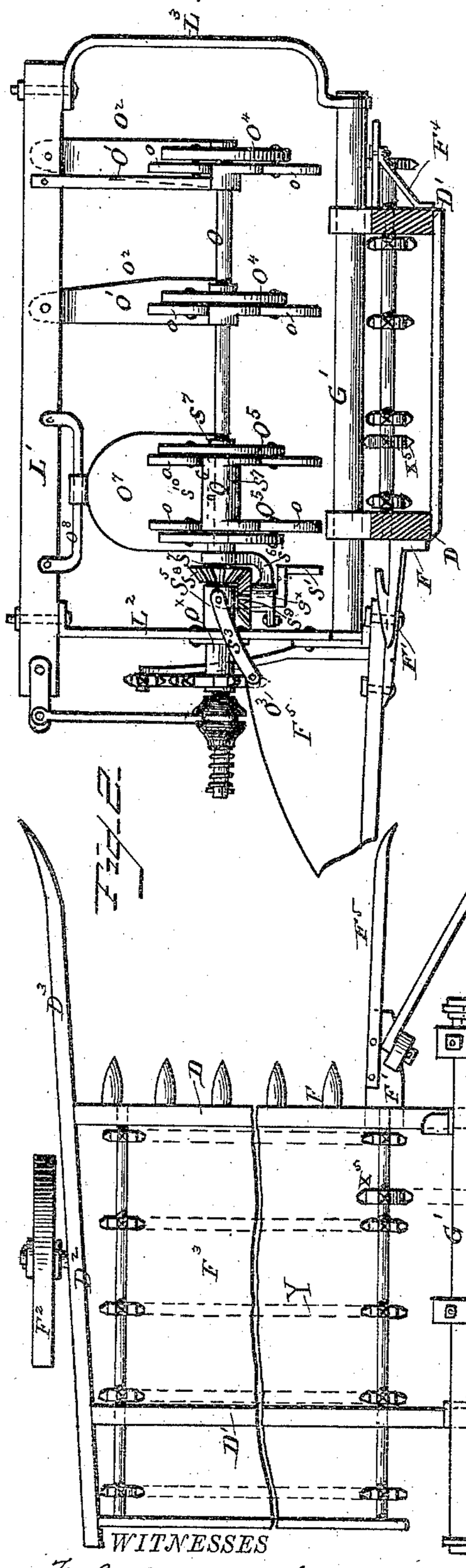
(No Model.)

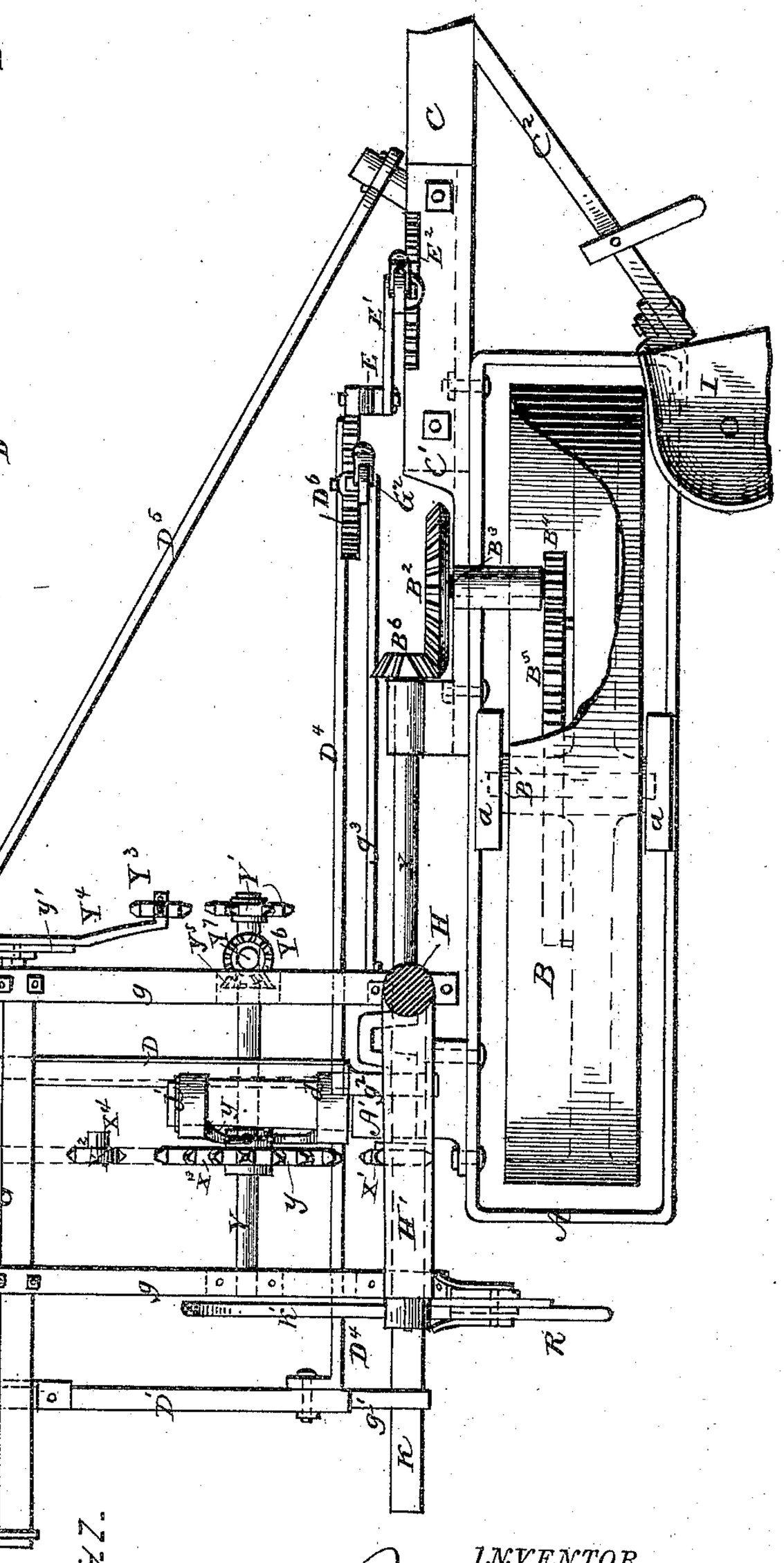
6 Sheets—Sheet 1.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

No. 335,722. Patented Feb. 9, 1886.





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(No Model.) 6 Sheets—Sheet 2.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

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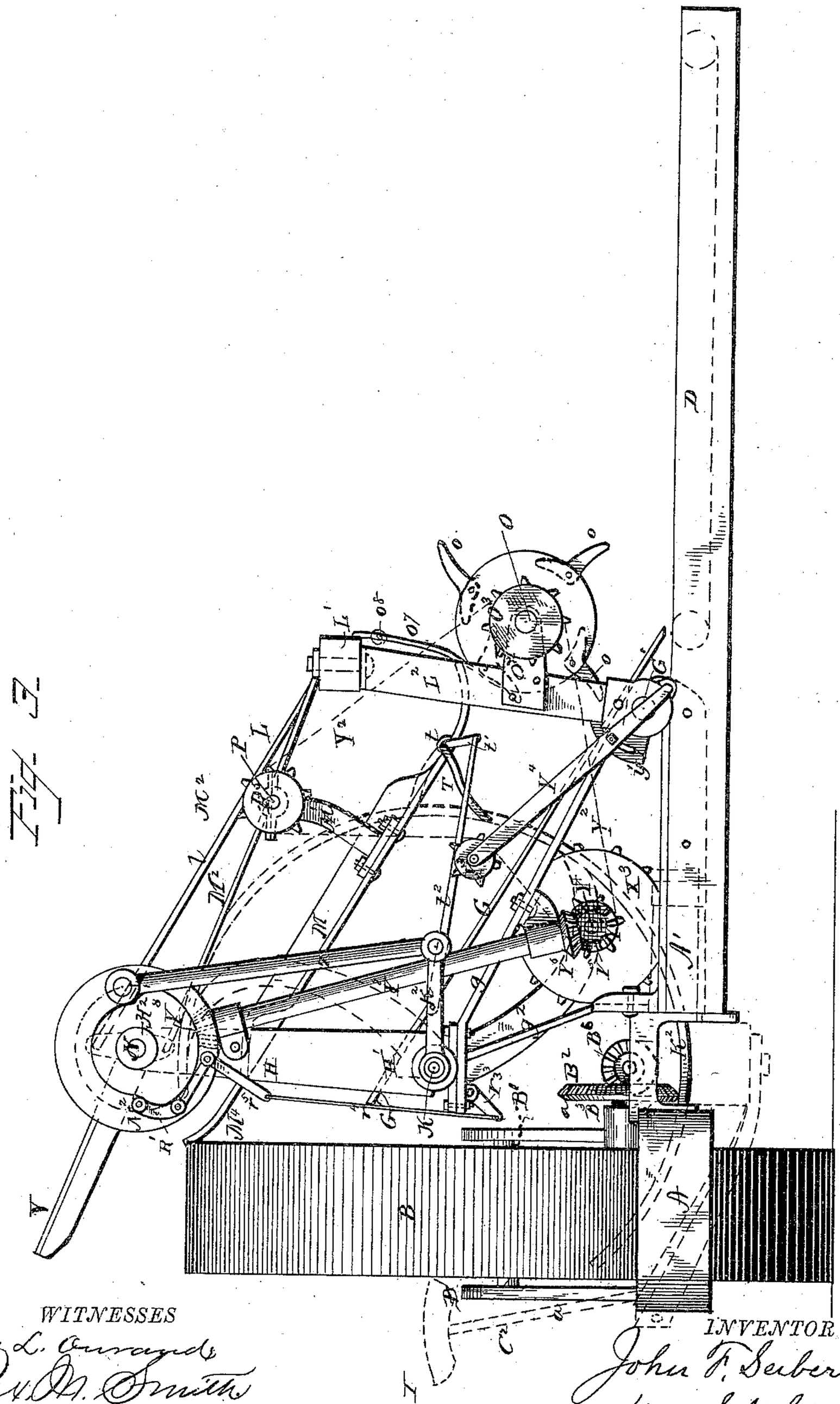

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(No Model.) 6 Sheets—Sheet 3.

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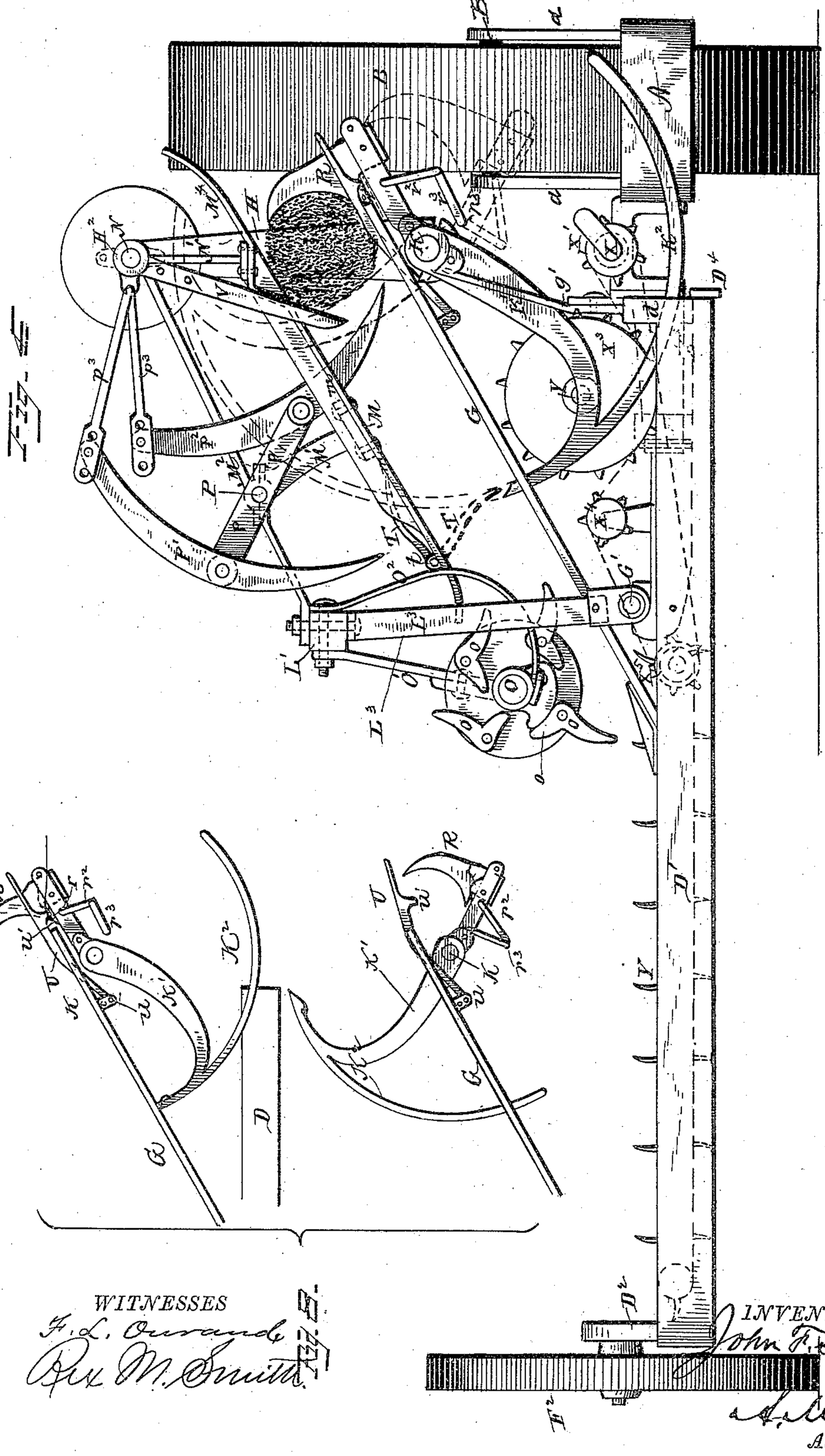
GRAIN BINDING HARVESTER.

No. 335,722. Patented Feb. 9, 1886.



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(No Model.)

6 Sheets—Sheet 4.

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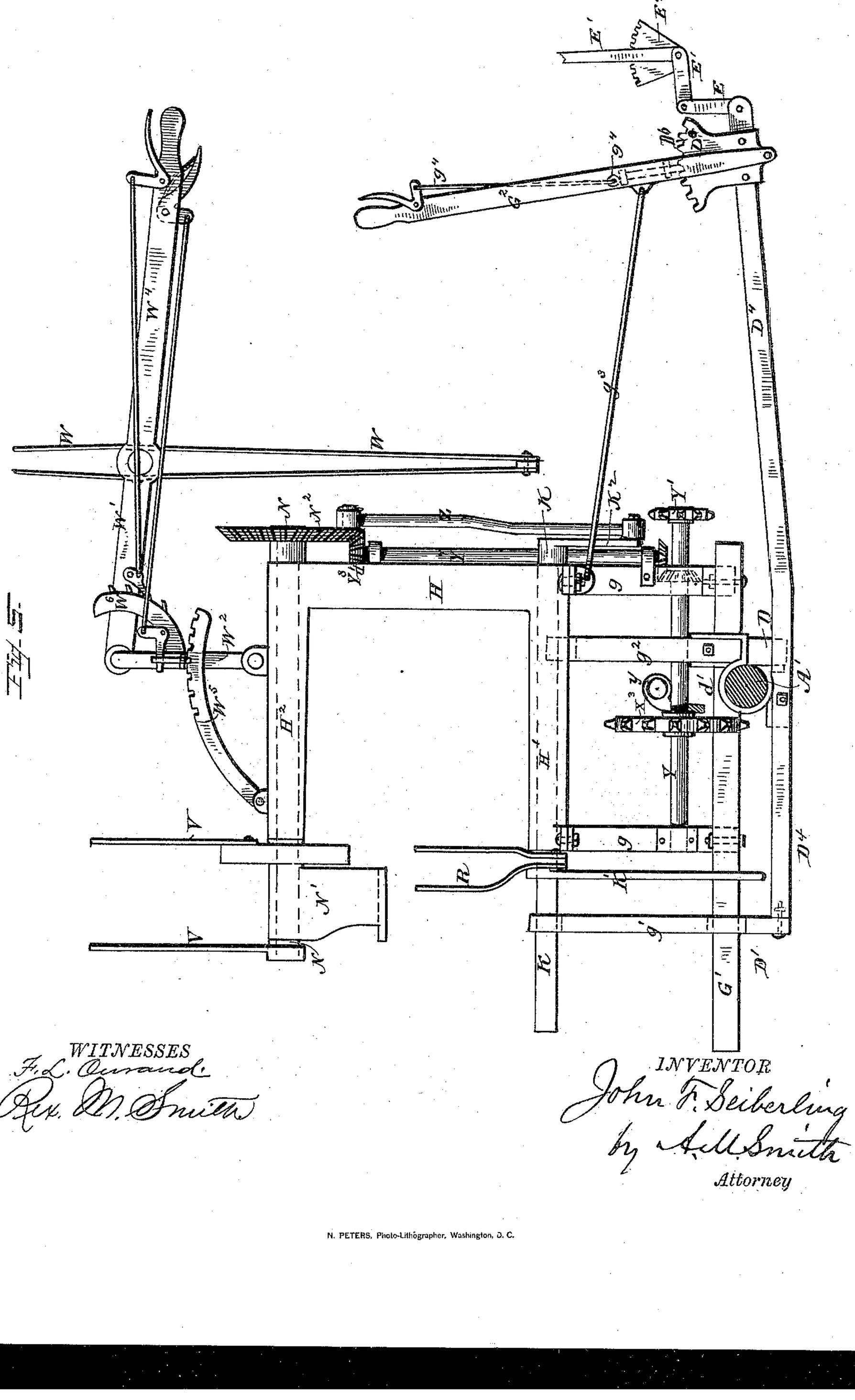
GRAIN BINDING HARVESTER.

No. 335,722. Patented Feb. 9, 1886.



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(No Model.) 6 Sheets—Sheet 5.

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GRAIN BINDING HARVESTER.

No. 335,722. Patented Feb. 9, 1886.

Fig. 6.

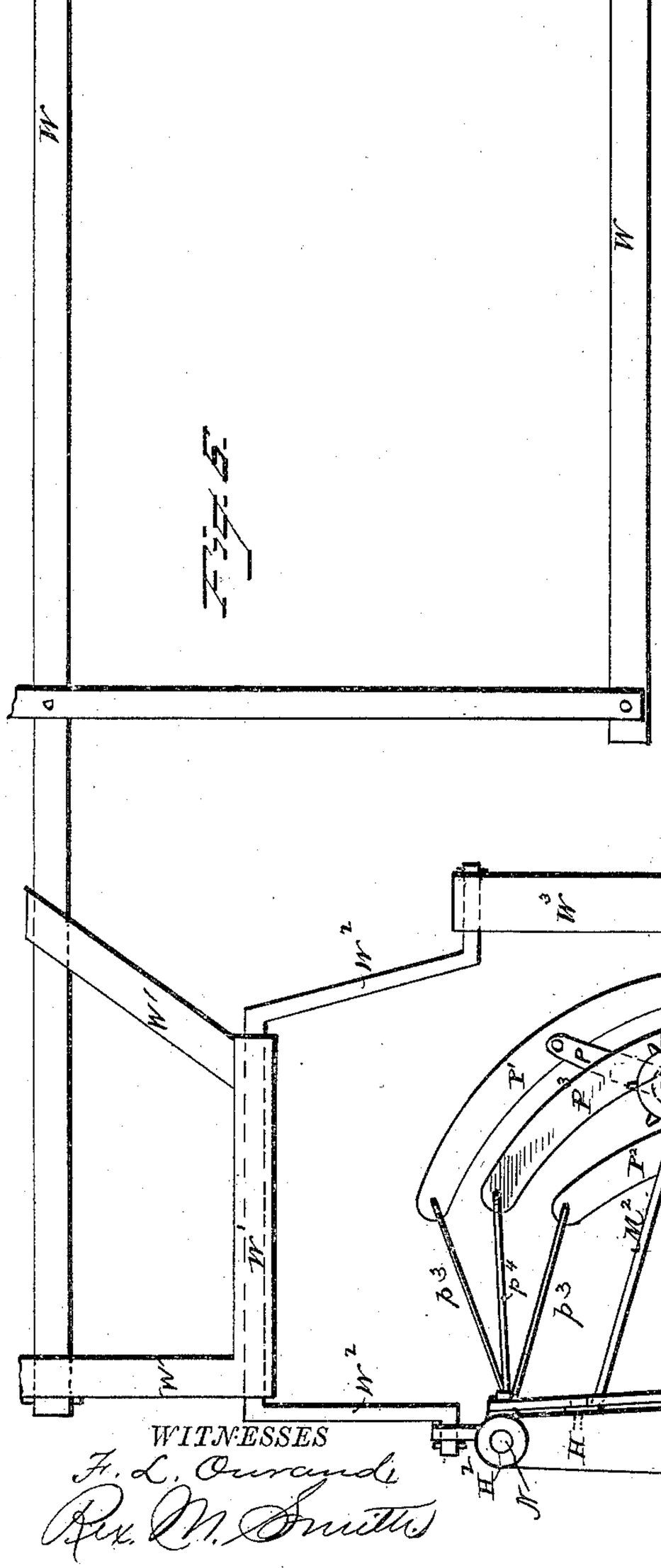
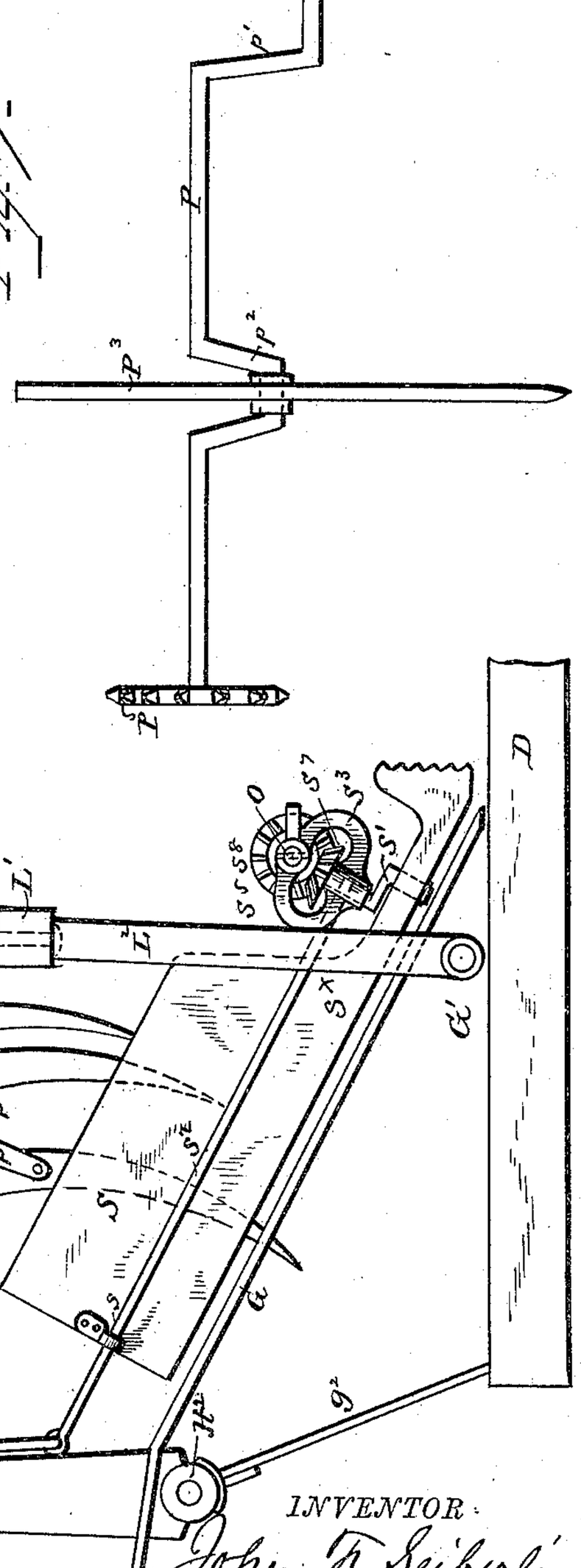


Fig. 7.



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(No Model.)

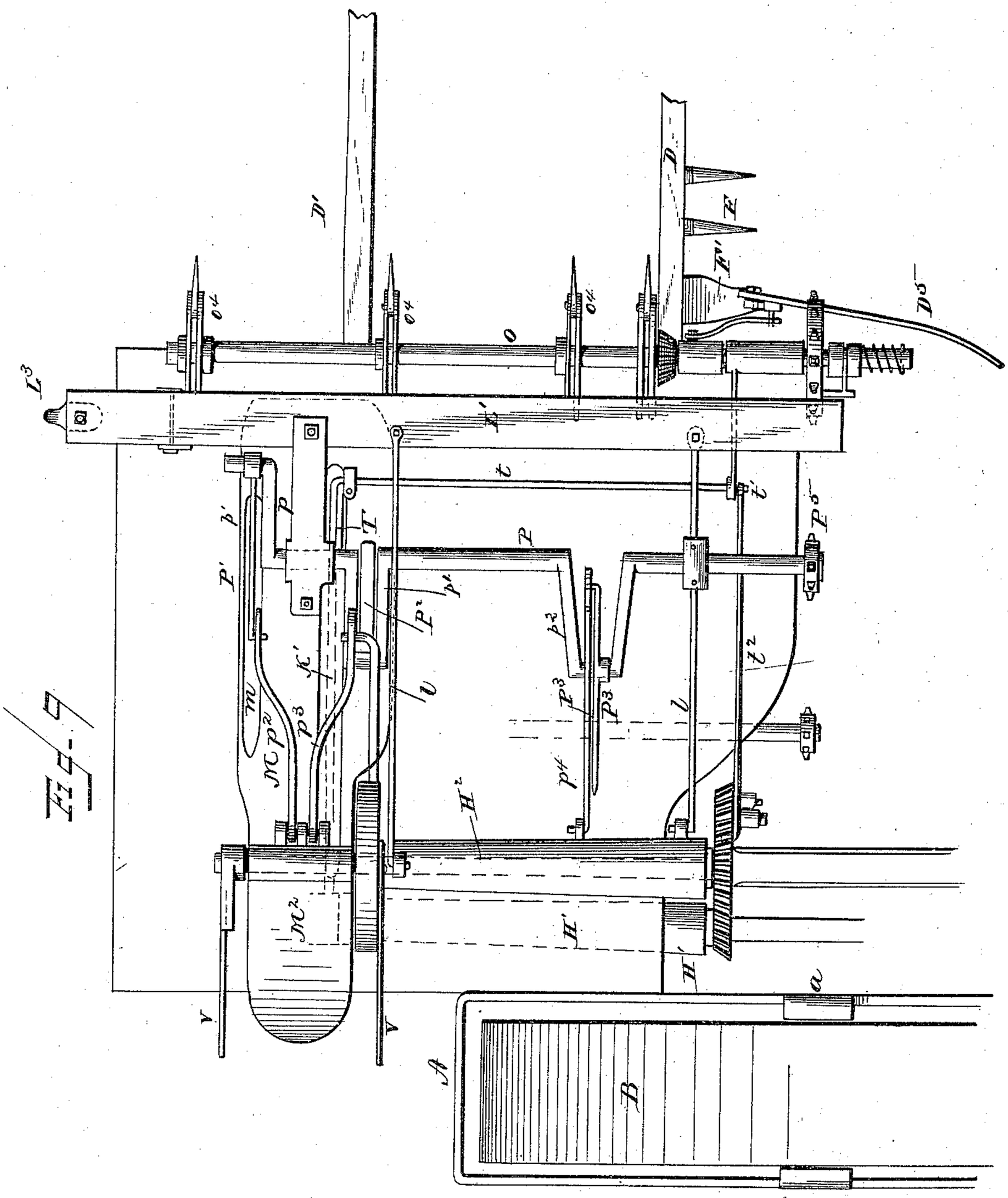
6 Sheets—Sheet 6.

J. F. SEIBERLING.

GRAIN BINDING HARVESTER.

No. 335,722. Patented Feb. 9, 1886.

Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN F. SEIBERLING, OF AKRON, OHIO.

GRAIN-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 335,722, dated February 9, 1886.

Application filed May 7, 1884. Serial No. 130,649. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SEIBERLING, of Akron, in the county of Summit and State of Ohio, have invented a new and useful Improvement in Grain-Binding Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to grain-binding harvesters wherein the grain is bound upon an inclined table located between the grain-platform and the inner plane of the drive-wheel.

The object of the first part of my invention is to arrange the inclined binder-table, the knotter-actuating shaft, the needle, and wheel in such relation to each other that the grain need only be elevated sufficiently to be carried over the needle-shaft and but partly over and behind the wheel.

A further object of the improved arrangement of said parts is to obviate the use of devices for raising the bundle to a higher elevation after it has been bound, to effect its discharge, and to locate the knotter-actuating shaft, the main binder gear-shaft, and needle-shaft as closely as possible to the inner plane of the main drive-wheel, to make the machine more compact, take weight from the grain-wheel, and lessen the side draft of the machine.

A further object of the improved arrangement of said parts by the arrangement of the packers above the inclined table, instead of beneath the table, is to gain space under the table for the adjustment of the binder, to shorten the width of the binder-table, to reduce the strain upon the finger-beam, and provide additional means for lessening the side draft of the machine.

A further object of the improved arrangement of said parts is to provide means for adjusting the binder-frame to suit different lengths of grain, and for adjusting and tilting the main and binder frames without interfering with the wheel.

The object of the next part of my invention is to provide an inclined binder-table with conveyers and a butter, made stationary with respect to the main frame or platform, while the binder stand and table are adjusted for long and short grain.

The object of the next part of my invention is to provide improved means for supporting the conveyer, packer, reel, and main binder gear-shafts, and means for driving the same and for adjusting the reel both vertically and horizontally.

The object of the next part of my invention is to provide a vibrating finger above the binder-table, to be employed in connection with the packers and auxiliary to the butter for elevating the butts of the grain up the inclined table, and to a novel construction of breast-plate through which the packers and butter-finger operate.

The object of the next part of my invention is to provide a cut-off to be employed in connection with the conveyers and packers to check the flow and upward pressure of the grain upon the operating devices while the bundle is being bound, and to a novel construction of the upper end of the inclined binder-table arranged relatively to the breast-plate and knotter, in combination with a dropping or tilting arm to effect the free discharge of the bundle from the machine, all of which will be hereinafter more fully described and claimed with reference to the accompanying drawings, wherein—

Figure 1 is a plan view of my improved machine, with the binder mechanism employed above the inclined binder-table and the reel removed; Fig. 2, a side elevation of the said binder mechanism detached, and showing by cross-section its relation to the main frame; Fig. 3, a front elevation of the machine, omitting the reel; Fig. 4, a rear elevation of the same from the rear; Fig. 5, a detached side elevation of the main binder-gear stand and reel, showing their connection with the main frame and the means for adjusting the same; Fig. 6, a detached front elevation of the butter, auxiliary butter-finger, and reel, showing their connection with and means for suppporting them upon the main and binder frames; Fig. 7, a detailed view of the crank-shaft for operating the packers and auxiliary butter-finger and the means for supporting the same; Fig. 8, reduced views in detail of the needle-arm, outer compressor, and vibrating compressor-guard, shown in both their raised and depressed positions; and Fig. 9, a plan view of the mechanism above the knotter-shield or breast-plate.

The wheel-frame A is preferably formed of

a rectangular plate of iron, to snugly inclose the wheel B, and provided with bearings *a a*, which rest upon or are supported by the ends of the axle B′. The tongue C is secured to a bracket, C′, firmly bolted to the inner front corner of the wheel-frame, and is also rigidly connected to the wheel-frame by a diagonal brace, C², firmly bolted to the outer front corner of the wheel-frame and to the side or under side of the tongue. A trunnion-bracket, A′, is bolted to the inner rear corner of the wheel-frame, and projects inwardly therefrom transversely to the line of draft. The main frame is formed of transverse sills D D′, connected at the grain side by a longitudinal sill, D², and divider D³, and at the stubble or drive-wheel side by a longitudinal brace, D⁴, which extends forward of the transverse sill D, parallel with the line of draft and tongue, to the rear end of the tongue, to which it is adjustably connected by a link, E, bell-crank hand-lever E′, and segment-rack E². The segment-rack E² is firmly bolted to the tongue and forms a stand, to which the bell-crank hand-lever E′ is pivoted, and to which it may be adjustably secured by a spring-latch in a well-known manner. The forward transverse sill, D, and the longitudinal brace D⁴ are rigidly bolted to the bracket-straps *d d′*, which are journaled upon the trunnion-bracket A′ and form a hinged connection between the wheel frame and the main frame, and, as the forwardly-projecting end of the longitudinal brace D⁴ is adjustably connected to the tongue and wheel-frame, the main frame may be rocked and the finger-beam be adjusted to any required height. The finger-beam F and shoe F′ are secured to the forward transverse sill, D, and a diagonal brace-rod, D⁵, is secured by hinged connections to the shoe and to the tongue to relieve the trunnion of a part of the strain without impairing the hinged connection between the wheel-frame and main frame. A grain-wheel, F², is secured to the stubble end of the frame, and a grain-platform, F³, is secured to the main frame to project in rear of the rear sill, D′, a suitable distance to be supported by brackets F⁴, bolted to the rear transverse sill. The binder-table G is supported in an inclined position upon a frame-work, *g g′ g²*, and extends from the inner end and level of the grain-platform nearly to the inner plane of the drive-wheel at an elevation slightly above the axis of the wheel. The frame *g g′ g²* is composed of inclined transverse bars *g g*, bolted at their lower ends to a tubular iron supporting-sill, G′, secured longitudinally by straps, so as to be adjustable upon the transverse sills D D′ of the main frame, and securely bolted at their upper ends to the needle-arm sleeve H′ of the main binder-gear standard H. The upper ends of the bars *g*, the said binder-gear standard, and the needle-shaft K are supported to move adjustably upon and rest in bearings upon the upper ends of the brackets or bars *g′ g²*, bolted to the inner ends of the transverse sills D D′ of the main frame, and the adjustment of said binder-table frame, binder-table, and main binder-gear standard is effected by a link, *g³*, connecting the front frame-bar, *g*, with a hand-lever, G², pivoted to the longitudinal brace D⁴ near its forward end, and is adjustably secured to a segment-rack, D⁶, also bolted to the longitudinal brace D⁴, a spring-latch, *g⁴*, secured to the lever G², serving to lock it in the desired position to adjust the binder-table relatively to the line of cut to suit the various lengths of grain to be bound. A driver's seat, I, is secured to the forward outer corner of the wheel-frame to bring the driver within convenient reach of the levers for adjusting the binder-frame and for tilting the main frame for adjusting the height of the cutter-bar. The needle-shaft K is extended back of the sleeve H′, and slides snugly through a bearing in the upper end of the bracket or bar *g′*, which serves to hold the rear end of the main binder-gear standard in place. The main binder gear standard H is braced at its upper or knotter shaft sleeve, H², by a framing, L, which supports the upper packers, conveyers, and cut-off, and the said framing furthermore mutually supports and is supported by the main binder-gear standard H and main tubular sill G′. The framing L is composed of a beam, L′, supported at its front end by a post, L², and its rear end by a bracket or breast-plate, L³, bolted at their lower ends to the sill G′ to move with it and the binder-table when they are adjusted. Brace-rods *l l* connect the beam L′ with the upper sleeve, H², of the binder-gear stand at its forward end, and a breast-plate, M, pendent bracket M′, and one of the brace-rods *l* connect said beam L′ with a pendent bracket, N′, of the knotter-frame, which is secured to the end of the knotter-actuating shaft N, to permit the latter to revolve freely therein in a well-known manner. Pendent brackets O′, bolted to the beam L′, support the conveyer-shaft O in a horizontal position above the lower end of the inclined binder-table, and have their backs formed of slotted plates O², which serve as shields or guards to prevent the grain from being carried or entangled with the conveyer-teeth. The lower ends of the brackets O′, which form the bearings for the shaft O, are cam-shaped, and serve the double purpose of bearings and tracks or cams which bear against the heel ends of the conveyer-teeth *o o*, and hold them to their work to revolve and withdraw themselves from the grain in the required and well-known manner. The forward end of the conveyer-shaft O is supported in a bracket, O×, secured to the post L², and has secured to it a sprocket-wheel, O³, driven from the main binder-gear shaft, as hereinafter described. A packer-shaft, P, is supported at its forward end in bearings upon a brace, M², connecting the upper end of the binder-gear standard H with the beam L′, and is supported at its rear end by the bracket M′, above described. The packer-shaft P is formed with cranks *p p′ p²*, to which packer-arms P′

P², and a butter-finger, P³, are journaled intermediately of their length. The upper ends of the packers P′ P² are adjustably secured in a suitable manner to links p^3 p^3, pivoted to the sleeve H² of the binder-gear standard, by which means the lower ends of the packers are caused to pass through slots *m m* in the breast-plate M with a swinging or elliptical rotary motion to sweep upwardly over the inclined binder-table below the breast plate, and be withdrawn and returned above the breast-plate at the completion of each of their movements or revolutions. The packers receive a movement somewhat more rapid than that of the conveyer-teeth, and take the grain as delivered from said teeth and elevate it upon the inclined binder-table and pack it against an upper or outer compressor, R, pivoted to the hub of the needle-arm K′ in a well-known manner. The butts of the grain are elevated upon the inclined binder-table by the butter-finger P³, operated by the shorter crank p^2 of the packer-shaft P, and connected by a link, p^4, with the sleeve H², to receive a movement similar to, but, by means of its shorter crank, slower and more limited than that of the packers P′ P². The shaft P is supported intermediately of its length, and upon a journal between the cranks *p p′*, by a bracket, M³, bolted to the breast-plate to give to it greater stability. A butter-board, S, is supported at the forward end of the inclined binder-table, transversely thereto, by a crank-shaft, S′, geared to and driven by the conveyer-shaft and connected to the lower end of the butter, and the upper end of the butter is supported by a sliding connection, *s*, with a rod, s^2, firmly bolted at its lower end to the butter-gear frame S³, and suspended by a swinging link, S⁴, from the binder-gear stand. The butter serves to even up the grain and present the gavel properly to the binder-needle, and the peculiar method of supporting the butter will admit of the adjustment of the binder frame and table independently of the butter. This independent adjustment of the binder frame and table is effected by a sleeve, S⁵, of the butter-gear frame, which fits snugly upon the conveyer-shaft O to slide thereon. A link, s^3, connects the sleeve with an inner divider, F⁵, bolted to the shoe and main frame, and holds the sleeve in a fixed relation to the main frame, while the conveyer-shaft moves freely through it when adjusted with the binder-frame. The sleeve S× is also cast with the butter-gear frame S³, and supports the shaft of the crank-arm S′. A yoke, S⁶, cast with the butter-gear frame S³, is cast with a collar, which fits upon a sleeve, S⁷, through which the shaft O may slide freely, and which is turned therewith by a pin, s^{10}, upon the shaft, engaging with a longitudinal slot, s^2, of the sleeve. A miter-gear, S⁸, keyed to the sleeve S⁷, and a corresponding gear, S⁹, upon the shaft of the crank-arm S′, serve to drive the butter from the conveyer-shaft O. Four conveyer-wheels are preferably employed, two of which, O⁴, are firmly keyed separately to the rear end of the conveyer-shaft, and the remaining two, O⁵, are coupled together by a sleeve, O⁶, and keyed upon and to revolve with the sleeve S⁷, and together with said sleeve maintain a fixed relation to the main frame, while the conveyer-wheels O⁴ are adjustable with the shaft O on the binder-frame. The guards O⁷ of the conveyer-wheels O⁵ are connected at their lower end to the ends of the sleeve O⁶, and have a sliding connection at their upper end upon a bent guide-rod, o^8, bolted at its ends to the beam L′, by which means the guards are pendent from the binder-frame, but are not adjustable with it.

The needle-arm K′ is secured to the shaft K, arranged beneath and at the extreme upper end of the binder-table, in close proximity to the inner plane of the drive-wheel, *l*, and the guard K² of the needle-arm, when in its lower position, swings behind and across the plane of the drive-wheel below its horizontal diameter. The compressor R, pivoted to the hub of the needle-arm, is also arranged in a plane behind the wheel and above its horizontal diameter, which arrangement will admit of the utmost limit of adjustment of the said needle-arm and compressor with the binder-table, when said parts are arranged to swing across the plane of the wheel. A cut-off, T, is suspended to vibrate vertically across the path of the rising grain from a rod, *t*, arranged horizontally in bearings upon the breast-plate M. The rod *t* extends to the forward end of the binder-table, and is connected by an arm, *t′*, and rod t^2 with the vibrating crank-arm K² of the needle-shaft. The cut-off T is thus connected directly to the needle-arm shaft, and acts conjointly with the needle-arm to swing down behind the guard of said arm and across the path of the grain and hold the grain from pressing against the needle-arm guard while the needle is raised to bind a bundle. The arrangement of the cut-off relatively to the point of the needle and to the conveyers herein shown provides a space between said cut-off and conveyers to receive the grain before it reaches the needle-arm while the needle-arm is raised. The needle-arm and outer compressor give the final pressure to the bundle from opposite sides in a well-known manner, and a vibrating compressor-guard, U, pivoted at *u* to the under side of the upper end of the binder-table, is forced against the under side of the bundle while the knot is being tied by a lug, *r*, upon the compressor R, which bears against a corresponding lug, *u′*, upon the guard U, by which means the bundle is compressed upon all sides beneath the breast-plate. The vibrating compressor-guard U passes through slots at the upper end, and forms a hinged extension of the binder-table, and projects above and beyond the point of the compressor R when said compressor is in its depressed position, and serves as a guard to prevent the bundle from being caught by the end of the compressor when it is being

discharged from the machine. The breast-plate extension M^4 is inclined upward and the compressor-guard U is inclined downward, when in its depressed position, to form a flaring passage for the unobstructed discharge of the bundle. The compressor R is vibrated at proper intervals by a link, r^2, connected to a rock-shaft, r^3, which is connected at its forward end by a rod, r^4, with a bell-crank lever, r^5, actuated by a cam, R′, on the knotter-actuating shaft in a well-known manner. A discharge-arm, V, is secured to the end of the knotter-actuating shaft N, and revolves with it in a well-known manner to discharge the bundle after the knot has been tied. The upper extremity of the inclined binder-table G may be formed with a horizontal extension, upon which the bundle may rest while being bound, and the vibrating compressor-guard will then be arranged horizontally, or approximately so, when in its raised position. By arranging the upper extremity of the inclined binder-table in a horizontal position immediately below the knotter mechanism the bundle need not be further elevated after having been bound. The reel W is supported upon a frame, W′, journaled upon an elbow-yoke, W^2, pivoted at one end to the sleeve H^2 of the binder-gear stand, and at the other end to the upper end of a post, W^3, secured to the binder-frame beam L′. A hand-lever, W^4, projects from the frame W′ to the forward end of the machine within reach of the driver. A segmental toothed rack, W^5, upon the binder-gear stand, and a similar rack, W^6, upon the yoke W^2 are engaged by locking devices of well-known construction to adjust and retain the reel in any desired position both vertically and horizontally. The reel may be driven in any well-known manner from the gearing of the binder, and is adjustable with the binder, while it may be separately and independently adjusted by the means above described. The platform-carriers Y may be of the usual or preferred construction to deliver the grain to the conveyers at the foot of the binder-table. The binder mechanism, reel, and platform-carrier are driven from a main drive-shaft, X, supported in bearings secured to the wheel-frame, and arranged in close proximity to the inner side of the driving-wheel and in line with the tongue for diminishing the weight upon and the consequent dragging of the grain-wheel, and therewith the side draft due to such dragging. The forward end of the drive-shaft X is geared by the bevel-pinion B^6, bevel-gear B^2, shaft B^3, and spur-pinion B^4 from a spur-wheel, B^5, secured to the hub and upon the inner face of the drive-wheel. The drive-shaft X extends but slightly back of the trunnion-bracket A′, so that the adjustment or vibration of the main frame upon the wheel-frame will not affect the drive-shaft and its connections. A sprocket-wheel, X′, is secured to the rear end of the shaft X, and a chain-belt, X^2, passes around the sprocket-wheel X′ and beneath a sprocket-wheel, X^3, upon the main binder-gear shaft Y, and thence passing over a tightening sprocket-pulley, X^4, adjustably secured to the main frame, and around a sprocket-pulley, X^5, secured to the inner shaft of the platform-carrier, serves to drive the main binder-gear shaft and platform-carrier from the main drive-shaft. The main binder-gear shaft is supported in bearings upon the under side of the inclined binder-table, and is adjustable with said table, and the sprocket-wheel X^3 is splined to slide upon the said shaft, and be held in fixed relation to the main frame by a yoke, *y*, secured to the main frame. A sprocket-wheel, Y′, is secured to the forward end of the main binder-gear shaft Y, and a chain-belt, Y^2, passes around said wheel and around sprocket-wheels O^3 P^5 on the ends of the conveyer and packer shafts, respectively. A tightening sprocket-pulley, Y^3, is secured to the end of a vibrating lever, Y^4, pivoted and adjustably secured to a bracket, *y′*, upon the main frame. The forward end of the main binder-gear shaft Y is connected by a clutch with a bevel-pinion, Y^5, and the clutch is operated by tripping mechanism actuated by the pressure of the grain to turn the bevel-pinion with the shaft when sufficient grain has been elevated and compressed to form a bundle in a well-known manner, as fully described in the grain-binding harvester known as the "Appleby Machine." The bevel-pinion Y^5 gears with a similar pinion, Y^6, secured to the lower end of an upright shaft, Y^7, supported to turn freely in bearings upon the binder-frame and gear-standard, and a bevel-pinion, Y^8, secured to the upper end of the shaft Y^7, gears with a bevel-wheel, N^2, secured upon the forward end of the knotter-actuating shaft, by which means motion is communicated to said knotter-actuating shaft at proper intervals from the continusly-revolving binder-gear shaft Y. The bevel-wheel N^2 is connected by a rod, Z, with the needle-shaft crank-arm K^2, and imparts to the needle-shaft and needle-arm a single vibration at each revolution of the knotter-actuating shaft N and bevel gear-wheel N^2.

The simple means above described for connecting the needle and knotter actuating shafts with the main binder-gear shaft is novel, and dispenses with the customary train of gear-wheels, which are necessarily heavy and exposed, and liable to become mutilated.

The operation of the machine will be understood from the foregoing description, as it is similar to that of the class of machines upon which this is an improvement.

By the construction and arrangement of parts herein described the binder-frame may be adjusted readily to suit the length of the grain, and will carry with it the gearing, shafting, and various mechanisms employed for elevating and compressing the grain, and for binding and discharging the bundle upon the stubble side of the machine and in rear thereof. A low-down inclined binder-table is obtained, which will lessen the width of the

machine, and require the grain to be elevated only above the needle-arm shaft, which can be located as low down as possible, to allow the needle arm and guard to swing clear of the ground.

The advantages obtained from the arrangement of the main driving-shaft and binder-shafts close to the inner side of the drive-wheel and in line with the tongue are evident, and will do much to lessen the direct draft as well as the side draft of the machine.

The means employed for adjusting the main frame upon the wheel-frame and the binder-frame upon the main frame are simple and effective, and the instrumentalities employed are within convenient reach and under perfect control of the driver from his seat, while the wheel is arranged in such relation to the binder-table that it will not obstruct the discharge of the bundle or the adjusting and tilting of one frame upon the other.

I claim as my invention and desire to secure by Letters Patent—

1. In a grain-binding harvester, the combination of the inclined binder-table arranged between the grain-platform and the inner plane of the drive-wheel, the knotter mechanism arranged vertically above the extreme upper end of the binder-table, and an ejector-arm secured to the knotter-actuating shaft, and arranged to swing in rear of and across the plane of the drive-wheel, substantially as described.

2. The combination, with the main harvester-frame, of the inclined binder-table arranged between the inner end of the platform-carrier and the vertical plane of the inner face of the drive-wheel, and extended to a plane in rear of said wheel, a binding apparatus arranged near the upper end of said inclined table near the vertical plane of the inner face of the drive-wheel, and the needle-arm and compressor arranged to move in a plane in rear of said drive-wheel, substantially as described.

3. The combination, with the grain-platform, of the inclined table arranged between the platform-carrier and the vertical plane of the inner face of the drive-wheel, and extending to a plane back of said wheel, a band-securing mechanism located above the upper end of said table, and adapted to bind the grain after it has been elevated upon the incline thereof, a discharging device arranged in respect to the drive-wheel to eject the bundles back of said wheel, and means, substantially as described, for adjusting said table and binding apparatus forward and backward in relation to the grain-platform to accommodate the same to different lengths of grain.

4. The combination, with the drive-wheel, wheel-frame, and tongue, of the main frame pivoted to the rear inner corner of the wheel-frame, the grain-platform carried by said main frame, and the inclined binder-table supported on said main frame and arranged between the grain-platform and the vertical plane of the inner face of the drive-wheel, and extending to a plane in rear of said wheel, whereby said platform and binder-table are adapted to oscillate or be tilted independently of the wheel-frame and clear of the wheel, substantially as described.

5. The combination, with the wheel-frame, of the main frame and platform hinged thereto, the adjustable binder-table, the brace extending from the main frame to the forward end of the wheel-frame, the adjusting-lever mounted upon said brace, and the connecting-rod, all arranged for joint operation, substantially as described.

6. In a grain-binding harvester, the combination, with the low-down inclined elevating binder-table arranged between the grain-platform and the inner side of the drive-wheel, and extended to a plane back of the drive-wheel, of the band-securing mechanism above the table, a needle arranged to swing beneath the inclined table in a plane back of the drive-wheel, the toothed conveyer arranged above the foot of the table, the vibrating packers arranged above the table, the compressor against which the grain is packed, and the discharge-arm arranged to eject the bundle back of the drive-wheel, substantially as described.

7. The combination of a grain-platform with the inclined binder-table arranged between the grain-platform and drive-wheel, the binder-gear standard, the needle arranged to swing beneath the table, and the packers suspended from revolving crank-arms arranged above the binder-table and adjustably connected to the upper sleeve of the binder-gear standard, substantially as described.

8. The adjustable binder-gear standard and binder-table, in combination with a support or bearing on the frame, and the extended needle-shaft adapted to slide in said support, substantially as described.

9. In a grain-binding harvester, the combination, with the platform-frame, of the inclined binder-table adjustable thereon, the binder-gear standard, and the extended needle-shaft supported in bearings secured to the main platform-frame, substantially as described.

10. The combination, with the main platform-frame, of the sill G′, the inclined binder-frame, the binder-gear standard, the extended needle-shaft, the bracket-support g^2, upon which said shaft is adapted to slide, and the supporting-bar upon which the gear-standard is supported and slides, substantially as described.

11. The combination of the inclined binder-table, the cut-off T, rock-shaft t, the connecting-rod t^2, and a crank secured to the needle-shaft for operating the cut-off while the needle is rising, substantially as described.

12. The combination, with the inclined binder-table arranged between the grain-platform and the drive-wheel, of the supporting-sill G′, the beam L′, and the posts L^2 L^3, substantially as described.

13. The combination, with the inclined binder-table arranged between the grain-platform and the drive-wheel, of the beam L′, posts L^2 L^3, pendent brackets O′, and a conveyer-shaft supported upon the post L^3 and brackets O′, above the foot of the inclined binder-table, substantially as described.

14. In a grain-binding harvester, the combination, with an inclined binder-table arranged between the grain-platform and the drive-wheel and made adjustable upon the main frame, of the conveyer-shaft arranged above said platform to move the grain on said table toward the needle, and provided with two series of revolving fingers, and means, substantially as described, whereby one series is made stationary with relation to the grain-platform, while the other series moves with the binder-table, substantially as described.

15. The combination of the inclined binder-table adjustable upon the main frame, the conveyer-shaft suspended in bearings from a beam, the revolving conveyer-fingers made stationary with relation to the main frame, and a tooth-guard connected to the hub of the revolving fingers and supported by a sliding connection with the beam, substantially as described.

16. The combination, with the grain-platform, of the inclined binder-table, and the butter arranged upon the forward end of said table, connected at its lower end by intermediate devices with the main frame, and suspended at its upper end by a linked connection with the binder-frame, substantially as described.

17. The combination, with the grain-platform, of the inclined binder-table, the butter arranged upon the forward end of said table, the conveyer-shaft, the butter-gear frame, the supporting-bar, the butter-board, and the link suspended from the binder-frame, substantially as described.

18. The combination, with the grain-platform, of the inclined binder-table, the butter arranged upon the forward end of said table, a butter-supporting bar secured at one end rigidly to the butter-gear frame and at the other end to a swinging link from the binder-stand, and a coupling forming sliding connection between the upper end of the butter and the supporting-bar, substantially as described.

19. The combination, with the grain-platform, of the inclined binder-table, the conveyer-shaft, the butter, the sleeve S^5 of the butter-gear frame, the link s^3, and the inner divider-board, F^5, substantially as described.

20. The combination, with the grain-platform frame, of the inclined binder-table adjustable upon said frame, the conveyer-shaft, the butter, the butter-gear frame connected to the platform-frame, the sleeves S^7, arranged to revolve with and slide longitudinally upon the conveyer-shaft, and the conveyer toothed wheel or fingers secured to said sleeve, substantially as described.

21. In a grain-binding harvester, the combination, with the main frame, of the inclined binder-frame, the binder-gear stand, the beam L′, the hinged yoke W^2, the frame W′, sleeved in said yoke, the reel-shaft supported in said frame, and means for adjusting the reel both vertically and horizontally, substantially as described.

22. In a grain-binding harvester, the combination, with the main or platform frame, of the inclined binder-frame, the binder-gear standard, the beam L′, the supporting-sill G′, the posts L^2 L^3 between said beam and sill, and the double-hinged adjustable reel-support having one of its stands hinged to the binder-gear stand and the other hinged upon said beam, substantially as described.

23. In a grain-binder, the combination, with the inclined binder-table, of the main binder-gear shaft arranged beneath the table, a conveyer-shaft and a packer-shaft arranged above the table, said shafts being provided with sprocket-wheels, and a chain-belt for gearing said shafts together, substantially as described.

24. The combination, with the inclined binder-table, of the main binder-gear shaft, the packer-shaft, the conveyer-shaft, the sprocket-wheels secured to said shafts, the chain-belt, the adjustable vibrating lever Y^4, and pulley Y^3, substantially as described.

25. The combination, with the main frame, of the wheel-frame, the adjustable binder-table, the main driving-shaft arranged in line with the tongue and supported upon the wheel-frame, and provided with a sprocket-wheel, the main binder gear-shaft supported in bearings upon the binder-frame and adjustable therewith, a sprocket-wheel splined to revolve with but slide upon the main binder-gear shaft, and a belt connecting said wheel with the wheel upon the driving-shaft, substantially as described.

26. In a grain-binding harvester, the combination, with the main frame, of the inclined binder-table arranged between the grain-platform and the drive-wheel, the knotter arranged above the upper end of the table, the compressor, the compressor-guard hinged to the upper end of the binder-table, and means, substantially as described, for operating said guard, substantially as and for the purpose set forth.

27. In a grain-binder, the combination of the inclined binder-table, the vibrating compressor-guard hinged to the upper end of the table, and the compressor constructed and arranged to operate the compressor-guard and press it against the under side of the bundle while the bundle is being bound, substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN F. SEIBERLING.

Witnesses:
A. W. PEARSON,
H. M. HAUSER.