

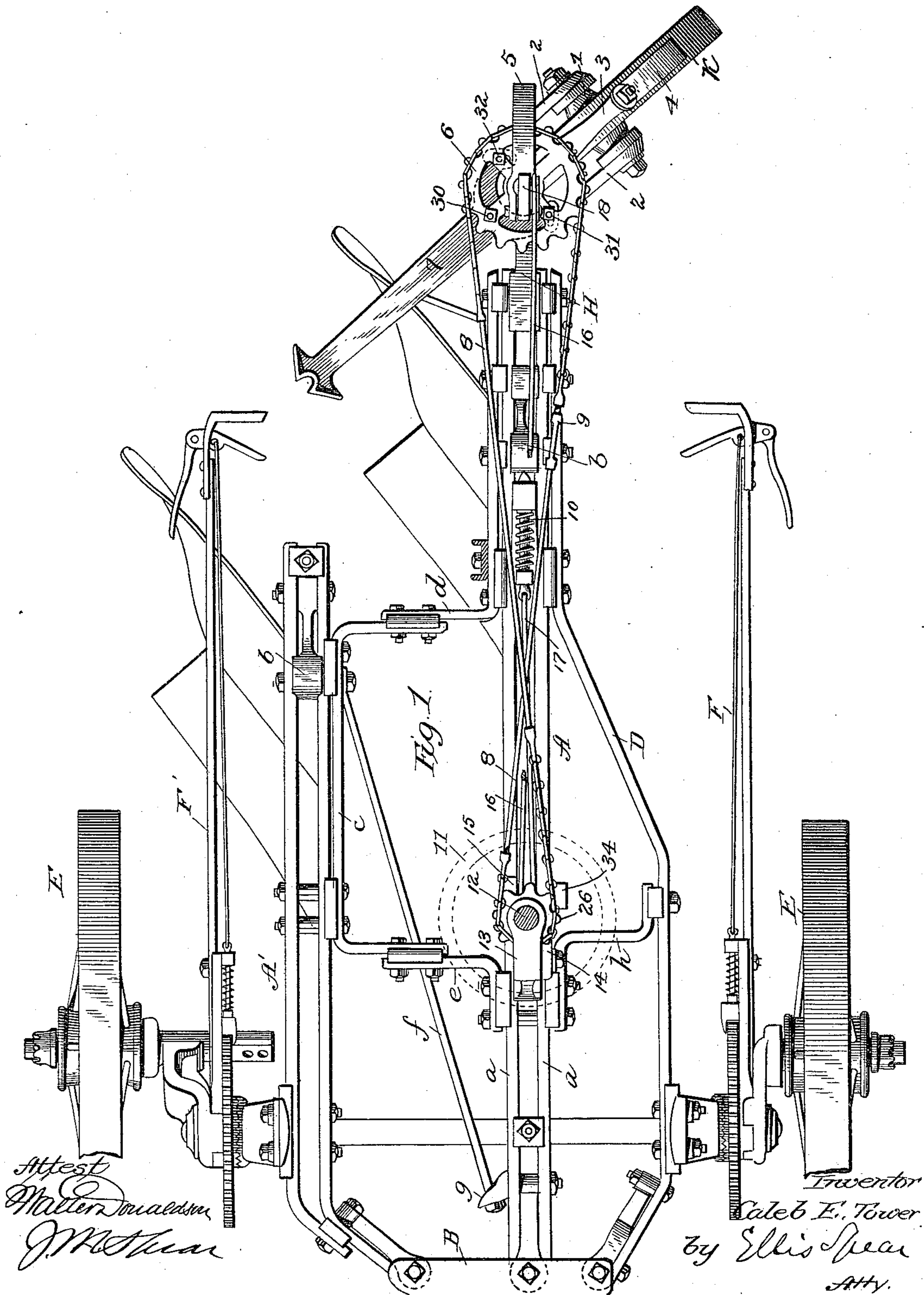
(No Model.)

3 Sheets—Sheet 1.

C. E. TOWER.
SULKY PLOW.

No. 442,673.

Patented Dec. 16, 1890.



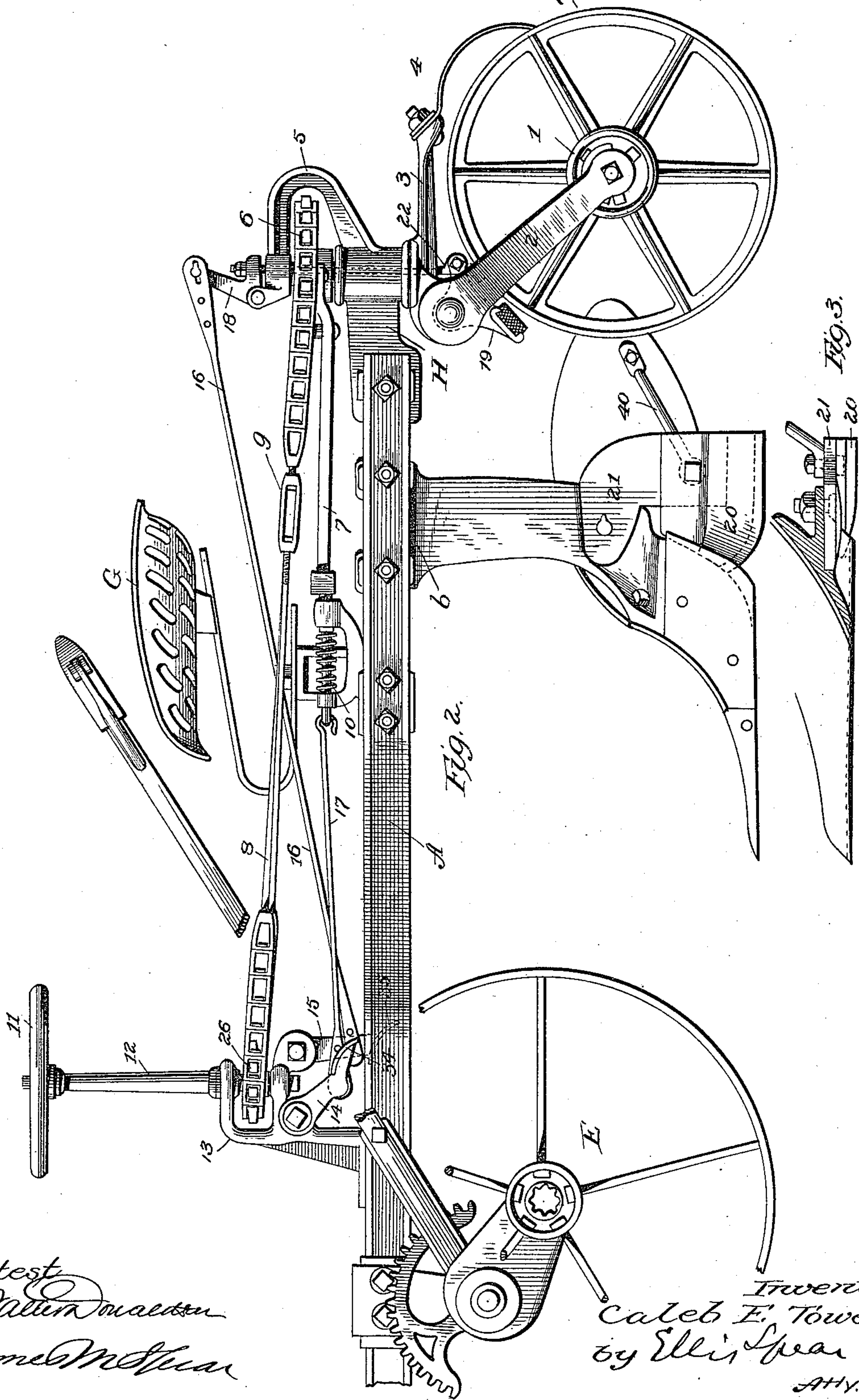
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3 Sheets—Sheet 2.

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Milton M. Alden
James M. Spear

Inventor
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by Ellis Spear
ATTY.

(No Model.)

3 Sheets—Sheet 3.

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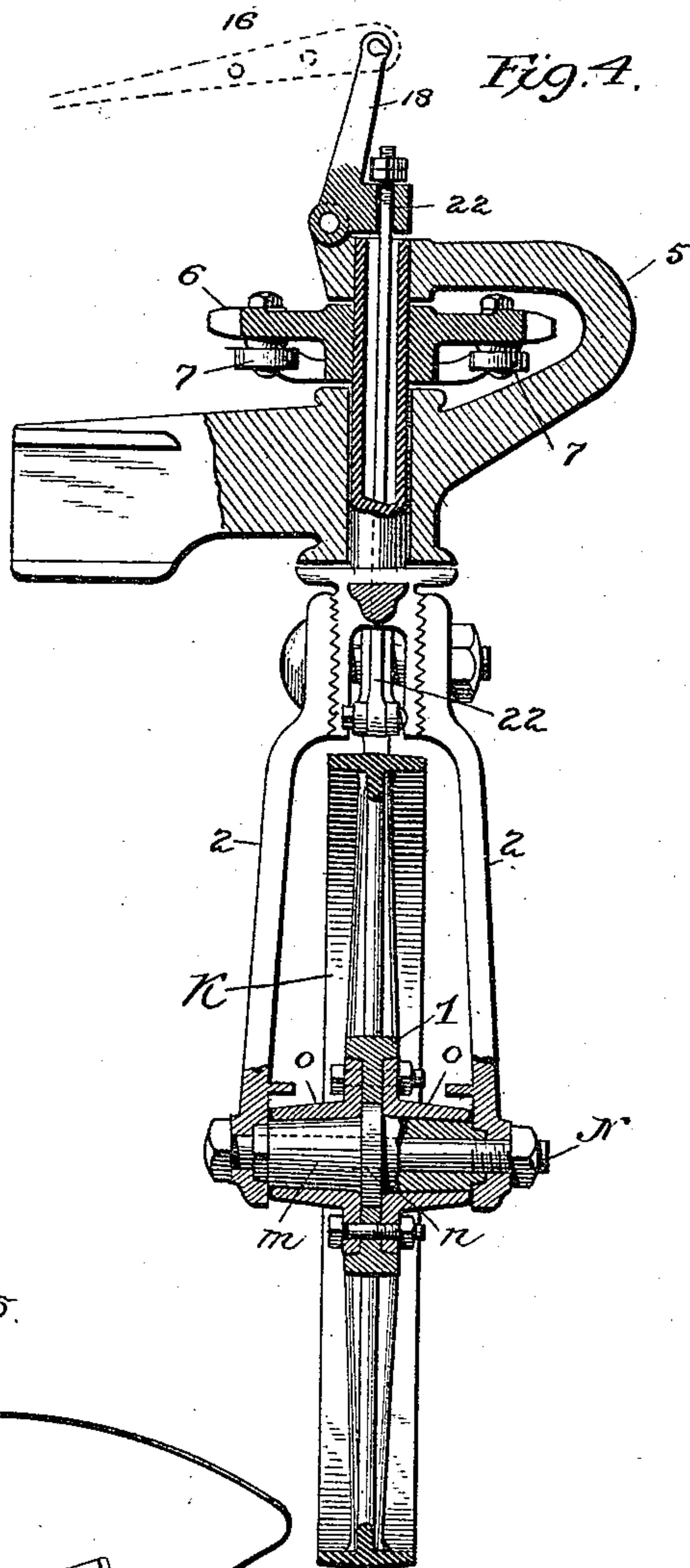


Fig. 4.

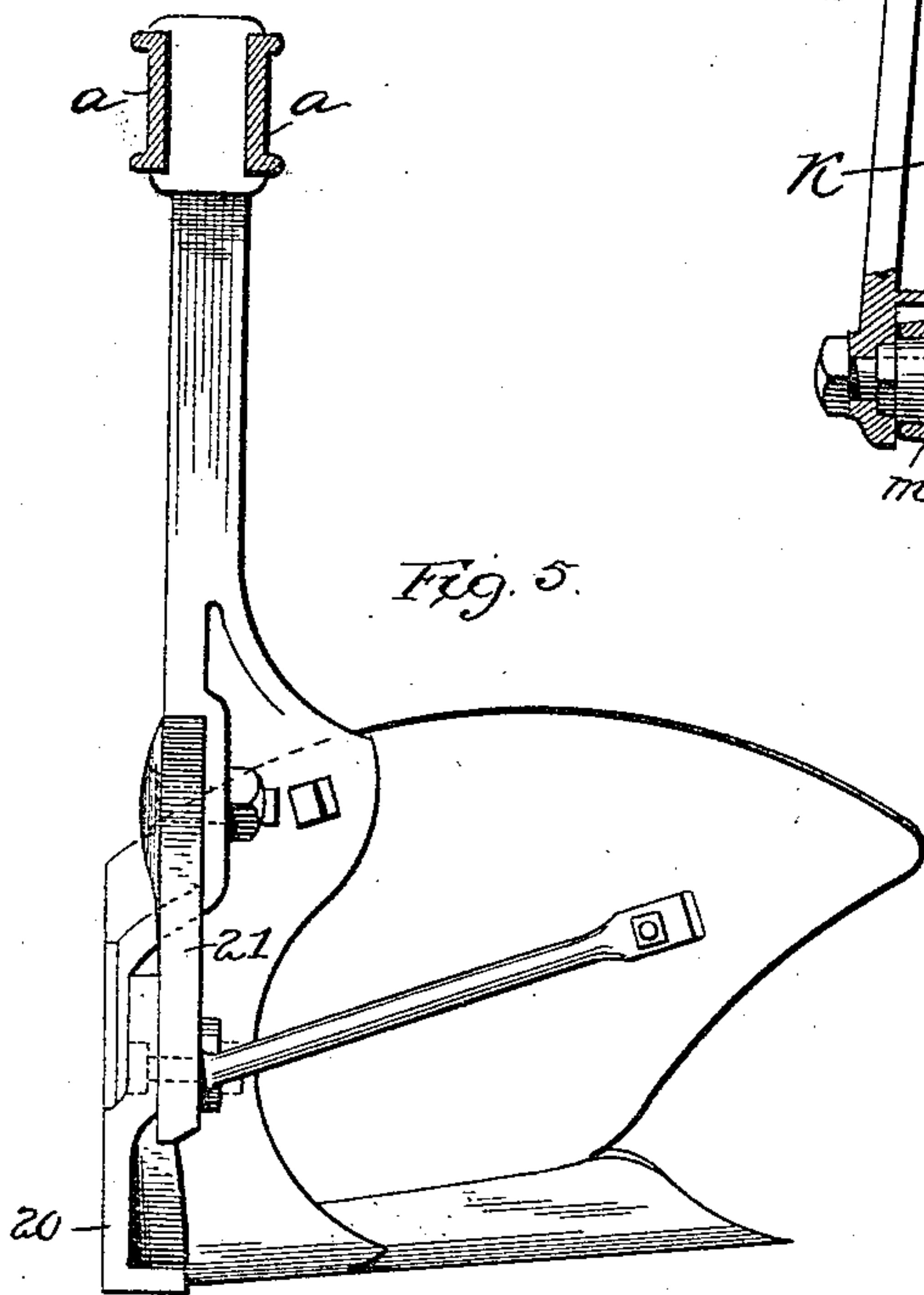
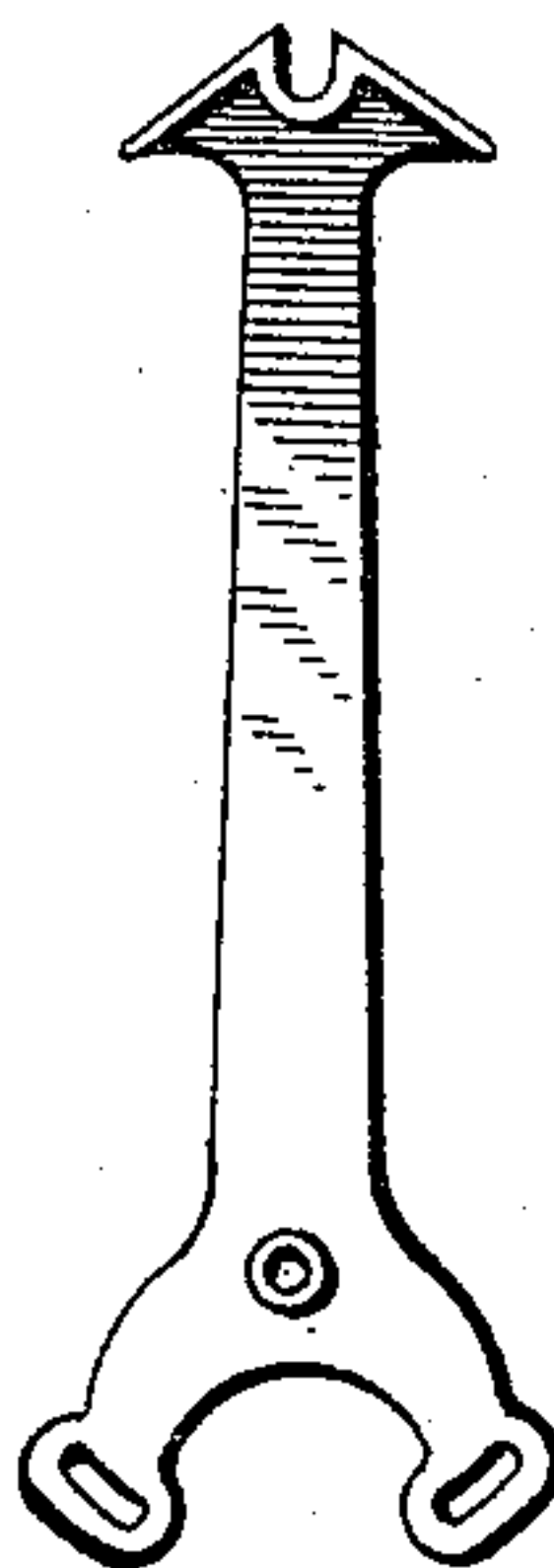


Fig. 5.

Fig. 6



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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. 442,673, dated December 16, 1890.

Application filed July 1, 1890. Serial No. 357,399. (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.

The invention relates to riding or sulky plows.

The invention includes various points of improvement, which are shown in connection with a plow adapted to two or more plow-bases, though not necessarily limited to two.

In the accompanying drawings I have shown this form of plow with two plow-bases.

Figure 1 shows a plan view of the plow. Fig. 2 shows a side elevation of the plow; Fig. 3, a section of the plow-post on line xx of Fig. 2. Fig. 4 is a section taken transversely on the line yy of Fig. 2. Fig. 5 shows a rear view of the plow-base and standard. Fig. 6 is a detail view of the catch-arm for the caster-wheel.

The main plow-beam (shown at A) carries the plow-base nearest the land-side, and to it are connected the lateral pieces which form the other parts of the frame. Of these pieces, which form the frame, A' is a supplemental beam which carries the second plow-base. As shown in the drawings, these beams are formed of two iron bars. (Represented in Fig. 5 in cross-section at a .) The heads b of the standards of the plow-bases are placed and bolted between these bars, the other parts of which are connected by bolts through suitable distance-pieces. The supplemental beam is connected to the main beam by adjustable connections, whereby it may be shifted toward or from said main beam to adapt the frame to the size of the plow-piece which may be used with it. To the supplemental frame is bolted a bar c , the ends of which are bent inwardly. The rear end laps upon the outwardly-turned end of the bar d , which is bolted to the side of the main beam. The ends of the bars d and c overlap and are provided with slots, through which pass bolts that hold the overlapping ends together. The forward end of the bar c overlaps the outwardly-bent end of the bar d in the same manner, and these overlapping ends are also

held together adjustably by means of bolts and slots. The inner end of the bar e is bolted to the side of the main beam. The forward end of the beam A' is adjustably attached to the front cross-bar B of the frame. A tie-rod f connects the rear end of the supplemental beam to a lug g at the forward end of the main beam to resist the strain of the plow on the frame. The frame is completed on the other side by means of a bar D bent laterally and connected directly to the beam in the rear at the central part of the frame by a brace h . The front end is connected with a cross-bar B.

On each side of the frame, at the forward end, is a main supporting-wheel E. These are journaled on crank-arms with segments connected to the main frame, and are provided with ordinary levers F, by means of which the relation of the wheels to the frame may be vertically changed. The right-hand wheel is adjustable to regulate the depth of the furrow and the left-hand wheel to level the frame or maintain the level in plowing on side hill. The levers F F' extend to the rear and terminate opposite the seat G within reach of the hands of the driver.

The levers and locking devices are of ordinary construction and operate in the ordinary manner.

In the rear end of the main beam is bolted a casting H, the main office of which is to form a bearing for the swivel-wheel K, which runs in the furrow next to the land side. The casting is clamped securely between the side pieces of the main beam, and it is provided with a vertical socket, which forms the bearing for the spindle of the caster-wheel. The lower end of this spindle is provided with a head to which the arms 2 are bolted. The casting H rests upon the head, and thus the weight of the rear end of the beam is transferred to the caster.

It will be observed that in the construction shown the caster-wheel is directly in rear of the driver's seat, and without some special provision could not be turned by him for the purpose of guiding the plow. This special provision I have made by the devices shown in Fig. 2. In front of the driver's seat is located a vertical shaft 12, having on its upper

end a hand-wheel 11. The shaft has its bearings in the casting 13, fixed to a support upon the main beam. The hand-wheel is in reach of the driver in his seat, and is connected to the spindle of the caster-wheel, so that by turning the hand-wheel 11 the driver can turn the caster-wheel and change the direction of the plow.

A variety of known devices might be used in forming the connection between the two shafts. Those shown in the figure are convenient and effective. They are as follows: On the spindle is set a sprocket-wheel 6 and on the shaft another sprocket-wheel 26. Around these are sprocket-chains made sufficiently long to provide for the required rotary movement of the sprocket-wheels. Their ends are connected by rods 8, provided with turn-buckles 9.

In order to hold the caster-wheel in fixed position—as, for example, in the same plane with the main plow-beam—I have provided an arm 7, which is connected to the spindle rigidly, like the tiller of a rudder. The forward end of it, as shown in Fig. 1, is provided with a notch, and bevels on each side of the notch to engage with the spring locking-bolt 10. This locking-bolt plays in guides in the casting on the beam, and its front end is connected to a rod 17, which in turn is connected to the lower end of the lever 14, pivoted to move in vertical planes on the casting 13. The lever 14 has a foot-piece 34 within reach of the foot of the driver. The lever 14 is of the third order, and by pressing upon the foot-piece on its lower end the locking-bolt 10 may be withdrawn from the notch in the end 7, and the arm is then released, so that the driver may turn the caster-wheel in either direction. The bevels on each side of the notch allow the arm to swing into place and automatically push back the bolt, so that it may lock at any time when the foot-piece is released. Ordinarily the arm should be in the same plane with a caster-wheel; but sometimes it is necessary to change this position in certain conditions of soil. Where the ground is hard, it may be desirable to set the wheel so that the plows will tend to run into the furrow-bank; or it may be desirable to lead the plows away from the furrow-bank to avoid cutting into the unplowed land too much. To provide for this adjustment of the arm 7, I have connected it to the sprocket-wheel 6 by bolts 30 31 32. The bolts 31 32 pass through slots in the rear arms of the arm 7, formed on a curve struck from the pivoting-bolt 30. By loosening the bolts 31 32 the tiller-arm 7 may be adjusted for the purpose above described.

The brake is applied to the caster-wheel, and in order to allow it to maintain its position without interfering with the connections by which it is operated I have provided a pivotal connection between the brake and the device under control of the driver. The brake-block is shown at 19. It is pivoted

upon the head of the spindle, and is connected by a rod with a bell-crank lever 18 on an arm 5 of the casting H. The arm 5 has a vertical hole in line with the central axis of the spindle. The rod which operates the brake-block is marked 22. It extends directly up through the spindle and the sprocket-wheel 6 and the arm 5, and also passes through the lower arm of the bell-crank lever 18, to which it is held by a nut, and in which it may turn. The upper arm of the bell-crank lever is connected by the rod 16 to a lever 15 pivoted on the casting 13 and provided with a foot-piece 35 within reach of the foot of the driver. By pushing on this foot-piece the driver applies the brake, and the device operates in the same manner, whatever may be the position of the caster-wheel. The head of the spindle also supports an arm 3, which carries the scraper 4, and this also is mounted in its proper relation to the wheel without regard to the position of the wheel.

I may use in connection with the riding-plow above described and in place of the caster-wheel above described the cone-faced back wheel shown in an application filed by me in the United States Patent Office, and now pending, serially numbered 352,365. When the said cone-faced back wheel is used, it will also take the place of the shoe shown in Figs. 2 and 5 in the accompanying drawings; but in the form shown with the caster-wheel I use a landside-shoe. (Marked 20.) This is formed, preferably, with a bottom flange and with a forward upward curve, as shown in Fig. 2. It is held by a bolt to a landside plate 21, the same bolt also holding the brace 40. The forward end of the shoe curves inward behind the ordinary landside-plate of the base. The plate 21 is fitted to a recess in the standard, upon which it is held by a bolt. The form shown of the frame is fitted to be made of rolled iron bars with cast-iron connections; but the frame may also be made of wood or any other suitable material.

The hub and bearings of the caster-wheel are of special formation, and are shown in detail in Fig. 4. In this figure the wheel K is shown in vertical section, taken centrally through the hub 1. Its hub is in the form of a flanged ring, the flange being centrally in the plane of the wheel. The arms 2, which are bolted to the head of the spindle, have on their interior faces at the lower ends angular sockets, in which are fitted the ends of a sleeve *m*, which has a central flange *n*. It has an axial hole, through which passes a bolt *N*, provided with a head and nut outside of the arm 2 to clamp the sleeve in the arms. The sleeve is tapered from the flange to the ends and forms the journal on which the hub turns. The hub is completed by the flanged sleeves *o*, the countersunk flanges of which are connected by bolts passing through them and through the flange of the hub 1.

I claim as my invention—

1. In combination with the spindle of the

caster-wheel and a sprocket-wheel fixed thereon, a shaft mounted in vertical bearings and having a sprocket-wheel, and the chains and connecting-rods connecting the two sprocket-wheels, substantially as described.

2. In a sulky-plow, the combination of the frame, the driver's seat thereon, the caster-wheel having an arm fixed to its spindle, a locking-bolt therefor, and independent operating connections leading from the caster-spindle and locking-bolt, respectively, to within convenient reach from the driver's seat, substantially as described.

3. In combination, the frame, the rear caster-wheel and spindle, the wheel 6 on the spindle, with operating connections for turning it, a locking-bolt, and an arm 7, adjustably secured to the wheel 6, substantially as described.

4. In combination with the caster-wheel and its spindle, and with the bearing therefor on the rear of the plow-frame, a brake pivoted to bear upon the said wheel, and a connecting-rod between said brake and the lever within reach of the driver, the said connecting-rod being arranged to pass through the spindle of the caster-wheel, substantially as described.

5. The combination of the brake arranged to bear upon the caster-wheel, the rod 22, passing through the spindle of the caster-wheel, the bell-crank lever pivoted upon an arm on the spindle-socket, and connections between said bell-crank lever and the lever arranged to be operated by the driver, substantially as described.

6. In combination, the frame, the caster-wheel, the spindle therefor, the bracket H, extending from the frame to hold said spindle, the operating mechanism for the spindle above the bracket, a scraper 4, and a scraper-

arm 3 at the lower end of the spindle below the bracket, substantially as described.

7. In combination with the main beam of the plow, a casting fixed to said beam, having bearings for a shaft arranged within reach of the driver, connected with the spindle of the caster-wheel, and levers arranged to be operated by the feet of the driver, connected with the caster-wheel-operating mechanism, the said levers being pivoted upon the casting, substantially as described.

8. In combination with the main beam A, carrying a plow-base, the supplemental beam A', carrying also a plow-base, and adjustable connections *d e* between the said beams, substantially as described.

9. In combination with the plow-base, a landside-plate secured thereto, and a movable shoe attached to said base in rear of the landside-plate, having its forward end fitted behind the plate, substantially as described.

10. In combination, the hub composed of the flanged ring 1, having the flanged sleeves *o o* bolted thereto, the arms 2, having the angular sockets, the sleeve *m*, having the flange *n* fitting between the sleeves *o o*, and the bolt N, all substantially as described.

11. In combination, the plow and frame, the caster-wheel, the spindle and head, the two arms 2, carried by said head, the brake pivoted between the arms 2 on the bolt which connects said arms to the head, and the operating connection leading from said brake, substantially as described.

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

CALEB E. TOWER.

Witnesses:

J. P. CREED,
LEIGHTON PINE.