

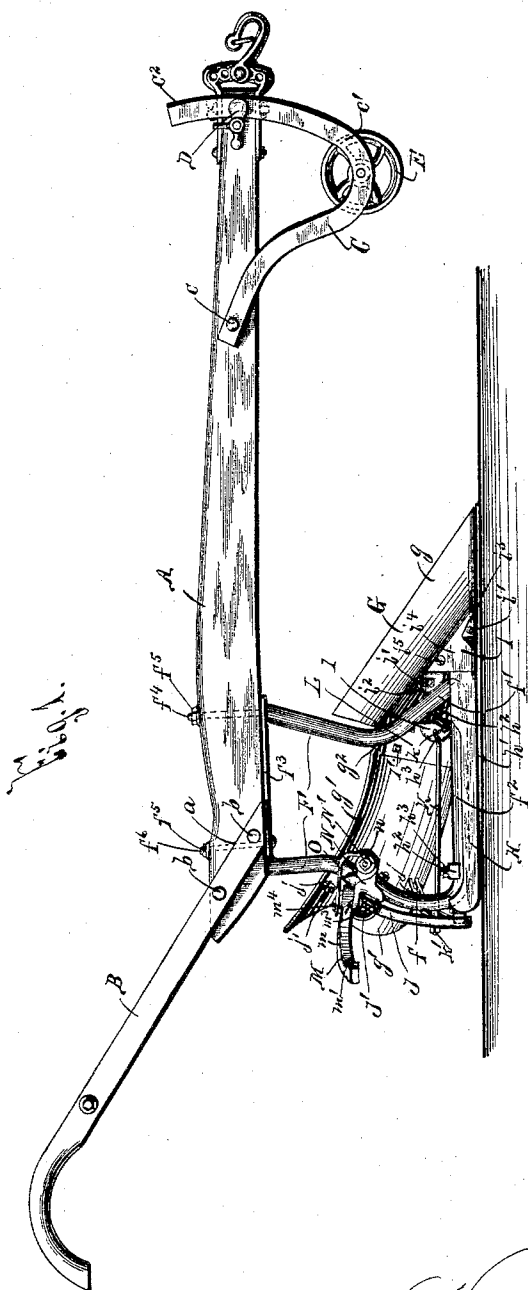
(No Model.)

3 Sheets—Sheet 1.

H. WIARD.
PLOW.

No. 473,989.

Patented May 3, 1892.



WITNESSES:

W. H. Randall,

H. C. Chase,

INVENTOR

Harry Wiard

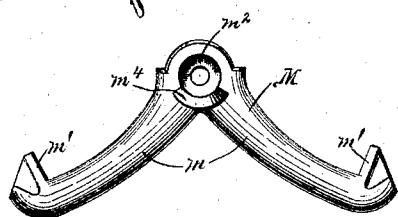
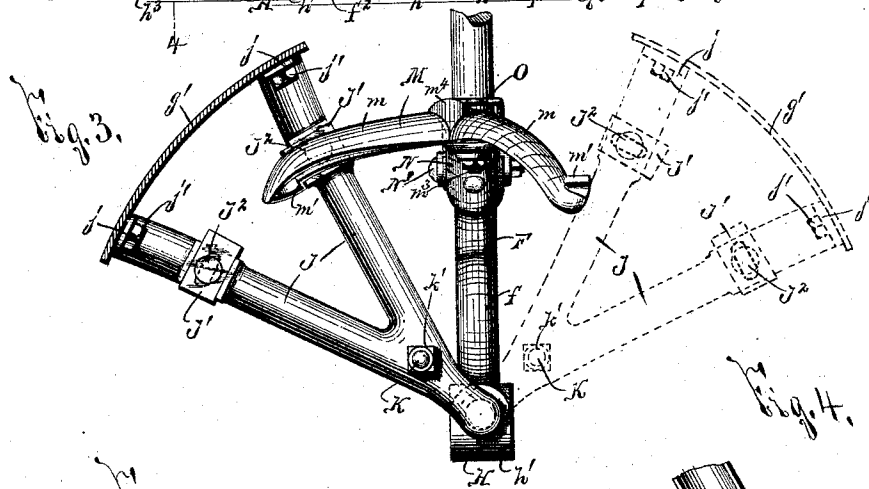
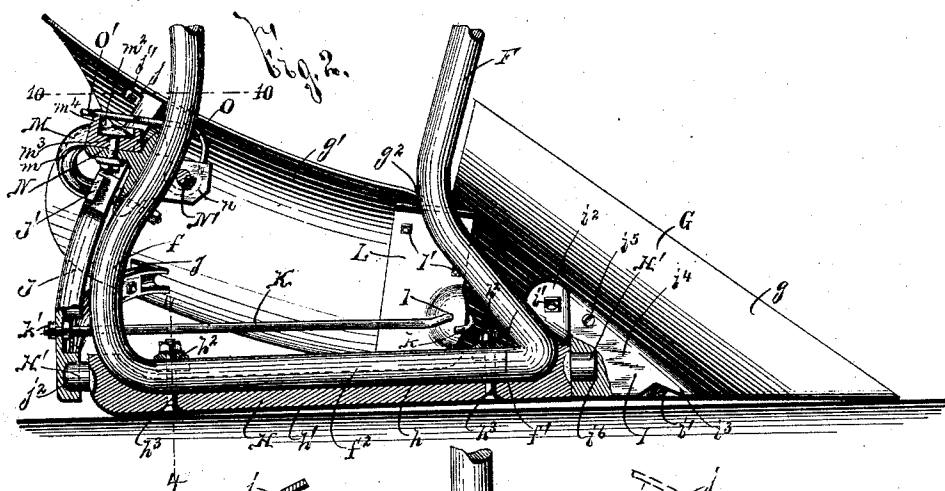
BY

Hayden Wilkinson Parsons,
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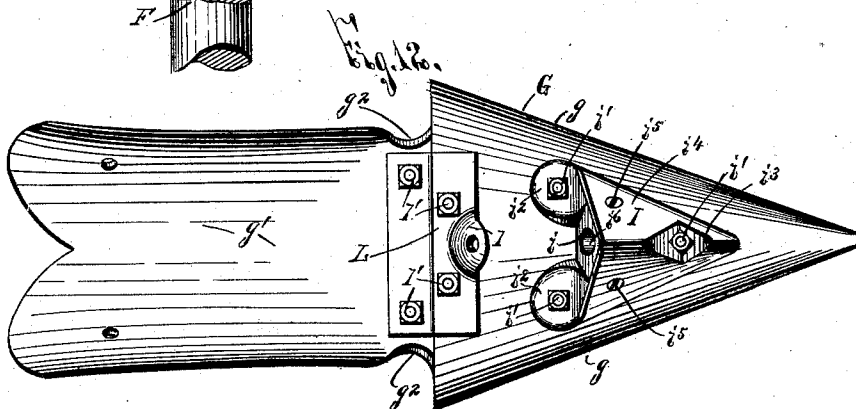
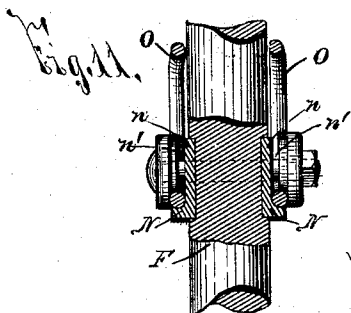
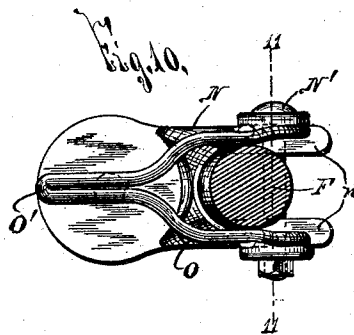
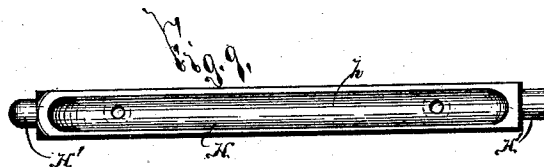
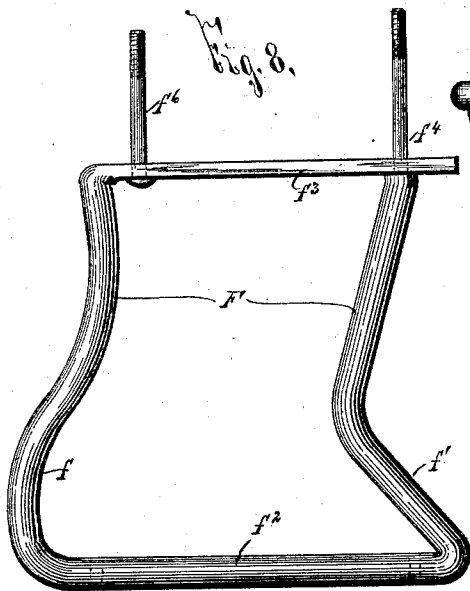
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3 Sheets—Sheet 3.

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WITNESSES:

W. H. Randall,

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UNITED STATES PATENT OFFICE.

HARRY WIARD, OF SYRACUSE, NEW YORK.

PLOW.

SPECIFICATION forming part of Letters Patent No. 473,989, dated May 3, 1892.

Application filed May 1, 1891. Serial No. 391,213. (No model.)

To all whom it may concern:

Be it known that I, HARRY WIARD, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Plows, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in plows, and has for its object the production of a simple and effective device, which is economical in manufacture and light and durable in use; and to this end the invention consists, essentially, in a metallic bar bent into an open frame and secured to the beam and a mold-board secured to said bar.

The invention furthermore consists in an arm secured upon one extremity of said bar, lying normally beneath the beam and engaged with a projecting lug upon the other extremity of the bar, whereby the bar is rendered very rigid and strong, a shoe secured to the lower cross-bar of the frame; a reversible mold-board pivoted to the shoe by a block at its forward extremity and a bracket at its rearward extremity, a support secured upon the frame-bar, a catch pivoted to said support and adapted to retain the mold-board in either position, an attachment or engagement plate secured to the under surface of the mold-board and formed with a portion thereof bent outwardly from the mold-board, and a retaining or tightening bar having one extremity engaged with said outwardly-bent portion of the plate and the other with the projecting arm of the bracket secured to the mold-board.

The invention also consists in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents an elevation of my improved plow. Fig. 2 is an enlarged elevation of the parts as illustrated in Fig. 1, a portion of the frame and the plow-beam being broken away. Fig. 3 is an end view of the parts as shown at *f*, Fig. 2. Fig. 4 is a sectional view taken

on line 4 4, Fig. 2. Fig. 5 is a top plan view of the detached catch for holding the mold-board in position. Figs. 6 and 7 are respectively rear and inner face views of the block, secured to the forward extremity of the mold-board for pivoting the same to the shoe upon the bracket. Fig. 8 is a detached elevation of the metallic bar forming the frame of the plow. Fig. 9 is a top plan view of the detached shoe secured to the lower extremity of said metallic bar. Fig. 10 is a transverse sectional view taken on line 10 10, Fig. 2. Fig. 11 is a vertical sectional view taken on line 11 11, Fig. 10. Fig. 12 is a detached inverted plan view of the mold-board, and Fig. 13 is a sectional view of the attachment-plate secured to the mold-board.

Owing to the great power required to draw a plow in operation, it is extremely necessary that the draft be reduced to a minimum degree for permitting the greatest possible amount of work to be effected with the least possible exertion, wear, and strain of the horses or other animals attached to the plow.

By my invention I greatly reduce the weight of the plow by lightening the standard or frame, but do not decrease its durability in the slightest degree, since, although the frame is extremely light, it still possesses, owing to its peculiar construction and form, all the necessary rigidity and strength required to successfully withstand the strain consequent upon use. Moreover, I adapt the mold-board and the various other parts of the plow to the peculiarly-shaped standard and construct the mold-board of the best possible form to turn the furrow with the least possible amount of friction and draft, thus producing a plow highly efficient and durable in use and extremely light and of easy draft.

A represents any suitable construction of beam, here illustrated as formed of wood and provided on its opposite sides with mortises *a*, in which at *b* are secured the inner extremities of the handles B.

Pivoted at *c* is the depth-gage wheel E, which is journaled in a pair of supports C on opposite sides of the beam A and composed of sheet metal bent downwardly into a loop *c'* and formed with the upwardly-extending concentric arm *c''*, adapted to be secured in position by any suitable clamp D.

F represents the frame for supporting the mold-board G. As best seen at Figs. 1, 2, and 8, the frame F consists of a metallic bar preferably formed of wrought iron or other suitable material having great strength and rigidity and arranged with its extremities secured to the beam A and its central portion projecting downwardly from said beam and formed with the rearward bend *f*, the forward bend *f'*, and the connecting cross-bar *f*².

Experience has demonstrated that when the frame is composed of a bar bent as described the two extremities should be locked together, as the same possesses far greater strength than would be the case were said extremities separated. Accordingly one extremity of the bar F is provided with the arm *f*³, which extends beneath the beam A and is engaged with the upwardly-extending lug *f*⁴ upon the opposite extremity, thus binding together the two ends of this bar. The lug *f*⁴ extends upwardly through the beam A, is provided with screw ends at its upper extremity, and is secured in position by a nut or nuts *f*⁵. At the rear of the arms *f*³ is a bolt *f*⁶, which also extends through the beam A and is secured in position by nuts *f*⁵.

Instead of being formed as described, the bar F may have its opposite ends welded together, and any desirable portion thereof may be suitably secured to the beam and the remainder be bent into the described or any other desired form.

It will thus be seen that the frame of my plow is extremely light and rigid, and is easily produced, since the bar may be readily brought to the desired shape by suitably-shaped dies, thus distinguishing the same from those formed of cast metal, of which the greater portion of plow-frames are now composed.

H represents a shoe, (best seen at Figs. 1, 2, 3, 4, and 9,) formed with the recess *h* in its upper face, adapted to receive the cross-bar *f*² of the frame, and provided with the flat lower face *h'* for forming a bearing for the plow. The shoe is held in position by means of caps *h*², at the opposite extremities of the bar *f*², and bolts *h*³, adapted to pass through said caps, bar, and shoe.

The mold-board G, as shown in Figs. 1, 2, and 12, is formed on its outer face with the right-angular surfaces *g g*, adapted to alternately become landside and bottom bearing-face for the plow, and with a suitable double mold-board *g' g'* of easy curve, having its opposite sides adapted to alternately turn the furrow. As best seen at Fig. 12, the rear extremity of the mold-board is of less width than the greatest width of the forward extremity and is provided with the recesses *g*² for receiving the adjacent face of the frame F. Secured to the forward extremity of the mold-board is the block I, (best seen at Figs. 6, 7, and 12,) consisting of a hollow casting *i*, having substantially right-angular bearing-faces and a recessed upper face. The casting *i* is secured in position by bolts *i' i'*, pass-

ing through rearwardly-extending lugs *i*² *i*³ and a depressed shoulder *i*³ at the forward extremity of said casting, and a wearing-plate *i*⁴ is secured by bolts or screws *i*³ and the forward bolt *i'* upon the lower right-angular faces of the casting *i*. Projecting from the rearward extremity of the mold-board is a bracket J, having lugs *j*, through which pass bolts *j'*, and formed on the adjacent faces of said bracket and block are sockets *j*³ and *i*⁶, adapted to receive trunnions H', provided upon opposite extremities of the shoe H.

K represents a retaining or tightening bar or rod for drawing said block and pivoted bracket firmly in position for operatively assembling the mold-board on its standard. The forward extremity of this bar is engaged with the portion *l* of an attachment-plate L, secured by bolts *l'* to the under face of the mold-board between the projection J and the block I. The aforesaid portion *l* of said plate is bent outwardly from the mold-board in order to enable the hook-shaped end *k* of the rod K to pass between said portion of the plate L and the mold-board, thus producing a simple, cheap, and strong means of attachment. The rear extremity of the bolt K passes through the bracket J, and is secured in position by nuts *k' k'*. This attachment-plate L is readily produced of sheet metal. The bracket J and the body *i* of the block I are cast to the desired form, and are readily and cheaply assembled in position, as illustrated.

The mold-board is held in its adjusted position by a catch M, consisting of a lever *m*, having right-angularly-arranged arms provided with engaging faces *m'*, adapted to engage bearing-faces J', adjustably supported at J² on the opposite sides of the bracket J. The top face of the lever *m* is provided with a socket *m*² for receiving the head of its pivotal bolt *m*³, which pivots the same to a support N, mounted upon said bracket just above the rearwardly-bent portion *f*. This support N, as best seen at Figs. 10 and 11, is provided with forwardly-extending arms *n*, which are drawn together by a bolt N', whereby the support is firmly held in position. Formed in the outer faces of the arms *n* are recesses *n'*, which receive the coiled extremities of a spring O, having its central portion formed into a single spring-bar *o'*, which rests upon a shoulder or cam *m*⁴, formed upon the lever *m*, and retains said lever in its position. It will thus be seen that by rocking the lever *m* the mold-board is free to be reversed and is then held in position by the engagement therewith of the opposite arm of said lever.

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings, and it will be seen that my improved plow is simple, effective, and extremely light and easy of draft. I do not, however, limit myself to the precise detail construction and arrangement of the parts of my plow, as the same may be somewhat varied from that shown and de-

scribed without departing from the spirit of my invention.

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

1. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, having a substantially horizontal securing-bar f^2 and arranged with one extremity passed through the opposite extremity, and a mold-board supported on the securing-bar of said frame, substantially as and for the purpose set forth.

2. In a plow, the combination, with the beam, of a metallic bar secured to the beam and bent into an open frame with both extremities secured together, a reversible mold-board supported on said bar, and a movable catch secured on said bar and adapted to retain the mold-board in either position, substantially as and for the purpose set forth.

3. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a projecting arm on one end of said bar extending toward the opposite extremity, a shoulder on the latter extremity for engaging said projecting arm, and a mold-board mounted upon said frame, substantially as and for the purpose specified.

4. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a projecting arm on one end of said bar extending toward the opposite extremity, a lug on the latter extremity for engaging said projecting arm, a shoe secured to said bar, and a reversible mold-board pivoted to said shoe, substantially as and for the purpose specified.

5. In a plow, the combination, with the beam, of a standard, a mold-board mounted upon said standard, a support adapted to be secured to said standard and formed with projecting arms, a clamp for drawing said arms together and retaining said support in position, and a catch pivoted to said support and adapted to retain the mold-board in either position, substantially as and for the purpose set forth.

6. In a plow, the combination, with the beam, of a frame, a shoe mounted on the frame, a mold-board having one extremity opposite to the shoe, a projecting arm or bracket secured to the mold-board pivoted to the

shoe, a plate secured to the mold-board and formed with the outwardly-bent portion l , and a bar secured to said outwardly-bent portion of the plate and to the projecting arm pivoted to the shoe, substantially as and for the purpose specified.

7. In a plow, the combination, with the beam, of a standard, a mold-board mounted upon said bar, a support adapted to be secured to said bar and formed with projecting arms, a clamp for drawing said arms together and retaining said support in position, a catch pivoted to said support and adapted to retain the mold-board in either position, recesses in the outer faces of the arms on said support, and a spring having its extremities mounted in said recesses and its central portion bearing against a shoulder on the catch, substantially as and for the purpose specified.

8. In a plow, the combination, with the beam, the frame, and the mold-board, of a block secured to the under face of the mold-board and formed with substantially right-angular bearing-faces and a recessed upper face, rearwardly-extending shoulders at the rear of said casting, a depressed shoulder at its opposite extremity, bolts engaged with said shoulders for securing the casting in position, and a wearing-plate secured to the bearing-faces of said block, substantially as and for the purpose set forth.

9. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a shoe secured to said bar and formed on its upper face with a recess adapted to receive a portion of said bar, a clamp for securing the shoe in position, a mold-board, a block composed of the casting i , and the wearing-plate i^4 , secured to the mold-board, and a bracket also secured to the mold-board, and trunnions on the shoe adapted to receive recesses in said bracket and block, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 24th day of April, 1891.

HARRY WIARD.

Witnesses:

MARION LOUISE MANNING,
W. W. WIARD.