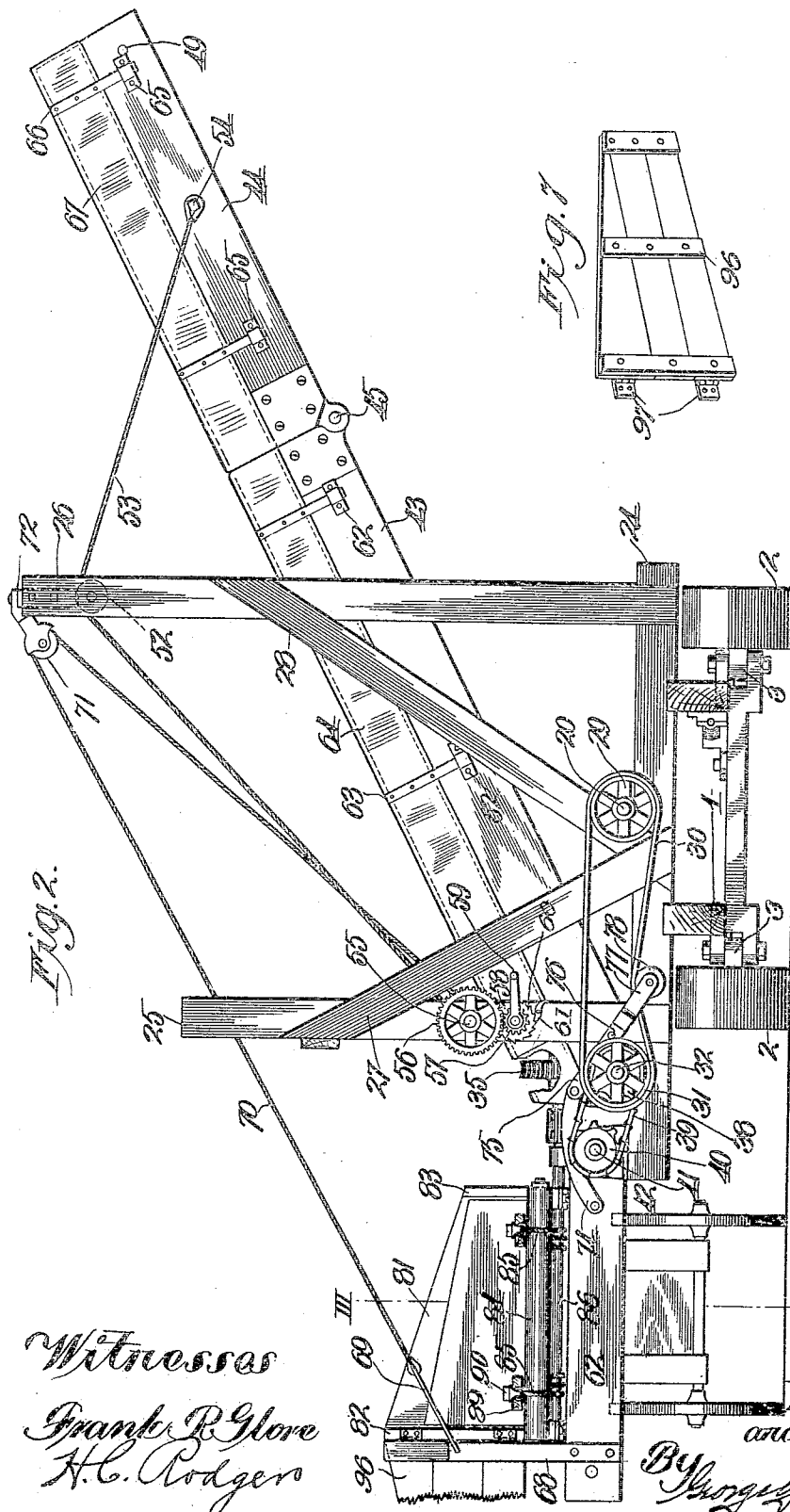
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Witnesses
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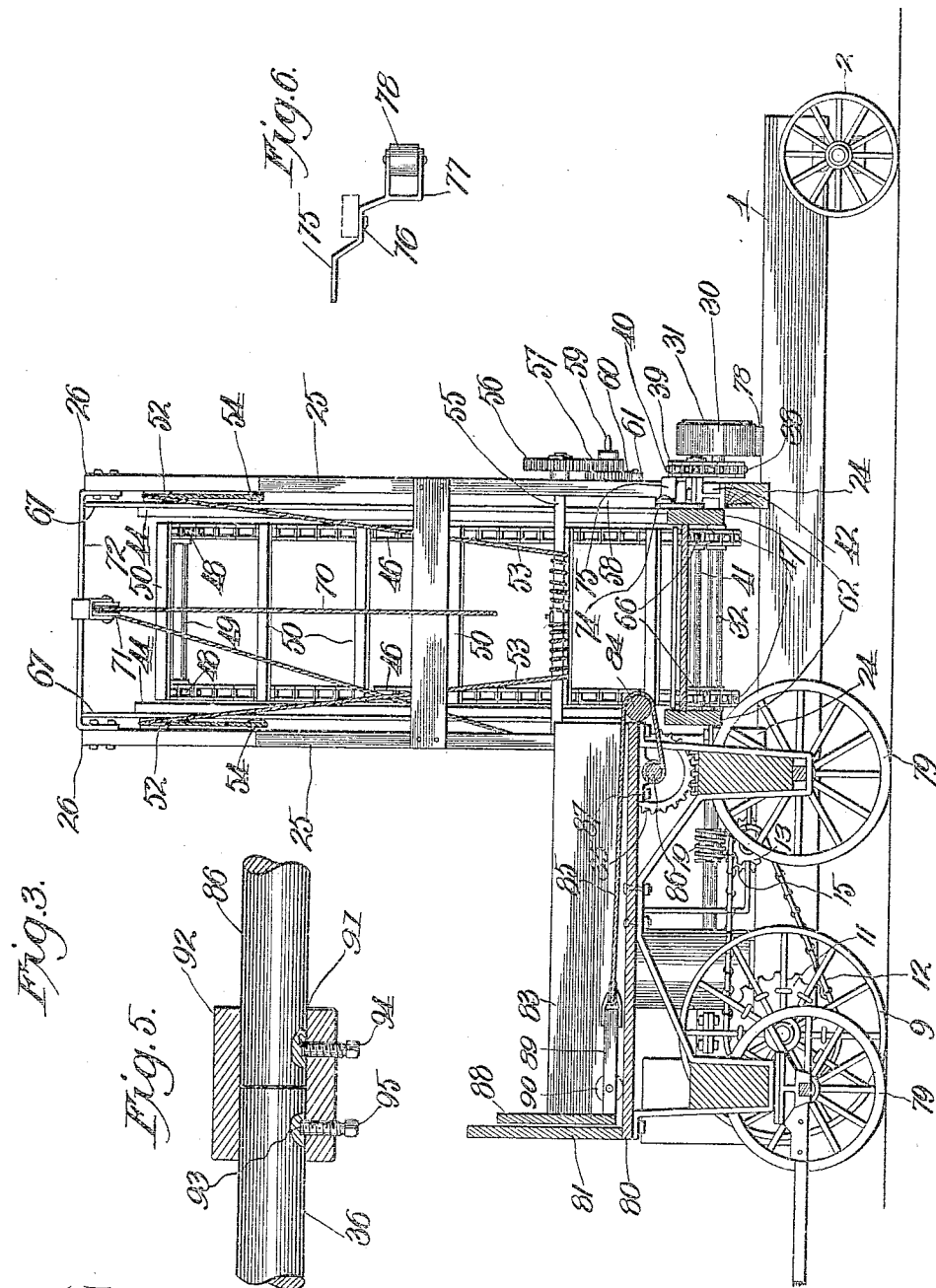
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4 SHEETS—SHEET 3.



Witnesses
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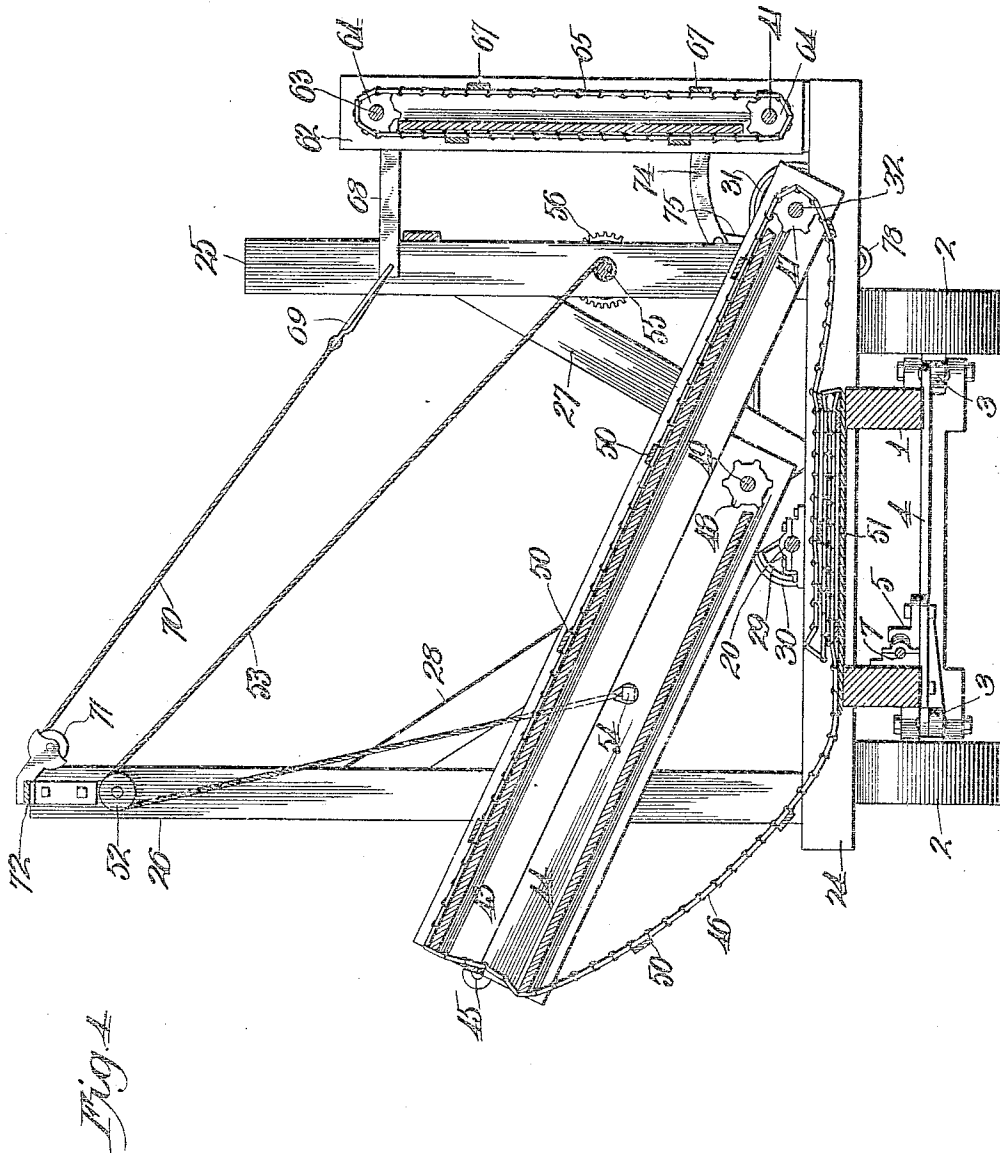
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4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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GRAIN-STACKING APPARATUS.

953,679.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed March 29, 1909. Serial No. 436,607.

To all whom it may concern:

Be it known that we, ALPHEUS D. ADKINSON and LEROY CADY, citizens of the United States, residing at Glasco, in the county of

Cloud and State of Kansas, have invented certain new and useful Improvements in Grain-Stacking Apparatus, of which the following is a specification.

This invention relates to hay stacking or loading apparatus and has for its object to produce a portable stacker equipped with a pivoted elevator and means for adjusting same to discharge at different altitudes and composed of sections which may be folded together for convenience of transportation or storage.

A further object is to produce a stacker of the character outlined, equipped with a conveyor adapted to occupy an operative or inoperative relation to the stacker and which when in operative position, will efficiently and reliably supply the elevator with the material to be stacked.

A still further object is to produce a header box, means whereby the header box may be secured in operative relation to the stacker, and means whereby the load of the header box may be automatically discharged onto the conveyor.

A still further object is to produce apparatus of the character outlined of comparatively simple and inexpensive construction, and which also possesses the desirable features of strength and durability.

With these and other objects in view, the invention consists in certain novel and peculiar features of construction and organization as hereafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which;—

Figure 1, is a top plan view of a stacker embodying our invention, and a header box especially adapted for use in connection with the stacker. Fig. 2, is a front view of the apparatus shown in Fig. 1. Fig. 3, is a vertical section on the line III—III of Fig. 2. Fig. 4, is a vertical transverse section of the stacker with the elevator folded and the conveyor in inoperative position, the section being taken through the elevator and conveyor. Fig. 5, is an enlarged section showing the adjacent ends of the winding drum or shaft of the feeder box and a shaft

of the stacker. Fig. 6, is a top plan view of a belt-tensioning lever. Fig. 7, is a detail perspective view of the end-gate of the header-box.

In the said drawings, 1 indicates a wheeled-truck of any suitable type, but preferably having its front wheels 2 journaled on bell-cranks 3 suitably mounted and connected by a cross bar 4 to compel the wheels to turn sidewise together, bar 4 having a pin-and-slot connection with a worm-threaded lever 5 suitably mounted and adapted to be turned to adjust said wheels sidewise by the worm 6 of a shaft 7 adapted to be turned through any suitable gearing, not shown, by the steering-wheel 8. The rear wheels 9 are rigidly secured on the ends of a suitably journaled rear shaft 10, equipped with sprocket wheels 11 connected by chains 12 with sprocket wheels 13 on a suitably-journaled transverse shaft 14.

15 is a worm-wheel journaled on shaft 14 and provided with an ordinary clutch-member, not shown, adapted to be engaged by a companion clutch-member 16 mounted in the usual manner to slide but not rotate on shaft 14, and adapted to be thrown into or out of gear with the worm-wheel 15 by the hand-lever 17, fulcrumed on a bracket 18 carried by the truck.

19 is a worm meshing with and adapted to rotate worm-wheel 15 and hence when the clutch members are in engagement, propel the wheeled-truck. Worm 19 is mounted on the longitudinal shaft 20 of a suitable engine 21 mounted on the truck, said shaft being journaled at one end in a bearing 22 journaled on shaft 10 or otherwise supported. It is also journaled in a pair of bearings 23 mounted on the base of a derrick carried by the truck, the base of said derrick being numbered 24 and the standards at opposite ends of the same, 25 and 26, the latter attaining a greater altitude than the former, and said standards are respectively braced by inclined brace-bars 27 and 28.

Mounted upon the front end of shaft 20 is a belt-wheel 29, connected by a belt 30 to a second belt-wheel 31 on the front end of a shaft 32 journaled in bearings 33 mounted upon the base of the derrick. Secured on the opposite end of shaft 32 is a worm 34 meshing with a worm-wheel 35

on a short transversely-arranged shaft 36 journaled in bearings 37 carried by the base of the derrick. A shaft 32 also carries a sprocket wheel 38 connected by a chain 39 with a sprocket wheel 40 on a shaft 41 journaled in bearings 42 mounted on the adjacent extremity of the base of the derrick.

An inclined elevator for stacking or loading hay at varying altitudes as hereinafter explained, consists of a pair of frames 43 and 44 of U-shape in cross section and arranged end to end and hinged together at 45, so that the extension frame 44 may fold back under the main or body frame 43. The said frames are equipped with an endless conveyer, consisting of a pair of endless chains 46 engaging a pair of sprocket wheels 47 on shaft 32 and a pair of sprocket wheels 48 on a shaft 49 extending across the free end of frame 44 beyond the bottom of said frame, the chains extending completely around the bottoms of said frames and being connected together by cross slats 50, which slats in their travel in the frames are adapted to carry hay or other material and discharge the same from the upper end of frame 44. When the elevator is folded to inoperative position, that is when frame 44 is folded back under frame 43 as shown in Fig. 4, the slack in the chains is adapted to be taken up by folding or doubling it below the elevator and resting the folded or doubled portion upon a plate 51 bridging the truck.

52 indicates a pair of guide-sheaves carried by and at the inner sides of the upper ends of standards 26, and engaging said sheaves are cables 53 secured at their outer ends at 54 to frame 44, and at their inner ends in standards 25. Said shaft or drum is equipped at one end with a gear-wheel 56 meshing with a gear-pinion 57 secured on a short shaft 58 journaled in one of the standards 25 and provided with a crank-handle 59. Shaft 58 is also equipped with a ratchet-wheel 60 engaged by a gravity pawl 61 carried by the said standard, said ratchet-wheel and pawl permitting the winding of the cables on the drum but preventing unwinding movement unless the pawl is tripped from engagement with the wheel. By the manipulation of the crank-handle in the proper direction, the cables 53 are wound upon the drum and the outer end of the elevator is raised.

Pivoted on shaft 41 is a frame 62 carrying a shaft 63 at its opposite end, having a pair of sprocket-wheels 64 connected by chains 65 to sprocket-wheels 66 on shaft 41, and connecting the chains are cross-slats 67 so as to constitute an endless conveyer for feeding baling material onto the lower end of the elevator. To pivotally raise the frame 62 to the inoperative position shown in Fig. 4, and lower it to the operative position shown in Figs.

1, 2 and 3, it is provided with a pair of upwardly-projecting arms 68 equipped with a bail 69 to which is attached one end of cable 70 extending over a guide-sheave 71 pendent from a cross-bar 72 connecting the upper ends of standards 26, the opposite end of said cable extending downward and being adapted for attachment to a projection 73 of the rear standard 25, Fig. 1, for the purpose of limiting the downward movement of frame 62. When it is desired to raise said frame 62 to inoperative position, the cable is detached from projection 73, and the operator pulls upon the free end of the cable and secures the frame in such inoperative position by reengaging the cable with said projection.

74 is a link pivoted to the front side of frame 62 and extending over shaft 41 toward the truck and pivoted at its opposite end to a bent lever 75 see especially Fig. 6 fulcrumed at 76 on the outer side of the adjacent standard 25, said lever terminating at its free end in a fork 77 arranged astride of the lower strand of belt 30 and equipped with an idler roll 78 engaging the underside of said strand, the arrangement being such that when frame 62 occupies its horizontal or operative position its link operates the lever 75 and causes the roll 78 of the latter to press upwardly against and thus tension belt 30 sufficiently to cause the same to engage belt-wheel 31 with sufficient friction to drive it. When frame 62 is swung to its vertical or inoperative position link 74 rocks the lever in the opposite direction to permit belt 30 to slacken and thus be capable of operation without imparting motion to belt-wheel 31 and the endless conveyers of the elevator and frame 62.

To operate in conjunction with the machine described, we provide a header box mounted upon wheels 79 and adapted to be drawn by horses, the box comprising a bottom 80, a front wall 81 and side walls 82 and 83, side wall 82, by preference, projecting to a greater height than side wall 83. The bottom of the box occupies a higher plane than the frame 62 when the latter is in its operative position, and mounted at the rear end of said bottom is a guide-roller 84 for a pair of cables 85 which extend forwardly and below the bottom are attached to a winding-shaft or drum 86 journaled in bearings 87 secured to the bottom of the box, the front or upper ends of the cables being attached to a drag-frame, consisting of a cross-bar 88 having a pair of horizontal arms 89 provided with wheels or rollers 90 resting on the bottom of the box to permit the drag-frame to be moved with the least possible friction. At one end shaft or drum 86 has a threaded opening 91, Fig. 5, and said shaft is adapted to aline endwise with the shaft 36, a sleeve 92 being employed to

bridge the joint between said shafts. The shaft 86 is provided with a threaded opening 93 corresponding to the said opening of shaft 86, and the sleeve is equipped with a pair of cap-screws 94 and 95 to engage said openings 91 and 93 and thus secure shafts 36 and 86 rigidly together so that the rotation of the former shall impart like movement to the latter and thus wind cables 85 upon shaft or drum and cause the drag-frame to move from the front to the rear end of the box and force the contents of the latter onto the said feed-conveyer, as the frame 62 and the chain conveyer thereof, is hereinafter identified.

When the header box is being loaded or drawn across a field, the sleeve 92 is carried by shaft or drum 86 and is preferably held reliably thereon by causing cap screw 95 to engage threaded opening 91, and while being loaded or drawn in loaded condition to the stacker machine, hereinbefore described, its rear end is closed by an endgate 96, which is preferably hinged as shown at 97, to the rear end of side wall 82, so as to be capable of being swung outward to inoperative position (see Fig. 1) when the header box is to be disposed in operative relation to the feed conveyer. To dispose it in such position, said conveyer is swung to inoperative position and the header box is moved in the direction indicated by the arrow, Fig. 1, to a position slightly ahead of that shown in said figure. The feed-conveyer is then lowered and the header box is backed up against it until shafts 36 and 86 are in alinement and close together. The cap-screw 95 is then unscrewed from opening 91 and the sleeve is slid on shaft 86 until it embraces the adjacent end of shaft 36 and the cap-screws 94 and 95 are in respective alinement with openings 91 and 93, into which openings they are screwed to secure the shafts together, it being of course understood that the stacker and header box will be chocked in any suitable manner, so as to be incapable of movement during the stacking operation.

Assuming that the parts are arranged as shown in Figs. 1, 2 and 3, the shaft 14 is thrown out of gear with the engine shaft by the proper manipulation of lever 17, as hereinbefore explained. The engine is then started up and through belt 30 imparts movement to the elevator and feed conveyers, at the same time through mechanism described, causing the drag-frame to move rearwardly in the header-box and discharge the contents thereof onto the feed-conveyer, which in turn conducts such material to the elevator which discharges it from its upper end into a vehicle or receptacle or upon the ground. In the latter case, the elevator is raised at intervals to accommodate the height of the growing stack, and if it is de-

sired, the stack may be of any length by throwing shaft 14 in gear, at intervals, with the engine to effect movement of the truck. When the header box is emptied, it is moved off to receive a second load and in the interim one or more other header boxes may be successively arranged in operative relation to the stacker and unloaded. It will be apparent of course, that one stacker of this type will accommodate a number of header boxes and that consequently the stacking operation can be performed with great celerity. When the stacker is to be moved any material distance, the elevator will preferably be raised to its greatest height and the extension 44 will be folded down under the main or body portion, the feed conveyer being also raised to its inoperative position. By thus arranging the parts the stacker can be moved with little danger of injury, and with no difficulty because there is no tendency for it to overbalance and thus impose more strain on one side of the derrick than the other.

From the above description it will be apparent that we have produced a hay stacking or loading apparatus embodying the features enumerated as desirable in the statement of the object of the invention, and which is obviously susceptible of modification in various particulars without departing from the principle and scope or sacrificing any of the advantages of the appended claims.

Having thus described the invention what we claim as new and desire to secure by Letters-Patent, is;

1. In an apparatus of the character described, a truck, a derrick mounted thereon, an elevator pivoted to and extending transversely of the derrick, and embodying an endless conveyer, means for pivotally raising or lowering the elevator, and a feed conveyer pivoted at one end to the derrick adjacent the pivoted end of the elevator and consisting of a frame and an endless conveyer, a driven wheel, a wheel rotatable with the elevator conveyer, a belt connecting said wheels, means for transmitting motion from said conveyer to the feed conveyer, a lever, and means whereby downward movement of the said feed-conveyer shall cause said lever to tension said belt.

2. In an apparatus of the character described, a truck, a derrick mounted thereon, an elevator pivoted to and extending transversely of the derrick, and embodying an endless conveyer, means for pivotally raising or lowering the elevator, a feed conveyer pivoted at one end to the derrick adjacent the pivoted end of the elevator and consisting of a frame and an endless conveyer, a driven wheel, a wheel rotatable with the elevator conveyer, a belt connecting said wheels, means for transmitting motion from

said conveyer to the feed conveyer, a lever
and a link pivoted to the feed-conveyer and
to said lever and adapted to operate the lat-
ter and cause it to tension the said belt or
5 permit the same to slacken accordingly as
the feed-conveyer occupies its operative or
inoperative position.

In testimony whereof we affix our signa-
tures in presence of two witnesses.

ALPHEUS D. ADKINSON.
LEROY CADY.

Witnesses:

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E. W. JORDAN.