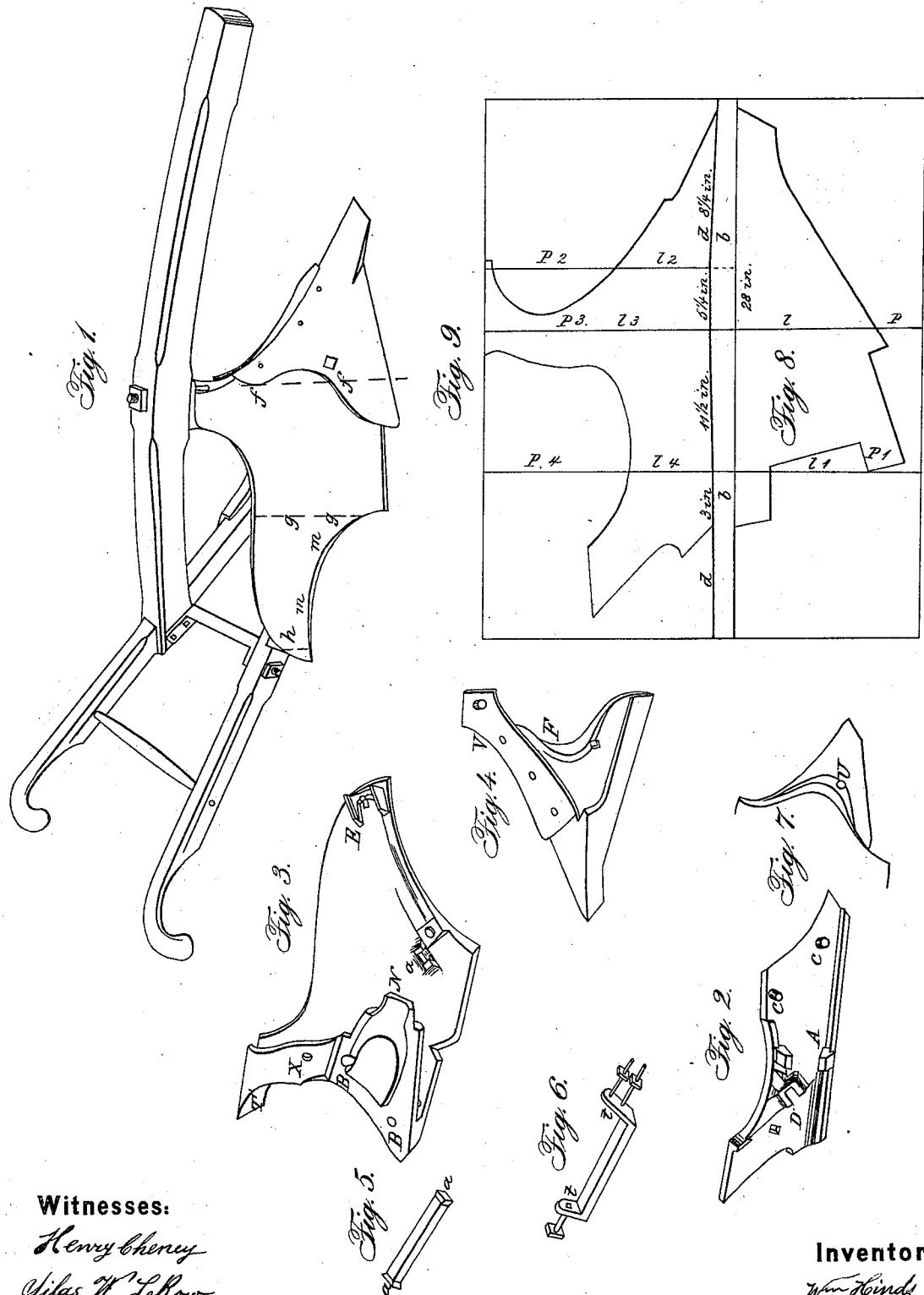


W. HINDS.

Plow.

No. 41,997.

Patented Mar. 22, 1864.



Witnesses:

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# UNITED STATES PATENT OFFICE.

W. HINDS, OF LITTLE FALLS, NEW YORK.

## IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. 41,997, dated March 22, 1864.

*To all whom it may concern:*

Be it known that I, WM. HINDS, of Little Falls, county of Herkimer, and State of New York, have invented new and useful Improvements in Plows; and I hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

A plow that shall do good work, be of easy draft to the team, and easy for the plowman to manage must be constructed in a shape and form peculiarly adapted for the purpose. A plow that shall be substantial and durable must be determined from the materials used in its construction, from the proportion of its parts, and from the method of putting together and connecting those parts.

My invention relates almost wholly to the form of the mold-board and standard and to the method of connecting or securing the landside to the mold-board. In supplying and filling out the parts of the plow not invented by me I have used of the numerous devices invented by others such as my experience as a plowmaker and farmer during a life-time of almost seventy years has determined to me to be the best.

To enable others to make and use my invention, I will now describe its construction and operation.

Figure 1 of the drawings is a perspective view of the plow entire. Fig. 2 is the landside detached. Fig. 3 is the mold-board and standard combined. Fig. 4 is the share and sward-cutter combined. Fig. 5 is the bottom cross-bar. Fig. 6 is the middle cross-bar. Fig. 7 is a section of the mold-board. Fig. 8 is a diagram of the bottom of the plow, and Fig. 9 is a diagram of the land-side elevation of the iron part of the plow.

The same kind of letters indicate the same parts throughout.

There is nothing new in the wood-work.

At B B, Fig. 3, the arm goes off to which the landside, Fig. 2, is attached. It is constructed in a semi-tubular or trough-like form, making it much stronger than if it were in a flat plate. It is longer on the outside, making a better and more permanent support for the

landside, and it attaches to the mold-board farther back on the inside, making it shorter on that side, and to require but little if any more material or cost in its construction.

On the out end of the arm, at N, Fig. 3, is a dovetail tenon that goes into an open space between the knobs or studs at A A, Fig. 2, and thereby forms a perfect dovetail joint. C C on the landside, Fig. 2, are pins, that serve in the holes B B on the mold-board, Fig. 3, and prevent all lateral motion, the working and wearing of the joints, and save the cost and wear of bolts usually used in those places.

At D, Fig. 2, and G, Fig. 3, are recesses or dovetail mortises, in which the dovetail tenons a a on the ends of the bottom cross-bar, Fig. 5, serve. Immediately under and against the ends of this cross-bar, Fig. 5, the plow-handles are bolted on, which will always keep said cross-bar firmly in place. The importance of this kind of cross-bar is that it will keep the landside and mold-board from spreading apart, and is not liable to lose out.

At E on the mold-board, Fig. 3, is a kind of seat or rest, to which the handle is bolted. It has flanges on the sides to project by the corners of the handle to hold it more firmly, and it extends far enough from the mold-board to permit the use of a straight handle, which is cheaper and much stronger than if bent to fit the convexity of the mold-board.

Fig. 6 is the middle cross-bar, and t t show the form of the turns or feet at the end thereof. The bolts go through these turns, and have square and wedging heads, that lodge with them, that can always be kept tight by turning the screws. The end of the cross-bar, having two bolts in it, goes to the handle that connects with the beam of the plow, and the bolts go through both handle and beam, and afford a great support to the joint at that point.

The share, Fig. 4, has a rib upon it at F, of a kind of miter or wedging form, that matches into a groove of corresponding form at U, Fig. 7, to assist the bolt in holding the share snugly in place, whereas without it shares would often get loose by the wear of the bolt, and consequently break. The sward-cutter V, Fig. 4, combined with the share, is a piece of steel, sharp in front and curved edgewise, to make it fit to the front edge of the standard and share, to the latter of which it is riveted, and

at the top end it is bolted to the standard at X, Fig. 3, making a very strong connection and support to the share and standard both.

The front part of the standard T, Fig. 3, forms a segment of a circle whose radius is five inches, with which the front edge of the share is so arranged and graduated that sods or whatever is in a mass or body to clog the plow will be carried over under the curve of the standard and be discharged by the velocity and force of the plow. Constructing the standard in this form carries the top of it much farther forward than that of most plows, making the extreme forward point project five inches forward of the front edge of the standard, immediately over the top elevation of the share, as shown on diagram, Fig. 9, where a circle drawn round the point  $P^2$  on line  $l^2$  from a radius of five inches will exactly correspond with the front edge of the standard.

There are several advantages that ensue from constructing the standard in this manner. One is that it carries the bolt that secures or fastens the beam to the standard more toward the center of said beam, thereby shortening the leverage power of the beam for breaking it and breaking the standard. Projecting the standard forward also carries the top edge of the mold-board forward with it, which puts the plow in a thinner wedge shape and makes it to be drawn through the earth much easier. Again, carrying the top edge of the mold-board forward with the curve of the standard carries it also toward the furrow side of the plow, making it to overhang a portion of the wearing-surface of the mold-board throughout its entire length, by which the furrow-slice is quicker and more gradually raised to an edgewise position, from which it falls over from gravitation. And, again, the quicker the furrow-slice is raised to an edgewise position the less it will load and ride the plow and the easier the plow will run.

For the express purpose of describing the form of the mold-board of my plow on the wearing side, which is a matter of some little difficulty, I have presented two diagram views, Fig. 8 and Fig. 9.

Fig. 8 shows the outlines of the bottom of the plow resting upon a level platform, with the land-side edge resting on the line  $b b$ . Against the platform on said line  $b b$ , (diagram Fig. 8,) and parallel therewith, I imagine a partition or wall to stand on line  $d d$  just fifteen inches high, to correspond exactly with the standard of the plow. The partition is not to be considered as standing exactly perpendicular, but to fall back just half an inch in its height from a perpendicular line, in order to correspond with the standard on the land-side side of the plow, which is so made that the plow shall cut over on the land side to prevent it from binding in the earth.

On the partition, and to correspond exactly with diagram Fig. 8, diagram Fig. 9 is made, which shows the outlines of the land-side face

of the plow. Thirteen and a half inches back from the point of the share the cross-line  $l$  is made exactly at right angle to line  $b b$ . At the heel end of the mold-board, and eleven and a half inches back from line  $l$ , the line  $l'$  is made also at right angle to line  $b b$ . Against these lines, and to correspond therewith, the perpendicular lines  $l^2$  and  $l^4$  are made upon the partition or diagram Fig. 9. The line  $l^2$  is made immediately behind the top elevation of the share, and corresponds exactly with the line  $f f$  shown on Fig. 1. The line  $l^4$  corresponds with the line  $g g$  Fig. 1. The measured distance from line  $b b$  to point  $P$  is nine and three-fourths inches. From the line  $b b$  to point  $P'$  is nine and one-half inches, and from thence to the outside corner of the bottom of that mold-board it is half an inch more, making the whole measurement and width of the plow at that point ten inches. The point  $P^2$  on line  $l^2$  is nine and a half inches above the platform or diagram Fig. 8. From this point the curve of the standard is formed from a radius of five inches. The point  $P^3$  on line  $l^3$  is eight and a half inches above the platform, Fig. 8, and three-fourths of an inch from the partition or land-side face of the standard. The point  $P^4$  on line  $l^4$  is twelve and one-fourth inches above the platform, and from said point  $P^4$  to the top edge of the mold-board immediately over the line  $l'$ , and where it is intersected by the line  $g g$ , and corresponding in height with the said point  $P^4$ , it is nine and a half inches. Therefore the curved form of my mold-board under the line  $g g$ , Fig. 1, corresponding with the lines  $l'$  and  $l^4$ , Figs. 8 and 9, is such that it will fit to a convexed arc formed from a radius of twenty-four inches when said arc shall be placed in contact with the point  $P'$  and the top edge of the mold-board under the line  $g g$ .

Under the line  $f f$ , corresponding with the line  $l$  and  $l^3$ , the mold-board will fit to a convexed arc whose radius is twelve inches when said arc shall be placed in contact with the point  $P$  and a point exactly opposite to and within three-fourths of an inch of point  $P^3$ . Longitudinally the mold-board is straight on any line or lines that may be drawn lengthwise across its working or wearing side that shall be horizontal to the bottom of the plow, excepting the point of the share, which is pitched down to give it a draft into the ground.

At the hind part of the mold-board, on line  $m$ , Fig. 1, a strip or portion is bent or set back so as to bring it nearly or quite into line, or parallel with the line of draft or landside of the plow. In this position the strip bent back comes to very little if any wear, and it serves to strengthen and protect that end of the mold-board until it is nearly or quite worn out. Under the line  $h$ , Fig. 1, at the extreme hind end of the mold-board, it is straight, or as near so as it can conveniently be determined. To construct larger or smaller plows on this principle requires only that the hind end of the landside and mold-

board shall be made longer or shorter; or it may be done by setting the arm to which the landside is attached in or out.

Separately considered, or compared in sectional parts with other inventions, there may not be very much that can be considered strictly or distinctly new in the form of my mold-board or standard, but in their general form I claim that they are widely different from all other plows. Therefore

What I claim as my invention, and wish to secure by Letters Patent of the United States, is—

1. A plow mold-board, when constructed in accordance with the following conditions—viz., all lines on the face of the mold-board which are parallel to a surface upon which the plow rests when in its proper position for operation to be straight, all said lines to intersect two circular arcs described upon vertical planes transverse to an axis from which said arcs are generated, said axis to be parallel to the before-mentioned horizontal surface, the radius of that arc which is nearest the rear end of the mold-board to be about double the radius of that arc which is nearest the front end of the mold-board, the distance between the vertical

transverse planes upon which said arcs are described to be about equal to the radius of the smaller arc.

2. In combination with a plow mold-board constructed as described in the preceding claim, a rim or flange, *m*, for the purpose of rendering the rear edge of the mold-board more durable.

3. In combination with a plow mold-board constructed as claimed above, a sward-cutter, *V*, attached to the plowshare, and secured to the standard by a removable bolt.

4. In combination with a plow mold-board, a cross-bar constructed with feet, as shown at Fig. 6, for the purpose of more rigidly attaching the rear end of the beam to the rear end of the mold-board.

5. In combination with a plow mold-board, a landside-arm, *N*, constructed in a trough-like form and fitted to the landside with a dovetailed joint, for the purpose of attaining greater security and facility of attachment.

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Witnesses:

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