I. L. DAWSON.

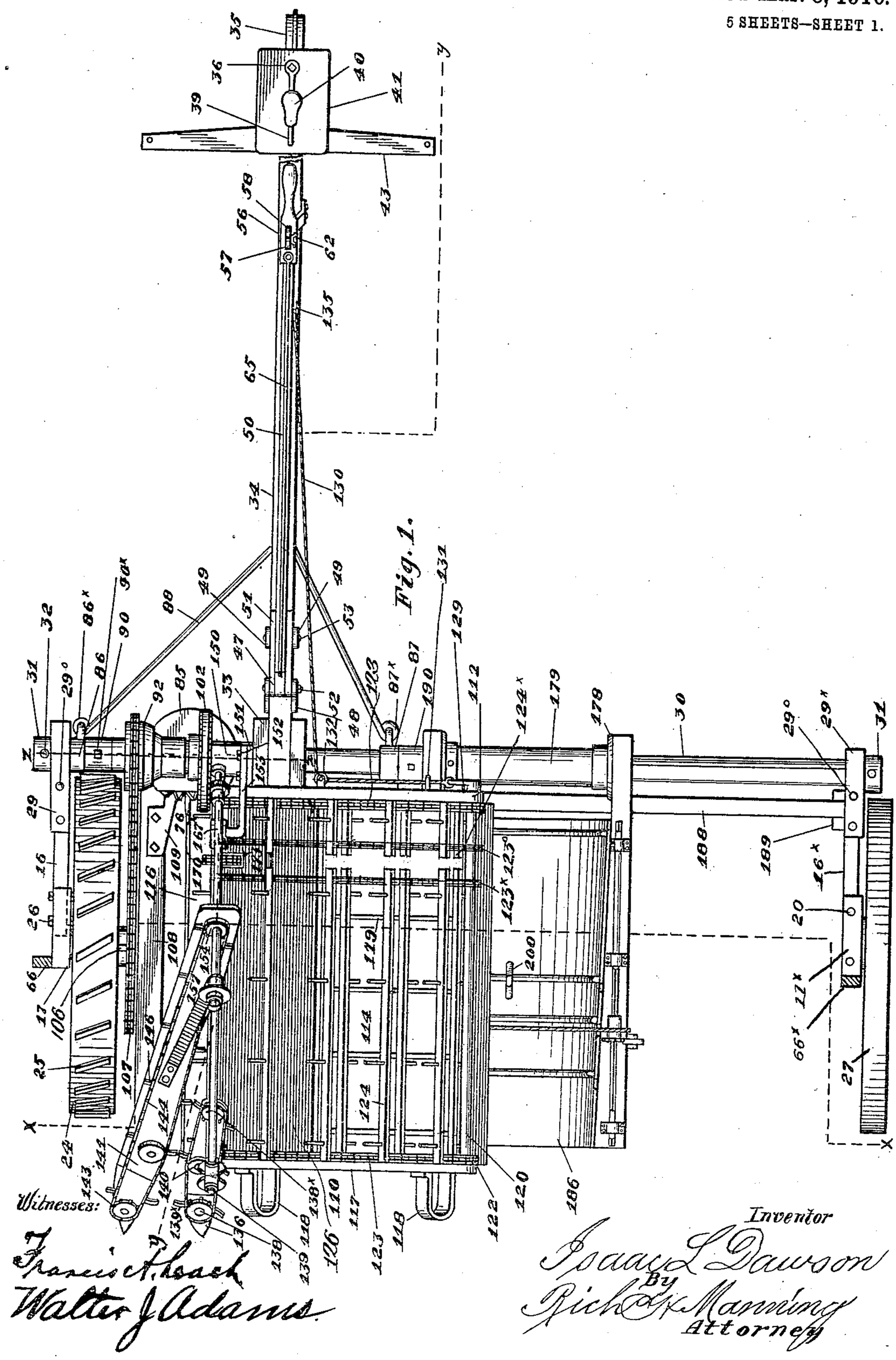
CORN HARVESTER.

APPLICATION FILED MAY 10, 1907. RENEWED AUG. 20, 1909.

951,366.

Patented Mar. 8, 1910.

5 SHEETS—SHEET 1.



I. L. DAWSON.

CORN HARVESTER.

APPLICATION FILED MAY 10, 1907. RENEWED AUG. 20, 1909.

951,366.

Patented Mar. 8, 1910.

5 SHEETS—SHEET 2.

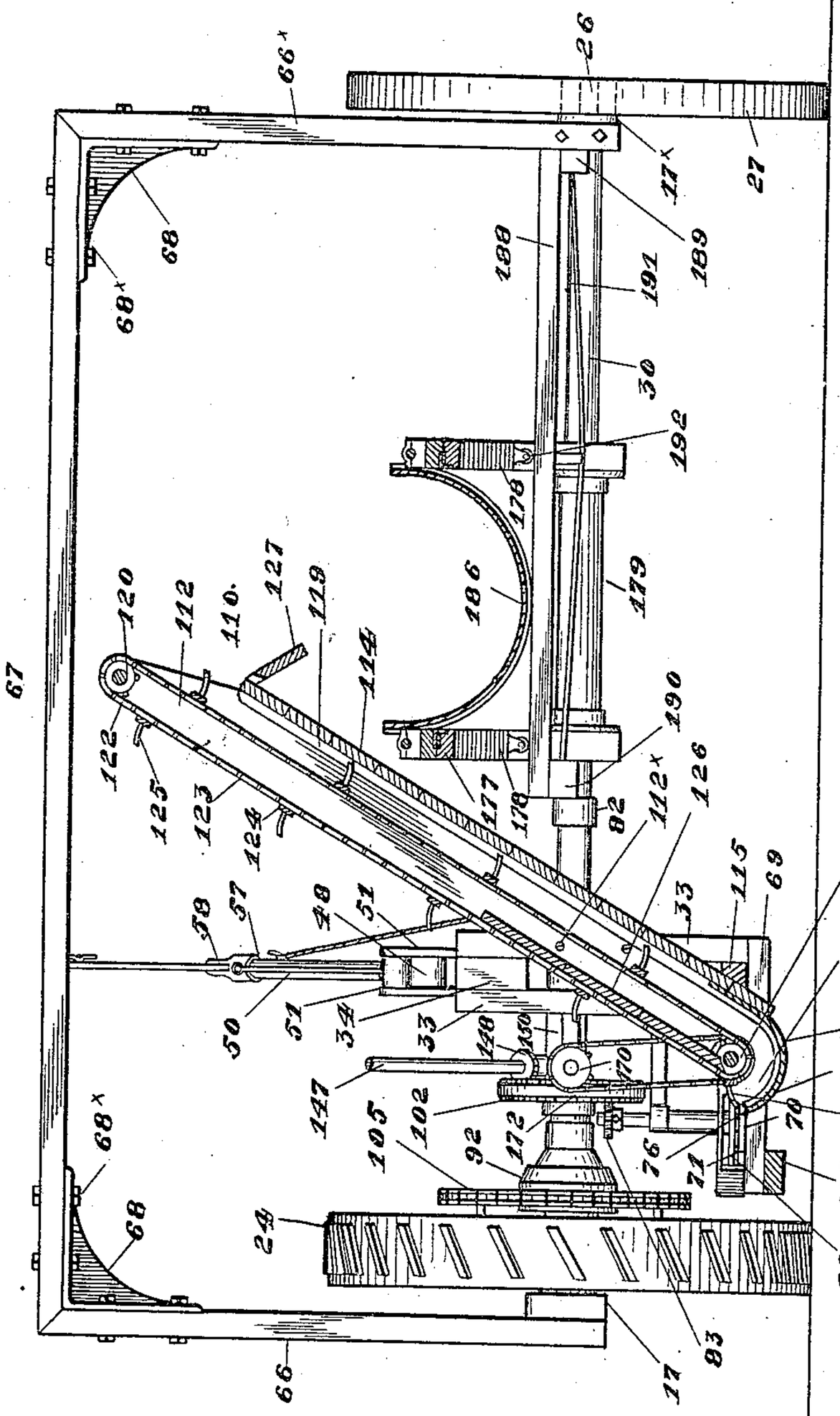


Fig. 2.

Witnesses:
Francis A. Lead
Walter J. Adams

Inventor,
Isaac L. Dawson
By Fisher & Manning
Attorney.

I. L. DAWSON.

CORN HARVESTER.

APPLICATION FILED MAY 10, 1907. RENEWED AUG. 20, 1909.

951,366. Patented Mar. 8, 1910.

5 SHEETS—SHEET 3.

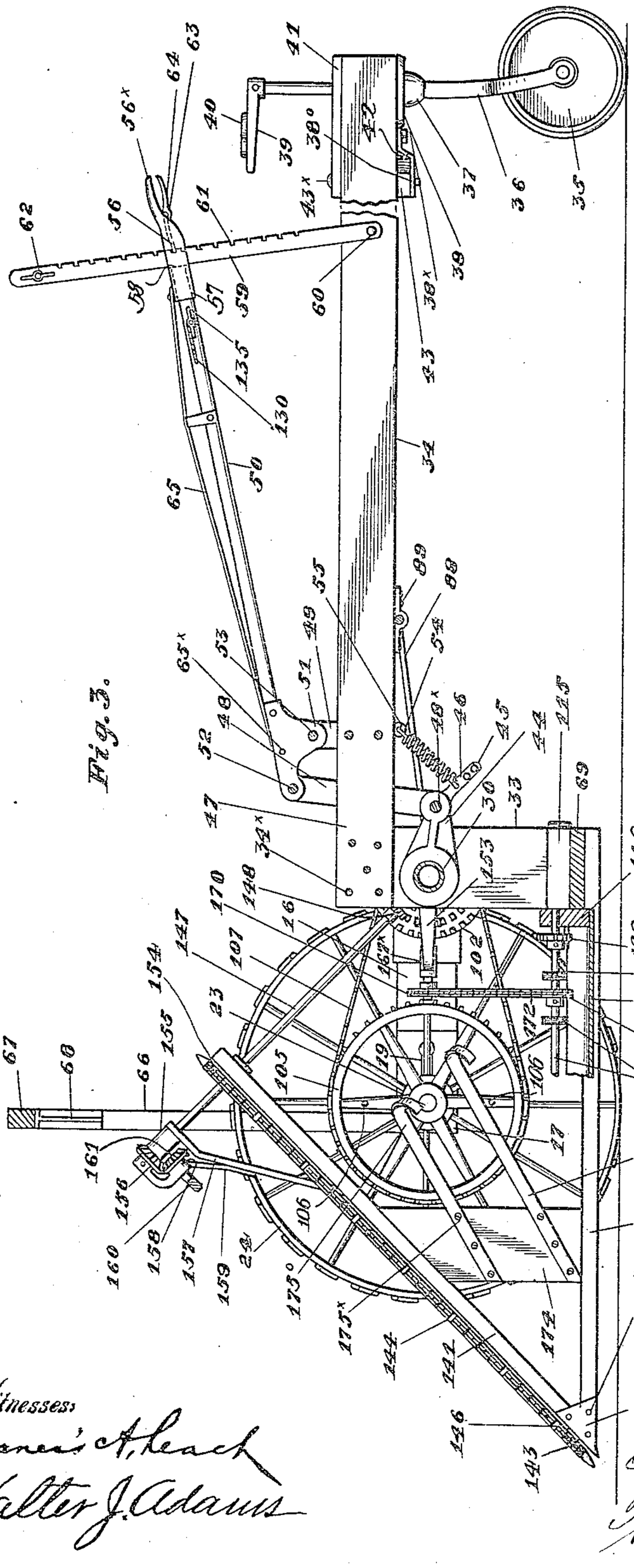


Fig. 3.

Witnesses:
Frances A. Leach
Walter J. Adams

Inventor;
Isaac L. Dawson
By
Richards & Manning
Attorneys.

I. L. DAWSON.

CORN HARVESTER.

APPLICATION FILED MAY 10, 1907. RENEWED AUG. 20, 1909.

951,366. Patented Mar. 8, 1910.

5 SHEETS—SHEET 4.

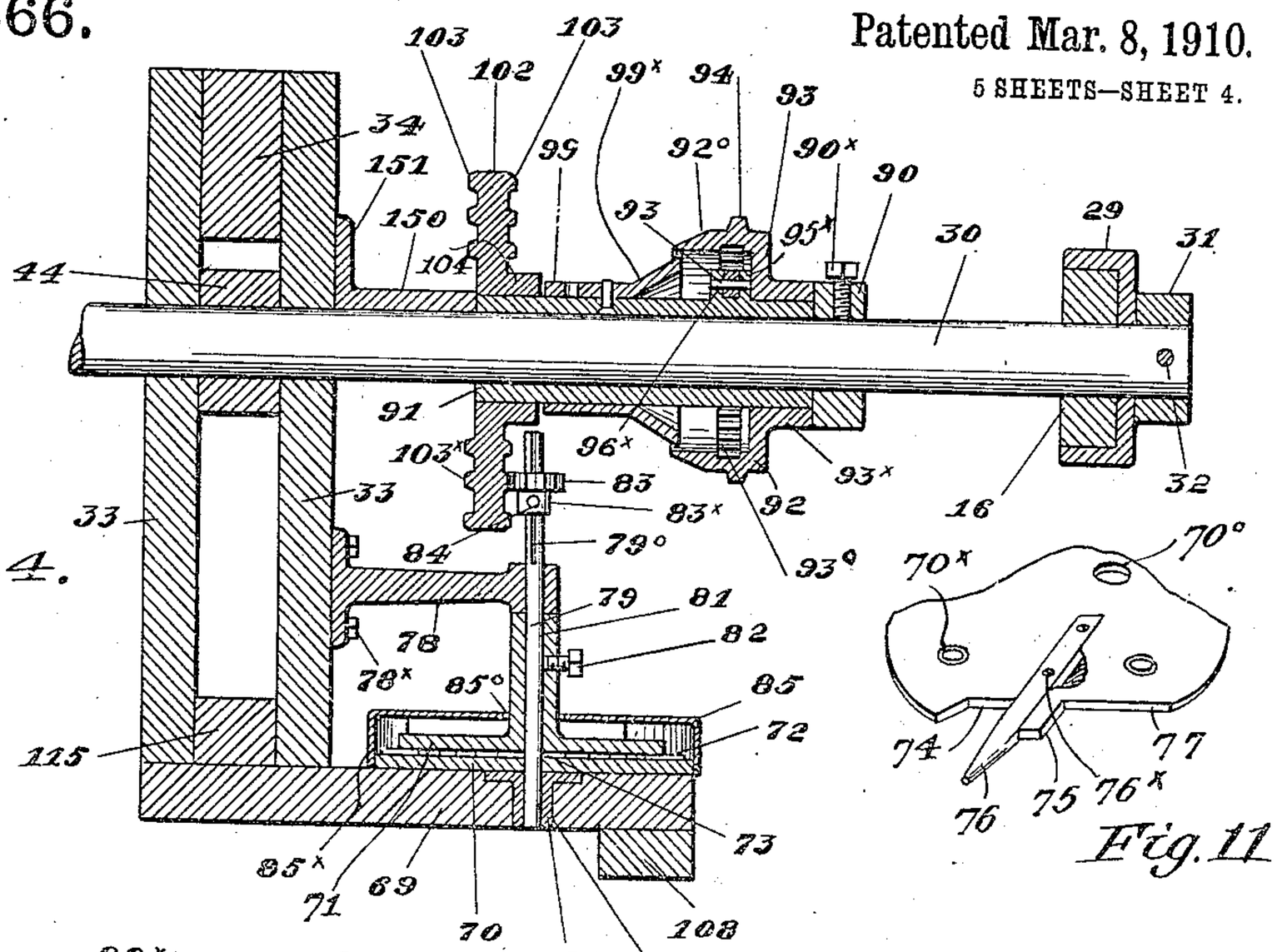


Fig. 4.

Fig. 11.

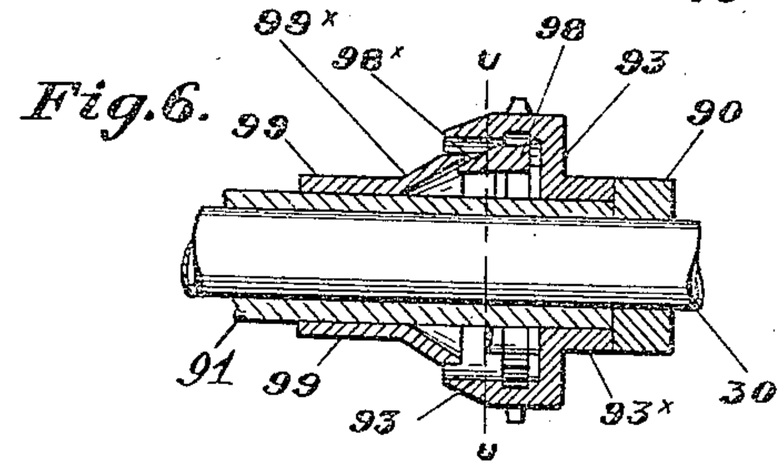


Fig. 6.

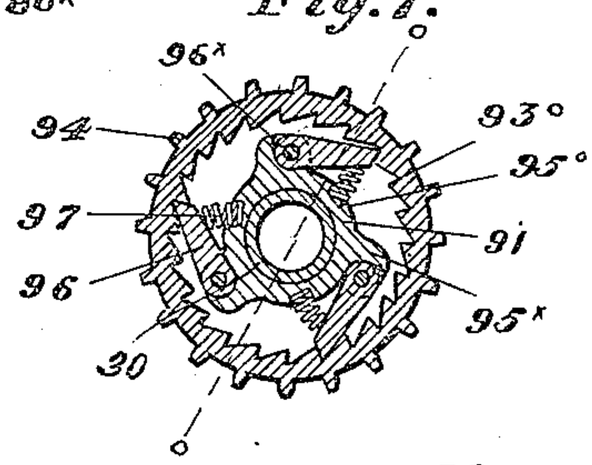


Fig. 7.

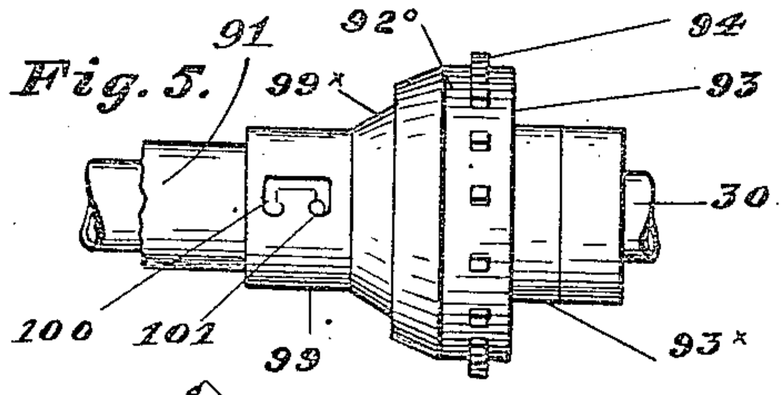


Fig. 5.

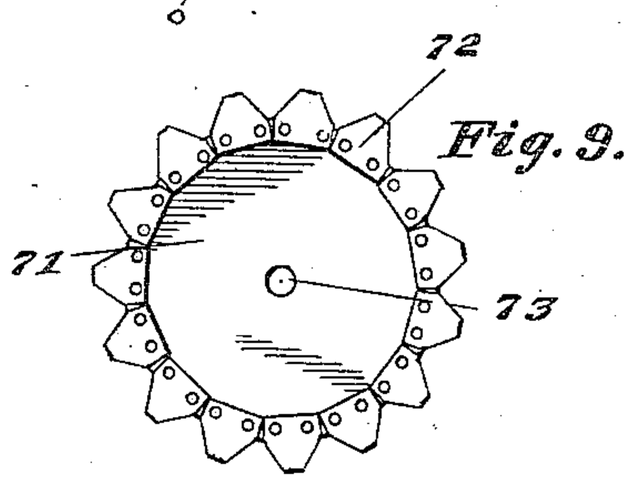


Fig. 9.

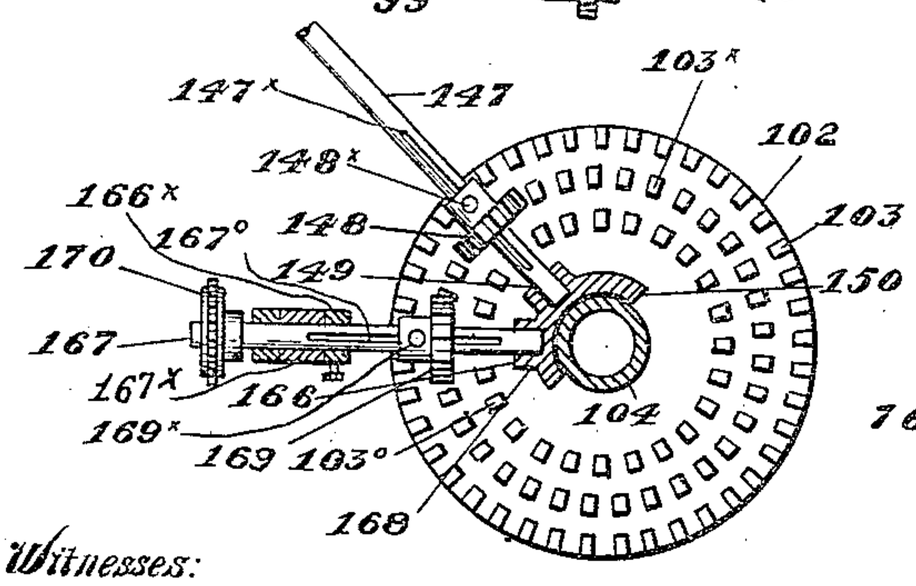


Fig. 8.

Fig. 10.

Witnesses:

Francis A. Leach

Walter J. Adams

Inventor,

Isaac L. Dawson

By Pickel & Manning

Attorney

I. L. DAWSON.

CORN HARVESTER.

APPLICATION FILED MAY 10, 1907. RENEWED AUG. 20, 1909.

951,366.

Patented Mar. 8, 1910.

5 SHEETS—SHEET 5.

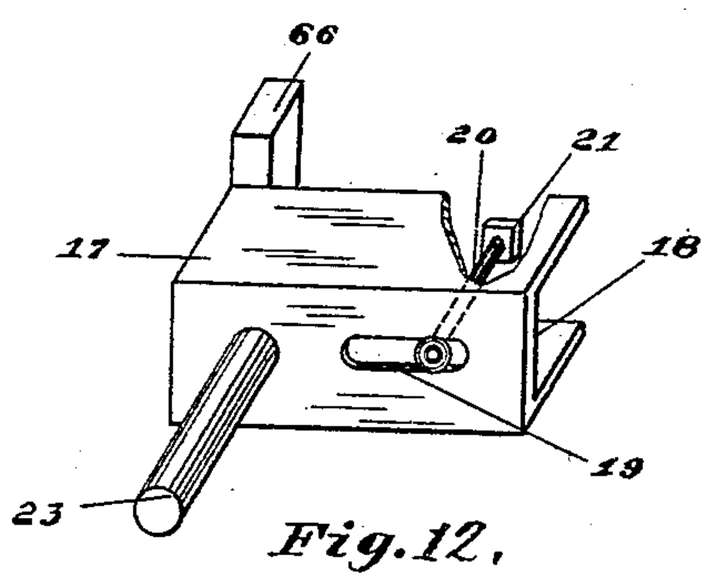


Fig. 12.

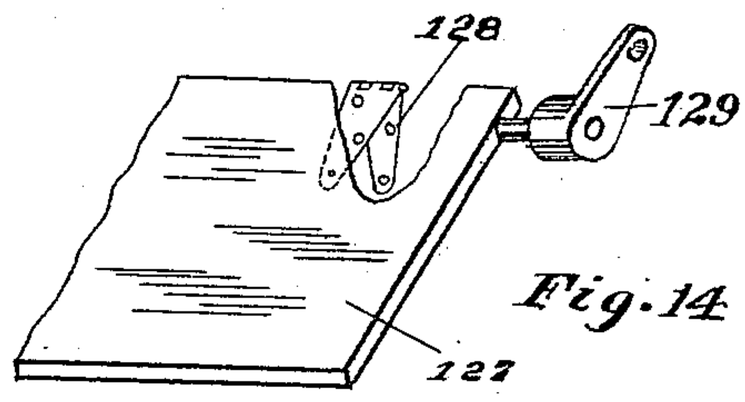


Fig. 14.

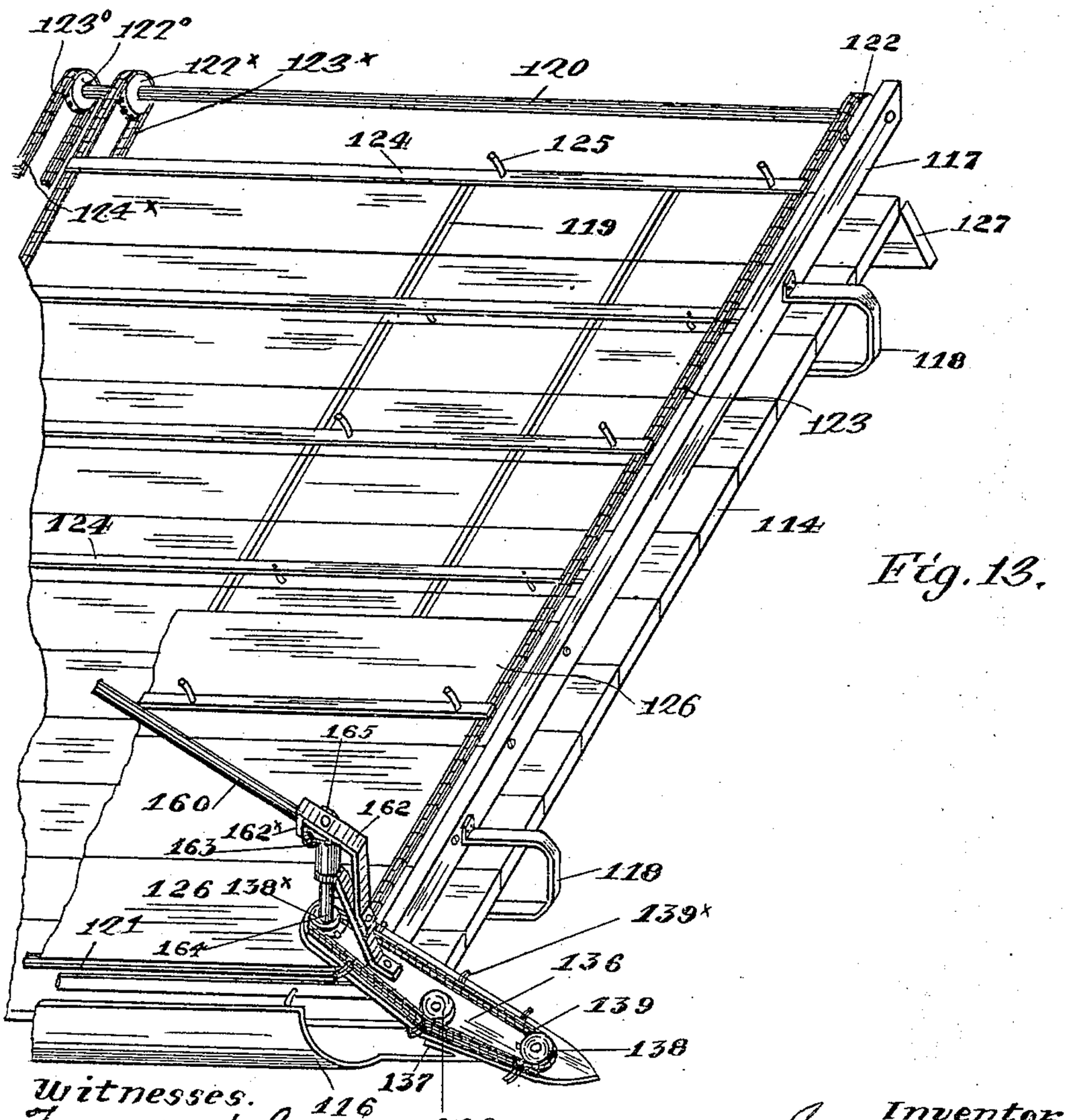


Fig. 13.

Witnesses.

Francis A. Leach

Walter J. Adams

Inventor

Isaac L. Dawson

By Dodge & Manning

Attorney.

UNITED STATES PATENT OFFICE.

ISAAC L. DAWSON, OF KANSAS CITY, MISSOURI.

CORN-HARVESTER.

951,366. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed May 10, 1907, Serial No. 372,922. Renewed August 20, 1909. Serial No. 513,873.

To all whom it may concern:

Be it known that I, ISAAC L. DAWSON, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Corn-Harvesters; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The principal objects of the invention are first—to apply the motive power to propel the harvester and control its movements from a position in rear of the transverse axis of the machine. Second—to cause the several stalks to fall in a direction corresponding to the forward direction of movement of the harvester with the butts to the rear. Third—to effect an ingathering of the stalks by the elevator and carried in rear thereof to be elevated. Fourth—to regulate differentially the speed of the elevator, the stalk cutters and gatherers. Fifth—to regulate the height of cut of the stalk cutter. Sixth—to depress the machine between the axis and the guide wheel and support the same under adjustable tension. Seventh—to prevent clogging of the stalk cutters, and, eighth—to relieve the mechanism from shock in the reduction of speed from the main drive wheel to the speed changing mechanism.

The invention consists in the novel construction and combination of parts such as will be first fully described and then specifically pointed out in the claims.

In the drawings—Figure 1 is a plan view of the improved corn harvester and shocker. Fig. 2 is a transverse vertical sectional view of the harvester taken upon the line *x x* on Fig. 1 looking forwardly. Fig. 3 is a side view of the harvester partially in vertical section, taken upon the line *y y* on Fig. 1, showing the rear portion of the frame lowered in position. Fig. 4 is a detail vertical sectional view of the rear tilting portion of the frame of the harvester taken upon the line *z z* on Fig. 1 looking forwardly, the transverse fixed shaft connecting the sides of the frame being shown in full lines. Fig. 5 is a detail view of the dust proof clutch box and gear as seen in Fig. 1, showing a broken portion of the fixed transverse shaft and sleeve and the bayonet joint fastening for the sliding clutch sleeve. Fig. 6 is a longitudinal sectional view of the clutch box and gear as seen in Fig. 5, showing the lugs on the pawls and the pawls disengaged, the line of the section being taken upon the line *o o* on Fig. 7. Fig. 7 is a sectional view of the portion of the clutch and gear fixed to the sleeve and taken upon the line *u u* on Fig. 6. Fig. 8 is a detail side view of the power transmitting speed changing wheel, showing portions of the power shafts conveying power to the elevator and stalk gatherers showing the adjustable gears on the shafts. Fig. 9 is a view of the stalk cutter inverted in position. Fig. 10 is a plan view of the fixed plate upon which the cutter rotates showing the guard finger. Fig. 11 is a detail view, in perspective, of the plate carrying the guard finger, showing the depression in the plate for said finger. Fig. 12 is a detail view in perspective of one of the forward adjustable castings on the side beams of the frame of the harvester showing the stud shaft or spindle upon which the main driving shaft is mounted and the adjusting bolt and nut. Fig. 13 is an enlarged broken view in perspective of the forward end of the elevator and the trough for receiving the stalks also showing the smaller stalk divider board and its support upon the forward end of the trough. Fig. 14 is a broken view in perspective of the hinged stalk deflecting board on the back of the elevator showing the arm or bar.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings the main supporting frame of the harvester consists of the parallel side beams 16 and 16× which are relatively in position a wide distance apart and are short in length. Upon the said beams are castings 17, 17× respectively which are also short in length. In the outer surface and rear end portions of the castings 17 which as shown is upon the right hand side of the machine is a recess 18, which receives the forward end of the said beam. In the casting opposite the recess 18 is a longitudinal slot 19 within which slot is an adjusting screw bolt 20 upon which bolt is an adjusting nut 21. (See Fig. 12.)

Connected rigidly with the inner surface and forward end of the casting 18 is a stud shaft 23 (see Figs. 3 and 12,) which is

short in length and upon which shaft is mounted the main driving and supporting wheel 24 of the harvester, which wheel is provided with the usual obliquely arranged traction lugs 25 upon its periphery. The casting 17× on the side 16× of the frame is similar to casting 17 the recessed portion being upon its inner surface for the beam 16× and upon the outer surface of the casting is a short stud shaft 26 upon which is mounted the idle or supporting wheel 27 of like circumference to the main drive wheel 24. The casting 17× is secured fixedly to the beam 16× by the bolts 28. The side beams 16, 16× are arranged in position a wide distance apart so as to provide for moving the shock upon the frame of the harvester and upon the rear ends of said beams are connected castings 29 and 29× which are secured by the bolts 29° rigidly to the respective beams and to the outer surfaces of the said beams, the channel casting being seen in Fig. 4. The rear ends of the beams 16, 16× extend but a short distance in rear of the wheels 24 and 27, and through said ends extend transversely the ends of a non-rotating connecting shaft 30. This shaft 30 is preferably hollow and to sustain the weight superimposed by the shock of corn is of considerable size. The shaft 30 is secured fixedly to the side beams 16, 16× by means of collars 31, secured to the ends of the shaft by bolts 32, and which collars bear upon the outer surfaces of the channel castings 29 and 29×.

At a point on shaft 30 the requisite distance from the side beam 16 in the direction of beam 16× to give direct power to the main drive wheel 25 and support the stalk cutting devices are mounted the vertical suspensory plates 33, which are arranged a short distance apart and loosely on the fixed shaft 30, the upper ends of the plate extending a short distance upwardly above said shaft. Between said upper ends of plates 33 extends the forward end of the horizontal push beam 34 which is bolted firmly by the bolts 34× to the said plates. The rear end of the push beam extends as far rearwardly as is necessary for hitching the team of horses to the beam. The said rear end of the beam 34 is mounted upon a swivel or caster wheel 35. This wheel is journaled between the lower forked ends of the pivot post 36, upon which is cast a boss 37, upon which the rear end of the beam 34 bears, a bearing plate 38 being secured by bolts 38× to the lower or under surface of the beam which bears directly upon the boss 37. The upper end of the pivot post 36 extends in a vertical direction through the plate 38 and the beam 34 and to a position a considerable distance above the upper surface of the beam. A wheel guiding or steering lever 39 is connected fixedly at one end with the upper end of the pivot post 36 upon which lever is mounted securely a saddle or seat 40.

Upon the upper surface of the rear end of beam 34 is a broad plate 41 secured firmly to said beam and through which the pivot post 36 is passed. Upon this plate 41 the driver stands in the forward movement of the harvester. A short portion or strap 38° of the bearing plate 38 is bent downwardly at 42 and extended forwardly a short distance and upon said portion 42 of the plate 38 is mounted at a point equidistant from its ends the double tree 43, to the ends of which double tree the draft is applied to move the harvester forward, a pivot bolt 43× for the double tree passing through the beam 34 and plate 38. Upon the fixed shaft 30 between the vertical suspensory plates 33 is connected rigidly the enlarged end portion of a crank arm 44 which extends rearwardly from the shaft and upon the outer end of said arm is a downwardly and rearwardly inclined extension 45 which is perforated at intervals in the direction of the length as at 46. (See Fig. 3.) Upon each side of beam 34 a short distance rearwardly from its point of connection with plate 33 is a short connecting bar 48, the lower ends of which bars are pivotally connected at 48× with the outer end of the crank arm 44, near the extension 45, one bar only being seen in Fig. 3.

Bolted to the sides of beam 34 are fulcrum plates 49 which extend a short distance above the upper surface of the beam and upon which are fulcrumed in the following manner the frame raising and lowering lever 50. To the sides of the forward end of the lever 50 are riveted the plates 51 the forward ends of which plates extend to the upper end of the connecting bar 48, and which bar is connected with said plates by the pivot bolt 52. A portion of plate 51 a short distance in rear of its pivotal point with the bar 48 extends downwardly a short distance its lower portion being curved outwardly in the arc of a circle and pivotally connected by the pivot bolts 53 with the fulcrum plates 49. With the extension 45 of the crank arm 44 is adjustably connected one end of a spiral spring 54, the other end of which spring is connected with an eyebolt 55 secured to the under side of the beam 34 beneath the fulcrum plate 49.

Upon the rear end of lever 50 is a cast extension or handle 56 having a socket 57 fitted to said lever (see Fig. 2). In the casting is a vertical opening 58. The under surface and rear end of the handle are cut away at 56× in an upward direction and in a curved line. 59 indicates a vertical latch bar pivotally connected at its lower end by the pivot bolt 60 to the side of the beam 34 in the rear surface of which bar are notches 61

spaced apart in the longitudinal direction of said bar. The upper end of bar 59 extends within the slot 58 of the handle or casting 56 and upon the upper end and upon one side of the said bar is a hitching hook 62, to which the driving reins from the head stalls of the animals may be conveniently secured. To the portion 56× of the handle 56 is secured by the pivot 63 a detent or latch 64 the forward end of which detent extends within the opening 58 in the handle 56 and engages with the notches 61 in the vertical latch bar 59. A truss rod 65 is secured at one end to the upper surface of the handle 56 on the lever 50 the other end being secured to the bolt 65× on the plates 51 at the forward end of said lever.

In order to give rigidity to the side beams 16, 16× of the harvester vertical standards 66, 66× are connected rigidly at their lower ends with the forward ends of the respective castings 17 and 17× the standard 66 being connected with the outer forward surface of casting 17 and the standard 66× with the extreme forward end of casting 17×. With the upper ends of said standards 66, 66× are connected the ends of a transverse bar 67. Upon the inner surfaces of the standards 66, 66× are brackets 68 secured to said standards and the transverse bar 67 by the bolts 68×. The lower end portions of the suspensory plates 33 on the fixed shaft 30 extend downwardly the requisite distance to approach the ground when the frame is lowered in position without contact with the ground and with the said lower ends of the said plates is connected rigidly one end of a horizontal platform or plate 69, the other end of which platform extends toward the main driving wheel 24 and to within a short distance of said wheel. Upon the upper surface of the platform is mounted the circular plate 70 (see Fig. 10,) secured in position by the bolts 70× at the axis of which plate is a shaft opening 70°. Upon the upper surface of the plate 70 is mounted the rotary stalk cutter 71 which consists of an annular plate smaller in circumference than the plate 70 to the lower surface of which plate are secured or riveted the inner ends of the cutter blades 72, which extend in series around the said plate, the cutting edges extending a short distance outwardly from the line of the circumference of plate 71. The blades 72 bear directly upon the upper surface of plate 70 the outer ends of the blades extending outwardly to a position near the circumference of plate 70. At the axis of plate 71 is a shaft opening 73. The forward portion of plate 70 extends a short distance past the line of the forward portion of the platform 69 and said plate is cut away or notched inwardly at 74 and 77 to form a throat, the side of the notch toward the main drive wheel being outwardly inclined. A fender or guard 75 projects from said plate intermediate said openings 74 and 77 and is connected rigidly with the said plate 70. In the upper surface of the plate 70, is a depression 76× extending parallel with the outer surface of the projection 75, in which depression is a guard finger 76, flush with plate 70, and secured to the plate by rivets 76×.

Connected rigidly with the inner suspensory plate 33 a short distance above the platform 69 is a shaft hanger 78 (see Fig. 4) bolted at 78× to said plate and extending horizontally therefrom the outer end extending to a position above the rotary cutter plate 71 in which hanger is supported a vertical power shaft 79 the lower end of which shaft extends downwardly through the opening 73 in plate 71 and the opening 70× in plate 70 and extends within a flanged boxing 80 secured within an opening 80× in the platform 69. Formed integrally with the cutting plate 71 is a sleeve 81 extending around shaft 79, the upper end of which sleeve extends to the lower surface of the outer end of the shaft hanger 78. Extending through the side of the sleeve is a set screw 82 which secures the sleeve to the shaft 79, the sleeve rotating in unison with the said shaft. The upper end of shaft 79 extends a short distance above the shaft hanger and is provided with a groove or key-way 79°. Upon said end of shaft 79 is a vertically movable and adjustable gear wheel 83 small in size, and upon the lower side of which is a sleeve 83× through which extends an adjusting screw 84 which extends within the key-way 79°. A circular cover 85 extends above the plate 71 on the sleeve 81 and in which cover is an opening 85° for the sleeve, the downwardly extended annular portion 85× of which cover rests upon the platform 69 and prevents the entry of any refuse to the cutters. The portion of the cover 85 above the throat 74, 77, of the plate 70 is cut away. Upon the fixed shaft 30 and close in position to the inner surface of the casting 29 on the side beam 16 is a collar 86 upon which collar is an eye 86×. Upon the fixed shaft 30 upon the side of the suspensory plates 33 in the direction of the supporting wheel 27 and at a point a short distance from said plates is a collar 87 upon which is an eye 87×. A stay rod 88 is provided with a hooked end which is secured to the eye 86× on the sleeve 86, the other end being extended rearwardly and inwardly to a box 89 secured to the lower portion of beam 34 and from said box the rod is bent forwardly and provided with a hooked end portion engaging with the eye 87× on the collar 87. Upon the transverse fixed shaft 30 close in position to the collar 86 is a fixed collar 90 secured to said shaft by an ad-

justing screw bolt 90× (see Figs. 1 and 4.) Adjacent to said collar 86 and mounted on said shaft 30 is a loosely mounted sleeve 91. (See Fig. 4.) Upon the end of sleeve 91 adjacent to the collar 90 is mounted loosely a hollow sprocket wheel 92, its peripheral portion 92° being made integral with a disk 93, also integral with a hub 93× which is loosely mounted on sleeve 91, and abutting the collar 90. On the inner circumference of the peripheral portion 92° of said wheel are ratchet teeth 93° and upon the outer surface are sprocket teeth 94. Upon the sleeve shaft 91 is secured rigidly the ears 95× and pivotally connected at 96× with said ears are pawls 96 which engage with the ratchet teeth 93° on the wheel 92, which pawls are retained in engagement normally by means of springs 97, the outer ends of the springs bearing upon the inner surfaces of the pawls and the other ends seated within recesses 95° in the plate 95. (See Fig. 7.) Upon the outer end portions of each pawl 96 is cast a lug 98, which extends at right angles to said pawl and outwardly from the opening in the wheel 92 as seen in Fig. 6, the upper surface of the lugs being inclined or beveled forwardly and downwardly as at 98×. Upon the sleeve 91 is loosely mounted a clutch sleeve 99 upon which sleeve is a cone shaped clutch 99× which enters the opening in the wheel 92 and engages with the lugs 98 on the pawls 96 and releases said pawls from engagement with the ratchet teeth 93°. In the sleeve 99 is a bayonet slot 100 and in the sleeve 91 is a pin 101 which extends within the said bayonet slot. this slot having two branches at the ends for the partial rotation of sleeve 99 in order to lock the sleeve in a position in engagement with the pawls or out of engagement the latter serving to prevent rotation of the sleeve 91 in moving the harvester to and from the field, the ratchet pawls and teeth permitting the harvester to be suddenly stopped without throwing stress upon the stalk feeding and cutting mechanism.

Upon the end of sleeve 91 in the direction of the suspensory plates 22 is mounted fixedly a large speed changing circular plate or wheel 102 upon both faces of which plate are teeth or cogs 103 one series of the cogs being arranged circumferentially near the periphery of the plate 102 and another series 103× inwardly and concentric with the series 103 and another series 103° concentric with the series 103× the cog teeth on the outer face of the wheel 102 being in engagement with and driving the small gear wheel 83 on the shaft 79 operating the rotary stalk cutter plate 71. Upon the cog wheel 102 is a hub 104 which is directly above the end of the shaft 79. Upon the stud shaft 23 upon which the main driving shaft is mounted is a sprocket wheel 105 (see Fig. 3), the spokes of which wheels 24 and 105 are connected by rivets or bolts 106 so that the wheels will rotate with each other. Over the sprocket wheel 105 is extended an endless sprocket chain 107 which is also extended over the hollow sprocket wheel 92.

On the lower outer portion of the platform 69 is connected rigidly the rear end of a bar 108, (see Figs. 1, 2 and 3), the forward end of which bar extends forwardly and horizontally a considerable distance forward of the wheels 24 and 27. Upon the upper surface of this bar 108 and immediately forward of its point of connection with the platform 69 is a casting or fender plate 109, (see Fig. 1), the outer edge of which plate extends toward the blades 72 on the rotary stalk cutter plate 71 and is inclined to said bar.

110 indicates the stalk elevator the main supporting frame of which consists of an upwardly extended plate or board 112 of considerable width. This plate forms the rear end of said frame and is inclined at an angle to the suspensory plates 33 and secured flatwise by the screws 112× to the forward vertical surfaces of said suspensory plates. The lower end of the board 112 is curved in the arc of a circle as at 112° and extends a short distance below the line of the lower surface of the platform 69, and its outer inclined surface is adjacent the guard finger 76 on said plate 70, (see Figs. 2 and 10).

114 indicates the back plate of the said frame which extends from a point a short distance below the upper end of the board 112, and is secured at one end to the forward surface of said board. The lower end portion of the back plate extends downwardly to a position near the line of the lower surface of platform 69. 115 indicates a supporting bar for the lower end of the back plate 114, the rear end of which bar extends on the upper surface of platform 69 between the suspensory plates 33 and is secured rigidly to said back plate (see Figs. 2 and 3) and one side of the bar is beveled so as to fit against the back plate. The forward end of bar 115 extends forwardly a slight distance beyond the wheels 24 and 27, the back plate 114 extending forwardly a corresponding distance. A semi-circular trough or pocket 116 extending forwardly the width of the frame and preferably made of sheet steel is connected rigidly with the lower end of the back plate 114 and extends downwardly a short distance below the line of the back plate 114, and its outer portion is bent in a curved line upwardly to a position directly beneath a line extended forwardly from the projection 75 on the plate 70, the inner end of the trough fitting closely the curved lower end of the end 112 of the elevator frame 110.

The forward end of the frame consists of a narrow bar 117 which is nearly of the same length as the end 112 of the frame 110. This bar is supported in an inclined position a short distance above the plane of the back plate 114 by the curved or U shaped plates or supports 118, one portion of the said plates being connected with the forward surface of bar 117 and the other portion being secured to the outer portion of the back plate. Upon the inner portion of the back plate are ribs 119 extending downwardly to and also upon the inner surface of the trough which serves to retain the stalks above the surface of the trough (see Figs. 2 and 13).

In the upper portion of the ends 112, 117 of the frame are journaled the ends of a rotary shaft 120 and in the lower portion of said ends is journaled the ends of a rotary shaft 121. Upon the shafts 120 and 121 are sprocket wheels 122, which are placed in position near the ends of said shafts, and also near the inner surface of the respective ends 112 and 117 of the frame. Intermediate sprocket wheels 122×, 122° are arranged in pairs upon said shafts 120, 121 a short distance apart on said shaft. Over the sprocket wheels on the shaft 120 are extended the respective endless sprocket chains 123 which are also extended over the sprocket wheels 122 on the shaft 121. Over the sprocket wheels 122× and 122°, on the shafts 120 and 121 are extended the respective sprocket chains 123× and 123°. (See Figs. 1, 3 and 13). To the sprocket chains 123 123×, 123° are connected the long and short transverse bars 124, 124×, the longer part 124 being connected with the sprocket chain at the forward end of the elevator at their forward ends and at their rear ends with the sprocket chain 123×. The short bars are connected at their rear ends with the sprocket chain adjacent to the rear end 112 of the elevator frame and at their forward ends with the elevator sprocket chains 123° thus leaving a space between the chains 123×, 123° and the portions of the bars for the purpose hereinafter described. Upon said bars are outwardly extended pins or fingers 125 which fingers are curved downwardly with respect to the working stretch of the elevator in a slight degree the ends of the pins being adapted to pass within the trough 116 and over the surface of the back plate between the ribs 119.

In order to insure that in the fall of the corn severed by the cutters the stalks will be carried within the trough, a front or top plate 126 is connected at its ends rigidly with the inner surfaces of the respective ends 112 and 117 of the frame between the sprocket chains 123, the said front plate 126 extending from a position near the sprocket chains upwardly about one third the distance toward the upper end of said frame of the elevator 110.

127 indicates a stalk diverting board which is hinged to the upper end of the back plate 114 by the hinges 128. Upon the ends of the board are secured the lower end of a lever bar 129 (see Fig. 14,) with the upper end of which bar is connected one end of an operating rope 130 which extends through the staple 131, on the outer surface and near the upper end of the end 112 of the elevator frame, thence downwardly over a pulley 132, thence forwardly parallel with the lever 50, and secured to a hook 135 on said lever near the rear end thereof (see Fig. 3.)

For the purpose of gathering the stalks whether fallen or upright in position the stalks pass between stalk gathering guiding devices of different lengths, and elevations. The smaller and lowest in position of the stalk guiding devices consists of a narrow board 136 which is secured flatwise to the upwardly and rearwardly extended plate 137 secured to the forward end and bottom portion of the trough 116. (See Fig. 13.) The board 136 inclines downwardly and is tapered to a point at its lower end which end approaches quite close to the ground and inclines laterally in a slight degree away from the horizontal bar 108, the upper end of the board extending to a position above the lower end of the front plate or board 126 of the elevator frame. Upon the upper surface and near the ends of the guide board 136 are mounted small sprocket wheels 138 and 138× over which wheels extend an endless sprocket chain 139 upon which chain are curved fingers 139×. An idler 140 pivoted to and upon said board serves to extend the chains laterally and slightly beyond the line of the guiding surfaces of the board 136 (see Fig. 1). The other stalk gatherer consists of a board 141 wider than the board 136, the lower end being tapered to a point, the inner portion of the said lower end of the guide board 141, and the inner portion of the forward end of the horizontal bar 108, are connected rigidly together by the triangular shaped plate 142 secured thereto by the rivets 142×, see Fig. 3.

Upon the upper surface and near the lower end of the guide board 141 is mounted a sprocket wheel 143, over which passes an endless sprocket chain 144, upon which are curved fingers 146. For the purpose of communicating power to this sprocket chain 144 a rotary shaft 147 extends at an angle through the upper end of the guide board 141 rearwardly and downwardly to a position near the inner face of the speed changing gear wheel 102 in which end of shaft 147 is a key-way 147× (see Fig. 8) and adjustably mounted on said shaft is a small gear wheel 148 by the adjusting screw 148×

engaging with the cog gear on the wheel 102, the said lower end of shaft 147 being stepped in a socket 149 upon the outer surface of a curved plate 150 on the hub 104 of the differential cog or gear wheel 102. This curved bearing plate 150 has an upwardly extended portion 151, (see Figs. 1 and 4,) through which extend the bolts 152 which bolts pass through the inner end of an arm 153 into the adjacent suspensory plate 33. Upon the shaft 147 directly above the upper surface of the guide board 141 is a small sprocket wheel 154 over which the endless chain 144 is passed. In order to communicate power from shaft 147 to the sprocket chain 139 on the guide board 141 upon the upper end of shaft 147 is a fixed sleeve 155 upon which rotates a bevel gear 156, (see Fig. 3). This portion of the shaft is braced by a perforate bar 157, through the upper end of which the shaft 147 is passed, the lower end of the brace bar being extended downwardly and secured rigidly to the upper surfaces of the guide board 141, (see Fig. 1).

With the upper end of the sleeve 155 is connected rigidly the upper end of shaft hanger 158 which is bent at right angles and extended downwardly parallel with the sleeve 155, in which hanger is journaled the upper end of the rotary shaft 160, upon which shaft is a bevel gear 161 meshing with the bevel gear 156, the shaft hanger 158 being supported by a brace 159, extending downwardly and connected with the brace bar 157, see Fig. 3. The lower end of the rotary shaft 160 extends downwardly to a position above the rear end of the guide board 136, and is mounted within a fixed socket 162×, with which socket is connected a shaft support or brace bar 162, which extends from the socket and forwardly a short distance then bent at right angles and extended downwardly to and connected with the upper surface of guide board 136, (see Fig. 13.) Upon the lower end of shaft 160 is a bevel gear 163. A small vertical shaft 164 is stepped in the upper surface of the guide board 136 and extends upwardly and is journaled in the brace bar 162 (see Figs. 1 and 13), upon which shaft is a bevel gear 165, which meshes with the bevel gear 163. Upon the lower end of the shaft 164 is the sprocket wheel 138× which meshes with the sprocket chain 139.

The horizontal arm 153 previously referred to, on the suspensory plates 33 secured by bolts 152 to the said plates extends forwardly a short distance and its forward end is bent at right angles and extended in the direction of the main driving wheel 24. Upon said bent end of arm 153 is a horizontal shaft socket or bearing 167×, (see Figs. 1 and 8), in which is journaled a rotary shaft 167 held from longitudinal movement by a fixed collar 166×, the inner end of which shaft is provided with a key-way 167° and stepped in a socket 168, on the curved plate 150. Upon the shaft 167 is mounted adjustably by a set screw 169× a small gear wheel 169 which engages with the cog gear on the inner surface of the said wheel 102. Upon the forward end of shaft 167 is mounted a small sprocket wheel 170. Upon the lower elevator shaft 121 is a small sprocket wheel 171, (see Fig. 3), over which passes an endless sprocket chain 172 which extends upwardly through an opening 173 in the top or front board 126 of the elevator frame and over the sprocket wheel 170 on the shaft 167 the divided bars 124, 124× permitting them to pass the sprocket chain 172 in the movement of the said bars.

For the purpose of compelling the erect stalks in the path of the cutting plate to fall in the forward direction a vertically arranged plate 174 is secured at its upper end to the outer longitudinal surface of the stalk guiding board 141, and at its lower end to the horizontal forwardly extended bar 108 at a point about one third the distance rearwardly from the forward end of said bar, (see Fig. 3). With the inner surface of the plate 174 are connected the forward ends of separate stalk arresting bars 175, 175× the rear end of which bars are extended rearwardly and upwardly, the upper bar 175× being considerably shorter in length than the lower bar 175 and the rear ends of the bars are bent in a curved line as at 175° to form hooks. Both hooks are in vertical line with the trough 116, the lower one being in a position in rear of a vertical line passing through the upper hook.

The shock former or shocker constitutes the subject matter of a separate application.

In the operation of the harvester the machine with the horses hitched to the double tree 43 is arranged in the field with the forward ends of the stalk dividing boards 136 and 141 at the beginning of the line of the row whether the corn is listed or in hills the main driving wheel 24 being in position between contiguous rows. The driver seated upon the wheel guiding or steering lever 39 upon the rear end of beam 34 grasps the handle 56 on the frame operating lever 50 and releases the detent or latch 64 from the notches in the vertical notched bar 59. He then moves the rear end of the lever upwardly the connecting bars 48 moving downwardly, and also the forward end of the beam 34 connected rigidly with the suspensory plates 33 on the shaft 30 and also the shaft 30 to a position in which the platform 69 is at its proper height above the ground for the cutting of the corn so as to cut effectively forwardly bent stalks. The clutch sleeve 99 on the fixed shaft 30 is then

moved out of engagement with the lugs on the pawls 96 on the hollow sprocket wheel 92 and the pawls engage positively with the ratchet teeth 93°. The harvester is then pushed forward with the force of the propelling power, the steering lever 39 being moved laterally when necessary in order to direct the course of the forward movement of the machine.

The power from the main driving wheel 24 is communicated from the sprocket wheel 105 through the sprocket chain 107 to the said clutch operated sprocket wheel 92, and thence to the sleeve 91 on the fixed shaft 30 and also to the speed changing cog wheel 102 on said sleeve and from said wheel direct to the stalk cutter operating shaft 79, a rotary motion being imparted to the plate 71 carrying the sections 72 of the circular stalk cutting device. In the same movement of the wheel 102 the power from said wheel is imparted to the shaft 147 and 160 to the ingathering stalk gatherers or fingers 139× and 146 on the respective chains 139 and 144 at a rate of speed nearly twice the speed of the mechanism as it moves forward, and the said fingers move inwardly in the direction of the elevator. In the same movement of the said speed changing wheel 102 power is communicated through the shaft 167 and the sprocket wheel 170 on said shaft through the sprocket chains 172 to the sprocket wheel 171 on the lower elevator shaft 121, thence to the elevator chains 123 and 123× and 123° and the curved fingers 125 which moves with the slats 124 and 124× of the elevator downwardly in the direction of the longitudinal trough beneath the lower elevator shaft 121, the ribs 119 keeping the stalks from the back board 114 in control of the fingers 125. In this forward movement of the harvester the erect stalks of corn will pass at once between the dividing boards 136 and 141 to a point a short distance within the passage to the cutters where the dividing board 141 throws the stalks away from the finger 146. The stalks then come into contact with the hooks 175° on the bars 175 175× on the vertical board 174. In this position of the stalks the fingers upon the elevator chains 139 and 144 which are moving at a necessary degree of speed to carry away the falling stalks from the throat or trough 116 retain control of the stalk until in the forward movement of the harvester the lower ends of the stalk which are now forwardly inclined enter the space between the trough and the bar 108 and are deflected toward the cutter section 72 on the plate 71 by the deflecting guide or casting 109. The stalks are then severed by the cutter the severed ends passing over the guard finger 76 and the stalk falls horizontally within the trough 116 in the path of the fingers 125 on the elevator chains and are carried by said fingers beneath the lower elevator shaft and thence upwardly upon a line with the back plate 114 of the elevator to the upper end of said back plate and the stalks fall upon the inclined surface of the hinged distributing plate 127 and from said plate downwardly within the shock former 186 with the butts to the rear and the weight being sustained by the fixed shaft 30 and the bar 188.

When the machine encounters fallen stalks of corn which lie in various positions upon the ground the frame of the machine may be lowered by the lever 50 on beam 34 to a position in which the forward ends of the divider boards 138, 141 of the stalk gathering devices move beneath the fallen stalks which are then elevated 45° by the fingers 139× on the elevator chains 139 and are then carried into an upright position and come into contact with the hooks 175° on the bars 175, 175× and are then diverted toward the throat of the elevator as previously described of the standing stalk of corn.

Very small stalks of corn are bent inwardly and forwardly by the lower hook 175 and toward the throat of the elevator and conveyed to the shocker in the same manner. In case the stalks of the corn are extra long the tops being small and tasseled pass beneath the front bar 117 of the elevator in the space between said bar and the back board 114 of the elevator and also in the space afforded by the bar supports 118 unrestricted.

When the machine is being operated in cutting light and thinly planted corn it may be operated in slow gear. For this purpose the power conveying shafts 147, 167 are in engagement with the inner cogs on cog wheel 102. In cutting heavy or thickly planted corn the cogs in the power shafts are moved outwardly and adjusted in engagement with the cogs near the periphery of the cog wheel 102 and the speed increased. The deflection board 127, on the back board or plate 114 of the elevator is operated by the rope 130, to incline it at the proper angle and permit the stalks to drop in any desired space in the width of the shocker 186, the normal position of the shocker being part way beneath the deflector board 127. In order to keep the sprocket chain 107 on the sprocket wheel 105 on the main driving wheel 24 in perfect tension the casting 17 on the side beam 16 of the main frame of the harvester is adjusted with respect to the side beam 16 by means of the bolt 20 and nut 21. Upon operating the lever 50, to raise or lower the frame of the machine, the spring 54 on the beam 34 acts to assist in the operation of raising and lowering the said frame. The tension of the spring 54 is regulated by changing the position of the spring in the opening 46 in the extension 45 of the crank arm 44 on the fixed shaft 30.

Having fully described my invention what I now claim as new and desire to secure by Letters Patent is—

1. In a harvester for corn, the combination with the main driving and supporting wheels and with the main frame comprising the side beams, stud shafts upon their forward ends, carrying the main driving and supporting wheels, and a transverse connecting shaft connected at its ends with the rear ends of said beams, of an arm on said shaft, and a platform carried by said frame, stalk cutting mechanism upon said platform, a rear push beam pivotally connected at its forward end with said shaft, a caster wheel supporting its rear end and raising and lowering means connected with the arm on said shaft and with the said push beam.

2. In a harvester for corn, the combination with the main driving and supporting wheels, and with the main frame comprising side beams having their forward ends mounted thereon, of a transverse connecting shaft, connected at its ends with the rear ends of said beams, an arm on said shaft, suspensory devices pivotally connected with said shaft and portions thereof extending above said shaft, a platform connected with said suspensory devices below said shaft, stalk cutting devices upon said platform actuated by the main driving wheel, a push beam having its forward end rigidly connected with the portion of said suspensory devices above said shaft, a caster wheel supporting the rear end of said push beam, and a lever fulcrumed on said push beam, and connecting devices connected with the arm on said transverse shaft and said lever.

3. In a harvester for corn, the combination with the main driving and supporting wheels, and with the main frame comprising the side beams, and stud shafts upon their forward ends, carrying said wheels, and a transverse connecting shaft fixedly connected with the rear ends of said beams, of an arm on said shaft, a platform carried by said frame, stalk cutting devices upon said platform, actuated by the main driving wheel, a rear push beam, pivotally connected at its forward end with said shaft, a caster wheel supporting the rear end of said push beam, raising and lowering means connected with said push beam and with the arm on said shaft, and a spring connected with said arm and said push beam.

4. In a harvester for corn, the combination with the main driving and supporting wheels, and with the main frame comprising side beams having stud shafts upon their forward ends, carrying said wheels, and a transverse connecting shaft fixedly connected with the rear ends of said beams, of an arm connected with and extending rearwardly from said shaft, suspensory plates pivotally connected with said shaft, having portions extending above said shaft, a platform connected with said suspensory plates beneath said shaft, stalk cutting devices upon said platform actuated by the main driving wheel, a rear push beam rigidly connected with the portion of said suspensory plates above said transverse shaft, a caster wheel supporting the rear end of said push beam, mechanism on the push beam connected with the arm on said shaft, for raising and lowering said frame and said platform, a coiled spring on said push beam, and adjusting devices connected with the arms on said transverse shaft and the said coiled spring.

5. In a harvesting machine, the combination with the main driving and supporting wheels, and the main frame comprising side beams, stud shafts upon the inner portions and forward ends of the side beams, a transverse connecting shaft fixedly connected at its ends with the rear ends of said beams, and an arm on said shaft, of suspensory devices pivotally connected with said transverse shaft, having portions extending above said shaft, a platform connected with said suspensory devices, and stalk cutting devices upon said platform, actuated by the main driving wheel, a push beam rigidly connected at its forward end with the portions of said suspensory devices above said transverse shaft, a caster wheel supporting the rear end of the push beam, an operating lever fulcrumed on said push beam and connecting plates pivotally connected with the forward end of said lever and also with said arm on said transverse shaft.

6. In a harvester for corn, the combination with the main frame and the main driving and supporting wheels, and with stalk gathering mechanism and stalk cutting mechanism on said frame, actuated by the main driving wheel, of means for imparting different degrees of speed to the stalk gathering and the stalk cutting mechanism relative to each other.

7. In a harvesting machine, the combination with the main frame and the main driving and supporting wheels and the stalk cutting devices, of stalk dividers between which the stalks are carried to the stalk cutters, elevator chains on said dividers, and wheels carrying said chains, hooks on said chains for elevating the stalks into an upright position, power transmitting devices on said machine communicating power to said chains, hooks upon said machine of different lengths for inclining the tops of the stalks in a forwardly direction while the stalks are being cut.

8. In a harvester, the combination with the main driving and supporting wheels, the pivoted side beams, the transverse connecting shaft connected at its ends with the rear ends of said beams, suspensory plates connected with said shaft, a platform con-

nected with the suspensory plates, means for raising and lowering the said transverse shaft, stalk cutting devices on said platform, and speed changing mechanism on said transverse shaft, and power transmitting devices connected with said mechanism and the stalk cutting devices.

9. In a corn harvester, the combination with the main driving and supporting wheels, the pivoted side beams, the transverse connecting shaft connected at its ends with the rear ends of said beams, suspensory plates connected with said shaft, a platform connected with the suspensory plates, stalk cutting devices on said platform, a rotary sleeve on said transverse shaft, power transmitting devices on said main driving wheel connected with and communicating rotary movement to said sleeve, and power transmitting devices on said sleeve, connected with and transmitting motion to the stalk cutting devices, and means for disengaging the power transmitting devices from the said sleeve.

10. In a harvester, the combination with the main driving and supporting wheels, the pivoted side beams, the transverse connecting shaft connected at its ends with the rear ends of said beams, suspensory plates connected with said shaft, a platform connected with the suspensory plates, stalk cutting devices on said platform, a rotary sleeve on said transverse shaft, and a gear wheel loosely mounted on said sleeve, power transmitting devices on said main driving wheel connected with and communicating rotary motion to said gear wheel, power transmitting devices for transmitting power from the gear wheel to the stalk cutting devices on the platform, and a clutch movably secured to the said sleeve, engaging with the said loose wheel on said sleeve.

11. In a harvester, the combination with the main driving and supporting wheels and the pivoted side beams, of a transverse shaft connected at its ends with the rear ends of said beams, suspensory plates connected with said shaft, a push beam connected at its forward end with said suspensory plates, and a caster wheel supporting the rear end of said push beam, a platform connected with said suspensory plates, rotary stalk cutting devices upon said platform, and a rotary shaft actuating said cutting devices, and a cog wheel on said shaft, a rotary sleeve mounted on said transverse shaft, a speed changing gear wheel fixedly connected with said sleeve, and cogs upon the face of said gear wheel, engaging with the cog wheel on the shaft actuating the cutting devices, a hollow sprocket wheel mounted on said sleeve, having internal ratchet teeth, ears connected with said sleeve and pawls pivotally connected with said ears and adapted to engage with the ratchet teeth on said sprocket wheel, lugs extending outwardly from said pawls, and a sliding sleeve on the said rotary sleeve having an enlarged portion adapted to engage with the lugs on said pawls, and securing devices for said sliding sleeve.

12. In a corn harvester, the combination with the main frame, and the inclined stalk dividing boards having a passage between them for the entrance of the stalks and with the sprocket wheels, and chains on said boards, and fingers on said chains, of cooperating power transmitting shafts and power transmitting gear wheels communicating power from one shaft to the other, and power transmitting devices connecting said shafts with the sprocket wheels on said divider board, a speed changing disk on said machine, and cogs thereon in concentric circles, and a cog wheel on one of said power transmitting shafts, engaging with the cogs on the speed changing disk, a platform on said main frame, a rotary cutting device on said platform, and a rotary shaft actuating said cutting devices, and a gear wheel on said latter shaft, engaging with the cogs on the speed changing disk.

ISAAC L. DAWSON.

Witnesses:
HARVEY C. LOWRANCE,
JULIA D. ST. CLAIR.