

C. S. WILLMETH.  
Corn-Harvester.

No. 224,500.

Patented Feb. 10, 1880.

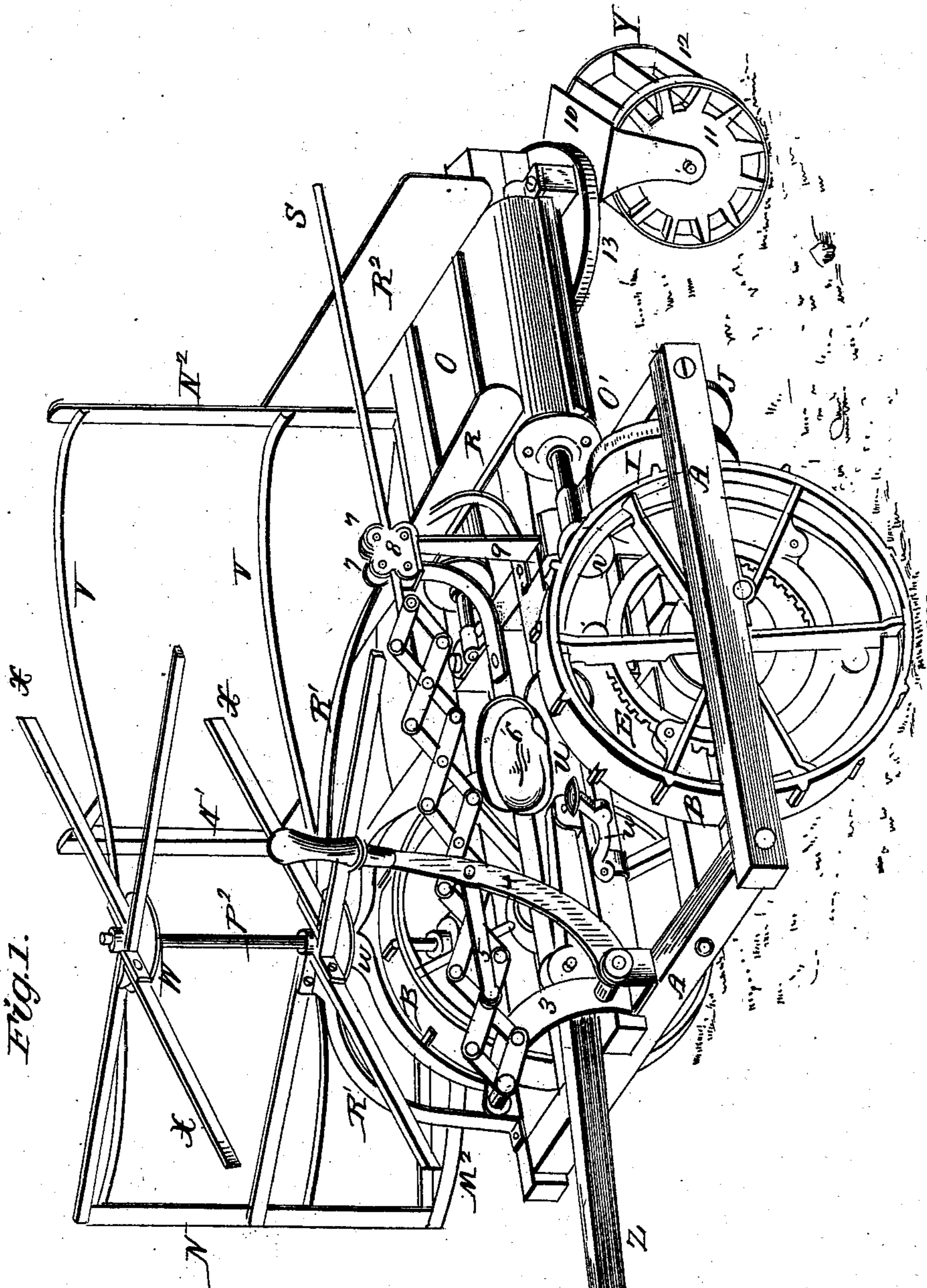


Fig. 1.

Witnesses  
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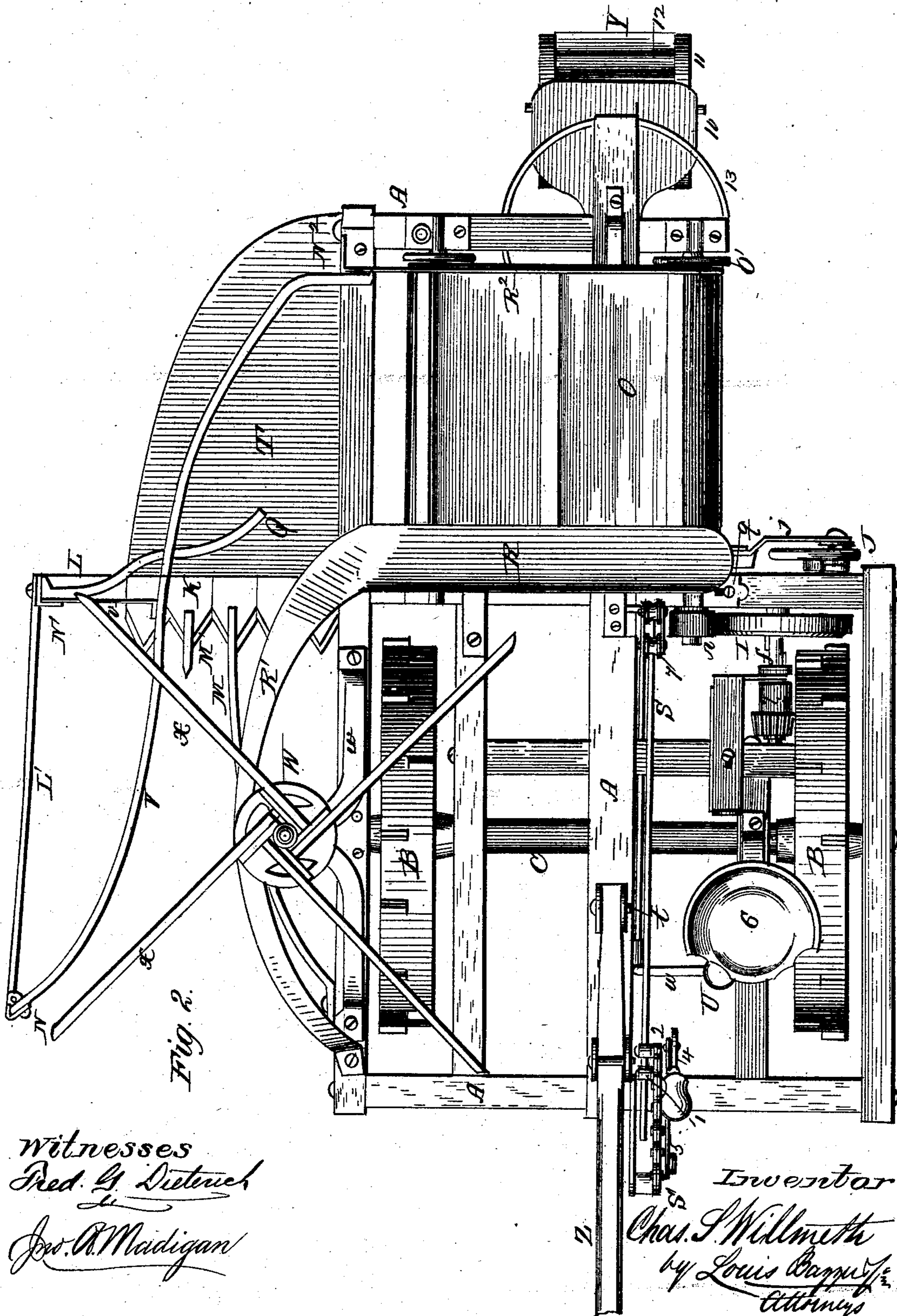


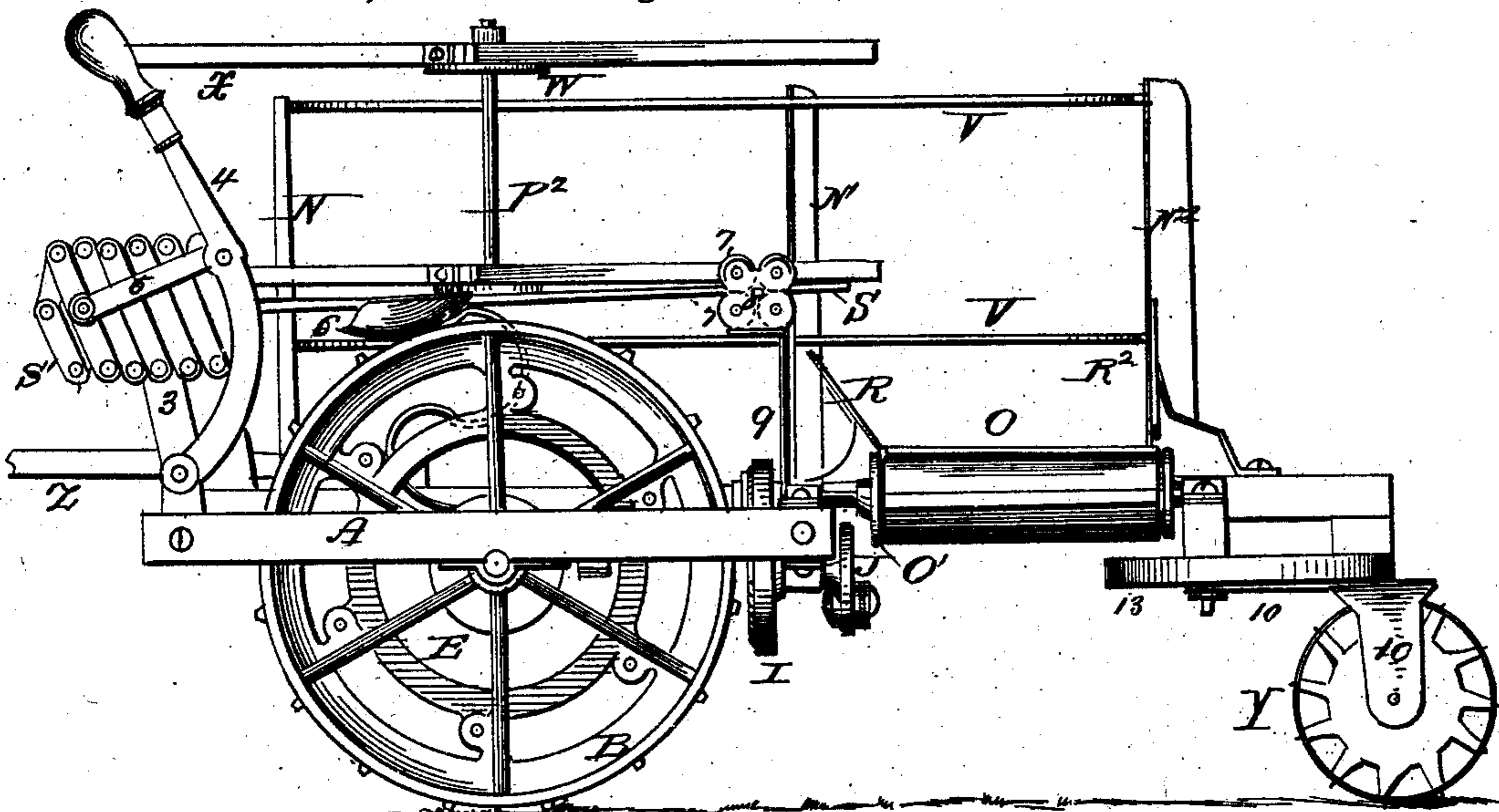
Fig. 2.

Witnesses  
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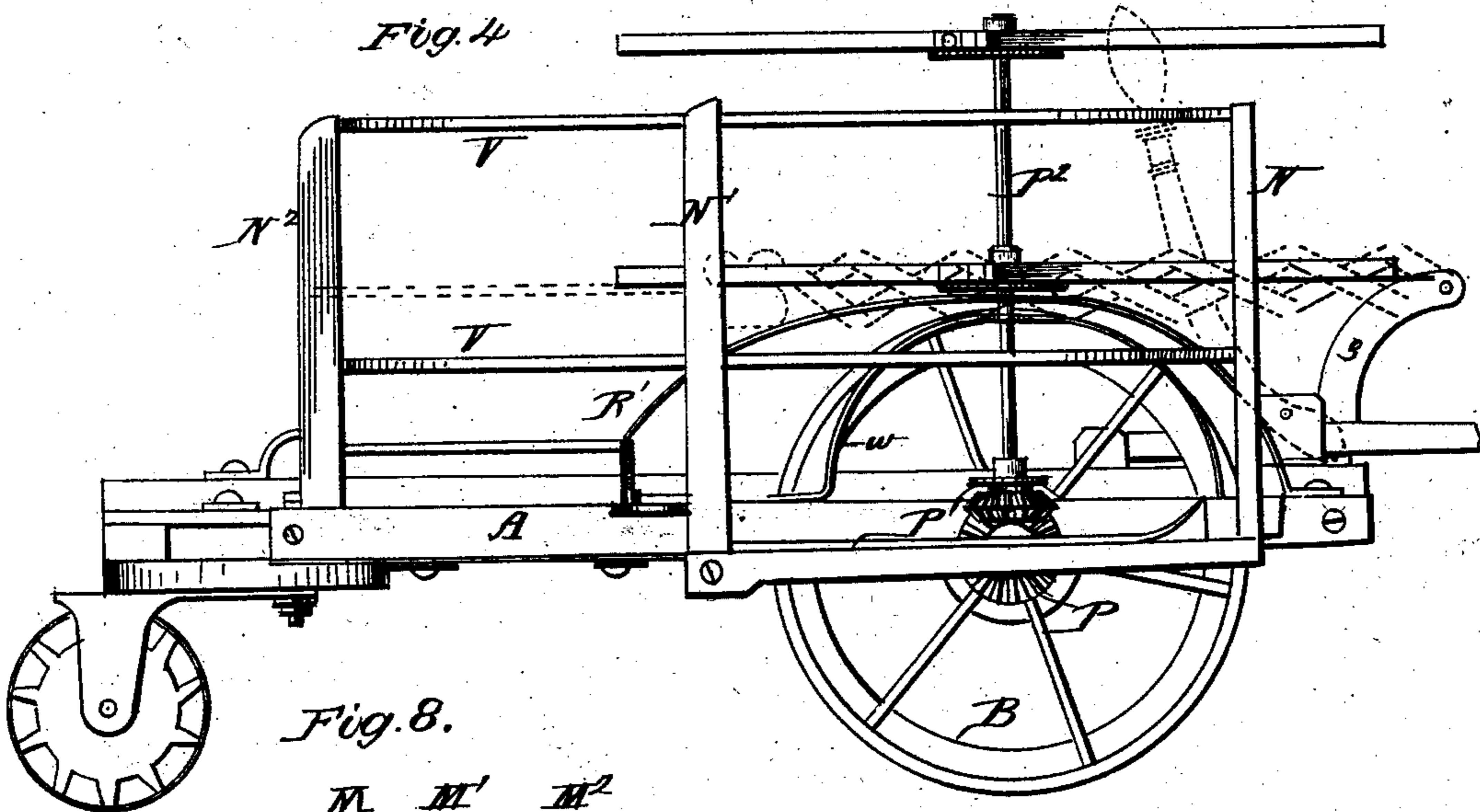
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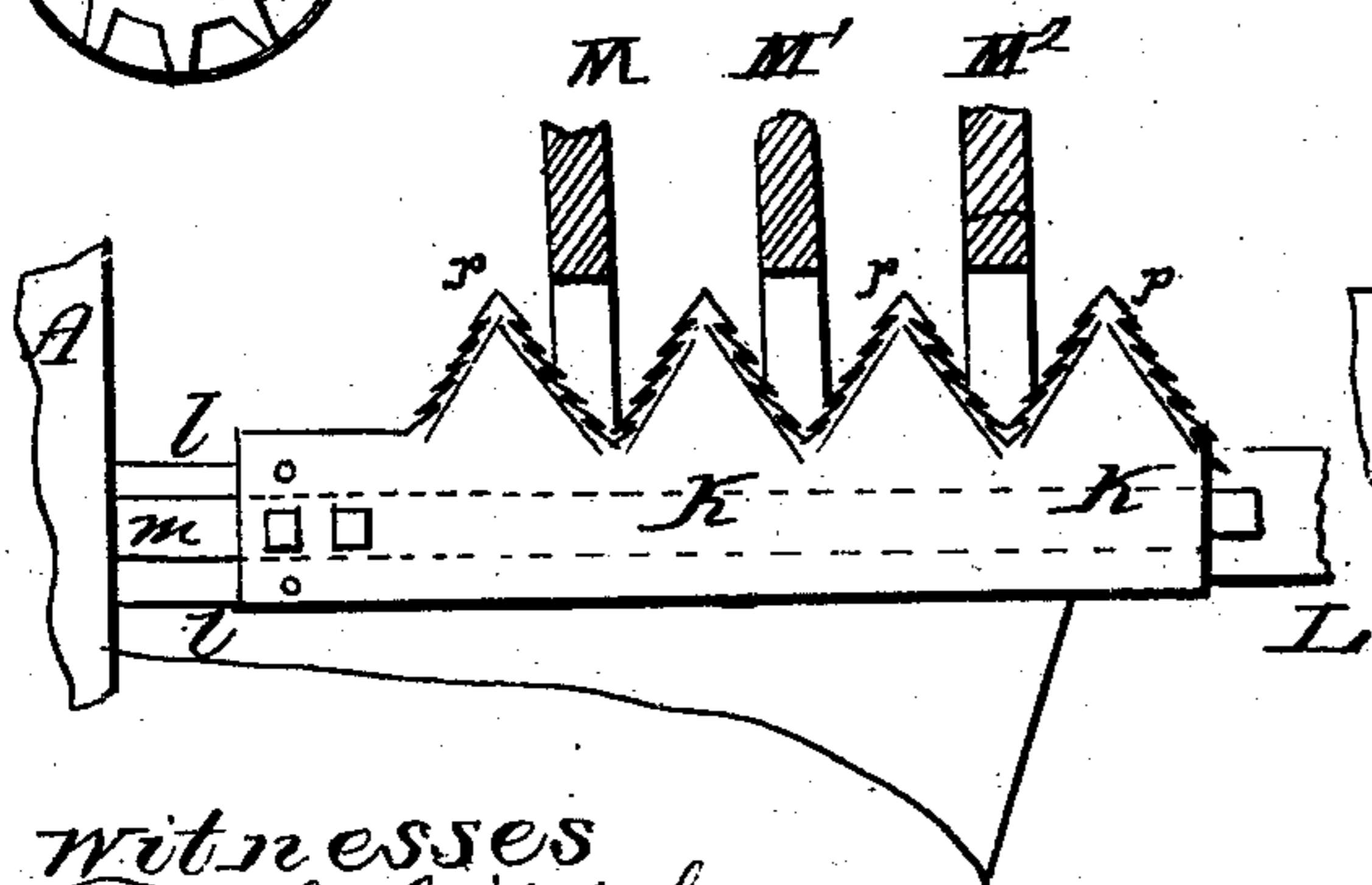
No. 224,500. *Fig. 3* Patented Feb. 10, 1880.



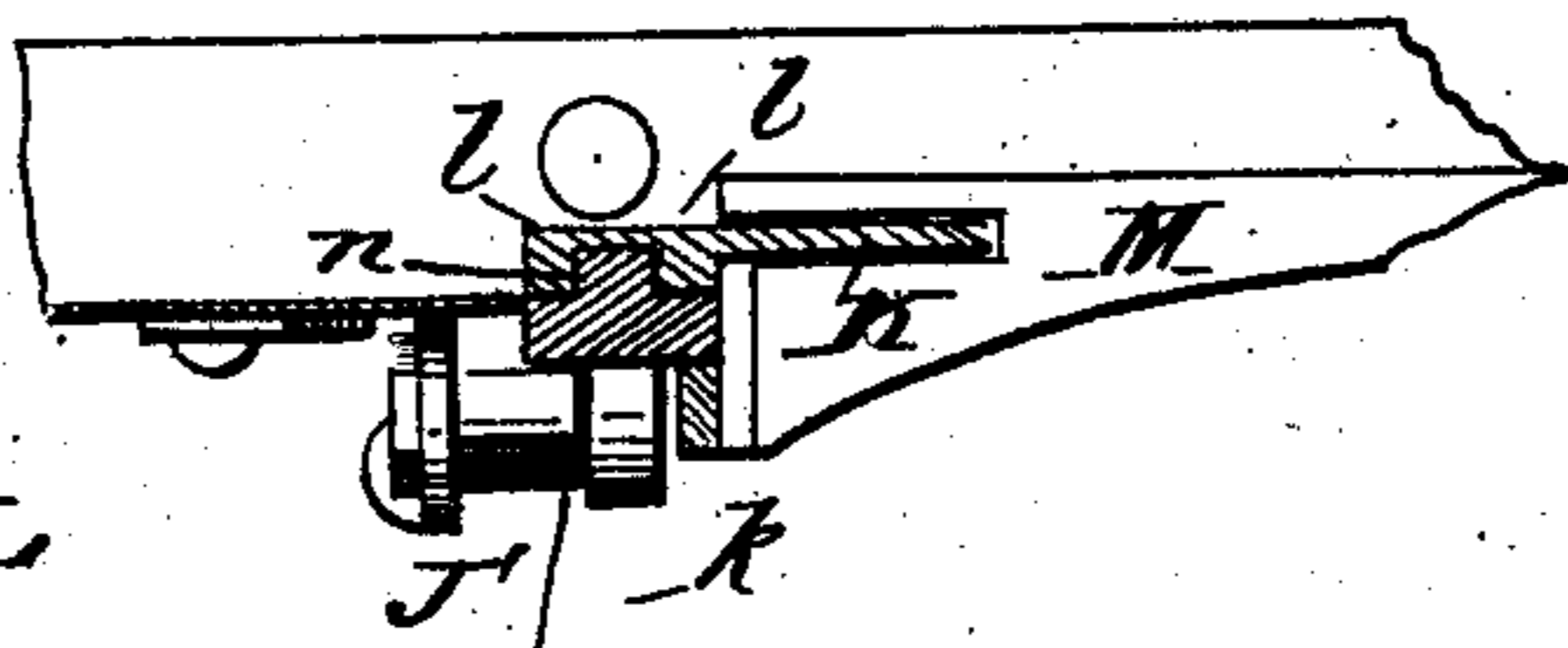
*Fig. 4*



*Fig. 7*



*Fig. 8*



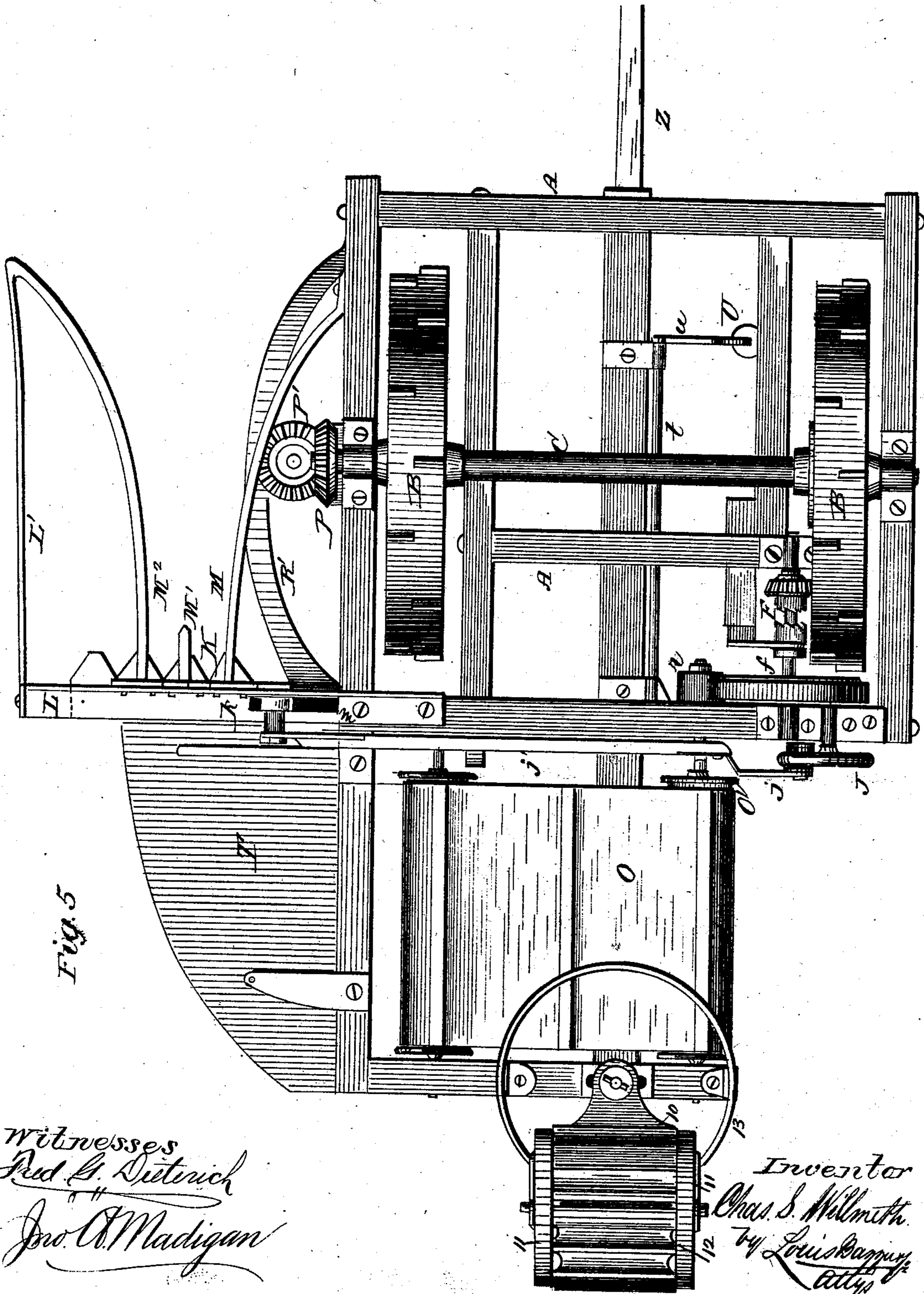
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Fig. 6.

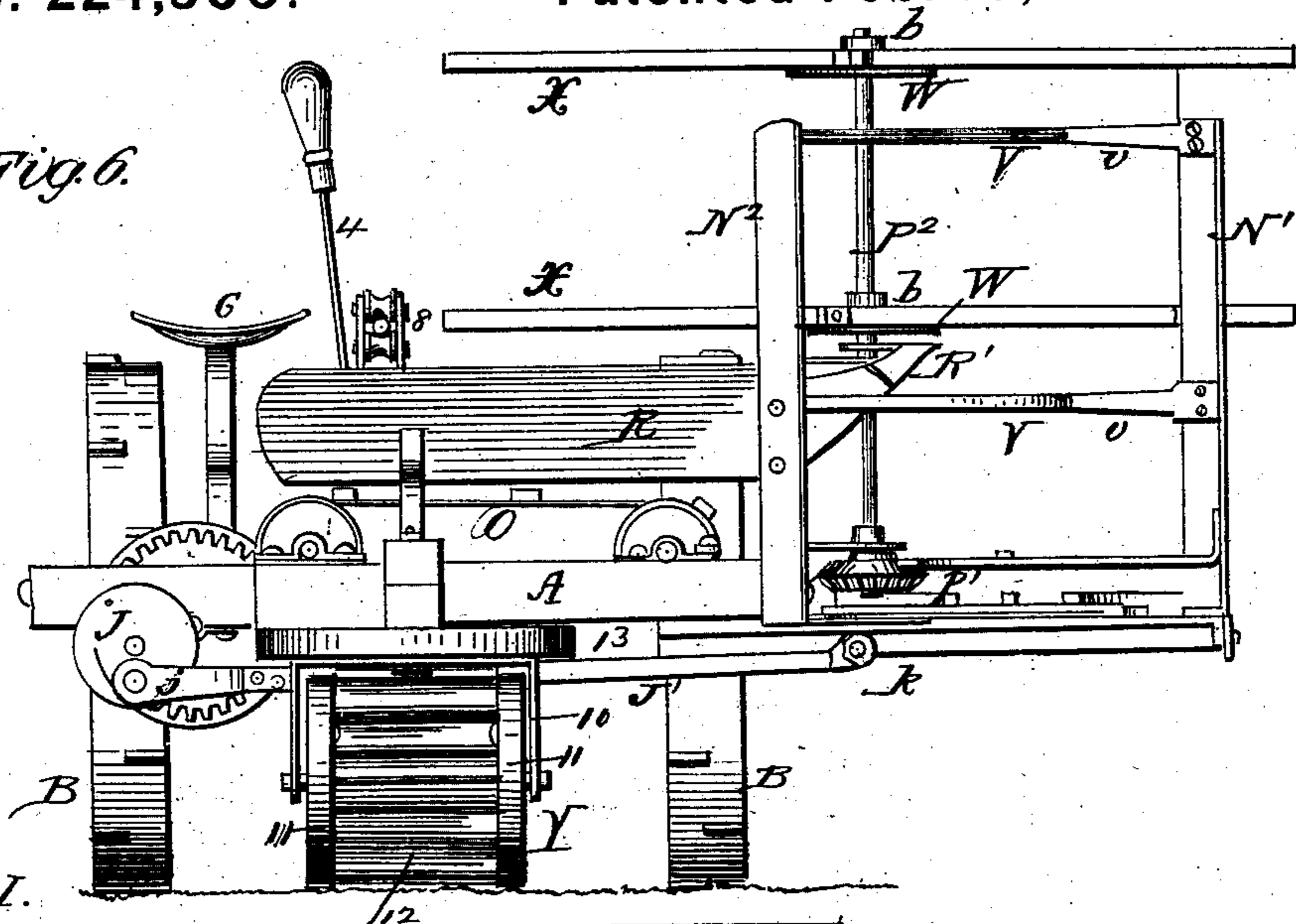


Fig. 11.

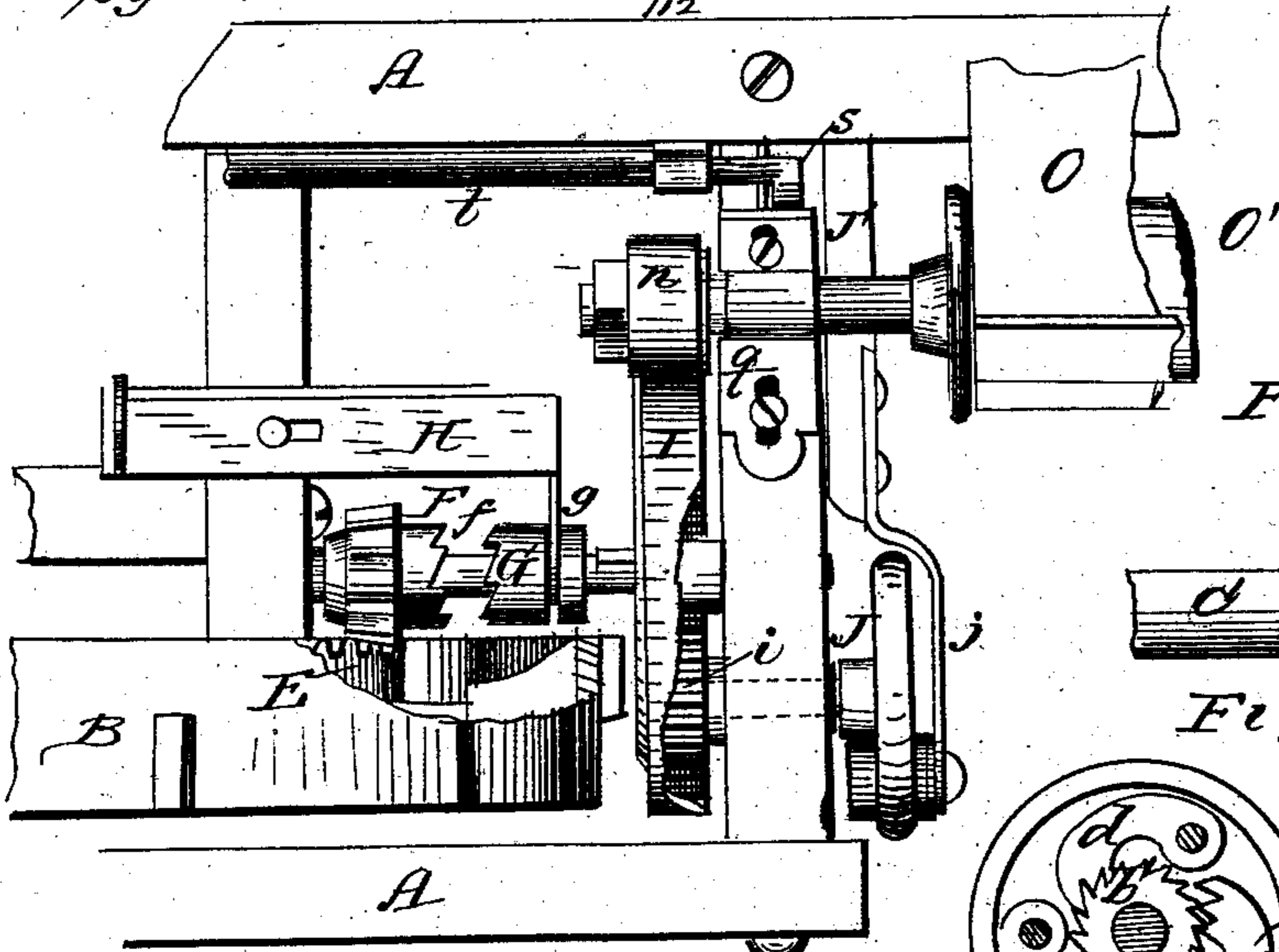


Fig. 9

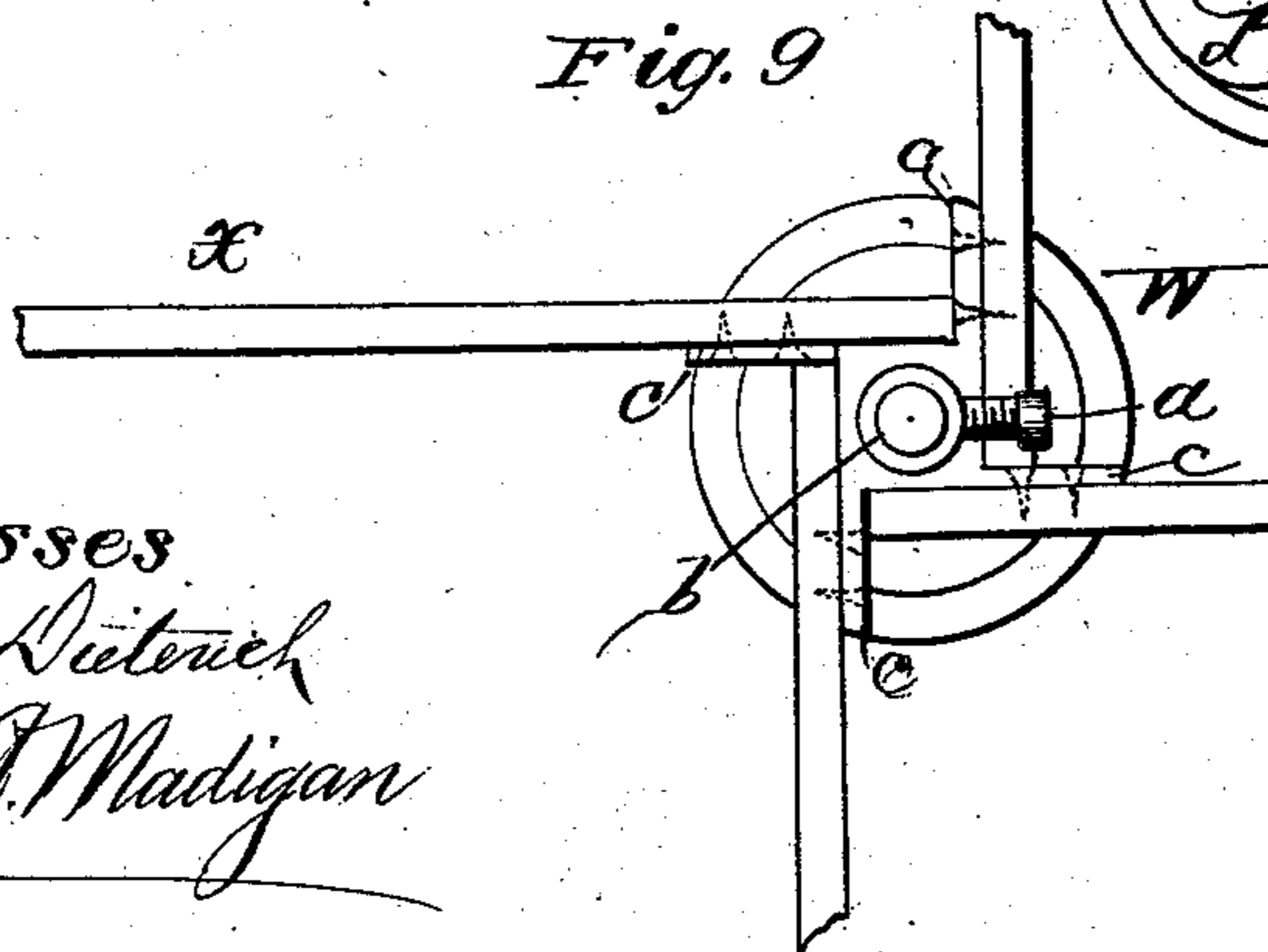


Fig. 10<sup>a</sup>

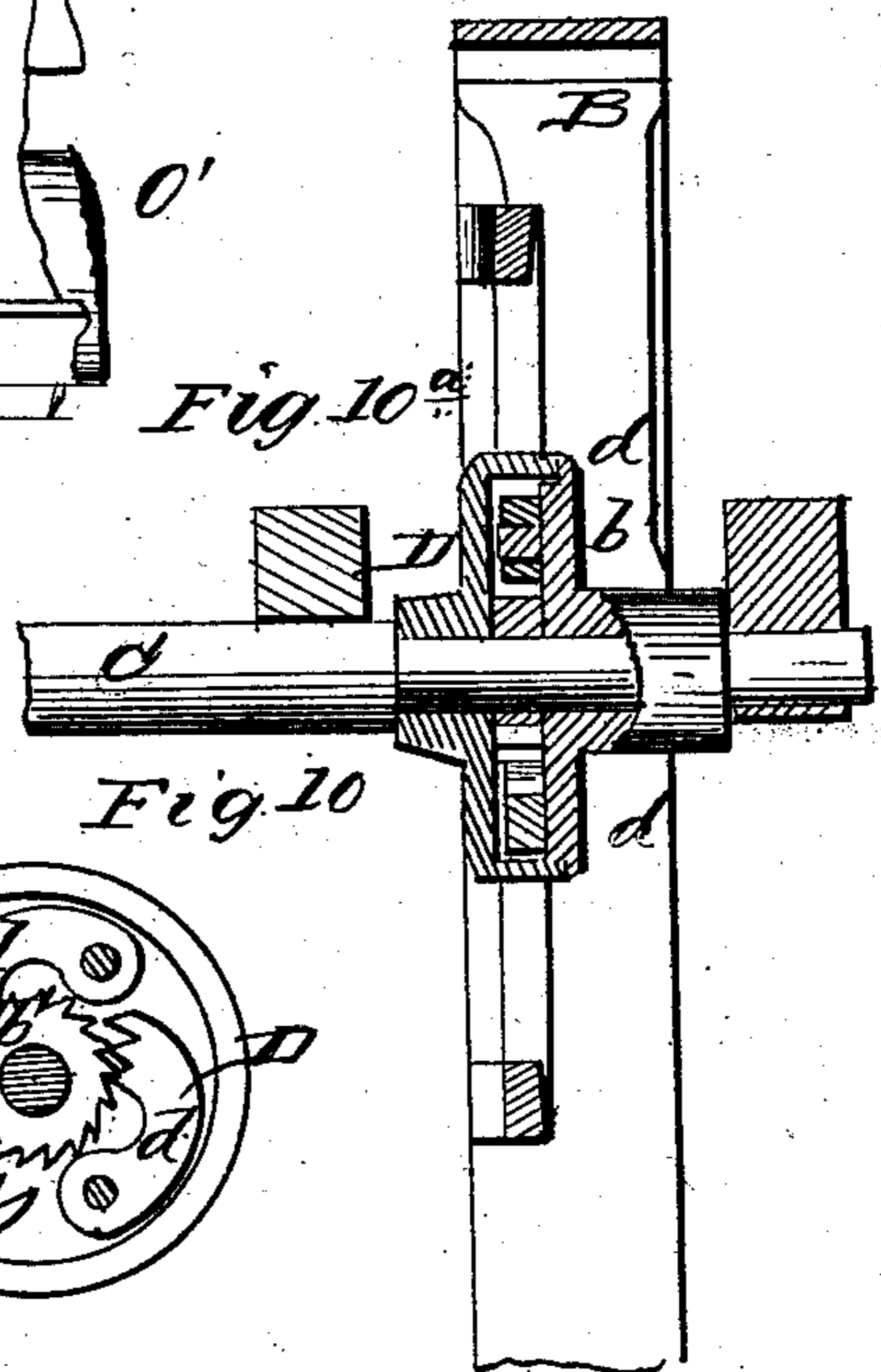
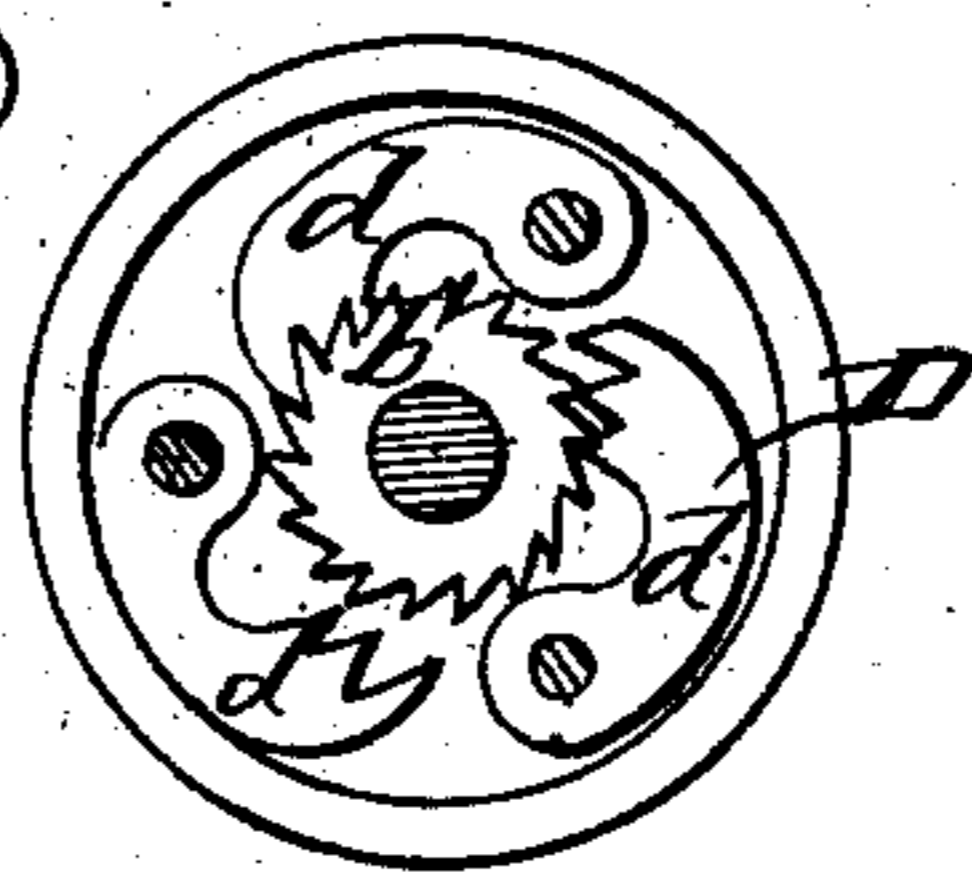


Fig. 10



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES S. WILLMETH, OF SULLIVAN, INDIANA, ASSIGNOR TO MICHAEL W. EVANS AND OLIVER J. DUDLEY, OF SAME PLACE, ONE-FOURTH TO EACH.

## CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 224,500, dated February 10, 1880.

Application filed December 8, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES S. WILLMETH, of Sullivan, in the county of Sullivan and State of Indiana, have invented certain new and useful Improvements in Corn-Harvesters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view. Fig. 2 is a plan or top view. Fig. 3 is a side elevation. Fig. 4 is a similar view of the opposite side. Fig. 5 is a bottom plan. Fig. 6 is a rear elevation. Fig. 7 is a transverse section of the sickle-bar with its carrier and central finger-guard. Fig. 8 is a detail view of a portion of the sickle, showing the construction of the serrated knives. Fig. 9 is a detail view of one of the circular flanged reel-arm supports. Figs. 10 and 10<sup>a</sup> are sections of one of the wheel-hubs, taken at right angles to each other, showing the construction and arrangement of the pawls; and Fig. 11 is a detail view of the clutch mechanism for operating the reciprocating sickle.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to corn-harvesters; and it consists in the improvements herein-after fully described, and particularly pointed out in the claims.

In the five sheets of drawings hereto annexed, A represents the frame of the machine, which is made, preferably, of beams of hard wood framed together with half-tenons and fastened with lag-bolts, so as to form a solid and substantial frame. B B are two iron traction or drive wheels running loosely on a wrought-iron shaft or axle, C. Each of the drive-wheels B has a concentric ratchet-wheel, *b'*, (see Fig. 10,) cast on the inside of the hub, facing a circular cast-iron box, D, which is keyed upon shaft C, one at each end, and provided on its inner side, facing the hub, with a series of pivoted pawls, *d*, or ratchet-fingers, which engage with the ratchet-wheel *b'* on the

forward motion of the wheel or advance motion of the machine, for the purpose of allowing each of the wheels B to work or rotate independently of the other in turning corners or turning around with the machine, both the wheels clutching shaft C only when the machine is advancing in a straight line.

E is a cast-iron bevel-wheel, which is bolted concentrically upon the arms of the left traction-wheel B, and meshes with a clutch-pinion, F, running loosely on a wrought-iron shaft, *f*, at right angles to the main shaft C. On the same shaft *f* is a match-clutch, G, the central bore of which, surrounding shaft *f*, has a longitudinal groove, which rides upon a feather or rib upon the shaft. Clutch G is moved forward and backward upon its shaft by means of a bifurcated arm, *g*, fitting into an annular groove upon the clutch-sleeve and operated by a sliding plate, H, provided with means for its adjustment upon the frame of the machine, so that by sliding plate H forward or backward (which the driver is enabled to do with his foot) the machinery for running the sickle may be unshipped in traveling over roads to or from the field.

On the end of shaft *f* is keyed an internal spur-wheel, I, which meshes with a pinion, *i*, secured upon the inner end of a short shaft, upon the outer end of which is keyed a disk, J, provided with a wrist-pin that connects with an iron strap-joint, *j*, the other end of which is screwed or bolted upon the pitman J'. This pitman extends transversely across the under side of the rear end of the machine, and is coupled at its outer end to the sickle-driver *k*, which is riveted to the sickle-plate guides *l* and sickle plates or knives K, the driver *k* working in a slot, *m*, in the finger-bar L, which said bar has a longitudinal raised flange or rib, *n*, (see Fig. 7,) projecting up into the longitudinal groove or recess formed between the guides *l l* and sickle-plates K, which are riveted upon and connect the parallel guide-bars *l l*. By this construction and arrangement of the sickle, which is composed of a series of the plates K riveted upon the connecting parallel guide-bars *l l*, or made in one piece therewith, and impinging edgewise upon each other, the

top of the sickle is left clear of any obstruction, as will be seen more clearly by reference to the top view, Fig. 2.

M M' M<sup>2</sup> are the sickle-guards or finger-guards, the rear end of each of which is bolted upon the front side of the finger-bar L, and slotted to receive the plates K. Each of these plates consists of a square or rectangular part or base and a projecting triangular plate or point, the edges of which are serrated, so as to form a series of sharp diamond-shaped points, *p p*, like saw-teeth, (see Fig. 8,) pointing backward from the point of the sickle-plate toward its base, the object of which teeth is to enable the knives K to penetrate through the hard and glossy surface or enamel of the corn-stalks during the process of cutting. If the sickle plates or knives K were made with smooth sharp edges, they would not only pass by the stalks without severing them, but the edge would soon be dulled by contact with the hard surface of the stalks, so that the machine would be practically inoperative.

N N' N<sup>2</sup> are three angular guide-posts made of strap-iron, the first one being bolted vertically upon the projecting outer end of the curved sickle-guide M<sup>2</sup>. The middle one, N', is bolted in like manner upon the outer end of the sickle bar or arm L, (which is connected to the end of guide M<sup>2</sup> by a brace, L',) and the third post, N<sup>2</sup>, is bolted on the rear end of the wooden frame A. Posts N N' N<sup>2</sup> are connected by two parallel curved guide-rails, V V, made of half-round strap-iron, and connected to their middle support or post, N', by straps *v v*. The forward end of these guide-rails, between posts N' N, operating in conjunction with the curved sickle-guide M, will, as the machine advances over the ground, guide the stalks in against the reciprocating sickle on both sides of the middle finger, M', where they are severed by the serrated sickle blades or knives K K in the manner described.

O is a canvas apron, which is suspended between and operated by two fluted wooden rollers, each of which has a cast-iron flanged gudgeon at each end journaled in boxes suitably arranged upon the frame of the machine. One of the rollers (denoted by the letter O') is journaled at its inner end in a sliding box, *q*, and provided at the end of its gudgeon-shaft with a friction-pulley, *r*, which is moved against the smooth outer face or periphery of the inside gear-wheel, I, by means of a cam, *s*, that bears against an upright shoulder or flange on the inner end of the sliding box *q*. This cam *s* is secured upon the rear end of a rock-shaft, *t*, the forward end of which has an arm, *u*, and treadle U within convenient reach of the driver's foot, so that when treadle U is depressed cam *s* at the other end of the rod or shaft *t* will shove the sliding box *q* to one side, bringing the friction-pulley *r* in contact with wheel I, which rotates the roller O' and operates its apron O, so that it will, every time pressure is brought to bear upon the

treadle U, dump the bunch of corn-stalks placed upon it at the time.

P is a bevel-pinion, which is keyed upon one end of the main shaft C, and meshes with a bevel-pinion, P', keyed upon the lower end of the vertical reel-shaft P<sup>2</sup>. This shaft is supported in a vertical position by an iron arm, *w*, bolted upon the frame, and also by the curved strap-iron guard R', which connects the front part of the machine, on one side, to the apron-guard or shield R, back of the main frame.

The reel-shaft P<sup>2</sup> is provided with two circular plates, W W, each of which has a central sleeve, *b*, and a set-screw, *a*, by means of which it may be adjusted at any desired elevation upon shaft P<sup>2</sup>. The circular disks or plates W are provided with flanges *c c*, intersecting each other at right angles, upon which the reel arms or wings X X are secured by screws, bolts, or in any other suitable manner, so as to rest upon the circular outer rim of the supporting plate or disk W, as will appear more clearly by reference to Fig. 9 of the drawings. Each of the reel-arms X is of such a length that it will, during the revolutions of shaft P<sup>2</sup>, extend through and beyond the open space between the guide-rails V V, as shown in the top view, Fig. 2, so as to conduct the growing stalks in batches into the space between the guides M M<sup>2</sup> and against the sickle.

After the corn-stalks have been cut they pass with their butt-end over the flat sickle, until they strike against the tripping-arm Q, by which they are tripped and hurled forward upon the apron O, which is bordered on two sides by the guards or fenders R R<sup>2</sup>.

S is the cut-off or gavel-divider, which consists of a rod, one end of which is inserted through two perforated lugs, 1 2, projecting laterally from the last two sections of a set of lazy-tongs, S', and secured adjustably, by a set-screw or similar fastening device, in the forward lug, 1. The other end of the lazy-tongs is pivoted in the end of an arm or upright, 3, which is bolted upon the frame of the machine, and the tongs are operated by means of a lever, 4, having a pivoted connecting rod or link, 5, the upper end or handle of lever 4 being within convenient reach of the driver's seat, (shown at 6.) The rear end of the cut-off rod S is inserted between guide-rollers 7 7, journaled in a frame, 8, which is supported upon a standard or upright, 9, bolted upon the frame of the machine.

The operation of this cut-off device or gavel-divider is as follows: After the corn-stalks have been cut by the sickle in the manner described, they are tripped by the arm Q and tossed upon the apron O, where they are allowed to accumulate in a bunch or gavel until from one to twenty hills, or more, have been cut and collected upon the apron, which remains stationary. The driver then takes hold of the handle of lever 4, and, pulling it toward him, extends rod S transversely across

the rear end of the apron, across and above the side guards or fenders, R R<sup>2</sup>, as indicated in Fig. 1. The tops of the stalks next cut and collected will fall upon rod S, their butt-ends resting upon the platform or table T, and by the driver now pressing his foot against treadle U the apron will be set in motion and dump the bunch or gavel of corn-stalks collected upon it. Pressure upon the treadle is then again taken off, lever 4 is pushed back, which withdraws the cut-off from across the apron, allowing the corn supported thereon to fall down upon the apron, after which it is again pushed back into its cut-off position, the bunch upon the apron is again dropped, and so on. By repeating the operation at certain intervals the corn-stalks are deposited upon the ground in convenient and equidistant shock-rows.

On the under side of the rear end of the frame is pivoted a frame, 10, within which is journaled the combined caster and stubble-cutter Y. This consists of two circular heads, 11 11, bound with strap-iron to form tires, and provided with radial flanges upon their inner faces, which form means of attachment for the knives or cutters 12. The frame of the machine is provided with a circular band or fifth-wheel, 13, bearing against the upper side of frame 10, which is pivoted in the center of the said circular band, so as to form an even support for the stubble-cutter without regard to its position or the line of draft of the machine.

Z is the tongue of the machine, which is drawn by two horses straddling the stubble-rows.

When operated by two horses and a driver

this machine is capable of cutting and bunching nine or ten acres of corn per day.

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

1. The combination, in a corn-harvester, of a vertical chute or leader constructed of curved horizontal guide-rails supported parallel to each other upon vertical standards, a vertical reel set to one side of said chute and provided with horizontal radiating arms or wings adapted to pass through the open space or spaces between the chute-rails, so as to traverse the entrance to the vertical chute or leader; a horizontally-reciprocating sickle traversing the inner end of the chute, mechanism for operating the reel and the sickle, and a tripping-arm set back of the sickle and adapted to tilt the severed corn-stalks obliquely across the harvester-platform upon an apron set back and to one side of the chute and sickle, substantially as and for the purpose herein shown and described.

2. The cut-off device consisting of the rod S, frame 8, containing the grooved rollers 7 7, and supported upon standard 9, lazy-tongs S', constructed with the perforated lugs 1 2, arm 5, and lever 4, all constructed and combined to operate substantially in the manner and for the purpose herein shown and set forth.

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

CHARLES S. WILLMETH.

Witnesses:

EZEKIEL RILEY,  
PRESTON A. GRIFFITH.