4 Sheets—Sheet 1.

W. W. MARSH.

Sulky-Plow.

No. 210,867. Patented Dec. 17, 1878.

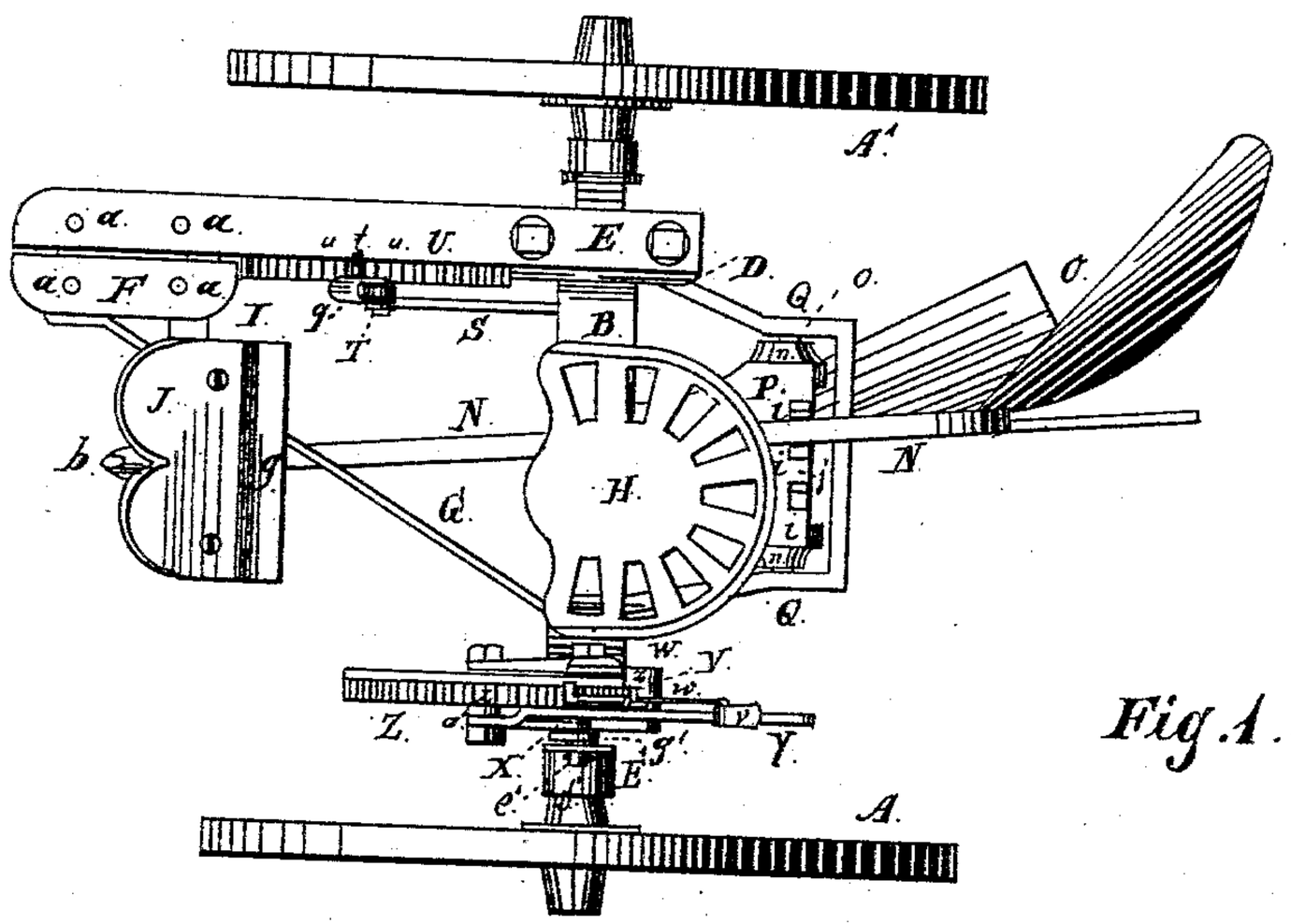


Fig. 1.

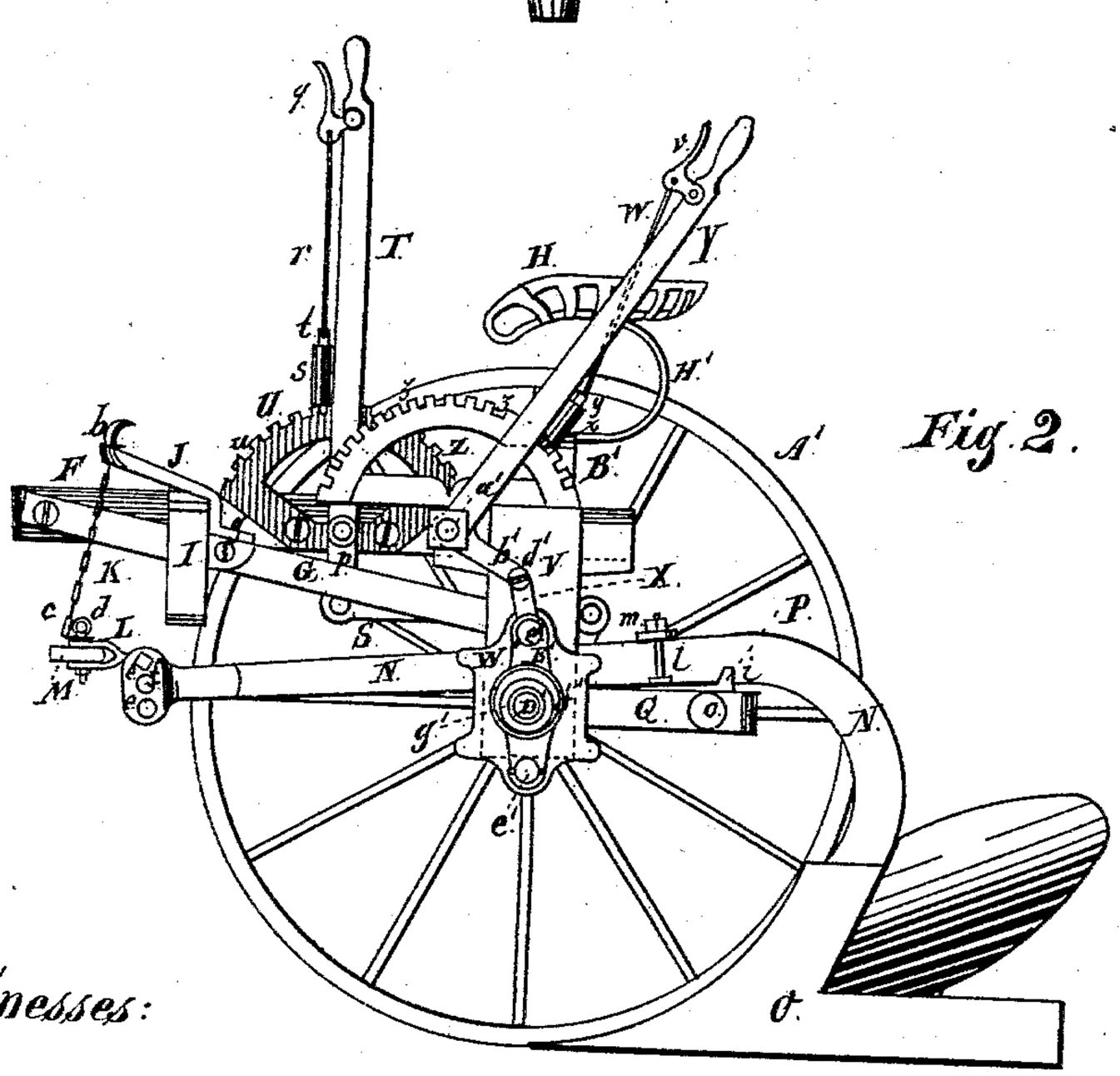


Fig. 2.

Witnesses:

Charles W. Mosher
Arthur M. Clark

Inventor:
William W. Marsh

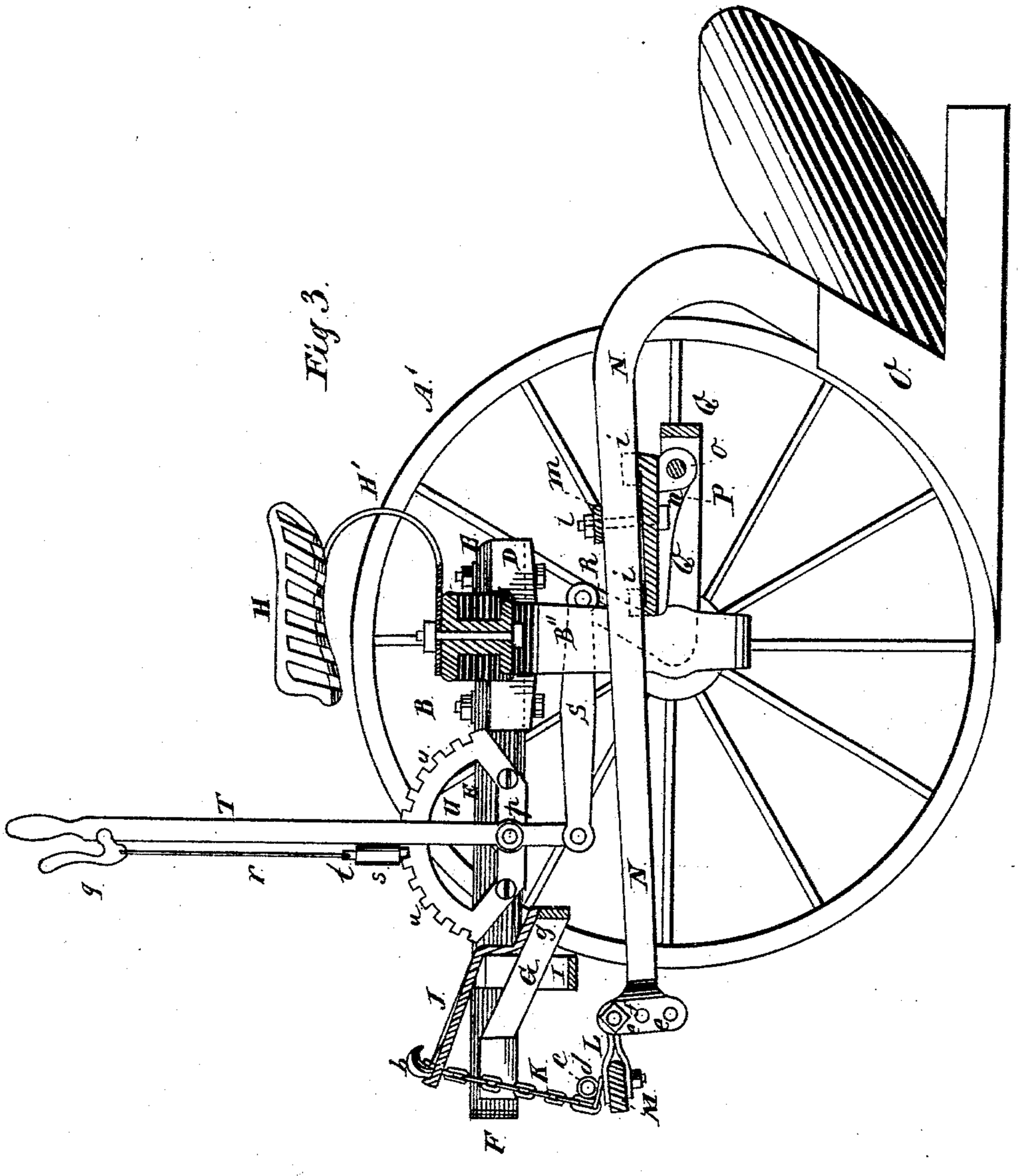
4 Sheets--Sheet 2.

W. W. MARSH.

Sulky-Plow.

No. 210,867. Patented Dec. 17, 1878.

Fig. 3.



Witnesses:
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Arthur H. Stark

Inventor:
William W. Marsh

4 Sheets—Sheet 3,

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Sulky-Plow.

No. 210,867. **Patented Dec. 17, 1878.**

Fig. 4.

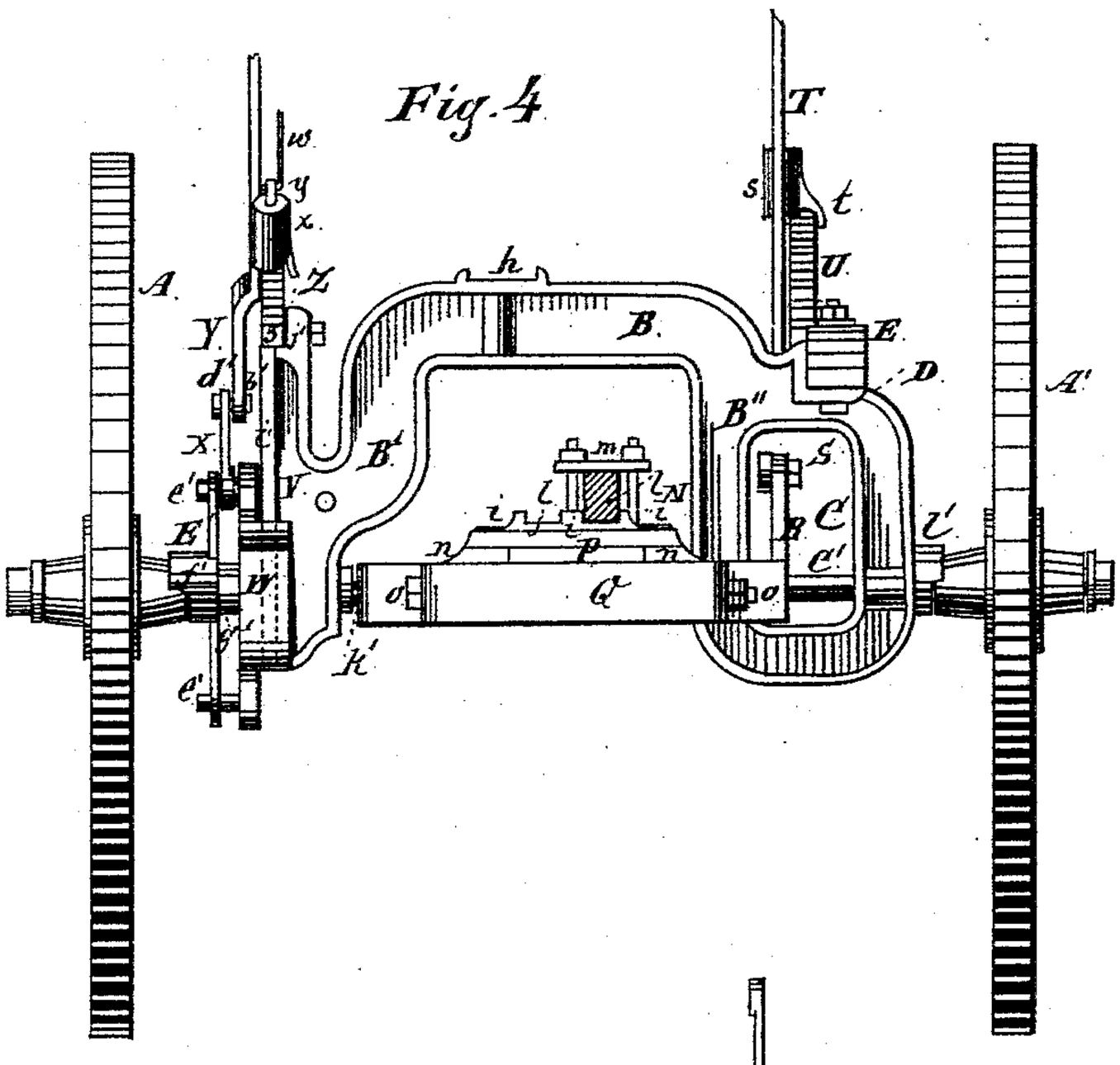

Fig. 5.

Fig. 6.

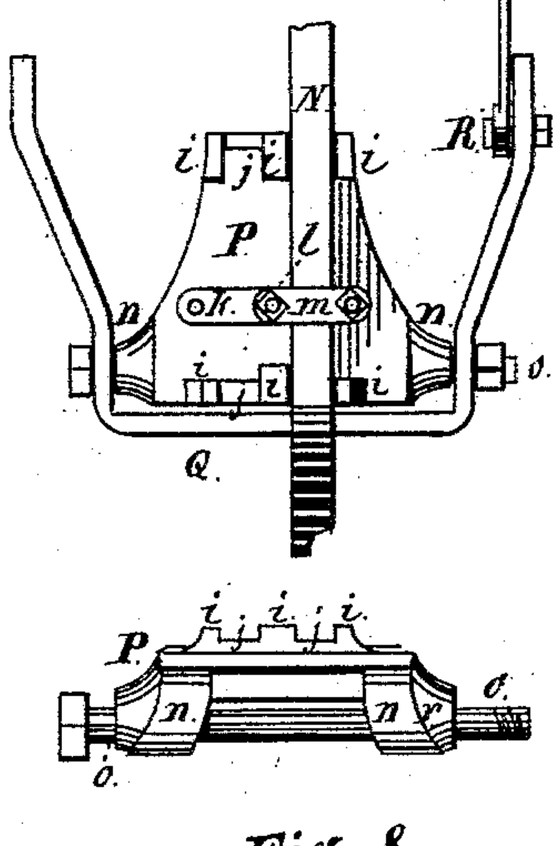

Fig. 7.

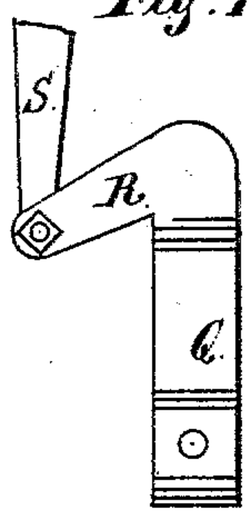

Fig. 8.

Witnesses:
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4 Sheets—Sheet 4.

W. W. MARSH.
Sulky-Plow.

No. 210,867. Patented Dec. 17, 1878.

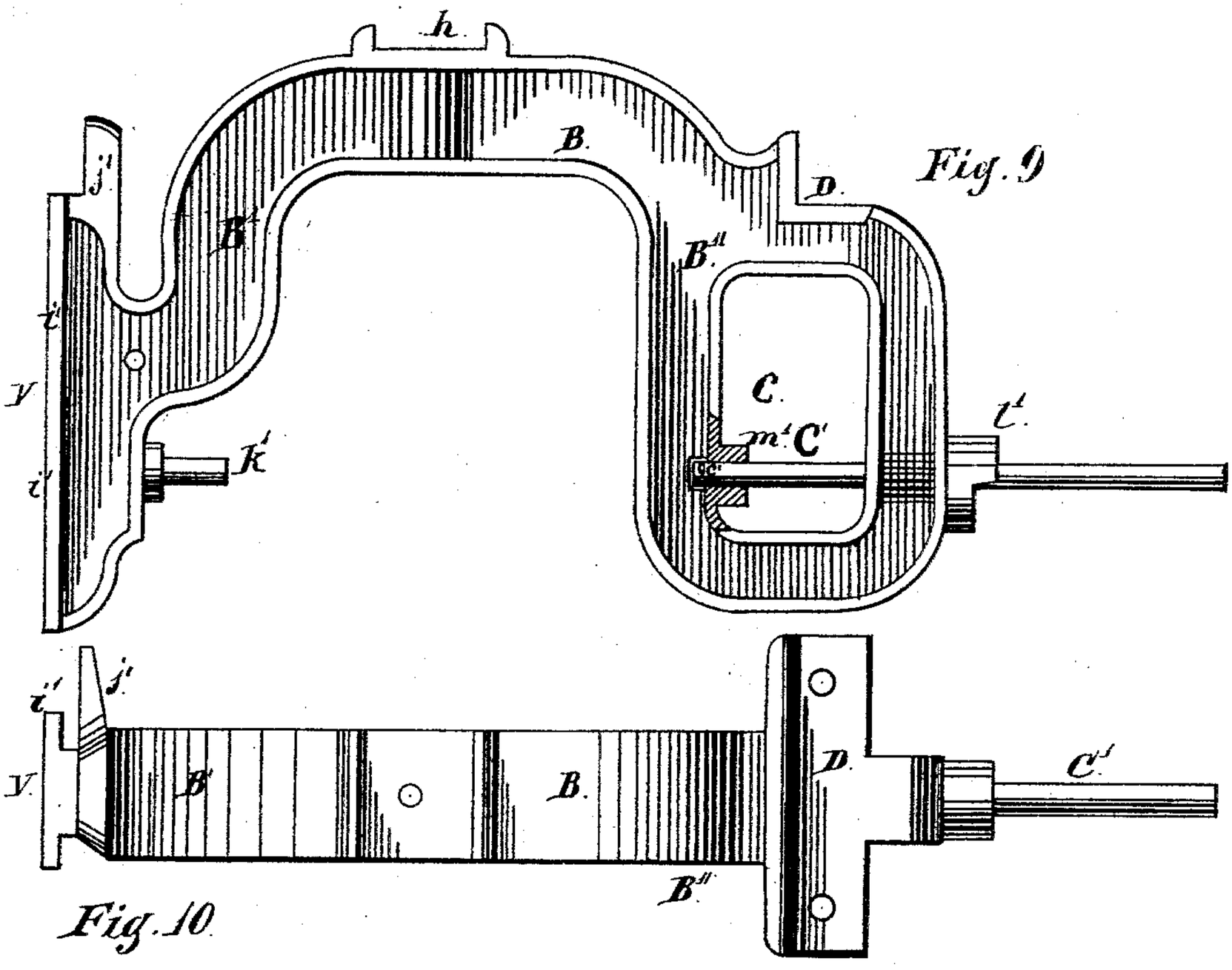

Fig. 9

Fig. 10

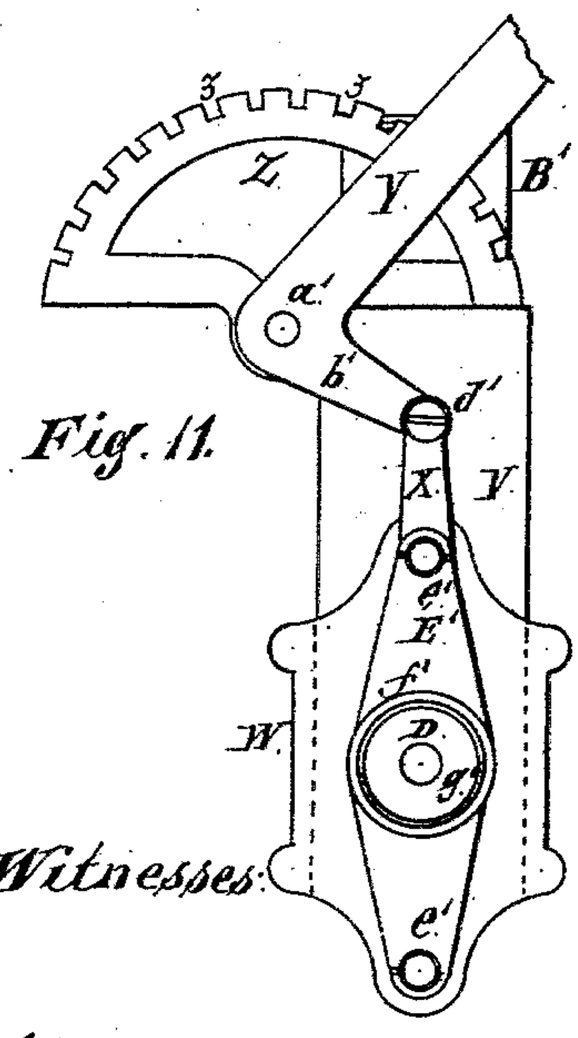

Fig. 11.

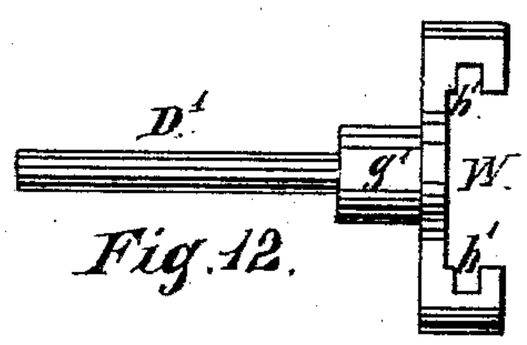

Fig. 12.

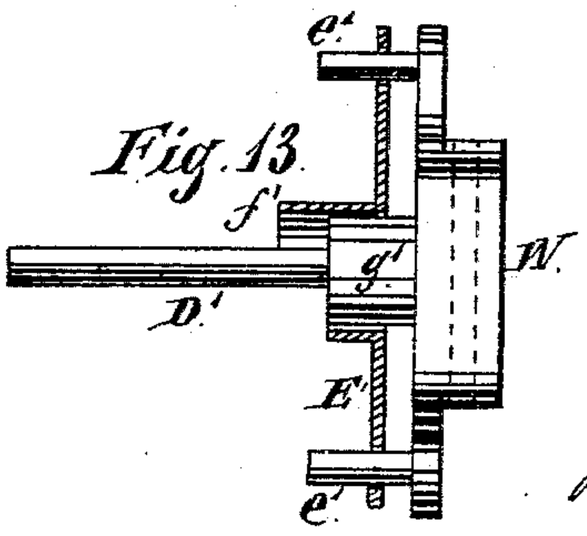

Fig. 13.

Witnesses:
Charles W. Mosher
Arthur M. Stark

Inventor:
William W. Marsh

UNITED STATES PATENT OFFICE.

WILLIAM W. MARSH, OF SYCAMORE, ILLINOIS.

IMPROVEMENT IN SULKY-PLOWS.

Specification forming part of Letters Patent No. **210,867,** dated December 17, 1878; application filed April 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM W. MARSH, of Sycamore, De Kalb county, State of Illinois, have invented new and useful Improvements in Sulky-Plows, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation, with one of the wheels removed; Fig. 3, a longitudinal section enlarged; Fig. 4, a rear view enlarged; Figs. 5, 6, 7, and 8, enlarged details of the plow-supporting devices; Fig. 9, a rear elevation of the frame or axle enlarged; Fig. 10, a top or plan view of the same; Figs. 11, 12, and 13, enlarged details of the spindle and head for the land-wheel and the raising and lowering devices.

The nature of my invention consists in the construction of the frame or axle, the reversible sliding head carrying the land-wheel spindle, and provided with pins for connection with the operating devices adapting said spindle to be reversed when worn, and in the construction of the plow-beam support, pivoted to the bail and having projections forming spaces between them to receive the beam, all as hereinafter more fully set forth, and pointed out in the claims.

In the drawings, A represents the land-wheel; A′, the furrow-wheel; B, the horizontal portion of the axle or frame; B′ B″, the vertical portions; C, the opening in the part B″; D, the shoulder or rest for the tongue; E F, the tongue-support; G, the brace; H, the seat, I, the support for the foot-rest; J, the foot-rest; K, the chain; L, the clevis; M, the double-tree; N, the plow-beam; O, the plow; P, the pivoted plate or support; Q, the swinging frame; R, the crank-arm; S, the connecting-link; T, the lever; U, the rack; V, the stationary head; W, the movable head; X, the connecting-link; Y, the lever; Z, the rack; C′, the spindle for the furrow-wheel; D′, the spindle for the land-wheel; E′, the movable plate or guard for the land-wheel spindle; H′, the seat-spring; *a*, the holes for attaching the tongue; *b*, the hook for attaching the chain; *c*, the wooden pin; *d*, the eye bolt or pin; *e*, the series of holes in the plow-head; *f*, the pivot or bolt; *g*, the flange on the support J; *h*, the opening for the seat-spring; *i*, the projections on the pivoted support; *j*, the openings for the plow-beam; *k*, the series of holes in the support P; *l*, the yoke; *m*, the locking-plate; *n*, the ears; *o*, the bolt or pivot; *p*, the pivot of the lever T; *q*, the bell-crank lever attached to lever T; *r*, the connecting-rod; *s*, the guide or socket; *t*, the locking-pawl; *u*, the notches in the rack U; *v*, the bell-crank lever attached to lever Y; *w*, the connecting-rod; *x*, the guide or socket; *y*, the locking-pawl; *z*, the notches in the rack Z; *a′*, the pivot of the lever Y; *b′*, the arm; *c′*, the locking-pin for the spindle C′; *d′*, the pivot for the link X; *e′*, the pins on the plate or head W; *f′*, the guard or covering-cap; *g′*, the projection on the head W; *h′*, the grooves in the head W; *i′*, the flanges on the head V; *j′*, the lip or projection on the head V; *k′*, the pivot for the swinging frame; *l′*, the guard or covering-cap for the hub of the furrow-wheel; *m′*, the boss or projection for giving a longer bearing to the spindle of the furrow-wheel.

The wheels A A′ may be of any of the ordinary forms of construction for wheels of sulky or gang plows, A being the land-wheel and A′ the furrow-wheel.

The axle or frame is made from a single piece, and may be cast, or otherwise suitably formed, so as to have a horizontal portion, B, and vertical portions B′ B″, B′ being the land-side and B″ the furrow side of the machine. The portion B′ is provided with a head, V, cast or formed therewith, which head is provided with flanges or guides *i′ i′* on its sides, which fit corresponding grooves *h′* formed in the head W, so that the head W can slide up and down on the head V. The head W carries the spindle for the land-wheel, which spindle, as shown, is cast or formed with the head, but may be formed separate, and be permanently secured thereto. At each end of this head W is a pin, *e′*, so arranged that the operating-lever can be connected therewith. A pin at each end is necessary in order to enable the head to be reversed and the proper connections to be made with the operating-lever. At the center of this head W is a projection, *g′*, against which the inner end of the hub of the land-wheel strikes when in use, so as to form a bearing therefor, and from this shoulder

g' the spindle D′ projects. To the upper pin, e', of the head W is attached one end of the link or bar X, the other end of which is connected with the end of the lever Y by means of the bolt or pivot d'. The lever Y is pivoted to a suitable ear formed on the head V by means of the pivot or bolt a', which bolt also acts to hold the rack Z in place. The lower end of this lever is turned or bent at right angles to the main portion, and to this portion b' is connected the upper end of the strap or link X.

The upper end of the lever Y extends up to be within easy reach of the operator when on his seat, and is provided at its upper end with a bell-crank lever, v, suitably pivoted thereto, to which lever v is secured the upper end of the rod w, which extends down by the side of the lever Y, and is provided at its lower end with a suitable pawl or point, y, which slides up and down in, and is held in place by, a guide, x, formed with or secured to the lever Y, just above the rack Z. The rack Z is of a segmental form, and is secured in any suitable manner to the upper end of the head V, as shown. The head V is provided with a shoulder and a suitable ear, j', to which the rack is secured by means of a bolt and the bolt or pivot a'. The rack Z is provided with suitable notches z, with which the pawl or point y engages, to hold the lever Y in any desired position.

By attaching the spindle D′ to or forming it with the sliding head W, and constructing this head so that it will have clevises at both ends for attaching it to or connecting it with the operating-lever or mechanism, it will be seen that when the axle becomes worn on the under side, as it is liable to in use, the head W can be taken off from its supporting-head V, and changed end for end, so as to bring the lower side of the spindle D′ on the upper side, and the upper side on the lower side, thereby bringing the lower side, which has not been worn, into position to receive the wear, so that double the wear can be had from the same spindle, as it is evident that both the upper and lower sides can be worn to an extent as far as practicable before the spindle becomes useless, and by providing the plate E′, having the cap or cover f', it strengthens the support or head W to some extent, and also furnishes a means to prevent dust, grit, and dirt from working in at the top of the spindle by reason of the cap f' extending over the inner end of the hub. The plate E′ may be of light cast metal, or of other suitable material strong enough for the purpose required of it.

In use, if the operator desires to change the position of the frame relative to the land-wheel, he can do so by taking hold of the lever Y, and, through the lever v and rod w, disengaging the pawl y from the notch z, with which it is engaged, and moving the lever Y forward or back, which movements of the lever Y will raise or lower the land end of the frame by reason of the head V sliding on the head W. When the desired position is reached, the lever can be held in such position by causing the pawl y to engage again with the notch z, which will retain the land end of the frame in that position.

In the horizontal portion B of the frame, on the furrow side thereof, is formed a shoulder or recess, the lower portion of which projects some distance each side of the frame, and is provided with openings for the passage of bolts, so as to secure the inner end of the bar or support E firmly in position on the shoulder. This bar or support E projects some distance forward of the frame and at its side, and suitably secured thereto is a second bar or support, F, which is shorter than the bar or support E, and does not extend back to the frame B. These bars E F, if desired, may be made from a single piece. These bars or supports E F are to be provided with suitable holes a, for the passage of bolts, so that the tongue can be secured thereto. Two sets of holes are shown, so as to enable the tongue to be secured in two different positions, corresponding with the positions of the plow when in use; but more sets of holes a may be provided if deemed necessary.

The brace G is rigidly secured at one end to the tongue-support E F, and its other end is secured in any suitable manner to the vertical portion B′ of the frame. To the rear of the tongue-support F is also secured one end or side of the brace or support I, which passes down and around the brace G, and is so formed as to furnish a proper support, to which the foot support or plate J is secured by means of bolts. The plate J is provided with an ear or flange, g, by means of which it can be secured to the brace G, thereby giving the support J additional strength and firmness. At the center of the forward edge of this support J is a hook, b, over which a link of the chain K may be slipped, which chain K may be of any suitable construction that will enable it to be secured in place. The lower link of this chain K is secured, by means of the wooden pin c, to the end or head of the bolt or center pin d, which secures the clip L to the doubletree M.

The clip L may be of any suitable construction to enable it to be secured to the doubletree at its forward end and to the end of the plow-beam at its rear end.

As shown, the plow-beam is provided with a clevis, between the parts of which the end of the clip or clevis L passes, and in which it is held by the bolt f, the clevis on the end of the plow-beam being provided with a series of holes, e, for the bolt, so as to enable the proper adjustment of the clevis L for the required depth of plowing.

By this arrangement it will be seen that the chain will form an efficient and reliable means for supporting both the whiffletrees

and end of the beam, and keeping the same from dropping upon the ground or under the horses' heels when the plow is being moved backward or forward out of the ground, during which movements there will be no tension or draft to keep these parts from falling, as aforesaid, unless kept up or supported in some manner; and by attaching the chain K by means of a wooden pin, *c*, it will be seen that in case of great strain the pin will break and the chain will become detached from its connection, so that no damage can be done by reason of such strain.

The seat H may be of any suitable construction, and, as shown, is mounted on the spring H′, the end of which spring is secured by means of a bolt to the horizontal portion of the frame, an opening, *h*, being provided to receive the end of the spring to prevent the seat from turning.

The plow-beam N is of the usual construction, and the plow O is secured thereto as usual, the plow being of any of the well-known forms. This plow-beam is supported upon a plate, P, which plate is provided with projections *i*, so arranged at the front and rear sides as to leave a space, *j*, between them of a size corresponding to the width of the plow-beam. At the rear end of this plate P, and projecting downward on each corner, is an ear, *n*, each ear being provided with an opening. The plow is secured to the plate by means of the bolts or yoke *l*, which passes up through suitable openings *k* in the plate P on each side of the plow-beam and the bar or plate *m*, which passes over the top of the beam, and is held in place by means of nuts on the ends of the bolts or yoke *l*, so that by reason of the plow-beam being secured in the notches *j* at the front and rear of the plate, and locked therein by the plate *m* and yoke *l*, all side motion is prevented, and the plow and beam will be held securely in position. Only two openings, *j*, are shown; but more may be used if desired.

The holes *k* in the plate are so arranged that the center hole will be in position for the bolt to pass one side of the beam, no matter in which of the notches *j* it may be placed. This plate P is pivoted to the frame Q by means of the rod *o*, which passes through the frame and through the ears *n*, so that the plate P is free to turn up and down on its pivot or bolt *o*. The frame Q is pivoted at one end to the stud or pin *k′*, formed with or secured in the vertical portion B′ of the frame. The other end of this frame Q is pivoted on that portion of the spindle C′ which passes through the opening C, so that the frame can be raised and lowered, carrying with it the plow. The end of the frame Q which is secured to the spindle C′ is provided with a crank, R, to the upper end of which is connected one end of the link or bar S, the other end of which is attached to the lever T, which lever is pivoted by the bolt or pivot *p* to the tongue-support E. The lever T extends up to within easy reach of the operator, and at its upper [illegible] provided with a bell-crank lever, *q*, pivoted to the lever T, to which lever *q* is attached the upper end of the rod *r*, which rod extends down by the side of the lever, and at its lower end is provided with a pawl; or the end of the rod itself may be so formed as to act as a pawl to engage with the notches *u* in the rack U, which rack is secured in any suitable manner to the tongue-support E.

In use, the plow can be set or secured in the desired notch *j* to cut a wide or narrow furrow, and be held in place by means of the plate and bolts; and the plate P is to be pivoted to the frame Q, so that it can turn on its pivot, which enables the point of the plow to adapt itself to the inequalities of the ground.

When it is desired to raise the plow for any purpose, the operator, by taking hold of the lever T and moving it back, can raise the frame Q, and with it the plow, and by moving it forward he can adjust the plow so as to cut any desired depth.

The portion B″ is provided with an opening, C, to enable the crank R to operate directly beneath the frame, and this portion B″ of the frame is so formed as to have a portion thereof on each side of the opening C, and is provided with suitable openings for the passage of the spindle C′, so that the spindle will have a firm support, and so that its position can be changed when the under side becomes worn, so as to bring the upper side into position for wear. This spindle is held in place by means of the pin *c′*, and the inside of the inner portion of the part B″ is provided with a projection, *m′*, to give a stronger support and a longer bearing to the inner end of the spindle for strength and steadiness. The outer portion of the part B″ is provided with a cap, *l′*, so arranged as to project over the end of the hub, to prevent dust, dirt, and grit from getting in on the spindle.

The spindle C′ is secured in place by means of the pin *c′*, and when it is desired to turn the spindle over the pin can be removed and the spindle turned and the pin driven in again.

What I claim as new, and desire to secure by Letters Patent, is—

1. The frame formed from a single piece, and having a vertical portion, B′, provided with a head to receive the sliding head for operating the land-wheel, and a vertical portion, B″, provided with an opening, C, all substantially as and for the purpose specified.

2. The frame formed from a single piece, having the vertical portions B′ B″ to receive the spindles for the wheels, and provided with the opening C and the recess or shoulder D for attaching the tongue-support, substantially as specified.

3. The reversible head W, provided with

hub g' and pins e' e', and carrying the spindle D', in combination with a supporting-head and devices for enabling the spindle to be reversed when worn, substantially as specified.

4. The pivoted plate P, provided with the ears n and with the projections i, which form spaces j between them, in combination with the bail or swinging frame Q, the rod o, and the plow-beam, substantially as and for the purposes herein set forth.

WILLIAM W. MARSH.

Witnesses:
CHAS. W. MOSHER,
ARTHUR M. STARK.