

(No Model.)

9 Sheets—Sheet 1.

C. C. SHERO.

COMBINED RAKE AND PORTABLE BALING PRESS.

No. 483,515.

Patented Sept. 27, 1892.

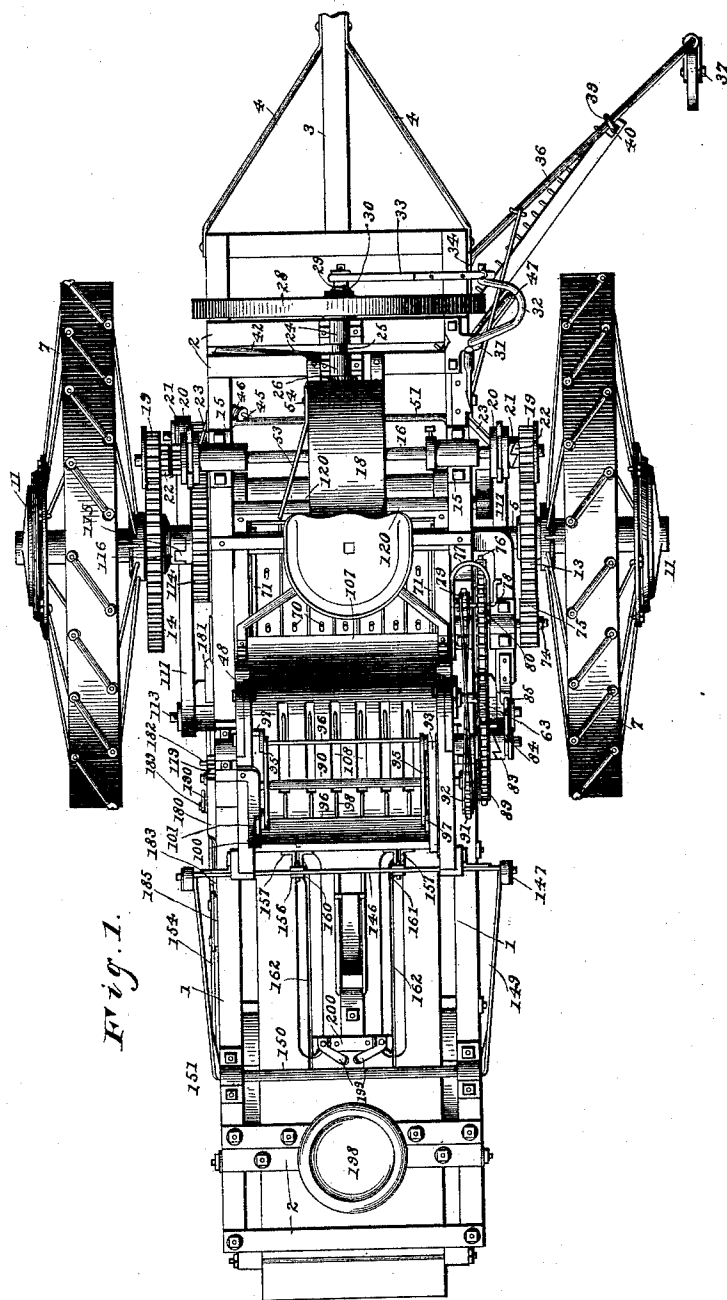


Fig. 1.

Witnesses:

J. M. Withers

W. S. Duwall

By his Attorneys,

C. A. Snow & Co.

Inventor
Christopher C. Shero.

(No Model.)

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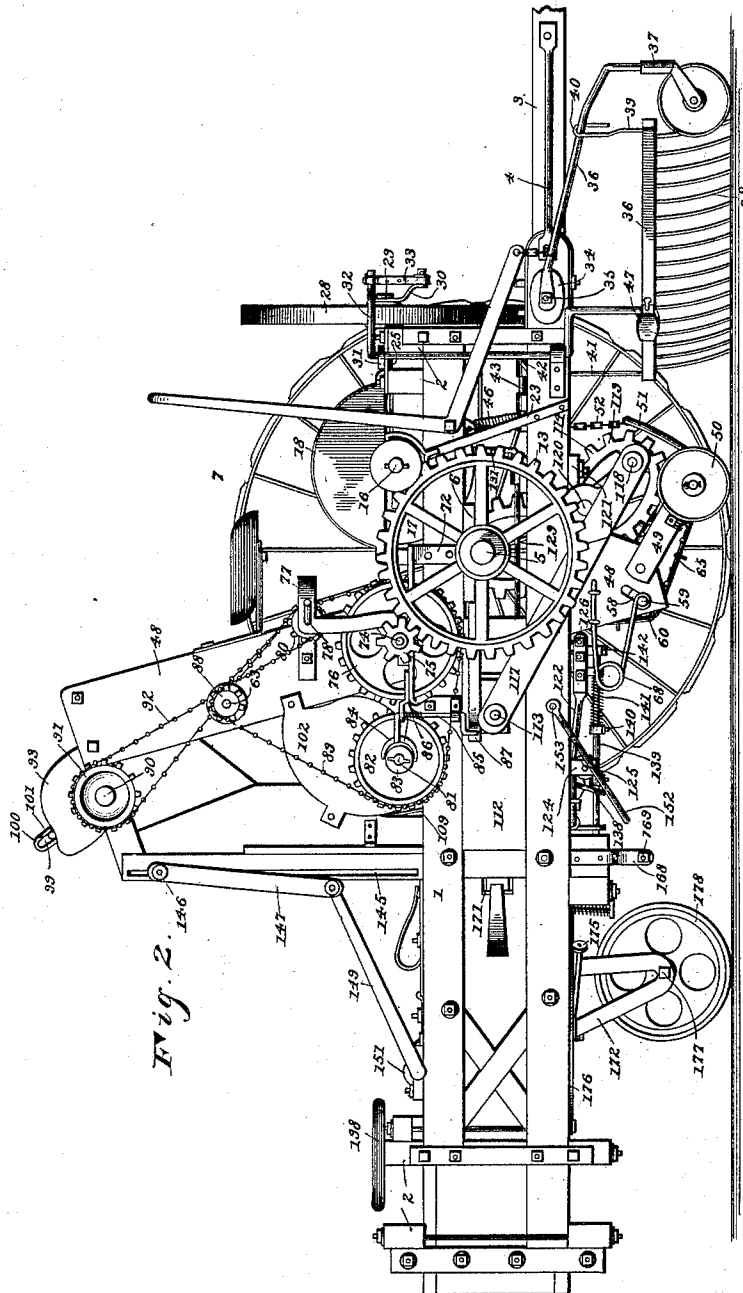


Fig. 2.

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J. M. Sherry

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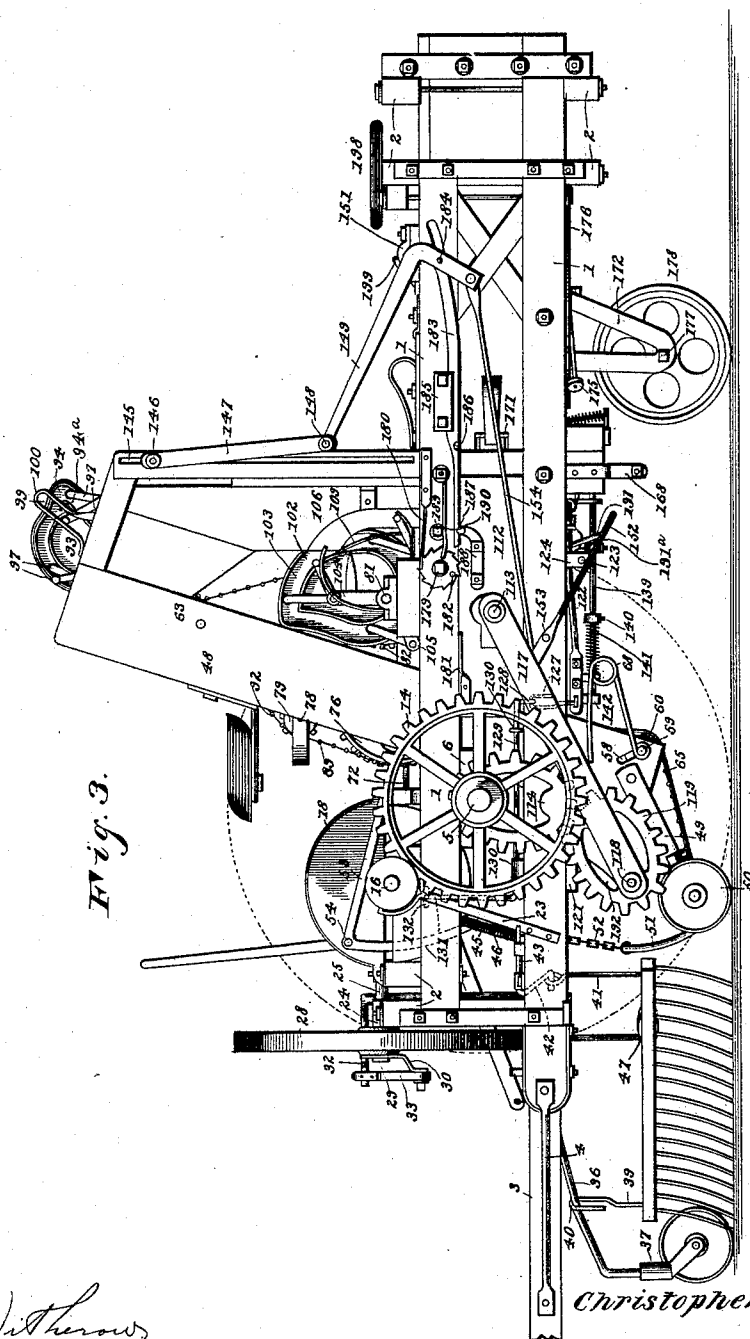
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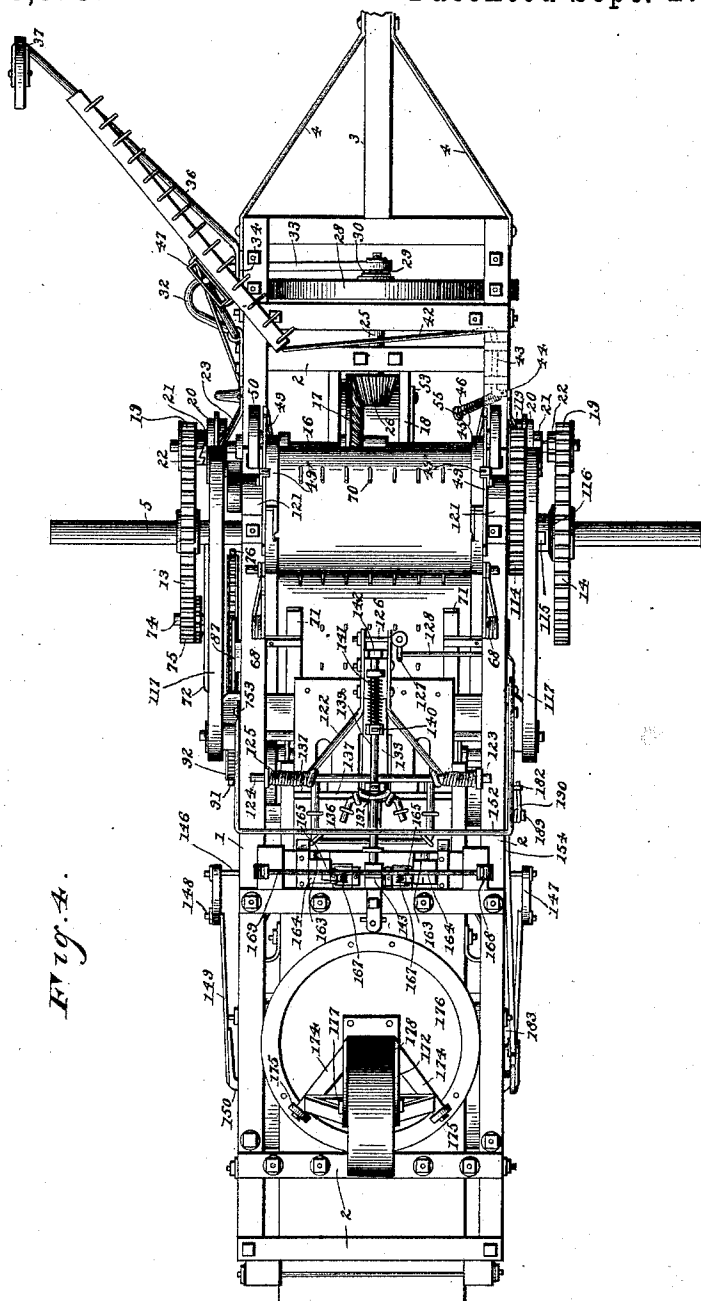


Fig. 4.

Witnesses:

J. M. Withers

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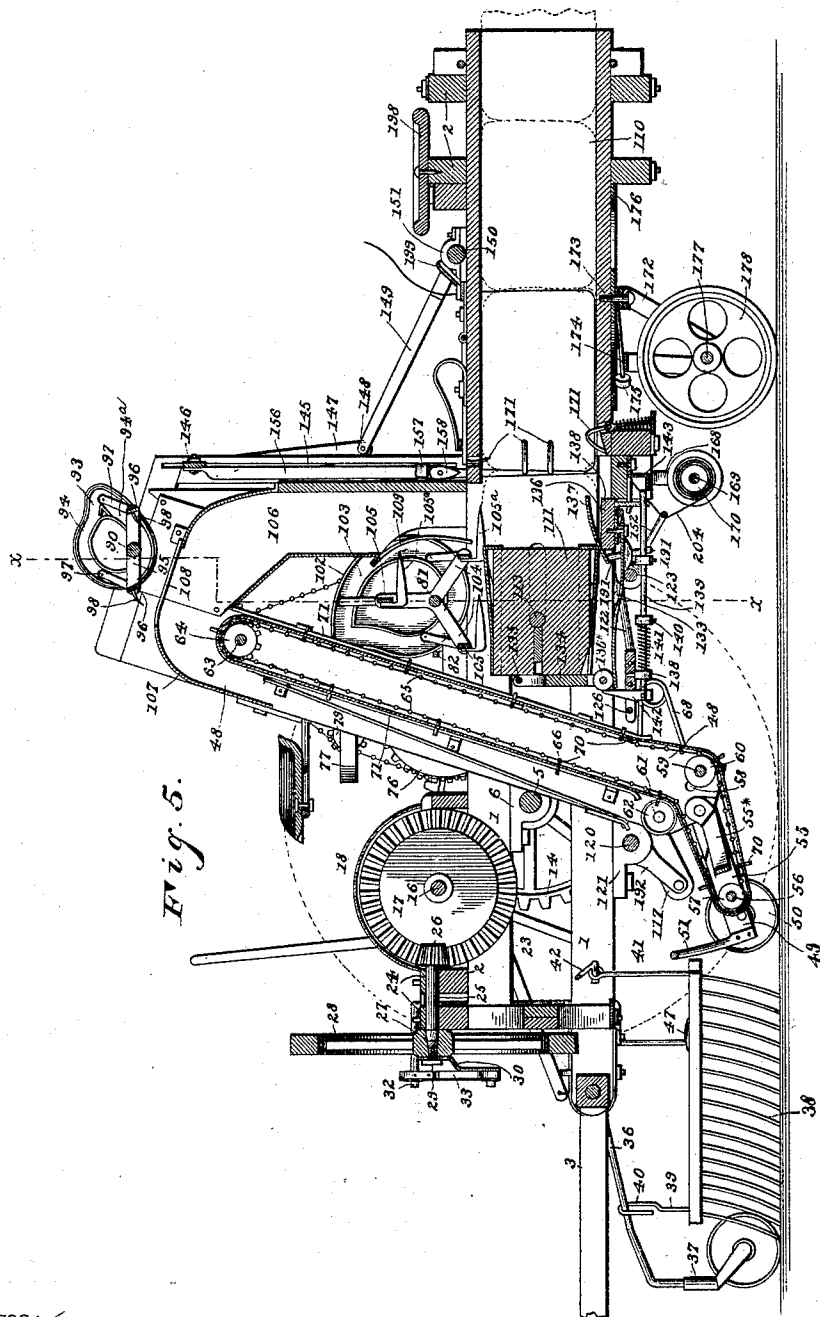
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9 Sheets—Sheet 6.

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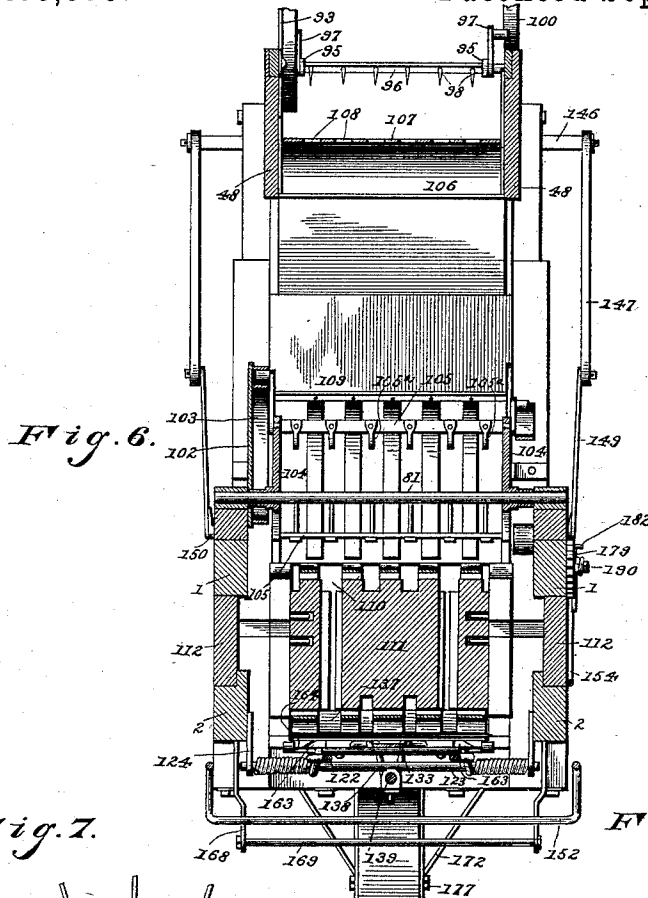
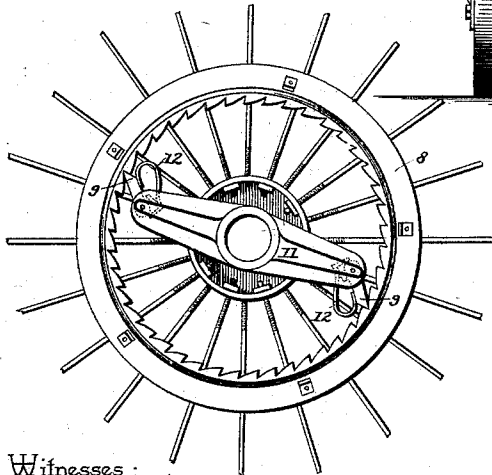


Fig. 6.



Witnesses:

J. M. Withers
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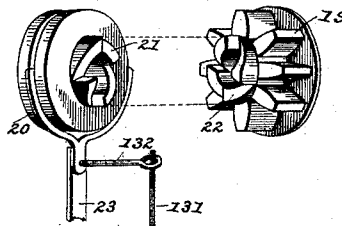
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Fig. 9.



Fig. 8.



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(No Model.)

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Fig. 10.

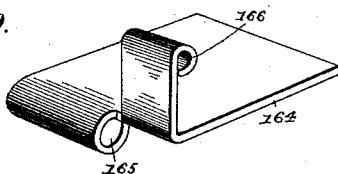


Fig. 21.

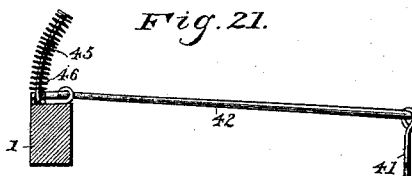


Fig. 11.

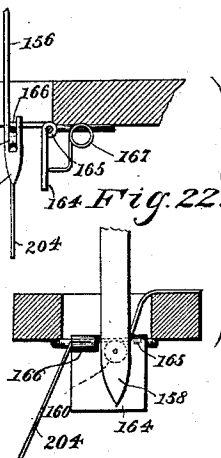
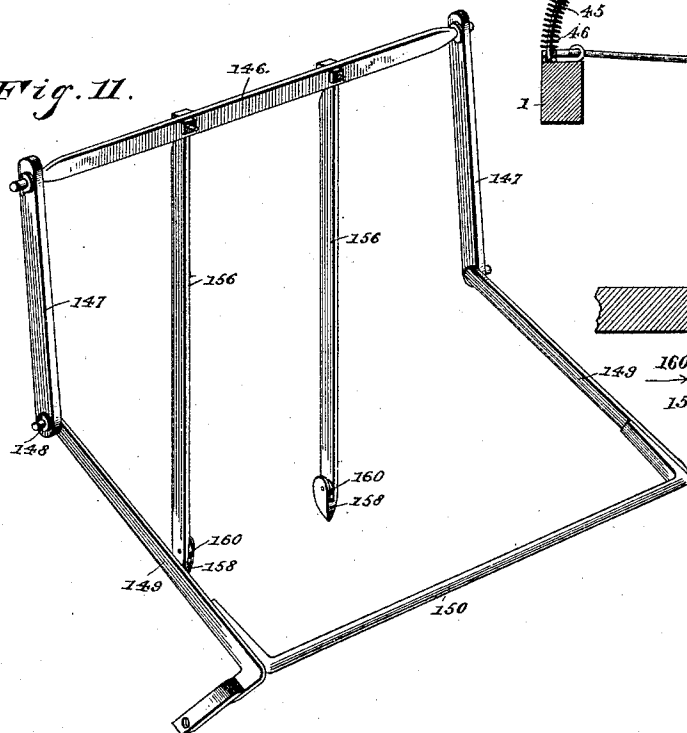
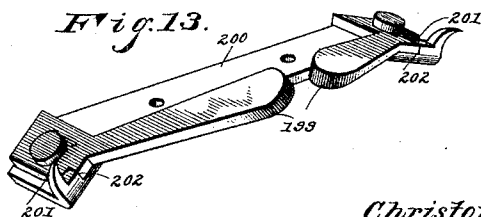


Fig. 13.



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Fig. 12.

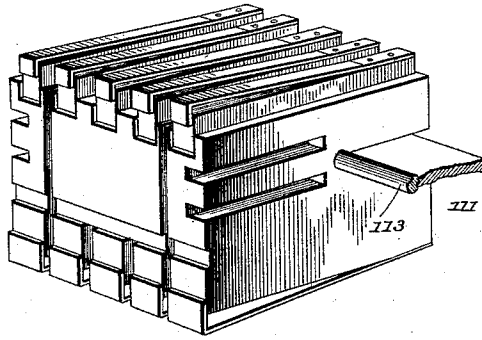


Fig. 14.

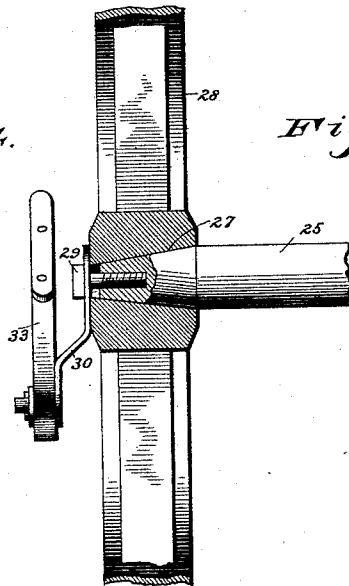
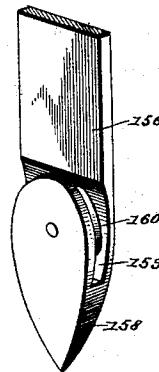


Fig. 15.



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(No Model.)

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Fig. 11.

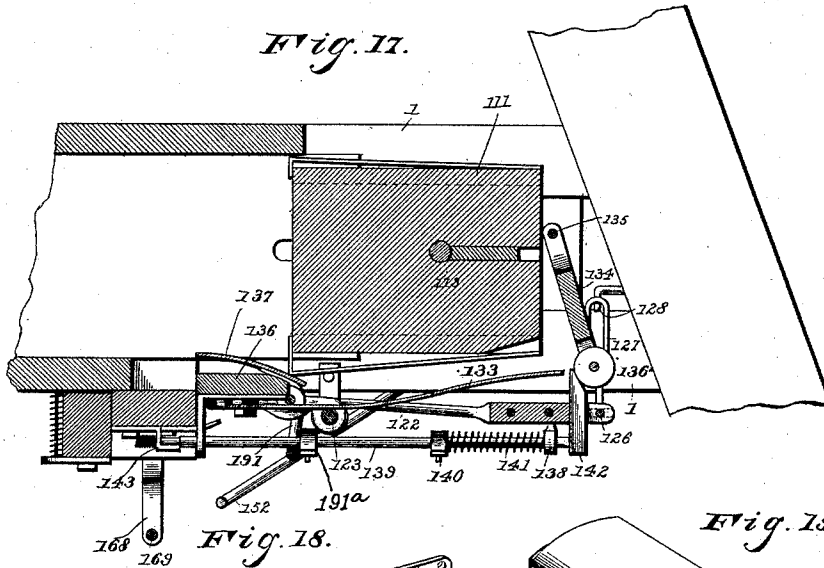


Fig. 18.

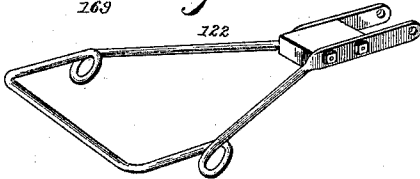


Fig. 19.

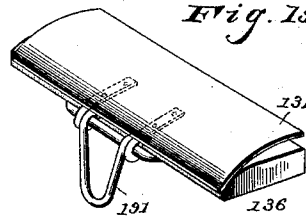


Fig. 16.

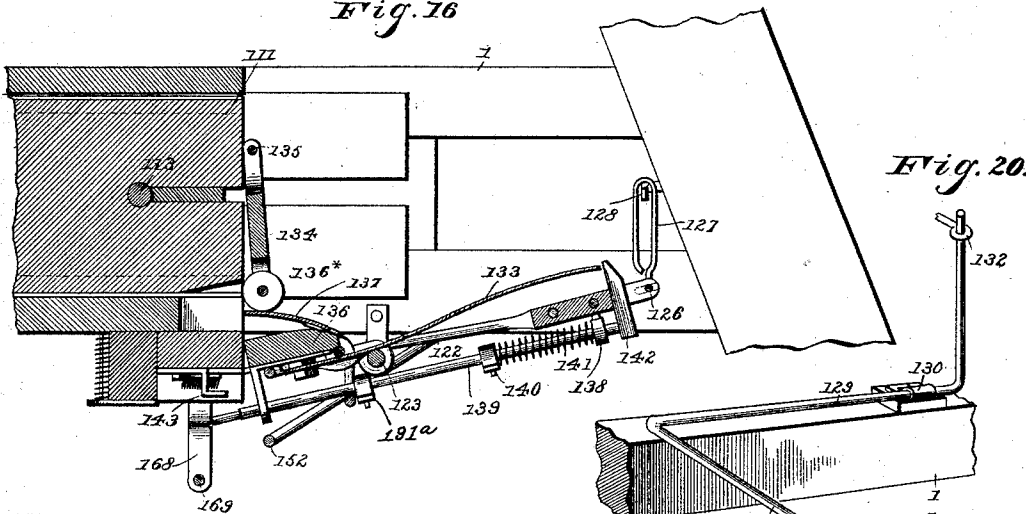
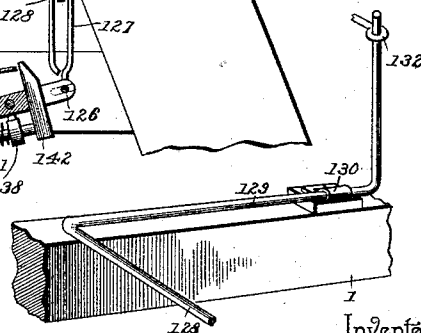


Fig. 20.



Witnesses;

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Inventor
Christopher Shero,

UNITED STATES PATENT OFFICE.

CHRISTOPHER C. SHERO, OF SHERMAN, TEXAS, ASSIGNOR OF ONE-HALF TO
ISAAC SHERO, OF SAME PLACE.

COMBINED RAKE AND PORTABLE BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 483,515, dated September 27, 1892.

Application filed October 24, 1890. Serial No. 369,220. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER C. SHERO, a citizen of the United States, residing at Sherman, in the county of Grayson and State of Texas, have invented a new and useful Combined Rake and Portable Baling-Press, of which the following is a specification.

This invention has relation to a combined rake and portable baling-press, the objects in view being to provide a machine of the above class of comparatively cheap and simple construction and adapted to rake, elevate, deliver, pack, and bale hay and to apply the binding-wires to the bales as formed in one continuous operation.

Various other objects and advantages of the invention, together with the novel features thereof, will appear in the following description and be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of a machine constructed in accordance with my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a similar view of the machine, the same being viewed from the opposite side. Fig. 4 is a bottom plan. Fig. 5 is a vertical longitudinal section. Fig. 6 is a vertical transverse section on the line *xx* of Fig. 5. Fig. 7 is an enlarged detail in elevation of the ratchet-hub of one of the drive-wheels. Figs. 8 and 9 are details of a clutch mechanism hereinafter described. Fig. 10 is a detail in perspective of one of the bell-crank shutters. Fig. 11 is a detail in perspective of the wire-operating plungers or needles. Fig. 12 is a detail in perspective of the plunger. Fig. 13 is a detail in perspective of the wire-retaining levers. Fig. 14 is an enlarged detail in section of the hub of the fly-wheel, together with its bearings. Fig. 15 is a detail in perspective of one of the plunger-needles. Fig. 16 is an enlarged vertical section of a portion of a baling-chamber, the packer, and packer-operating trip devices. Fig. 17 is a similar view, the packer thrown forward; Fig. 18, a detail of the rocking bail; Fig. 19, a detail of the spring-trip; Fig. 20, a detail of the clutch-withdrawing rock-shaft operated by the link 127. Fig. 21 is a detail in perspective of the rake-supporting rock-shaft 43. Fig. 22 is a

detail in transverse section through one of the shutters, showing the needle in elevation.

Like numerals of reference indicate like parts in all the figures of the drawings.

In constructing the framework of the machine I employ opposite pairs of parallel beams 1 and connect the same at their front and rear ends by means of suitable transverse beams 2, securely bolted in position. The lower beams 1 at their front and rear ends extend beyond the ends of the upper beams, and at their front ends said lower beams have mounted therein the draft-pole 3, suitably braced by hounds 4.

5 designates the axle of the machine, mounted in bearings 6, secured to the under side of the upper pair of beams 1 and having its bearing ends terminating beyond the sides of the framework. Upon these bearing ends of the axle are mounted the ground-wheels 7, and secured to the spokes of the wheels are toothed ratchet-rings 8. (See Fig. 7.) The teeth of the rings are upon the inner sides thereof and are designed to be engaged by means of a pair of pawls 9, pivoted at the ends of a pawl-yoke 11, made fast upon the ends of the axle. Like springs 12 serve to press the pawls into engagement with the teeth, and said teeth are so disposed with relation to the pawls that operative engagement is only formed when the machine is in motion and moving forward. By this means motion of the wheels is communicated from them to the pawl-yoke and from thence to the axle. In backing the machine, however, or in any of its movements other than forward the pawls ride idly over the teeth and the mechanism, hereinafter described, operated by the axle remains inactive. Between that ground-wheel located at the right of the machine and the framework there is rigidly mounted upon the axle a master-gear 13, and between the left-hand ground-wheel and the framework there is loosely mounted upon the axle a loose gear 14.

Upon the upper longitudinal bars 1 in bearings 15 is journaled a transverse shaft 16, upon which is mounted a beveled gear 17, covered by a hood 18. To the ends of the shaft 16 are applied small pinions or gears 19, and

between the pinions, which latter are loosely mounted, is splined upon the shaft a pair of clutch-sleeves 20. These clutch-sleeves are provided upon their outer faces with an annular series of teeth 21, designed to engage or interlock with a corresponding series 22, formed upon the inner faces of the small gears 20. The peripheries of the sleeves are provided with annular grooves and are each engaged by a spring-yoke 23. At each side of the shaft 16 the two upper side beams 1 are connected by the before-mentioned cross-beams 2, and upon these is supported the hood 18.

15 In a pair of the cross-bars 2 in boxes 24 is journaled a short shaft 25, disposed longitudinally to the machine. The inner end of the shaft is provided with a small beveled pinion 26 and the outer end is made conical, forming a cone-bearing 27. Upon the cone-bearing there is loosely mounted a fly-wheel 28, the same being forced to its seat by means of a cramping-screw 29. A crank-arm 30 is mounted upon the screw 29 and is held in position against the fly-wheel by the head of the screw. In a bracket 31 at one side of the machine there is pivoted a vertically and transversely curved crank 32, loosely connected with the crank-arm 30 by means of a pitman 33. Motion is imparted through the gear 13 to the small gear 19, adjacent to the gear 13, and thus the shaft 16 is rotated, said shaft carrying with it the large beveled gear 17, which in turn rapidly rotates the small pinion 26, the short shaft 25, and the large fly-wheel 28. If, perchance, anything should happen to the mechanism to cause a sudden stoppage of the parts, the momentum of the fly-wheel serves to force the same to rotate upon its semi-loose bearing 27 without actually turning the shaft 29 and the mechanism to which the same is operatively connected. By this means a general smashing of the machinery is avoided and in a short time the revolutions of the fly-wheel will cease. While the fly-wheel is loose upon the shaft, yet there is sufficient friction between its hub and the conical shaft to cause said wheel to rotate after once being set in motion.

50 A bracket 34 (see Fig. 2) has pivoted thereupon, as at 35, an arm 36, projecting forwardly and laterally from the machine. The outer end of the arm is bent downwardly and has swiveled thereon a loose caster 37.

55 38 designates an ordinary rake, to which is connected at one end a suspension-bar 39, the upper end of which is bent to form a hook 40, which rides loosely upon the arm 36. The rear end of the rake-bar is provided with a suspension-rod 41, which latter terminates in an eye at its upper end and engages with the lower hooked end of a rock-arm 42, extending from a rock-shaft 43, the opposite end of the shaft terminating in an eye 44, which receives a rod 45, terminating at its upper end in a head. A coiled spring 46 encircles the rod 45 between the head and the eye, said

spring having a tendency to depress the rock-shaft and yieldingly elevate the rake. The rake is provided with a metal box 47, having an elongated opening, in which terminates the lower end of the crank-rod 32, said rod being cranked at its lower end, so that oscillations upon the part of the same cause longitudinal vibrations of the rake.

In rear of the axle there is located a conveyor. This conveyor consists of opposite slightly-inclined side bars 48. To the lower ends of the inclined bars 48 are pivoted short bars 49, in the lower ends of which are journaled small rollers 50, said bars being connected by a transverse inverted-U-shaped bail 51, to which is connected a chain 52, the upper end of the chain being connected to a bell-crank lever 53, pivoted, as at 54, to the side of the housing 18. Upon the same pivots, but independently movable of the bars 49, is a pair of arms 55, in which is journaled a transverse shaft 56, having a pair of pulleys 57. The arms 55 are connected by a transverse bail 55*, rigid therewith, and at their lower ends supported by a pair of L-shaped stops or brackets 49*, depending from the bars 49.

In the rear lower ends of the side bars are formed inclined slots 58, and in the same is journaled a transverse shaft 59, carrying pulleys 60. Diagonally opposite the pulleys 60, upon a shaft 61, are journaled pulleys 62. At the upper end of the chute is a transverse shaft 63, upon which is mounted a pair of sprocket-wheels 64. A pair of sprocket-chains 65 pass over the sprockets 64, under the pulleys 62, around the pulleys 57, under the pulleys 60, and back to the sprockets 64. At intervals the chains are connected by transverse toothed elevating-bars 66, and an apron or web is secured to the bars, and through the same the teeth of the bars project. By means of the bell-crank lever 53 the lower hinged section of the elevator thus constructed may be lowered, so that the small rolls 50 travel upon the ground, and the apron travels sufficiently close to the ground for the teeth of the sprocket-chains to engage the hay raked by the rake, said rake being so inclined as to direct the hay toward the lower end of the elevator. The ends of the shaft 59 extend beyond the sides of the elevator and are yieldingly depressed by means of springs 68, said springs being of V shape and having their upper ends secured to the sides of the elevator and their lower ends bent to form eyes for engaging the ends of the said shaft. The bars connecting the chains, as before stated, are provided with teeth or spurs, and said teeth are of L shape and designated as 70. The inner ends or branches of the end teeth of each bar ride upon tracks 71, secured to the side bars of the elevator, so that they are maintained at a proper inclination.

In a bearing-bracket 72, secured to the right-hand side of the machine (see Fig. 2) and the adjacent side bar 1 of the framework, is jour-

naled a shaft 74, upon which, outside of the bracket, is rigidly mounted a small pinion 75, which engages with and is driven by the master-gear 13. Within the bracket said shaft 5 has mounted thereon a sprocket 76, and mounted upon the bracket is a standard 77, in which is mounted a short shaft 78, said standard being bowed or bent upon itself, as shown. An inner sprocket 79 and an outer sprocket 80 are mounted upon the shaft 78.

In rear of the elevator is located a transverse shaft 81, upon which is loosely mounted opposite the sprocket 76 a sprocket 82. The sprocket 82 is loose upon the shaft and may be made rigid therewith by means of a sliding clutch 83, splined upon the shaft. The clutch is provided with an annular groove, in which rests the bifurcated yoke 84, formed upon the upper crank end of a crank-shaft 85, journaled vertically in the front end of the bracket 72. A spring 86 normally presses the clutch-sleeve into engagement with the sprocket 82, and the crank-shaft 85 is thrown outwardly by reason of its lower end coming in contact with the cam-plate 87, mounted for movement below the crank-shaft, as herein-after referred to. The sprockets 82 76 and a small sprocket 88 upon one end of the shaft 63 are all connected by a small sprocket-chain 89, which chain also includes the small sprocket 80.

In rear of the upper end of the elevator is located a transverse shaft 90, upon the outer end of which is mounted a sprocket-wheel 91, connected to the small sprocket 79 by means of an endless sprocket-chain 92, so that motion is imparted from the shaft 78 to the shaft 90. The shaft 90 passes through a cam-plate 93, rigidly secured to the bar connecting the upper ends of the sides of the elevator and the slotted vertical guides 145, hereinafter mentioned, which plate, as best shown in Fig. 5, is provided with an irregular cam groove or track 94. Opposite transverse arms 95 are located upon the shaft 90, said arms being connected by bars 96, pivoted in the ends of the arms and terminating beyond the transverse bars 95 in crank-arms 97, provided with outwardly-bent ends adapted to ride in the cam-grooves 94. The form of the cam track or groove is nearly circular, so that the toothed bars 96 are partially rotated at each revolution of the shaft 90, whereby the teeth 98 of said bars are given a swing every time they come opposite the upper or discharge end of the elevator and are returned to a position for swinging after they have passed beyond said point. This movement upon the part of the toothed transverse bars is facilitated at the opposite side of the elevator by means of a standard 100, provided with an inclined vertical slot 99, the upper front wall of which is notched, as at 101. The slot corresponds and agrees with the rear inclined portion 94^a of the cam, so that the teeth are steadied, when plunged into the hay, by means of the opposite ends of the bars 96 engaging

in and riding down the inclined slot of the said standard.

Upon the shaft 81 is mounted a fixed cam-plate 102, having a cam track or groove 103. Three-way arms 104 are mounted upon the shaft 81, each pair of arms being connected by a bar 105, pivotally mounted in position, which bars carry L-shaped teeth 105^a. The ends of the bars are cranked and ride in the cam-tracks of the cam, so that each bar is given a rocking movement when it reaches the rear side of the cam.

106 designates a packing-chamber, the upper end of which communicates with the elevator, the upper end of the latter being covered by a hood 107, having a series of longitudinal slots 108 to permit of the introduction therethrough of the spurs or teeth 98 of the bars 96. The lower end of the packing-chamber is reduced, and said reduction is accomplished by means of a curved spring-plate 109, the lower end of which is provided with a series of slots for the passage of the L-shaped feeding-teeth 105^a. By reason of the spring being curved a throat or contracted outlet is formed at the lower end of the packing-box, which throat is capable of being expanded when necessary, so that no choking can occur.

In rear of the packing-chamber the framework embraces and supports a baling-chamber, said baling-chamber being slightly contracted or narrowed toward its rear end, and with the rear end of said chamber the packing-chamber communicates.

110 designates the chamber, and in the same is mounted for movement the packer or plunger 111. Between the opposite side bars 1 and 2 are mounted for sliding blocks 112, and through the packer or plunger passes a shaft 113, the ends of which pass through the blocks. The beams 1 and 2 constitute ways in which the blocks 112 reciprocate, and any movement upon the part of the blocks is communicated to the packer or plunger 111.

114 designates an elliptical eccentrically-journaled gear mounted upon the axle 5 of the machine and adjacent to the gear-wheel 14. The eccentrically-journaled cam-gear 114 is provided with a toothed hub 115, which engages with the toothed hub 116 of the gear 14, and therefore receives motion from said gear 14, which latter is driven by the small gear 19 at that end of the shaft 16. Pitmen 117 have their upper ends pivotally connected with the trunnion or bearing-shaft 113 and at their lower ends are pivoted, as at 118, eccentrically to an elliptical or cam-gear 119, which latter is rigidly and eccentrically mounted upon one end of a transverse shaft 120, journaled in bearings 121, located upon the under sides of the two lower side bars or beams 1.

124 represents a pair of bearings depending from the lower side beams 1, immediately in rear of the baling-chamber, and in said bearings is mounted a rock-shaft 123.

Mounted upon the shaft and rigidly connected therewith is a rocking bail 122. Washers 125 are mounted upon the rock-shaft at each side of the bail and serve to retain the same upon the shaft. The two terminals of the bail are connected at their front by means of a transverse bolt 126, from one end of which there arises a vertical loop 127, as shown best in Fig. 3. The loop is elongated and loosely embraces a rock-arm 128, extending laterally from the rock-shaft 129, mounted in bearings 130. From the front end of the rock-shaft there arises a vertical rock-arm 131, which is connected with a transversely-disposed bolt 132, extending laterally through one of the upper bars 1 and connected at its outer end to the spring-yoke 23.

Mounted at the center of the rock-shaft 123 is a yielding or spring plate 133, the front end of the plate serving as a yielding track for the lower end of an arm 134, pivoted, as at 135, to the rear end of the packer, said arm being provided at its lower end with a roller 136* for moving on the track. The rear end of the track extends under and is secured to a trip-plate 136, mounted upon the rear end of the bail, and said plate has hinged thereover a spring trip-plate 137, as clearly shown in Figs. 16 and 19. Keepers 138 depend from the front end of the bail and the trip-plate 136, and in the same there is mounted for reciprocation a bolt 139, provided with a collar 140, between which and the front keeper 138 is mounted a coiled spring 141, which serves to normally press the bolt 139 to the front. The rear end of the bolt is provided with a head 142, which extends up between the front terminals of the rocking bail and slightly in front of the end of the yielding track. The rear end of the bolt, or, rather, its engaging end, is designed for engagement with a catch 143, which is of L shape and secured to the underside or bottom of the baling-chamber, immediately in rear of the trip 136.

In rear of the packing-chamber is located a pair of slotted vertical guides 145, and mounted for vertical reciprocation therein is a bar 146. From the ends of the bar depend loosely-connected pitmen 147, the lower ends of which are pivoted, as at 148, to a pair of bell-crank-shaped rock-arms 149, mounted at their angles upon a rock-shaft 150, journaled in bearings 151 upon the top of the baling-chamber. 152 designates a draw off bail pivoted, as at 153, to the opposite side beams 2 and extending under said beams immediately in rear of the spring-tread. The upper ends of the bail are by rods 154 pivotally connected to the lower branches of the bell-cranks 149. Between the vertical guides 145 there is secured to the bar 146 a pair of vertically-reciprocating plungers or needles 156, the lower ends of which are guided by keepers 157, secured to the rear wall of the packing-chamber. The lower ends of the plungers are provided with beveled or penetrating heads 158, and in the same are formed slots 159, in which are mounted small grooved rollers 160. In

line with the plungers there are formed in the top of the baling-chamber openings 161, which openings are continued in the form of narrow slots 162 to a point near the rock-shaft 150. Opposite the openings for the reception of plungers corresponding openings 163 are formed in the bottom of the baling-chamber, and covering said openings are shutters 164, hinged at their inner edges, as at 165, and provided upon their upper sides with perforated lugs 166. The shutters are normally maintained closed by like coiled springs 167.

Depending from the framework transversely opposite the shutters are hangers 168, which are connected by a spindle 169, designed for the reception of a pair of wire-carrying spools 170.

In rear of the mechanism just described there are located within the baling-chamber the usual retarding devices 171, said devices being yielding or spring-pressed.

172 designates a caster-frame pivoted at its center, as at 173, to the under side or bottom of the baling-chamber and is designed to support the rear end of the machine. Lateral arms 174 project from the caster-frame and are provided at their free ends with loose rollers 175, designed for movement upon a wear ring or track 176. The caster-frame is provided with a journal 177, upon which is mounted the caster-wheel 178.

To begin operation, the leading ends of the two wires are passed around the front and over the draw-off bail and then through the perforated lugs of the shutters up through the baling-chamber and out through the openings in the roof.

Mounted above one of the sliding blocks 112 is a ratchet-wheel 179, designed to loosely rotate and held against accidental rotation by means of a flat spring 180. Secured to the corresponding sliding block is a fixed pawl 181, in the path of which the teeth of the ratchet-wheel lie, and said wheel also carries a pin or trip 182.

183 designates a lever pivoted to the lower branch of one of the bell-cranks 149, as at 184, said lever being designed for reciprocation in a keeper 185 and provided upon its under side with a notch 186, adapted for engagement with a lug 187, formed upon a plate 188, secured to one of the sliding blocks 112.

Upon a bolt 189 at one side of the ratchet-wheel 179 is coiled a spring 190, one end of the spring terminating opposite the face of the ratchet-wheel and in the path of the trip-pin 182, by which it is adapted to be struck and tilted, and the opposite end being located over the free end of the lever 183, which it is designed to depress when so tilted, so that the notch 186 in the lever will receive the lug 187 of the block 112.

The operation of my invention is as follows: The machine being set in motion, said motion is imparted by the ground-wheel at the right of the machine to the shaft or axle thereof, and from thence to the master-gear 13. The gear 13 rotates the small pinion 75, and

said pinion in turn rotates the shaft 74. By means of the main sprocket-wheel 76 the shafts 90, 81, 63, and 78 are set in motion, and by means of the shaft 63 motion is imparted to the endless belt of the elevator or conveyer. The rake being inclined, as shown, gathers the hay and feeds the same back to the lower end of the elevator, up which it is carried and dumped into the upper end of the packing-box, into which it is thrown by means of the rapidly-rotating picking-frame at the upper end of the conveyer. The hay thrown into the box accumulates at the lower end of the same and is lowered in portions by the teeth 105^a, which successively are projected into and pass through the slots in the spring-plates 105. The hay, falling upon the spring-plate 137 of the trip 136, depresses the same at its rear end, and by reason of said trip being connected with the bolt by means of the bell-crank connection 191, which abuts against a stop 191^a, said bolt is reciprocated to the front until out of engagement with the catch 143, when it is depressed, lowered, and forced forward against the tension of the spring 141, whereby it is disengaged from the keeper 143. As the bail is also depressed at its rear end, the front end of the same is elevated, so that it releases the rock-arm 128 of the rock-shaft 129, and the spring-yoke 23 serves to throw the clutch 20 into engagement with the gear 19 at the end of the shaft 16. This engagement of the gear 19 serves to rotate the same, which motion is imparted to the loose gear 14, and from thence to the two loose elliptical or cam gears 114 and 119. The gear 119 rotates the shaft 120 and rotates the crank-arm 192, located at the opposite end of the shaft, and to which are connected the opposite pitmen 117. As the pitmen are thrown forward the wires—of which there are two—act as a head-block to receive the hay, and against the same the plunger forces the first lot of hay delivered into the baling-chamber. As the plunger moves forward, the pawl 181 engages the ratchet 179 and moves the same one tooth, and the number of teeth of the ratchet are in accordance with the number of deposits made by the teeth 105^a necessary to complete or give the desired quantity of hay to the bale, so that by the time a sufficient quantity of hay has been deposited in the chamber to complete the bale the ratchet will have completed one entire revolution and the stop-pin 182 will be in contact with and elevate the front end of the spring 190, and thus the rear end of the spring will be lowered upon the free end of the latch or lever 183. The next forward movement, therefore, of the blocks 112, which move with the plunger, will cause the lug 187 to engage with the notch 186 of the latch or lever 183, and any movement upon the part of the blocks will be communicated through the latch to the bell-cranks 149 through the pitmen 147 to the bar 146 and to the pair of plungers depending from the bar. A continuation of the movement of the plunger toward the bail

serves to lower the needles or wire-carrying plungers 156 through their openings and down through the hay, and the grooved rollers engage with the wires which are stretched across the path of the said plungers. When lowered, the lower ends of the plungers are permitted to pass below the bottom of the baling-chamber by reason of the yielding spring-pressed shutters 164. When the wires are engaged by the lower ends of the plungers, said plungers are elevated and form a loop of the wires and the operation of building the next bale begins. After the loop is formed and the packer or plunger 111 moves to the rear the pivoted arm 134 rides upon the spring-track 133 and serves to depress the front end of the bail, and consequently the bolt. As the bolt is depressed the lower end of the pivoted arm 134 comes in contact with the head of the same and serves to retract said bolt against the spring and out of engagement with the under side of the catch 143. As the bail descends its loop 127 depresses the rock-arm 128 and rocks the arm 131, so that the clutch 20 is withdrawn from engagement with the gear 19 against the tension of the spring-yoke 23. The wire-operating mechanism is now motionless, and the stop 182, having passed beyond the spring 190, releases the same and the latch 183, so that the operation of baling alone is carried on. At each forward movement of the sliding blocks 112 the cam-track 87 at the right of the machine serves to operate the crank-shaft 85 and its yoke. This serves to throw the clutch 83 out of engagement with the sprocket 82, so that the shaft 81 remains inactive, or, in other words, is intermittently operated to deposit hay into the baling-chamber. It will be observed that, the baling-chamber being contracted toward its rear end, considerable friction between the sides of the chamber and the bales take place, so that they are slowly fed or squeezed through the rear opening of the chamber, and thus offer a resistance, or, in other words, perform the functions of a head-block to the baling mechanism. As the bale is formed the wires at the ends of the bale travel along the longitudinal slots in the top of the baling-chamber, where an attendant is seated upon a seat 198. At this point he clips the loops and, taking the ends, clamps them under a pair of small binding-levers 199, pivoted to a plate 200, the short ends of the levers, which are rounded, as at 201, binding the wires snugly against curved shoulders 202, and holds them in that position while the attendant forms the tie. By the time he has completed the tie the first pair of wires of the next bale has reached him, are grasped by him, and a moment later the rear wires are looped, which he severs in a similar manner as the preceding one and ties. From the foregoing description it will be apparent that the hay is raked, gathered, elevated, and thrown into the packing-box, from which it is intermittently delivered, deposited

into the baling-chamber, and pressed, after which it is pushed toward the mouth of the chamber for tying or binding, and during such time the depositing mechanism is inactive and only recommences operation after the packer has receded to its front position. At the same time that the bell-cranks 149 are operated to vertically reciprocate the wire-carrying plungers the draw-off bail 152 is swung to the front and a suitable length of wire for binding the subsequent bale is drawn off from the spools, so that the plungers have merely to engage the wire and draw the same up through the openings in the bottom of the chamber.

Changes in the form, size, proportion of parts, and the minor details of construction can be made without departing from the spirit or scope of this invention.

Having described my invention, what I claim is—

1. In a baling-press, the combination, with the driving mechanism, the baling-chamber, its plunger, and mechanism for operating the latter and normally out of connection with the driving mechanism, of a trip located in the chamber and adapted to be operated by the weight of deposited material in the chamber and adapted to throw the plunger-operating mechanism into engagement with the driving mechanism, substantially as specified.

2. In a baling-press, the combination, with the driving mechanism, the baling-chamber, its plunger, and mechanism for operating the latter, of a spring for throwing the driving mechanism into connection with the plunger-operating mechanism, devices for retracting the spring so as to withdraw the drive mechanism from the plunger-operating mechanism, and a trip located in the chamber, adapted to be operated by the deposit thereon and when so operated to operate the spring-retracting device, substantially as specified.

3. In a baling-press, the combination, with the framework, an arm pivoted to one side of the same and terminating at its outer end in a caster, and a rake loosely suspended from the arm, of the oppositely-cranked shaft journaled in the framework and having its lower crank terminating in the socket of the rake, a fly-wheel, a shaft therefor, means for operating the same, and a pitman connected to the upper end of the crank, and a crank connecting the opposite end of the pitman to the fly-wheel shaft, substantially as specified.

4. In a baling-press, the combination, with the framework, the driving mechanism, a shaft journaled in the framework, geared with the drive mechanism and conical at its outer end and provided with a threaded bore, a fly-wheel on said end and having a conically-bored hub slightly smaller than the conical end, the crank-arm, and the screw passed there-through and into the bore of the shaft and having its head clamping the same against the end of the shaft, of a vertical rake-operating shaft journaled in the framework and

having a cranked upper end, a rake connected to the lower end of said vertical shaft, and a pitman connecting the upper crank end with the crank-arm of the shaft, substantially as specified.

5. In a baling-press, the elevator, the pairs of arms pivoted to and depending from the inner faces of the lower ends thereof, the endless apron, the supports thereof, and operating means, combined with the pair of arms pivoted to the outer lower ends of the elevator, the stops depending therefrom and taking under the inner arms, the rollers at the lower ends of the outer arms, the bail connecting the outer arms, and the perforated lever connected to the bail, substantially as specified.

6. In a baling-press, the combination, with the opposite sides of the elevator, provided near their lower ends with an inclined slot, and a pair of arms hinged to the lower ends of the sides, of a shaft passed through the upper end of the elevator, a pair of shafts in the lower end of the same, one of which is mounted in the slot, springs for depressing the said shaft in the slot, and a shaft passed through the ends of the arms, a bail connecting the arms, a lever pivoted on the framework, a chain connecting the same with the lever, a pair of opposite endless chains passing over the sprockets, around the lower pulleys, and in rear of the intermediate pulleys, bars connecting the chains and provided with spurs or teeth, and an endless apron connected to the bars, substantially as specified.

7. In a baling-press, the combination, with a baling-chamber, of a packing-chamber located above the same and provided with a reduced spring-wall at one side of its mouth or lower end and means for reciprocating the packer within the chamber and for discharging from the packing-chamber into the baling-chamber deposits at each reciprocation of the packer, substantially as specified.

8. In a baling-press, the combination, with a train of gearing, a plunger mechanism operated thereby, said train including a loose gear provided with a toothed hub, a clutch mounted on the shaft of the gear, a spring-yoke for normally withdrawing the clutch from engagement with said gear, and a rock-shaft having a rock-arm connected with the clutch and having its opposite end laterally bent, of a baling-chamber, a shaft located below the chamber, a rocking bail mounted on the shaft, a trip-plate mounted on the bail in the bottom of the chamber, a spring for elevating the trip-plate, and a loop on the rocking bail, engaging the laterally-bent end of the rock-shaft and adapted to draw the same downward at each depression of the bail, whereby the clutch is thrown against the tendency of the spring into engagement with the toothed hub of the before-mentioned gear, substantially as specified.

9. In a baling-press, the combination, with the baling-chamber, the rock-shaft located

thereunder, and the bail mounted on the rock-shaft and having depending brackets, of the trip-plate mounted upon the bail, the catch located in front of the same, the bolt mounted for reciprocation in brackets upon the under side of the bail, a spring coiled upon the bolt and bearing at one end against a depending bracket, said bolt being adapted for engagement with the catch and being provided at the rear side with an enlarged head or end, a collar located on the bolt at the rear end of the spring, a packer mounted for reciprocation in the chamber, an arm pivoted to the packer and adapted to actuate the bolt against the spring, and a spring-track mounted on the bail, extending above the same, and terminating in advance of the head of the bolt, substantially as specified.

10. In a baling-press, the combination, with the baling-chamber provided upon its under side or bottom with openings, shutters spring-pressed and provided upon their upper sides with lugs having eyes and hinged to one side of and adapted to cover the openings, a pair of wire-drawing plungers mounted for movement through the openings, and means for lowering and raising said plungers, of a wire-spool-carrying support located below the chamber and guide-eyes located in the openings in the chamber, substantially as specified.

11. In a baling-press, the combination, with a baling-chamber the bottom of which is provided with openings, spring-pressed shutters provided with guide-eyes, hinged to the edges of and adapted to cover the openings, wire-carrying plungers mounted for reciprocation in the openings, and devices for operating the same, of a wire-support, a pivoted bail for drawing off the wire, and means for operating the same at each downstroke of the plungers, substantially as specified.

12. In a baling-press, the combination, with a baling-chamber, guides located at the sides of the chamber, blocks mounted for reciprocation in the guides, a packer connected with the blocks, and a lug mounted on one of said blocks, of means for reciprocating the blocks, a ratchet-wheel provided with a stop mounted for rotation at the side of the chamber, a double-ended spring located at the side of the wheel and adapted to be operated by the stop, a rock-shaft journaled upon the chamber, rock-arms connected to the shafts, a lever connected with one of the rock-arms and provided with a notch for engagement with the lug upon the guide-block, said lever extending into the path of and adapted to be actuated by the double-ended spring, a pair of guides located above the chamber, a bar mounted in the guides, rods connecting the same with the rock-arm, and wire-loop-forming plungers connected to the bar, substantially as specified.

13. In a baling-press, the combination, with the baling-chamber having the opposite guides, the packer mounted in the chamber,

and opposite pitmen for operating the packer, of a shaft, an eccentrically-pivoted elliptical gear mounted thereon, a shaft located below the first-mentioned shaft, and an eccentrically-mounted elliptical gear in one end of the same, engaged and driven by the first-mentioned gear and at its free end connected to one of the pitmen, the opposite end of the shaft being bent to form a crank and connected to the opposite pitman, substantially as specified.

14. In a baling-press, the combination, with a conveyer and a packing-chamber, the two communicating at their upper ends and covered by a slotted plate, of a shaft and means for rotating the same located above the plate, opposite transverse bars mounted on the shaft, rods connecting the bars and pivoted in the ends of the latter and provided with teeth, said rods having their outer ends bent to form cranks, and cams located at the ends of the shaft and provided with grooves for the reception of the cranks, substantially as specified.

15. In a baling-press, the combination, with a baling-chamber the roof of which is provided with longitudinal slots, a packer mounted for reciprocation therein, wire-loop-forming plungers mounted for reciprocation in the front ends of the slots, and suitable mechanism for operating the packer and the plungers, of a plate located at the rear ends of the slots and provided with cam-shoulders and a pair of pivoted levers mounted opposite the slots and provided with beveled ends for binding on the shoulders, substantially as specified.

16. In a baling-press, the combination, with the baling-chamber, opposite guides, blocks mounted in the guides, a packer mounted in the chamber and connected with the guides, and mechanism for reciprocating the blocks, of a packing-chamber located above the packer, a shaft journaled in rear of the box and provided with teeth for feeding from the chamber to the baling-chamber, a sprocket loosely mounted on the shaft, gearing connecting the same with the ground-wheel, a clutch mounted upon the shaft and adapted to engage the hub of the sprocket, a bracket located at the side of the sprocket, a crank-shaped yoke engaging the clutch, a spring for throwing the clutch into engagement with the sprocket, and a track mounted upon one of the sliding blocks and adapted to come in contact with and operate the yoke against the tendency of the spring and so as to disengage the clutch from the sprocket at each forward movement of the block and packer, substantially as specified.

17. In a baling-press, the combination, with the baling-chamber, its reciprocating packer, means for operating the same, a feed mechanism, gearing for operating the same, and a clutch located between the feed mechanism and gearing, said clutch normally connecting the same, of devices actuated by the packer for throwing the clutch out of operative posi-

tion at each forward movement of the plunger, substantially as specified.

18. In a baling-press, the combination, with the baling-chamber, its packer, and the super-
5 imposed feed-chamber and its feeders, of devices for operating the packer, devices for operating the feeders, and devices mounted on the packer for throwing the feeders out of operation at each forward movement of the
10 packer, substantially as specified.

19. In a baling-press, the combination, with a baling-chamber, a packer, and mechanism for operating the packer when connected thereto, but normally out of such connection,
15 of a trip located in the chamber, adapted to be depressed by the deposits of hay thereon, and connections between the packer-operating mechanism and packer, whereby when said trip is depressed said mechanism and

packer are thrown into connection, substantially as specified. 20

20. In a baling-press, the combination of a baling-chamber, means for compressing material therein, a feed-chute located above and communicating with said baling-chamber, a
25 packer operating to intermittently feed the material through said feed-chute into said baling-chamber, and a spring in said feed-chute for preventing the material being baled from entering the baling-chamber without the
30 aid of the packer, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CHRISTOPHER C. SHERO.

Witnesses:

WM. SHERO,
J. T. CAUDRY.