

(No Model.)

3 Sheets—Sheet 1.

T. I. LUDWIG.

PLOW.

No. 282,999.

Patented Aug. 14, 1883.

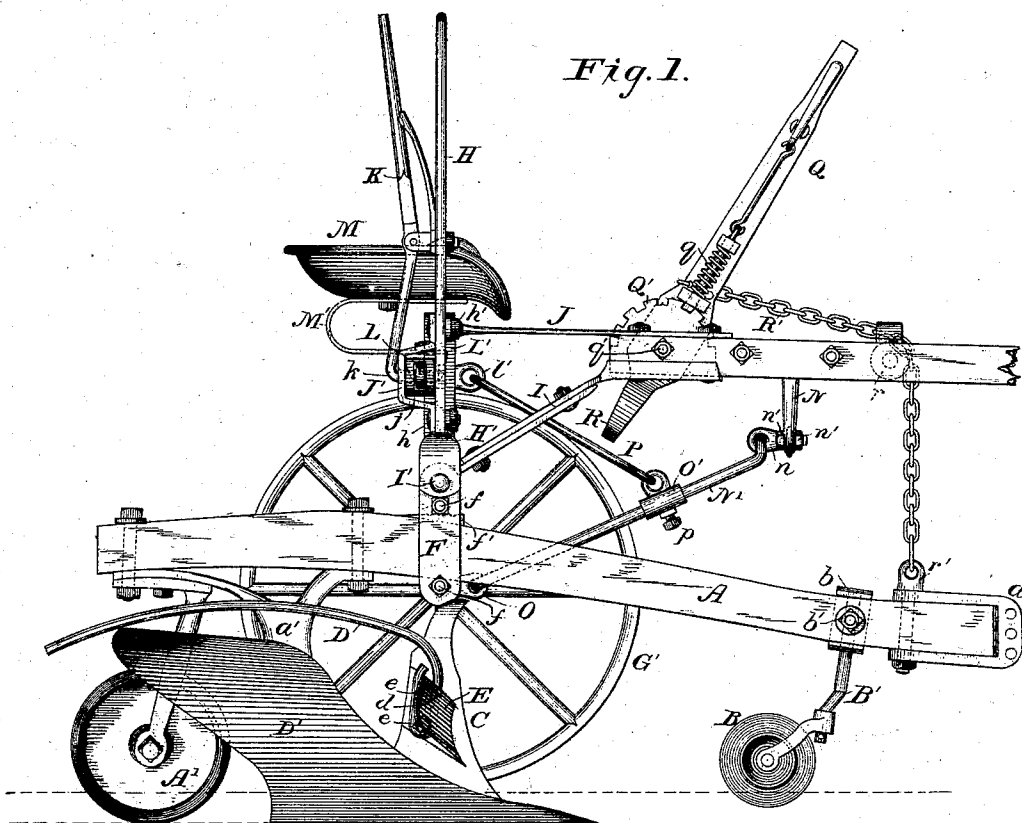


Fig. 8.

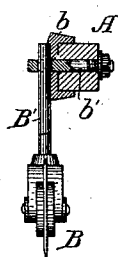


Fig. 9.

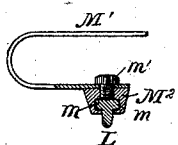
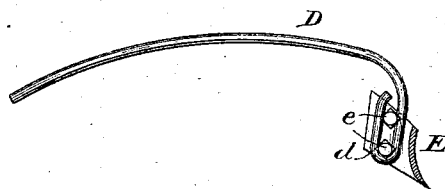


Fig. 10.



WITNESSES

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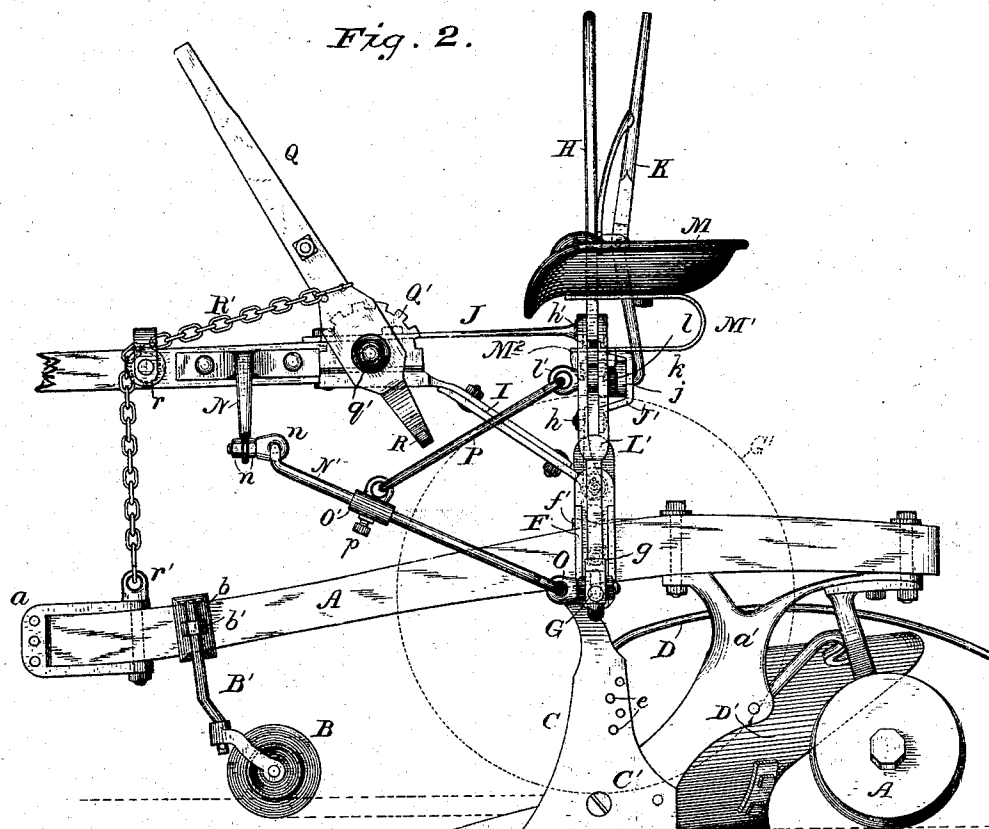


Fig. 4.

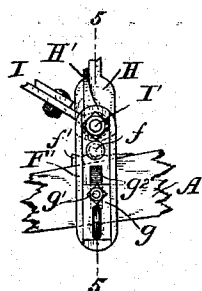


Fig. 5.

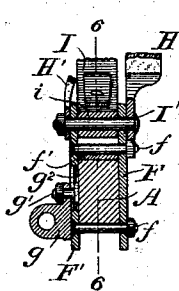


Fig. 6.

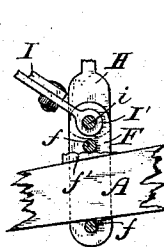
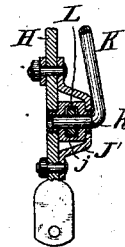


Fig. 7.



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Fig. 3.

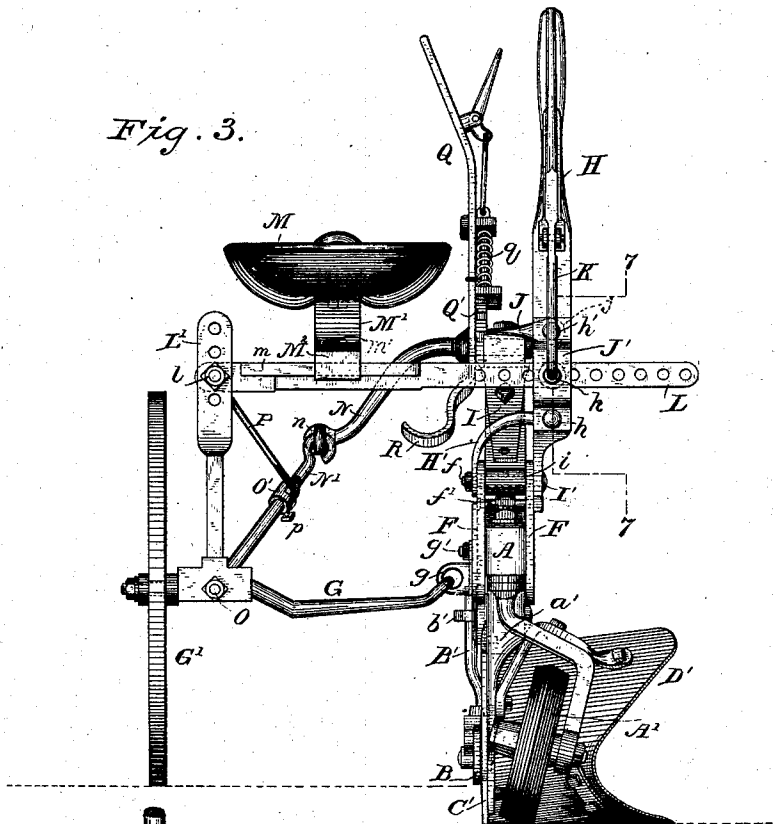
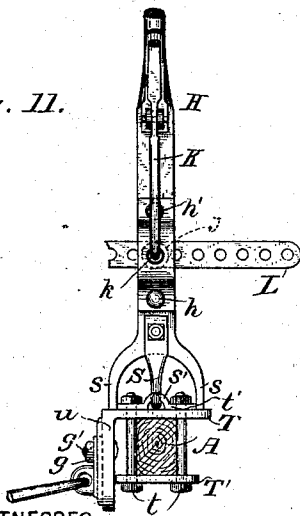


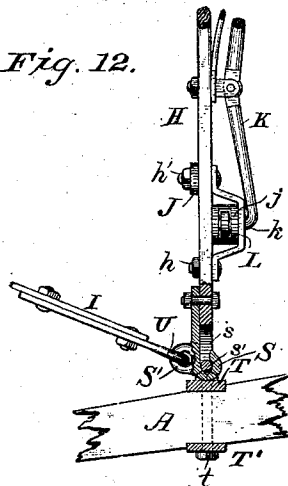
Fig. 11.



WITNESSES

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Fig. 12.



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UNITED STATES PATENT OFFICE.

THOMAS I. LUDWIG, OF FREMONT, OHIO.

PLOW.

SPECIFICATION forming part of Letters Patent No. 282,999, dated August 14, 1883.

Application filed May 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS I. LUDWIG, of Fremont, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Plows, of which the following is a specification.

My invention relates to sundry improvements in plows, hereinafter specifically designated by the claims, including devices for preventing clogging or choking, for turning under weeds, &c., for turning or "jointing" the edges of the furrow-slices, so that contiguous edges of adjacent slices shall not injuriously lap, for attaching a pole to the plow-beam, for connecting a riding attachment to the plow and providing for its adjustment, and for placing the plow thoroughly under the control of the attendant.

In the accompanying drawings of my improvements, Figure 1 is a view in elevation as seen from the outer or mold-board side, a portion of the tongue being broken away. Fig. 2 is a like view as seen from the opposite or inner side, with the main or carrying wheel dotted in place. Fig. 3 is a view in rear elevation. Figs. 4 to 10, inclusive, are detail views. Of these views Fig. 4 is an inside elevation, showing the heel of the tongue, the vertically-adjustable bracket with which the axle of the carrying-wheel connects, a part of the wheel adjusting or "leveling" lever, a portion of the plow-beam, and the clip-fastening secured thereto. Fig. 5 is a view, partly in rear elevation and partly in section, on the line 5 5 of Fig. 4. Fig. 6 is a view, partly in elevation as seen from the inner side and partly in section on the line 6 6 of Fig. 5; Fig. 7, a view, partly in side elevation and partly in section, showing the connections between the leveling-lever and its detent, and an adjusting-bar which has connection with the axle of the carrying-wheel. Fig. 8 shows the rolling cutter and its connection with the beam. Fig. 9 is a view, partly in elevation and partly in section, showing the seat-supporting spring and its adjustable connection with the adjusting-bar. Fig. 10 is a view, partly in section, of the "jointer" or detachable auxiliary mold-board, the clearer-rod or weed-turner, and their fastening devices. Figs. 11 and 12 show, respectively, a

rear elevation and a view partly in elevation as seen from the inner side, and partly in section, of a modification of the clip-fastening and its connections.

The beam A, the clevis *a*, the rolling cutter B, adjustably secured in place by its shank B', and the clip-bracket *b* and eyebolt *b'*, are all of suitable well-known construction. The plow proper is suitably secured to the beam, as by the forked stock *a'* and its attaching bolts and nuts, and a heel-roller or following-wheel, A', is provided for a well-known purpose.

An upwardly-projecting cutter, C, is fixed at its lower end to the plow, and is curved outwardly or toward the mold-board side, and slightly forwardly at its upper end. (See Figs. 1 and 2.) In this way weeds, &c., are prevented from accumulating against the cutter and beneath the beam to an extent sufficient to injuriously clog the plow, the curvature of the cutter rendering it self-clearing by turning and deflecting the trash to the side. The cutter is formed to constitute the landside C', and also serves as a means of attaching a weed turner or clearer, D, and a jointer or small auxiliary mold-board, E. Bolts *e e* and nuts pass through holes in the cutter and in the jointer-back or attaching-plate, as well as through a slot or loop, *d*, of the clearer-rod. The same fastenings thus secure both the clearer and the jointer. A series of holes in the cutter C provides for vertical adjustment of the clearer and jointer, so as to adapt them to operate to the best advantage, whether the plow is cutting a deep or shallow furrow.

As will readily be seen, the jointer serves to turn the edge of the furrow-slice next the land before the turning over of the slice by the mold-board D'. The result is that the plowed ground is left smoother, because the turned-under edge of the one slice abuts against or is presented close to the edge of the slice to which it is contiguous, instead of overlapping it. The jointer protects the threaded ends of the fastening-bolts and their nuts, it will be seen.

Handles may be provided, so that the plow may be used either with or without the hereinafter described riding attachment.

The beam is provided with a clip-fastening, too

which by preference is composed of outer and inner upright side plates, F F', clipped to the beam by the upper and lower screw-bolts, f f', and their nuts, and the serrated wedge-plate 5 J'. This clip-fastening serves as a means for jointing to the beam the axle G of a main supporting or carrying wheel, G', for making a hinged connection between the beam and the tongue, and for jointing a leveling-lever, H, 10 in place upon the beam, as next in turn to be explained.

The inner clip-plate, F', is provided with a guideway, as clearly shown by the drawings, for a vertically-adjustable eye-piece or socket- 15 slide, g, with which the hooked end of the axle connects. A securing bolt and nut, g', and a slot, g'', in the plate F', provide for adjusting and clamping the slide g in place.

A metallic heel strap or plate, I, is secured 20 to the tongue and inclines downwardly therefrom. A socket, i, is provided at the rear end of this heel-strap. A bolt, I', passes through this socket and through the upper ends of the clip-plates, so as to pivot these parts together. 25 The bolt I' serves also to joint the lever H in place, as well as to secure one end of a curved brace-rod, H', the opposite end of which is connected by a bolt, h, Figs. 1 and 3, with the lever above its jointed support. A second 30 heel-strap, J, secured to the tongue, is connected with the lever H by a bolt, h'. The bolts h h' and their nuts serve to attach a loop-bracket, J', to the back of the lever.

A rocking guideway or transversely-perforated roller, j, is mounted by hollow trunnions 35 in bearings in the lever and bracket. The opening made through the trunnions of the rocking guideway extends entirely through it, intersecting the transverse or guideway opening. A spring-actuated detent-lever, K, is 40 provided with a lug or bent end, k, to enter the trunnion-opening and cross the intersecting or guideway opening. The detent-lever is pivoted to the leveling-lever H, and it may 45 be moved against the force of its spring in obvious ways and for a purpose now to be described.

A perforated adjusting-bar, L, adapted to slide in the guideway-opening, is held in any 50 desired position by the detent-lug k, engaging with its perforations. This bar L has a vertically adjustable and jointed connection with a post or upright standard, L', which is rigidly united with the axle g near the carrying-wheel. 55 The upper end of the standard is forked or slotted and perforated, (see Figs. 2 and 3,) and the adjusting-bar is secured at any desired elevated position between the forks of the standard by a bolt, l, passing through perforations in the 60 standard and the adjusting-bar. The bolt is secured by a nut at the back of the standard, and is provided with an eye, l', at its opposite end for a purpose to be explained farther on.

It will be seen that by means of the leveling-lever and its detent the adjusting-bar and its vertically-adjustable connection with the

axle-standard, and the vertically adjustable connection of the axle with the clip-fastening on the beam the carrying-wheel may readily be 70 "leveled" or adjusted up or down relatively to the plow to suit the depth of plowing, and so as to keep the adjusting-bar level.

The adjusting-bar is over and parallel, or nearly so, with the axle. It supports the driver's seat M, and it is therefore important 75 that it be maintained level, or nearly so, and in such position as to locate the driver's weight about over the axle. The seat is adjustable lengthwise of the adjusting-bar, so that 80 more or less of the driver's weight may be brought upon the plow, according to the nature of the soil, the depth to which it is desired to plow, &c. To provide for adjusting the seat 85 its supporting-spring M' is secured to a slide-block, M'', (best shown by Fig. 9,) which is provided with a cross-shaped or T-groove to fit about the adjusting-bar and its front and rear 90 ribs, m m. A set-screw, m', serves to clamp the slide-block in place and hold the seat in the desired position.

The axle is held against backward swing by being connected with the tongue in the following way: A downwardly-projecting side arm, N, fastened to the tongue, is provided with a 95 swiveling eyebolt, n, which may be adjusted by its nuts n' n', so as to cause it to project more or less to the rear. A link-rod, N', is jointed at its front end with the swiveling eyebolt n, and at its rear end is similarly jointed 100 by the swivel-bolt O to the axle, at or near the base of the standard L'. A brace link-rod, P, is jointed by the eyebolt l l' to the axle-standard at one end, and at its opposite end is jointed to an adjustable tubular eye-block, O', adapted 105 to slide on the rod N, and secured in the desired position by a set-screw, p.

It will be seen that by adjusting the swivel-bolts n and O the connection between the axle and the arm N may be lengthened or shortened, and that variations in the position of 110 the eyebolt l l', caused by adjusting the connection between the bar L and standard L', may be compensated by sliding the tubular block O' along the rod N, thus preventing the cramping of the brace-rod P. 115

The plow is raised or lowered and the depth of plowing regulated by rocking the beam about its hinged connection with the tongue-wheel in the following way: An adjusting-lever, Q, provided with an ordinary spring-detent, 120 q, for engaging a fixed segment-rack, Q', in well-known way, is fulcrumed and secured to the tongue by a pivot-bolt, q', and its nut and washer. An extension of the adjusting-lever projecting downwardly from its fulcrum is 125 provided with a foot-rest, R, so that the driver may work the lever by both foot and hand. A chain, R', connected with the beam-adjusting lever passes over a pulley, r, supported on the tongue about over the clevis pivot-bolt, and 130 is attached to the beam by means of an eye, r', of this bolt.

The team being hitched to the clevis in the usual way, the operation of the beam-adjusting devices in regulating the depth of plowing will readily be understood, and it will also be seen that the adjusting-lever may be rocked back far enough to lift the front end of the beam to an extent sufficient to raise the plow clear of the ground, so that it can be transported on the heel-roller and the carrying-wheel.

In order that the plow may give slightly by vibration of the beam to one side or the other independently of the tongue when encountering stones, stumps, &c., which tend to deflect the plow from its course, and to relieve the tongue of unnecessary lateral strain, the modification of the clip-fastening and its connections (shown by Figs. 11 and 12) may be employed in lieu of the before-described vertical clip-plates F F', the upper and lower bolts, *f f*, and the bolt *I* passing through the socket of the heel-strap and serving to secure the leveling-lever in place. As modified the leveling-lever H is forked at its lower end, and its forks *s s* rest upon a clip-plate, T, on top of the beam. A clip-plate, T', beneath the beam is connected with the upper plate and the two plates secured to the beam by vertical bolts *t t* and their nuts. The bolts also secure a plate, *t'*, upon the top clip-plate. The plate *t'* is provided with a loop or eye, *s'*, which is engaged by a rearwardly-projecting hook, S, detachably connected by its shank with the leveling-lever, at the juncture of its fork, by a bolt and nut. A forwardly-projecting hook or eye, S', on the same shank as the hook S, serves to connect with a hook, U, of the downwardly-inclined heel-strap of the tongue. To provide for the attachment of the adjustable socket-slide *g* the upper clip-plate is made of angular form and the slide secured to the downwardly-projecting side *u*, in the manner before described with reference to the side plate F'.

It will be seen that the lever-forks *s s* and the loosely-interhooked loop *s'* and hook S enable the beam to move sidewise to a limited but sufficient extent, the plate T turning somewhat in the manner of a fifth-wheel. The lower ends of the lever-forks may be united by a circle-iron, or be formed with segmental flanges to lessen frictional contact between the clip-plate and lever-forks and reduce wear, if desired.

I claim as of my own invention—

1. The cutter C, formed with the landside C' at its lower end and curved outwardly at its upper end, as and for the purpose hereinbefore set forth.

2. The combination of the plow, the cutter fixed thereto at its lower end, curved outwardly at its upper end, and terminating beneath the level of the beam, the detachable clearer D, and the detachable jointer, substantially as and for the purpose hereinbefore set forth.

3. The combination of the cutter, formed

with the landside, the jointer, and the bolts by which the jointer is fastened to the cutter and rendered vertically adjustable, as and for the purpose hereinbefore set forth.

4. The combination of the beam, the jointed axle, the hinged tongue, the jointed leveling-lever, and the clip-fastening by which the axle, the tongue, and the lever have connection with the beam, substantially as and for the purpose hereinbefore set forth.

5. The combination of the beam, the clip-fastening, the tongue, having hinged connection with the beam by way of the clip-fastening, the guideway in the clip-plate, the socket-slide adjustable in the guideway, the axle jointed to the slide, the leveling-lever, and the adjusting-bar having jointed connection with the standard of the axle and actuated by the leveling-lever, substantially as and for the purpose hereinbefore set forth.

6. The combination of the beam, the clip-fastening, the leveling-lever jointed to the clip-fastening, the tongue, its heel-strap jointed to the clip-fastening, and the second heel-strap of the tongue connected with the leveling-lever, substantially as and for the purpose hereinbefore set forth.

7. The combination of the beam, the leveling-lever, the axle, having jointed connection with the beam, the carrying-wheel, the adjusting-bar, having jointed connection with the axle, the hollow trunnioned rocking guideway supported by the leveling-lever, and the detent-lever, substantially as and for the purpose hereinbefore set forth.

8. The combination of the beam, the clip-fastening, the hinged tongue, the jointed axle connected with the tongue, the carrying-wheel, the leveling-lever, the adjusting-bar, the axle-standard, and the guideway and detent of the leveling-lever, substantially as and for the purpose hereinbefore set forth.

9. The combination of the beam, the carrying-wheel, its axle, having jointed connection with the beam, the leveling-lever, the adjusting-bar, the axle-standard, with which the adjusting-bar has vertically-adjustable jointed connection, and the rocking guideway, and the detent of the leveling-lever, substantially as and for the purpose hereinbefore set forth.

10. The combination of the beam, the leveling-lever, the jointed axle, the carrying-wheel, the adjusting-bar, its guideway and detent carried by the leveling-lever, the axle-standard, with which the adjusting-bar is adjustably connected, and the driver's seat adjustable on the adjusting-bar, substantially as and for the purpose hereinbefore set forth.

11. The combination of the beam, the axle, having jointed connection therewith, the hinged tongue, its side arm, provided with the swiveling eyebolt, the link-rod jointed thereto, the axle having jointed connection with the link-rod, the axle-standard, and the adjustable brace link-rod jointed to the stand-

ard, and the tongue-connected link-rod, substantially as and for the purpose hereinbefore set forth.

12. The combination of the beam, the jointed
5 axle, the axle-standard, the adjusting-bar, the driver's seat, the tongue hinged to the beam, the link-rod, having jointed connection with the tongue and axle, and the brace link-rod,

substantially as and for the purpose hereinbefore set forth. 10

In testimony whereof I have hereunto subscribed my name.

THOMAS I. LUDWIG.

Witnesses:

HORACE S. BUCKLAND,
HENRY P. FINEFROCK.