(No Model.) 8 Sheets—Sheet 1.

E. M. TOUSLEY.

SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

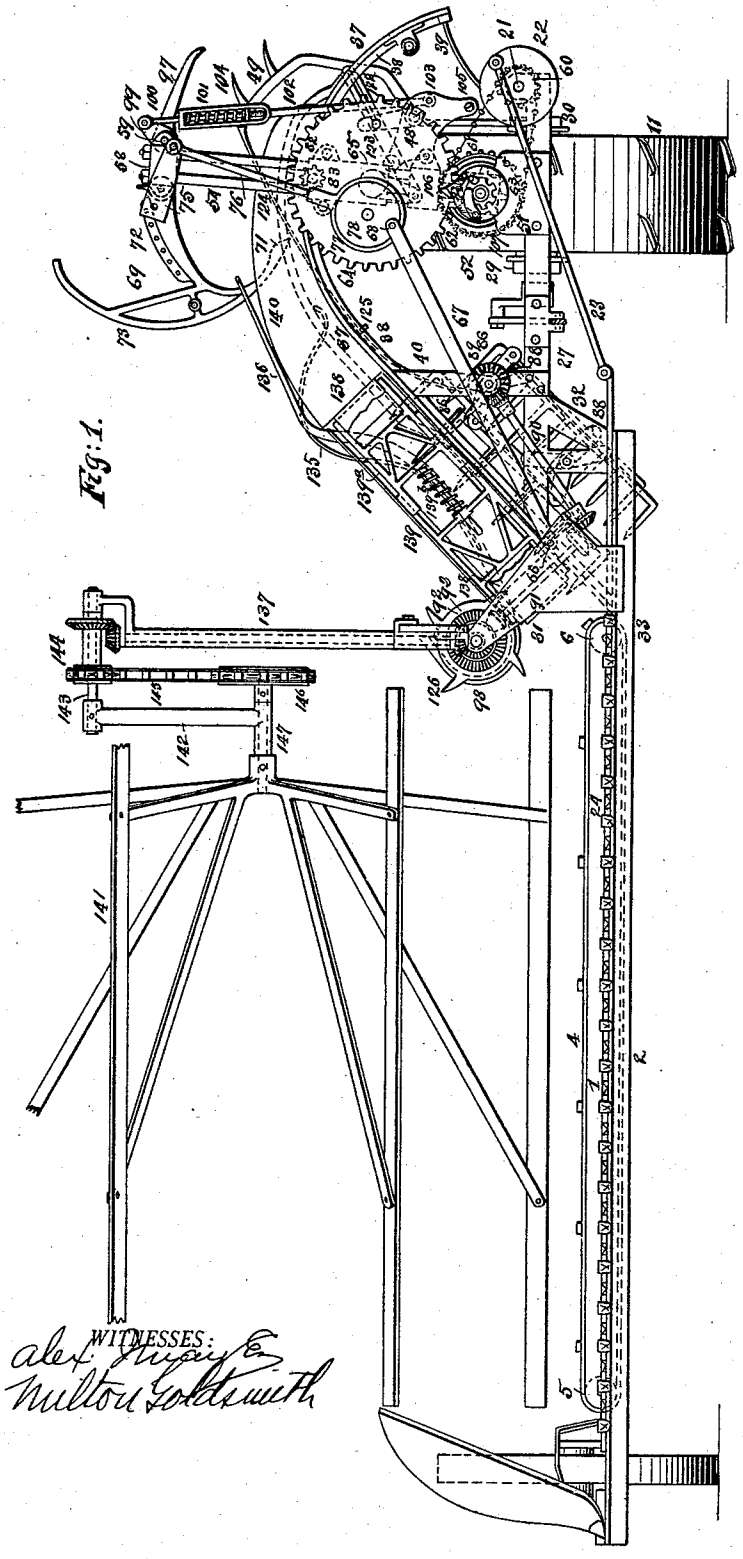


Fig. 1.

WITNESSES:
Alex. Hupay Jr.
Milton Goldsmith

INVENTOR
Edgar M. Tousley
BY
H. Albertus West
ATTORNEY

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E. M. TOUSLEY.

SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

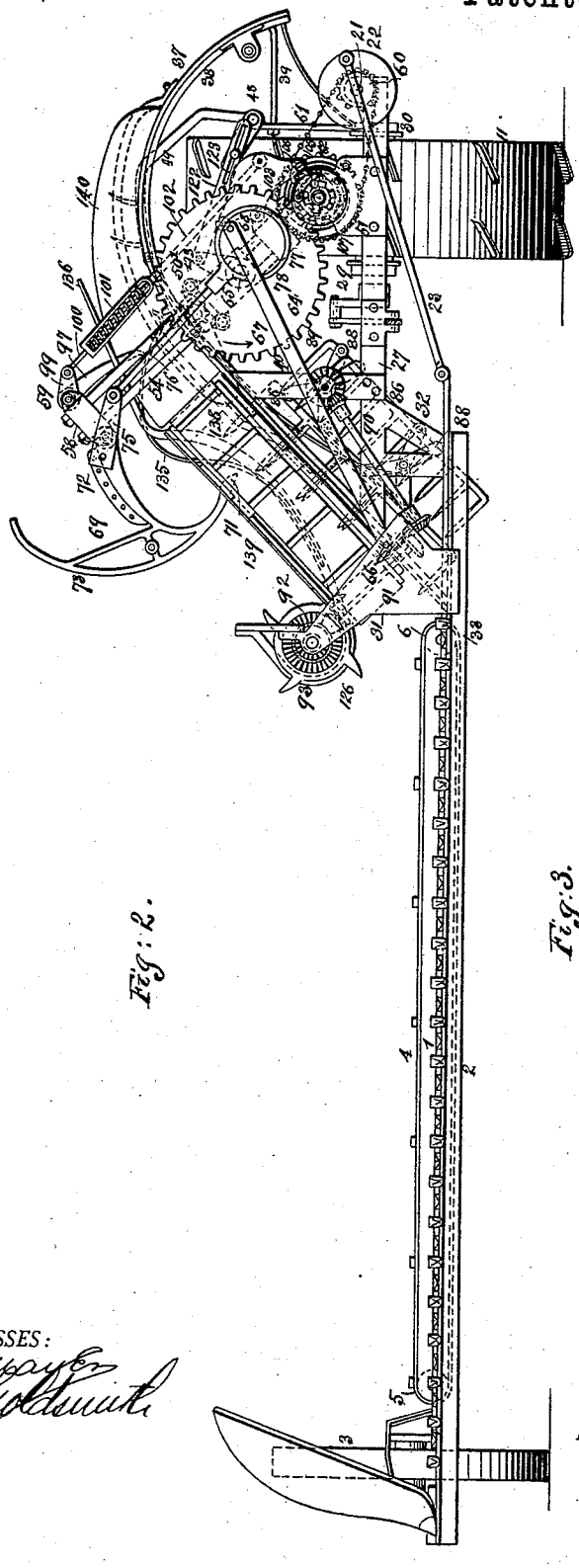


Fig. 2.

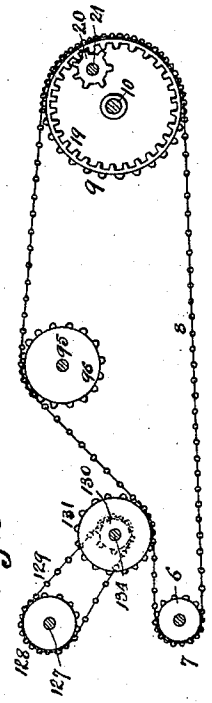


Fig. 3.

WITNESSES:

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E. M. TOUSLEY.

SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

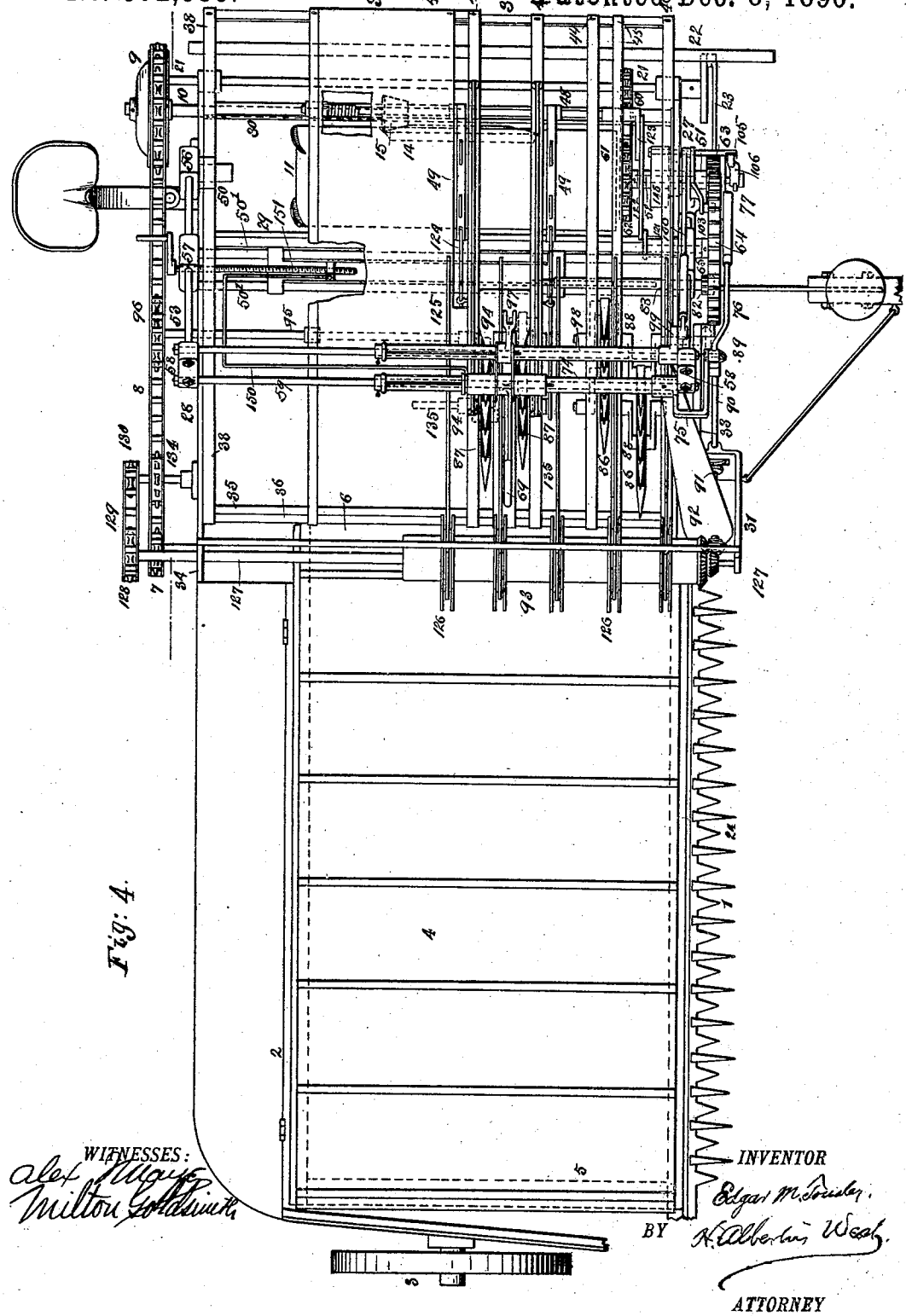


Fig. 4.

WITNESSES:
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E. M. TOUSLEY.

SELF BINDING HARVESTER.

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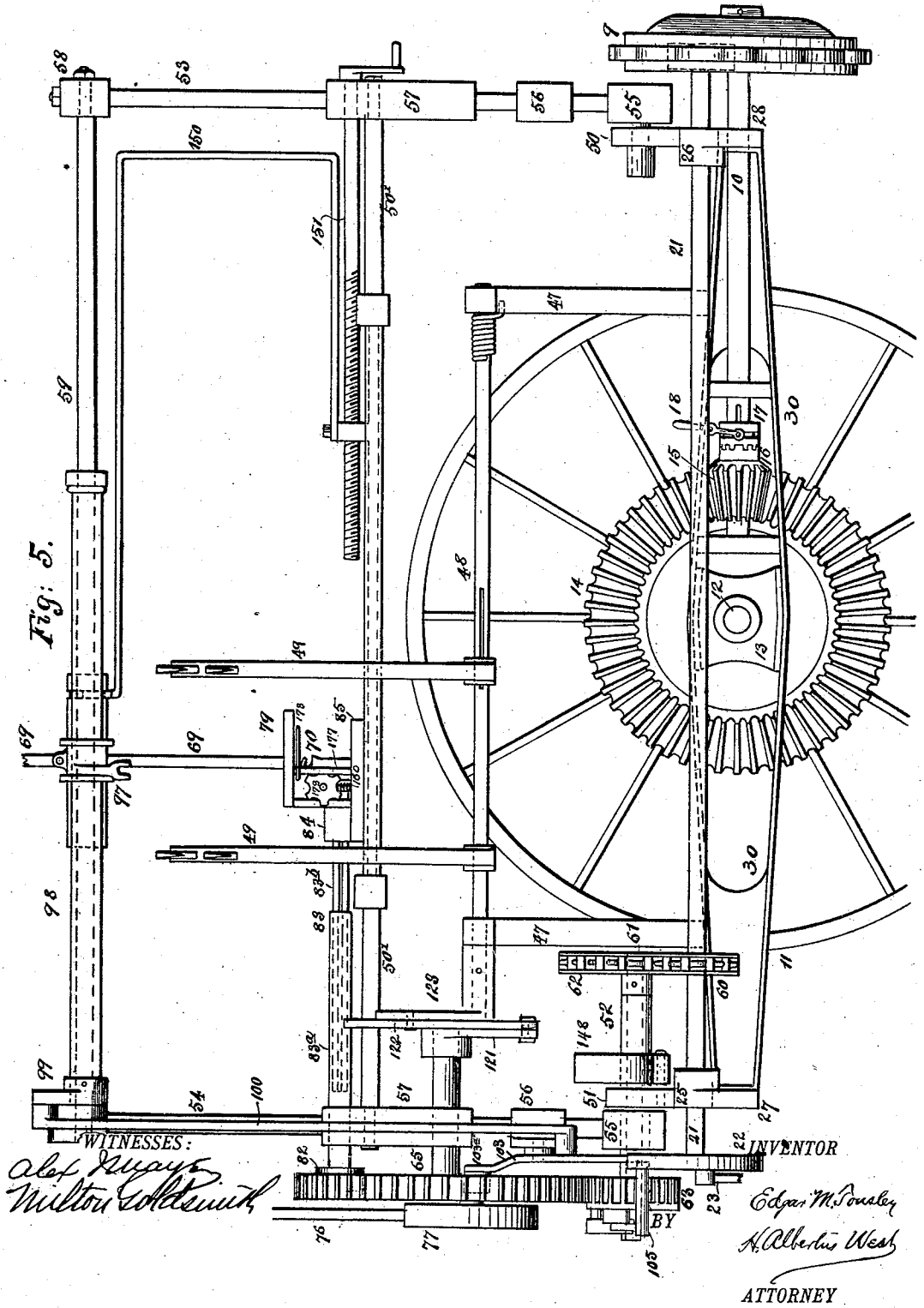


Fig. 5.

WITNESSES:
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E. M. TOUSLEY.

SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

Fig. 6.

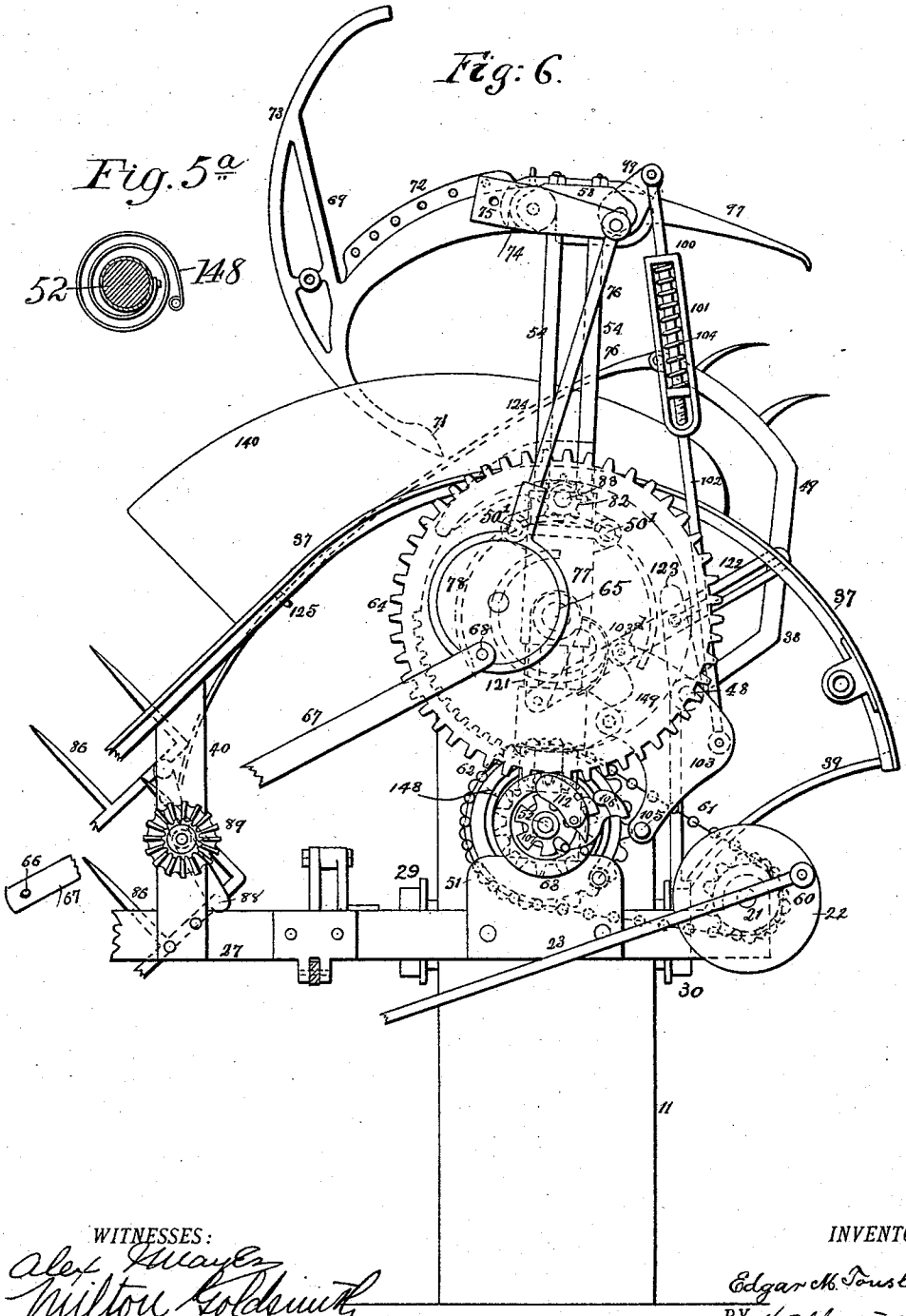


Fig. 5a.

WITNESSES:

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INVENTOR

Edgar M. Tousley

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SELF BINDING HARVESTER.

No. 572,585. *Fig. 7.* Patented Dec. 8, 1896.

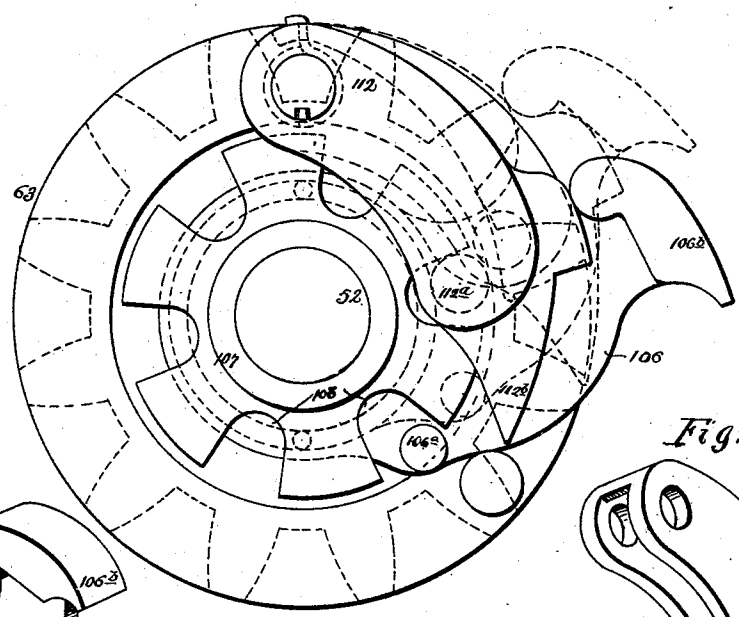


Fig. 9.

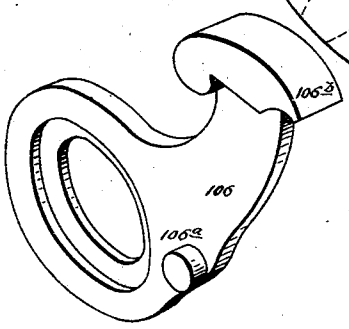


Fig. 10.

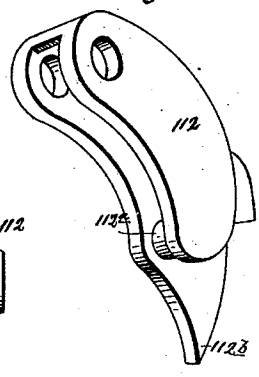
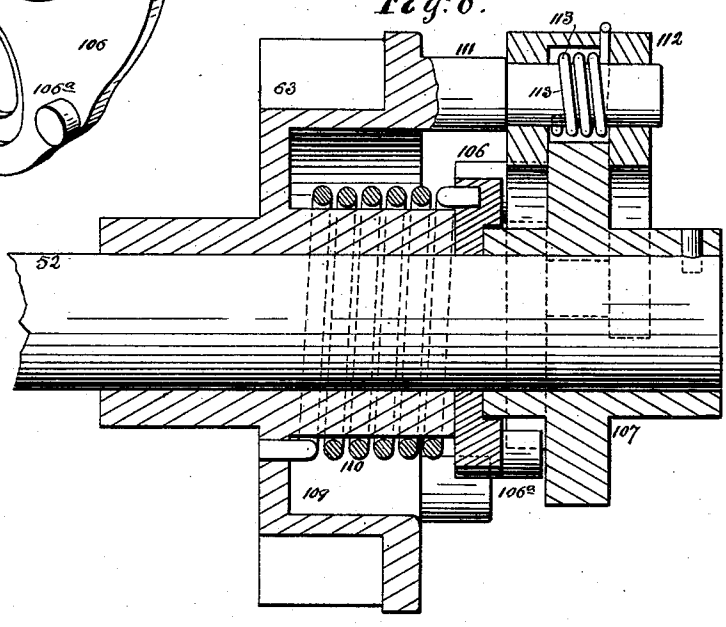


Fig. 8.



WITNESSES:

Alex. Gilroy Jr.

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SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

Fig: 11.

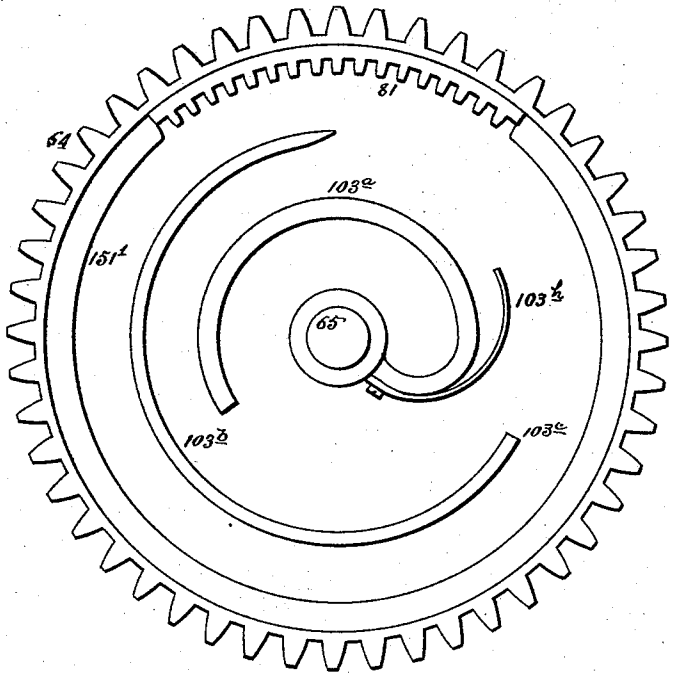


Fig: 12.

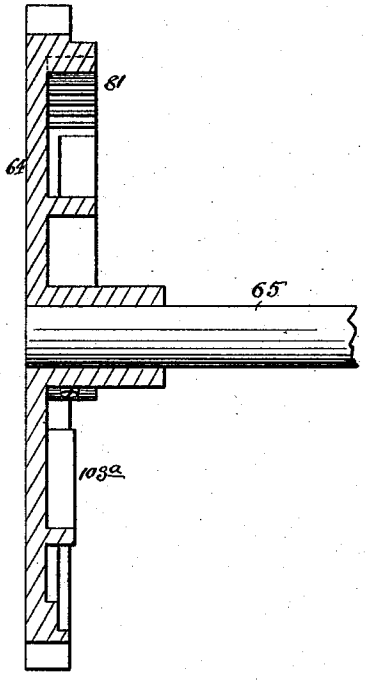


Fig: 15.



Fig: 16.



Fig: 13.

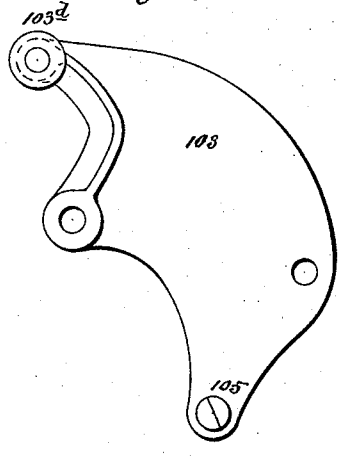
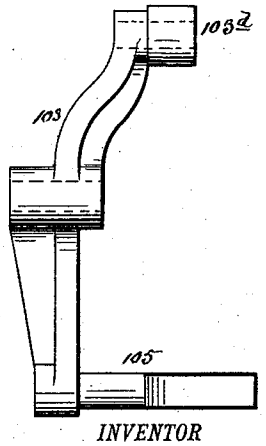


Fig: 14.



WITNESSES:

Alex Swayne

Milton Goldsmith

INVENTOR

Edgar M. Tousley

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E. M. TOUSLEY.

SELF BINDING HARVESTER.

No. 572,585. Patented Dec. 8, 1896.

Fig: 17.

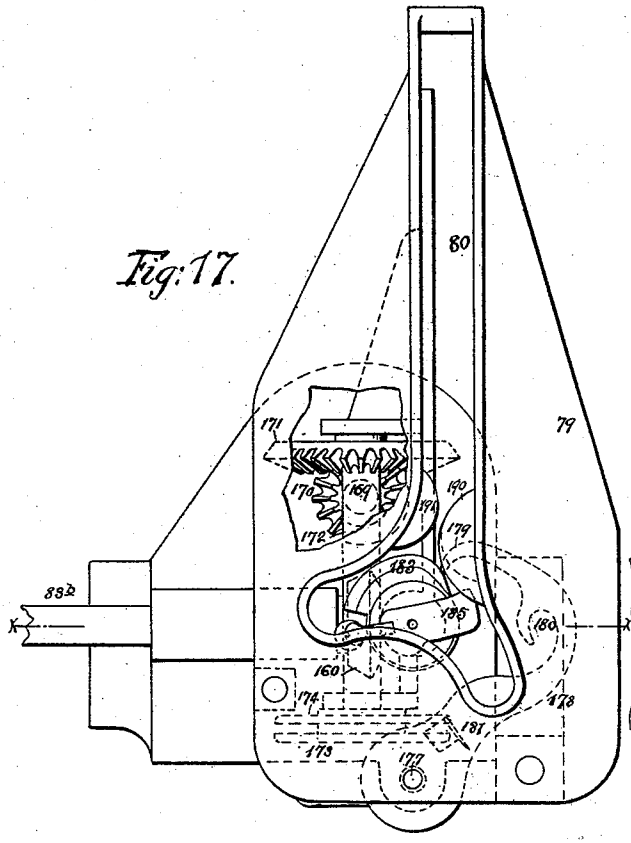


Fig: 19.

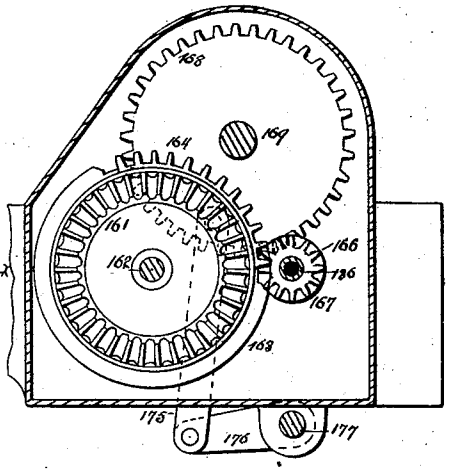


Fig: 18.

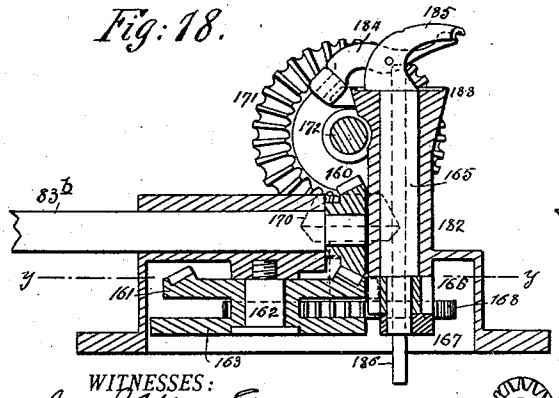
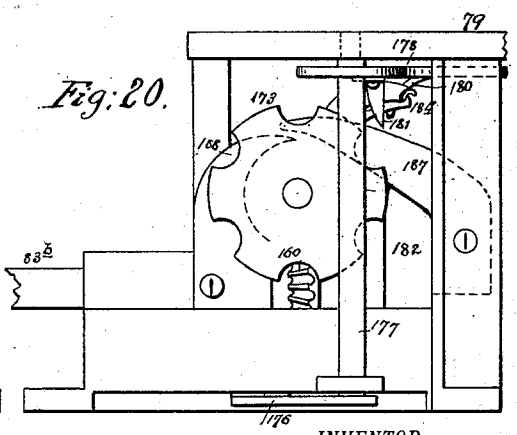


Fig: 20.



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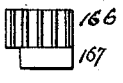
Alex. Gilmore

Milton Goldsmith

Fig 21



Fig: 22



INVENTOR

Edgar M. Tousley

BY H. Alberlis Wait

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDGAR M. TOUSLEY, OF JAMESTOWN, NEW YORK, ASSIGNOR TO THE TOUSLEY HARVESTER COMPANY.

SELF-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 572,585, dated December 8, 1896.

Application filed May 23, 1893. Serial No. 475,252. (No model.)

To all whom it may concern:

Be it known that I, EDGAR M. TOUSLEY, a citizen of the United States, and a resident of Jamestown, in the county of Chautauqua and State of New York, have invented a new and Improved Self-Binding Harvester, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof, in which—

Figure 1 is a front elevation showing the parts in the position they assume at the time of discharging the bundle. Fig. 2 is a similar view without the reel, showing the parts in the position they assume after discharging the bundle and while the gavel is accumulating. Fig. 3 shows in diagram the arrangement of gearing at the rear of the machine. Fig. 4 is a plan view of the machine without the reel, the outer end of the cutter-bar being omitted. Fig. 5 is an enlarged view of the stubble side of the machine, showing only the frame and the main moving parts. Fig. 5ª is a detailed sectional view showing the spring 148, shown in edge elevation in Fig. 5. Fig. 6 is an enlarged front view showing the needle-operating mechanism, bundle-discharging mechanism, clutch mechanism and its gearing, the pitman, and upper gear for operating the packers. Fig. 7 is an enlarged view of the pinion and its clutch for operating the master-wheel. Fig. 8 is a sectional view of the same. Figs. 9 and 10 are respectively enlarged perspective views of parts of the clutch mechanism. Fig. 11 is an enlarged view of the inner surface of the master-wheel. Fig. 12 is a sectional view of the master-wheel. Fig. 13 is an enlarged front view of the trip-lever for actuating the clutch. Fig. 14 is an edge view of the same. Figs. 15 and 16 are respectively end and side views of the pinion for operating the knotter-shaft. Fig. 17 is an enlarged broken plan view of the knotter. Fig. 18 is a vertical section of the same on line *x x* of Fig. 17. Fig. 19 is a sectional plan view on the line *y y* of Fig. 18. Fig. 20 is a rear elevation of the knotter, and Figs. 21 and 22 are respectively end and plan views of the knotter-pinion.

My invention relates to a self-binding harvester; and it consists in the construction, arrangement, and combination of parts, all as hereinafter described and claimed.

Referring to the drawings, the cutter-bar 1, platform 2, supported by the outer wheel 3 and main frame, and the platform-carrier 4 may be of the usual or of any appropriate construction. The platform-carrier is mounted on rollers 5 and 6 in the usual way, the latter being revolved by pinion 7 and main chain belt 8 from the large sprocket-wheel 9 on shaft 10 at the stubble side of the machine.

11 represents the drive-wheel, provided with shaft 12, which turns in boxes 13, which support the main frame, and said wheel is provided at the stubble side with a beveled gear 14, which revolves the beveled pinion 15, which latter is mounted on the shaft 10 and is formed with a half-clutch 16. A complemental half-clutch 17 is mounted to slide on the said shaft 10 and is connected therewith by a spline, and a lever 18 is connected to said sliding half-clutch, by which the machine may be put in and out of gear. The said sprocket 9 is formed with an interior gear 19, (see Fig. 3,) which by means of the pinion 20 revolves the shaft 21, which reaches to the front of the machine, where it is provided with a crank or wheel 22, to which the pitman 23 is connected for operating the knives 24. This shaft 21 is journaled in the boxes or bearings 25 26, attached to or formed as a part of the front and back bars 27 and 28 of the main frame.

The main frame is composed of the front and back bars 27 and 28 and the outer and inner truss beams or sills 29 and 30, to which the said front and back bars are connected and which are centrally boxed and mounted upon the shaft 12 of the drive-wheel. A casting 31 of proper form, substantially as shown in Figs. 1, 2, and 4, is secured to the inner end of the front bar 27, which, together with the downwardly-projecting member 32, supports the front inner edge of the platform-frame 33, (besides serving other purposes below described,) the opposite edge being held by a plain vertical plate 34, secured to the back bar 28. A cross-plate 35 binds the front and back bars firmly together and forms an edge support for the platform, and above this plate is held the rod 36, which supports the lower edge of the curved deck 37 or to which the parts thereof are in this instance connected. The curved deck reaches from the

platform-carrier with an easy slope and curve to the stubble side of the machine, as shown, and in this instance is supported by a skeleton 38, which is braced at the stubble side by the brace rods or arms 39, and is supported in the center by uprights 40, rising from the front and back bars 27 and 28. The deck, which to all intents and purposes is a part of the main frame, is composed in this instance of the wide strip 41, of sheet metal, and the narrow and spaced strips 42, 43, 44, 45, and 46. (See Fig. 4.) Other parts which may be comprised in the main frame are the two standards 47, which rise from the truss-beam 30, equidistant from the drive-wheel shaft, and which support the rod 48, which carries the bundle-dischargers or "kickers" 49 49, and still other parts comprised in the main frame are the two opposite bearings 50 and 51, the former, 50, constituting the bearing for the rear upright of the oscillating frame, and the latter the bearing for the short binder-shaft 52, which supports the front upright of the oscillating frame. The oscillating frame comprises the said rear upright 53 and the front upright 54. These uprights are by preference each composed of two rods or tubes, as shown in Figs. 5 and 6, yoked together by blocks 55, 56, 57, and 58. The upper ends of the said uprights are united by two horizontal bars, rods, or tubes 59, and they are also united below the deck by the horizontal rods or tubes 50'.

Referring now again to shaft 21, which operates the knives, it will be seen that on this shaft is secured a sprocket-wheel 60, from which passes a chain belt 61 over a larger sprocket-wheel 62 on the inner end of the short binder-shaft 52 and revolves the same continuously. To the outer end of this shaft 52 is applied the clutch-pinion 63, which meshes with the master-wheel 64.

The master-wheel is attached to the short shaft 65, journaled in the front block 57 of the oscillating frame, and it is connected to a fixed point 66 by a strong rod or bar 67, which bar is connected to an off-center pin 68 in the face of the master-wheel, so that when the master-wheel is revolved in the direction of the arrow in Fig. 2 it will be forced gradually back to the position shown in Figs. 1 and 6 and then drawn forward again to its position of starting, thus properly swinging or oscillating the frame and the needle 69 and the knotter 70.

The needle, as here shown, is curved and formed with a point 71, tension-plate 72, and upward extension 73, and is attached to a tube 74, mounted upon the front top bar 59 of the oscillating frame. To the front end of this tube is attached the bent crank 75, to the end of which is connected the rod 76, the lower end of which is connected to the ring 77, which is applied to the off-center hub or wrist 78, attached to or formed upon the outer surface of the master-wheel, so that when the master-wheel is revolved said hub and rod, acting through the lever 75, will turn the tube to which the needle is attached and thrust the point of the needle down through the gavel and through a space in the deck and thence into the knotter, and this action is performed while the oscillating frame is being swung back, its initial inward thrust and upward movement being simultaneous to open or spread the grain to facilitate penetration. This action will be understood from Fig. 2, for the first movement of the master-wheel on its center carries the hub upward and around the center of the master-wheel, and the backward movement begins just at the time the point of the needle enters the grain. When the hub passes to the left of the center of the master-wheel, its descent will cause rod 76 to draw the end of the lever 75 downward and thus elevate the needle and withdraw its point at the proper time from the knotter and deck and turn the needle to the position shown in Fig. 6, where it is held during the descent, thus causing the needle to clear the incoming grain on the deck during the forward and downward movement of the oscillating frame.

The knotter is mounted beneath the deck upon the rods of the oscillating frame in line with the needle and is provided with an outer guard-plate 79, flush with or a little above the deck, which guard-plate is formed with a guide-slot 80, (see Fig. 17,) into which the point of the needle enters and which guides the needle properly to the knotter-bills.

While I may use some of the common knotters in use, the special knotter which I prefer will be described in detail below. It is operated to tie the knot and cut the binding-cord at the proper time by the internal gear 81 on the inner face of the master-wheel, which, by pinion 82 and knotter-shaft 83, revolves the knotter-bills and operates the other parts of the knotter, as will be hereinafter described. The said knotter-shaft is made in two telescopic parts 83^a and 83^b, journaled, respectively, in the front block 57 of the oscillating frame and the bearing 84, formed on the base-plate 85 of the knotter, and keyed together, the section 83^a being hollow to receive 83^b to slide therein to permit the shifting of the parts of the machine necessary for handling long and short grain.

It will be understood that while the gavel is gathering the oscillating frame, needle, master-wheel, and pinion 63 remain at rest. As the grain is delivered from the platform-carrier to the curved deck it is carried up the deck by the alternately-reciprocating packers 86 87, of which I prefer to use four sets in pairs—a front and back set. These packers may be variously operated, but I prefer to operate the front set by means of two double crank-shafts 88, the upper one of which is journaled in the upright 40 and provided at its outer end with a beveled gear 89, which receives motion from the inclined shaft 90,

turned from another inclined shaft 91, both of which are geared together, as shown, the latter being revolved by the beveled gear 92 on the front end of the drum 93. The rear set of packers are mounted on double crank-shafts 94, in all respects like the crank-shafts 88, operated from the rear of the machine by the shaft 95, (see Figs. 3 and 4,) sprocket 96, and the main belt 8. The packers thus operated, or operated in any suitable manner, form the grain into a gavel against the trip 97. This trip 97 is attached to a sleeve or tube 98, mounted upon the outer top bar 59 of the oscillating frame in line, or thereabout, with the needle and knotter, and the tube is formed or provided with an arm 99, to which is connected a rod 100, held in a loop 101 of the extension 102, which latter is connected to a clutch-yoke 103, (see Figs. 6, 13, and 14,) centrally pivoted to block 56, and which, under the influence of the trip, throws the binding mechanism in and out of gear. When the master-wheel is in the position shown in Fig. 2, the upper roller or stud 103^d stands somewhat back from the flange 103^a on the inner surface of the master-wheel, while the lower arm 105 thereof engages the trip and holds the binding mechanism out of gear. When the pressure of grain on the trip is sufficient for a bundle, the trip is forced back thereby sufficiently to disengage arm 105 from the clutch to put the binding mechanism in gear, and at about this time the adjacent end of the flange 103^b comes in contact with the stud 103^d, which holds the yoke and trip to resist the pressure of the needle in compressing the gavel, and when in the revolution of the master-wheel the end 103^c of the flange passes the said stud or roller 103^d the pressure of the bundle on the trip will swing it out of the way and permit the bundle to drop to the ground. All this time the said stud or roller 103^d is acted upon by the curved spring 103^h, which obviates too rigid action and which resets the yoke to bring the arm 105 into the path of the clutch-dog, so that the latter will strike upon said arm and at the proper time throw the binding mechanism out of gear. A spring 104 is applied to the rod 100 within the loop 101 to take up wear and obviate danger of breakage; but this might be omitted and a continuous rod used for connecting the arm 99 to the clutch-yoke 103, if desired. The trip 97 determines the size of the bundle, and it is to be set so that when a certain pressure is brought to bear upon it by the grain packed in front of it on the top of the deck by the packers it will swing back and through arm 99 and the connecting-rod will swing the clutch-yoke 103 outward and disengage the stud 105 thereof from the clutch-dog 106, and thus by the action of the said clutch-dog put the binding mechanism in gear, as next described.

The clutch is shown in Figs. 7, 8, 9, and 10. The short shaft 52, as above described, is revolved continuously. To its outer end is secured the clutch-block 107, formed with six recesses 108. This block revolves continuously with the shaft 52. The pinion 63 is loose on the said shaft 52 and normally communicates no motion to the master-wheel. The pinion is chambered, as shown at 109, and provided with a coiled spring 110, and is formed with an arm 111, on which is pivoted a divided pawl 112, acted upon by a spring 113, which constantly presses its free end toward the clutch-block 107. The clutch-dog 106 is placed on the shaft 52 between the hubs of the pinion 63 and the block 107 and is acted upon by the spring 110, and is formed at one side with a stud 106^a and at the outer end with a hook 106^b. The pawl 112 is formed with a cross-piece 112^a, adapted to drop into the recesses 108 of the block 107 and thus lock or clutch the pinion 63 to the said block 107 and shaft 52. Said pawl is also formed with a projection or toe 112^b, against which the stud 106^a of the dog 106 strikes for lifting the pawl out of the recesses of the block 107 when said pawl or the hook 106^b thereof is retained by the stud 105 of the yoke 103, which drops into the path of the said hook as soon as the bundle is discharged, so that when the bundle is discharged and the yoke 103 drops back to its normal position the dog 106 will strike the stud 105 and being retained thereby will detach the clutch-dog from the clutch-block and thus throw the binding mechanism out of gear, where it will remain until the trip is again forced back by the gavel, when the action will be repeated.

At the time the master-wheel has reached the position shown in Fig. 6 its shaft 65 operates the above-mentioned kickers 49 by means of a crank 121, slotted link 122, and crank 123, attached to the shaft 48, to which the kickers are attached. The said kickers are by preference of the form shown clearly in Fig. 6 with prongs at the upper ends, and to said upper ends are connected two rods 124, which reach back through and under the deck, where they are held and guided in eyes 125 to insure proper action and to prevent grain from falling in behind the kickers.

The grain in passing from the platform-carrier to the deck is assisted by the arms or projections 126 of the drum 93, which is attached to shaft 127, revolved by sprocket 128 and chain belt 129 from the small sprocket 130 and larger sprocket 131 on shaft 134, the main chain belt 8 passing under the said sprocket 131, as shown in Fig. 3. Between the projections 126 are secured to the said drum 93 the series of spring-fingers 135, which are curved first toward the deck, then outward away from the deck, and then at the upper ends curved down nearly to the deck, as shown in Fig. 2, so that they retain the gavel while forming and also retain any loose grain attached to the gavel at the time it is carried out from under the fingers and over the crest of the deck by the needle. In some cases I shall also employ a spring-arm

136, which tends to prevent the bundle from being drawn back into the machine by the kickers. The front end of the drum 93 and shaft 127, as above stated, are provided with two beveled gears, the smaller one for turning the reel-driving shaft 137, the latter for turning the packer-driving shaft 90, as above described, and also for turning the butter-belt 138, which passes around rollers held in a frame 139 139^a at the front edge of the deck and in line with the fender 140. The parts of the frame are spread by a spring 139^b. The reel 141 is journaled in the arm 142, attached to the horizontal shaft 143, surrounded by a sleeve, to which is secured a beveled pinion to engage with the pinion on the vertical shaft 137; and said sleeve is also provided with a sprocket 144, which by chain belt 145 and sprocket 146 on the end of the reel-shaft 147 communicates rotary motion to the reel, as will be fully understood from Fig. 1.

It will be noticed that the front block 55 of the oscillating frame is not connected directly to the shaft 52, but to a sleeve or tube surrounding this shaft. The block is fast on the tube, and to the tube is applied a heavy coiled spring 148, one end of which is fastened to the box or bearing 51, so that when the oscillating frame is carried forward it is against the tension of this spring, which eases and cushions the downward movement and at the same time stores up power in the spring, which reacts on the frame and assists the upward movement of the same, thus economizing power.

The needle and trip are mounted by means of sleeves upon the top rods of the oscillating frame, which sleeves are connected together, as shown in Fig. 4, and by means of the frame 150 and the screw-rod 151 (shown clearly in Figs. 4 and 5) the needle and trip may be shifted forward or back to suit grain of different lengths. The rear portion of the deck—viz., the parts 41, 42, and 43—is also shifted at the same time and by the same rod, also the knotter, rear packers, and rear kicker, which move with the deck.

The knotter, as above mentioned, is operated by the interior-toothed segment 81 of the master-wheel, which revolves the knotter-shaft 83 83^b by the pinion 82 on the front end of the knotter-shaft. The said pinion is faced off at one side for square contact with the edge of the flange 151′ of the master-wheel, which holds the knotter-shaft rigid except when revolved by the gear 81.

To the rear end of the knotter-shaft is secured a beveled pinion 160, which revolves the gear-wheel 161, which is journaled on the screw 162, and which is formed at the lower end of its hub with a flange 163, one portion of which is formed with a segmental gear 164, as shown in Fig. 19. The said segmental gear intermittently revolves the knotter-bill shaft 165 by means of the pinion 166, secured thereto, while the cam-flange 163 locks said shaft and pinion during the interval of rest by acting against the flat or slightly-curved face of the locking-cam 167, secured to the lower end of the said pinion. The said pinion 166 also communicates motion to the horizontal gear-wheel 168, secured to the short vertical shaft 169, to the upper end of which is secured the beveled pinion 170, which gears with the beveled wheel 171 on the shaft 172, which carries at its opposite end the twine-holding disks 173 174. To the lower surface of the plate 163 is attached a crank-pin, to which is attached one end of the connecting-rod 175, the opposite end of which is attached to the crank 176, which crank is attached to the lower end of the vertical shaft 177, to the upper end of which is secured the stripper 178, formed, as shown in dotted lines in Fig. 17, with hooks 179 180. This stripper is provided with the knife or twine-cutter 181.

The knotter-bill shaft 165 turns in a post 182, the upper end of which is formed or provided with a cam 183 for opening the lower tyer-bill 184. The upper tyer-bill 185 is formed as a part of the shaft 165, which is hollow and in which is placed a rod 186, which is pressed upward by a spring (not shown) and which presses upon the lower tyer-bill in front of its pivot and serves to close the bill upon the twine.

The twine-holders 173 174 are notched at their edges, and between them is held the finger 187, which forces the twine in between the plates, and between them also is held the opposite finger 188, which serves to force out from between the plates the short ends of the twine after cutting to detach each bundle. In the guide 80 are formed the rounded flanges 190 and 191, which guide the twine to the knotter-bills.

The operation is as follows: At the instant the needle carrying the twine is thrust back to its extreme point in the knotter the pinion 82, coming into engagement with the segment 81 on the master-wheel, revolves the knotter-shaft, pinion 160, and wheel 161, which first turns the tucker 178 and causes its point to thrust the twine to one side, placing it within the radius of the knotter-bills. Following the movement the segment 164, acting on pinion 166, the tyer-bills commence and complete their revolution, thereby forming the loop and securing the ends of the twine between the jaws of the knotter and also bringing the neck of the knot in the hook 180. Simultaneously with the revolution of the knotter-bills the disks or twine-holders 173 174 are advanced one step or about one-sixth of a complete revolution, thereby securing the incoming twine from the needle. In completing this much of the operation about one-half part of the entire revolution of wheel 161 has been used. By continuing the movement the combined stripper tucker and cutter 178 is forced back to its original position, thereby severing the twine between

the disks 173 and the tyer-bills and completing the knot by stripping the loop from the bills and drawing the several ends through the loop.

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

1. In a self-binding harvester an apertured deck reaching from the platform-carrier to the stubble side of the machine-packers working through the deck, and retaining-fingers held over the deck in combination with an elevated oscillating frame, a needle and trip carried by the said frame above the deck, a knotter held in or beneath the deck and reciprocating kickers provided with rods which reach back to the deck, substantially as described.

2. In a self-binding harvester, an oscillating frame, a master-wheel carried thereby, a rod held at a fixed point at one end and connected at the other to the master-wheel off the center thereof, in combination with a pinion for turning the master-wheel and a clutch for putting said pinion in and out of gear, substantially as described.

3. In a self-binding harvester an oscillating frame and a master-wheel and needle held by and moving therewith in combination with an off-center hub on the master-wheel and a connecting-rod applied to said hub and connected to an arm or lever for operating the needle, substantially as described.

4. In a self-binding harvester a master-wheel formed with an off-center hub and carried by a frame and connected by a rod to a fixed point, said rod being connected to the master-wheel at one side of its center in combination with a rod connecting the said hub to a crank or arm for operating the needle, a pinion for turning the master-wheel, a clutch for putting the pinion in and out of gear, a trip carried by the oscillating frame, and a yoke controlled by the trip for actuating the clutch, substantially as described.

5. In a self-binding harvester an elevated oscillating frame carrying a needle and trip, the latter connected with a rod provided with an arm or lever in combination with a rod connected at one end to said arm or lever and at the other to a pivoted yoke, a master-wheel provided with a cam for intermittently retaining the upper end of said yoke, a pinion for revolving the master-wheel and a clutch applied to said pinion, the yoke being provided at its lower end with an arm or stud to engage and disengage the clutch, substantially as described.

6. In a self-binding harvester a constantly-rotating shaft and a pinion and clutch applied thereto and an apertured deck reaching from the platform-carrier to the stubble side of the machine and an oscillating frame carrying the needle and trip above the deck, the knotter in or beneath the deck, and a master-wheel at the front of the machine said master-wheel being formed with an off-center hub at its front surface for operating the needle, and a cam and cogs on the inner surface for operating the knotter, in combination with a rod attached at one end to a fixed point at the other to the master-wheel at one side of its center and a pivoted yoke controlled by the trip and master-wheel for actuating the clutch for putting the binding mechanism in and out of gear, substantially as described.

7. A master-wheel journaled on a shaft, a constantly-rotating shaft 52, and a pinion mounted thereon, meshing with the master-wheel and formed with an arm 111 and provided with a spring 110 and a notched wheel 107 fixed on the shaft, a clutch-pawl 112 mounted on said arm and acted upon by a spring and formed with a stud 112^a and toe 112^b in combination with a dog 106, mounted upon the shaft, acted upon by the spring 110 and formed with the head, a projection 106^b and stud 106^a, substantially as shown and described.

8. The master-wheel formed with cams 103^a and 103^b and the yoke 103 formed with a stud or roller 103^d and provided with a lateral arm 105 and acted upon by the trip in combination with the pawl 112 112^a, the pinion 63, notched wheel 107 and the clutch-dog 106 having the projection or head 106^b, substantially as described.

9. The deck formed of spaced sections, mounted to slide upon their support and the oscillating frame provided with sliding tubes on which the needle and knotter are mounted in combination with a screw 151 and connecting-rods 150 connected to the needle-sleeve and to a sliding block through which the screw passes for adjusting the deck, needle and knotter for long or short grain, substantially as described.

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Witnesses:
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