L. M. AMDAHL.

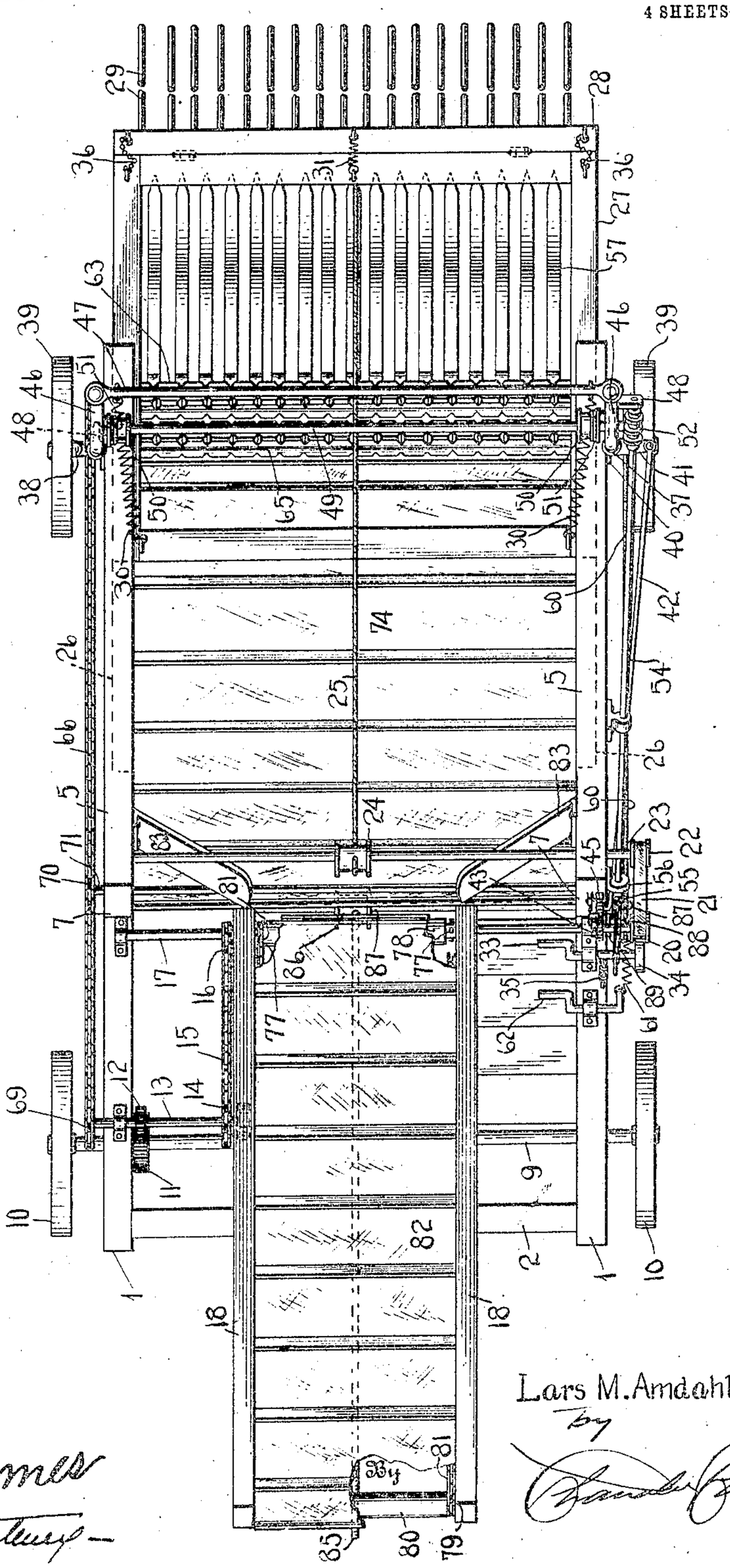
BUNDLE LOADER.

APPLICATION FILED MAR. 27, 1908.

934,649. Patented Sept. 21, 1909.

4 SHEETS—SHEET 1.

FIG. 1.



Witnesses

L. B. James

H. C. Dale

Inventor

Lars M. Amdahl

by

Attorneys

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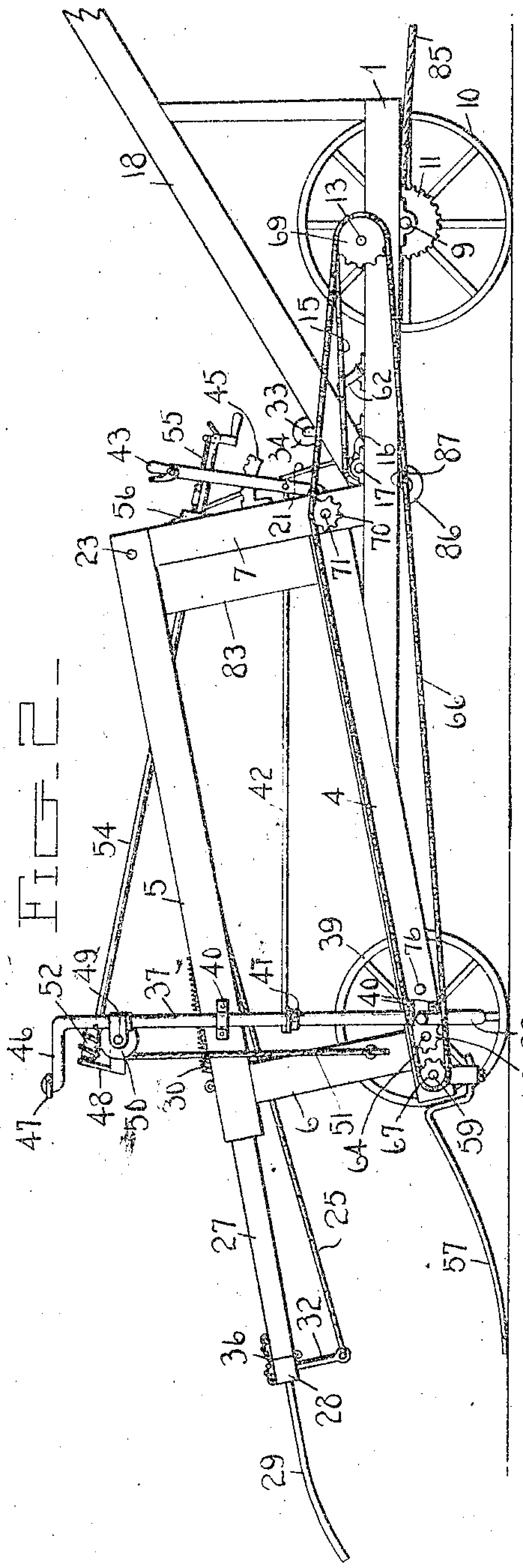

FIG 2

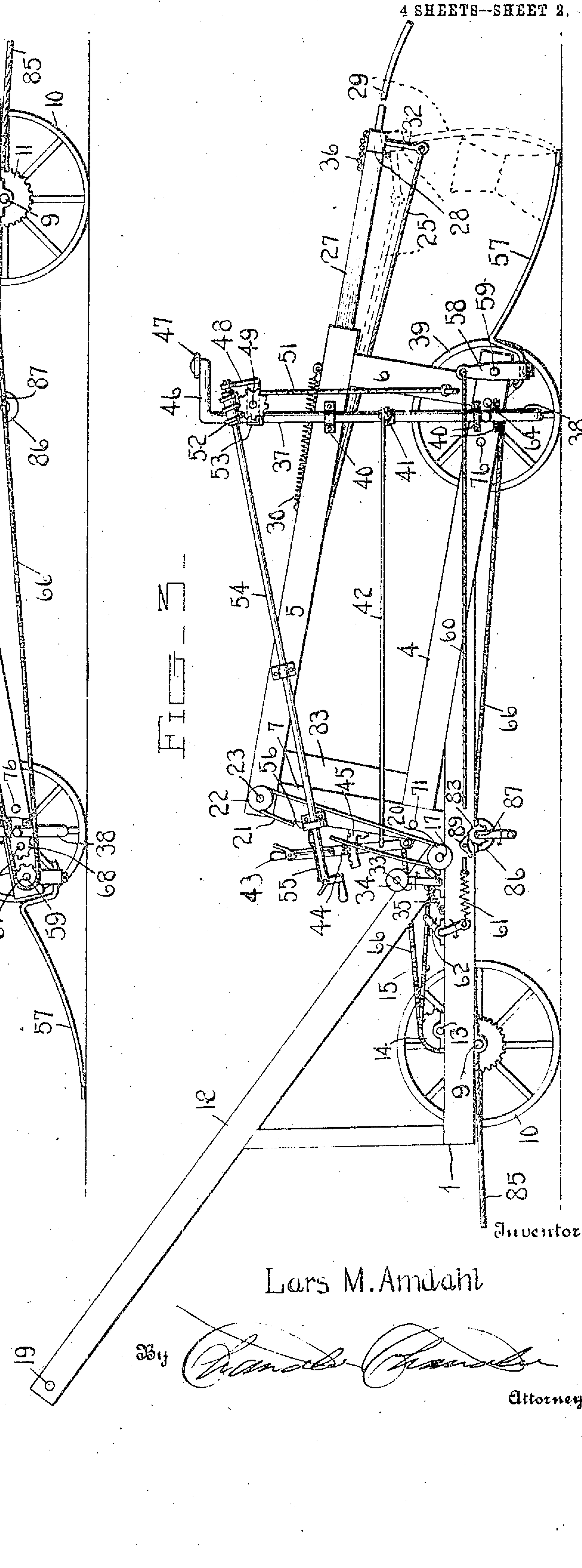

FIG 3

Witnesses

L. B. James

[signature]

Inventor

Lars M. Amdahl

By [signature] Attorneys

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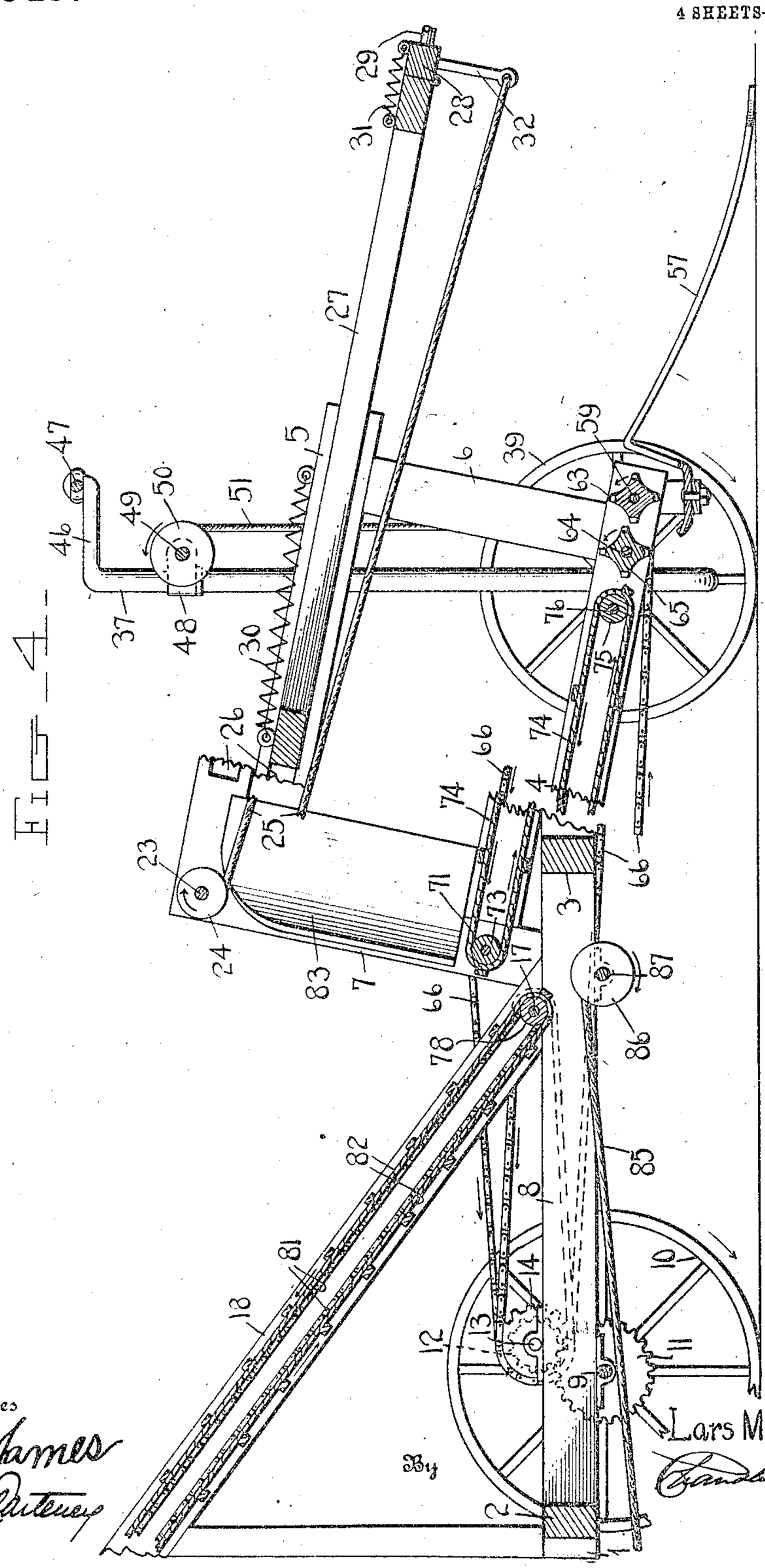
4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

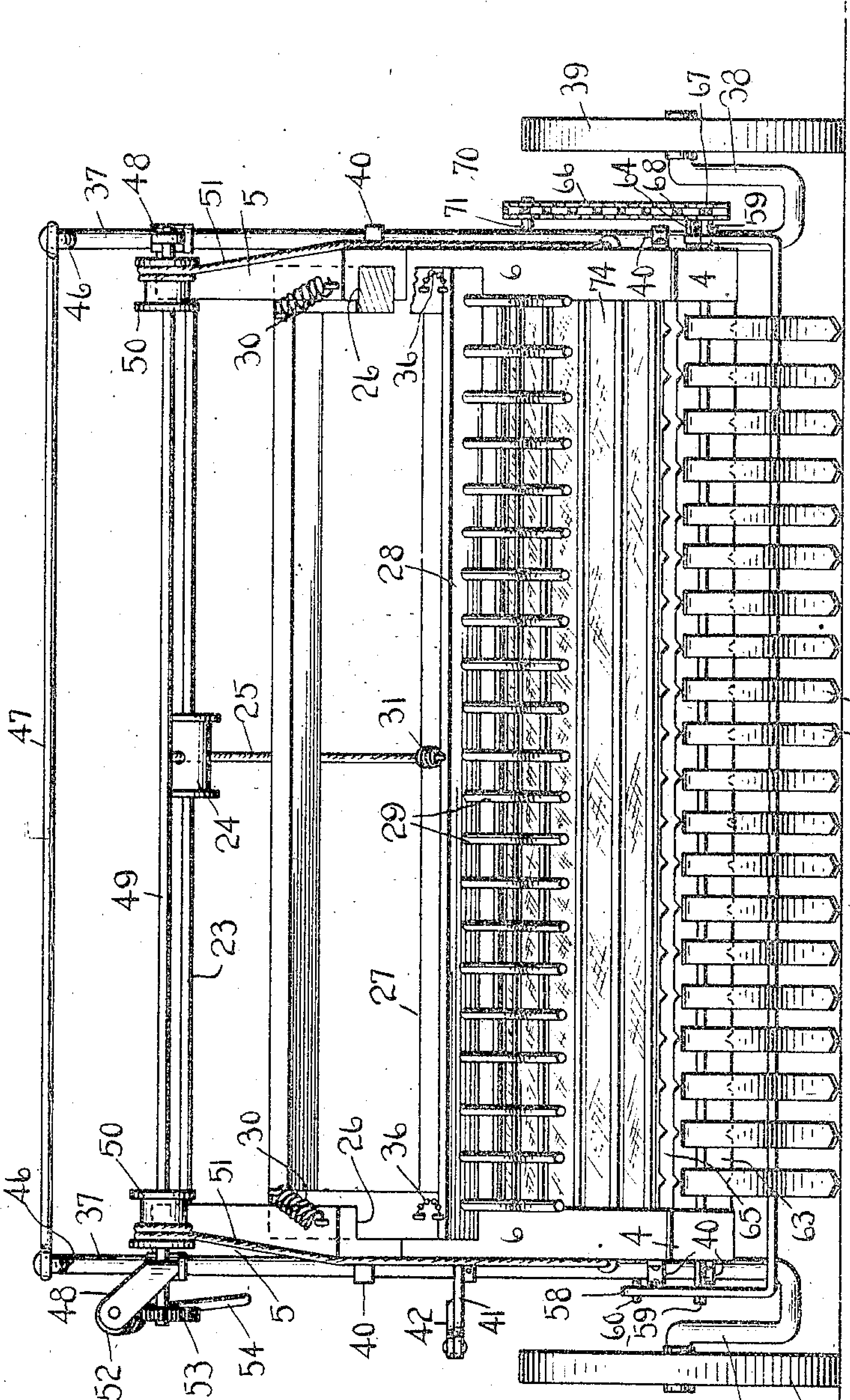

Fig - 5 -

Witnesses

L. B. James

[signature]

Inventor

Lars M. Amdahl

By [signature]

Attorneys

UNITED STATES PATENT OFFICE.

LARS M. AMDAHL, OF FILLMORE, NORTH DAKOTA, ASSIGNOR OF ONE-HALF TO STENERSEN & ROHOLT, OF ESMOND, NORTH DAKOTA, A CORPORATION.

BUNDLE-LOADER.

934,649. Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed March 27, 1908. Serial No. 423,648.

To all whom it may concern:

Be it known that I, LARS M. AMDAHL, a citizen of the United States, residing at Fillmore, in the county of Benson, State of North Dakota, have invented certain new and useful Improvements in Bundle-Loaders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention has reference to bundle-loaders, and it aims generally to provide an exceedingly simple, readily-operated and efficient machine of that nature including a rake and a fork adapted to coöperate with each other in gathering up the bundles from the field during the passage of the machine thereacross, and in delivering them to a feed conveyer, whence they pass on to a discharge conveyer from which they are finally delivered to a collecting wagon which follows the machine.

More especially, the invention resides in the particular construction of the frame which supports the rake; in the specific devices employed for effecting the requisite swinging movement of the rake; and in the means employed for operating said devices.

The invention still further resides in the provision of a pair of serrated rollers interposed between the feed conveyer and the fork, and adapted to engage the bundles, when the latter leave the fork, and to feed them to said conveyer.

The invention will be readily understood from a consideration of the following detailed description, and its preferred embodiment is illustrated in the accompanying drawings in which corresponding parts or features, as the case may be, are designated by the same reference numerals throughout the several views.

Figure 1 is a plan view of the complete invention. Figs. 2 and 3 are views in elevation of the opposite sides thereof, the latter figure showing in dotted lines the rake in its lowered position. Fig. 4 is an enlarged fragmental longitudinal section. Fig. 5 is an enlarged front elevation.

Referring more particularly to the drawings, 1 designates the side sills of the rear portion of the main frame of the machine, and 2 and 3 the front and rear cross-beams which connect together the adjacent ends of said sills, the latter having their front ends beveled. Upon said beveled ends rest the rear ends of the upwardly and rearwardly inclined side sills 4 of the front portion of the frame, said portion having mounted thereon a supporting frame comprising side sills 5 and front and rear inclined posts 6 and 7, the sills 5 being elevated above and disposed parallel with the sills 4. The cross-beams 2 and 3 are further connected with each other by a pair of spaced longitudinally-disposed sills 8.

The rear or main axle 9 of the machine, to whose ends the traction wheels 10 are secured, is journaled in bearings attached to the under faces of the sills 1 adjacent the rear ends thereof. This axle carries a gear 11 secured thereto between one of said sills and the adjacent central sills 8, said gear meshing with a smaller gear 12 secured to a short transverse shaft 13 journaled in bearings mounted upon the sills 1 and 8 above referred to. The shaft 13 is further provided with a sprocket 14 connected by a chain 15 with a sprocket 16 secured to one end of a second transverse shaft 17 located in advance of said shaft 13 and extending through alining openings formed through the lower ends of a pair of rearwardly and upwardly inclined beams 18 whose upper ends are likewise provided with alining openings through which a shaft 19 passes. The other end of the shaft 17 carries a belt pulley 20 connected by a belt 21 with a similar pulley 22 secured to the adjacent end of a horizontal shaft 23 journaled in bearing openings formed through the rear ends of the sills 5, the last-mentioned shaft carrying a centrally-located drum 24 to which is attached the rear end of a cable 25. The belt 21 which, as stated, connects the pulleys 20 and 22, is, however, in its normal condition, too slack to effect the rotation of the latter pulley, in consequence of which fact the rotation of the shaft 17 will not be transmitted under ordinary circumstances to the shaft 23, as will be apparent.

The sills 5 have their inner faces provided with longitudinal grooves 26 in which slidably fit the side members of a skeleton rectangular frame 27, to whose front member is hinged a transversely-disposed horizontal beam 28 in which are embedded the rear ends of a series of parallel teeth 29, said beam and teeth constituting a rake, as is ob-

vious. The sliding frame 27 is normally held in projected position by means of a pair of retractile coil-springs 30 secured at opposite ends to the rear ends of the side members of said frame and to the front ends of the sills 5. The rake beam 28 is likewise connected with the front member of the sliding frame by means of a retractile coil-spring 31, the tension of which holds the rake normally in raised position, in the plane of said frame. The rake beam has secured thereto a depending bolt 32, to which the front end of the cable 25 is attached.

The right-hand sill 1 (with reference to Figs. 1 and 3) has mounted thereon adjacent the belt 21, a rock-shaft 33 the outer cranked end of which carries a roller 34, which is normally held away from said belt by a retractile coil-spring 35, but which may be moved against the belt by the pressure of the foot of the driver upon the inner cranked end of said shaft 33, in which instance, the roller will tighten said belt sufficiently to permit the pulley 22, and, in consequence, the shaft 23 to be rotated thereby. The rotation of the last-mentioned shaft will cause the cable 25 to become wound around the drum 24, the winding of said cable first effecting a downward swinging movement of the rake and subsequent thereto a gradual retraction of the frame 27. The downward movement of the rake is limited by a pair of chains 36, secured at their opposite ends to the front ends of the side members of said sliding frames and the adjacent ends of the beam, as shown in Figs. 1, 2 and 3.

At its front end the main frame of the machine is supported at opposite sides by means of a pair of vertical standards 37 whose lower ends are bent upwardly parallel with the body portions of the standards and are then bent at right angles thereto, the last mentioned portions, which are designated by the numeral 38, carrying the front wheels 39. The standards extend loosely through guides 40 secured to the sills 4 and 5. The right hand standard has secured thereto intermediate its ends a laterally-projecting arm 41, the free end of which is pivotally connected to the front end of a steering rod 42 which is disposed longitudinally of the main frame and has its rear end pivoted to a steering lever 43 provided with a spring-actuated dog 44 adapted for engagement with the teeth of a segmental rack 45 which projects rearwardly from the right hand post 7. The upper ends of the standards are cranked, as indicated by the numeral 46, said ends being connected with each other by means of a link 47. Owing to this construction, it will be apparent that the entire machine may be steered by swinging the lever 43 in one direction or the other, such movement of the lever effecting a corresponding endwise movement of the steering rod, with a resultant rotation of the standards, the front wheels being thus turned to one side or the other of the machine.

To effect the bodily vertical movement of the main frame, requisite at times during the passage of the machine across a field, the standards 37 are each provided toward their upper ends with a strap bearing 48 in which the opposite ends of a transversely-disposed shaft 49 are journaled, said shaft having secured to each end thereof, a drum 50 around which a cable 51 is adapted to be wound, one end of each cable being secured to the corresponding drum, while its other end is fastened to a laterally-projecting eye bolt set into the outer side face of the adjacent post 6 toward the lower end thereof. The right hand end of the shaft 49 projects beyond the adjacent bracket, and is provided at such point with a worm gear 52 which meshes with a worm 53 secured to the front end of an upwardly and forwardly inclined shaft 54 which passes intermediate its ends through a bearing secured to the above mentioned sill 5, the extreme forward end of said shaft being fitted in an opening formed through an upward extension with which the adjacent bracket 48 is provided, said shaft being supported by said extension and the bearing last referred to. At its rear end, the shaft 54 is bent to form an operating handle adjacent to which is located a spring-pressed dog 55 carried by said shaft and adapted for engagement in a series of openings formed in a bracket 56 secured to the adjacent post 7. Rotation of the shaft 54 will, therefore, effect a rotation of the drums 50 carried by the shaft 49, the rotation of said drums effecting the winding of the cables 51 therearound, with a resultant upward movement of the machine frame, which latter swings upon the rear axle as a pivot. Said frame is retained in adjusted position by means of the engagement of the dog 53 in the openings formed in the bracket 56.

At the forward end of the machine is located a fork 57 provided at its opposite sides with upwardly extending arms 58 in which are formed openings for the reception of the projecting ends of a transverse shaft 59 journaled in bearing openings formed through the front ends of the sills 4. The extreme upper end of the right hand arm 58 has attached thereto one end of a rearwardly-extending cable 60 whose other end is fastened to the front end of a coil-spring 61 whose rear end is fastened in turn to a pedal lever 62 mounted upon the beam 1. The actuation of this lever will tend to draw the cable 60 rearwardly of the machine, with a resultant upward pivotal movement of the fork 57.

The shaft 59 above referred to, has rigidly secured thereto a longitudinal ribbed roller 63 which extends the entire distance between

the sills 4. Rearwardly of this roller is mounted upon a shaft 64 a similar roller 65, the longitudinal edges of the ribs formed upon said rollers being serrated or notched as shown. The rotation of the shafts 59 and 64 is effected by means of a sprocket chain 66 which passes around sprockets 67 and 68 secured to said shafts and around a sprocket 69 carried by the shaft 13 at one end thereof. The sprocket chain also passes around a sprocket 70 secured to the adjacent projecting end of a transverse shaft 71 journaled in bearing openings formed in the post 7. The shaft 71 is further provided with a roller 73 around which passes the upper end of a slatted conveyer belt 74 whose lower end passes around a similar roller 75 mounted upon a shaft 76 whose ends fit in bearing openings formed through the sills 4, the last-mentioned roller being disposed parallel with and in close proximity to the rear corrugated roller 65.

The shaft 17 which, as stated, passes through openings formed in the lower ends of the beams 18 is provided with a pair of sprockets 77 located adjacent the inner faces of said beams, and with a roller 78, the shaft 19 carrying a similarly-located pair of sprockets 79 and a roller 80, the pairs of sprockets being connected by sprocket chains 81, and the rollers by a slatted conveyer belt 82. The lower end of this belt is disposed sufficiently close to the roller 73 to permit the bundles discharged from the conveyer 74 to fall upon the conveyer 82, the post 7 carrying deflectors 83 which direct the bundles to the last mentioned conveyer.

A wagon into which the bundles are discharged from the conveyer 82, is retained in proper position with respect to said conveyer by means of a cable 85 secured at its rear end thereto and at its front end to the drum 86 mounted upon a shaft 87 journaled in depending brackets secured to the under face of the central sills 8 of the main frame, one end of said shaft projecting beyond the corresponding sill 1 and being provided at such point with a ratchet wheel 88 engaged by a gravity pawl 89 pivoted to the last-mentioned sill. The wagon may, therefore, be drawn into proper position by the rotation of the shaft 87, the projecting end of which is bent to form a crank handle.

During the passage of the machine across a field, the bundles of grain will be gradually gathered upon the fork by the passage of the latter therebeneath. When a sufficient number of bundles has thus been accumulated, the operator of the machine throws the roller 34 into engagement with the belt 21, by actuating the foot lever 33, the movement of the roller into such position tightening said belt and thus effecting the rotation of the shaft 23 upon which the drum 24 is mounted. The rotation of the drum shaft will cause the cable 25 to become wound therearound, the swinging of the cable first swinging the rake into its lower position and then retracting a sliding frame which carries the rake. The retraction of said frame will bring the rake into contact with the bundles gathered upon the fork and as the retraction of the frame continues, the rake will force the bundles across the fork, until they are engaged by the corrugated rollers, whereupon said rollers pass the bundles to the conveyer 74 from whence they are delivered to the conveyer 82. The last-mentioned conveyer discharges the bundles into the wagon.

During the movement of the machine as a whole, it will be apparent that it may be turned in any direction by means of the steering attachment above described, and that the position of its main frame with reference to the ground may be adjusted by rotating the shaft 54 which movement is transmitted to the drum-carrying shaft 49 through the worm and worm gear 53 and 52.

By reason of the formation of the longitudinal ribs upon the rollers 63 and 65, and by providing said ribs with serrations or indentations, it will be apparent that the rollers will more effectively engage the bundles forced in that direction by the rake during the retraction of the sliding frame 27.

While the preferred embodiment of the invention is illustrated in the drawings and has been above described, it is to be understood that the invention is not intended to be limited to the exact details of construction illustrated, as modifications and changes may obviously be made within the scope of the appended claims.

What is claimed is:

1. In a loading machine, the combination, with a main frame, and a fork attached to the front end thereof, of a sliding frame disposed above said front end; and a rake hinged to the front end of said sliding frame.

2. In a loading machine, the combination, with a main frame, and a fork attached to the front end thereof, of an endwise movable frame disposed above and parallel with said front end; and a rake hinged to the front end of said movable frame and adapted to travel across the fork during the movement of the last mentioned frame.

3. In a loading machine, the combination, with a main frame, and a fork attached to the front end thereof, of a supporting frame mounted upon the front end of said main frame; a rake attached to the front portion of said sliding frame; means for normally holding said frame in projected position; and means for retracting said sliding frame, to cause the rake to travel across the fork.

4. In a loading machine, the combination, with a main frame, and a fork attached to

the front end thereof, of a supporting frame mounted upon the front end of said main frame; a sliding frame carried by said supporting frame; a rake hinged to the front end of said sliding frame; means for normally holding said sliding frame in projected position; means for normally holding said rake in raised position; and means for lowering said rake and for retracting said sliding frame, to cause said rake to travel across said fork.

5. In a loading machine, the combination, with a main frame, and a fork attached to the front end thereof, of a supporting frame mounted upon the front end of said main frame; a sliding frame carried by said supporting frame; a rake hinged to the front end of said sliding frame; means for normally holding said sliding frame in projected position; means for normally holding said rake in raised position; a depending arm secured to said rake; a cable secured at one end to said arm; and means connected with the other end of the cable, for applying stress thereto, to lower said rake and retract said sliding frame, for causing said rake to travel across said fork.

6. In a loading machine, the combination, with a main frame and a fork attached to the front end thereof, of a supporting frame mounted upon the front portion of said main frame; a sliding frame carried by said supporting frame; a rake secured to the front end of said sliding frame; means for normally holding said sliding frame in projected position; a transverse shaft journaled in said supporting frame; means for rotating said shaft; and connecting devices between said shaft and said sliding frame, for retracting the latter during the rotation of said shaft.

7. In a loading machine, the combination, with a main frame and a fork attached to the front end thereof, of a supporting frame mounted upon the front portion of said main frame; a sliding frame carried by said supporting frame; a rake secured to the front end of said sliding frame; means for normally holding said sliding frame in projected position; a transverse shaft journaled in said supporting frame; means for rotating said shaft; means for throwing said shaft-rotating means into and out of operation; and connecting devices between said shaft and said sliding frame for retracting the latter when said last-mentioned means are in operation.

8. In a loading machine, the combination, with a main frame and a fork attached to the front end thereof, of a supporting frame mounted upon the front portion of said main frame; a sliding frame carried by said supporting frame; a rake secured to the front end of said sliding frame; means for normally holding said sliding frame in projected position; a transverse shaft journaled in said supporting frame; means for rotating said shaft; means for throwing said shaft-rotating means into and out of operation; a drum secured to said shaft; and a cable secured at one end to said rake and at the other end to said drum, and adapted to be wound around the latter when said shaft-rotating means are in operation, for retracting said sliding frame.

9. In a loading machine, the combination, with a main frame and a fork attached to the front end thereof, of a supporting frame mounted upon the front portion of said main frame; a sliding frame carried by said supporting frame; a rake hinged to the front end of said sliding frame; means for normally holding said sliding frame in projected position; means for normally holding said rake in raised position; a transverse shaft journaled in said supporting frame rearwardly of said sliding frame; a drum secured to said shaft; a cable secured at one end to said rake and at the other end to said drum; and means for rotating said shaft, to wind the cable around said drum, for lowering said rake and retracting said sliding frame.

10. In a loading machine, the combination, with a main frame and a fork attached to the front end thereof, of a supporting frame mounted upon the front portion of said main frame; a sliding frame carried by said supporting frame; a rake attached to the front end of said sliding frame; means for normally holding said sliding frame in projected position; a transverse shaft journaled in said main frame; a transverse shaft journaled in said supporting frame; a drum secured to the last mentioned shaft; means for rotating said first-mentioned shaft; a pulley secured to each shaft; a loose belt connecting said pulleys; means for tightening said belt, for effecting the rotation of the last-mentioned shaft; and a cable connected at one end to said sliding frame and at the other end to said drum, and adapted to be wound around the latter when said last-mentioned shaft is rotated, for retracting said sliding frame.

11. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; serrated rollers interposed between the fork and the front end of said conveyer and adapted to feed material to the latter; means for driving said conveyer; and means for feeding the material collected upon said fork to said rollers.

12. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the

fork and the front end of said conveyer and adapted to feed material to the latter; means for driving said rollers; means for driving said conveyer; and means for feeding the material collected upon said fork to said rollers.

13. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the fork and the front end of said conveyer and adapted to feed material to the latter, said ribs having their edges serrated; means for driving said rollers; means for driving said conveyer; and means for feeding the material collected upon said fork to said rollers.

14. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the fork and the front end of said conveyer, for feeding material to the latter; means for driving said conveyer; means for driving said rollers; and a rake movable longitudinally of said frame and located adjacent the front end thereof, for feeding the material collected upon said fork to said rollers.

15. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the fork and the front end of said conveyer, for feeding material to the latter; means for driving said conveyer; means for driving said rollers; a sliding frame located above and in spaced relation to said rollers; a rake attached to the front end of said sliding frame; and means for bodily moving said sliding frame rearwardly, to cause the rake to feed the material collected upon said fork to said rollers.

16. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the fork and the front end of said conveyer, for feeding material to the latter; means for driving said conveyer; means for driving said rollers; a sliding frame located above and in spaced relation to said rollers; a rake attached to the front end of said sliding frame; means for normally holding said sliding frame in projected position; and means for retracting said sliding frame, to cause the rake to travel across the fork.

17. In a loading machine, the combination, with a frame and an endless conveyer carried thereby, of a fork attached to the front end of said frame; longitudinally-ribbed transverse rollers interposed between the fork and the front end of said conveyer, for feeding material to the latter; means for driving said conveyer; means for driving said rollers; a sliding frame located above and in spaced relation to said rollers; a rake hinged to the front end of said sliding frame; means for normally holding said sliding frame in projected position; means for normally holding said rake in raised position; and means for successively lowering said rake and retracting said sliding frame, to cause the rake to travel across the fork.

In testimony whereof, I affix my signature, in presence of two witnesses.

LARS M. AMDAHL.

Witnesses:
PAUL CRUM,
OLE VOLD.