

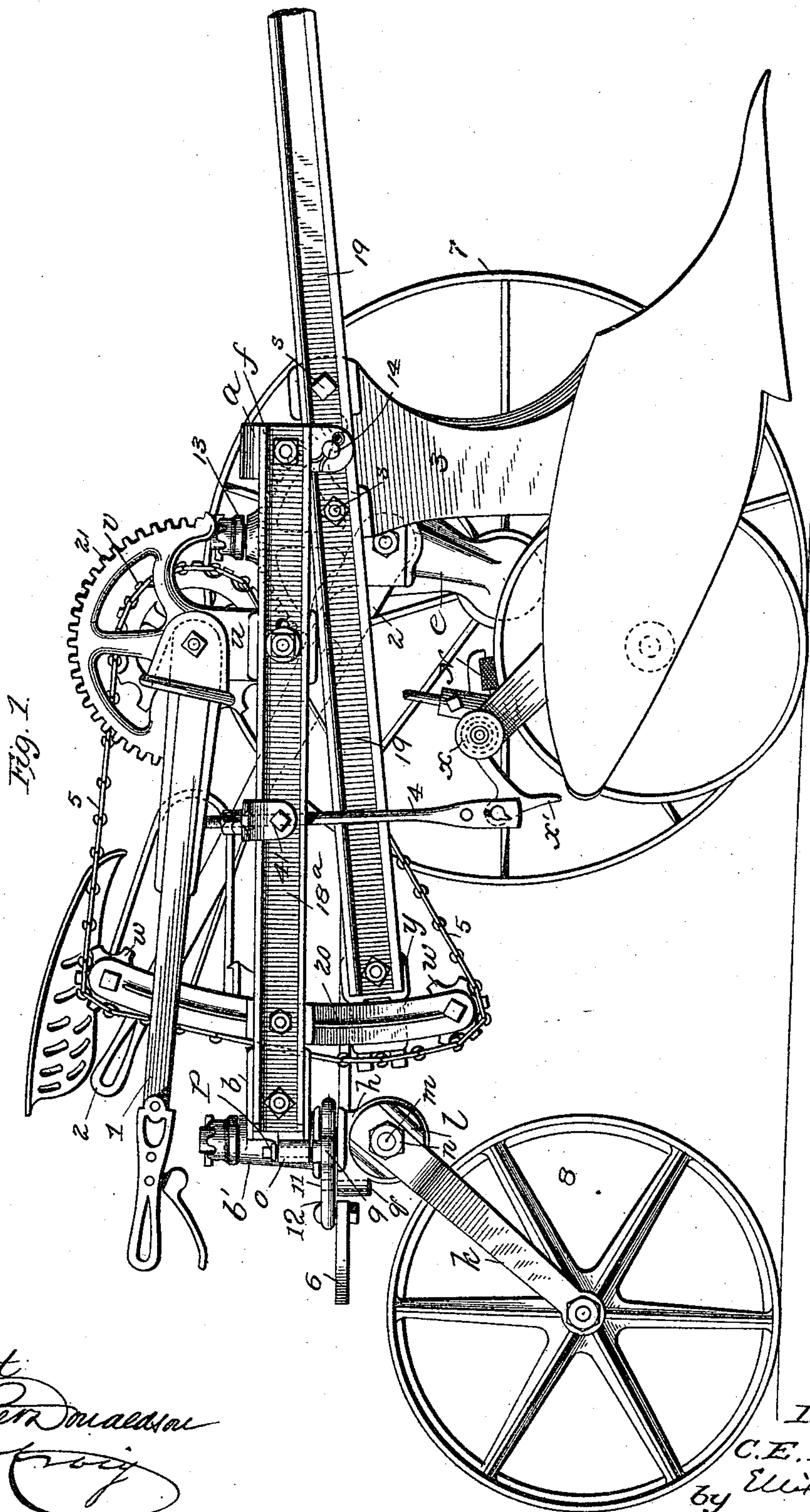
(No Model.)

4 Sheets—Sheet 1.

C. E. TOWER.
SULKY PLOW.

No. 442,672.

Patented Dec. 16, 1890.



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Lee S. Craig

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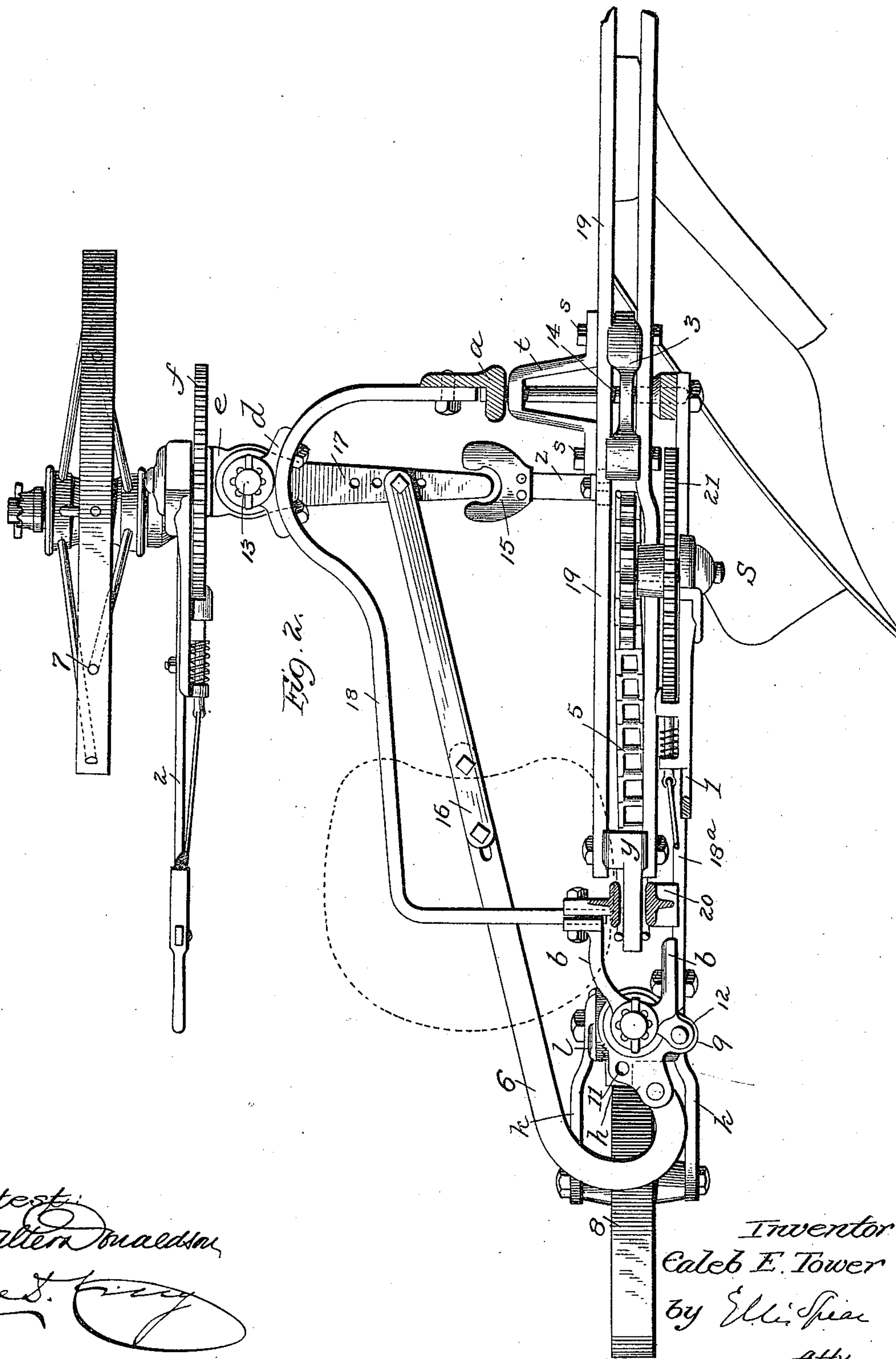
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4 Sheets—Sheet 2.

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No. 442,672.

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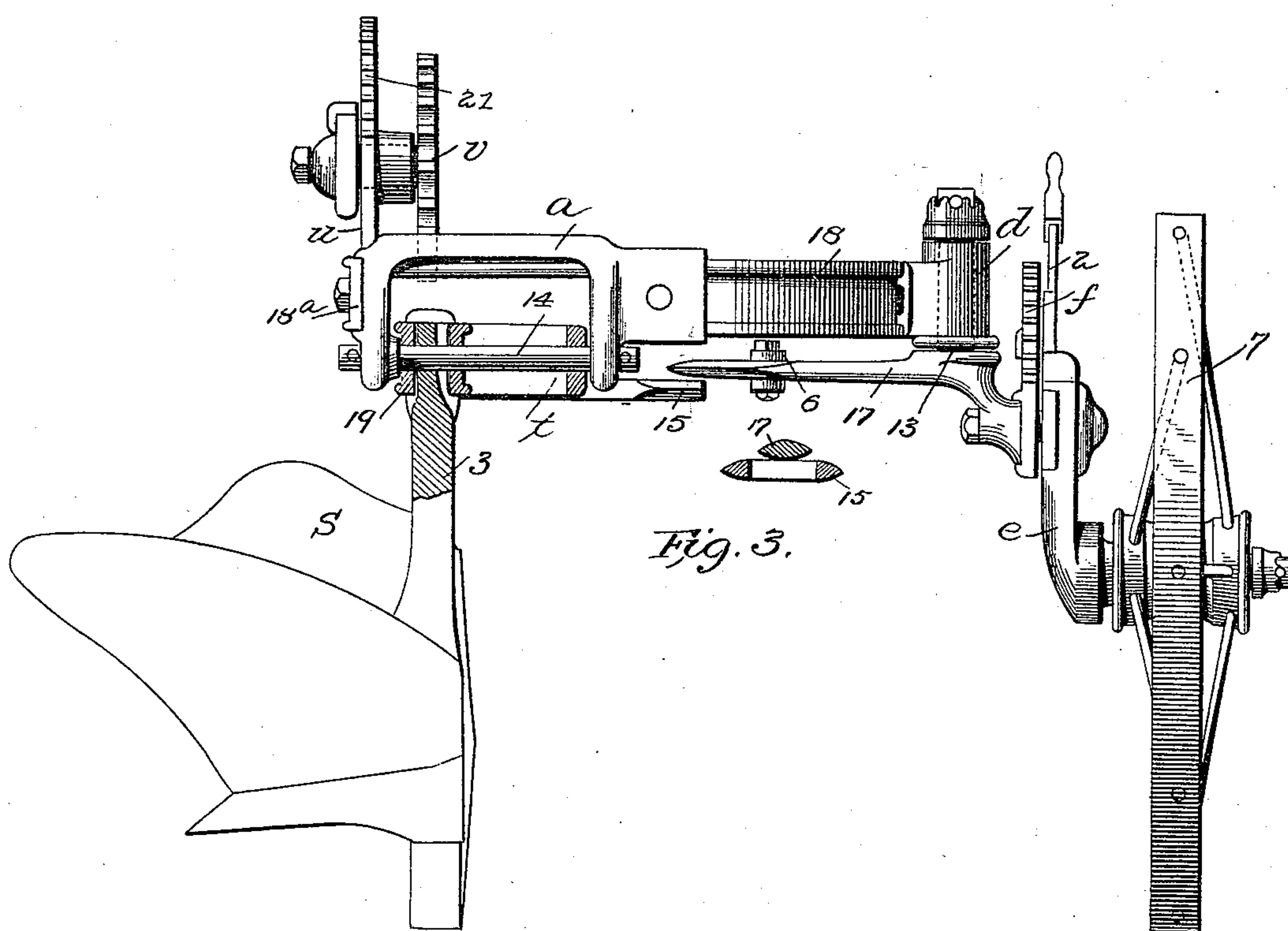
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No. 442,672.

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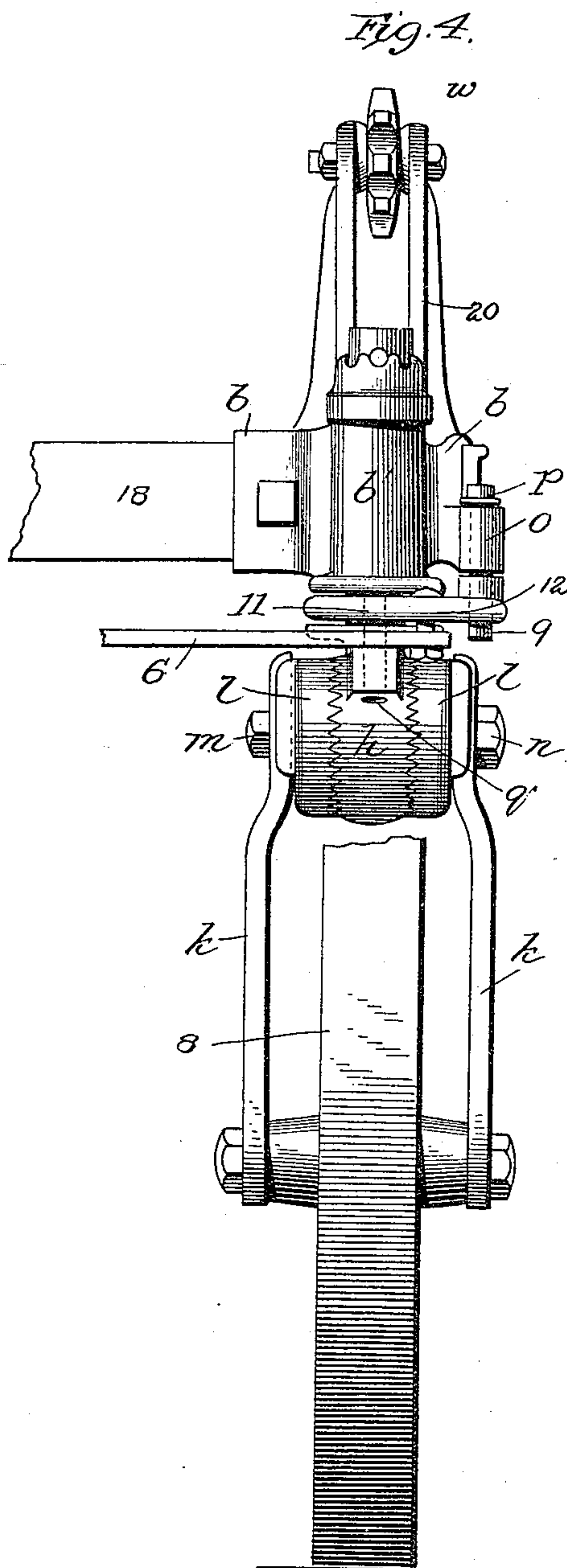
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UNITED STATES PATENT OFFICE.

CALEB E. TOWER, OF SOUTH BEND, INDIANA, ASSIGNOR TO THE ECONOMIST PLOW COMPANY, OF SAME PLACE.

SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 442,672, dated December 16, 1890.

Application filed May 19, 1890. Serial No. 352,365. (No model.)

To all whom it may concern:

Be it known that I, CALEB E. TOWER, a citizen of the United States of America, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Sulky-Plows, of which the following is a specification.

My invention includes improved details of construction in a riding-plow frame, these improvements being designed for the purpose of lessening the cost and improving the construction and operation of the machine. These details are fully explained hereinafter, in connection with the accompanying drawings, in which—

Figure 1 shows the plow in side elevation. Fig. 2 represents a plan or top view of the same. Fig. 3 shows a front view of the plow, partly in elevation and partly in section, as hereinafter explained. Fig. 4 represents a rear elevation of the caster-wheel with its connections in enlarged scale.

The form of plow shown is of that class in which there is a landside-wheel running in the furrow, a land-wheel running upon the unplowed land, and a swivel-wheel which, as shown, is arranged to run in the furrow. The land-wheel 7 and the swivel caster-wheel 8 are connected with and support one side and the rear end of the main frame of the riding-plow, the other side, or rather the front right-hand corner of this frame, being pivoted to the plow-beam on a right-hand plow and to the front left-hand corner on a left-hand plow.

The main part of the sulky-plow frame is shown at 18. It is shown as made of a single bar with its greater diameter in vertical plane and bent in the form as shown in Fig. 2. The front end is bolted to a casting *a* and the rear end to a casting *b*, through which it is connected to the right-hand side of the frame. To the bend on the left-hand side is bolted a casting *d*, which forms the bearing for the spindle of the lever 17, the spindle or journal 13 of which passes up through the casting *d*, so that the lever may be turned in a horizontal plane in its bearing to sway the land-wheel 7 to the right or left from a direct line. The axis of the wheel 7 is on an arm *e*, which is

journaled on the outer end of the lever 17. 50
The arm *e* is provided with a lever 2, which has a pawl, as usual, engaging with a segmental rack *f*. The lever is fixed to the arm *e* and the rack to the lever 17, so that the frame can be raised or lowered in its relation 55 to the wheel 7 in the ordinary manner.

The casting *a* is shown more clearly in Fig. 3. It is shaped so as to bridge over the plow-beam 19. On the outer end is bolted the forward end of the right-hand side piece 18^a of 60 the frame. The rear end of this right-hand side piece is bolted to the casting *b*. These main pieces of the frame 18 and 18^a are made, preferably, of rolled iron or steel bar. The rear casting *b* has cast with it a sleeve or 65 socket *b'*, which forms a bearing for the spindle on which the caster-wheel turns. This spindle stands vertically in a block *h*, which is preferably cast upon it and forms the head 70 on which the arms of the caster-wheel are adjustably held. The lower part of the block *h* is in the form of a disk having serrated sides, and the arms *k*, on the lower end of which the wheel is journaled, are placed between flanges 75 at their upper ends on the disks *l*, the inner faces of which are serrated to fit the serrations of the block *h*. The parts are held together by a bolt *m* and nut *n*, and by this construction the wheel may be set at any desired 80 height in relation to the plow. On the spindle of the caster-wheel block is journaled a plate 12, to the upper end of which is pivoted the rear bent end of the connecting-bar 6, the front end of which is connected to the inner 85 end of the lever 17, the outer end of which carries the land-wheel. This plate is provided with two holes 9 and 11, and on the rear casting *b* is cast a small sleeve *o*, vertically bored, and over the circle on which 90 moves the hole 9 in the plate 12, and when the hole 9 in the plate 12 registers with the vertical bore of the sleeve *o*, as represented in Figs. 1 and 2, then the arm 17 is at right 95 angles to the length of the plow-frame, and the wheel 7 is parallel with the line of movement of the plow, and it is held in this position, being locked by the bolt *p* to the frame of the machine. When, however, the bolt *p*

is removed, then the land-wheel 7 is free to move or swing laterally to the right or left of the direct line.

In order that the caster-wheel 8 may be connected with the land-wheel 7 and move therewith, I have provided a vertical hole *q* in the block *h*, which may register with the hole 11 in the plate 12 when both wheels 7 and 8 are in the line of direct movement, but parallel with each other. This connects the two wheels, so that they move together in turning. The point of connection of the bar 6 with the arm 17 may be varied to adjust the relative movement of the wheels to each other by means of a series of holes in the arm 17, to any one of which the forward end of the bar may be connected. The bar 6 is formed of two parts, which are spliced together by bolts which pass through slots, as shown at 16, by means of which the length of the arm may be varied.

The plow-beam 19 is composed of two rolled-iron bars, between which the plow-standard 3 is bolted by bolts *s*, as shown in Figs. 1 and 2. It is pivoted on the casting *a* by means of a bolt 14. In order to give increased lateral bearing, a yoke *t* is bolted onto the inner bar of the plow-beam, and the bolt 14 passes through the lower parts of the casting *a*, through the beam and the yoke, and thereby the plow is journaled upon the frame at its forward right-hand corner, so as to swing thereon when the frame is level in the vertical plane in order to be turned into or out of the ground.

I now describe the mechanism for tilting the plow-beam for the purpose of thus turning the plow into or out of the ground. Upon the bar 18^a of the frame is firmly bolted a standard *u*. In the top of this is pivoted the furrow-lever 1, which tilts the beam of the plow, and thus governs the depth of the furrow and turns the plow out of the ground. This lever is fixed to the shaft journaled in the standard on the outer end thereof, and the inner end of the shaft has fixed to it a sprocket-wheel *v*, over which runs a chain 5. This chain runs over the idlers *w w*, journaled in the upper and lower ends of an arm 20, which is bolted midway near the rear end of the side bar 18^a of the frame. A casting *y* is bolted between the rear ends of the plow-beam and extends through a vertical slot in the arm 20 and behind the slotted arm is connected by prongs to the chain 5, so that by moving the lever 1 the rear end of the plow-beam is raised or lowered. The lever has ordinary pawl arrangement, by means of which it may be locked upon a segment 21, fixed to the frame. The lever 1 is not fixed rigidly to the shaft, but is arranged to play loose within a socket of slightly greater width than the lever, said socket being on the outer end of the shaft, so that in operating the lever has slight free movement before the resistance of the weight is felt. To the inner side of the

plow-beam 19 is fixed a locking device 15 at a point somewhat in rear of the pivot-point. This locking device is supported upon a spring-arm *z*, so that it may be sprung up or down slightly. Into the recess in this lock projects the end of the lever 17^b, as shown in Fig. 2. When the arm 17 is in the same vertical plane with the lock, the arm 17 is held at right angles to the plow-beam and the wheel 7 parallel with the plow-beam, but when the plow-beam is raised above or below the end of the arm 17 then the said arm is free to turn and permits the wheels to turn to the right or left of the direct line.

The brake on the landside-wheel (shown at N) is the same as that shown in the application filed by me in the United States Patent Office on the 28th day of April, 1890, Serial No. 349,714. I show herein, however, a modified connection, which consists of a rod pivoted on the end of the brake-lever opposite the brake and connected to a bracket 41 on the plow-beam by means of a nut which permits of the necessary adjustment.

It will be observed that the plow-beam runs back to a considerable distance behind the plow and that it has a rear bearing in the slotted arm 20. This gives a firm support and connection between the plow-beam and the frame. At the same time by reason of the connection of the lifting-chain 5 to the rear end of the plow-beam great leverage is secured in working the plow. When the furrow-lever latch is out of engagement with the teeth of its sector, the lever has a loose movement. By moving the furrow-lever backward the front of the beam is raised and the weight of the plow is thrown upon the three wheels. This at the same time, through the connection 4, presses the brake N upon the revolving landside and disengages the scraper on the end of the lever under the connection 4. This movement also lifts the lock 15 above the end of the lever 17 and allows that lever to move on its axis, and the land-wheel in consequence to swing out of the direct line. The pin *p* being placed in the hole 11, it connects the back caster-wheel with the arm 17, so that the wheels 7 and 8 are in connection and the plow is ready for traveling upon the road.

The plow can be turned upon its point to the right or left by pushing lever 1 forward until the point rests upon the ground, the plow being supposed to be upon the road or level ground. While the plow is thus raised, with its point upon the ground, the whole may be swung upon that as upon a pivot, the wheels 7 and 8 changing its position and moving around said pivot.

The holes in the arm 17 are used for various lengths of plow-point. The longer the point of the plow the closer the bar 6 must be brought to the free end of the lever 17, and the reverse, the position of the wheel 7 requiring to be changed in respect to its angle to the frame according to the length of

the plow. The block 15 is made adjustable on the beam, so that it may be set according to the gather required in the land-wheel, either forward or backward.

5 It will be noticed in Fig. 1 that the standard *u* of the sector 21 is held to the side of the frame by a bolt passing through the slot. This is for the purpose of adjusting the sector or standard to take up any slack in the
10 chain 5 due to wear or other causes.

Fig. 2 shows a lateral extension or bearing on the standard *u*, which serves as a box for the sprocket-journal. A projection 42, cast on the sector, limits the movement of the lever 1. I have shown the pivot between the
15 frame and the beam at the standard-head of the plow; but I do not limit myself to this position, as it may be moved forward or backward, if found desirable to do so. While I
20 have shown a special construction of the castings and iron or steel frame, other materials may be used and other forms without departing from other points of the invention herein set forth.

25 A shield is shown at S in Fig. 2, extending from the rear face of the plowshare over the edge of the landside-wheel, it serving to protect the brake and brake mechanism from the earth as the furrow is formed.

30 The rod 4 of the brake device passes loosely through the bracket 41, and when the plow is forced into the ground and the rear end of the beam is elevated this rod slides upwardly through the bracket, and the spring *x* (shown
35 in dotted lines) then acts to force the scraper *x'* upon the furrow-wheel and relieve the brake.

I claim as my invention—

40 1. In combination with the frame of a riding-plow, a furrow-lever pivoted upon said frame, a wheel, and chain connections between said wheel and the plow-beam, the beam being pivoted to the frame, all substantially as described.

45 2. In combination with the frame of a sulky-plow, the furrow-lever pivoted upon the frame, a sprocket-wheel connected to the furrow-lever, and a chain running over pulleys above and below the frame, said chain being con-
50 nected to the rear end of the pivoted plow-beam, substantially as described.

3. The standard *u*, held adjustably upon the frame and having a bearing in its upper end, a sprocket-wheel having a shaft arranged
55 to turn in said bearing, a furrow-lever fixed to said shaft, and a chain 5, connected to the rear end of the plow-beam, substantially as described.

60 4. In combination with the frame, the arm 20, carrying sprocket-wheels *w* and having a slot to receive the rear extension of the pivoted plow-beam, and a chain running to the sprocket-wheel, which is operated by the furrow-wheel lever, substantially as described.

65 5. In combination with the frame, the plow-beam pivoted thereto near the front of said

frame and extending to the rear of the plow, connections between said rear end and a lever, a landside-wheel vertically adjustable on a pivoted arm connected to said frame, means
70 for holding said arm, and a caster-wheel on the rear of the frame adapted to run in the furrow, substantially as described.

6. The combination, in a plow, of a land-wheel, a horizontally-pivoted arm, with an ad-
75 justable connection between said arm and the land-wheel, a rear caster-wheel, and a connecting-bar between the pivoted arm and the said caster-wheel, substantially as described.

7. In combination with the rear caster-wheel, a bar 6, connected with the pivoted
80 arm of the land-wheel and having adjustable connections with the caster-wheel, substantially as described.

8. In combination with the rear caster-wheel and with the block *h*, having the pivot and the connections to the wheel and pro-
85 vided with a hole, as *q*, a plate connected to the pivoted arm of the land-wheel through the bar 6, the said plate having holes 9 and 11, and a socket *o* on the frame, fitted to receive
90 a pin *p*, all substantially as described.

9. In combination with the pivoted arm 17, the bar 6, adjustably connected therewith,
95 and adjustable connections between the said bar 6 and the rear caster-wheel, all substantially as described.

10. In combination with the arm 17 of the land-wheel, a lock fixed to the plow-beam and arranged to hold said arm when the plow-
100 beam is in one position and to release it when the plow-beam is in another position, all substantially as described.

11. In combination with the arm 17 of the land-wheel, the lock 15, held upon a spring-
105 arm attached to the plow-beam, all substantially as described.

12. In combination with the parts 18 and 18^a of the frame, the casting *a*, constructed to receive the ends of the said parts and to be
110 bolted thereto and to receive the plow-beam underneath, and a pivoting-bolt for the plow-beam, substantially as described.

13. In combination with the casting *a* and the parts 18 and 18^a, the plow-beam and piv-
115 otting-bolt and the yoke *t*, substantially as described.

14. The frame composed of the parts 18 and 18^a, the casting for the land-wheel bolted to the part 18, the casting *a* at the front, and
120 the casting *b* at the rear, all substantially as described.

15. In combination, the frame, the plow-beam pivoted thereto and movable vertically independent of the frame, a lever with con-
125 nections for raising and lowering the beam, a furrow-wheel movable with the beam, a brake adapted to bear against the same, and a connection between the brake and the plow-frame operating automatically to operate the
130 brake when the plow-beam is moved vertically, substantially as described.

16. In combination, the frame, the plow-
beam and plow, the brake N, the scraper x' ,
the spring x for applying the scraper and re-
lieving the brake, and the connection 4 to
5 the frame of the plow, for applying the brake
when the plow is out of the ground, substan-
tially as described.

In testimony whereof I affix my signature in
presence of two witnesses.

CALEB E. TOWER.

Witnesses.

LEIGHTON PINE,
JONA. P. CREED.