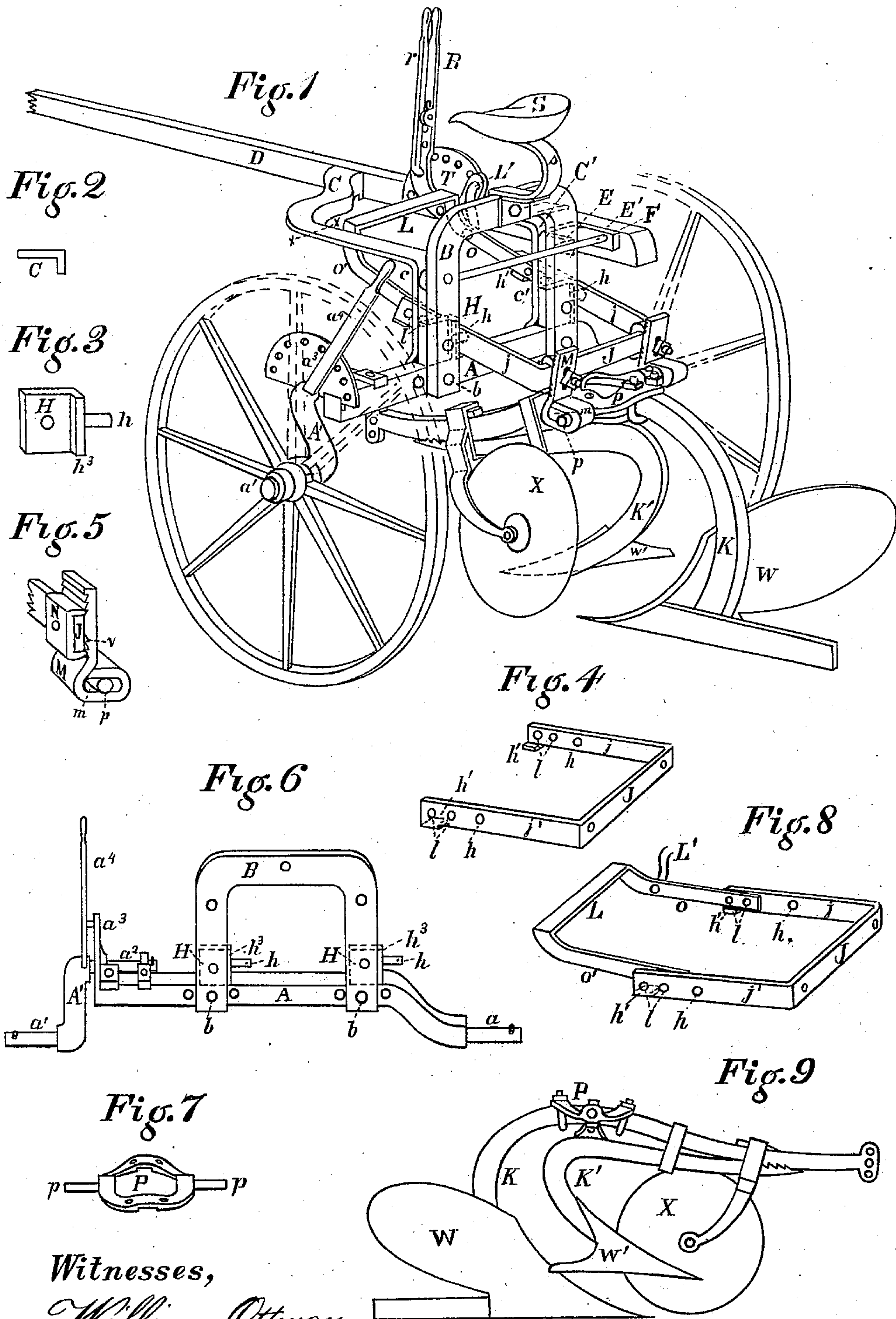


J. LANE.  
Sulky-Plow.

No. 209,175.

Patented Oct. 22, 1878.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SULKY-PLOWS.

Specification forming part of Letters Patent No. **209,175**, dated October 22, 1878; application filed June 13, 1878.

*To all whom it may concern:*

Be it known that I, JOHN LANE, of Hyde Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sulky-Plows, which improvement is fully set forth in the following specification and accompanying drawing, in which—

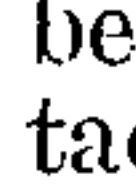
Figure 1 is a perspective view of a sulky-plow with my improvement attached. Fig. 2 is a cross-section of the foot-rail C, taken on dotted lines *xx* in Fig. 1. Fig. 3 is a view of the bracket H detached from the frame, showing the construction of the shoulder *h*<sup>3</sup> and pivot-pin *h*. Fig. 4 is a view of the bail-yoke J detached from the frame, showing how it is formed and the construction of stop-hooks *h*<sup>1</sup> and perforations *lh*. Fig. 5 is a view of the hanger M, holder N, and a piece of the rear end of the yoke J, showing how the holder N is bent over the yoke J and its ends holding in the grooves *v*, and also showing how the saddle ends *p* have play in the slotted eyes *m*. Fig. 6 is a view of the axle A, having the crank-axle A' attached, also the arch B attached, showing how the arch B is adjustable on the axle by moving the bolts *b* to other holes in the axle, also showing how the crank-axle A' is attached to the axle A. Fig. 7 is a view of the saddle P, showing its construction, with the ends *p* made round. Fig. 8 is a view of the foot-lift L and yoke J, showing how they are united together, forming a rectangular frame. Fig. 9 is a view of the plow detached from the sulky, showing how the attachment slicing-plow W' is combined with the turning-plow W.

My invention relates to sulky-plows composed of an axle on wheels, having a tongue, and carrying a frame with a seat, and a pivoting bail-yoke, with levers, and to which are connected one or more plows; and consists in an improved construction of the axle and frame; also an improved bail-yoke, and foot-lifting device; also improved devices and method of connecting the plow-beam to the pivoting bail-yoke and frame; and also a plow connected therewith, having an improved plow attachment for slicing and dividing the furrow-slice, all substantially as hereinafter set forth and claimed.

A is the axle, consisting of a bar of wrought-

iron, having near one end a downward bend or crank, and the end terminating in a rounded-part wheel-arm, *a*, and to the other end is connected a rotary crank-wheel arm, by means of a bracket and segment, with levers and locks, as shown. The furrow-wheel rotates on the rounded part *a* of axle A and the land-wheel on the rotary crank-wheel arm, as shown.

A' is the rotary crank-wheel arm, consisting of a bar bent with two right-angle arms in opposite directions. On one arm, *a*<sup>1</sup>, rotates the land-wheel. The other arm, *a*<sup>2</sup>, revolves in a segment-sleeve, *a*<sup>3</sup>, which connects with the axle A with bolts, as shown. A lever, *a*<sup>4</sup>, is attached to the crank, and has a pin sticking in perforations in the segment *a*<sup>3</sup>, whereby, by moving the lever *a*<sup>4</sup>, the land-wheel is adjusted to level the plow at work.

The frame consists of the arch B, foot-rail C, tongue-brace C', and elbow E, connecting the axle A and tongue D, as shown. B is the arch, consisting of a flat bar of wrought-iron, bent  shape, and the perpendicular limbs attached with bolts to the axle A, and the closed end above supporting the seat S, as shown. C is the foot-rail, consisting of a bar of wrought-iron, attached to the tongue and extending obliquely to the opposite limb of the arch B, and there bent at right angles, extending downward, and the extension *c* attached with bolts to the axle A and arch B, as shown. C' is the tongue-brace, consisting of a bar of wrought-iron, attached to the tongue and extending obliquely to the near limb of the arch B, and there bent at right angles, extending downward, and the extension *c'* attached with bolts to the axle A and arch B, as shown. The foot-rail C and tongue-brace C' are alike, except as to length of the oblique parts, the foot-rail C being longer, and attached to the tongue some considerable distance forward of the tongue-brace C', as shown.

The axle is placed between the arch-limbs and the extension *c c'*, and bolts secure the three parts together, as shown; and the axle A may be moved laterally and the arch adjusted thereon by means of the several bolt-holes in the axle, as shown, and the furrow-wheel thereby adjusted nearer to or farther from the arch B, whereby the wheel may be adjusted close to the furrow-edge.



H is a bracket, consisting of a flat piece of iron, having a shoulder,  $h^3$ , and a rounded pin,  $h$ , projecting therefrom, on which pivots the bail-yoke J, as shown. The flat part of bracket H is bolted to the limbs of the arch B and the extension  $c$ , and bolts pass through the three parts, as shown, the shoulder  $h^3$  resting against the corner of the arch B as a brace, keeping the bracket in position, and the pin  $h$  projecting into a hole in yoke J, as shown.

E is an elbow, consisting of a flat bar of iron, bent near its center at right angles, and one arm secured between the limb of the arch B and the extension  $c'$ , and a bolt passing through the three, and the other arm is secured by a bolt to the tongue D, as shown.

F is a rod-brace, consisting of a rod of iron, having an eye on one end and a shoulder and screw nut and thread on the other end. The eye end is placed between the limb of the arch and extension  $c$ , and a bolt passing through the three secures them together, the other end of the rod F passing through the arm of the elbow E' and the tongue D, with a nut on each side or shoulder against the elbow and nut outside of the tongue, as shown, as a brace, to more securely brace the frame and tongue.  $s$  is the seat-spring, of ordinary construction and attachment, connecting the arch and seat S.

J is the bail-yoke, consisting of a flat bar of iron, bent  $\perp$  shape, having right-angle square corners and straight limbs  $j j'$ , and a straight closed end bar, as shown. The limbs  $j j'$  are perforated, and pivoted on the bracket-pins  $h$ ; and the ends of both limbs  $j j'$  extend forward of the arch B, each having two perforations,  $l$ , and a stop-hook,  $h^1$ , at the extreme end for attachment of the foot-lift, as hereinafter shown.

The plow-beam K is suspended to the yoke J, pivoting and vibrating by means of a saddle, P, attached to the plow-beam. The ends of the saddle terminate in round parts, which pivot and slide forward and back in the slots  $m$  of the hangers M, as shown.

P is the saddle, consisting of a plate crossing the beam K, to which it is attached with U-bolts, the ends of the saddle extending each side of the beam some distance, and each end terminating in a round part,  $p$ , pivoting in the hanger, as shown.

M is the hanger, (one attached to each corner of the yoke J,) consisting of a bar of iron, having an eye,  $m$ , at one end, in which pivots the end  $p$  of the saddle P. On one side of the hanger there are several saw-teeth grooves,  $v$ , a holder, N, consisting of a thin bar, bent over the yoke J, having the ends of the holder fitting in the grooves  $v$ , as shown. A bolt passing through the three—holder N, yoke J, and hanger M—secures them together.

The bolt-hole in the hanger M is slotted, whereby the hanger may be adjusted up and down. The eye  $m$  in the hanger M is slotted, as shown, admitting the ends  $p$  of the saddle P to vibrate forward and back, as shown,

whereby the plow may not be moved from its straightforward course by the swinging or vibrating of the tongue when plowing, caused by staggering of the team or lateral movement of the tongue.

L is the foot-lift, consisting of a bar of iron bent  $\perp$  shape, having the closed end forward, and the arms  $o o'$  extending rearward by the side of the extended limbs  $j j'$  of the yoke J, to which they are attached with bolts at  $l$  and stop-hooks  $h^1$ , as shown. The forward and closed end of the foot-lift is bent upward, affording a better foot-rest for the operator, as shown.

The foot-lift L and yoke J are connected together either rigid or flexible, as desired. When secured with two bolts in each of the limbs  $j j'$  they are rigid, and together pivot on the bracket-pins  $h$ ; but when bolted with one bolt only in each of the limbs  $j j'$  the foot-rest L pivots on the bolt  $l$ , and its downward movement is limited by the stop  $h^1$ , while the yoke J pivots on the bracket-pins  $h$ , admitting of vibration of the plow-carriage, as hereinafter explained.

R is a hand-lever, carrying a lock-lever,  $r$ , locking into segment T, and a link,  $L'$ , connecting the lever R with the foot-lift L, as shown.

The lever R controls the depth of plowing by the lock-lever  $r$  locking into any of the perforations in the segment. When desired to lift the plow the lever  $r$  is unlocked, and the operator, throwing his weight on his feet and foot-lift L, tilts the yoke J, thereby lifting the plow high out of the ground, the operator assisting the lifting by moving the lever R full back and locking it into any desired position.

It is sometimes desirable to plow over very rough ground, as going across the corn or cotton row ridges, in which the land-wheel is continually going over ridges and furrows. In my improved sulky-plow I have completely overcome all former troubles in such work, and am able to plow a straight and level furrow while the land-wheel passes over such uneven ground. When plowing such the wheel rising and falling continually will cause the tongue to vibrate laterally or stagger, and the plow having freedom by the play of the saddle ends  $p$  in the slot-eyes  $m$  of the hanger M, combined with the free-play pivoting of the foot-lift L on the bolts at  $l$ , connecting with the yoke J, the rear end of the yoke J and the plow may rise and fall, limited by stop-hooks  $h^1$  on the ends of the limbs  $j j'$ , and the plow will keep in its straightforward progress, while the carriage is traveling over uneven ground and the tongue is swaying or staggering laterally.

The foot-lift L and yoke J, connected by the bolts at  $l$ , and stop-hooks  $h^1$  combined, are as a closed rectangular frame pivoting on the bracket-pins  $h h$ , (and may or may not be pivoting at  $l$ ), and afford a substantial and sim-



ple support, connecting the plow to the carriage, and a simple easy operation to lift the plow above the ground and out of work.

I do not claim, broadly, a foot-lift lever having a flexible connection with the bail-yoke.

W is an ordinary turning-plow, consisting of a share, mold-board, and land-side, connected and attached to the rear bottom end of the beam K, bent or curved down to the land-side, as shown. W' is a plow, consisting of a share only, attached to the rear bottom end of the beam K', bent or curved down to the share, as shown, and which I call "slicing-plow."

The beam K' is connected and united to the beam K in such a manner that the beam K' is under and forward of beam K, as shown in the drawings, and they are united together by U bolts or links, or in any other substantial manner, keeping them in their relative positions.

The position of the slicing-plow W' is above and forward of the plow W, as shown in the drawings, in a position so as to reslice and divide the furrow-slice at about its center in depth, and the slice passes over the slicing-share W' and falls unturned upon the furrow-slice of the plow W, which, having a turning mold-board, turns the two slices together over, reversing their positions.

It has been a custom in double plowing heretofore to use two plows connected to one beam, each plow cutting and turning its own furrow-slice independent of the other, one working below and behind the other; and it has also been the custom to follow one plow with another separate plow with separate teams, each turning its own furrow, one following the other, the following plow working deeper and throwing its furrow on top of the first furrow-slice.

In plowing new ground it is known the grass-roots to the depth of two inches (more or less) are interlaced and hold the thin sod together until rotted, which requires months of time, often a year or more, and if plowed deep in a single furrow-slice the sod will not rot nor roots die by reason of not dividing the top roots. It is also well known that the furrow-slice taken from under the first furrow-slice has no interlacing roots, and freely pulverizes in turning. Hence the custom of double plowing, as stated, whereby a furrow-slice of pulverized dirt is thrown on top of the inverted unrotted tough sod-slice, produces a seed-bed at once for a crop.

In my invention I have overcome all heretofore-existing troubles. The slicing-plow W' slices off the tough sod, which, passing over the share unturned, falls upon the second furrow-slice, as it was before being divided; and, the plow W working deeper and turning a second furrow-slice of loose soil with the tough sod furrow-slice, it has been found that the two furrow-slices will keep and turn together completely inverted, level, and in the best condition for a seed-bed, and the harrow or grain-drill will pulverize freely the loose soil with-

out danger of pulling the tough sod from its place.

I make the share to the slicing-plow W' of about full-width cut of the plow W, and it has its thin end upper corner extending as a high breast where it is attached to the beam, simply for strength, and to lift up the edge of the furrow-slice while it is passing the beam K'.

I have found the slicing-plow to work best when close back, with just sufficient space between the two plows for the second furrow-slice to pass between them, the plow W catching, as it were, the furrow-slice elevated by the slicing-plow W' on the turning furrow-slice of the plow W, when both slices are inverted together by the mold-board of the plow W.

I attach a revolving-disk colter, X, in such a manner as to cut perpendicularly down by the side of and in advance of the slicing-plow W' to the depth of plowing of the plow W, as shown in the drawings.

Two plows connected in one frame, working in one furrow, each plow turning its furrow-slice, being old and well known, such I do not claim, my improvement being to divide the furrow-slice by having a slicing-plow and a turning-plow connected together in such a manner that the slicing-plow cuts its furrow-slice, and, without turning, lets it fall upon the slice cut by the turning-plow, and the turning-plow, turning, inverted the two slices together, as herein shown.

What I claim is—

1. In a sulky-plow, the frame consisting of arch B, foot-rail C, tongue-brace C', and elbow E, combined with the axle A and tongue D, all arranged and bolted or riveted together as shown, and operating substantially as and for the purpose shown.

2. The combination of the bent axle A, the arch B, the latter adjustably attached to the former by means of the bolts b, substantially as shown, the crank-axle A', the segment-sleeve  $a^3$ , and the lever  $a^4$ , substantially as and for the purpose set forth.

3. The rod-brace F, having an eye at one end and a nut and screw-thread at the other end, combined with the arch B, elbow E, and tongue D, all arranged substantially as and for the purpose set forth.

4. The hanger M, having slotted eye m and grooves v, all substantially as shown, and for the purpose set forth.

5. The foot-lift L, locked in position by the lever R, lock-lever r, and link L', and the yoke J, hinged to the foot-lift L by the bolts at l, and limited by the stop-hook h', and the yoke J, pivoting on the pins h and arch B, and the plow-beam K, connected to the yoke J by means of the saddle P and hangers M, having slotted eyes m, all arranged and operating substantially as shown, whereby the depth of plowing is controlled and the plow kept in its steady forward progress while the land-wheel is passing over ridges and furrows and the tongue is swaying laterally, as set forth.



6. The combination of the bail-yoke J, having both limbs  $j$   $j'$  extending forward of the axle, and the extensions having two perforations,  $l$   $l'$ , and having a stop-hook,  $h'$ , formed offset at the bottom of the extreme forward end, all as shown, with the foot-lift L, connected therewith, substantially as shown, whereby they are made rigid or flexibly connected, as shown, and with the arch B, the axle A, and the plow-beam K, all substantially as and for the purpose set forth.

7. The foot lift L, bent  $\sqcap$  shape, having two arms and a closed end, and the rear ends of the arms  $o$   $o'$  connected with the extensions  $j$   $j'$  of the bail-yoke J, and provided for both rigid and flexible connection, as shown, and the forward part of the arms  $o$   $o'$  bent upward, supporting the closed end as a foot-board rest, as specified, in combination with the bail yoke J, constructed substantially as shown, and with the arch B, the axle A, and beam K, all substantially as and for the purpose set forth.

8. The combination of the plow W, the beam K, the latter bent curved and supporting plow W, as shown, the slicing-plow W',

consisting of a share only, without turning mold-board, in advance of and above the cutting-line of plow W, the beam K', bent curved and supporting slicing-plow W', and connected to the beam K, and the revolving-disk colter X, arranged to cut perpendicularly down by the side of and in advance of the slicing-plow W' to the depth of plowing of the plow W, substantially as and for the purpose set forth and shown.

9. The combination of the slicing-plow W', consisting of a share having an extending high breast, as shown, and for the purpose shown, and without a turning mold-board, plow W, having a turning mold-board, the plow W', arranged in advance of and above the cutting-line of the plow W, and the disk-revolving colter X, the latter arranged to cut down by the side of and in advance of plow W' to the depth of plowing of plow W, substantially as and for the purpose set forth.

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Witnesses:

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