(No Model.) 3 Sheets—Sheet 1.

L. B. WHITE.

PLOW.

No. 420,587. Patented Feb. 4, 1890.

Fig. 1.

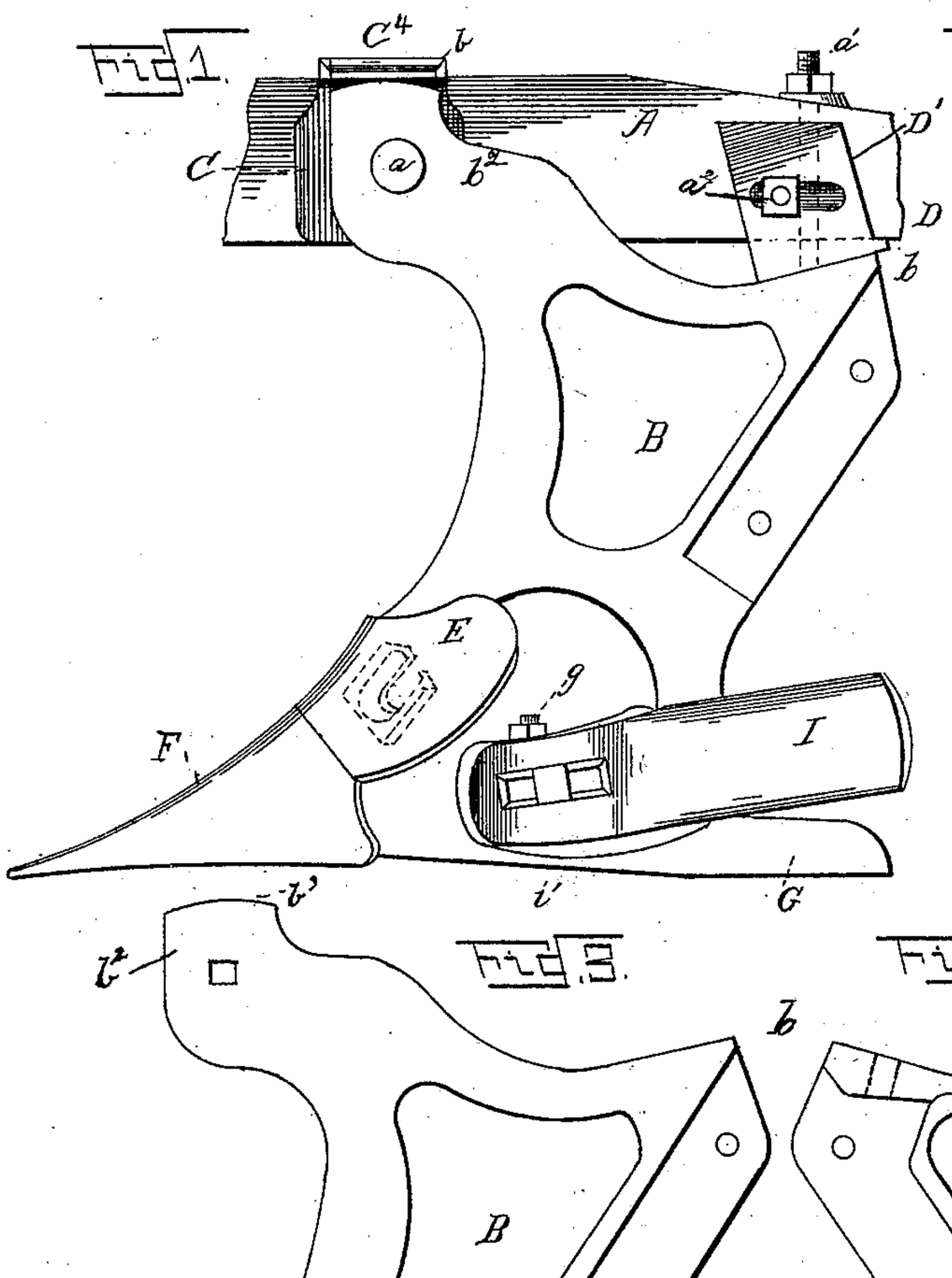


Fig. 2.

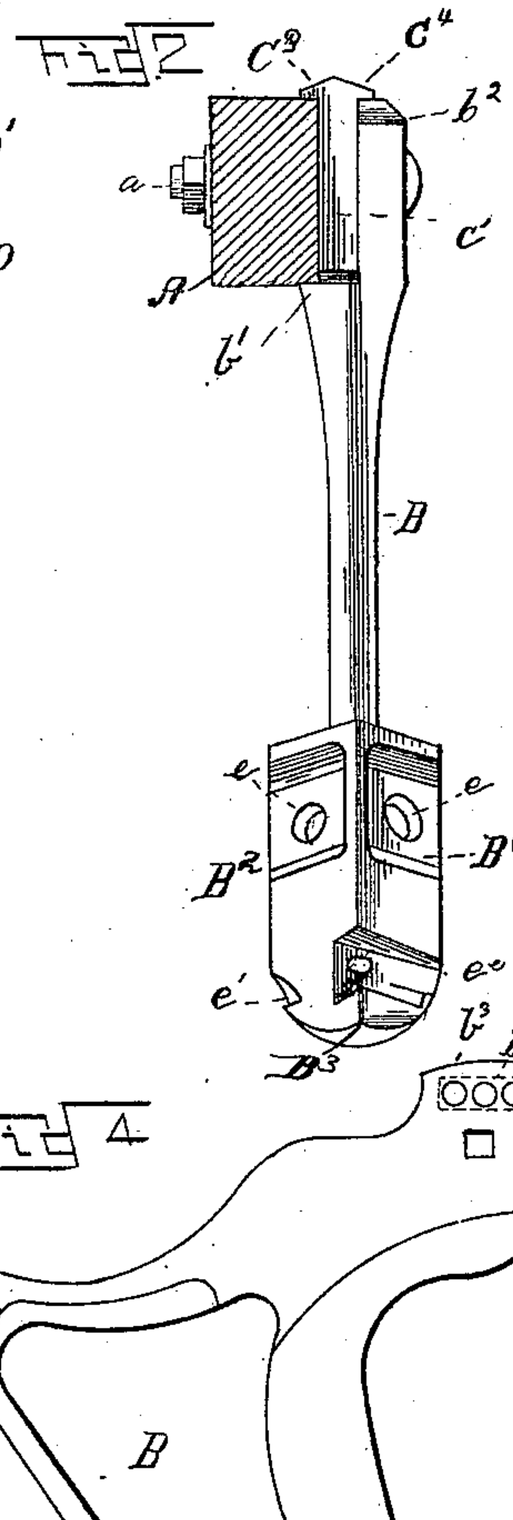
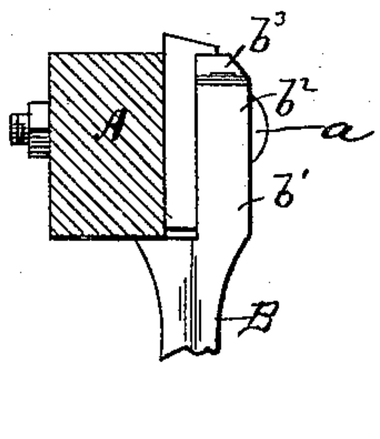


Fig. 3.

Fig. 4.

Fig. 1a.



Witnesses
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Pearl Kramer

Inventor
Lewis B. White

By his Attorneys
R. S. & A. L. Lacey

(No Model.) 3 Sheets—Sheet 2

L. B. WHITE.

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Fig. 5.

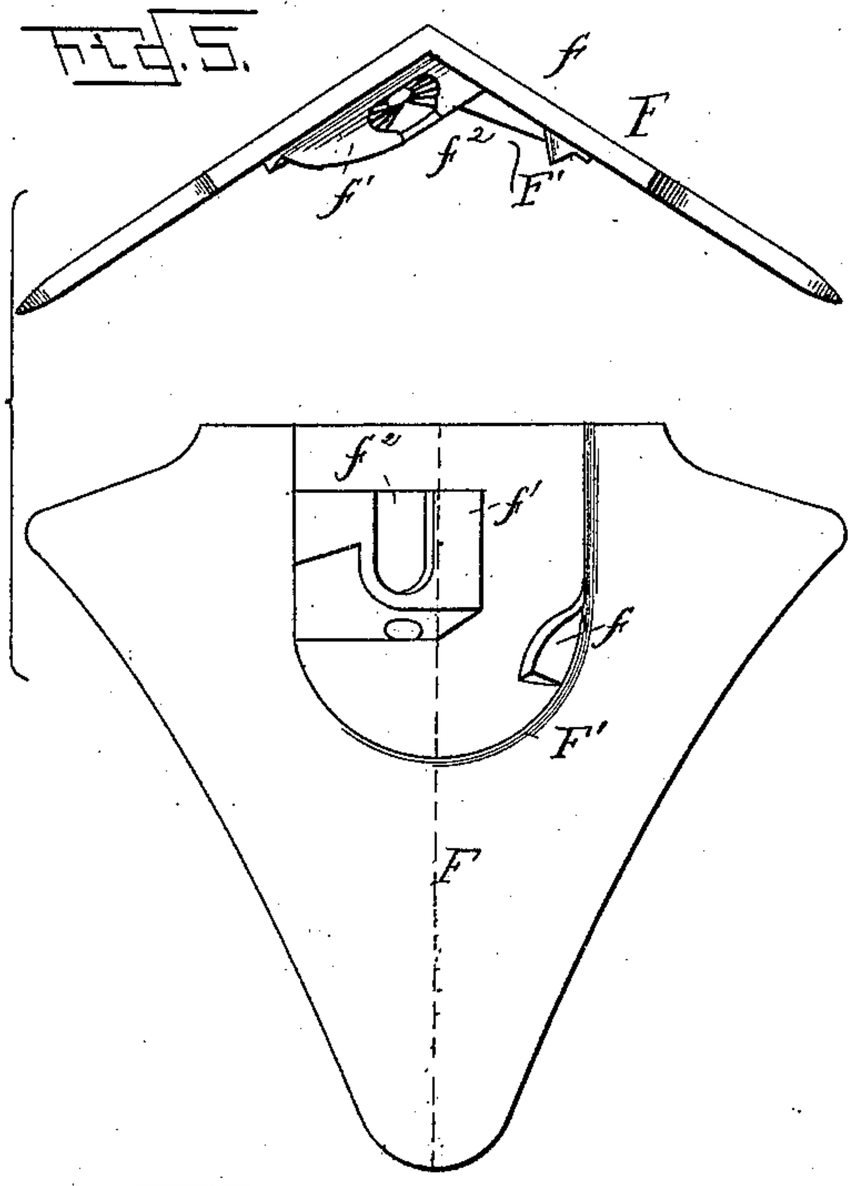


Fig. 8.

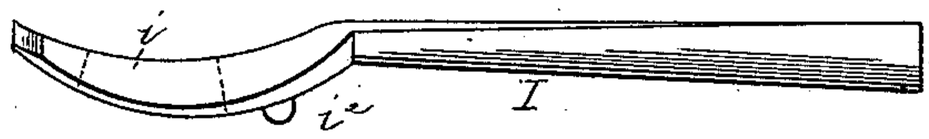


Fig. 7.

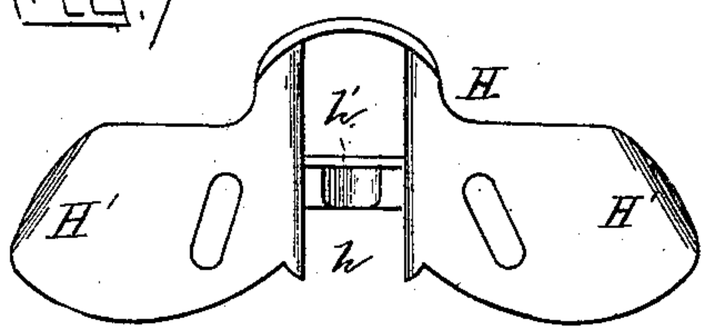


Fig. 9.

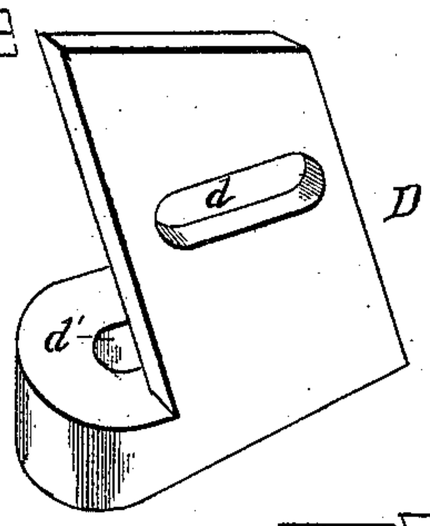


Fig. 6.

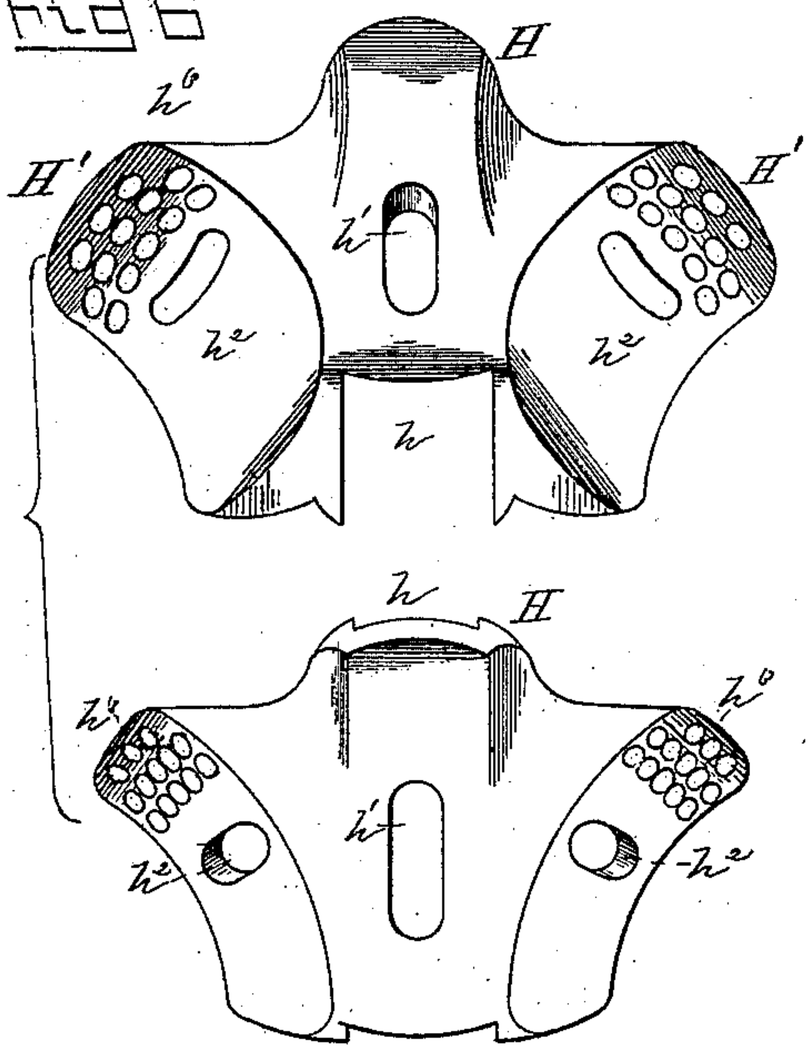


Fig. 10.

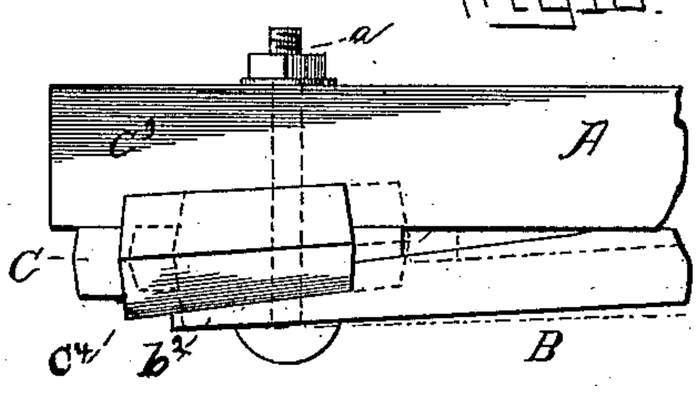
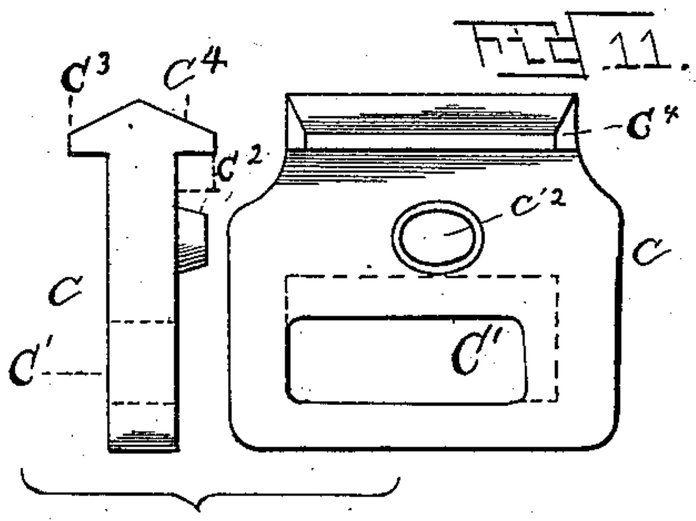


Fig. 11.



Witnesses
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(No Model.) 3 Sheets—Sheet 3.

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Fig 12

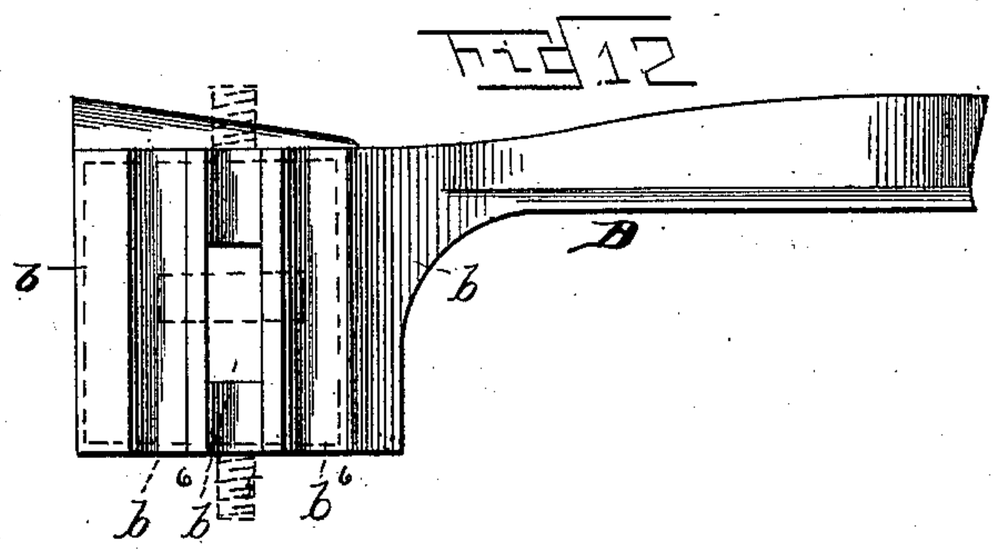


Fig 14.

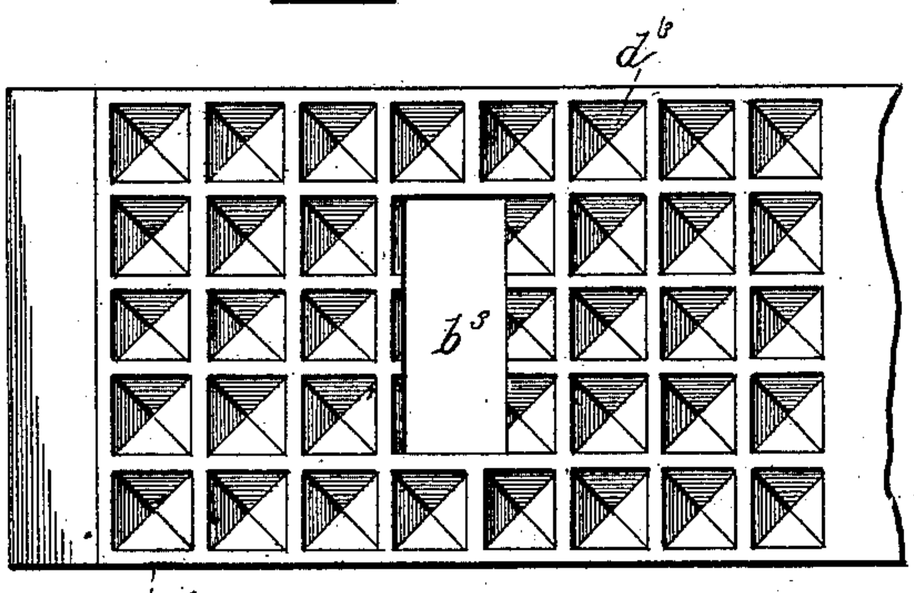


Fig 13.

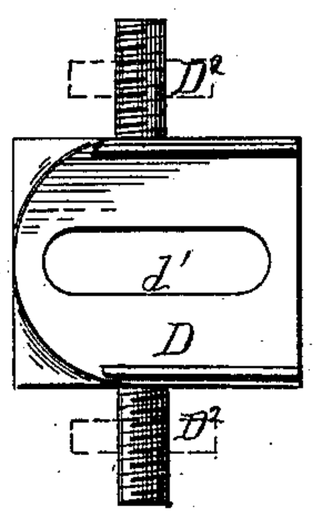


Fig 16.

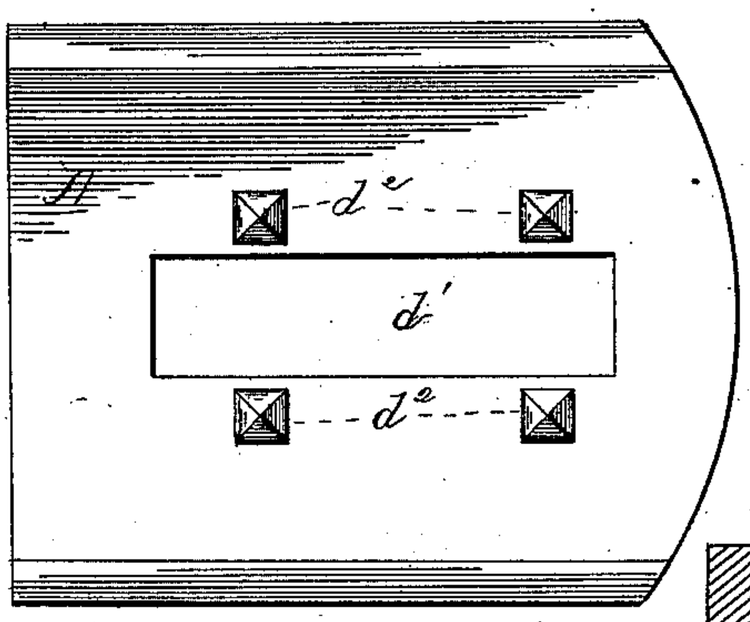


Fig 15.

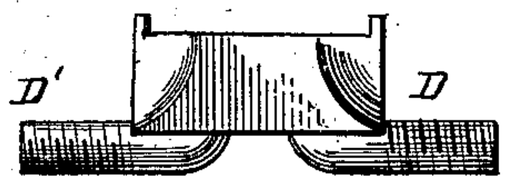
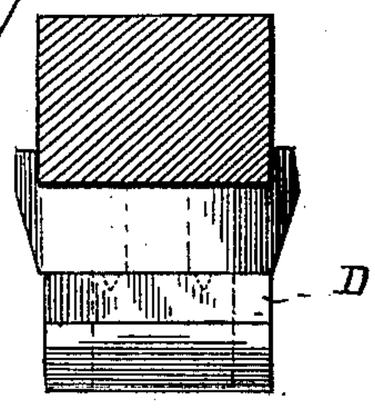


Fig 17.



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UNITED STATES PATENT OFFICE.

LEWIS B. WHITE, OF NORFOLK, VIRGINIA.

PLOW.

SPECIFICATION forming part of Letters Patent No. 420,587, dated February 4, 1890.

Application filed April 5, 1886. Serial No. 197,853. (No model.)

To all whom it may concern:

Be it known that I, LEWIS B. WHITE, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Plows; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to plows; and it consists in the novel features hereinafter more fully set forth and claimed, and shown in the annexed drawings, in which—

Figure 1 is a side view of a plow of my construction provided with my improvements and applied to a beam, a portion of which is shown; Fig. 2, a front view of the standard divested of its detachable parts; Fig. 3, a side view with parts removed and partly in section; Fig. 4, a reverse side view with parts removed. Fig. 5 shows the top edge and the rear or under side of the share. Fig. 6 shows a front perspective and plan view of the sweep-stock. Fig. 7 is a rear or under side view of the sweep-stock on a reduced scale; Fig. 8, a side edge view of one of the sweeps; Fig. 9, an enlarged perspective detail of the supplemental beam-seat to be interposed between the beam and beam-seat on the standard; Fig. 10, a plan view showing portions of the beam and standard and adjusting wedge or block. Fig. 11 shows an end and a side view of the wedge or block interposed between the beam and the side bearing of the standard. Figs. 12 and 14 are plan views or modified forms of the beam-seat on the standard. The position of the supplemental beam-seat is shown in dotted lines. Figs. 13 and 15 are plan and end views, respectively, of a modified form of the supplemental beam-seat to be inserted between the beam and the beam-seat on the standard. Fig. 16 is a bottom plan view of a modified form of a supplemental beam-seat to be used in connection with the form of beam-seat shown in Fig. 14. Fig. 17 is a rear view, on a reduced scale, of a beam and the upper portion of a standard, showing the application of the supplemental beam-seat shown in Fig. 16, in which the said supplemental seat is provided with two flanges to embrace the opposite sides of the beam; and Fig. 18 is a detail view showing the flange of the wedge overlapping the upper curved end of the vertical bearing.

The standard B is provided with two bearings, one of which is a vertical extension of a portion thereof up alongside the beam, and the other is a lateral extension or flattening of a portion of the standard under the beam. For convenience of reference I shall hereinafter designate these bearings as the "vertical bearing or arm" and the "beam-seat," respectively. These bearings are preferably arranged as shown in the drawings, wherein the vertical bearing b^2 is on the front portion of the standard and beam-seat b is on the rear portion thereof and under the rear end of the beam. The beam is adjustable laterally upon the vertical bearing b^2 and vertically and laterally on the beam-seat b. The beam-seat b is wholly on a plane below the beam, while the vertical bearing b^2 projects up alongside the beam. The step or rest b' is curved, as shown, so that the beam will readily tilt thereon as its draft end is raised or lowered. The upper edge b^3 of the vertical bearing b^2 is curved, as shown, and is arranged preferably flush with the upper surface of the beam; but it may be in a different plane, as will be hereinafter explained.

A wedge or block C, provided with a flange which overlaps the beam, is pivotally held on the bearing b^2, so that it will turn with the beam as the latter is adjusted, but it does not lift vertically. This wedge or block is placed at the pivotal center of the beam, and the flange or lip rests in its entire length on said beam in all the various adjustments of the latter, and thus affords a brace or support for the pivotal bolt, and as it moves with the movement of the beam the latter is not injured by being cut into, as would be done by a flange integral with the standard which would bear only on a small portion of its surface when the beam is adjusted vertically. The wedge or block is preferably interposed between the vertical bearing and the beam; but it may be made L-shaped and placed on the outside of the bearing, and the flange will

then extend over the top of the said bearing and onto the top of the beam. I prefer to interpose the pivotal block between the vertical bearing and beam, as shown, and to make it wedge-shaped, for thereby I secure additional advantages, as will be made clear hereinafter.

The wedge or block is provided with a longitudinal slot C′ to permit its longitudinal adjustment on the retaining-bolt *a*. It is provided with a gudgeon or side lug C^2, arranged and adapted to enter a recess or bearing b^4 in the side of the bearing b^2. The slot is made wider than the bolt, so that the edges of said slot may not come in contact with the bolt during the vertical adjustment of the draft end of the beam, and thereby bind the wedge and lift its flange from its bearing or seat on the upper end of the vertical bearing or beam. There may be a series of holes b^4, which will permit the longitudinal adjustment of the block; or, instead of a series of holes, an elongated recess may be provided, as shown in dotted lines. If the block C, instead of being wedge-shaped, were of rectangular form, to be used simply to set the beam bodily out from the bearing without changing the line of draft, there would be no need of but a single hole b^4. The block would support the beam and bolt by its overlapping flange and lug, and at the same time its opposite flange would rest on the curved upper edge b^3 in any vertical adjustment that might be given to the end of the beam. I prefer to make the bearing b^2 with the series of holes or the elongated recess, so as to provide for the longitudinal adjustment of the wedge or block.

While I have shown the lug on the block and the recesses in the standard-arm, yet it will be clearly understood that the lug may be on the standard-arm and the recess or recesses in the wedge or block.

The wedge or block C has projected the side flanges C^3 C^4, preferably in the same plane, which give it a cross or T head, which overlap the beam or vertical bearing, as shown. If the upper edge of the vertical bearing were not flush with the upper surface of the beam, then the flanges C^3 C^4 would be arranged in different planes to adapt them to the different relative positions of the bearing and the upper surface of the beam.

It will be understood that in giving a vertical adjustment to raise or lower the draft end of the beam the wedge or block has a tilting but no vertical movement on the vertical bearing, while its relation to the beam is unchanged.

The wedge or block is fixed as regards any vertical movement independent of the beam; consequently it rocks in unison therewith as the latter turns pivotally about the bolt *a*. The flange C^4 rocks over the curved end b^3, while the entire length of the flange C^3 rests on the beam, which length of bearing remains unchanged, and the beam is thereby prevented from being cut or worn, as hereinbefore explained. It will be readily understood that the wedge may be made with a single flange to overlap the beam, or to overlap the standard, or both, as may be desired.

The beam-seat *b* is preferably inclined on its upper surface, forming an acute angle with the under side of the beam, and the intervening space is filled by an adjustable supplemental beam-seat D. The adjacent faces of the supplemental seat and beam-seat are preferably provided with interlocking teeth or other means to prevent possibility of slipping. The teeth may be dispensed with and the fastening-bolt be made to hold the parts together. A flange D, projected from the supplemental seat D, is or may be longitudinally slotted in a direction parallel with the face which lies against the beam. A flange may also be formed on the opposite side.

A slot *d′* is formed in the supplemental seat parallel with the length of the beam or line of draft. When this seat is placed on the beam-seat *b*, the slots b^5 and *d′* are at right angles to and cross each other, and the fastening-bolt *a′* passes through both of them. The bolt is fixed in its relation to the beam.

The supplemental seat shown in Figs. 1 and 9 has a longitudinal adjustment relative to the beam, whereas, with reference to the standard, it has both a longitudinal and transverse adjustment.

In Figs. 16 and 17 the supplemental seat is shown as provided with a flange extending part way on each side of the beam, and in Fig. 16 pointed lugs or teeth d^2 are shown on each side of the slot *d′* for engaging corresponding indentations d^3, a series of which are provided on the top beam-seat, (shown in Fig. 14,) so that the teeth d^2 may engage some one thereof when the supplemental seat is adjusted. It is manifest that the teeth may be formed on the standard and the indentations on the adjustable seat.

Figs. 12 and 13 show a modification in which the supplemental seat has a transverse adjustment relative to the standard by means of the threaded arms D^2 projecting laterally from each side thereof to receive adjusting-nuts, which are adapted to bear on the sides of the cross-bearing. The lateral movement of the seat with reference to the standard is effected by loosening one nut and tightening up on the other. By this arrangement a much nicer adjustment can be made than by any other means. The nuts could be left off, if desired, in which case the arms D^2 will assist in holding the support in place and give firmness to its position. The arms project beyond the plane of the support and are adapted to be seated in one of a series of transverse grooves b^6 in the upper side of the beam-seat, thereby performing the office

of interlocking teeth, and insuring a stable and firm connection between the parts after the seat is adjusted longitudinally.

The lower part or foot of the standard is expanded at its forward side, forming wings B′ B², which incline rearwardly from a central line or apex B³. The mold-boards E, having projections on the rear to fit into corresponding notches or recesses *e* near the upper outer corners of the wings, are removably secured thereto in any well-known manner. The lower portion of one of the wings has a notch *e′* in its edge. In the other wing a recess or socket e^2 is formed, which extends from its edge across its face and terminates in the opposite wing at a point beyond the central line B³.

The double point or share F is adapted to fit snugly against the lower edge of the mold-boards when properly seated and secured to the lower portion of the expanded end. The socket or recess F′ in the rear or under side of the share receives and forms a seat for the end of the standard. A projection *f*, extending within the socket, coincides with the notch *e′* in the wing to steady the point and prevent lateral displacement thereof. A second projection *f′*, springing from the opposite side of the socket and extending across the angle of the wings and connecting with the opposite wing, strengthening and forming a brace for both wings, while at the same time fitting in the socket e^2 in the lower portion of the standard, affords a means for securing the point or share in place, the projection being recessed, as shown at f^2, for the reception of a bolt-head for securing such castings to a standard, as shown in my previous patents.

A further object in locating the fastening for bolt-head as described, so that it extends to both wings of share, is to have it at the middle, so that the bolt-head will draw on both wings, thus dividing the strain and thereby reducing to the minimum the liability to break.

To the bar B of the standard is adjustably secured a sole-piece G by a bolt *g*, passing vertically, and a bolt *g′*, passing transversely, through. The upper side of the bar is concave or curved on the arc of a circle, and forms a seat for the sweep-holder H, which is correspondingly convexed on its under side where it contacts with the bar. Wings H′, extending on each side of the convexed portion, form a channel *h*, into which the bar B′ is seated, thereby preventing any lateral displacement of the holder. Slot *h′*, running in the direction of the channel *h*, allows the bolt *g* to project through and adjustably secure the holder in position. The faces of the wings are formed approximately on the segment of a sphere, and the rear side of the inner end of the sweeps I are made of corresponding shape to fit snugly thereto and present a ball-and-socket joint, so that the sweep may be adjusted in the arc of a circle from end to end, vertically and laterally, to regulate the throw of the earth to the plants and to increase or diminish the track or path according to the distance of the rows, respectively. The best results are obtained by convexing the ends of the sweeps, although it is evident that this order may be reversed with equal results, so long as an approximately ball-and-socket joint is maintained between the two parts. The inner end of the sweep has a slot *i*, and the wings of the holder have slots h^2, said slots in sweep or holder being arranged transversely to each other, a bolt *i′*, passing laterally through the slots in each sweep and wings of the holder, binding the two together. By loosening the bolt the shank of the sweep may be adjusted to give a greater number of inclinations or sets to the sweep than can be done by any of the ordinary means of adjustment. It may be adjusted so as to give its face any desired pitch without changing its horizontal position; or it may be turned either up or down about the bolt as an axis to regulate the inclination of the sweep to the ground, its angle with the standard, and its pitch, respectively, as occasion may require.

To render more positive the binding action of the bolt and to guard against accidental displacement of the sweeps when adjusted by neglecting to properly tighten the bolts, one or more teeth i^2 are formed on that side of the sweep adjacent, to engage one or more of a series of indentations or depressions h^3 in said holder.

If it is desired to raise or lower the sweeps without changing their set relative to their position on the holder, the bolt *g*, securing the holder in place, is slackened and the sweep-holder left free to be adjusted on the bar, and by reason of the concavity of its upper surface the holder may be adjusted to a higher or lower level, as required, carrying therewith the sweeps. By tightening the bolt the holder is secured in its adjusted position. Interlocking teeth h^4 are provided between the contacting surfaces to render more positive their binding action.

It will be noticed that the entire beam may be adjusted laterally on both bearings of the standard, but that it is vertically adjustable on only one of said bearings. The bolt *a*, connecting it with the standard, forms a fulcrum or axis about which the beam tilts when its draft end is adjusted vertically.

Instead of having a holder projected laterally from the standard, as particularly shown, I can form on or in the side of the standard a projection or recess, which will be the segment of a sphere, and correspondingly form the inner end or shank of the sweep, so that the two parts fit together as a ball and socket. Then by providing these adjacent parts with suitable slots I secure all the movements set forth for the sweep when attached to the projected arm of the sweep-holder.

The wedge having threaded arms, which

are adapted to receive adjusting-nuts, is shown in the present case to illustrate its application to the form of standard set forth, and is specifically claimed in the application filed by me January 14, 1889, Serial No. 296,321.

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

1. The combination of the beam vertically adjustable at its draft end, the standard provided with a vertical bearing or arm extended up alongside of the beam, and the wedge or block C, having a flange to lap upon the beam, the said wedge or block and the vertical bearing of the standard being provided with an interlocking bearing and gudgeon, whereby the said block turns upon a pivoted center and is permitted to tilt freely in the vertical adjustment of the draft end of the beam, substantially as set forth.

2. The combination, with the beam and the standard having a vertical bearing provided with a recess or bearing in its side, of a wedge or block C, interposed between the beam and vertical bearing, and provided with a lip or flange to extend over one of the adjacent parts, and having a slot to permit the longitudinal adjustment thereof, and a side lug or gudgeon to engage in the recess or bearing in the vertical bearing, whereon it will pivot in the vertical adjustment of the draft end of the beam, substantially as described.

3. The combination, with the beam and the vertical bearing of the standard, having its upper end curved and having in its side a recess or bearing, of the wedge or block C, interposed between the beam and vertical bearing, and having side flanges C^3 C^4, which lap over on the beam and on the upper curved end of the vertical bearing, and having a longitudinal slot and a side lug or gudgeon to extend into the recess in the vertical bearing and pivot thereon, substantially as described.

4. The combination, with the beam and a beam seat or bearing over which the beam may be shifted laterally, of a supplemental wedge-shaped beam-seat interposed between the beam and beam-seat and adjustable longitudinally and laterally, substantially as set forth.

5. The combination, with the beam and the standard, having a beam seat or bearing over which the beam may be shifted laterally, of a supplemental beam-seat having flanges to embrace the beam and adjustable longitudinally thereunder, the said flanges being adapted to prevent any lateral movement of the beam independently of the said wedge, substantially as described.

6. The combination of the standard having front and rear bearings, the beam secured to said standard, and a wedge interposed between the rear bearings and the under side of the beam, and provided with flanges to embrace the sides of the beam and prevent any lateral movement thereof independent of the beam and adjustable lengthwise thereon and laterally relative to the standard.

7. The combination of the standard having front and rear bearings, the latter of which is inclined on its upper surface from front to rear, and a wedge interposed between the inclined bearing and the beam and having an upwardly-projected flange or flanges resting against the sides of the beam, substantially as and for the purpose set forth.

8. The combination of the beam, the standard having a beam rest or seat slotted transversely to the line of draft, the supplemental beam-seat slotted parallel with the line of draft and interposed between the beam and beam-seat and adjustable longitudinally and transversely, substantially as set forth.

9. The combination of the standard, slotted at right angles to the draft of the standard, the beam resting on and secured to said bearing, and a wedge interposed between the bearing and the under side of the beam and having lateral pins or arms, by which it may be positively adjusted laterally relative to the standard, substantially as specified.

10. The combination of the standard having its lower forward end expanded laterally on each side, and having a recess extending from the opposite edge beyond the median line, with a double point fitted to said end of the standard, and having projection partially filling the angle between the wings of the point to brace the same, and resting in the recess in the standard to prevent accidental lateral or vertical movement, substantially as described.

11. The combination of the standard having an expanded end forming wings adapted to support a removable part of the plow, one of said wings having a notch in its edge, the other having a recess across its face, and a double point fitted to said wings, and having a lug and an angular projection to correspond with the notch and recess in the wings, respectively, substantially as and for the purposes hereinbefore specified.

12. The removable double-winged share F, provided with the boss or projection f', united to and bracing both wings and having formed therein a recess or slot f^2, open at its end or side, the said slot being arranged at or near the median line between the wings, and adapted to permit the insertion or removal of the bolt, substantially as and for the purpose described.

13. The sweep-connection herein described, consisting of a bearing on the sweep holder or standard curved longitudinally and transversely, whereby it is given approximately the shape of a segment of a sphere, and the sweep-shank curved longitudinally and transversely on its bearing-face, whereby it is made approximately a segment of a sphere and adapted to fit and turn upon the spheroidal bearing, substantially as and for the purpose set forth.

14. The combination of a sweep-holder

wing, the contacting surface of which is formed on the segment of a sphere and apertured for the passage of a bolt and provided with a series of depressions to one side of the aperture, and a sweep secured to the holder by a bolt passing through the aperture and having its sides adjacent the wing corresponding with its curvature, and having a projection to engage the depressions and positively hold the sweep in its adjusted position, substantially as described.

15. The combination of the sweep-holder having wings, the surfaces of which are segments of a sphere, said wings being slotted in a nearly vertical direction, and sweeps having longitudinal slots near their inner ends, and secured to the wings by bolts passing through the vertical and longitudinal slots, respectively, the side of the sweeps adjacent the wings conforming to their curvature, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS B. WHITE.

Witnesses:
G. P. KRAMER,
R. H. LACEY.