

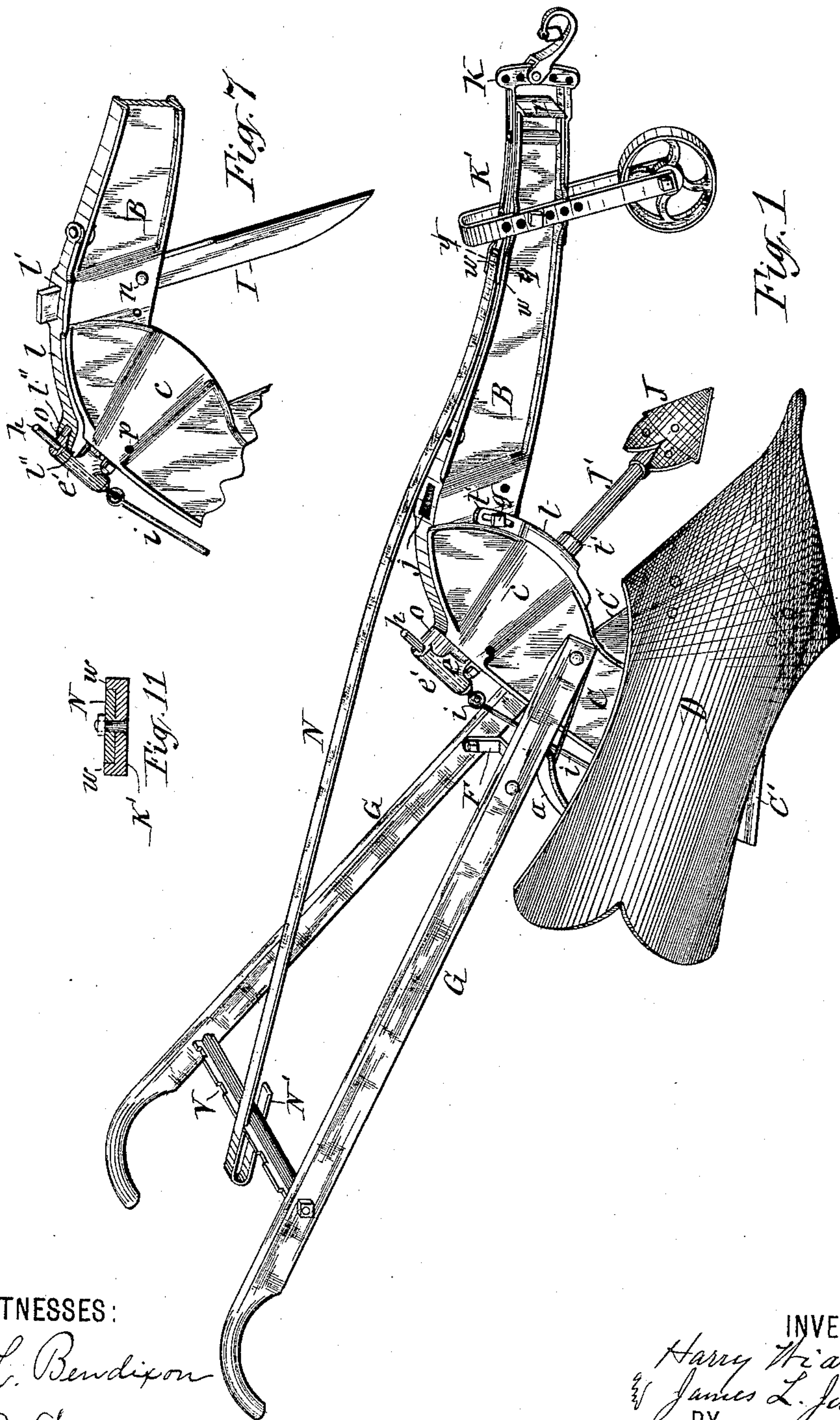
(No Model.)

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SIDE HILL PLOW.

3 Sheets—Sheet 1.

No. 418,433.

Patented Dec. 31, 1889.



WITNESSES:

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(No Model.)

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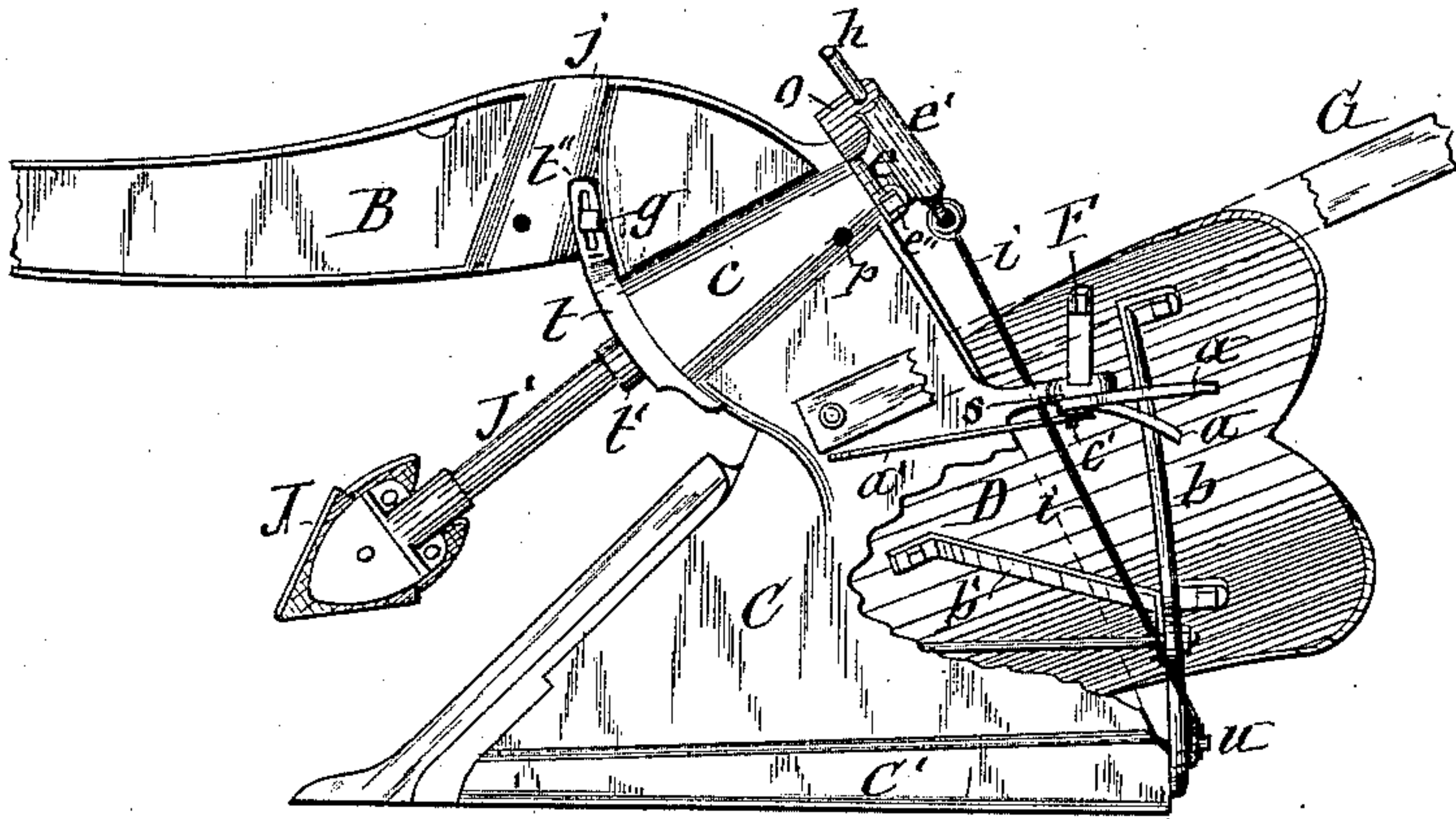


Fig. 2

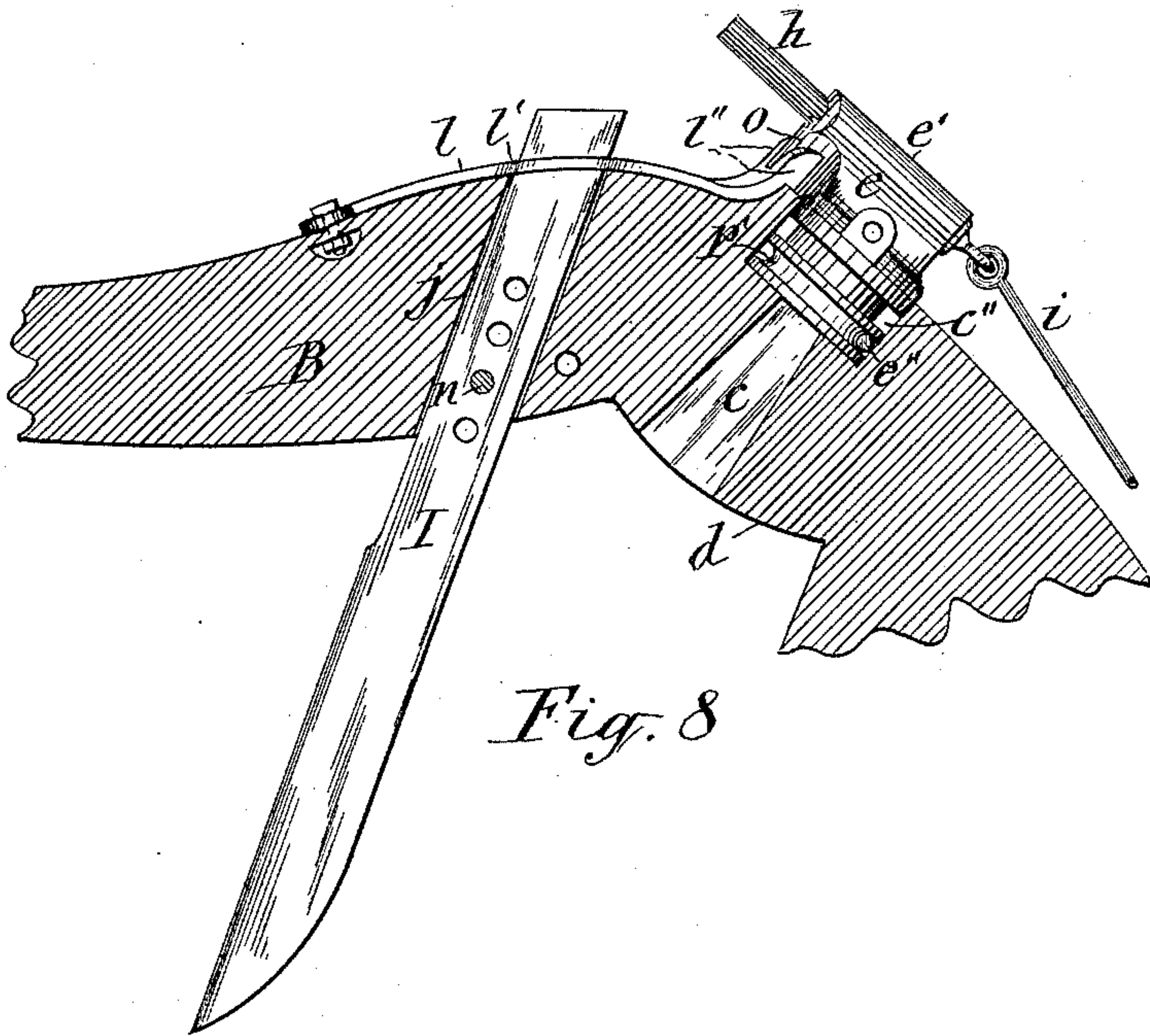


Fig. 8

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# UNITED STATES PATENT OFFICE.

HARRY WIARD AND JAMES L. JUDD, OF SYRACUSE, NEW YORK.

## SIDE-HILL PLOW.

SPECIFICATION forming part of Letters Patent No. 418,433, dated December 31, 1889.

Application filed April 19, 1889. Serial No. 307,819. (No model.)

*To all whom it may concern:*

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

This invention relates to the class of plows which have the mold-board hinged to the landside, so as to allow the former to be reversed and placed on either side of the landside, as may be desired; and the invention consists in novel devices for automatically adjusting the jointer in its position by the movement of the brace by which the rear end of the mold-board is pivoted to the rear end of the landside; and the invention furthermore consists in certain peculiarities of the detail construction of certain portions of the plow, all as hereinafter fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a perspective view of the mold-board side of a plow embodying our improvements. Fig. 2 is a view of the landside of the plow, a portion thereof being broken away to show the extra brace employed for supporting the mold-board. Fig. 3 is a top plan view of the plow. Fig. 4 is a rear end view of the same. Fig. 5 is a vertical longitudinal section of that portion of the plow-beam to which the jointer is connected. Fig. 6 shows the same with the jointer attachment in section. Fig. 7 is a perspective side view of the portion of the plow-beam to which the colter is attached. Fig. 8 is an enlarged vertical longitudinal section of said portion of the plow-beam, illustrating the means for adjustably sustaining the colter. Fig. 9 is an enlarged detached inverted plan view of the spring-latch which holds the usual mold-board locking catch-arm in its operative position. Fig. 10 is a vertical transverse section of the same on line  $x x$ , Fig. 9; and Fig. 11 is an enlarged transverse section on line  $y y$ , Fig. 1.

Similar letters of reference indicate corresponding parts.

B represents the plow-beam, which is formed of metal.

C denotes the standard, which is preferably

formed integral with said beam, and C' is the landside of the plow.

D denotes the mold-board, which is hinged or pivoted to the rear end of the landside in the usual manner, the rear portion of the mold-board being usually connected to the landside by means of a three-armed brace  $b$ , two arms of which are rigidly secured to the back of the mold-board, and the other arm is pivoted to the base of the rear end of the landside. From the standard projects rearward an arm  $s$ , on which is pivoted the usual duplex catch-arm  $a$ , which is adapted to interlock with the brace  $b$ , so as to lock the mold-board in its position. A spring-bale  $a'$ , attached at one end to the standard C and embracing with its opposite end the pivot-bolt  $v$  of the arm  $a$ , lies intermediately of its length between lugs  $c' c'$ , formed on the arm  $a$ , as illustrated in Figs. 9 and 10 of the drawings, and thereby holds the arm  $a$  in its engagement with the brace  $b$ . Upon the arm  $s$  is also mounted the bracket F, which supports the handles G G, and by means of the single bolt  $v$ , which attaches the catch-arm  $a$  to the arm  $s$ , the aforesaid bracket is also secured to the latter arm, and thus said bolt is made to serve two functions and the construction of the plow is correspondingly simplified and cheapened.

The central portion of the mold-board is nearly straight crosswise, and consequently weak at that point and liable to crack, especially when the mold-board is formed of thin steel or with a chilled face. In order to compensate for the aforesaid weakening of the mold-board, we employ an additional brace  $b'$  in connection with the three-armed brace  $b$ , which latter is rigidly attached to the mold-board. Said additional brace  $b'$  is connected at one end to the lower portion of the brace  $b$  and at the opposite end to the central portion of the mold-board. The beam B is provided with a socket  $c$ , which extends from the top of the beam through the bottom thereof and with a forward inclination. The upper end of said socket is cylindrical, as shown at  $c''$  in Figs. 5, 6, and 8 of the drawings, and from thence down to the bottom of the beam the socket is flared rearward and forward. To the top of the beam B we swivel a block  $e$ , preferably



by seating said block rotatably in the cylindrical portion  $c''$  of the socket. The under side of this block is formed with a recess  $e'''$ , into which is inserted the upper end of the arm or shank  $J'$  of the jointer  $J$ . A pin  $e''$  passes transversely through the block  $e$  and upper end portion of the jointer-shank, and thus connects the latter to said block at a point at or near the top of the plow-beam. The recess  $e'''$  is flared from the aforesaid point of attachment upward and also downward to correspond to the flare of the socket  $c$ , and thus the lower end of the jointer-shank is permitted to be elevated and depressed. The bottom of the beam  $B$  is formed with a longitudinal convex segmental bearing  $d$ , on which is placed a corresponding concave plate  $t$ , which is provided with an eye  $t'$ , through which the jointer-shank  $J'$  passes. The plate  $t$  is adapted to be moved longitudinally on the bearing  $d$ , and has one end formed with a bifurcated longitudinally-slotted extension  $t''$ , which embraces the beam  $B$ , and is adjustably secured thereto by a bolt  $g$ , passing through the slots of the extension  $t''$  and through the beam. Said plate serves to sustain the jointer-shank in its requisite angle of inclination. The top of the block  $e$  is formed with a sleeve  $e'$ , in which slides a pin  $h$ , to the rear end of which is coupled a shifting rod  $i$ , which is extended rearward and has its rear extremity connected to the three-armed brace or pivoted rear support  $b$  of the mold-board at a point eccentric to the pivot of said support, as shown at  $u$ .

The arm  $s$ , hereinbefore referred to, is formed with a vertical aperture or slot  $s'$ , through which the rod  $i$  passes, and is thus fulcrumed on the arm  $s$  at that point. The effect of the aforesaid combination and arrangement of parts is as follows: In reversing the mold-board the three-armed brace  $b$  is swung from one side to the opposite side of the landside. Said brace, carrying with it the lower end of the rod  $i$ , causes the upper end of said rod to be swung in the opposite direction by the fulcrum of the rod on the arm  $s$ , and this shifting of the rod turns the block  $e$ , so as to turn the jointer  $J$  to conform to the position of the mold-board; hence the jointer is adjusted automatically by the movement of the three-armed brace  $b$ .

In addition to the socket  $c$ , we provide the beam  $B$  with a slot  $j$ , which extends from the top of the beam with a forward inclination to the bottom of the beam and is adapted to receive the attaching-shank of a colter  $I$ . Thus the jointer and colter can be used interchangeably on our improved plow. The slot  $j$  is flared rearward, and the shank of the colter is rectangular in cross-section and secured in the slot by a pin  $n$ , passing transversely through the lower portion of the beam and through the colter-shank, which latter is provided at different points of its length with a plurality of holes for the reception of the pin  $n$ , and is thus capable of being adjusted

to project different distances from the plow-beam. The aforesaid flare of the slot  $j$  allows the colter to be turned so as to come in proper position in relation to the landside of the plow, according to the position of the mold-board. In order to effect this adjustment of the colter automatically with the shifting of the mold-board and without interfering with the mechanism employed for adjusting the jointer, we place upon the beam  $B$  a lever  $l$  and pivot the latter to the beam a suitable distance in front of the slot  $j$ , the lever extending rearward and being provided with a slot  $l'$  directly over the slot  $j$ , the slot  $l'$  being of a size to snugly fit the colter-shank which passes through the same. The rear end of said lever is bifurcated or formed with two lugs  $l'' l''$ , which embrace between them a nose-piece  $o$ , formed on the front end of the block  $e$ . Said block being turned automatically with the shifting of the mold-board in the manner hereinbefore described causes the lever  $l$  to be swung laterally, and thereby turns the colter into its requisite position to conform to the change of the position of the mold-board. This automatic adjustment of the colter constitutes the subject-matter of another application for Letters Patent about to be made by us.

In order to retain the block  $e$  in the cylindrical seat  $c''$  during the use of the colter, we form the lower portion of said block with a circumferential groove  $p'$  and provide the beam  $B$  with a perforation  $p$ , which is tangential to the groove  $p'$ , and into this perforation we insert the same pin  $e''$  which is employed for attaching the jointer-shank to the block  $e$ .

$K$  represents the clevis, which is pivoted to the front end of the beam in the usual manner, and is formed with a rearward extension  $K'$ , which is provided with upwardly-projecting flanges  $w$ , and upon said extension between the flanges thereof lies the front end of the shifting lever  $N$ , which is secured thereto by a bolt or rivet passing vertically through said parts, as illustrated in Fig. 11 of the drawings. The rear end of said shifting lever lies across the usual notched plate  $V$ , and at the rear of said plate the end of the lever is bent forward, as shown at  $V'$ , so as to bear with its extremity across the opposite side of the notched plate and serve as a spring for holding the lever in engagement with the notches of the plate  $V$ , as shown in Fig. 1 of the drawings. The lever and its sustaining-spring are thus formed in one piece, and consequently are not only cheaper to manufacture, but also stronger and more durable.

In order to properly support the clevis  $K$  in its laterally-adjusted positions, we form the front end of the beam  $B$  with a head  $r$ , which projects laterally from opposite sides of the beam and is formed with horizontal top and bottom bearings.

What we claim as our invention is—

1. In a plow having a reversible mold-board



supported at the rear by a brace pivoted to the lower portion of the landside, the jointer adapted to rotate on its axis and turned automatically by a connection thereof with the aforesaid brace, as set forth.

2. In a plow having a reversible mold-board, the jointer hung on a support connected rotatably to the beam, and a shifting rod connecting said support with the pivoted rear support of the mold-board at a point eccentric to the pivot of the latter.

3. In a plow having a reversible mold-board, the jointer hung on a support swiveled on the beam, a shifting rod connecting said support with the pivoted rear support of the mold-board at a point eccentric to the pivot of the latter, and a fulcrum for the shifting rod on the stationary part of the plow between the two aforesaid supports.

4. In a plow having a reversible mold-board, the beam having a socket extending through it, a block swiveled to the top of the beam axially in range with said socket, the jointer-shank extending through the aforesaid socket and hung on said block, and a shifting rod connecting said block with the pivoted rear support of the mold-board at a point eccentric to the pivot of the latter.

5. The combination of a plow-beam having a downwardly-flaring socket, the jointer-shank suspended from the upper end of said socket, and a stay adjustably connected to the under side of the beam and supporting thereat the jointer-shank, as set forth.

6. The combination of a plow-beam having a downwardly-flaring socket and a longitudinal convex segmental bearing on its under side, a concave plate on said bearing connected to the beam longitudinally adjustable and provided with an eye in range with the aforesaid socket, and the jointer-shank secured at the upper end of the socket and passing through the aforesaid eye.

7. The combination of a plow-beam having a downwardly-flaring socket and a longitudinal convex segmental bearing on its under side, a concave plate on said bearing provided with a longitudinally-slotted segmental extension resting against the sides of the beam and with an eye in range with the socket, a bolt passing through the aforesaid extension and beam, and the jointer-shank secured at the upper end of the socket and passing through the aforesaid eye, as set forth.

8. In a plow having a stationary landside and reversible mold-board, the beam provided with a downwardly-flaring socket terminating cylindrically at the top portion of the beam, a block riding on top of the beam and pivoted in the cylindrical portion of the aforesaid socket and provided with a recess in its under side and with a perforation transversely through the recessed portion, the

jointer-shank extending into the socket of the beam and secured in the recess of the pivoted block by a pin passing through said block and shank, and a shifting rod connecting said block with the rear support of the mold-board at a point eccentric to the pivot of the latter.

9. In a plow having a reversible mold-board, the beam having a socket extending from the top through the bottom thereof, a block swiveled in the upper end of said socket and provided with a transverse sleeve above the beam, a pin sliding in said sleeve, a shifting rod connecting said pin with the pivoted rear brace of the mold-board at a point eccentric to the pivot of the latter, a fulcrum for the shifting rod on the stationary part of the plow between the aforesaid pivoted block and brace, and the jointer-shank extending through the socket of the beam and secured to the pivoted block, substantially as set forth and shown.

10. In a plow having a reversible mold-board supported at its rear end by the brace *b*, pivoted to the landside, the combination of the beam *B*, provided with the downwardly-flaring socket *c*, terminating with the cylindrical portion *c'* at its upper end, and the bottom of said beam provided with the convex segmental bearing *d*, the concave plate *t*, provided with the eye *t'* and with the bifurcated longitudinally-slotted extension *t''*, embracing the beam, the bolt *g*, passing through the slots of said extension and through the beam, the block *e*, pivoted in the cylindrical portion *c'* of the aforesaid socket and formed with the sleeve *e'* and recess *e'''* and provided with the coupling-pin *e''*, the jointer-shank *D'*, passing through the eye *t* and through the socket *c* and secured in the recess *e'''* by the pin *e''*, the pin *h*, sliding in the sleeve *e'*, the arms, provided with the slot *s'*, and the rod *i*, passing through said slot and connected at opposite ends to the sliding pin *h* and to the brace *b* at a point eccentric to the pivot of the latter, substantially as described and shown.

11. The combination, with the mold-board *D*, of the brace *b*, rigidly attached at the ends of its prongs to the mold-board, the tie-rod *u*, connecting the lower end of said brace to the landside of the plow, and the additional brace *b'*, attached at one end to the lower portion of the brace *b* and at the opposite end to the central portion of the mold-board to brace the latter, substantially as described and shown.

In testimony whereof we have hereunto signed our names this 13th day of April, 1889.

HARRY WIARD. [L. S.]

JAMES L. JUDD. [L. S.]

Witnesses:

C. H. DUELL,

J. J. LAASS.