No. 652,148.

Patented June 19, 1900.

M. F. STADTMULLER.

ATTACHED SWINGING STRAW STACKER.

(Application filed Apr. 17, 1899.)

(No Model.)

5 Sheets—Sheet 1.

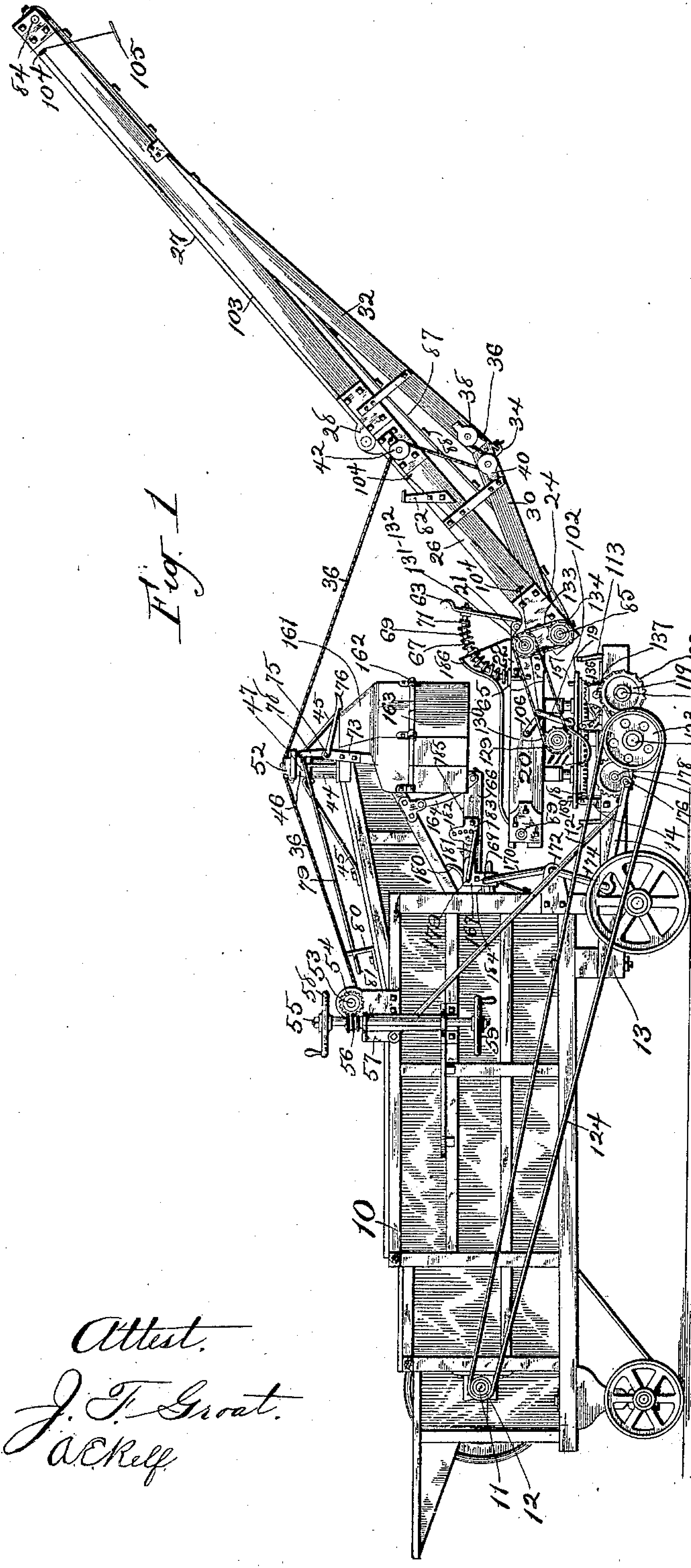

Fig. 1

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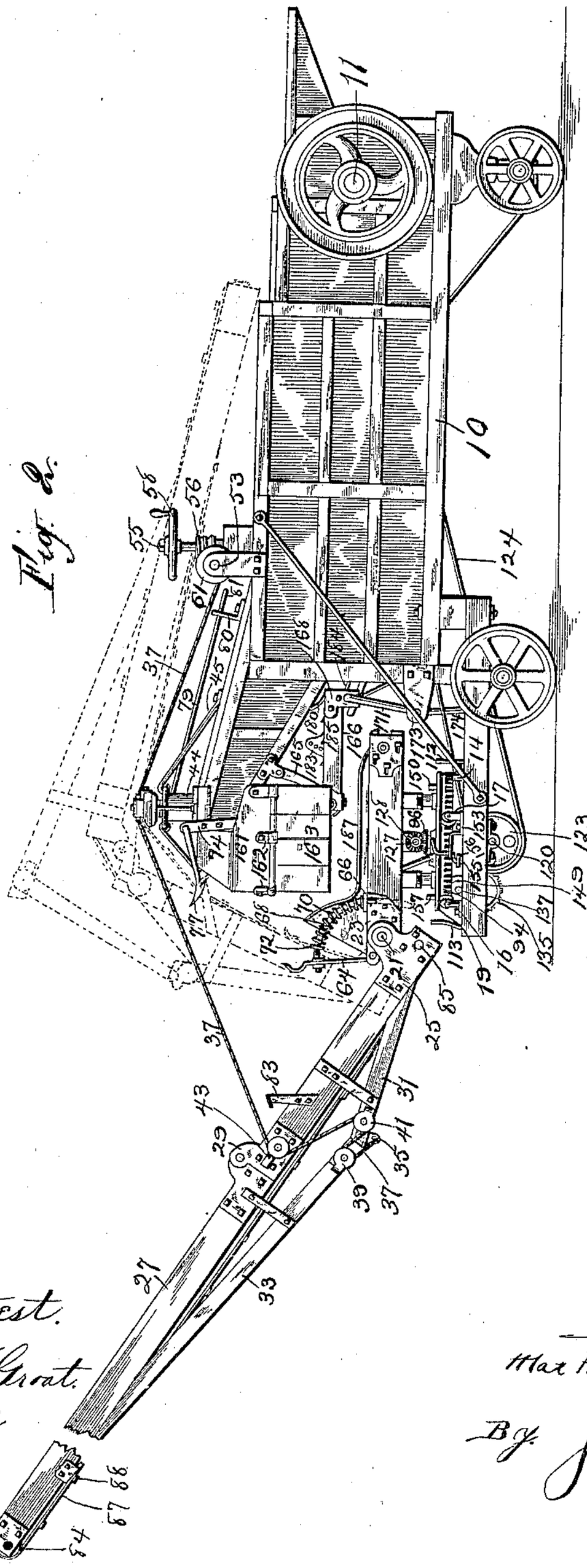
(No Model.) 5 Sheets—Sheet 2.

Fig. 2.



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5 Sheets—Sheet 3.

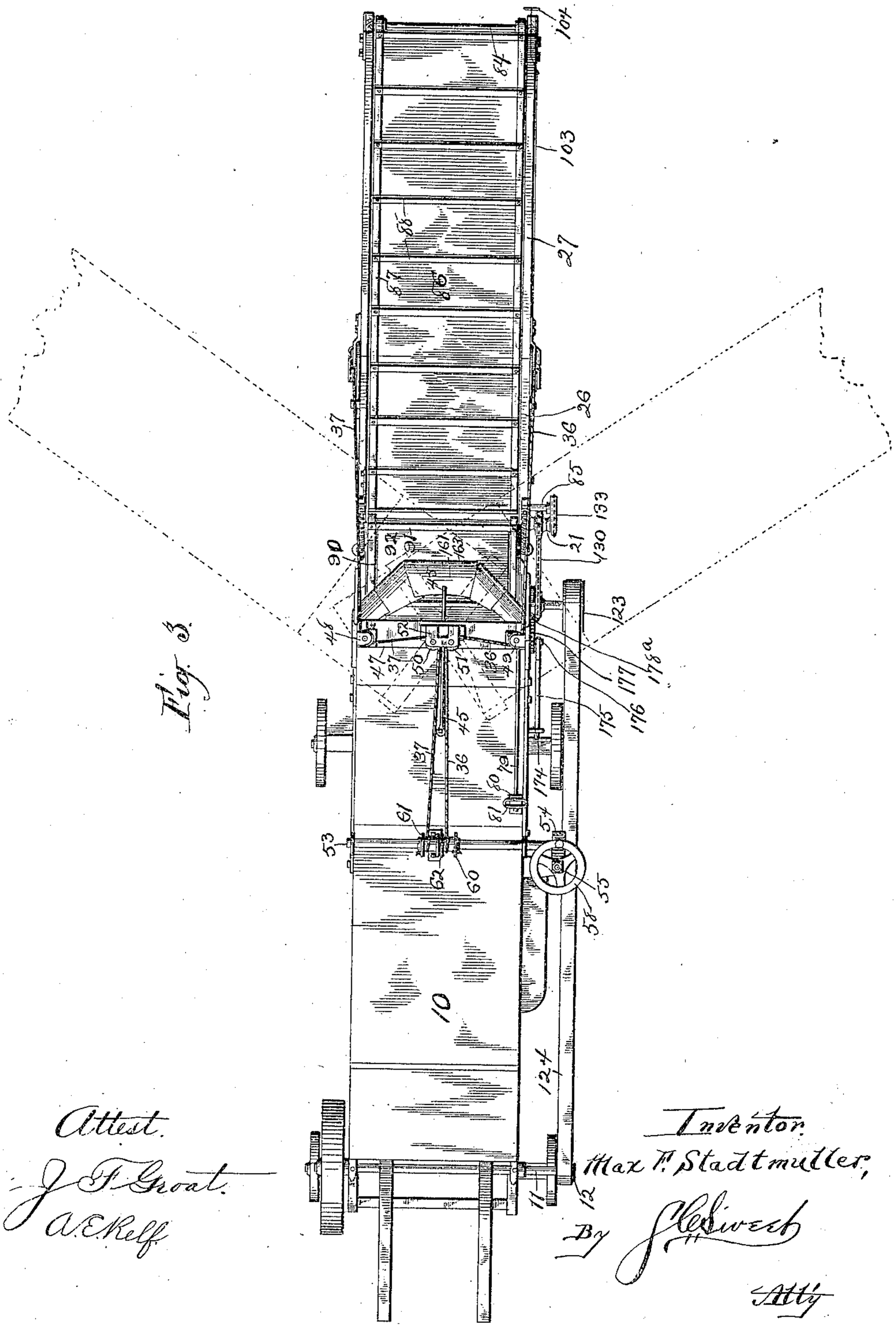

Fig. 3.

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(Application filed Apr. 17, 1899.)

(No Model.) 5 Sheets—Sheet 4.

Fig. 4.

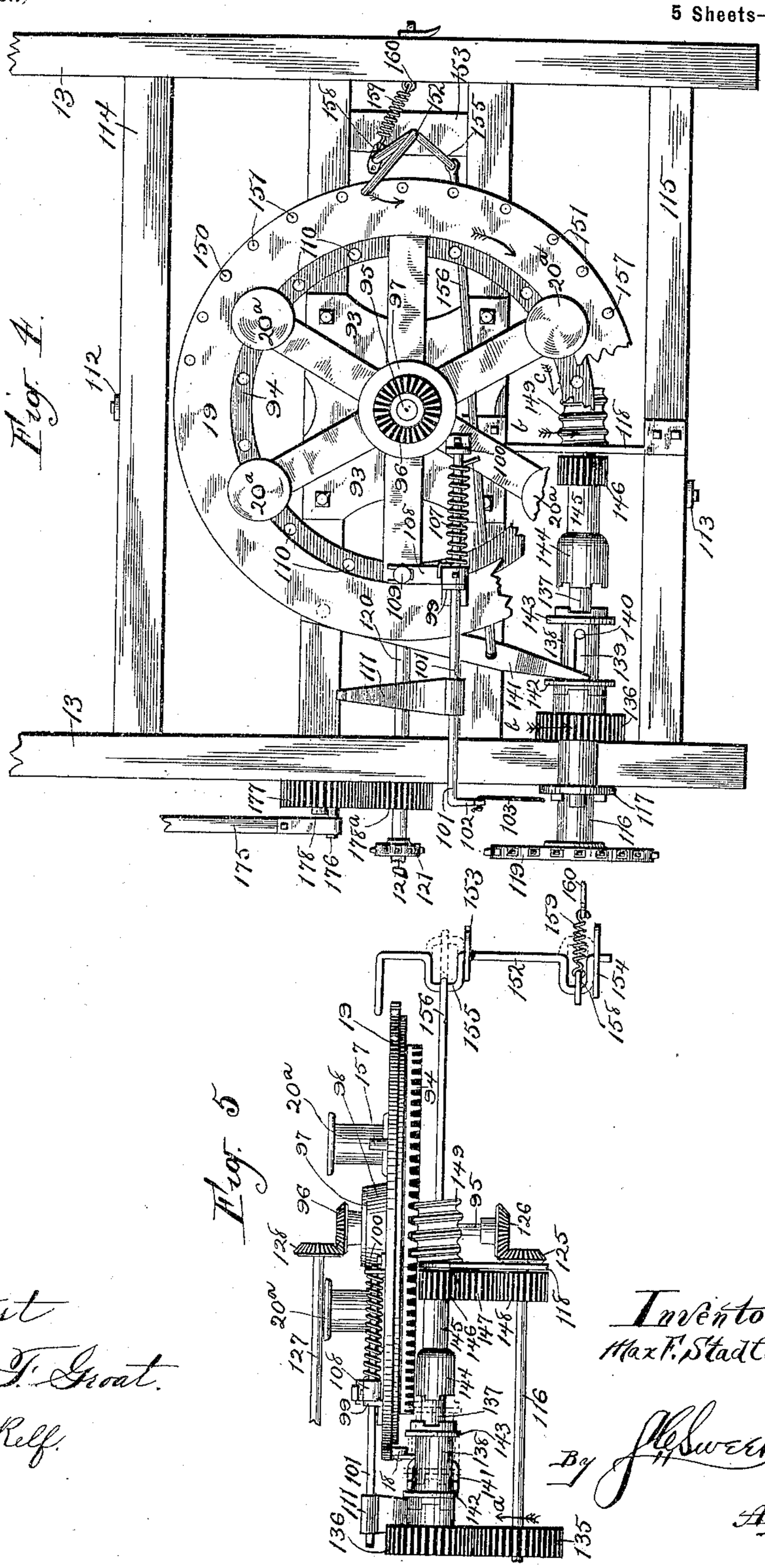

Fig. 5

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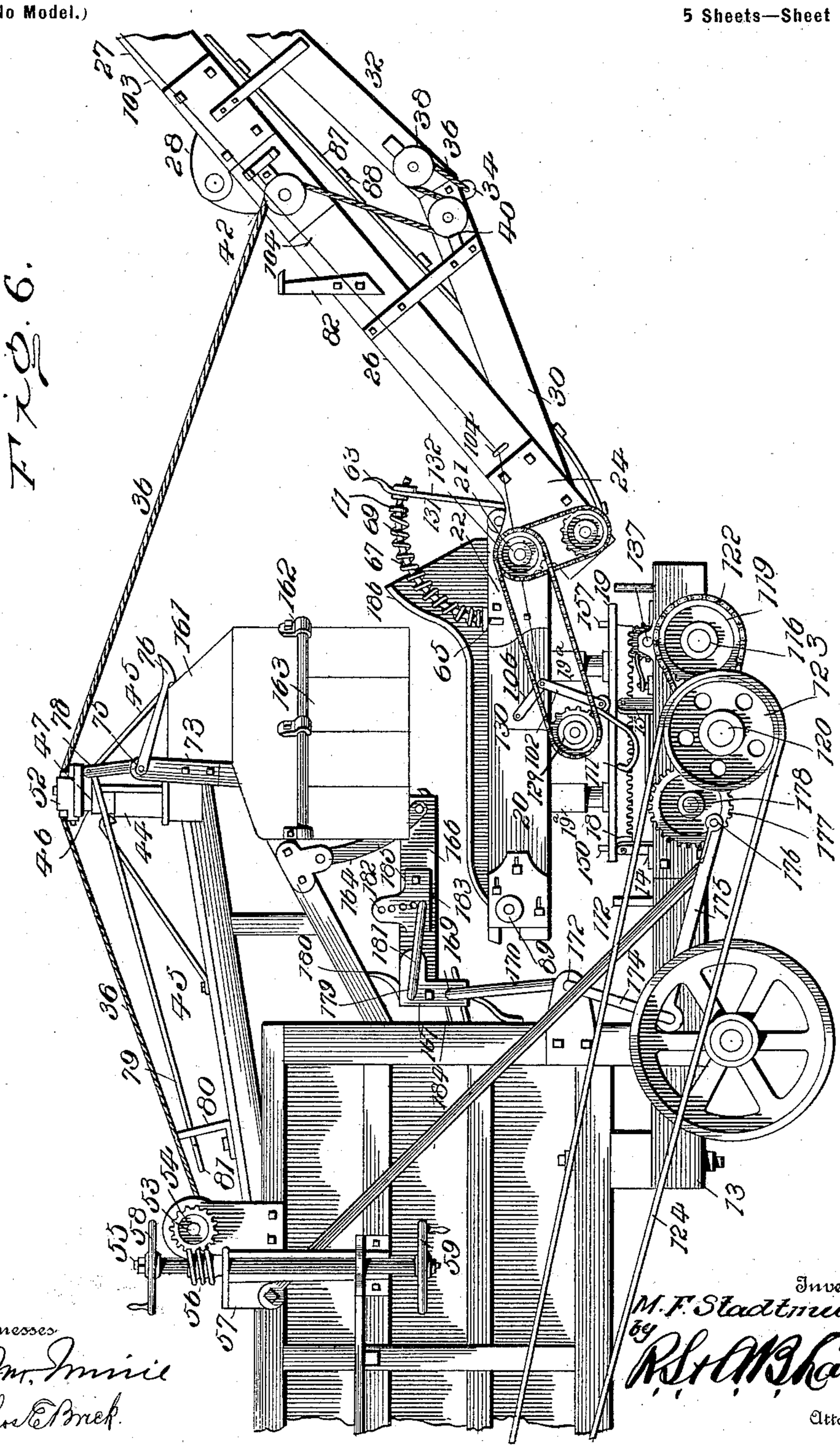
(No Model.) 5 Sheets—Sheet 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

MAX F. STADTMULLER, OF POMEROY, IOWA.

ATTACHED SWINGING STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 652,148, dated June 19, 1900.

Application filed April 17, 1899. Serial No. 713,306. (No model.)

To all whom it may concern:

Be it known that I, MAX F. STADTMULLER, a citizen of the United States of America, and a resident of Pomeroy, Calhoun county, Iowa, have invented certain new and useful Improvements in Attached Swinging Straw-Stackers, of which the following is a specification.

The object of this invention is to provide improved means for stacking straw.

This invention has relation to stacker attachments for separators, and has for its objects to combine with the sectional, foldable, and adjustable stacker novel means for strengthening and holding the sections of the stacker in alinement; adjusting mechanism coöperating with the stacker and its bracing means to assist materially in unfolding the stacker, maintaining its sections in alinement when unfolded, and raising and lowering the outer end of the stacker; mechanism for oscillating, locking, and releasing the stacker, and means for relieving the shock incident to folding of the stacker, all the adjunctive parts being combined and arranged with a view to economy of space, positiveness of action, ease of operation, and accessibility for any desired purpose.

The invention further consists of the novel features, details of construction, and combinations of the parts, which will hereinafter be more fully set forth, claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the complete machine. Fig. 2 is an elevation of the machine on the opposite side from Fig. 1, the dotted lines indicating the positions of the stacking mechanism when the same is folded upon the separator for transportation. Fig. 3 is a plan of the machine, the dotted lines indicating positions assumed by the stacking mechanism in swinging laterally of the separator. Fig. 4 is a plan illustrating in detail the reversing mechanism whereby the stacking mechanism is oscillated automatically laterally of the separator, portions being broken away to reveal the construction. Fig. 5 is a front end elevation illustrating in detail the mechanism shown in plan in Fig. 4. Fig. 6 is a side elevation of the rear end of the separator, the inner end of the stacker, and the coöperating mechanism on a larger scale.

In the construction, mounting, and operation of the machine, as illustrated, the numeral 10 designates a separator having the usual cylinder-shaft 11, with a belt-wheel 12 on one end thereof. A frame 13 is mounted horizontally on and projects from the end of the separator at which the straw is discharged and is located in the horizontal plane of the rear trucks of the separator. Standards 14 15 16 17 are mounted on and rise from the frame 13, and antifriction-rollers 18 are pivoted on the upper ends of said standards, the standards being arranged at equal distances of separation. A turn-table 19 is mounted horizontally and rests on the antifriction-rollers 18. A bed-frame 20 is mounted horizontally and secured by posts 20^a to and upon the turn-table 19. A shaft 21 is mounted for rotation in bearings 22 23, rearwardly projecting from the rear corners of the bed-frame 20, and said shaft projects at both ends beyond its bearings. Hinge-plates 24 25 are mounted for revolution on the projecting end portions of the shaft 21, and a stacker-frame is rigidly attached at its inner (lower) end to said hinge-plates. The stacker-frame is formed into sections 26 27, connected by hinges 28 29 in such a manner that the upper (outer) section 27 will fold forwardly and upon the lower (inner) section 26. Braces 30 31 are fixed to and project rearwardly and downwardly from the section 26 of the stacker-frame, and the outer extremities of said braces are in a plane between the ends of said section 26 of the frame. Braces 32 33 are fixed to and extend forwardly and downwardly from the section 27 of the stacker-frame, and the extremities of said braces project beyond the hinged end of said section 27 and are arranged and so shaped as to abut the rearward extremities of the braces 30 31 and support or truss the sections of the stacker-frame in alinement with each other, as illustrated in Figs. 1, 2, and 3 of the drawings. Ears 34 35 are fixed to and project downwardly from the extremities of the braces 30 31 and are formed with eyes or apertures, to which the rear ends of cables 36 37 are attached. Sheaves are mounted in brackets 38 39 on the extremities of the braces 32 33. Sheaves are

mounted in brackets 40 41 on the extremities of the braces 30 31 adjacent the ears 34 35, and sheaves are mounted in brackets 42 43, fixed to the hinged ends of the section 26 of the stacker-frame, and the cables 36 37 extend from points of attachment to the ears and through said sheaves in sequence—that is to say, the cable 36 successively runs through the sheaves in the brackets 38 40 42 and the cable 37 successively runs through the sheaves in the brackets 39 41 43. A socket 44 is mounted on and rises from the top of the rear end portion of the separator 10 and is braced to said separator by rods 45. A shaft 46 is stepped in the socket 44, and a cross-head 47 is rigidly mounted on the upper end of said shaft and extends transversely of the separator, the length of the cross-head being approximately the same as the width of the stacker-frame. Sheaves are mounted in brackets 48 49 on the upper face of the cross-head 47, and sheaves 50 51 are mounted in a bracket 52, centrally located on the upper face of said cross-head between the brackets 48 49. The cables 36 37 are run through the sheaves in the brackets 49 48 and thence through the sheaves 51 50 and extend forwardly in approximately-parallel planes above the median line of the separator 10. A shaft 53 is mounted for rotation on a horizontal axis in bearings fixed to and rising from the separator 10 and extends transversely of said separator, one end portion of said shaft projecting beyond one side of the separator a material distance and having mounted thereon a worm-gear 54. A worm-shaft 55, having a worm 56 thereon and intermediate of its ends, is mounted for rotation on a vertical axis in bearings 57, fixed to and projecting laterally from the frame of the separator. The worm 56 meshes with the worm-gear 54 on the shaft 53, and hand-wheels 58 59 are fixed to the end portions of the worm-shaft 55, by means of which hand-wheels manual power may be applied to rotate the worm-shaft and drive the drum-shaft 53 in either direction. Drums 60 61 are mounted rigidly on the central portion of the drum-shaft 53, and the forward end portions of the cables 36 37 are fixed to and adapted to be wound upon said drums. A bearing 62 is fixed to and rises from the top of the separator 10 between the adjacent ends of the drums 60 61. Levers 63 64 are fulcrumed at their lower ends on the bearings 22 23 and extend upwardly therefrom. Ears 65 66 are formed on and project outwardly from the forward ends of the bearings 22 23, and curved rods 67 68 are mounted rigidly by means of jam-nuts at their upper ends on the upper ends of the levers 63 64, and the lower end portions of said curved rods extend through apertures in the ears 65 66 and are provided with split keys transversely mounted therein below said ears. Expansive coiled springs 69 70 are mounted on the curved rods 67 68 above the ears 65 66, and the tension of said springs is regulated and determined by adjusting-nuts 71 72 on the rods engaging the upper (outer) ends of the springs. Bearings 73 74 are mounted on and rise from the corners of the separator-frame laterally removed from the socket 44, and a rock-shaft 75 is mounted therein. The extremities of the rock-shaft 75 are bent rearwardly at right angles to the intermediate portion of said shaft and formed with hooks 76 77 at their outer ends. A crank-arm 78 is formed on and rises from the rock-shaft 75, adjacent the bearing 73, and a rod 79 is pivoted at one end to the extremity of said crank-arm and extends therefrom forwardly of the separator, transverses a slide-bearing 80, fixed to and rising from the separator adjacent the drum-shaft 53, and terminates in a handhold or eye 81. Angle-irons 82 83 are fixed to and extend forwardly and upwardly from the section 26 of the stacker-frame adjacent the upper (outer) end thereof and in such positions as to engage the hooks 76 77 of the rock-shaft 75 when the stacker-frame is swung forwardly for folding upon the separator. A shaft 84 is mounted for rotation in and transversely of the outer end of the section 27 of the stacker-frame, and a shaft 85 is mounted for rotation in the lower corners of the bearings 24 25, extends transversely of the stacker-frame parallel with the shaft 84, and projects beyond one of its bearings. A bottom 86 is positioned in the stacker-frame, and an endless straw-carrier 87 is mounted for travel on the shafts within the stacker-frame and driven by the shaft 85, the cleats 88 of the straw-carrier traveling upwardly and outwardly in contact with the upper face of the bottom 86. A shaft 89 is mounted horizontally in and transversely of one end of the bed-frame 20, parallel with the shaft 21, and an endless straw-carrier 90 is mounted for travel on the shafts in the bed-frame and driven by the shaft 21, the cleats 91 of the carrier 90 traveling rearwardly and outwardly in contact with a bottom 92 in said frame. A plate 93 is horizontally positioned on the central portion of the frame 13 and is centrally apertured. A worm-gear 94 is stepped for revolution on the plate 93 concentric with the aperture in said plate and is located horizontally between the turn-table 19 and said plate. A shaft 95 is vertically positioned in the aperture in the center of the plate 93 and the turn-table 19, and a miter-wheel 96 is mounted rigidly on the upper end of said shaft and the hub of said miter-wheel rests on a steel wear-plate 97, surmounting a boss 98 on the central portion of the turn-table. As hereinbefore stated, the bed-frame 20 is connected by the posts 20^a rigidly to the turn-table. Ears 99 100 are fixed to and rise from the turn-table 19 and are apertured horizontally, and a shaft 101 is pivotally mounted in the apertures of the ears 99 100 and extends approximately radially of and from the turn-table 19 to a point beyond one side bar of the frame 13, and the outer end portion of said rock-shaft is provided with

a crank-arm 102, to which a cable 103 is attached by one end, the cable 103 extending horizontally along the side bar of the frame 13, and thence through eyes 104, projecting from the stacker-frame to the outer (upper) end of said stacker-frame, at which point the cable is provided with a handhold or loop 105. A pawl 106 is fulcrumed at one end on one side bar of the frame 20 and is arranged and so shaped as to engage at times with the crank-arm 102 on the rock-shaft 101 and limit the movement of oscillation of said shaft in one direction. A torsional coil-spring 107 is mounted on the rock-shaft 101 between the ears 99 100, and a bifurcated crank-arm 108 on said shaft adjacent the ear 99 is engaged by one end of said spring, the opposite end of said spring engaging the turn-table 19 or a spoke thereof. The tension of the spring 107 tends to bear the bifurcated arm 108 downwardly and oscillate the rock-shaft in one direction and in a direction opposite to the movement that would be given the rock-shaft by draft of the cable 103. A pin 109 is mounted vertically in an aperture in the turn-table 19 and engages normally in one or another of a series of apertures 110 in the worm-gear 94. The pin 109 is formed with an annular groove near its upper end of such size as to receive the arms of the bifurcated crank-arm 108. The pin 109 normally locks the turn-table 19 and worm-gear 94 together, but may be lifted away from the worm-gear by manual oscillation of the rock-shaft 101, either through draft applied to the cable 103 by an operator located on the straw-stack or at the discharge end of the stacker-frame or by an application of manual force directly to the crank-arm 102. Upon the release of the manual force applied to the rock-shaft the spring 107 will reverse the movement of said shaft and permit the seating of the pin 109 in one or another of the apertures or seats 110 in the worm-gear. A curved crank-arm 111 is fixed to and projects forwardly from the rock-shaft 101 approximately parallel with the crank-arm, and it is the function of the arm 111 to oscillate the shaft automatically in the same direction that said shaft may be oscillated by manual force and such automatic movement is given by the engagement of the arm with one or another of studs 112 113, fixed to and rising from bars 114 115 of the frame 13. A shaft 116 is mounted for rotation in bearings 117 118, fixed to the frame 13, and a sprocket-wheel 119 is rigidly mounted on one end of said shaft outside said frame. A shaft 120 is mounted for rotation in bearings fixed to the frame 13, and a sprocket-wheel 121, rigidly mounted on said shaft, is connected by a chain 122 to the sprocket-wheel 119. A belt-wheel 123 is rigidly mounted on the outer end portion of the shaft 120 and connected by a belt 124 to the belt-wheel 12 on the cylinder-shaft 11. The shaft 120 extends nearly to the center of the frame 13, and a miter-gear 125 is mounted rigidly on the inner end thereof and meshes with a miter-gear 126, rigidly mounted on the lower end of the shaft 95, Fig. 5. A counter-shaft 127 is mounted for rotation in bearings depending from the bed-frame 20 and extends radially of the turn-table from approximately the center of the bed-frame beyond one side of said frame. A miter-gear 128 is mounted rigidly on the inner end of the shaft 127 and meshes with the miter-gear 96 on the upper end of the shaft 95. A sprocket-wheel 129 is mounted rigidly on the outer end portion of the counter-shaft 127 and connected by a chain 130 to a sprocket-wheel 131 on the shaft 21 adjacent the bearing 22. A sprocket-wheel 132, also mounted rigidly on the shaft 21, adjacent the sprocket-wheel 131, is connected by a chain 133 to a sprocket-wheel 134 on the extremity of the shaft 85 adjacent thereto.

The rotary movement of the cylinder-shaft 11 is communicated, through the belt-wheel 12, belt 124, belt-wheel 123, shaft 120, miter-gear 125, miter-gear 126, shaft 95, miter-gear 96, miter-gear 128, shaft 127, sprocket-wheel 129, chain 130, sprocket-wheel 131, shaft 21, sprocket-wheel 132, chain 133, sprocket-wheel 134, and shaft 85, to and drives the straw-carrier 87 in the stacker-frame. The same rotary movement of the cylinder-shaft, communicated, as described, to the shaft 21, drives the straw-carrier 90 in the bed-frame 20 in the same direction as the straw-carrier in the stacker-frame is driven. The sprocket chain and wheel connection between the shaft 120 and the shaft 116 drives said shaft 116 in the same direction as the cylinder-shaft is driven and in the direction of the arrow *a* in Fig. 5. A gear-wheel 135 is mounted rigidly on the shaft 116 adjacent to and just inside of one side bar of the frame 13 and meshes with a gear-wheel 136, loosely mounted on a worm-shaft 137, mounted for rotation in the bearings 117 118. The hub of the gear-wheel 136 is formed with a clutch member arranged and so shaped as to engage at times with one face of a clutch member 138, slidably mounted on the worm-shaft 137. The clutch member 138 is formed with a longitudinal slot 139, that is traversed by a pin 140, seated in and projecting radially from the worm-shaft. A lever 141, bifurcated at its rear end, is fulcrumed at its forward end on the frame 13 beneath the peripheral portion of the turn-table 19, and the bifurcated end portion of said lever embraces the clutch member 138 and is confined by peripheral flanges 142 143 on said clutch member. Thus is the clutch member 138 mounted to rotate with the worm-shaft 137 and slide upon and longitudinally of said shaft under the control of the lever 141, engaging one or another of the peripheral flanges 142 143. A clutch member 144 is mounted loosely on the worm-shaft 137 and rigidly connected to a sleeve 145 to a gear-wheel 146, mounted loosely on the worm-shaft adjacent the bearing 118. The gear-wheel 146 meshes with a gear-wheel 147,

mounted on a stud projecting from the bearing 118 immediately below the worm-shaft 137, and the gear-wheel 147 meshes with the gear-wheel 148 on the inner end portion of the shaft 116, the gear 148 and miter-gear 125 being located on opposite sides of the bearing 118. The clutch member 144 is so shaped and arranged as to engage at times with one of the faces of the clutch member 138. A worm 149 is mounted rigidly on the inner end portion of the worm-shaft 137, the gear-wheel 146 and worm being located on opposite sides of the bearing 118. It may be well to observe here that the worm 149 meshes with and drives the worm-gear 94, and the bearing 118 limits the longitudinal movement of the worm and its shaft. When the clutch member 138 is in the position shown in Figs. 4 and 5, engaging the clutch member on the hub of the gear-wheel 136, a driving connection is established between the gears 135 136, clutch members, and worm-shaft 137, whereby said worm-shaft is rotated in the direction of the arrows *b* in Fig. 4, resulting in a movement of revolution of the worm-gear 94 in the direction of the arrow *c* in Fig. 4, whereby the worm-gear, turn-table 19, connected thereto by the pin 109, bed-frame 20, and mechanism carried by said bed-frame and including the stacker-frame are revolved in such a manner as to carry the stacker-frame in an arc toward and over the belt-wheel 123 of the driving mechanism and into a position nearly at right angles to the longitudinal plane of the separator. When the limit of movement in the direction just described has been reached, a pin 150, vertically seated in one or another of a series of apertures 151 in the peripheral portion of the turn-table, engages the arm of a tripping-lever 152, vertically positioned for oscillation in bearings 153 154, fixed to the frame 13, and moves said lever in one direction. The tripping-lever 152 is formed with a lateral bend or crank 155 in its upper portion, and a rod 156 is pivotally connected at one end to said lateral bend or crank, and said rod is connected at its opposite end to the lever 141, adjacent the bifurcated end portion of said lever. When the pin 150 engages the arm of the tripping-lever and oscillates said lever in the direction of travel of the pin, such movement of oscillation is communicated through the bend or crank 155 of the lever and exerts a draft on the rod 156, resulting in a movement of the lever 141 into engagement with the peripheral flange 143 of the clutch member 138, whereby said clutch member 138 is reciprocated or moved longitudinally on the worm-shaft in such a manner as to release the engagement thereof from the hub of the gear-wheel 136 and establish an engagement between the other end of the clutch member and the clutch-face of the member 144. When the clutch member 138 is shifted into contact with the clutch member 144, the gear-wheel 136 runs idly, and the motion heretofore transmitted idly from the shaft 116 through the gear-wheels 148 147 146 now becomes a driving motion, and owing to the interposition of the gear-wheel 147 between the gears of the shafts the motion of the worm-shaft 137 is reversed relative to its prior motion, thus providing for a reversal of the movement of revolution of the worm-gear 94 and turn-table. The reverse movement of the turn-table and mechanism carried thereon is continued until the stacker-frame is swung laterally of the separator and projects from the side of the frame 13 opposite to the belt-wheel 123. When limit of desired movement in the reversed direction is reached, a pin 157, vertically mounted in one or another of the apertures 151, engages the arm of the tripping-lever 152, reversely moves said lever, and, operating through the bend or crank 155 and rod 156 pushes the lever 141 and clutch member 138 away from the clutch member 144 and toward the gear-wheel 136, thus reëstablishing the original movement of oscillation or rotary travel of the stacker-frame. A crank-arm 158 projects laterally from the tripping-lever 152 and is connected by a retractile coil-spring 159 to an adjusting-screw 160, seated in one side bar of the frame 13. The relative positions of the tripping-lever and adjusting-screw are such that the spring 159 tends to retain the tripping-lever in either position, at either limit of rotary movement, in which it may be placed by contact of one or another of the traveling pins 150 157. The pins 150 157 may be removed from or replaced in the apertures or seats 151, as desired, to govern and control the degree of movement of oscillation of the stacker-frame between the operations of reversing such movement or to determine the degree of oscillation of the stacker-frame laterally of and relative to the median line of the separator. It may occur that one or another of the pins 150 157 will be accidentally displaced from its seat, and to avoid crashing the stacker-frame or driving mechanism into the frame of the separator I have provided the crank-arm 111 and studs 112 113, in the use of which the crank-arm 111 will ride upon one or the other of the studs and release the locking engagement of the pin 109 between the turn-table and worm-gear in the event that for any reason the tripping-lever fails to reverse the driving mechanism whereby the worm-gear and turn-table are revolved. Again, it sometimes occurs that it is desirable to stop the oscillatory movement of the stacker-frame to deposit a greater quantity of straw in a given position, and for this reason I have provided the crank-arm 102, cable 103, handhold 105, and pawl 106, the operations of which hereinbefore have been explained. In the oscillation of the stacker-frame laterally the cross-head 47 oscillates in its step and compensates for the slackening and tightening of the cables 36 37 intermediate of their ends and maintains a level transversely positioning of the stacker-frame. A hood 161, preferably

formed of sheet metal, is mounted rigidly upon and projects rearwardly from the straw-discharging end of the separator and is supported in its central portion by one of the braces 45, connecting it to the socket 44. Bearings 162 are fixed to and depend from the lower margin of the hood 161, and a hinge-rod is extended through and horizontally supported by said bearings. A plurality of leaves or wings 163 are mounted upon, hinged to, and depend from the hinge-rod in the bearings 162 in close relations with each other and abutting each other side by side. The leaves or wings 163 are arranged to swing outwardly relative to the hood 161 and permit the discharge of the straw upon the carrier 90, while at the same time they shield the straw and chaff from the influence of air-currents that otherwise might scatter said straw and chaff and prevent the discharge thereof by the straw-carriers. Hangers 164 165 are pivoted at their upper ends upon and depend from the rear portion of the separator-frame adjacent the ends of the hood 161, and a tailings-frame 166 is hung with its rear corners on the lower ends of said hangers. Bearings 167 168 are fixed to the forward corners of the tailings-frame 166, and a rock-shaft 169 is mounted with its central (straight) body portion in a horizontal position beneath and transversely of the forward end of the tailings-frame and embraced by bifurcations or forks on and extending downwardly from the bearings 167 168. Crank-arms 170 171 are formed on and extend downwardly from the rock-shaft 169 and are bent laterally and journaled in bearings 172 173, projecting rearwardly from the separator-frame. Thus is the rock-shaft journaled for oscillation in the bearings 172 173 and carries the forward end of the tailings-frame, the rear end of the tailings-frame being suspended by the hangers 164 165 loosely. An extension 174 is formed on and projects downwardly from the crank-arm 170 and is bent inwardly at its lower end. A pitman 175 is pivotally connected at its inner end to the inwardly-extending portion of the extension 174 of the crank-arm 170 and extends rearwardly therefrom to and is pivotally connected with a wrist-pin 176, mounted on a gear-wheel 177, journaled on a stud 178, laterally projecting from a side bar of the frame 13, adjacent the sprocket-wheel 121 on the shaft 120. The gear-wheel 177 meshes with a gear-wheel 178ª, rigidly mounted on the shaft 120 between the sprocket-wheel 121 and the frame 13. The rotary motion of the shaft 120 is communicated through the gear-wheel 178ª, gear-wheel 177, wrist-pin 176, pitman 175, and extension 174 and converted thereby to effect the oscillation of the rock-shaft 170, whereby the tailings-frame may be rectilinearly reciprocated. A rock-shaft 179 is mounted in the bearings 167 168, extends transversely of the forward end of the tailings-frame, and has a blade or wing 180 mounted rigidly on and extending rearwardly and upwardly therefrom. A crank-arm 181 is formed on one end of the rock-shaft 179, extends rearwardly at right angles to said shaft, and has its rear end portion turned inwardly and so shaped and arranged as to seat in one or another of apertures 182 in a plate 183, fixed to one side of the tailings-frame. A solid bottom 184 is mounted in the tailings-frame and projects forwardly into the fan-chamber of the separator. A perforated slide or screen is mounted in the tailings-frame immediately above and spaced apart from the solid bottom 184, and a series of ribs 185, of ratchet formation, are mounted on the screen and extend transversely of the tailings-frame. The tailings of chaff and grain that are blown from the fan-chamber upon the tailings-frame are sifted thereby, the chaff going rearwardly over the ribs and upon the carrier 90 and the grain falling through the screen upon the solid bottom 184 and discharging back into the fan-chamber, below the main current of air therefrom. By means of the rock-shaft 179, blade 180, crank 181, and perforated plate 183 I am enabled to control, regulate, and determine the strength and direction of the current of air proceeding from the fan-chamber of the separator over the tailings-frame.

Shields 186 187 are mounted on and extend upwardly from opposite sides of the bed-frame 20 and serve to retain the straw against lateral displacement from the carrier 90.

Assuming the parts to be positioned as shown in Fig. 1, the stacker-frame may be folded upon the separator, as shown by dotted lines in Fig. 2, by the following operation: Manual force is applied to one or another of the hand-wheels 58 59 to rotate the worm 56. The worm 56 engages and rotates worm-gear 54 to effect the rotation of the worm-shaft 53 and drums 60 61 thereon. The drums receive and wind up the forward end portions of the cables 36 37, and said cables, drawing through the sheaves on the cross-head 47, lift the stacker-frame on the axis of rotation of the shaft 21. In the elevation of the stacker-frame the side bars thereof contact with the levers 63 64 and are steadied and restrained in further forward movement by said levers cushioning upon the springs 69 70 and yielding under the draft of the cables only and not affected materially by the forwardly-trending weight of the stacker-frame. In its forward movement the stacker-frame approaches the hood 161 and the angle-irons 82 83 travel beneath and engage the hooks 76 77 on the rock-shaft 75. At this time the movement of rotation of the worm-shaft 55 is reversed, thus slackening the cables and permitting the section 27 of the stacker-frame to descend gradually and under perfect control to a position of rest upon the top of the separator, the cables paying out through the sheaves on the stacker-frame and permitting the separation of the meeting

ends of the braces 30 31 32 33, the section 27 of the frame swinging on the pins of the hinges 28 29. When it is desired to elevate and extend the stacker-frame, the worm mechanism is operated to first lift the section 27 of the frame by draft upon the cables 36 37 until the braces of the frame contact, and then the hooks 76 77 of the rock-shaft 75 are released from the angle-irons 82 83 by manual operation of the draw-rod 79, acting through the crank-arm 76 to oscillate said rock-shaft, and then the expansive resilience of the springs 69 70 impels the stacker-frame rearwardly, subject to a succeeding manual relaxation of the cables 36 37, until the desired degree of inclination of the stacker-frame is attained. The stacker-frame may be adjusted in any position between a horizontal plane and the vertical plane for use; but its operation will be more satisfactory when inclined to less than sixty degrees than if inclined to a greater extent than sixty degrees relative to a horizontal plane. The cylinder-shaft 11 of the separator may be driven in any desired manner.

I claim as my invention—

1. In a machine of the class described, a stacker-frame formed in two sections hinged together, truss-rods depending from and meeting below the sections of the stacker-frame, whereby flexure of said frame in one direction is limited and cables mounted on and connecting the sections of the frame and truss-rods, substantially as described.

2. In combination with the sectional stacker having its sections hinged, a sectional truss having its parts secured to the respective hinged sections of the stacker and having their abutting ends out of line with the joint between the hinged extremities of the stacker-sections, and cables connecting the sections of the stacker-frame and truss adjacent to their abutting or meeting ends, substantially as specified.

3. The combination of the separator, the drum-shaft thereon, means for driving the drum-shaft, a stacker-frame mounted for vertical adjustment and horizontal oscillation, cables connecting said stacker-frame and drum-shaft, a cross-head pivoted at its center upon said separator, sheaves on the end portions of said cross-head and receiving the cables from the stacker-frame, and sheaves on the central portion of said cross-head and receiving said cables from the sheaves on the end portions of the cross-head and guiding them to the drum-shaft.

4. The combination of the separator, the stacker-frame hinged thereto for vertical adjustment and formed in two sections hinged together, hooks pivotally mounted on the separator, angle-irons on the inner portion of the stacker-frame and arranged to engage said hooks at times, cables and windlass mechanism whereby the stacker-frame is adjusted to engage the angle-irons with the hooks and to flex or extend the stacker-frame, and means for releasing said hooks from the angle-irons.

5. In combination, a supporting-frame, a stacker hinged to said frame, pivoted arms arranged in the path of the stacker, curved rods rigidly attached to the pivoted arms, and coil-springs mounted upon the curved rods and confined thereon between stops, substantially as described.

6. In a machine of the class described, the stacker-frame formed in two sections hinged together, buffer-arms 63, 64 arranged for engagement by the stacker-frame, springs supporting said buffer-arms, angle-irons on one section of the stacker-frame, releasable hooks arranged to engage said angle-irons and hold the stacker-frame against the resilience of the buffer-arms and rope and windlass mechanism whereby the sections of the stacker-frame may be flexed or extended during the engagement of the hooks with the angle-irons.

7. The combination of the separator, the worm-gear mounted thereon, means for driving said worm-gear in reverse directions, the turn-table mounted on the worm-gear, a latch connecting said turn-table and worm-gear for conjunctive operation, tripping mechanism whereby the reversing mechanism is controlled, tripping mechanism whereby the latch between the worm-gear and turn-table is controlled, the bed-frame surmounting the turn-table, the conveyer mounted for travel in said bed-frame, the stacker-frame hinged to the bed-frame, the straw-carrier in said stacker-frame, and means for adjusting and flexing said stacker-frame.

8. In a machine of the class described, the frame 13, the worm-gear mounted for revolution on said frame, the reversible mechanism whereby said worm-gear is revolved, the turn-table mounted parallel with the worm-gear, the pin 109 connecting said gear and turn-table, the rock-shaft 101 mounted for oscillation on the turn-table, the crank-arm on said rock-shaft and engaging said pin, the studs 112, 113 on the frame 13 and the crank-arm 111 on said rock-shaft and arranged to engage one or the other of said studs and release the pin from the worm-gear.

9. In a machine of the class described, the frame 13, the worm-gear mounted for revolution on said frame, the reversible mechanism whereby said worm-gear is revolved, the turn-table mounted parallel with the worm-gear and latched thereto, the tripping-lever mounted for oscillation and connected with the reversible mechanism and pins mounted upon the turn-table and arranged for alternate engagement with the tripping-lever.

10. In a machine of the class described, the frame 13, the worm-gear mounted for revolution on said frame, the turn-table mounted parallel with the worm-gear, the pin connecting said gear and turn-table, the rock-shaft mounted for oscillation on the turn-table, spring-pressed in one direction and arranged

for manual operation in the other direction, studs on the frame and a crank-arm on said rock-shaft so shaped and arranged as to engage one or the other of said studs and move the rock-shaft in the direction of the manual operation thereof.

11. In a machine of the class described, the frame 13, the worm-gear mounted for revolution on said frame, the turn-table mounted parallel with the worm-gear, the pin connecting said gear and turn-table, the rock-shaft mounted for oscillation on the turn-table, spring-pressed in one direction and arranged for manual operation in the other direction, studs on the frame and a crank-arm on said rock-shaft so shaped and arranged as to engage one or the other of said studs and move the rock-shaft in the direction of the manual operation thereof, in combination with a pawl 106 whereby the movement of oscillation of the rock-shaft may be determined.

12. In a machine of the class described, the bed-frame, the worm-gear mounted for revolution on said frame, the shaft vertically transversing the center of the worm-gear, the turn-table mounted above the worm-gear and latched thereto, means for driving the gear in either direction, a frame surmounting the turn-table, a stacker-frame hinged to said frame, a straw-carrier in said stacker-frame, a shaft journaled in the first frame and connected with the first said shaft, a shaft journaled in the upper frame and connected with the first said shaft and flexible connections between the latter shaft and the straw-carrier.

Signed by me at Des Moines, Iowa, this 13th day of February, 1899.

MAX F. STADTMULLER.

Witnesses:
S. C. SWEET,
CHAS. A. VAN VLECK.