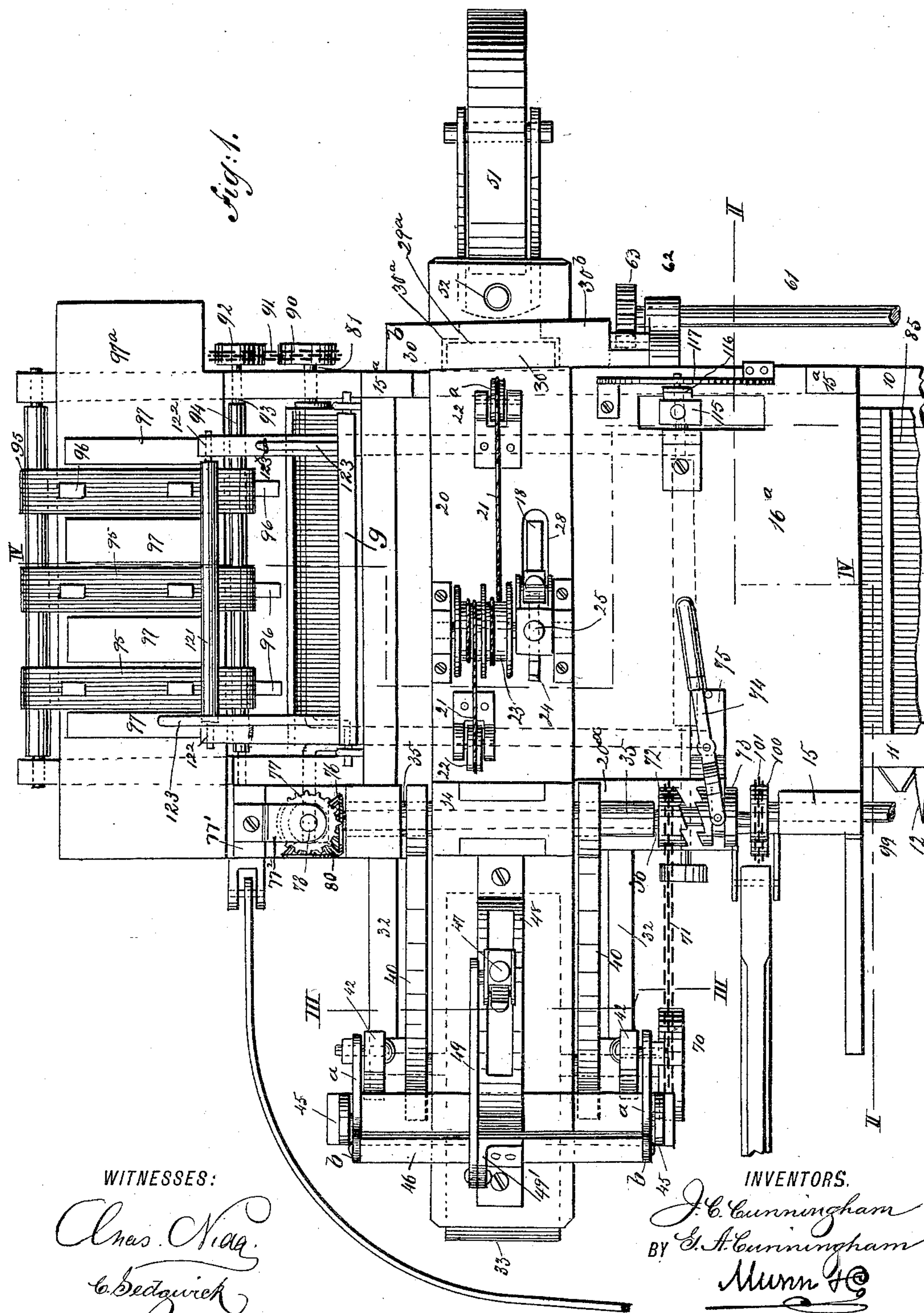


6 Sheets—Sheet 1.

No. 453,077.

Patented May 26, 1891.



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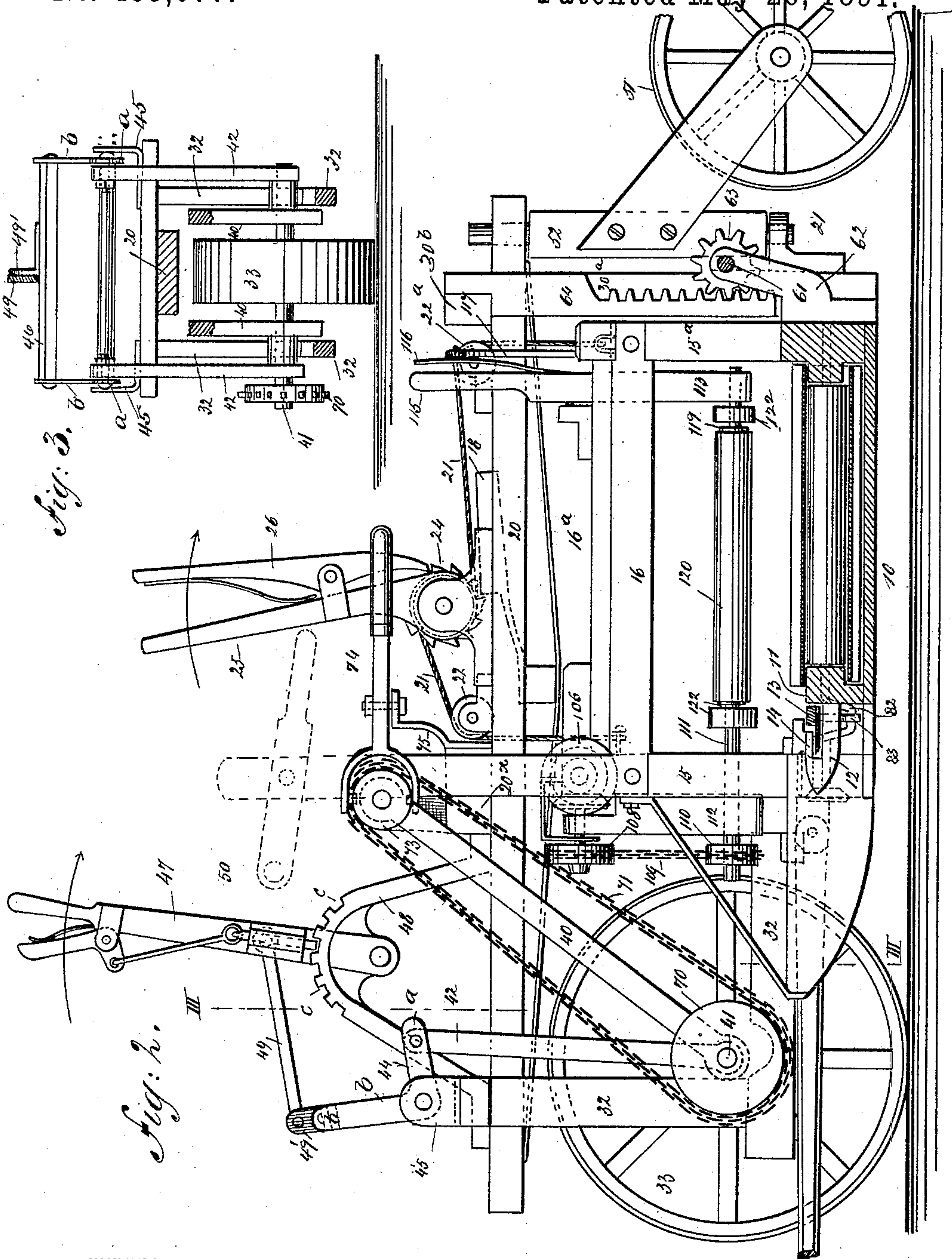
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LOW BINDING HARVESTER.

No. 453,077.

Patented May 26, 1891.



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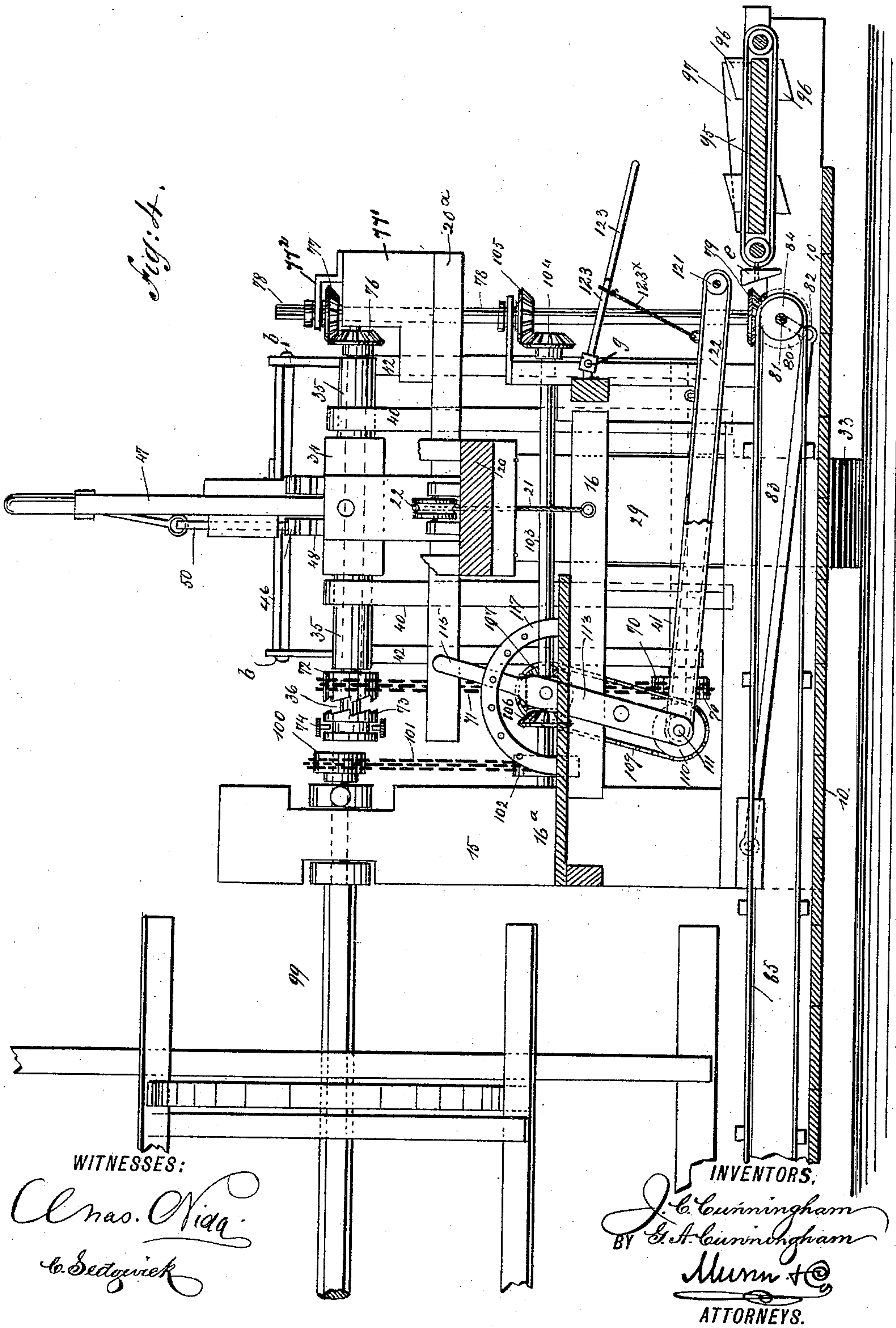
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J. C. & G. A. CUNNINGHAM.
LOW BINDING HARVESTER.

No. 453,077.

Patented May 26, 1891.



(No Model.)

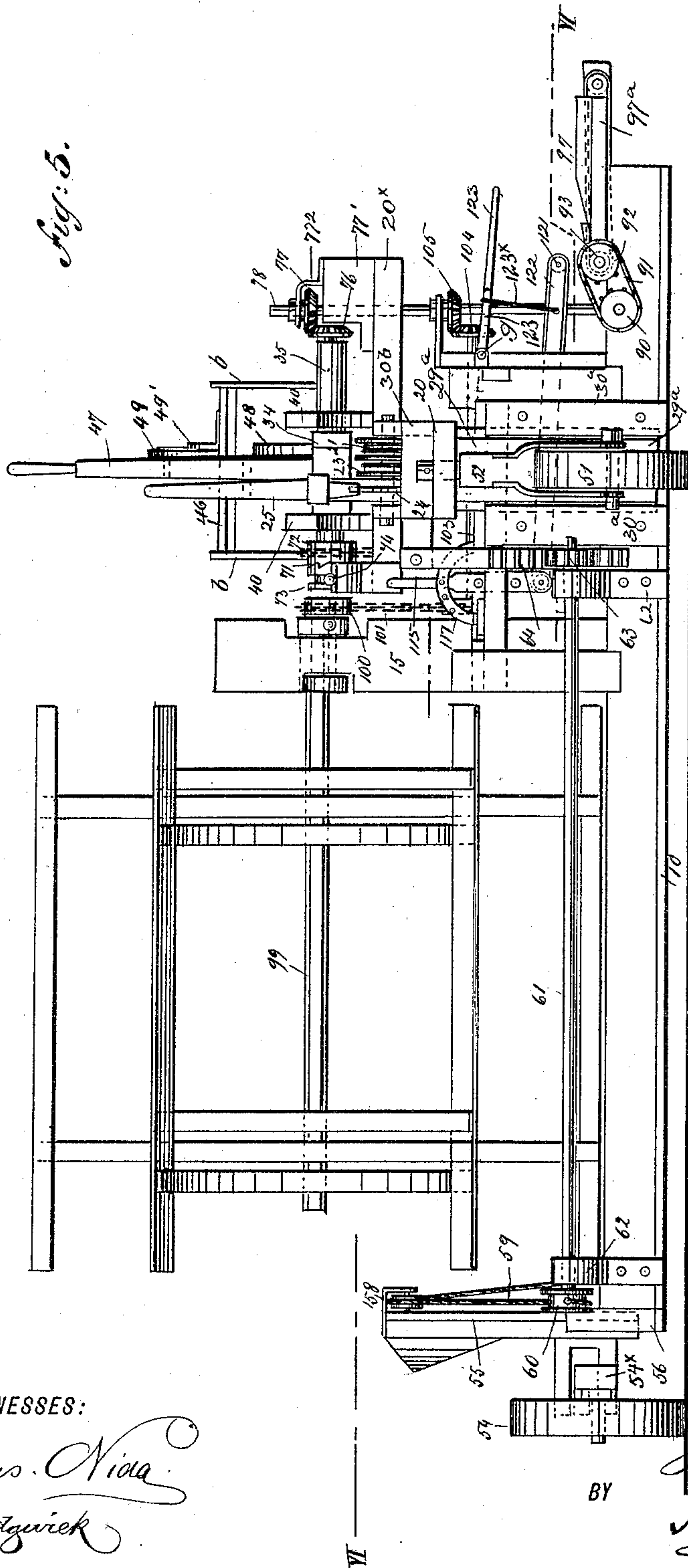
J. C. & G. A. CUNNINGHAM.

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LOW BINDING HARVESTER.

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6 Sheets—Sheet 5.

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LOW BINDING HARVESTER.

No. 453,077.

Patented May 26, 1891.

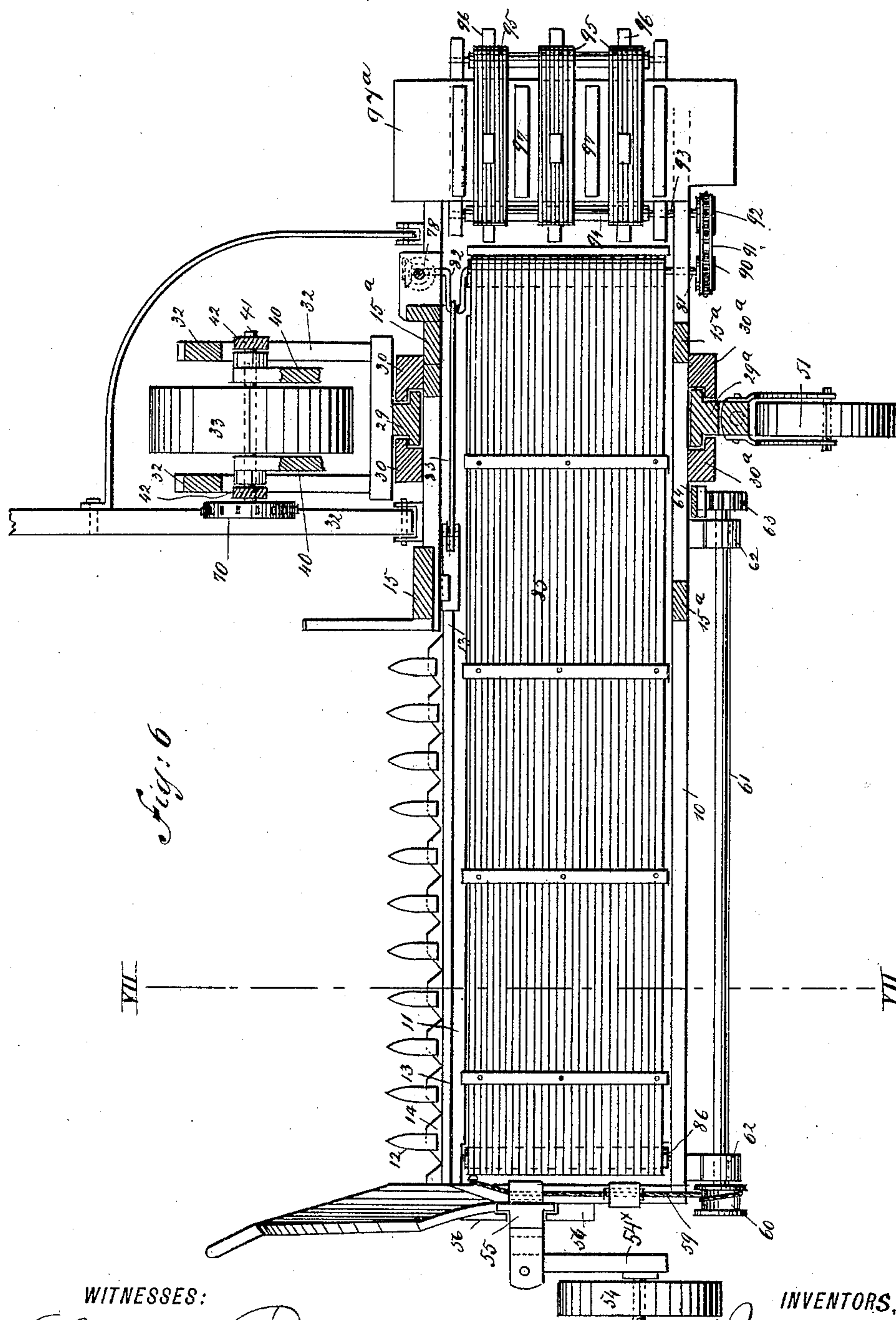


Fig. 6

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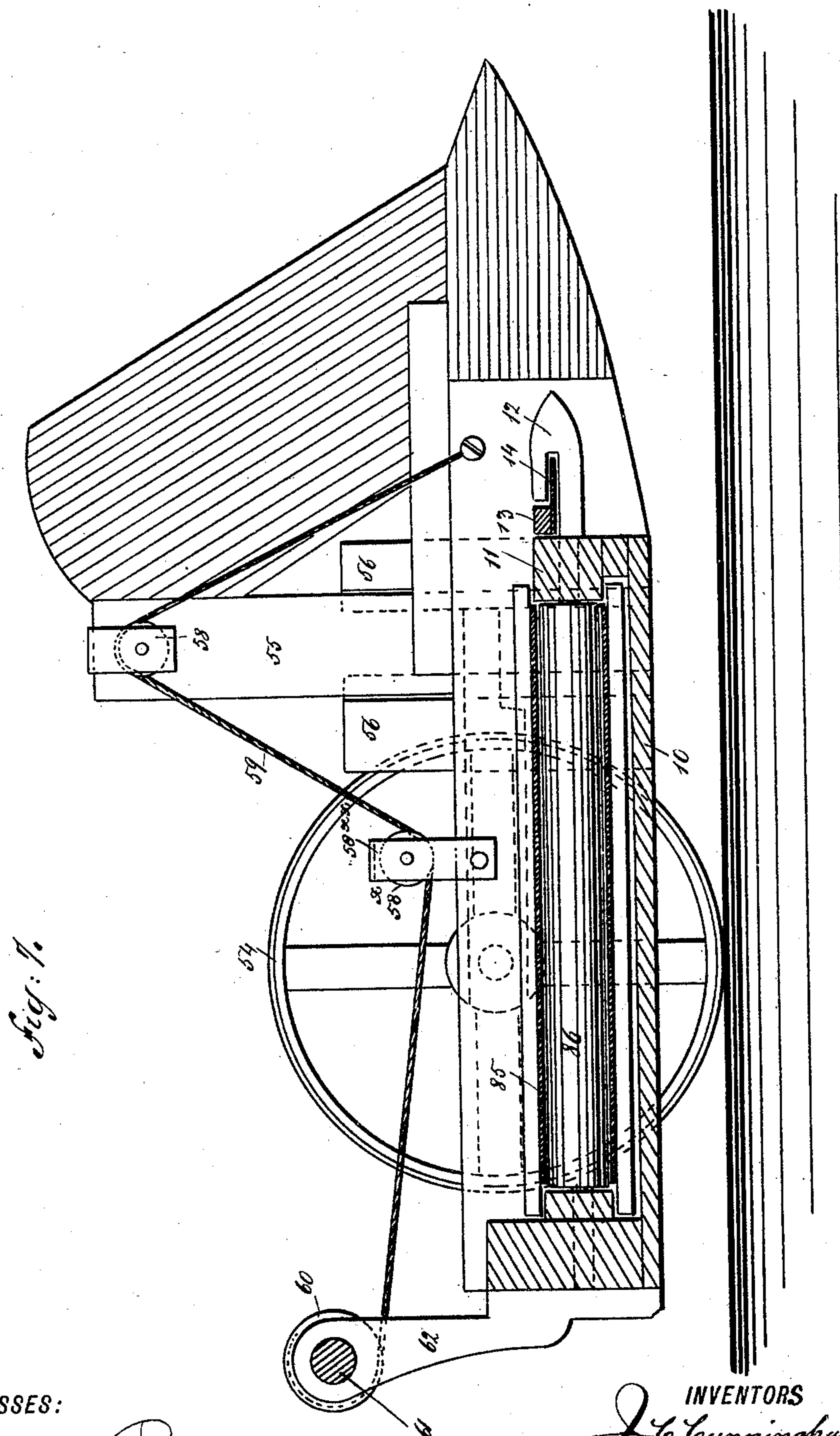
(No Model.)

6 Sheets—Sheet 6.

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No. 453,077.

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UNITED STATES PATENT OFFICE.

JAMES CALDER CUNNINGHAM AND GEORGE A. CUNNINGHAM, OF ST. MARY'S,
KANSAS.

LOW-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 453,077, dated May 26, 1891.

Application filed May 7, 1889. Serial No. 309,899. (No model.)

To all whom it may concern:

Be it known that we, JAMES CALDER CUNNINGHAM and GEORGE A. CUNNINGHAM, both of St. Mary's, in the county of Pottawatomie and State of Kansas, have invented a new and Improved Low-Binding Harvester, of which the following is a full, clear, and exact description.

This invention relates to harvesters of the class illustrated, described, and claimed in Letters Patent of the United States Nos. 338,219, 369,910, and 375,694, granted to us on the 16th day of March, 1886, the 23d of August, 1887, and the 23d of December, 1887, respectively, the main object of our present invention being to provide for the lifting of the frame and for the tilting thereof; and to the ends named the invention consists of certain novel constructions, arrangements, and combinations of elements to be hereinafter fully explained, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a portion of our improved low-binding harvester. Fig. 2 is a cross sectional view thereof, the view being taken on line II II of Fig. 1, the wheel 100 and reel-shaft being omitted. Fig. 3 is a sectional detail view, upon a reduced scale, of the main driving-wheel and its connections, the view being taken on line III III of Fig. 2. Fig. 4 is a sectional elevation on line IV IV of Fig. 1. Fig. 5 is a rear view of the harvester. Fig. 6 is a sectional detail view on line VI VI of Fig. 5. Fig. 7 is an enlarged transverse section taken on line VII VII of Fig. 6.

In the drawings, 10 represents the platform-frame, to the front of which there is connected a finger-bar 11, having guard-fingers 12, and provided with a sickle-bar 13, which carries cutters 14, that work in the fingers 12. At one end the frame 10 carries a heavy upwardly-extending post 15, and other posts 15^a, which support a frame 16, upon which there is mounted a platform 16^a.

The platform-frame and the parts described as being connected thereto are suspended

from a horizontal trussed beam 20, by means of chains or wire ropes 21, which are connected to the frame 16 and extend upward over sheaves 22 and 22^a to a drum 23, that is normally engaged by a pawl, in connection with which there is arranged a ratchet-wheel 24, that is operated to wind the ropes 21 by means of a lever 25, which carries a heavy pawl 26, that engages the ratchet 24, the lever being thrown in the direction of the arrow shown in connection therewith in Fig. 2 to wind the cords upon the drum, and in order that the drum may be held against all retrograde motion, we mount a spring-pressed pawl 18 in a recess 28, formed in the trussed beam 20, in a position such that when desired the pawl 18 may be forced downward from engagement with the ratchet 24 and the platform-frame be lowered.

The trussed beam 20 is provided with two heavy downwardly-extending beams 29 and 29^a, which said beams ride in guideways 30 and 30^a, that are carried by the frames 10 and 16, and to the forward end of the beam 20, which end extends outward beyond the forward edge of the frame 10, there is connected a downwardly-extending frame 32, which said frame 32 is secured to the beam 29, and above the beam 20 there is mounted a block 34, having trunnions 35, that are centrally apertured, as is also the block, to serve as the bearing for a shaft 36, the purpose of which will be hereinafter explained.

Upon the trunnions 35 we arrange two bars 40, which extend downward and forward and through which the axle 41 of the driving-wheel 33 passes, said axle also passing through two vertical bars 42, that are connected to the horizontal arms *a* of bell-crank levers 44, said levers being pivotally connected to brackets 45, that are supported by the frame 32. The vertical arms *b* of the levers 44 are connected by a cross-bar or strut 46, provided with a bracket or arm 49', which is connected to a lever 47, that is pivotally supported upon a rack 48, carried by the trussed beam 20, the connection between the lever 47 and the bracket or arm 49' being established by means of a connecting-rod 49. The lever 47 is provided with a locking-bolt 50, which engages teeth *c*, formed upon the rack 48, the arrangement be-

ing such that by throwing the lever in the direction of the arrow shown in Fig. 2 the levers 44 will be drawn so that their horizontal arms a will be carried downward and the diagonal bars 40 will move toward the frame 10, and consequently the forward edge of the frame 10 will be slightly raised, an opposite movement of the lever 47 resulting in an opposite movement of the forward edge of the said frame 10.

10 A caster-wheel 51 is pivotally connected to the rear of the machine, connection being established in any proper manner, but preferably by means of a shaft 52, that is frun-
15 of the trussed beam 20, and in a bracket 21^a, that is carried by the beam 29^a.

In order that the extending end of the frame 10 may be properly supported, we provide a wheel 54, supported by an arm 54^x on the
20 lower end of an upwardly-extending post 55, said post being held to the end of the frame 10 by blocks 56, which constitute guideways for the post 55. At the top of this post 55 we mount a sheave 58, over which there is
25 passed a rope or chain 59, one end of said rope or chain being secured to the frame 10, while the other end is made fast to a drum 60, that is carried by a horizontal shaft 61, which extends above the rear edge of the frame 10
30 through a bracket 62, which serves as a support for the shaft. Between the post 55 (below its pulley 58) and the drum 60 a post 58^x is secured to the frame 10 and a pulley 58^x is mounted thereon, under which the rope 59
35 passes, the said pulley 58^x serving as the fulcrum when the frame 10 is being adjusted. This shaft 61 carries a pinion 63, which engages a rack 64, said rack being rigidly connected to and extending downward from a
40 short cross-bar 30^b, fixed to the rear end of the trussed beam 20, the arrangement being such that as the right-hand end of the frame 10 is raised by turning the drum 23 the pinion 63 will turn as it rides over the rack 64 and
45 the shaft 61 will be turned, which turning of the shaft will wind the rope or chain 59 upon the drum 60, and consequently the left-hand end of the frame 10 will be raised, the drum 60 being in proper proportion to bring about a
50 corresponding lift of said left-hand end of the frame 10.

Upon the shaft 41 (which is the driving-wheel shaft) we mount a chain or sprocket-wheel 70, about which there is passed a driv-
55 ing-chain 71, that runs to a sprocket-wheel 72, carried by the shaft 36, the sprocket or chain wheel 72 forming one-half of a clutch-section, which said one-half of the clutch-section is loosely mounted on the shaft 36. The other
60 clutch-section, which is shown at 73, is mounted upon a feather carried by the shaft 36, and in connection with the said clutch-section 73 we arrange a shifting-lever 74, which is supported upon a proper bracket 75 above the platform
65 16^a. The bracket 75 projects upwardly from the inner end of the cross-beam 20^x, secured to the trussed beam 20. The shaft 36 carries

a bevel-gear 76, which engages a corresponding gear 77, mounted to turn a vertical shaft 78, the shaft, however, being free to slide lon- 70
gitudinally through the gear 77. The gear 77 has a hub which turns in a bracket 77^a, mounted on the block 77' on the outer end of the cross-beam 20^x. At the lower end of the shaft 78 we mount a gear 79, which engages 75
a gear 80, carried by a horizontal shaft 81, formed with a crank 82, which operates the rod or pitman 83, connected to the sickle-bar 13.

Upon the shaft 81 there is mounted a drum 84, which serves as the support for a carrier- 80
belt 85, the belt passing over a drum 86, arranged at the left-hand end of the frame 10, and upon the outer end of the shaft 81 we mount a chain or sprocket wheel 90, which, through the medium of a chain 91, drives a 85
chain or sprocket wheel 92, mounted on a shaft 93, which carries a drum 94, over which there are passed belts or bands 95, carrying blocks 96 and passing around the binder-table 97^a, which said blocks, when in the position shown 90
at e in Fig. 4, serve to prevent the dropping of grain between the end of the belt 83 and the belts 95; but in order that the grain carried forward by the blocks 96 may be freed therefrom we arrange inclined faced strips 97 95
on the upper side of the binder-table between the belts 95, as best shown in Fig. 4.

The reel-shaft 99 carries a sprocket or chain wheel 100, about which there is passed a chain 101, that runs upon a sprocket or chain wheel 100
102, carried by a shaft 103, said shaft being mounted on the front posts 15 15^a a little above the front end of platform 16^a and provided with a pinion 104, that is engaged by a pinion 105, carried by the vertical shaft 78. 105
The shaft 103 carries a pinion 106, which drives a pinion 107, carrying a sprocket-wheel 108, which, through the medium of a chain 109 and a sprocket-wheel 110, drives a shaft 111, said shaft being mounted in bearings 110
formed in arms 112 and 113, the arm 112 being supported upon the shaft of the pinion 106 and the wheel 108, so that as the arm swings the tension upon the chain 109 will be maintained. The arm 113 extends upward 115
above its pivotal connection, this upward-extending portion constituting a lever-arm 115, and to this lever-arm 115 there is connected a spring-catch 116, that engages a rack 117. The shaft 111 carries a drum 119, upon which 120
there is arranged an endless carrier-belt 120, that runs in engagement with a drum 121, supported by a frame-work 122, mounted upon the shaft 111, the frame 122 being adjustably connected to levers or arms 123, that are piv- 125
otally connected to the frame 16 by a rock-shaft g , (see Fig. 4,) this arrangement being provided to secure a regular feed to the blocks 96 of the belt 95.

From the construction above described it 130
will be seen that by throwing the lever 47 in a proper direction the forward edge of the frame 10 may be raised or lowered to the required operating position, the arrangement

being such that we are able to cut the grain at such distance above the ground as may be required, and when it is desired to move the machine from place to place the frame 10 may be raised some distance above the ground by reciprocating the lever 25, such reciprocation of the lever 25 winding the chains or ropes 21 upon the drum 23.

It will be understood that instead of the belts 95 and blocks 96 we might employ chains having toothed links, and it will also be understood that the belt 85 might be carried out over the binder-table to take the place of the belts 95.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a low-binding harvester, the combination, with the longitudinal beam 20, having a supporting-wheel at its rear end, and a transverse frame 10, suspended under the beam and provided with the cutting and carrying mechanism, of a block on the beam 20, provided with opposite trunnions, bars 40, journaled at their upper ends on said trunnions and inclined downwardly and forwardly therefrom, a wheel journaled in the lower ends of said bars, a bell-crank lever mounted on the beam 20 in front of the said block, and vertical arms extending from the horizontal arms of said levers to the shaft of said wheel, substantially as set forth.

2. In a low-binding harvester, the combination, with the longitudinal beam 20, having front and rear posts 29 29^a, the rear wheel carried by post 29^a, the depending forwardly-projecting frame secured to the beam and post 29, the transverse block on the beam 20 above the post 29, provided with end trunnions and apertured from end to end through the trunnions, the downwardly and forwardly projecting bars 40, journaled on said trunnions, the wheel 33, having its shaft passing through the lower ends of said bars, the bell-crank levers 44 on top of the forward end of beam 20, the arms 42, extending from the horizontal arms of said levers downwardly to the said wheel-shaft, and a transverse shaft 36, ex-

tending through the trunnioned shaft and geared to the said wheel-shaft, of the transverse frame 10, suspended under and projecting from opposite sides of the said beam, vertical posts 30 30^a, grooved to slide on posts 29 29^a, means for raising and lowering said frame, a post carrying a wheel at the grainward end of the frame 10 and means for adjusting said end on the post, and the cutting and carrying mechanism on the frame 10, operated from the shaft 36, substantially as set forth.

3. The combination, with the carrier-belt and binder-table having belts passing around it, and inclined surfaces between which the belts pass and on which they deposit the grain, of a vertically-swinging frame mounted above the carrier-belt with its distal end projecting over the space between the adjacent ends of the carrier and binder-table belts, a belt passing around drums on said frame, and a reciprocating pitman or lever connected with said swinging frame and adapted to be actuated from a movable part of a binder mechanism, substantially as set forth.

4. The combination, with the main supporting-beam 20, the vertically-adjustable frame 10 suspended thereunder, an upper frame 16, carried by the frame 10, the power-shaft 36, mounted in bearings on the beam 20, and the transverse carrier-belt on the frame 10 below said beam 20, of the frame 122 over said carrier-belt, and drums at the ends of said frame, and a belt 120, passing around said frame and drums, the shaft 111, on which the inner end of the frame 122 pivots or swings, the swinging arms 112 113, in the lower ends of which said shaft is journaled, the lever 115 for adjusting said arms, gearing for operating the belts 120 and 85 from the power-shaft, and the lever 123 for operating the frame 122, substantially as set forth.

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Witnesses:

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