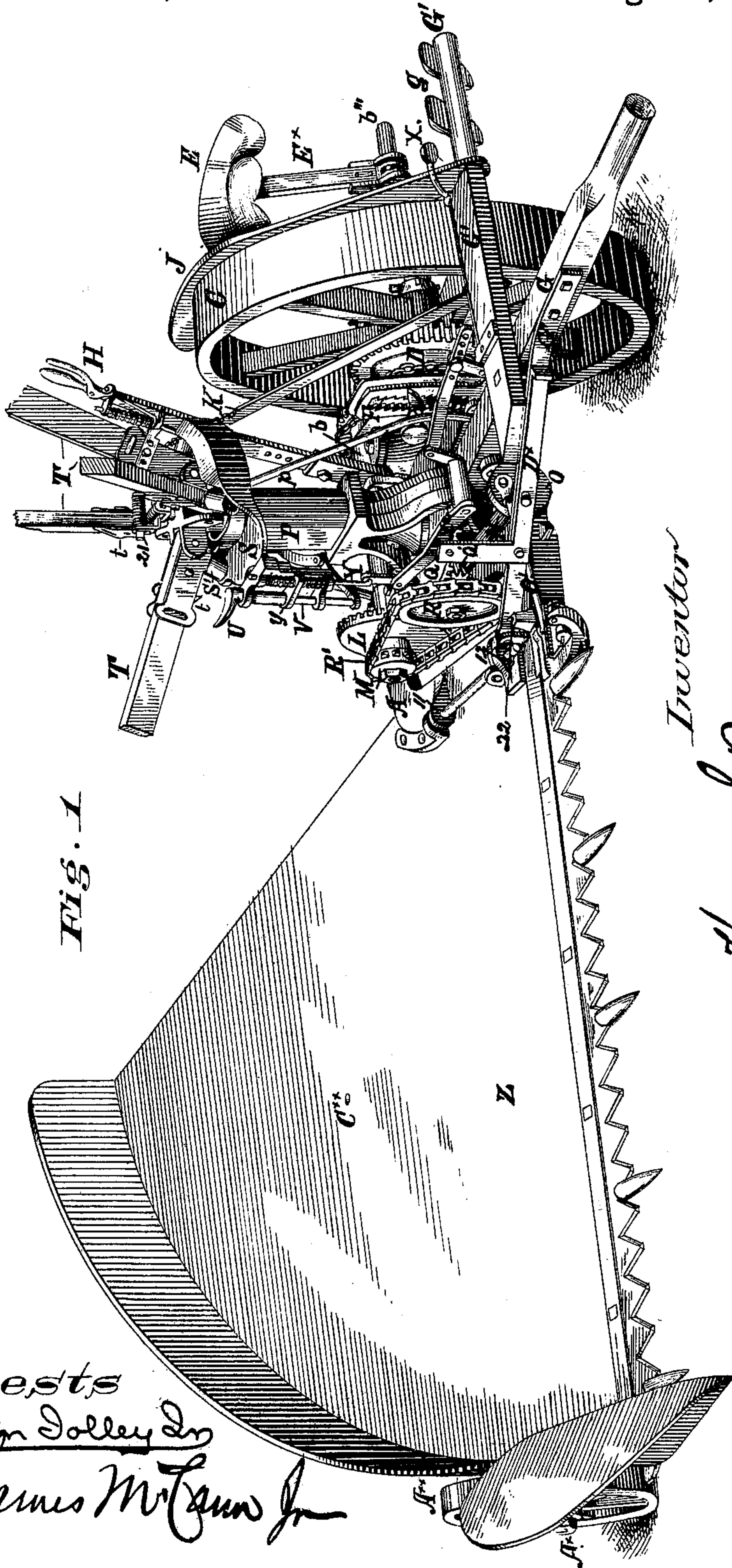


T. S. BROWN.
Harvester.

No. 206,857.

Patented Aug. 13, 1878.



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By his Attorneys
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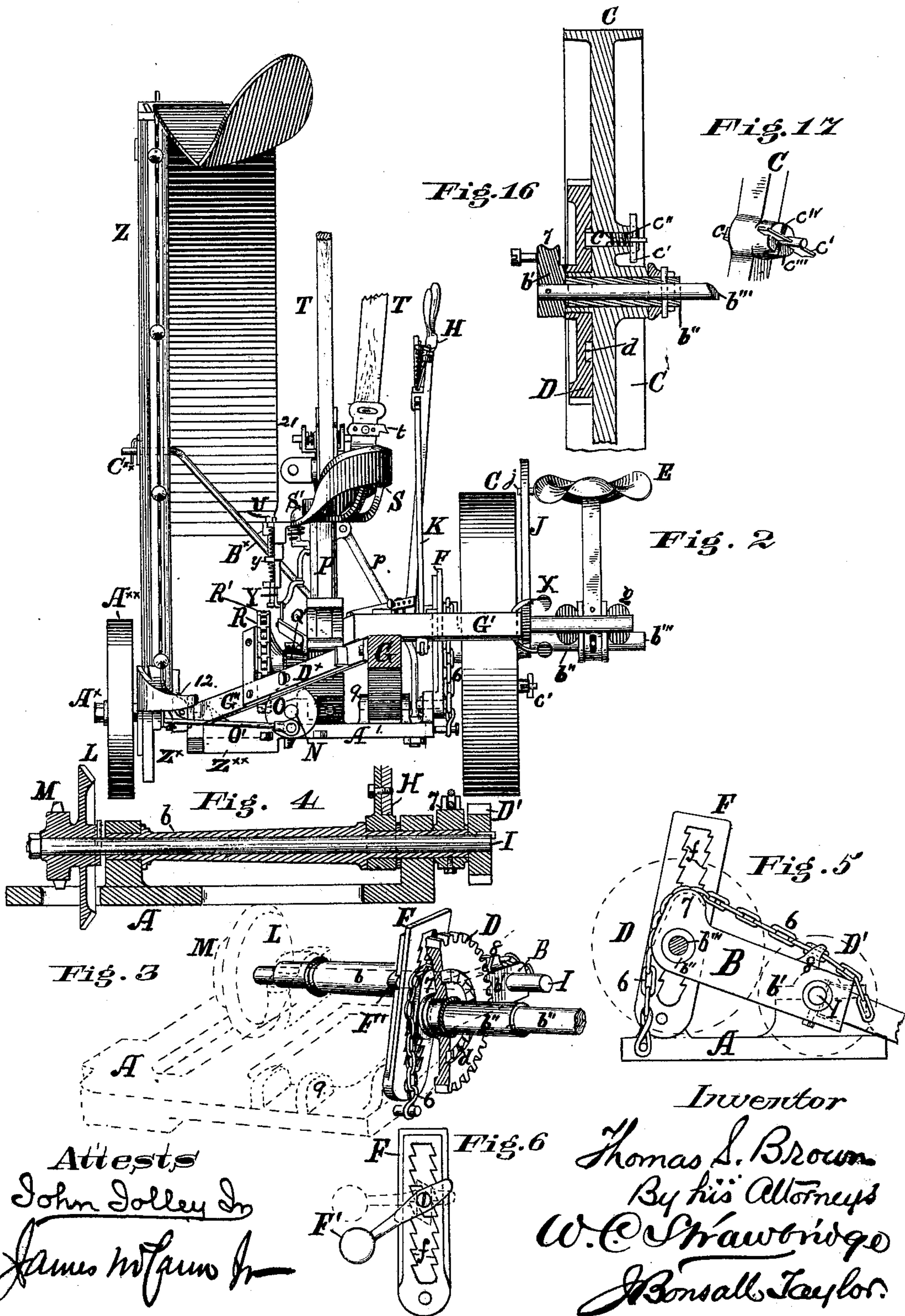
James McGowan Jr

T. S. BROWN.

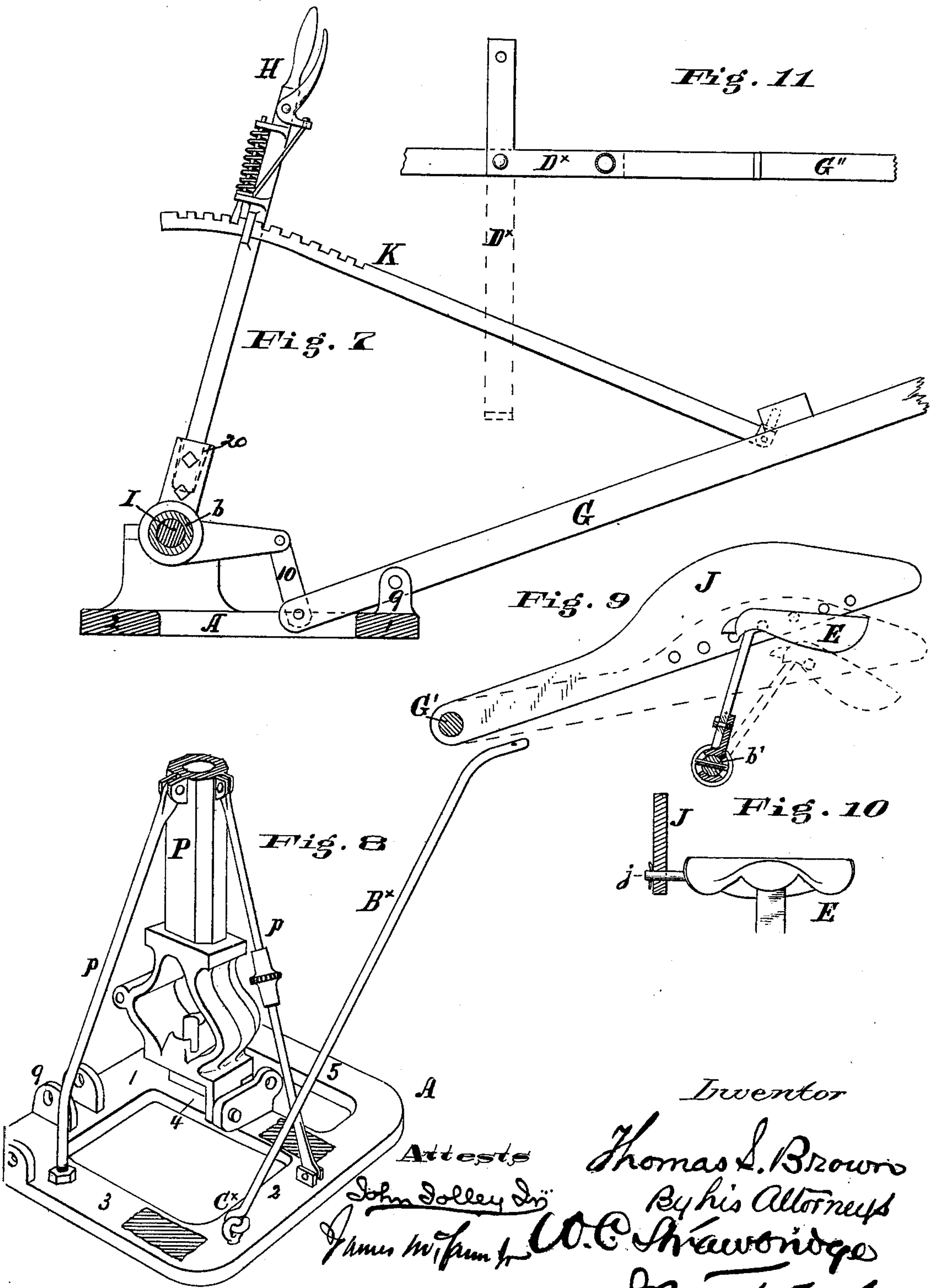
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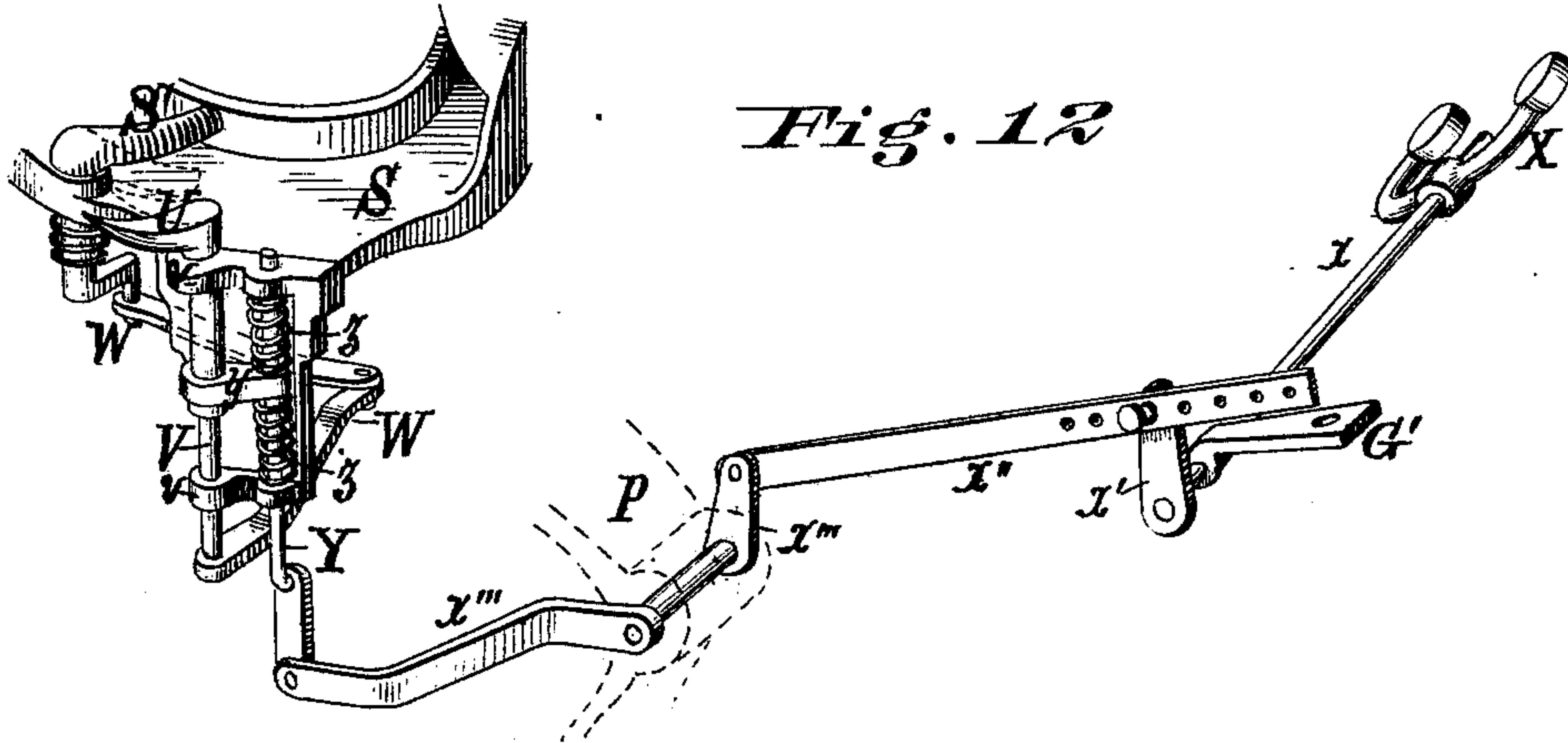


Fig. 12

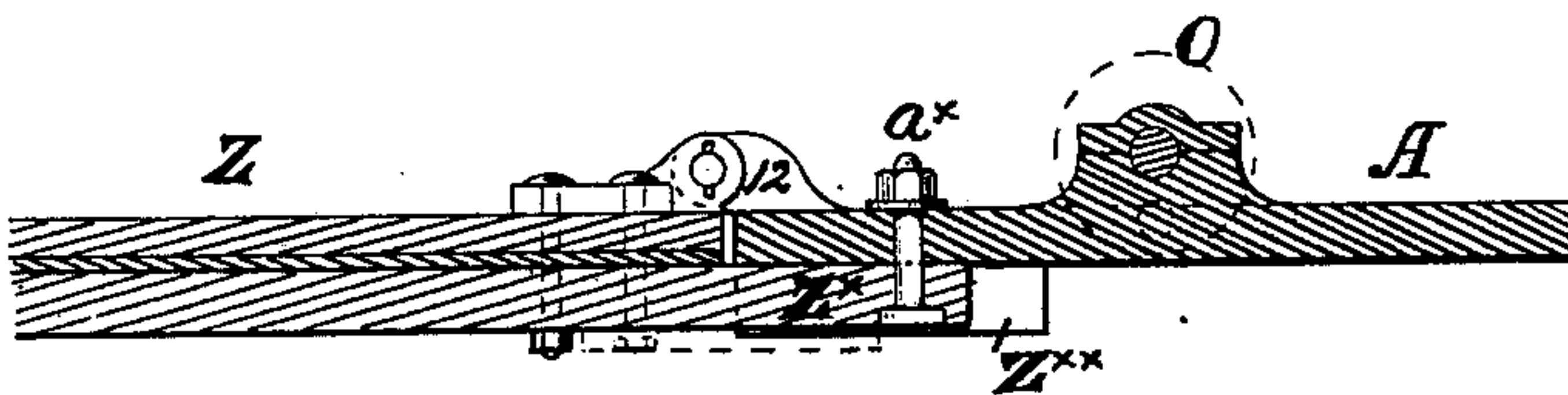


Fig. 13

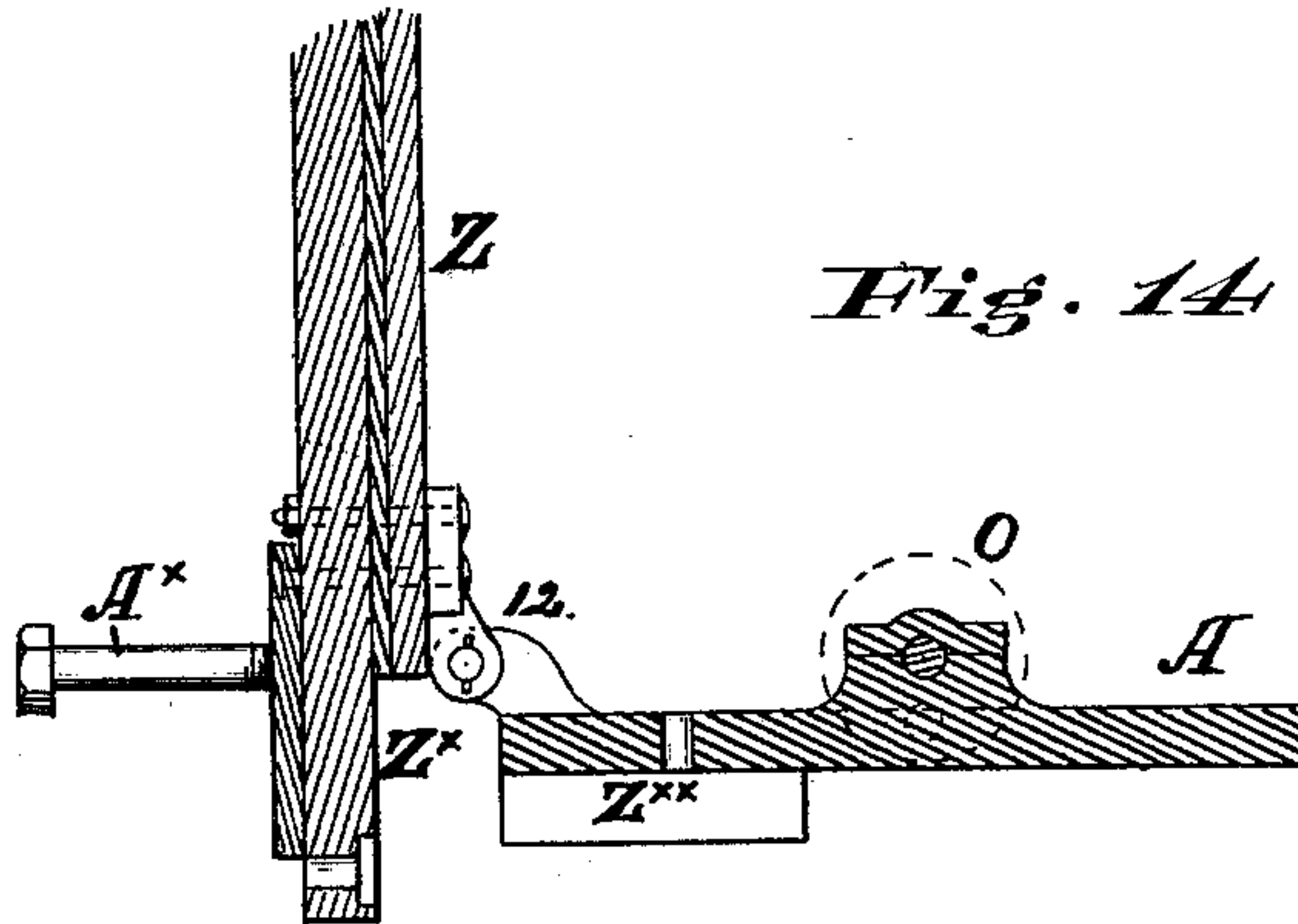


Fig. 14

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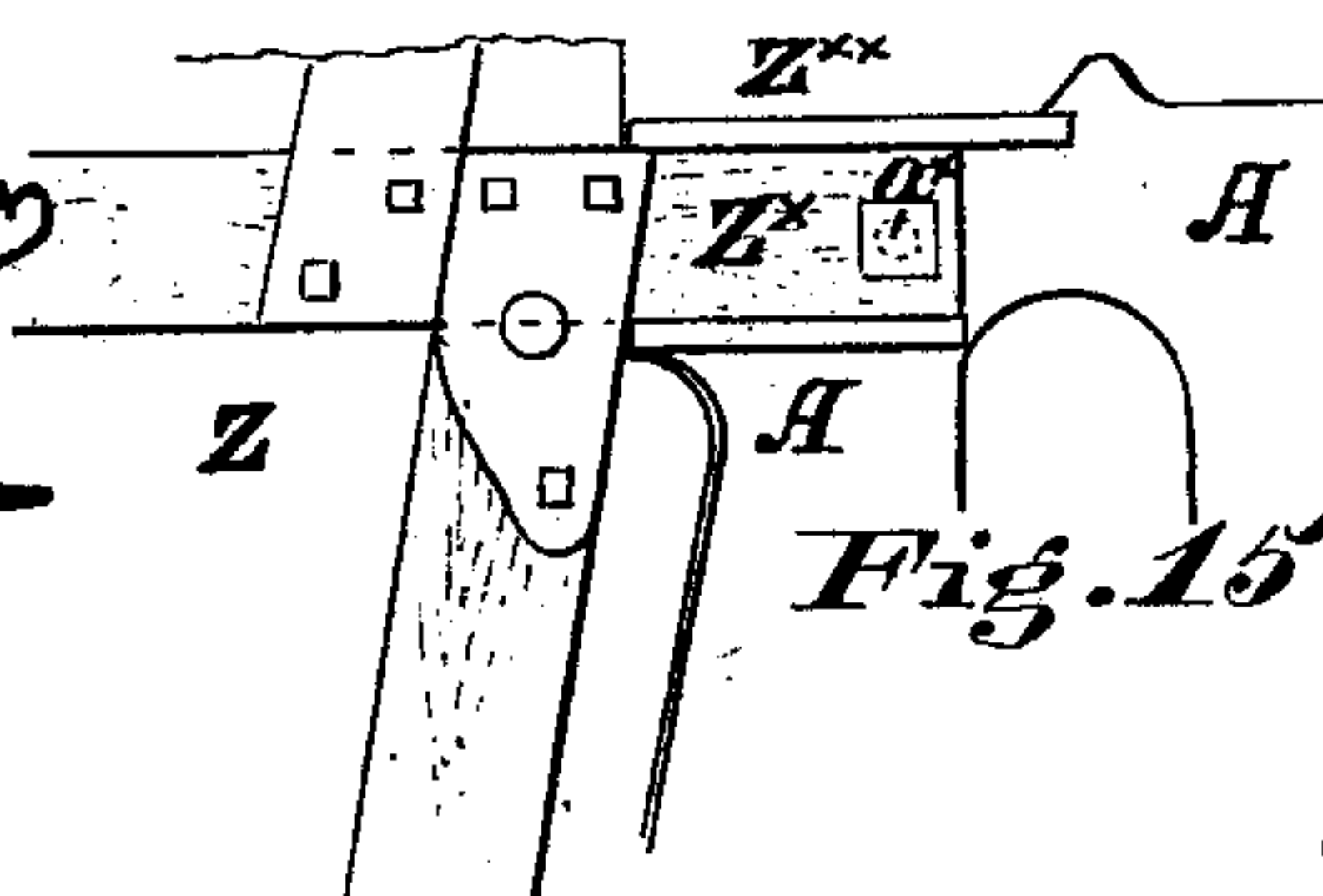


Fig. 15

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UNITED STATES PATENT OFFICE.

THOMAS S. BROWN, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN P. ADRIANCE, OF SAME PLACE.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **206,857**, dated August 13, 1878; application filed January 16, 1878.

To all whom it may concern:

Be it known that I, THOMAS S. BROWN, of Poughkeepsie, in the State of New York, have invented a new and useful Improvement in Harvesters, of which I do hereby declare the following to be a full, clear, and precise description, and sufficient to enable those skilled in the art to which it appertains to make and use my said invention, reference being had to the accompanying drawings, which form part of this specification, and of which—

Figure 1 is a view in perspective of the entire machine, showing the platform down; Fig. 2, a front elevation of the same, with the platform folded for transportation and the carrying-wheel in place; Fig. 3, a detailed perspective of the crank-frame, gag-piece, and driving spur-wheel, showing the main frame in dotted lines; Fig. 5, a side elevation of the same; Fig. 4, a longitudinal cross-section of the sleeve of the crank-frame, main driving-axle, and attachments; Fig. 6, a side-elevation detail of the gag-piece and double ratchet; Fig. 7, a side elevation of the tongue, its tilting-lever and connections; Fig. 8, a perspective view of the main frame, rake-head standard and braces, and platform-supporting link; Fig. 9, a side elevation of the seat and its bracing guard-board; Fig. 10, a front elevation of the same, the guard-board being in section; Fig. 11, a detail of the angle-jack; Fig. 12, a detailed view in perspective of the pedals and mechanism for raising or lowering the latch of the camway-gate; Fig. 13, a section of the connection of the platform and main frame, the platform down; Fig. 14, a similar view of the same, the platform up; Fig. 15, a bottom plan of the same, the platform down; Fig. 16, a sectional elevation of the drive-wheel, driving spur-wheel, and ratchet connection; Fig. 17, a detailed perspective of the pawl-lock and handle.

Similar letters of reference indicate corresponding parts wherever used.

My invention relates to that subdivision of the class of harvester-machines which are known as "single-wheel reapers."

The following is a description of a machine embodying my improvements: A is the main

frame, of flat and approximately rectangular configuration, to which, at right angles to each other, are hinged the platform and what I term the "crank-frame" B. The crank-frame consists of three portions, so to speak—a horizontal sleeve, *b*, journaled transversely on the frame, a rigid arm, *b'*, and an axle, *b''*, upon which is supported the main drive-wheel C, the tight-and-loose driving spur-wheel D, running upon the hub of the drive-wheel, while the driver's seat E is hinged upon extension-piece *b'''*, affixed to and projecting from the axle. The main frame and crank-frame are adjustably hinged or connected, the adjustment being effected by means of a ratcheted gag-piece between the front of the main frame and the forward extremity of the rigid arm of the crank-frame, whereof hereinafter. The tongue S is pivoted on the front cross-bar of the main frame on a line in rear of the cutter-bar, and hinged to an angle-foot of the tilting-lever H, itself pivoted upon the sleeve of the crank-frame.

The detailed structure and arrangement of the foregoing parts is this: The main frame (best shown in Fig. 8) is composed of a front and back cross-bar, 1 and 2, and of three connecting-bars, 3, 4, and 5, the whole being made in one piece. Upon bars 3 and 4 are set journals, in which rests the sleeve *b* of the crank-frame, the same being a hollow cylinder, within which rotates the bevel-wheel shaft I. Rigidly affixed to the extremity of the sleeve *b* nearest the drive-wheel, and at right angles to it, is the arm *b'*, Fig. 3, from which projects horizontally outward the axle *b''*. Upon the axle the drive-wheel C runs freely, as also upon the hub of the driving-wheel runs freely the driving spur-wheel D, engaged, however, with a smaller spur-wheel, D', Figs. 4 and 5, keyed upon the extremity of the bevel-wheel shaft I beyond the sleeve *b* and nearest to the drive-wheel. The driving spur-wheel D and drive-wheel C are connected at will by a pawl, *c*, in the drive-wheel engaging into a ratchet, *d*, in the side of the spur-wheel D. The pawl is kept in gear by a spring, *c''*, Figs. 16 and 17, and locked out of gear by simply turning the handle *c'* of the pawl out of a slot,

c' , and against projections c''' on the drive-wheel. The ratchet is so cut that the machine always backs out of gear.

The driver's seat E is rotatably hinged or set on the end of an adjustable extension-piece, b''' , affixed to the axle b'' , and is braced up at any angle of adjustment of the frames by a guard-board, J, provided with a series of holes, into which a pin, j , on the side of the seat projects. The guard-board is affixed to the tongue cross-piece G' .

F is the gag-piece, Figs. 3, 5, and 6, which connects the main frame to the crank-frame, and, making a stiff connection, holds the cutting apparatus at the desired height. Said gag-piece is pivoted to the front cross-bar of the main frame, is cut internally with a double and opposing set of teeth, f , and embraces within it a double pawl, F' , pinned to the front of the arm b' of the crank-frame.

By this arrangement the main frame and the crank-frame can be forced to assume any position relatively to each other, and, when locked by the double ratchet, are rigidly connected, any motion, either upward or downward, being prevented by the opposing teeth of the ratchet biting upon the double pawl. The platform and cutters can also be raised or lowered to different heights by inserting a lever in the socket at the rear of the arm b' of the crank-frame, as shown in Fig. 6, and raising or lowering, the double pawl and ratchet being for the time disconnected. The lever H is fitted loosely into the socket 20, so that a slight play is allowed to the main frame even when the lever is locked, as shown in Fig. 7, the lever-socket being flared or expanded at its upper end for this purpose.

Another convenient additional means of holding up the cutters is shown in Figs. 3 and 5, a chain, 6, secured to front of the main frame, passing up and over a bridge, 7, on the front of the arm b' , and locking in a toe, 8, at the rear of the same, the double ratchet being meanwhile locked to overcome any upward pressure on the main frame.

G is the tongue or pole, G' its cross-piece, and G'' a brace running down to the main frame. The cross-piece binds the tongue and brace together, and by its extension beyond the drive-wheel answers for a foot-rest, g , for the driver. The cross-piece also forms a support for the crank-rod and pedal, whereby the mechanism for controlling the rakes is adjusted, whereof hereinafter.

The tongue, Fig. 7, is pivoted to the front cross-bar of the main frame at 9 in such manner that its extremity extends within the open interior of the main frame, and is there, by means of the link 10, connected to the foot of the tilting-lever H, which latter is loosely hinged or jointed over and about the sleeve b of the crank-frame, the arrangement being such that the finger-beam can be tilted to rise freely over any obstruction it may meet in its path or the platform tilted to take up lodged grain. The sleeve b being the axis to which

the main frame and crank-frame are attached, and about which the main frame vibrates, it is evident that by locating the lever H upon said sleeve its action is less influenced by the relative positions of the crank and main frames, and a greater efficiency is obtained. The lever locks into a lock-bar, K, hinged to the tongue cross-piece G' .

I is the main shaft, Figs. 3 and 4, upon the end of which nearest the drive-wheel is, as already stated, the small spur-wheel D' , which meshes with and is driven by the main spur-wheel D, itself driven by the main wheel, and upon the other extremity of which, or that nearest the platform, is a bevel-wheel, L, and a sprocket-wheel, M. The bevel-wheel L engages with a pinion, L' , (not visible in drawings,) at the rear extremity of a shaft, N, journaled in the main frame at right angles to the main shaft, at the forward extremity of which shaft N is the disk or crank O, driving the pitman O' , which actuates the cutters.

P is the rake-head standard, Figs. 1 and 8, erected upon the main frame, shown springing from bar 4 thereof, and braced by straining-bars $p p$ to the sides of the frame. Upon the crown of the rake-head are set spring-bumpers 21, to cushion the rake-arms as they are thrown up. Throughout the standard is journaled the vertical shaft, which drives the rakes, to the base of which shaft is keyed a crown-wheel, Q, into which meshes a pinion, Q' , on the end of a horizontal shaft likewise journaled in the standard P, on the other end of which shaft is the driving sprocket-wheel, which derives its rotation, by means of a sprocket-chain, R' , from the sprocket-wheel M, which pinion is mounted upon the platform end of the shaft I, located within the sleeve which forms the axis of connection between the main and crank frames.

It is obvious that by this arrangement of gearing the power to drive the rakes is taken from the end of the main or bevel-wheel shaft next the platform to a shaft in the rake-head standard parallel with the bevel-wheel shaft.

S is the rake-cam; S' , the cam gate or switch, automatically operated to open or close by the following mechanism controlled by the driver's foot: The rakes T are provided each with adjustable trips t , adapted, as set, to encounter or not a latch of the following arrangement, (best shown in Fig. 12:) U is the latch, set upon the upper end of a vertical sliding and rotatable stem, V, hung in slide-bearings $v v$ depending from the camway. It is jointed by the common link-and-arm mechanism W to the switch-gate, so that when tripped it operates to open the gate.

My improvement consists in forming a positive connection between the latch U and the foot of the driver, by means of which the driver is enabled to throw the latch up or down, into or away from the path of the trips, so as to open or shut the gate for all or for any particular arm, so as to rake or reel at pleasure. The connection consists of a double

pedal, X, and pedal-shaft x and crank x' , journaled on the tongue cross-piece G' , connected by a link, x'' , with a double lever, x''' , having it, bearing on the standard of the rake-head, one end of which lever connects with a spring-controlled vertical shifter-rod, Y, and lug y , secured to the slide-stem V of the latch.

The shifter-rod Y being in equilibrium between two coiled or other springs, $z z$, one or the other of which is compressed as the pedal operating the connection raises or lowers the shifter-rod. The foot being removed from the treadle, the recoil of the compressed spring places the latch again in equilibrium, and ready to be operated upon by such of the trips on the rake-arms as are set to encounter it in such position.

It is evident that the trip t upon any particular rake-arm may be set far enough down to operate the latch when the latch is in equilibrium. Should it be desired, however, that the trip of any arm which is not so set down shall operate the latch, or that the trip which is so set down shall not operate the latch, the latch may be forced upward or downward by the positive mechanism operated by the driver's foot, so that either of these results shall be effected.

Z is the platform, Figs. 13, 14, and 15, hinged by means of hinges 11 and 12, located above its upper surface, with a wide basis of support to both front and back of the main frame at the side thereof. The platform is provided with a tongue or extension, Z^x , on its under side, extending beyond the inner shoe, adapted, when the platform is down, to enter and fit snugly within a socket, Z^{xx} , on the under side of the main frame, the whole to be then secured by a bolt, a^x , passing through both main frame and tongue, as shown in Fig. 13.

The hinges are parallel with the crank-shaft and immediately behind the inside shoe, which latter is located upon the platform. As constructed, the inner edge of the platform and the inner end of the finger-bar, extending inside of said hinges, fold underneath the main frame. 22 is a spring-catch inclosed in an upright casing adapted to retain the cutter-bar in place when the platform is folded up.

When the platform is up the axle-bolt A^x , which, when down, being screwed into a support near the outer divider, forms the axle of the carrying-wheel A^{xx} , is screwed into the base of the platform, and serves as the axle of said wheel, which, when so applied, renders the machine readily transportable. When the platform is up, the supporting-link B^x , which goes with the machine, is hooked at one end, at C^x , to the main frame, Fig. 8, and at the other into the platform, and there secured, at C^{xx} , as shown in Fig. 2, holding the platform rigidly up.

The advantages of this structure of platform are that the hinge is removed from the end of the finger-bar far enough to secure a lap-joint of sufficient length to effect a strong splice when the parts are bolted together for operat-

ing in the field; that a strong place of bearing is also secured for the axle of the carrying-wheel when the platform is up for transportation; and that the hinges, being above the platform, the equilibrium is better when the platform is up, a portion of the platform and finger-beam hanging below the center of the supporting-wheel, the whole being steadier and not so liable to tip over when on slanting or uneven ground; finally, a wide basis of support is effected when the platform is folded up, and great stiffness secured when down and in the field.

When folded up the strain of the weight of the platform is entirely upon the carrying-wheel, and the platform is not raised so high as to be unwieldy or dangerous.

D^x is an angle-jack carried upon the pole-brace G'' , and adapted to be removed, inverted, and again secured to the brace, so as to form a leg or support for the platform side of the machine during the process of taking off the carrying-wheel and folding up the platform.

In folding up it is not necessary to take out the cutter or disconnect the pitman, one rake-arm alone, as is usual, being removed.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A mechanism intermediate between the foot of the driver and the latch which controls the rake-cam gate, consisting of a lever and link or other equivalent mechanism—viz., double pedal X, pedal-shaft x , pedal-crank x' , link x'' , double lever x''' , spring-controlled shifter-rod Y, lug y , and sliding latch-stem V—the whole organized, as described, in such manner that at rest the latch is held in equilibrium, but can be raised into or lowered out of the path of any or all the rake-arms by pressure in one or the other direction upon the pedal, substantially as shown and described.

2. The lever H, hinged to the crank-frame B upon the sleeve b thereof, in combination, by means of a link, 10, with the inner end of the pole G, which latter is hinged to the front cross-piece of the main frame A, substantially as shown and described, and for the purposes set forth.

3. As a means of connecting the arm b' or free forward part of the crank-frame B rigidly to the main frame A when the platform is adjusted to a desired height of cut, a gag-piece, F, hinged to the main frame, and consisting of two internal parallel ratchet-bars, the teeth of each bar pointing toward the teeth of the other, and a double pawl, F' , pivoted to the arm b' of the crank-frame, and adapted to engage the ratchet-teeth on each side, so as to lock with the gag-piece and prevent either an upward or downward movement of the platform, substantially as shown and described.

4. In combination, the driving-wheel C, the driving-gear wheel D, mounted loosely upon the hub of the driving-wheel and provided

with a ratchet, d , upon its side, and a pawl, c , lying parallel with the axis, and contained within bearings in the drive-wheel, so that said pawl engages with said ratchet to operate the driving-gear wheel, and thence the train, in the forward movement of the drive-wheel, and is adapted to slide back over said ratchet in the backward movement of the drive-wheel, substantially as shown and described.

5. The combination of the pawl c , mounted in a bearing in the drive-wheel, the ratchet d in the main gear-wheel D , the pawl-handle c' and projections c'' on the drive-wheel C , the arrangement being such that the handle can be pulled out, turned half around, and rested on the projections to hold the pawl out of gear, the spring drawing the handle into the recesses c'' and the pawl into bite when the handle is turned off the projections, substantially as shown and described.

6. In a one-wheel harvester, the combination, by means of a sprocket-chain, R' , a sprocket-pinion, LM , upon the end next the platform of the bevel-wheel or driving shaft I , which shaft is located within the sleeve which forms the axis of connection between the main and crank frames, and a driving sprocket-wheel, R , on the platform end of a shaft in the rake-standard lying parallel with the bevel-wheel shaft, said shaft in the standard being provided at its inner end with a pinion, Q' , meshing with a crown-wheel, Q , connected with the vertical shaft which drives the rakes, the whole forming a device for driving the rakes from the bevel-wheel shaft I , substantially as described.

7. In a one-wheel harvester, platform z , hinged directly to the main frame by hinges 11 and 12, located on top of the platform at front and back of the main frame, and as wide apart as possible, said platform being pro-

vided with an extension which folds beneath the main frame so as to be rigidly secured thereto, and when up permits a portion of the platform and of the finger-bar to hang below the axis of the hinge and the center of the carrying-wheel A^{**} , substantially as and for the purposes set forth.

8. The combination of the platform hinged to the main frame and provided with the extension Z^x , the socket Z^{**} beneath the main frame, and the connecting-bolt a^x , the whole forming a rigid splice for the platform when down, substantially as described.

9. In combination with the platform Z , the carrying-wheel A^{**} , placed against its under side, outside or above the line of its hinged connection to the main frame by means of the axle-bolt A^x , substantially as described.

10. In a harvester, the lever H , loosely set in its socket, in combination with the main frame and the tongue, and with devices for connecting the lever therewith, substantially as shown and for the purpose set forth.

11. The shifting angle-prop D^x , attached to the tongue-brace of a harvester, substantially as shown and described, and for the purpose specified.

12. In a harvester, the combination of the latch of the rake-cam gate, the double foot-pedal, and mechanism, substantially as described, whereby the said latch, when at rest, being held in equilibrium, can be raised into or lowered out of the path of any or all the rake-arms by pressure in one or the other direction upon the pedal, substantially as shown and described.

THOS. S. BROWN.

Witnesses:

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