

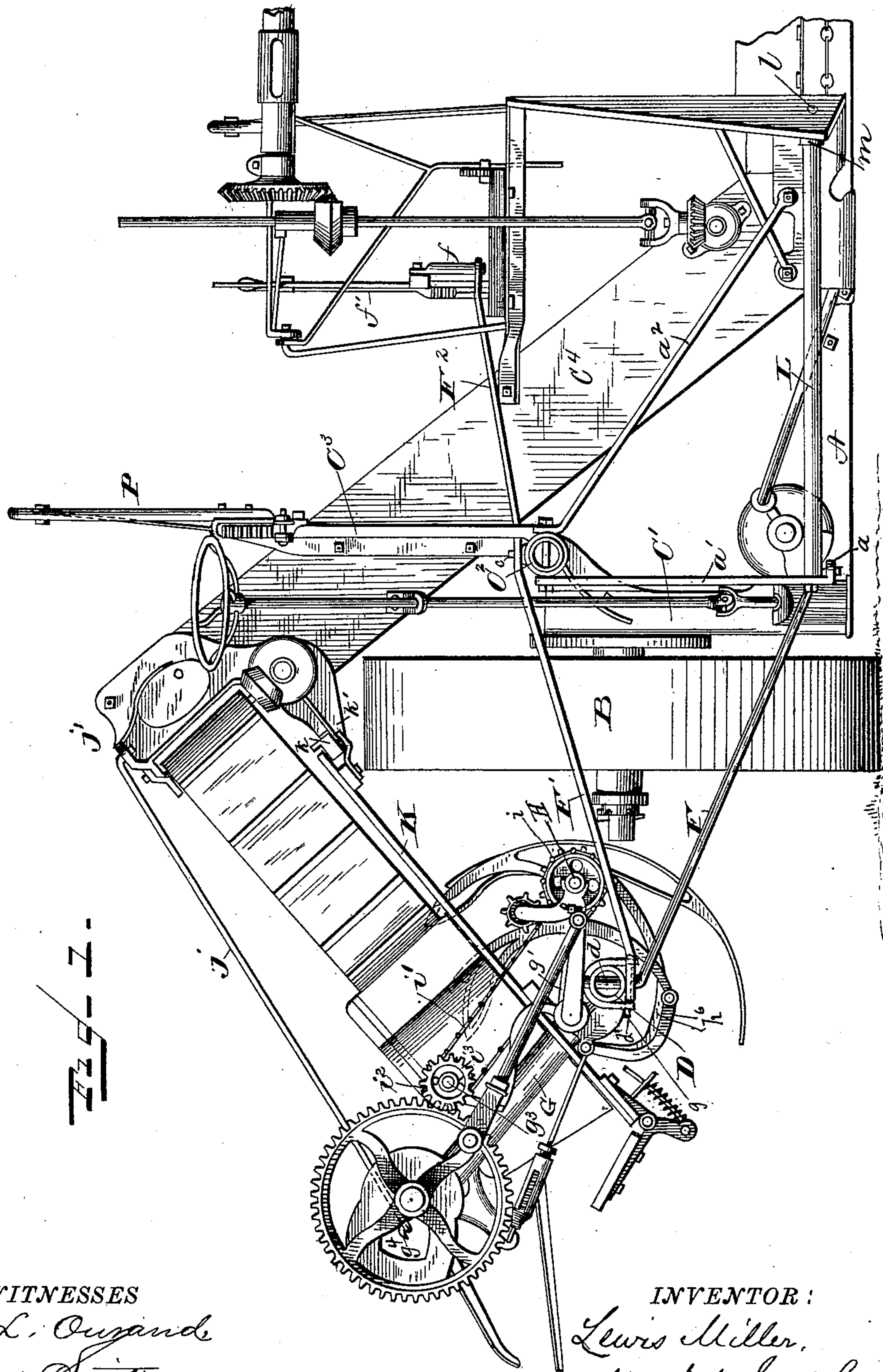
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5 Sheets—Sheet 1.

L. MILLER.
GRAIN BINDING HARVESTER.

No. 434,642.

Patented Aug. 19, 1890.



WITNESSES

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Rex. Smith

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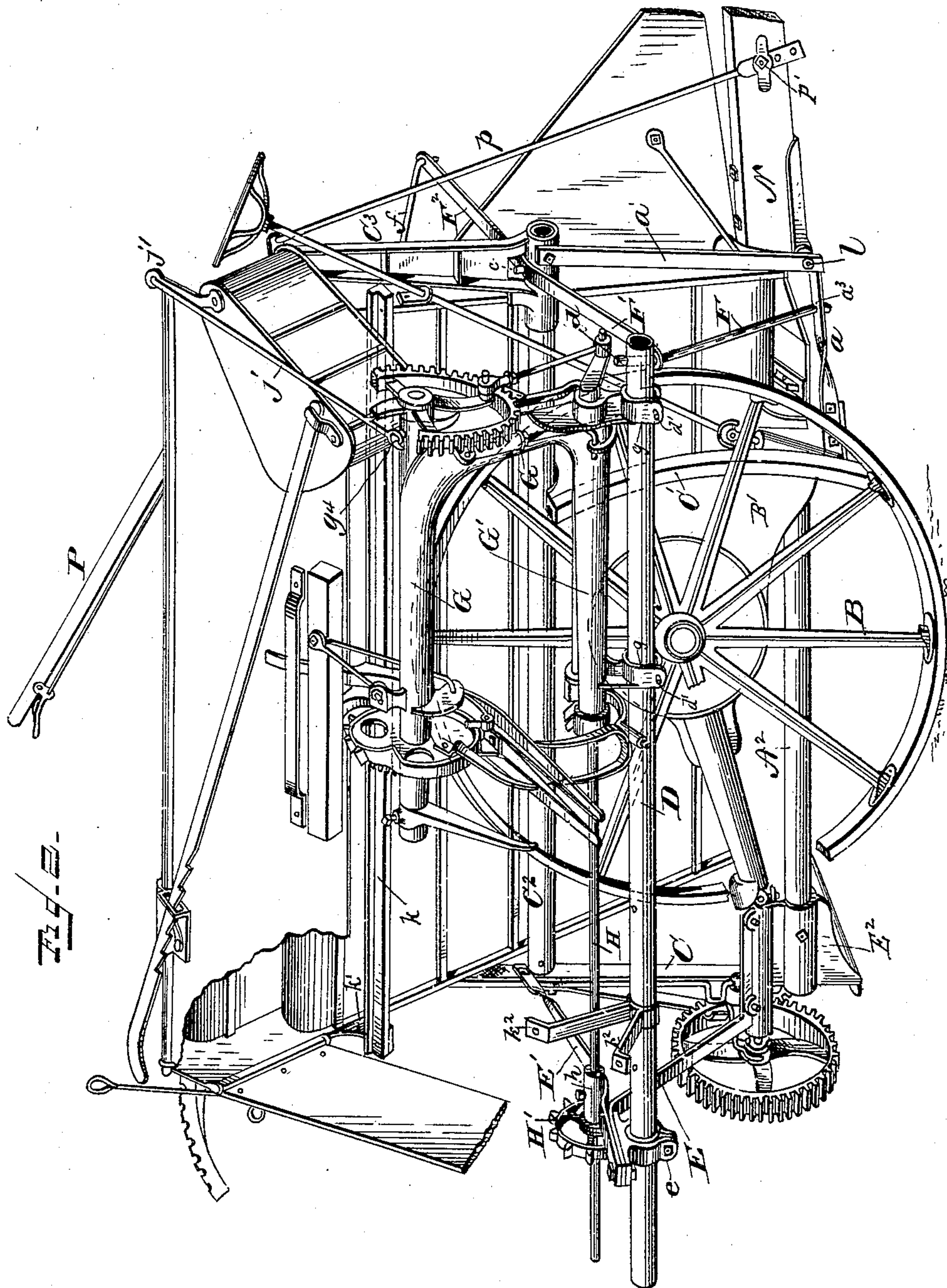
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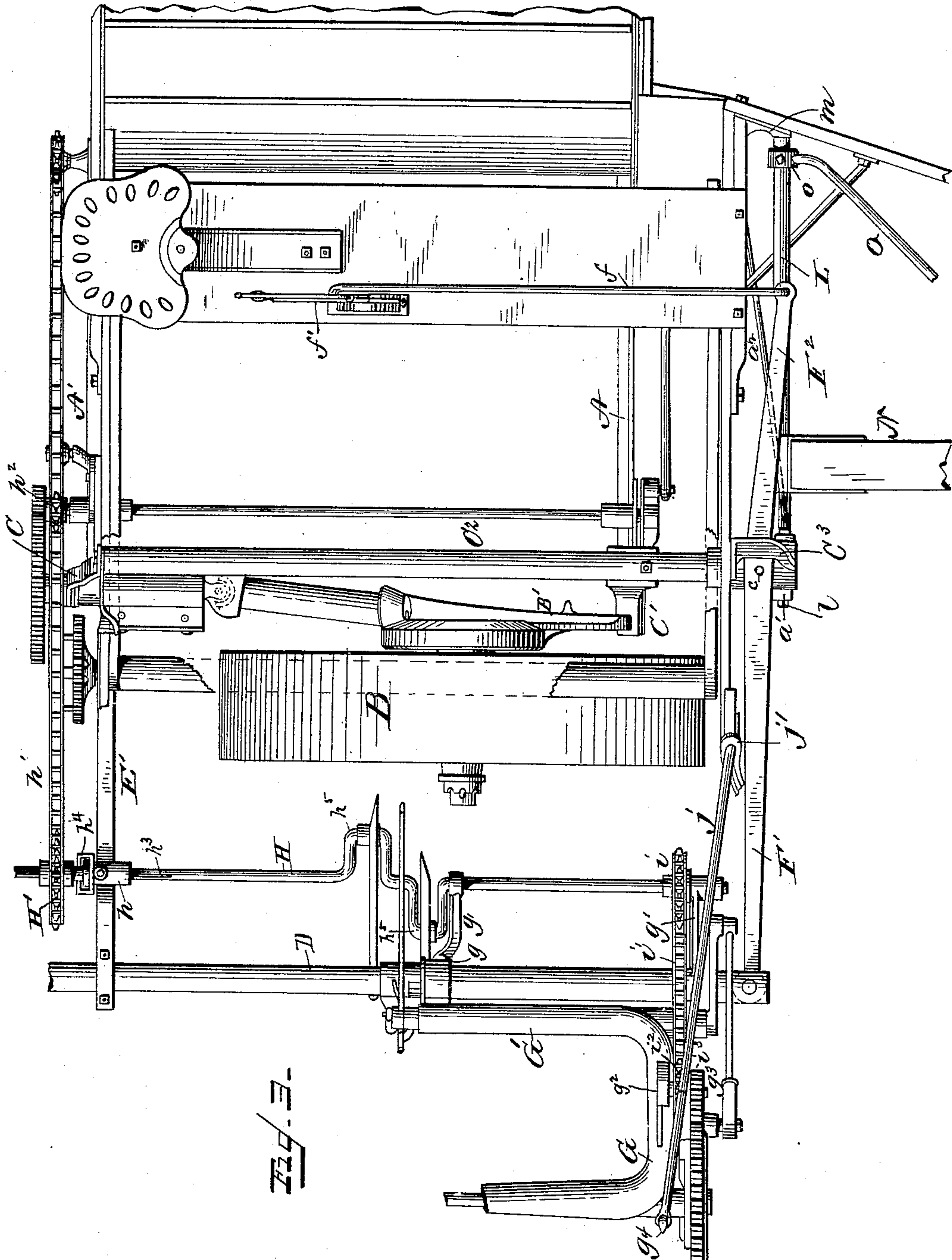
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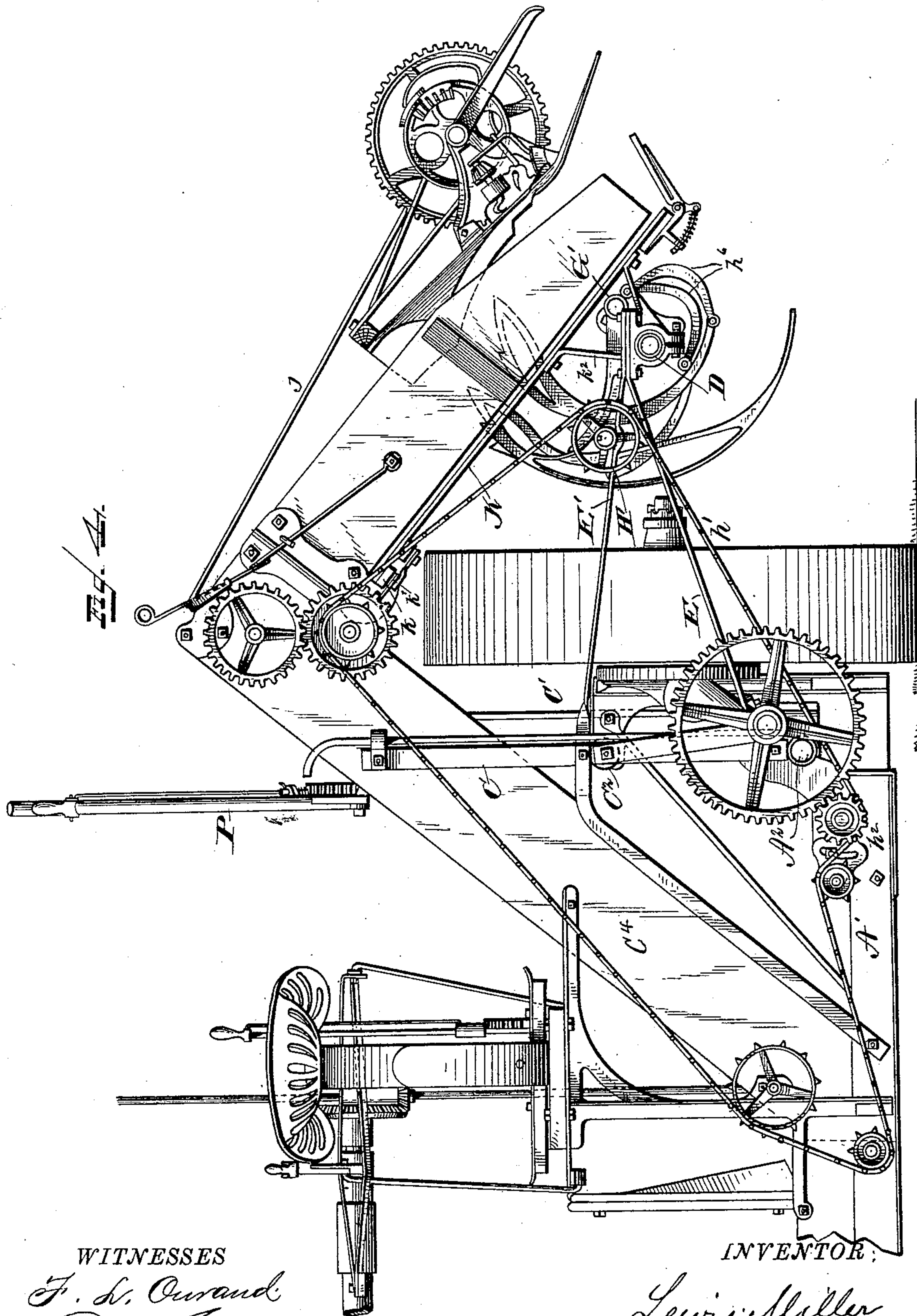
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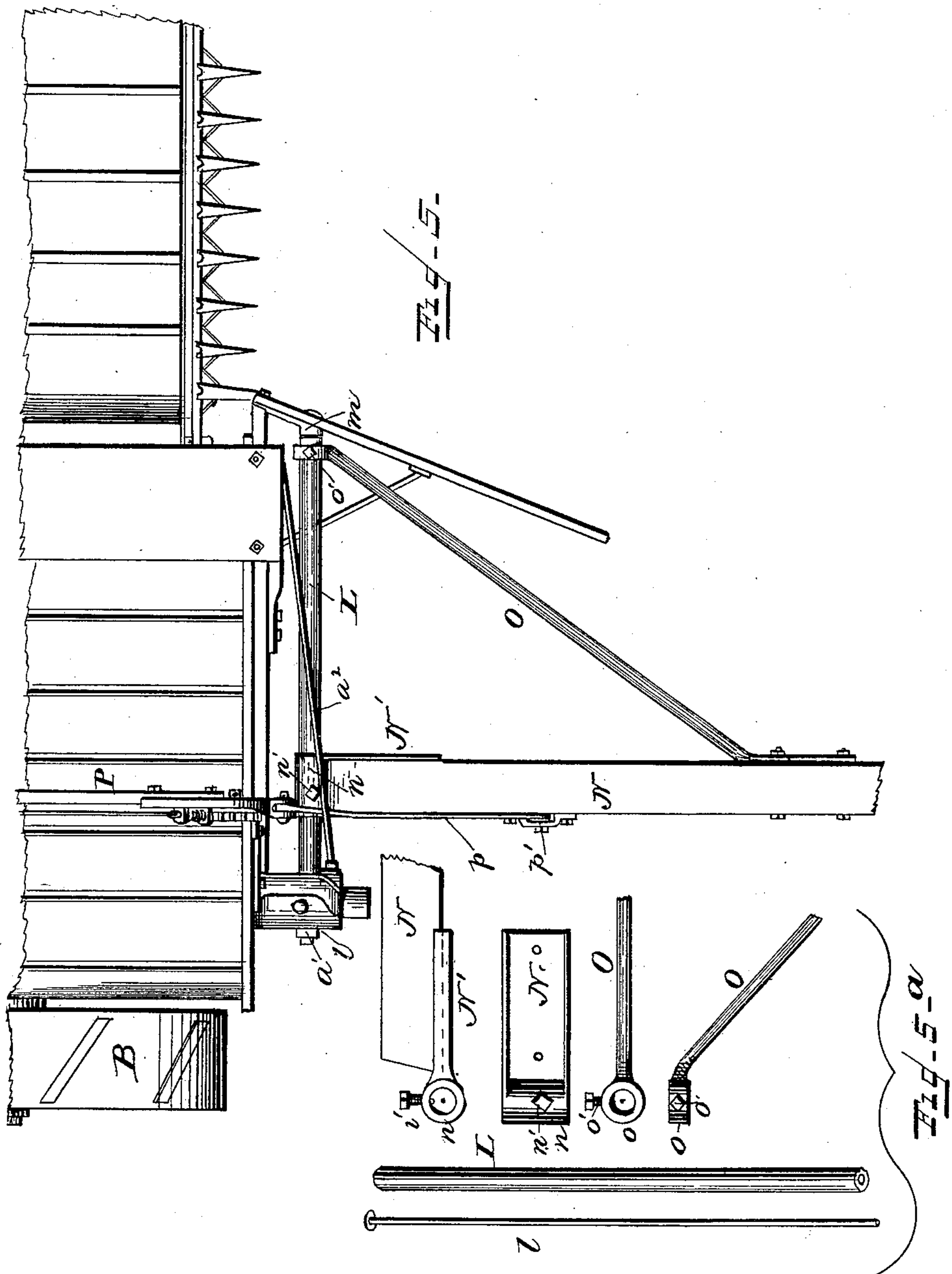
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UNITED STATES PATENT OFFICE.

LEWIS MILLER, OF AKRON, OHIO.

GRAIN-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 434,642, dated August 19, 1890.

Application filed December 19, 1887. Serial No. 258,339. (No model.)

To all whom it may concern:

Be it known that I, LEWIS MILLER, of Akron, 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 the manner of supporting and effecting the adjustment of the binder gear-frame mechanism and binder-table, and to certain details of construction and arrangement, hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of so much of a harvesting-machine as is necessary to show the binder gear-frame supporting and adjusting devices with the adjustable tongue and draft-rod removed. Fig. 2 is a side elevation of the machine, looking from the stubble side. Fig. 3 is a plan view, partly broken away. Fig. 4 is a rear elevation of the machine. Fig. 5 is a plan view showing the adjustable draft attachment, and Fig. 5^a details of parts of said attachment.

The machine represented in the drawings is of the elevated binder type, in which the grain is carried over to and bound on the outer or stubble side of the driving-wheel, and my improvements will therefore be described with reference to said type of machine, which is of a well-known construction.

A and A' indicate the front and rear sills of the main or platform frame; A², a longitudinal tubular bar, to which the inner ends of the sills A and A' are connected through suitable corner plates or irons, and B the driving-wheel, said parts being constructed and connected in any usual or preferred manner.

The elevator-frame (indicated at C, C', C², and C⁴) may be of any usual construction, except that I prefer to make the longitudinal bar C² tubular in form. Said bar is supported by and connects uprights C and C' on the frame C', forming in this instance a curved guiding-standard which moves up and down on the wheel plate or arm B' in the adjustment of the frame, and is, by preference, formed on the corner plate or iron through which the front sill and the longitudinal bar A² are con-

nected. The bar C² extends forward of the upright C' and supports a standard C³, on which a lever P for rocking the machine on its wheels is fulcrumed, and a forward supporting-standard a' extends from the forward end of an arm or bar a, attached to the inner end of the sill A, or its corner-plate referred to, to the forward end of bar C². An additional brace or support a² extends from the inner shoe obliquely upward to the forward end of the bar C², for giving greater rigidity thereto.

D indicates a longitudinal bar or support for the binder gear frame or standard, preferably tubular in form, located on the stubble side of the drive-wheel, and supported from the main frame or main and elevator frames in suitable brackets, which will be described, said bar forming a support for the longitudinally-adjustable binder gear-frame and mechanism, as will appear. This bar is supported at its rear end in a stationary bracket composed of an outwardly and upwardly projecting bar E, secured at its lower end to the corner-plate E² or iron connecting the rear platform sill and the longitudinal bar A², and a horizontal bar E', connected at its inner end to an upright C of the elevator-frame. These bars are united at their outer ends and form in connection with the corner-plate and upright C connecting their inner ends a triangular bracket, and are provided at their jointed ends with a bearing-sleeve e, in which the rear end of bar D is supported and adapted to slide longitudinally. The bracket supporting the forward end of the bar D is a pivoted and swinging one composed of rods or bars F and F', the rod or bar F being pivoted at its lower end in the bar a at a³, as shown, or other suitable support, and extending obliquely outward and upward to the bar D, its upturned end d passing through a perforation in the forward end of said bar and forming a pivotal connection therewith. The bar or lever F', at its outer end underlies the bar D, and is perforated to receive the pivot d on the bar F. The bar F' extends inward over the forward end of the tubular bar C², and is pivoted thereto at c, and extends beyond said bar to form a lever F², through which the pivoted bracket F F' can be vibrated for moving the longitudi-

nal bar D backward or forward, as desired. The lever F^2 has a rod f connected to its inner end, which extends to an upright lever f' , arranged in convenient position to be operated by the driver for adjusting the swinging bracket and bar D, and which may be held at the desired adjustment by any suitable arrangement of latch and rack-bar, such as is indicated in the drawings.

G indicates the binder gear frame or standard, made substantially U-shaped and placed on its side, its lower tubular arm G' being provided with pendent U-shaped feet or brackets g , which rest and pivot the binder gear stand or frame on the bar D, and are secured thereon by removable bolts or pins d' , which permit said frame to be readily removed from or attached to the bar D. The frame G has one or more laterally-projecting arms or brackets g' , which afford bearings for the packer-actuating shaft H, which in this instance forms also the first or main binder gear-shaft, and has its rear end supported and adapted to slide in a sleeve-bearing h on the stationary bracket $E E'$. The shaft H has a sprocket-wheel i fast on it near its forward end, which has a bearing in the forward arm or bracket g' , and is held in place therein by a suitable pin or key, this arrangement serving to cause the shaft H to move longitudinally with the frame G when the latter is adjusted. Motion is communicated from the sprocket-wheel i to a drive-chain i' to a sprocket-wheel i^2 , mounted and turning loosely on a stud-shaft g^3 on an arm or bracket g^2 on the frame G , and thence through a pinion i^3 , on the same stud-shaft with the sprocket-wheel i^2 to the binder mechanism. The sprocket-wheels i and i^2 are in continuous motion when the machine is at work, but operate the pinion i^3 to drive the binder mechanism only when the pinion is thrown into engagement with the sprocket-wheel i^2 by any usual or suitable clutch mechanism for that purpose. The rear end of the shaft H is adapted to slide in the sleeve h , and is grooved at h^3 to receive an internally-feathered hub of a sprocket-wheel H' , mounted on and serving to rotate the shaft H. The sprocket-wheel H' at the end of its hub adjacent to the bearing-sleeve h is grooved and a fork or hook h^4 on the rear end of said sleeve engages said grooved hub and prevents end movement of the sprocket-wheel with the shaft H without interfering with its rotation for driving said shaft. The sprocket-wheel H' is operated through a chain h' , which, as shown in Fig. 4, serves also to drive other parts of the machine from a sprocket-wheel h^2 on a suitable shaft geared to and driven from the main drive wheel or axle in any suitable manner.

The binder mechanism frame G has a lug or ear g^4 on its upper side, from which a pivoted rod j extends and has its inner end pivoted to a suitable lug or bracket j' on the forward end of the elevator-frame, as shown, and which serves to hold up the upper end of

said frame, while permitting the forward and backward adjustment of said frame with the swinging end of the pivoted bracket, as above explained.

The binder-table (indicated at K) is supported at its upper end by and adapted to slide longitudinally on a rabbeted longitudinal bar k , secured to suitable brackets k' on the elevator-frame. The lower end of the table is secured to and upheld by the sleeve G' of the binder mechanism frame, and at its rear end or side projecting beyond said sleeve by a suitable bracket or brackets k^2 , connected to the bar D, the arrangement being such that the table, which is of a well-known form, slotted to permit the needle and packers to work through it, will move with and maintain its proper relation to said parts. The packers are operated by means of cranks h^5 on the shaft H, their pivoted ends being connected by suitable links h^6 with the binder-frame G , so as to move with the latter when it is adjusted.

The tongue N (see Figs. 5 and 5^a) is pivotally connected, through a sleeve n on the tongue-plate N' , with a long sleeve L on a bolt l , supported in the inner shoe at m and in the upright a' , and a tongue-brace O is also connected, through a sleeve o at its rear end, with the sleeve L, as shown, and a lever P, pivoted to the standard C^3 on the tubular bar C^2 , and adjustably connected at p' by a rod p with the pivoted tongue, enables the operator to rock or tilt the machine on its carrying-wheels in a manner that will be understood without further description. Set-screws n' and o' permit the adjustment laterally on the sleeve L of the tongue and tongue-brace for changing the line of draft, as may be required.

By the use of the swinging bracket composed of the long arms or links pivoted at one end to the frame-work of the machine on the grain side of the driving-wheel and supporting the longitudinal supporting-bar and the binder gear frame and mechanism on the stubble side of the wheel, as described, I am enabled to adjust the binding mechanism with much greater ease and less friction than in the ordinary methods of supporting and adjusting it, and the length of the arms or bracket is such as to permit longitudinal adjustment, within the limits required, without giving lateral movement enough to interfere with the proper working relation of the parts.

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

1. In a harvesting-machine, the combination, with the main frame and driving-wheel, of a binder gear stand or frame supported on the stubble side of the driving-wheel and supporting-brackets for said stand, one of which is pivoted to the main frame on the grain side of said wheel, substantially as described.

2. In a harvesting-machine, the binder gear

stand and a supporting-bracket therefor pivotally connected with the machine-frame, in combination with a link-rod upholding said stand and pivotally connecting its upper end with a support rigid on said frame, substantially as and for the purpose described.

3. In a harvesting-machine, a support for the binder gear stand or frame located on the stubble side of the driving-wheel, in combination with a supporting-bracket therefor pivoted to the frame on the grain side and crossing the path of said wheel, substantially as described.

4. In a harvesting-machine, a binder gear stand or frame pivoted to its support and made longitudinally adjustable relatively to the machine-frame for adapting it to the length of the straw to be bound, in combination with a link or rod pivoted at one end to said stand and at its other end to a support rigid on the machine-frame for adapting it to swing and permit the longitudinal adjustment of the binder-frame, and at the same time uphold the latter on its pivotal support, substantially as described.

5. In a harvesting-machine, the combination, with the main frame and driving-wheel, of the longitudinally-arranged bar located on the stubble side of the driving-wheel, supporting-brackets for said bar connected to the frame on the grain side of said wheel, the binder gear stand or frame supported on said bar, and a rod or link connecting the upper end of said gear-stand with a fixed support on the main frame and adapted to permit the forward and backward adjustment of said gear-stand, substantially as described.

6. In a harvesting-machine, the combination, with the main frame and driving-wheel, of brackets secured to the frame on the grain side of the driving-wheel and crossing the path thereof and a longitudinal bar forming a support for the binder gear frame or stand, located on the stubble side of the driving-wheel and upheld by said brackets, one of which is pivoted to the frame and has the support for the binder-stand connected to its swinging end to move with it, substantially as described.

7. In a harvesting-machine, the combination, with the main frame, the binder gear stand or frame, and a support for the latter, of laterally-projecting brackets supporting said stand, one of which brackets is connected at one end to the main frame and at the other to the binder gear-stand support by

vertical pivots, adapting it to swing backward and forward and to carry the binder gear-stand with it, substantially as described.

8. In a harvesting-machine, the combination, with the main frame and driving-wheel, of a binder gear stand or frame and a support therefor located on the stubble side of the driving-wheel, supporting-brackets extending from said support to the main frame on the grain side of said wheel, and one of which is pivoted to said frame, and a link connecting the upper end of the binder gear-stand with a support rigid on said main frame, substantially as described.

9. The combination, in a harvesting-machine, of a binder gear stand or frame, a longitudinal bar on which said stand is supported, and supporting-brackets for said bar, one of which brackets is pivoted to the machine-frame, and is provided with a lever-arm extension through which the backward and forward adjustment of the binder mechanism is effected, substantially as described.

10. In a harvesting-machine, the combination, with the main frame and driving-wheel, of the brackets connected to said frame and crossing the plane of the driving-wheel, the longitudinally-arranged bar supported on the stubble side of said wheel by said brackets, the binder gear stand or frame secured to and adjustable with said bar, and the binder gear and packer actuating shaft, binder and packer mechanisms, and the binder-table, all connected to said binder gear-stand to move with it, substantially as described.

11. In a harvesting-machine, the combination of the main frame and driving-wheel, the brackets connected to said frame on the grain side of the driving-wheel, the longitudinally-arranged bar D, supported by said brackets on the stubble side of said wheel, the binder gear-stand on said bar, the pivoted link connecting the upper end of said stand with a support on the main frame, binder mechanism connected to and adapted to move with said gear-stand, and a lever connected to said bar D for adjusting it and the binder mechanism, substantially as described.

In testimony whereof I have hereunto set my hand this 21st day of November, A. D. 1887.

LEWIS MILLER.

Witnesses:

O. L. SADLER,
W. K. MEANS.