(No Model.) 3 Sheets—Sheet 1.

J. WILLSON.

REVERSIBLE SULKY PLOW.

No. 358,180. Patented Feb. 22, 1887.

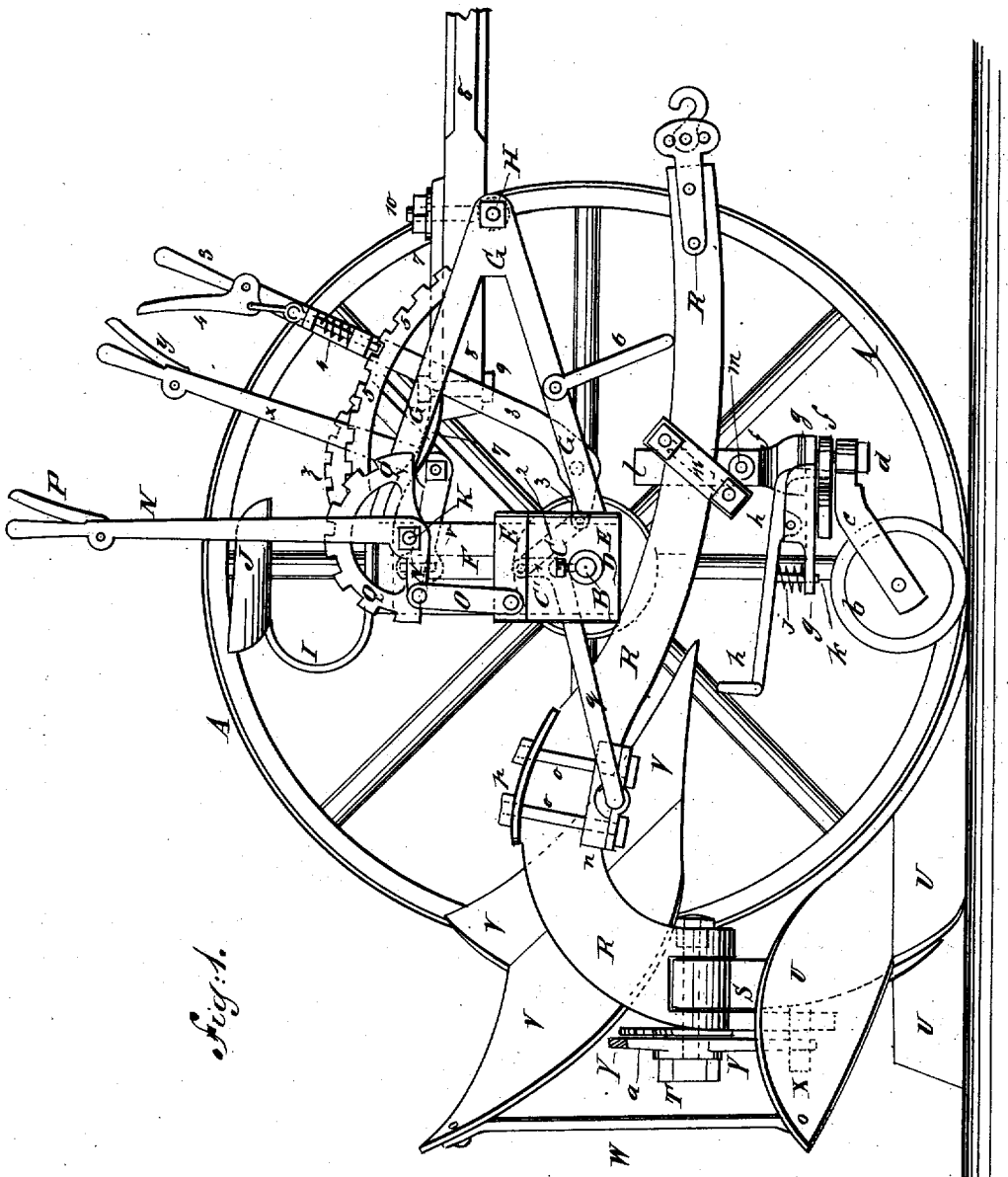

Fig. 1.

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REVERSIBLE SULKY PLOW.

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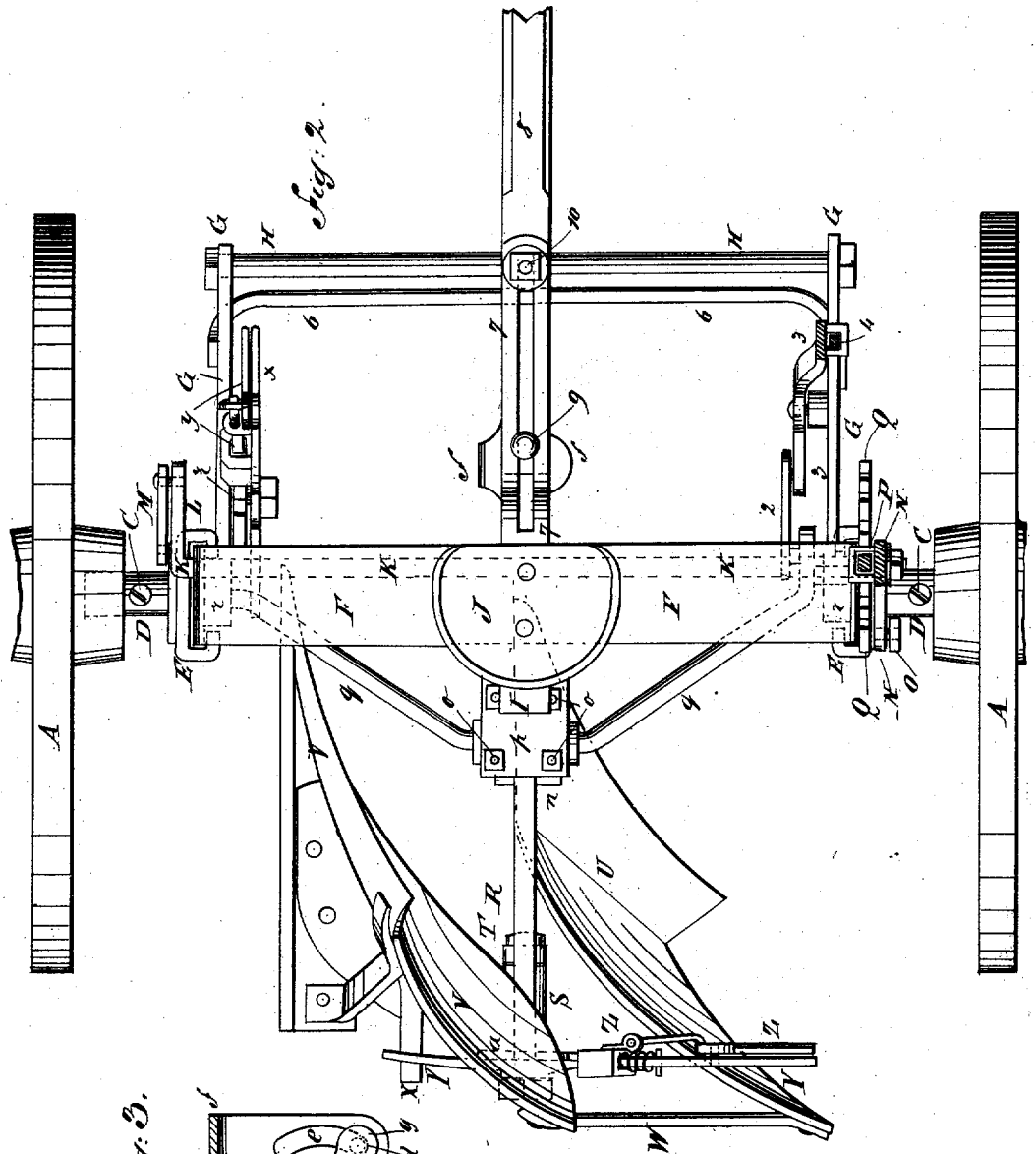

Fig. 2.

Fig. 3.

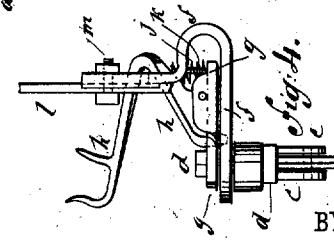

Fig. 4.

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REVERSIBLE SULKY PLOW.

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Fig. 5.

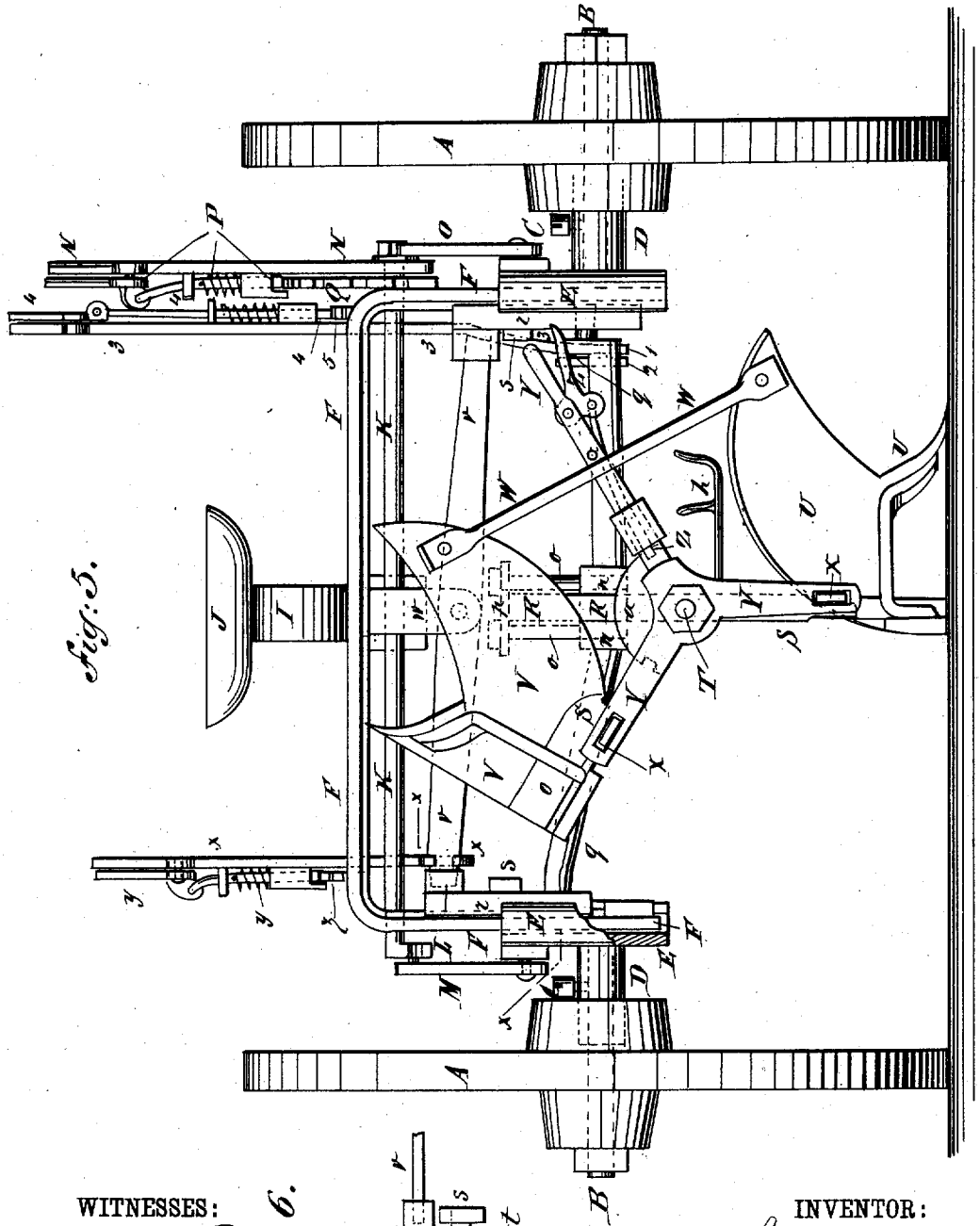
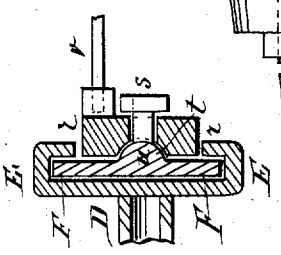


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES WILLSON, OF TOMAH, WISCONSIN.

REVERSIBLE SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 358,180, dated February 22, 1887.

Application filed June 19, 1886. Serial No. 205,662. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILLSON, of Tomah, in the county of Monroe and State of Wisconsin, have invented a new and useful Improvement in Reversible Sulky-Plows, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved reversible sulky-plow, one of the sulky-wheels being removed. Fig. 2 is a plan view of the same, two of the adjusting-levers being shown in section. Fig. 3 is a plan view, partly in section, of the colter and its adjusting mechanism. Fig. 4 is a front elevation of the same, part being broken away. Fig. 5 is a rear elevation of the machine, part being broken away. Fig. 6 is a sectional plan view of a part of the same, taken through broken line *x x*, Fig. 5.

The object of this invention is to provide reversible sulky-plows constructed in such a manner that the plows can be easily and readily reversed, the main frame leveled on laterally-inclined ground, the plows raised from the ground or adjusted to work to any desired depth in the ground, and the plows tilted laterally to adjust them to lateral inclination of the ground.

The invention consists in the construction and combination of various parts of the reversible sulky-plow, as will be hereinafter fully described.

A represents the sulky-wheels, the axles B of which are secured by set-screws C, or other suitable means, in sockets D, formed upon or attached to the slides E. In the inner sides of the slides E are formed T-shaped grooves, in which slide the ends of the U-shaped bar F. To the bar F, at or near its bends, and to the ends of the arms of the said bar, are attached the ends of the V-shaped bars G, which are connected at their angles by the rod H, the bar F, the bars G, and the rod H forming the sulky-frame.

To the center of the bar F is attached the lower arm of the U-shaped spring-standard I, to the upper arm of which is attached the driver's seat J.

In bearings in the upper parts of the arms of the bar F rocks a shaft, K, one end of which is bent forward at right angles, forming a crank-arm, L. To the end of the crank-arm L is pivoted the upper end of a short connecting-bar, M, the lower end of which is pivoted to the upper forward corner of the slide E at that side of the machine. To the other end of the shaft K is rigidly attached the angle of an elbow-lever, N, the short arm of which projects to the rearward, and to its end is pivoted the upper end of a short connecting-bar, O. The lower end of the bar O is pivoted to the upper rear corner of the slide E at that side of the machine. The long arm of the elbow-lever N extends upward into such a position that it can be readily reached and operated by the driver from his seat.

With the upper arm of the elbow-lever N is connected a spring lever-pawl, P, which engages with the recessed upper edge of a catch bar or plate, Q, attached to the adjacent arm of the bar F, so that the said lever N will be held securely in any position into which it may be adjusted. With this construction, by moving the upper end of the lever N forward or back one end of the bar F will be raised and the other lowered, so that the sulky-frame, and with it the driver's seat, can be kept level when the machine is working upon laterally-inclined ground.

R is the plow-beam, the downwardly-curved rear end of which is slotted to receive the angle of the angular double standard S. The standard S is pivoted to the beam R by a bolt, T, passing through the angle of the said standard and through the slotted rear end of the beam R. The standard S is bent at an angle of about one hundred and twenty degrees, and to its ends are secured a right-hand plow, U, and a left-hand plow, V, so that when either plow is swung down into a working position the other is swung up out of the way, as shown in Figs. 1 and 5. The connection between the plows U V is strengthened by a connecting-bar W, the ends of which are riveted or bolted to the rear ends of the mold-boards of the said plows, as shown in Figs. 1, 2, and 5. The rear part of the slotted rear end of the plow-beam R extends downward farther than the forward part, for the stand-

ard-arm of the plow that is in a working position to rest against to assist in supporting the said plow against the draft-strain.

To each arm of the angular standard S is attached, or upon it is formed, a rearwardly-projecting lug, X, which passes through a perforation in the end of an arm of the three-armed lever Y. The three-armed lever Y is pivoted at its angle to the bolt T, and its third or upper arm projects upward into such a position that it can be readily reached and operated by the driver to reverse the plows.

The upper arm of the lever Y is provided with a spring lever-pawl, Z, to engage with recesses in the arched upper edge of the catch-plate *a*, secured to the rear side of the lower end of the plow-beam R, to hold the plows U V securely in either position. *b* is a rotary colter, which is journaled to the slotted lower end of the standard *c*. The standard *c* projects upward and forward and is pivoted at its upper end to a bolt, *d*, which passes through a curved slot, *e*, in the forward part of the plate *f*, and is attached to the forward end of the bar *g*. The bar *g*, at a little distance from its rear end, is pivoted by a bolt or rivet to the rear part of the plate *f*, at the center of the circle of which the slot *e* forms a part. The side parts of the bar *g* are bent upward, forming two parallel flanges, to and between which is pivoted, at a little distance from its rear end, the foot-lever *h*. The forward end of the foot-lever *h* is bent downward at right angles to enter one or the other of the holes *i*, formed in the plate *f*, to lock the upper end of the standard *c* in either position. The rear end of the foot-lever *h* is bent to one side, and is provided with a foot-rest, so that the said lever can be readily operated by the driver with his foot to adjust the rotary colter in front of the colter of the working-plow.

The rear end of the foot-lever *h* is pressed upward, to prevent the colter from being accidentally released, by a spiral spring, *j*, interposed between the said foot-lever and the rear end of the bar *g*, and kept in place by a guide-pin, *k*, attached to the said foot-lever *h*, and which passes through a guide-hole in the said rear end of the bar *g*.

Upon one side of the plate *f* is formed an arm, which is bent upward, inward, and upward, and its upper end is secured to the lower end of the bar *l* by a bolt, *m*. The arm of the plate *f* has flanges upon its side edges to rest against the side edges of the bar *l* and prevent the said plate and bar from turning upon their connecting-bolt. The bar *l* is secured to the side of the plow-beam R by a clip, 11, as shown in Fig. 1.

To the lower side of the plow-beam R, at or a little in front of its bend, is secured a bearing, *n*, by means of bolts *o*, passing up at the sides of the said plow-beam, and passing through a plate, *p*, placed upon the upper side of the said plow-beam. In the bearing *n* rocks the center of the bail *q*, the ends of which are pivoted to blocks *r*, which slide up and down upon the inner sides of the arms of the U-shaped bar F, between the edges of the side flanges of the slides E, and are slotted vertically to receive the screws *s*, that secure them to the said arms of the bar F. Upon the outer sides of the sliding blocks *r* are formed vertical grooves *t*, to receive ribs *u*, formed upon the inner sides of the arms of the bar F, to cause the said sliding blocks to move up and down vertically. Upon the inner sides of the upper ends of the sliding blocks *r* are formed sockets to receive the ends of the bar *v*, which is pivoted at its center to a hanger, *w*, attached to the center of the bar F.

To the bar *v*, near one end, is pivoted the end of the elbow-lever *x*, which is pivoted at its angle to the upper arm of one of the V-shaped bars G, or to a support attached to the said arm, so that by operating the said lever *x* the bar *v* will be operated to raise one of the sliding blocks *r* and lower the other, and thus tilt the working-plow toward or from the land, as may be required. The lever *x* is held in any position into which it may be adjusted by a spring lever-pawl, *y*, connected with the upper arm of the said lever, and engaging with the catch-plate *z*, attached to the upper arm of the V-shaped bar G.

To the bail *q*, near one end, is rigidly attached, or upon it is formed, a short upwardly-projecting crank-arm, 1, to which is pivoted the upper end of a short connecting-bar, 2. To the lower end of the connecting-bar 2 is pivoted the end of the short arm of the elbow-lever 3, which is pivoted at its angle to the lower arm of one of the V-shaped bars G, so that by operating the said lever the bail *q* can be turned to raise the plows from the ground, or to adjust them to work at any desired depth in the ground.

The upper arm of the lever 3 is provided with a spring lever-pawl, 4, which engages with a recessed catch-bar, 5, attached to the upper arm of the V-shaped bar G, so that the bail, and with it the plows, will be held securely in any position into which they may have been adjusted.

To the forward parts of the lower arms of the V-shaped bars G are rigidly attached the ends of a bail, 6, the arms of which are made of such a length that the middle part of the said bail will be a little above the forward part of the plow-beam R, so that when the lever 3 is operated to raised the plows the forward part of the plow-beam will come in contact with the bail 6, which will serve as a fulcrum to cause the plows to be more easily raised, and to hold them steadily when in a raised position.

To the middle part of the bar F is secured, by bolts or other suitable means, the rear end of a forwardly-projecting bar, 7, which is slotted longitudinally nearly to its ends. 8 is the tongue, the rear part of which is slotted to correspond with the slot in the bar 7. The slotted rear part of the tongue 8 is placed be-

neath the slotted bar 7, and is secured in place by the bolt 9, which passes through the solid rear end of the tongue 8, and through the rear part of the slot in the bar 7, and by the eye-bolt 10, through the eye of which the cross-rod H passes, and which passes up through the forward parts of the slots in the bar 7 and tongue 8, so that by loosening the nuts of the bolts 9 10 the tongue 8 can be contracted or extended, as the length of the horses may require.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a reversible sulky-plow, the combination, with the slotted rear end of the plow-beam R, the right plow U, and the left plow V, of the swinging angular standard S, having lugs X, the bolt T, pivoting the said standard to the plow-beam, the three-armed lever Y, engaging with the lugs X and pivoted to the bolt T, and the spring lever-pawl Z, and catch-plate *a*, substantially as herein shown and described, whereby the said plows will be securely connected with the said beam and can be readily reversed, as set forth.

2. In a reversible sulky-plow, the combination, with the plow-beam R and the rotary colter *b* and its standard *c*, of the plate *f*, having curved slot *e*, perforations *i*, and curved arm, the flanged bar *g*, pivoted to the said plate, the bolt *d*, connecting the bar *g* and colter-standard *c*, and passing through the curved slot *e*, the foot-lever *h*, having a downwardly-projecting forward end engaging with the perforations *i*, of the plate *f* and the bar *l*, and clip 11, connecting the arm of the plate *f* with the plow-beam, substantially as herein shown and described, whereby the said rotary colter can be readily adjusted into line with either plow, as set forth.

3. In a reversible sulky-plow, the combination, with the wheels A, the axles B, and the slides E, carrying the said axles, of the vertically-sliding frame F G H, the connecting-bars M O, pivoted to the said slides, the shaft K, journaled to the U-shaped bar F of the sliding frame, the crank-arm L, connecting one end of the shaft K with the connecting-bar M, and the elbow-lever N, connecting the other end of the said shaft K with the connecting-bar O, substantially as herein shown and described, whereby the frame can be readily leveled when the plow is working on laterally-inclined ground, as set forth.

4. In a reversible sulky-plow, the combination, with the plow-beam R and the sliding frame F G H, of the bearing *n*, secured to the said plow-beam, the bail *q*, journaled in the said bearing, the slotted bar *r*, sliding upon the arms of the U-shaped bar of the sliding frame, the pivoted cross-bar *v*, connected with the said sliding bars and pivoted centrally to a support attached to the center of the said U-shaped bar of the sliding frame, and the elbow-lever *x*, connected with the said pivoted cross-bar, substantially as herein shown and described, whereby either plow can be tilted toward or from the land as may be required, as set forth.

5. In a reversible sulky-plow, the combination, with the plow-beam R, the sliding bars *r*, and the sliding frame F G H, of the bearing *n*, secured to the said plow-beam, the bail *q*, journaled to the said bearing and to the said sliding bars, and having a crank-arm, 1, at one end, the connecting-bar 2, pivoted to the said crank-arm, the elbow-lever 3, pivoted to the said connecting-bar and fulcrumed to the said sliding frame, and the stationary fulcrum-bail 6, attached to the said sliding frame for the plow-beam to strike against, substantially as herein shown and described, whereby the plows can be readily raised from the ground or adjusted to work at any desired depth in the ground, as set forth.

6. In a reversible sulky-plow, the combination, with the vertically-sliding frame F G H, of the slotted bar 7, attached to the U-shaped bar of the said sliding frame, the tongue 8, slotted to correspond with the slotted bar 7, the bolt 9, securing the said bar and tongue together, and the eyebolt 10, securing the said bar and tongue to each other and to the cross-rod of the said sliding frame, substantially as herein shown and described, whereby the said tongue can be readily lengthened and shortened as the length of the team may require, as set forth.

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Witnesses:
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MATTIE M. SCHULZ.