

(No Model.)

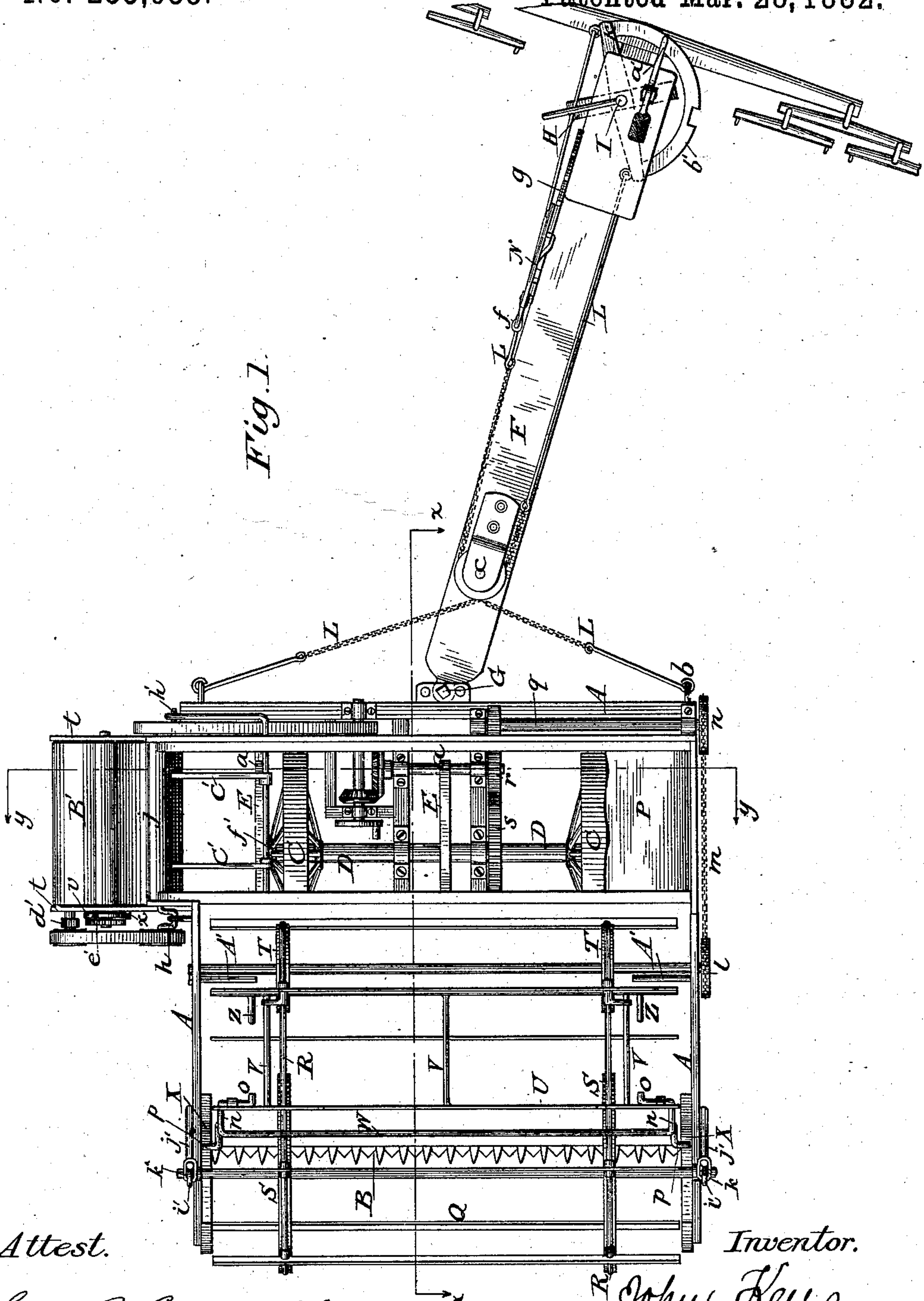
3 Sheets—Sheet 1.

J. KEYS.

HARVESTING MACHINE.

No. 255,635.

Patented Mar. 28, 1882.



Attest.

Sidney C. Hollingsworth
Newton Wyckoff.

Inventor.

John Keys.
By his atty.
Philip T. Dodge

(No Model.)

3 Sheets—Sheet 2.

J. KEYS.

HARVESTING MACHINE.

No. 255,635.

Patented Mar. 28, 1882.

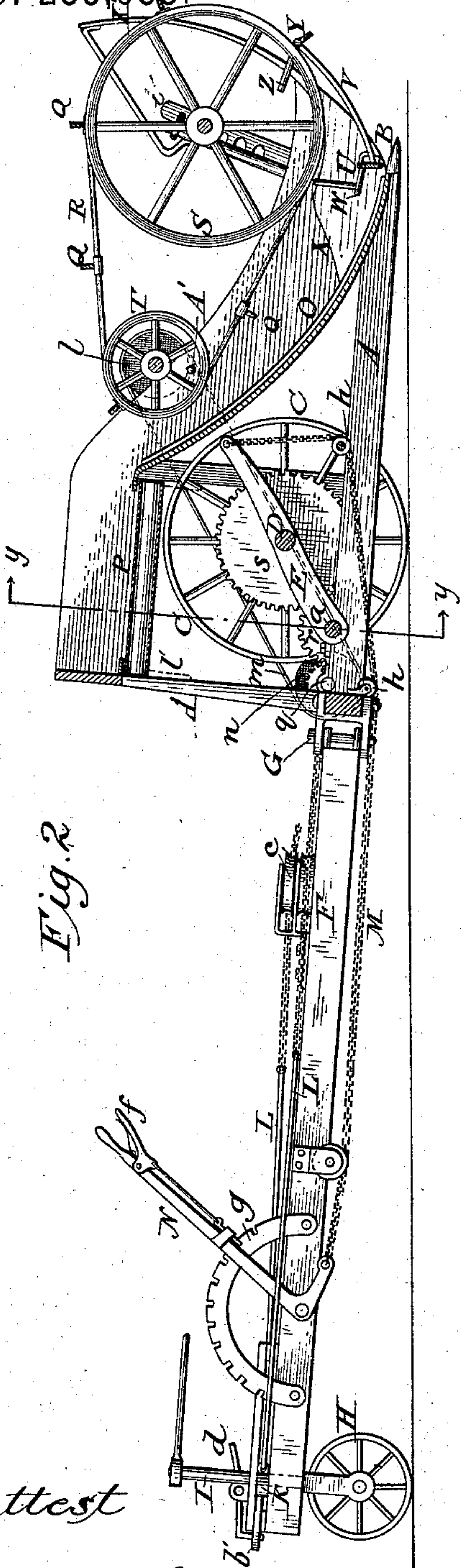


Fig. 2.

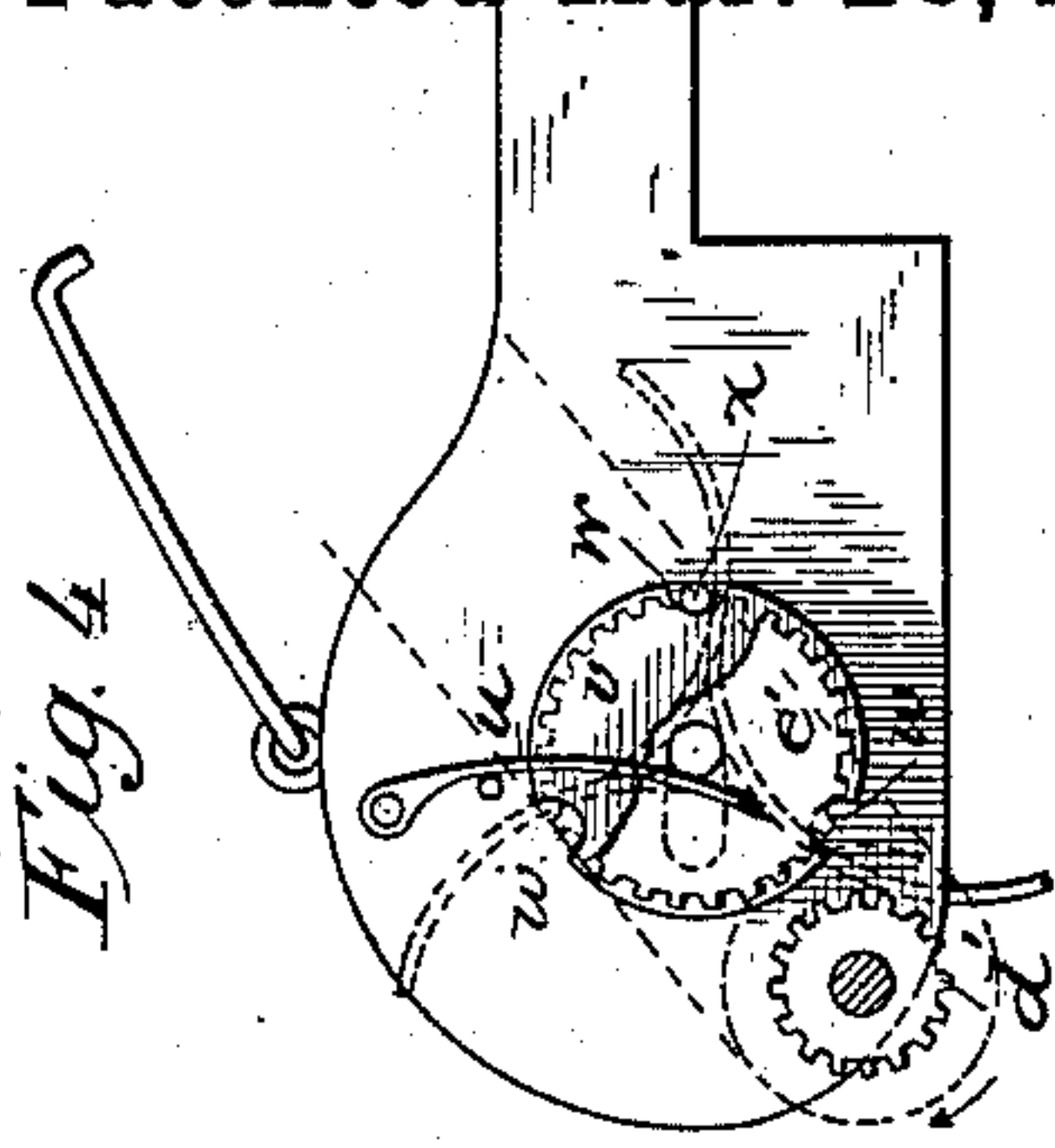


Fig. 4.

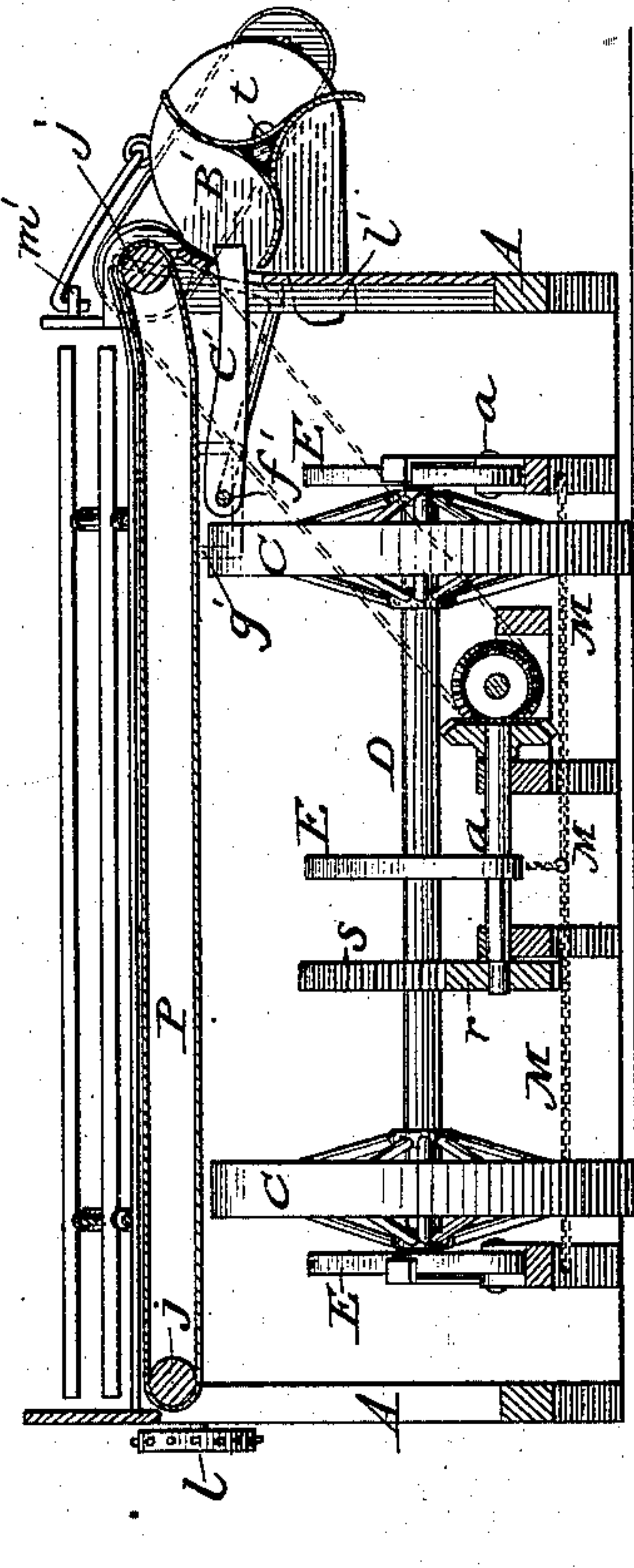


Fig. 3.

Attest
Sidney P. Hollingsworth
Newton Wyckoff.

Inventor.
John Keys.
By his Atty.
Philip T. Dodge.

(No Model.)

3 Sheets—Sheet 3

J. KEYS.

HARVESTING MACHINE.

No. 255,635.

Patented Mar. 28, 1882.

Fig. 5.

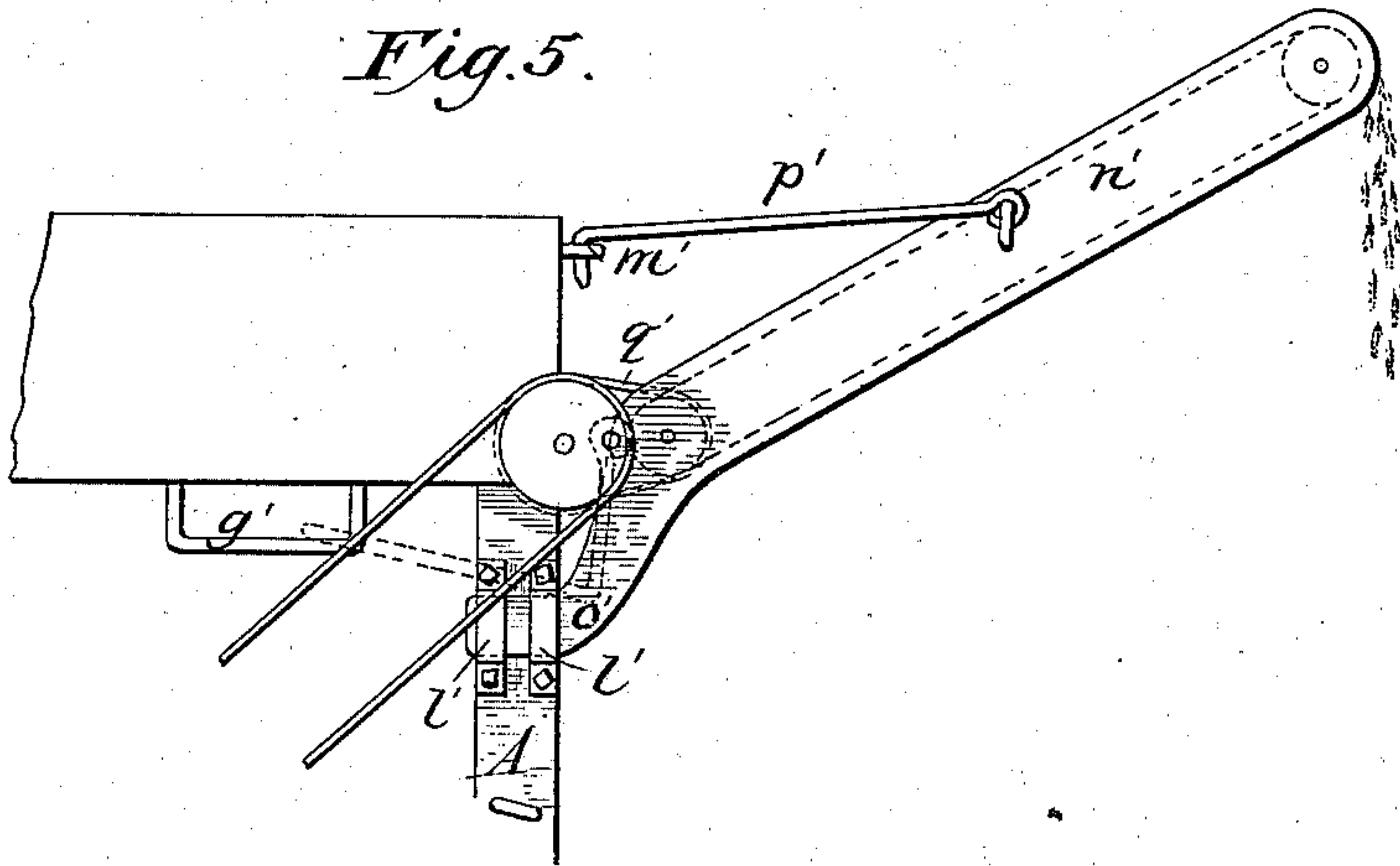
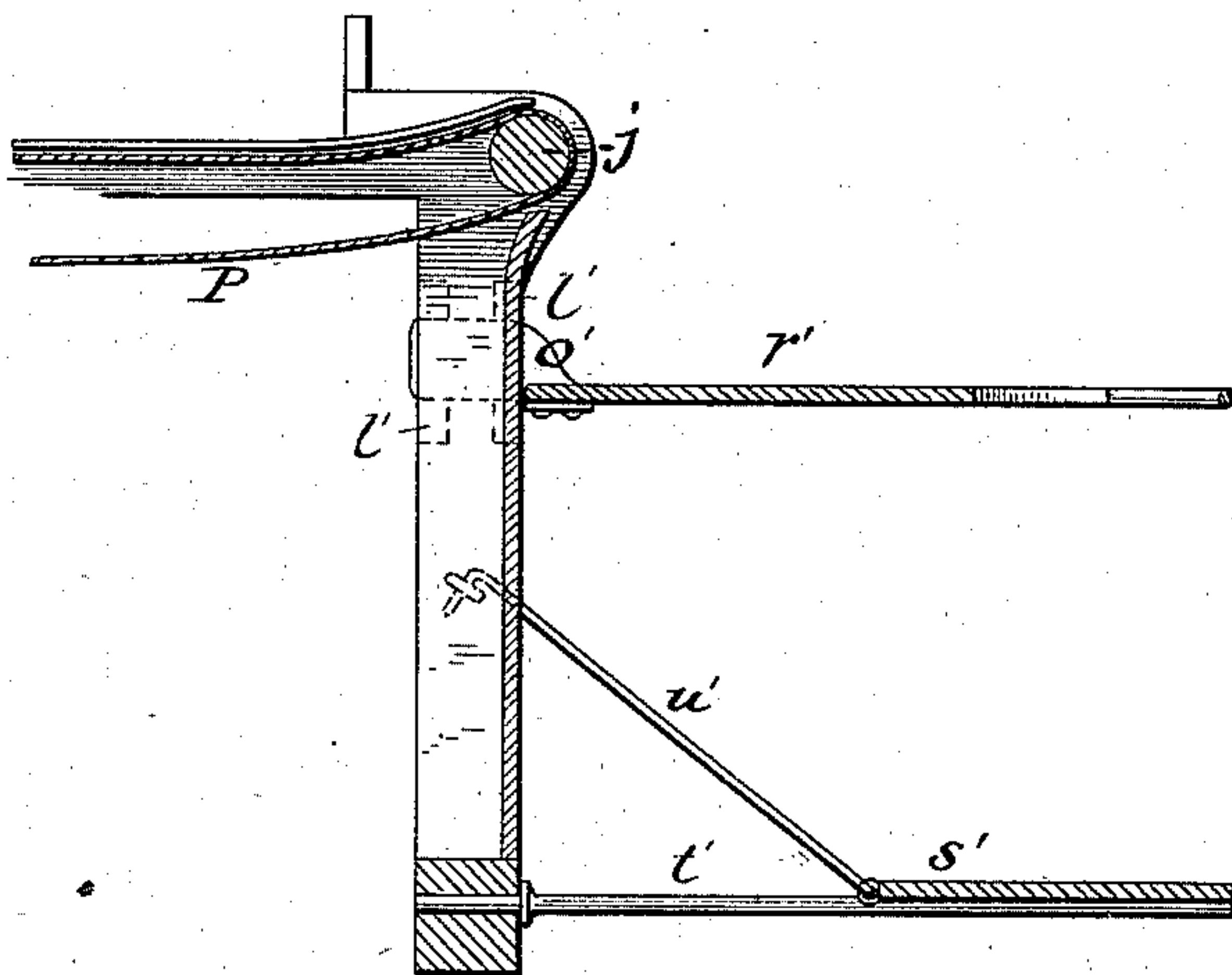


Fig. 6.



Attest

S. P. Hollingsworth
Newton Wyckoff

Inventor.

John Keys
By his atty
Philip S. Dodge

UNITED STATES PATENT OFFICE.

JOHN KEYS, OF BELOIT, KANSAS, ASSIGNOR OF ONE-HALF TO GEORGE W. PORT, OF SAME PLACE.

HARVESTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 255,635, dated March 28, 1882.

Application filed February 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN KEYS, of Beloit, in the county of Mitchell and State of Kansas, have invented certain Improvements in Harvesting-Machines, of which the following is a specification.

My invention relates to that class of harvesting-machines in which the body of the machine is carried in advance of the team by means of a rearwardly-extending tongue or draft-pole, which is jointed to the main frame, and to the rear end of which the team is connected.

The invention consists in improved means for guiding or turning the frame in relation to the draft-pole; in connecting said device with the swiveling wheel at the rear end of the pole, whereby the position of the swivel-wheel is changed at the same time that the position of the frame is changed in relation to the pole; also, in the arrangement of devices for securing the vertical adjustment of the main frame; also, in the novel construction of the automatic receiver and gaveling mechanism, and in the combination of the same with packing devices; also, in various details of minor importance, which will be hereinafter specified.

Referring to the accompanying drawings, Figure 1 represents a top plan view of my machine; Fig. 2, a longitudinal vertical section of the machine on the line *xx*, Fig. 1; Fig. 3, a transverse vertical section on the line *yy*; Fig. 4, an outside end view of the automatic gaveling mechanism, a portion of the gear-wheel being broken away to expose other parts to view. Fig. 5 is a view looking against the rear end of the main frame, showing in side elevation the conveying or delivering devices employed when the machine is used as a header; Fig. 6, a vertical section on the line *yy*, showing the conveyer and the devices employed when the machine is used as a hand-binder.

Referring to the drawings, A A represent a rigid rectangular main frame, provided at its front edge with cutting devices B, of any ordinary or approved style, the cutting devices and the mechanism for driving the same forming no part of my invention. The main frame

A is sustained upon two ground-wheels, C, located therein near the rear end, these wheels being connected with the frame in such manner as to permit its vertical adjustment, as hereinafter described in detail.

For the purpose of propelling and guiding the main frame and retaining the same in its horizontal position I secure to its rear end by means of a vertical hinge-pin, G, a backwardly-extending tongue or draft-bar, F, the rear end of which is supported by a steering-wheel, H, and carried in a swiveling post, I, which latter is extended upward through the draft-pole and provided with a handle or steering device on the upper end, so as to be operated by the attendant riding on the rear end of the pole, as usual. The steering motion is effected by swinging the arm horizontally and changing its angle with relation to the draft-pole, the steering-wheel being at the same time turned at a suitable angle to cause the tongue to swing laterally. The swinging or steering movement of the frame is secured by means of chains L, which are attached to the two rear corners of the main frame and passed thence on opposite sides of pulleys *c*, secured upon the draft pole or tongue, and carried thence backward to opposite ends of a horizontal bar, K, which is secured rigidly to the swiveled post I of the supporting-wheel, as represented in Figs. 1 and 2. It will be seen that under the above-described arrangement the turning of the post or changing the angle of the steering-wheel at the same time operates the bar K and chains L, causing the latter to swing or turn the main frame horizontally, changing its angle to the draft-pole and causing the machine to move to the right or left, as may be required. This connection of the swiveling wheel with the devices by which the angle between the tongue and main frame is changed is a feature of importance, inasmuch as it gives the operator perfect control over the movement of the machine and permits the latter to be turned quickly and in a very contracted space.

While it is preferred to retain the arrangement of parts represented in the drawings, it is obvious that the connections between the

swiveling wheel, the tongue, and the main frame may be modified, provided the parts are connected so that the swiveling motion of the wheel changes in a positive manner the angle between the main frame and tongue.

For the purpose of locking the tongue and the steering-wheel in a position in line with the movement of the machine, which is their normal position, a foot-lever, *a'*, is mounted upon the rear end of the tongue or draft-pole and arranged to engage with a notched plate, *b'*, connected with the swiveling-wheel post. The connections *L* between the steering device and main frame may consist, as shown in the drawings, of chains or ropes extending the entire distance, or may consist of rods having chains connected therewith at the points of flexure, where they pass around the pulleys *c*.

The manner in which the main frame is made adjustable vertically upon the main wheels *C* is clearly represented in Figs. 1, 2, and 3, the wheels *C* being mounted upon a horizontal shaft, *D*, which is supported in two or more pivoted levers, *E*, hinged or pivoted at their rear ends, as shown at *a*. The forward ends of the levers are attached to the ends of a chain, *M*, which extends thence downward and backward under guiding-pulleys *h* to a hand-lever, *N*, mounted upon the rear end of a tongue or draft pole, as plainly represented in Figs. 1 and 2, so that when the lever is moved forward the chains are caused to draw downward upon the forward ends of the wheel carrying levers and raise the main frame.

It will be observed on reference to the drawings that the chain *M* has its forward end forked or branched for connection with the respective levers, and also that one of the guiding-pulleys *h* of the chain is located immediately adjacent to the joint *G* of the pole or tongue, so that the horizontal motion of the main frame has no appreciable effect upon the action of the lifting-chains.

For the purpose of securing the frame at different heights the hand-lever *N* is provided with a locking-dog, *f*, arranged to engage in a notched bar or rack-plate, *g*, secured to the draft pole or tongue. Any other suitable locking devices may, however, be employed as a substitute for those shown. It will be observed that the jointed connection *G* between the main frame and draft-pole prevents said parts from moving vertically in relation to each other, whereby the draft-pole is caused to maintain the main frame in its proper horizontal, or substantially horizontal, position.

It will also be observed that, inasmuch as the draft-pole is sustained at its rear end a considerable distance behind the main frame, the angle or inclination of the main frame is not materially changed by its vertical adjustment, the frame retaining substantially a horizontal position under all of its adjustments.

Passing next to the automatic mechanism for gaveling the grain or dividing the same into bundles of uniform size, attention is di-

rected to Figs. 1, 3, and 4. Outside of the main frame, immediately beneath the outer end of the transverse conveyer-belt *P*, I mount a revolving receiver, *B'*, having three or more pockets or receptacles disposed around the central shaft in such manner that as the receiver is revolved the various receptacles will be brought into position to receive the grain successively from the conveyer. The receiver has one or both ends of its horizontal supporting-shaft mounted in horizontally-slotted supporting plates or arms *t*. A spring, *u*, arranged to bear against the end of the shaft, as shown in Fig. 4, urges the receiver inward toward the conveyer, but permits the same to be crowded outward as the amount of grain in the receiver reaches the desired limit. On the movable end of the receiver-shaft I mount a disk, *v*, provided in its periphery with three notches, *w*, arranged to engage successively with a stationary stud, *x*, secured on the outside of the frame, the stud serving to prevent the rotation of the receiver. During the time that the receiver is being filled the stud remains engaged in one of the notches and the receiver is held rigidly in position. When, however, the accumulation of grain causes the receiver to be forced outward the disk *v* is carried outward and disengaged from the locking-stud, so that it is permitted to make a third of a revolution and discharge the accumulated grain. During this rotation of the receiver the stud *x* bears against the smooth periphery of the disk; but as soon as the receiver has completed a third of a revolution the stud engages in the next notch of the disk and retains the receiver with its next compartment in position to receive the grain.

For the purpose of imparting a positive rotation to the receiver to effect the discharge of the grain I mount on the outside of the frame, as shown in Fig. 4, a continuously-revolving gear-wheel, *d'*, and on the end of the movable receiver-shaft I mount a gear-wheel, *e'*, in such manner that when the receiver is forced outward by the pressure of grain and unlocked the pinions *d'* and *e'* are thrown into gear, and a positive rotation thereby imparted to the receiver. The notched disk *v*, bearing against the stud *x*, serves, in addition to its locking action before described, to retain the two pinions in gear with each other during the proper length of time to effect the discharge of the grain, the stud preventing the pinion *e'* from moving back until the disk has turned a sufficient distance to bring another of its notches opposite the stud. A constant motion may be communicated to the pinion *d'* by means of a pulley and a belt extending thence to a pulley on the end of one of the conveyer-rolls, as shown in Fig. 3, or it may be otherwise driven, as preferred.

For the purpose of packing or pressing the grain into the receiver any suitable packing device known in the art may be employed; but I prefer to make use of the reciprocating pack-

er clearly represented in Figs. 1 and 3. This packer consists of two horizontal reciprocating arms, *C'*, arranged to project at their outer ends through openings on the outer side of the frame immediately over the receiver, as shown in Fig. 3. The packer-arms *C'* have their inner ends attached to and carried by a transverse shaft, *f'*, supported in horizontal slotted guides *g'*, and having its ends bent forward at right angles and mounted upon cranks *h'*, mounted upon and connected with one of the rolls by which the conveyer-belt is carried. The rotation of the cranks causes the shaft to be moved to and fro in the slotted guides, and causes it to impart the required reciprocating motion to the packer-arms. The grain discharged by the conveyer into the receiver falls in front of the packer-arms as the latter are withdrawn, and is compressed by the forward movement of the arms, which reciprocate rapidly. While it is preferred to operate the arms in the manner described, it is obvious that the reciprocating motion may be imparted to them by suitable mechanism from any other moving part of the machine.

In order to adapt my machine for use either as a harvester or as a header, as circumstances may require, I make the reel adjustable vertically to such an extent that it may be set to act upon the heads of the grain when the cutter is adjusted near the ground as well as when adjusted to cut near the heads of the grain. The manner in which the reel is thus supported is clearly represented in Figs. 1, 2, and 9. The ends of the reel-shaft are mounted in notched bars *i'*, pivoted at their lower ends to the sides of the main frame, each bar being provided with a series of notches, into any one of which the shaft may be inserted at will. Adjacent to the swinging arms *i'*, I secure rigid upright arms *j'* to the sides of the harvester-frame, as shown in Fig. 9, in such position that upon swinging the arms *i'* upward against the arms *j'* the reel-shaft will be prevented from escaping from its notch or bearing. A swinging link, *k'*, attached to the upper end of the arm *i'*, forms a convenient means of locking the two arms together.

When it is desired to change the height of the reel it is only necessary to release the links *k'*, when the reel-supporting arms *i'* will fall backward, leaving the bearings exposed, so that the reel may be readily moved from one to another.

In order that the machine may be adapted for use under different circumstances—either as an automatic gaveler, or as a header, or as a hand-binder—I provide an endless elevator and a hand-binder table, either of which may be substituted at will in place of the automatic gaveling device before described. In order to permit the ready attachment of these parts, the main frame is provided, as shown in Figs. 3, 7, and 8, and in dotted lines in Fig. 2, with sockets *l'*, into which the supporting-arms of the gaveling attachment are inserted, and I also

provide the frame, near the top, with eyes *m'*, into which hooked arms upon the gaveling attachment may be engaged, as shown in Fig. 3. This mode of attachment permits the gaveling device to be unhooked and removed at will.

When the machine is to be employed as a header it is desirable that the heads of the grain shall be delivered at a distance from the side of the machine, in order that they may be delivered into the body of a wagon, which will accompany the machine in the field, as usual. For the purpose of thus delivering the heads I employ an endless elevator, *n'*, as represented in Fig. 7. This elevator consists of a frame carrying an endless apron mounted upon two rolls in its end, the frame being provided with an arm, *o'*, to enter the sockets *l'* on the main frame, and with hooked arms *p'* to engage with the eyes *m'*, the mode of attaching and supporting this conveyer being the same as that described in connection with the automatic gaveler. The lower end of the conveyer-apron *n'* stands in such relation to the transverse conveyer *P* as to receive the heads of grain therefrom, the heads being carried upward on the conveyer *n'* and delivered over its outer end.

Motion may be transmitted to the conveyer-belt *n'* in any suitable manner; but it is preferred to provide one of its carrying-rolls with a pulley and drive the same by a belt, *q'*, from a pulley on one of the rolls of the main conveyer *P*, as shown in the drawings.

When the harvester is to be employed as a hand-binder I substitute in place of the delivering-conveyer above described a binder's platform and table, as represented in Fig. 8, the table *r'* being provided with arms to enter the sockets *l'* in the main frame, and the platform *s'* being provided with arms *t'* to enter sockets in the main frame, and also with sustaining-rods *u'* to engage with eyes on the side of the main frame. Under this arrangement of parts the grain will be delivered from the main conveyer-apron *P* directly to the binder-table *r'*.

It is manifest that in place of the gaveling and binding devices herein described an automatic binder of any suitable construction may be attached in any suitable manner to the frame opposite the outer end of the transverse conveyer, so that the grain delivered from said conveyer will be received directly by the automatic binder.

The reeling, raking, and elevating mechanism herein described forms no part of the present invention, being made the subject-matter of a separate application. The present invention is restricted to the matters and things herein specifically claimed, and as to any other parts or features which may be shown and described herein, and particularly the packing-arms, the right is reserved to make the same the subject-matter of a separate patent.

Having thus described my invention, what I claim is—

1. In combination with the main harvester-

frame and its two sustaining-wheels, the rearwardly-extending vertically-pivoted tongue; the swiveled steering-wheel mounted on the tongue, and the chains extending from the
5 main frame backward and connected with the steering-wheel, substantially as shown.

2. The main frame, its wheels, and the levers supporting said wheels, in combination with the jointed rearwardly - extended tongue, its
10 sustaining-wheel, the lever mounted on the tongue, and the chains extending from said lever to the wheel-sustaining levers, substantially as shown, whereby the frame may be adjusted in height at will and maintained in a substan-
15 tially horizontal position.

3. The revolving receiver having its shaft arranged to slide laterally, in combination with the notched disk and locking-stud, where-
20 by the receiver is held in position until unlocked by the pressure of the accumulated grain.

4. In combination with the rotary receiver arranged to yield laterally, the pinion thereon and the stationary driving-pinion arranged, as described, to engage with the receiver-pin- 25
ion only when the latter is moved outward.

5. In combination with the rotary side moving receiver and its pinion and notched disk, the locking-stud and the stationary driving-
pinion, as shown and described. . 30

6. In combination with the rotary side moving receiver and its locking devices, the grain-
packing devices, substantially as shown, where-
by the receiver is caused to move sidewise and
unlock whenever a predetermined amount of 35
grain has accumulated therein.

JOHN KEYS.

Witnesses:

P. T. DODGE,
NEWTON WYCKOFF.