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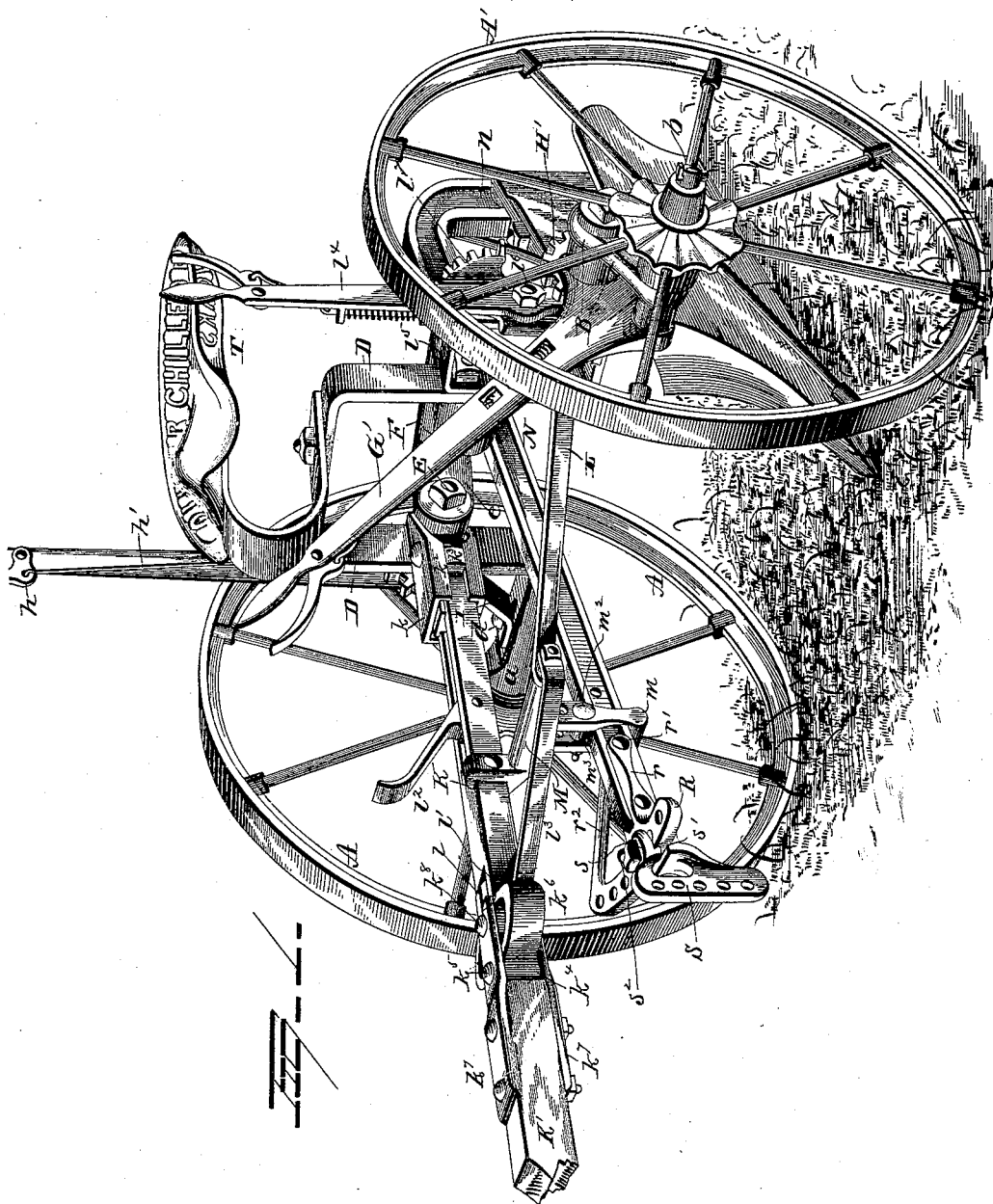
3 Sheets—Sheet 1.

C. ANDERSON.

SULKY PLOW.

No. 348,487.

Patented Aug. 31, 1886.

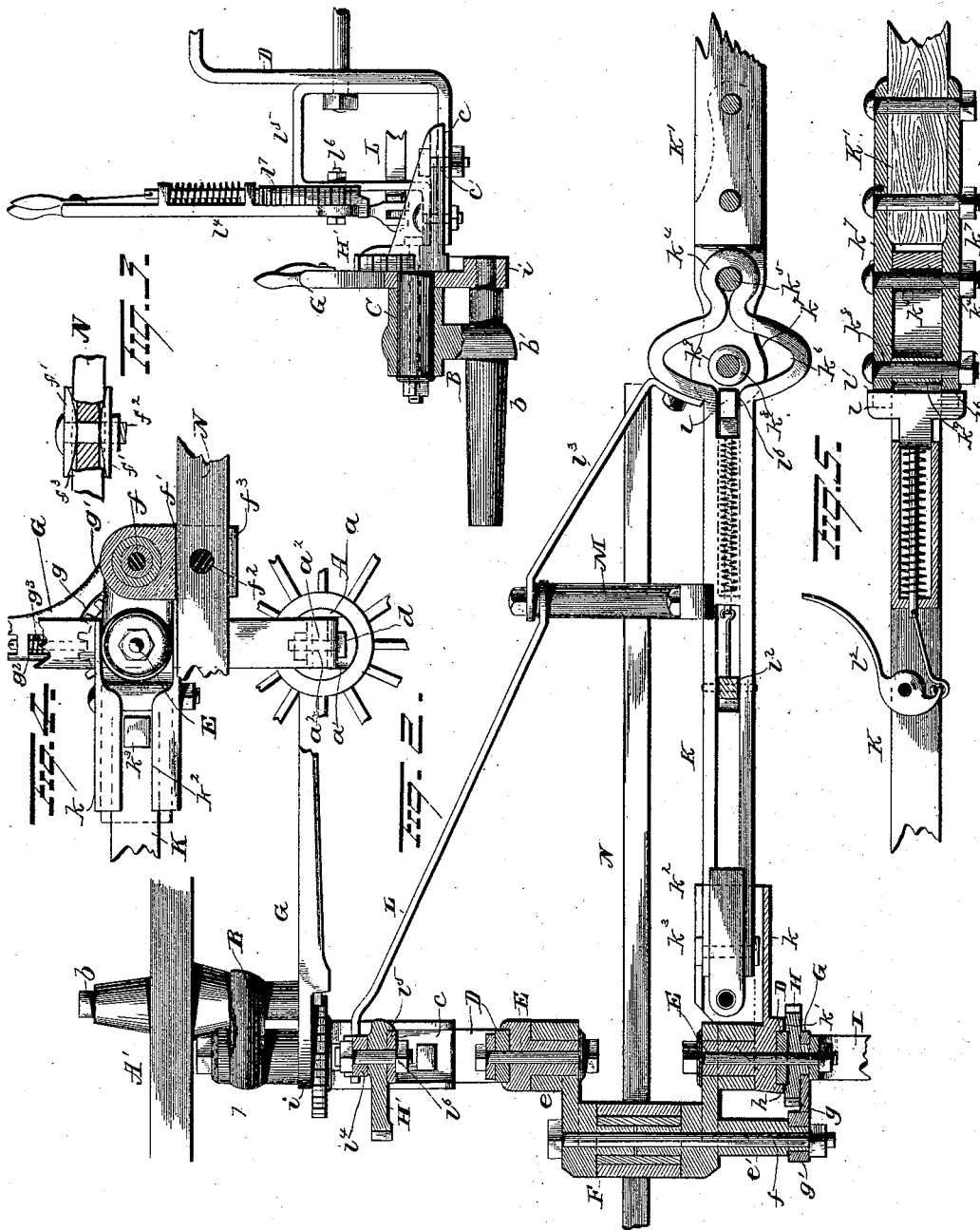


WITNESSES  
 E. Nottingham  
 Geo. T. Downing.

Charles Anderson <sup>INVENTOR</sup>  
By H. A. Seymour <sup>Attorney</sup>

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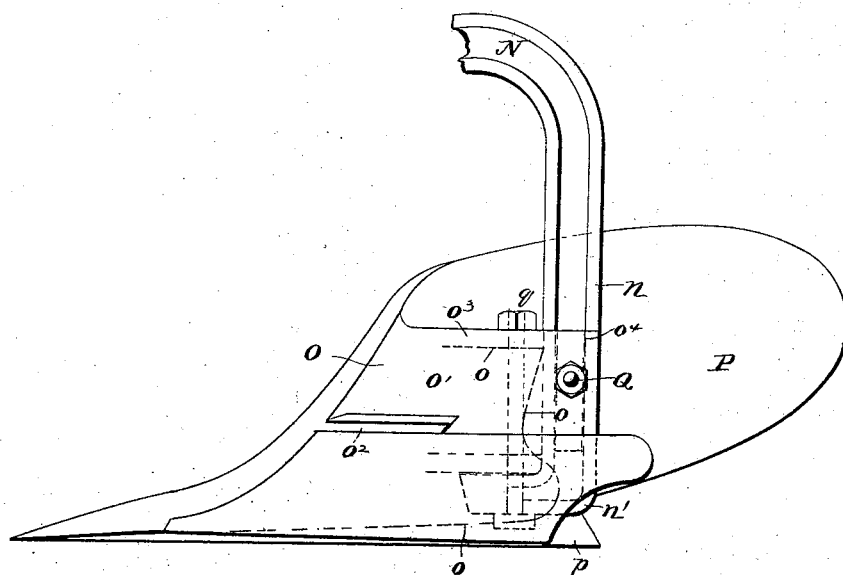
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By H. A. Seymour <sup>Attorney</sup>

# UNITED STATES PATENT OFFICE.

CHARLES ANDERSON, OF SOUTH BEND, INDIANA, ASSIGNOR TO THE  
SOUTH BEND IRON WORKS, OF SAME PLACE.

## SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 348,487, dated August 31, 1886.

Application filed June 7, 1886. Serial No. 204,434. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ANDERSON, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Sulky-Plows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in sulky-plows.

In my application for Letters Patent entitled Sulky-plows, filed June 5, 1886, Serial No. 204,223, a sulky-plow was described which combined lightness and simplicity with strength and effectiveness.

The object of my present invention is to provide an attachment which may be applied to the axle and plow, as constructed in said application referred to above, by removing certain parts therefrom, and by which the line of draft may be set at any desired angle to the plane of the furrow-wheel and the plow turned around with greater facility.

A further object is to provide certain modified forms of crank-arm, hanger, and stub-axle, which may be employed in the place of those shown in my former application.

With these ends in view my invention consists in certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the plow in perspective. Fig. 2 is a view of the attachment detached from the plow, and Figs. 3, 4, and 5 represent detached views of parts. Fig. 6 is a plow that may be attached to the sulky.

The attachment consists of the tongue, side brace, and mechanism attached to the side brace for swinging the tongue and the hanger for adjusting the front end of the plow-beam. These parts are adapted to replace the tongue, diagonal brace on the land side, and swinging hanger for adjusting the front end of the plow-beam, as shown and described in the application hereinbefore referred to, and the modified crank-arm, plow-supporting hanger, and stub-axle are also adapted to replace the forms shown in the former case.

The remaining parts of the sulky and the

plow are constructed and combined in the same manner as described in said former application, and are herein set forth for the purpose of showing the relation of the improved attachment to the several parts, which together with the attachment make up the complete sulky-plow, those features of the plow proper which are not confined to sulky-plows in their application being reserved as the subject-matter of a separate application.

A represents the furrow-wheel, and A' the land-wheel. The furrow-wheel A is mounted on a stub-axle, *a*, in the upper side of which is a channel extending from the shoulder at the end of the spindle to the inner end, and through which extends a vertical elongated slot, *a'*, for the reception of the bolt which secures the end of the yoke or arch-section of the axle. The wheel A' is mounted on a spindle, *b*, which is in effect the wrist-pin of a crank, B, the latter being mounted on the end of a stub-axle, C, in a line with the stub-axle *a*. The under side of the stub-axle C for a considerable distance from the inner end of the same is provided with a channel, *c*, to receive the land end of the arch-section of the axle, and the upper side is correspondingly grooved to receive the end of a bracket-brace. The grooved portion of the stub-axle C is provided with perforations *c'*, to receive the securing-bolts. The stub-axles are firmly united by an arched axle-section, D, the ends of which have extended bearings in the channels formed in the upper side of *a* and under side of C, respectively. The elongated slot *a'* in the stub-axle *a*, through which the securing-bolt *d* extends, admits of the adjustment of the wheel A toward and away from the plow, enabling the latter to cut a narrower or wider furrow, as may be desired. At points about the middle of the sides of the arched axle-section D are a pair of pivotal bolts, E, set firmly in the sides of the section D, and having their axis in the same line.

On the portions of the bolts E which extend within the arch of the section D are loosely mounted a pair of arms, *e*, between the free ends of which are loosely secured the sleeve portion F of a hanger for the attachment of the plow. The end of the arm *e* on the furrow side is provided with an outwardly-

extending sleeve, *e'*, the end of which is about flush with the outer face of the side of the arch D. The free ends of the arms *e* are secured together with the sleeve F of the plow-hanger between them by a bolt, *f*, which extends through them and through the sleeve-projection *e'*. An operating-lever, G, for swinging the arms *e*, and hence elevating or depressing the plow-hanger and plow attached thereto, is loosely mounted on the end of the bolt E, projecting on the furrow side of the arch D. Between the lever G and the side of the arch D a toothed sector-bar, H, is firmly secured on the bolt E, and provided with shoulders *h*, which project over the edges of the arch, and the end of the lever G is hollowed out to conform to the periphery of the sector-bar, as shown at *g*. A branch, *g'*, at the lower end of the lever G, extends rearwardly and loosely embraces the bolt *f* at the end of the sleeve-projection *e'*. A spring-actuated dog, *g''*, is allowed a longitudinally-sliding motion in bearings formed across a channel, *g''*, in the lower portion of the lever G, and is adapted to automatically engage the toothed sector-bar H and lock the lever G, and hence plow, in the desired elevated adjustment. The spring-actuated dog *g''* is operated by a hand-lever, *h*, secured to the handle of the lever G and connected with the dog by a rod, *h'*, located in a prolongation of the channel *g''*. A diagonal brace, I, is secured on the end of the bolt E, and leads from thence to the end of the arch-section D on the furrow side, its lower end being secured by the bolt which secures the arched section D to the stub-axle.

To the stub-axle C, at the end of the channeled portion, is secured a sector-bar, H', and on the said axle between the sector-bar and the crank B is loosely mounted an operating-lever, G', quite similar in its construction to the lever G, above described, its projecting foot or its branch *i* being adapted to loosely embrace the inner end of the spindle *b*, which projects through a sleeve, *b'*, on the free end of the crank B. The rotation of the lever G' on its axis thus rotates the crank B and elevates or depresses the land-wheel A', as may be desired, while the spring-actuated dog attached to the lever serves to lock the lever, and hence the wheel, in the desired adjustment.

From the sleeve F of the plow-hanger depend a pair of jaws, *f'*, between which the plow-beam is pivotally secured by a bolt, *f''*, which extends through the jaws and plow-beam. The lower ends of the jaws *f'* extend toward each other a short distance, as shown at *f'''*, and the inner faces of the jaws are made convex or rounded, to admit of the slight laterally-rocking motion of the beam as the plow works through the soil without exerting any strain upon the jaws or wearing their faces. The sleeve F of this hanger is further provided with a loose box-bearing of hard metal, which may be replaced at slight expense when worn, and saves the cost of an entirely new hanger.

The driver's seat T is secured to the top of the arch D by a band-spring, *t*, and the sleeve of the hanger M serves as a foot-rest. The plow-beam N is of the channel type, and at its rear end, where it forms the plow-standard *n*, it is formed nearly or quite straight, extending downwardly to the foot of the plow, and there bending forwardly with a sharp turn, as shown at *n'*.

For securing the mold-board, landside, and point to the standard, a peculiar shaped casting, O, is provided, as follows: The side *o* of the casting is shaped to conform to the curve of the mold-board P, and furnishes an extended seat for the same. It also extends low enough to form an extended bearing for the plow-joint and wing *p*. The side *o'* of the casting extends rearwardly at the same angle with the side *o* as the landside *p'* makes with the mold-board, and forms an extended seat for the landside. The sides *o* and *o'* of the casting are firmly united by a horizontal web, *o''*, a short distance above the foot and by the increased thickness of metal at the upper end, *o'''*. The lower end of the plow-beam N or standard *n* fits snugly beneath the web *o''*, and a rib, *o'''*, at the rear edge of the side *o'* of the casting, is adapted to fit snugly in the groove in the side of the beam or standard. The beam is locked in its adjustment by means of one or more bolts, Q, (one is sufficient,) which extends transversely through the beam and the side *o'* of the casting, and by a long bolt, *q*, which extends upwardly through the foot of the standard *n*, web *o''*, and re-enforced top *o'''* of the casting. This latter-named bolt is not, however, absolutely necessary to secure the beam to the plow; but it tends to materially strengthen the attachment and prevent any possible play between beam or standard and plow. The distance of the web *o''* above the foot of the plow is naturally determined by the depth of the end of the standard *n*, the object being to allow the latter sufficient room to keep it above the foot-bearing of the plow, and yet not reduce its depth enough to weaken it.

The attachment on the front end of the plow-beam for applying the draft at different points to the right and left of the beam-center consists of a transverse perforated bar, R, projecting farther on the furrow side than on the land side of the beam, to the rear edge of which are secured a pair of rearwardly-extending jaws or branches, *r*, adapted to embrace the opposite sides of the plow-beam, to which they are secured by bolts *r'*, extending through the jaws or branches and the beam. A strengthening-brace, *r''*, extends from the furrow end of the bar R to the jaw or branch *r* near its rear end.

The clevis S consists of an upright perforated bar terminating rearwardly in a pair of jaws, *s*, which snugly fit the upper and lower sides of the bar R and lip over the front of said bar, as shown at *s'*. By sliding the clevis along the bar R and locking it in different po-

sitions thereon by a draw-bolt,  $s^2$ , the plow may be made to take more or less land, as desired, and may be held up to its work in side-hill plowing, where the tendency is to constantly

5 work away from the land.

K represents the section of the jointed tongue which is located next the plow-frame. It is preferably of skeleton form, consisting of a pair of flat metallic bars spaced a short distance apart, and secured firmly together at their ends and at suitable intervals between the ends. It is secured at its rear end in a limited laterally-swinging adjustment in an angular sleeve,  $k$ , the later being secured on the furrow-side bolt E, just inside of the arch D, and recessed, as shown at  $k'$ , to lip over the front and rear edges of the arch and thereby form a firm connection therewith. One side of the sleeve  $k$  is provided with an open slot,  $k^2$ , to admit a bolt-head,  $k^3$ , on the side of the tongue. The extreme front end of the tongue-section K is provided with a vertical socket,  $k^4$ , adapted to receive the pintle-bolt  $k^5$ , which secures the tongue section K' to the section K. Immediately in the rear of the socket  $k^4$  the tongue-section K is provided with a transversely elongated loop,  $k^6$ . The socket  $k^4$  and loop  $k^6$  are preferably formed by forging or casting a single bar or two bars of metal into the shape required. The section K' of the tongue, which is preferably of wood, is provided with a pair of rearwardly-extending plates,  $k^7$ , one secured to the upper side of the tongue and one to the lower side, and the pintle-bolt  $k^5$  extends through the plates  $k^7$ , near the end of the tongue-section K'. The plates extend toward the beam-section K above and below the edges of the loop  $k^6$ , and are held in light contact therewith by a draw-bolt,  $k^8$ , which extends through the plates, passing within the loop  $k^6$ . The bolt  $k^8$  is provided between the plates  $k^7$ , with a wearing-sleeve,  $k^9$ , and serves to limit the lateral swing of the section K' by its contact with the ends of the loop. The bearing of the plates  $k^7$  on the edges of the loop  $k^6$  serves to keep the section K' steady and cause it to swing without cramping as well as to strengthen it against both vertical and lateral strain. A spring-actuated dog or plunger,  $l$ , housed between the sides of the beam-section K, is adapted to automatically engage recesses  $l'$  in the ends of the plates  $k^7$ , and thereby lock the section K' in a straight line with the section K. A foot-lever,  $l^2$ , pivotally secured between the sides of the section K, has its short arm connected with the dog or plunger  $l$ , thus enabling the driver to release the section K' whenever desired, by pressing on the long arm of the said lever  $l^2$ .

60 To the land side of the tongue-section K is rigidly secured a laterally-extending arm, M, provided with a depending branch,  $m$ , in which is formed an elongated closed slot,  $m'$ , adapted to receive the plow-beam N. A bolt,  $m^2$ , provided with a wearing-sleeve,  $m^3$ , is adapted to be secured at different elevations across the slot  $m'$  above the beam N, and thereby

hold the beam in the desired depressed adjustment, and at the same time admit of its longitudinally-sliding motion as the plow is elevated or depressed by the crank-arms attached to the arch D. A diagonal brace,  $l^3$ , extends from the side of the loop  $k^6$  to the end of the arm M, and a second brace, L, loosely secured on the end of the arm M, extends from thence to the end of the short arm of an operating-lever,  $l^4$ . The lever  $l^4$  is pivotally secured to the land side of a rectangular brace,  $l^5$ , adapted to be secured to the side of the arch D by the bolt E and to the stub-axle C by the bolt which in the former construction referred to secured the lower end of the diagonal brace I. The bolt  $l^6$ , which secures the lever  $l^4$  to the brace  $l^5$ , also secures a toothed or notched sector-bar,  $l^7$ , to the side of the brace  $l^5$ , the said sector-bar being adapted to lip over the edges of the brace, and thereby be held firmly in place. A spring-actuated dog of ordinary construction is secured to the lever  $l^4$  and adapted to lock the lever in the desired swinging adjustment. By throwing the lever  $l^4$  forwardly or backwardly the tongue-section K and plow-beam N are simultaneously swung away from or toward the furrow-wheel and the plow caused to take more or less land, as the circumstances may require. These features—the laterally-swinging adjustment of the tongue and plow-beam under the immediate command of the driver, the swinging of the front tongue-section in turning, and the means for regulating the depression of the plow-beam, taken in connection with the improved construction of sulky and plow, as herein before explained—serve to provide a sulky-plow possessing all the important advantages of the heavier and more complicated plows, and at the same time furnish a plow of light draft and moderate cost.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. The combination, with an arched axle, a pivoted tongue secured thereto, and a plow-beam secured to the axle in laterally-swinging adjustment and loosely secured near its front end to the tongue, of an operating-lever pivotally secured to the plow-frame and connected with the tongue, by means of which the tongue and plow-beam are adjusted toward and away from the plane of the furrow-wheel, substantially as set forth.

2. In a sulky-plow, the combination, with a tongue and a plow-beam, each secured to the arch-axle in a limited laterally-swinging adjustment, and means for securing the plow-beam loosely to the tongue, of an operating-lever connected with the plow-beam and

tongue and adapted to swing them simultaneously toward and away from the plane of the furrow-wheel, substantially as set forth.

3. In a sulky-plow, the combination, with  
5 a laterally-swinging tongue and vertically-swinging plow-beam, of a laterally-extending arm rigidly secured to the tongue and adapted to loosely embrace the plow-beam, substantially as set forth.

10 4. In a sulky-plow, the combination, with the tongue and the plow-beam, of the laterally-extending arm rigidly secured to the tongue and provided with a depending slotted arm adapted to embrace the plow-beam, and  
15 the side brace and operating-bar adapted to connect the said laterally-extending arm with the operating-lever, substantially as set forth.

5. In a sulky-plow, the combination, with  
20 the rear section of the tongue provided with a transversely-elongated loop near its forward end and a socket forward of the loop, of a laterally-swinging tongue-section hinged to the rear section by a bolt extending through the socket and provided with an upper and a  
25 lower rearwardly-extending guide-plate connected by a bolt through the transversely-elongated loop, substantially as set forth.

6. In a sulky-plow, the combination, with the tongue-section hinged to the rear section and limited in its lateral swinging movement  
30 by a bolt or its equivalent adapted to engage the ends of a transversely-elongated loop in the end of the rear section, of a spring-actuated dog housed between the sides of the rear tongue-section, adapted to lock the tongue-  
35 sections in alignment, and a foot-lever for operating the dog, substantially as set forth.

7. The skeleton tongue-section, consisting, essentially, of the flat bars spaced a suitable  
40 distance apart and forged or cast to form the transversely-elongated loop and the hinge-socket, substantially as set forth.

8. In a sulky-plow, a plow-supporting hanger provided with depending jaws or branches  
45 having convex or rounded faces, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES ANDERSON.

Witnesses:

F. C. NIPPOLD,

M. M. MATTHEWS.