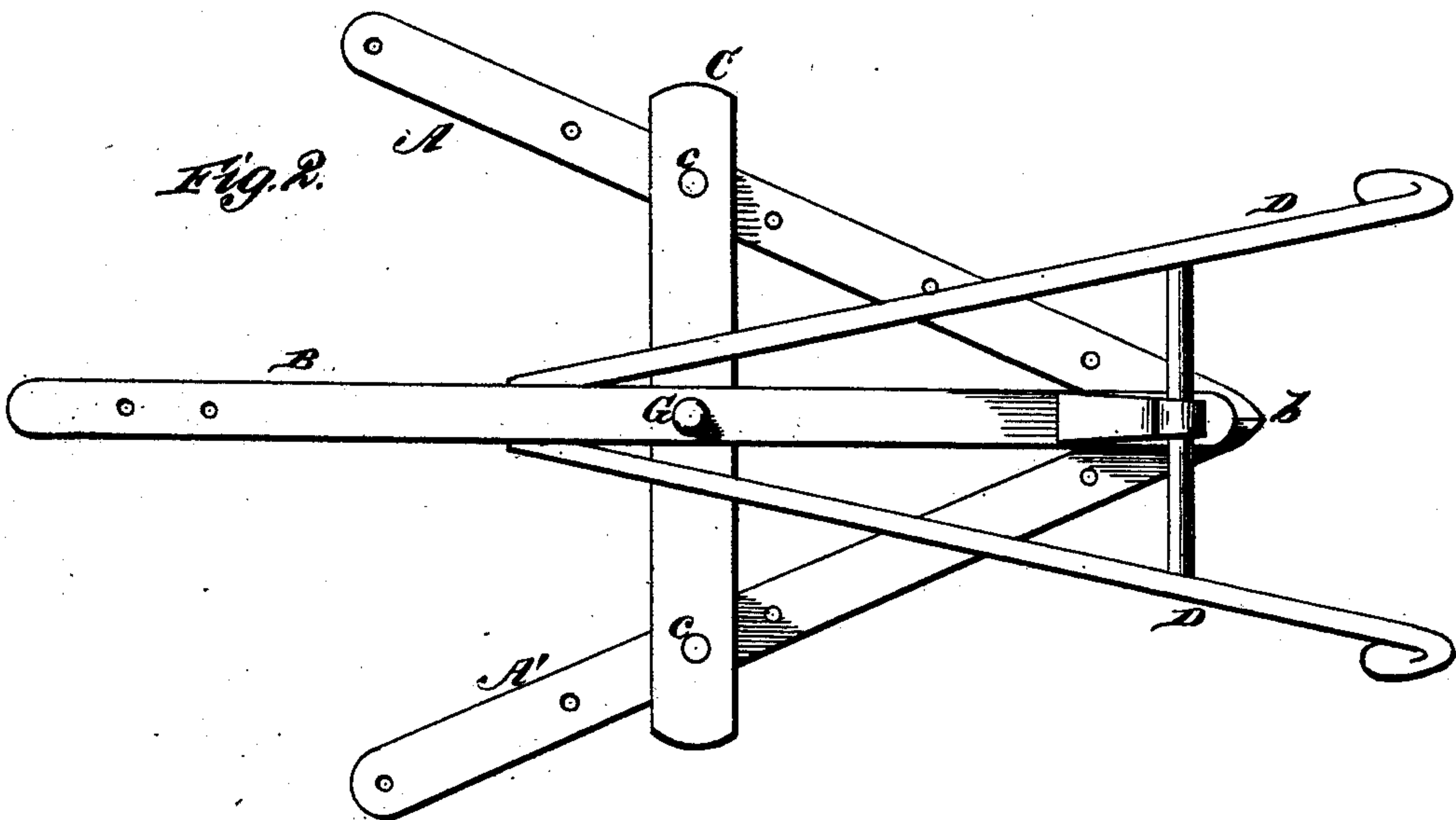
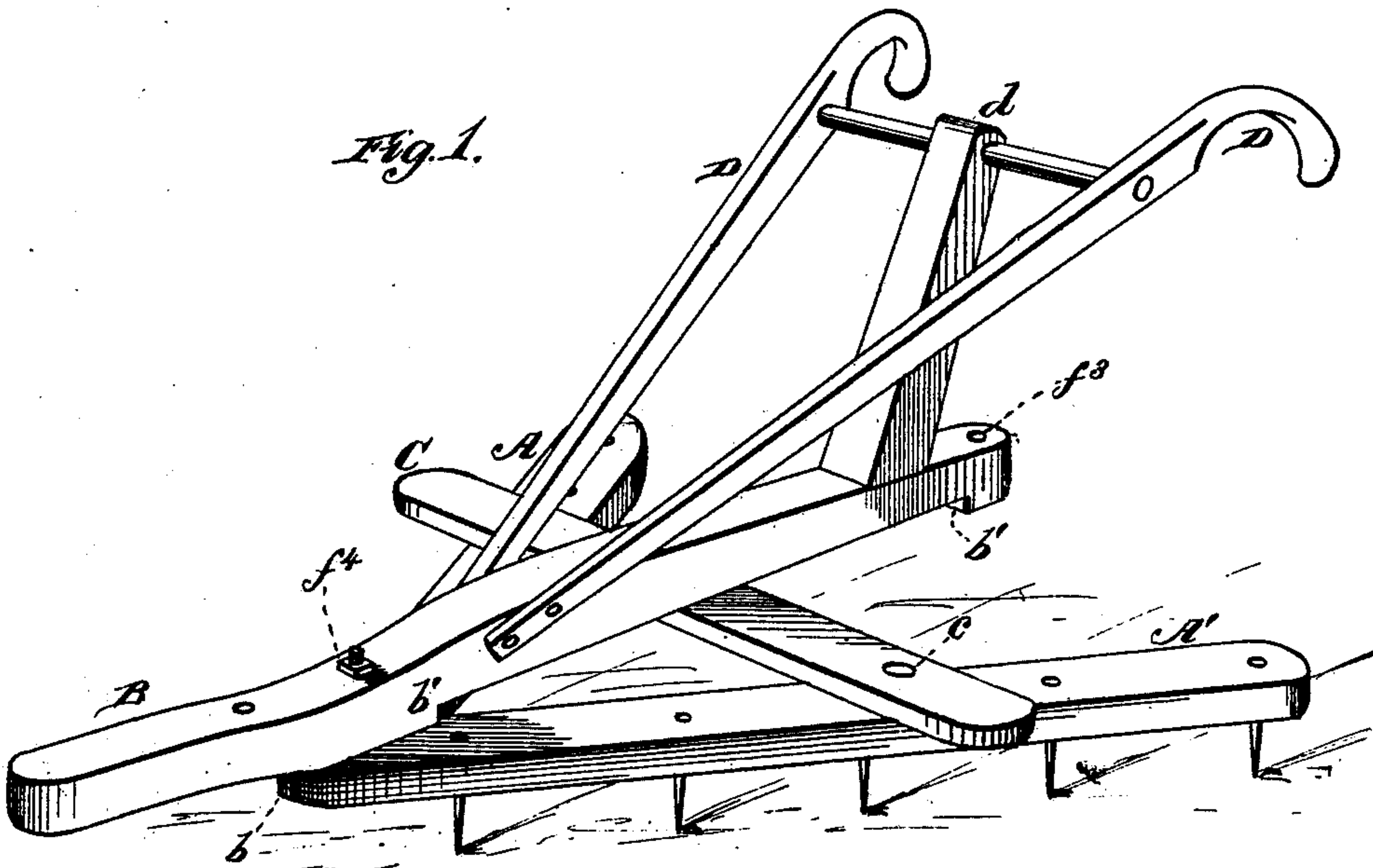


T. V. CARDWELL.
Harrow.

No. 221,664.

Patented Nov. 18, 1879.



WITNESSES
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2 Sheets—Sheet 2.

Harrow.

No. 221,664.

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Fig. 3.

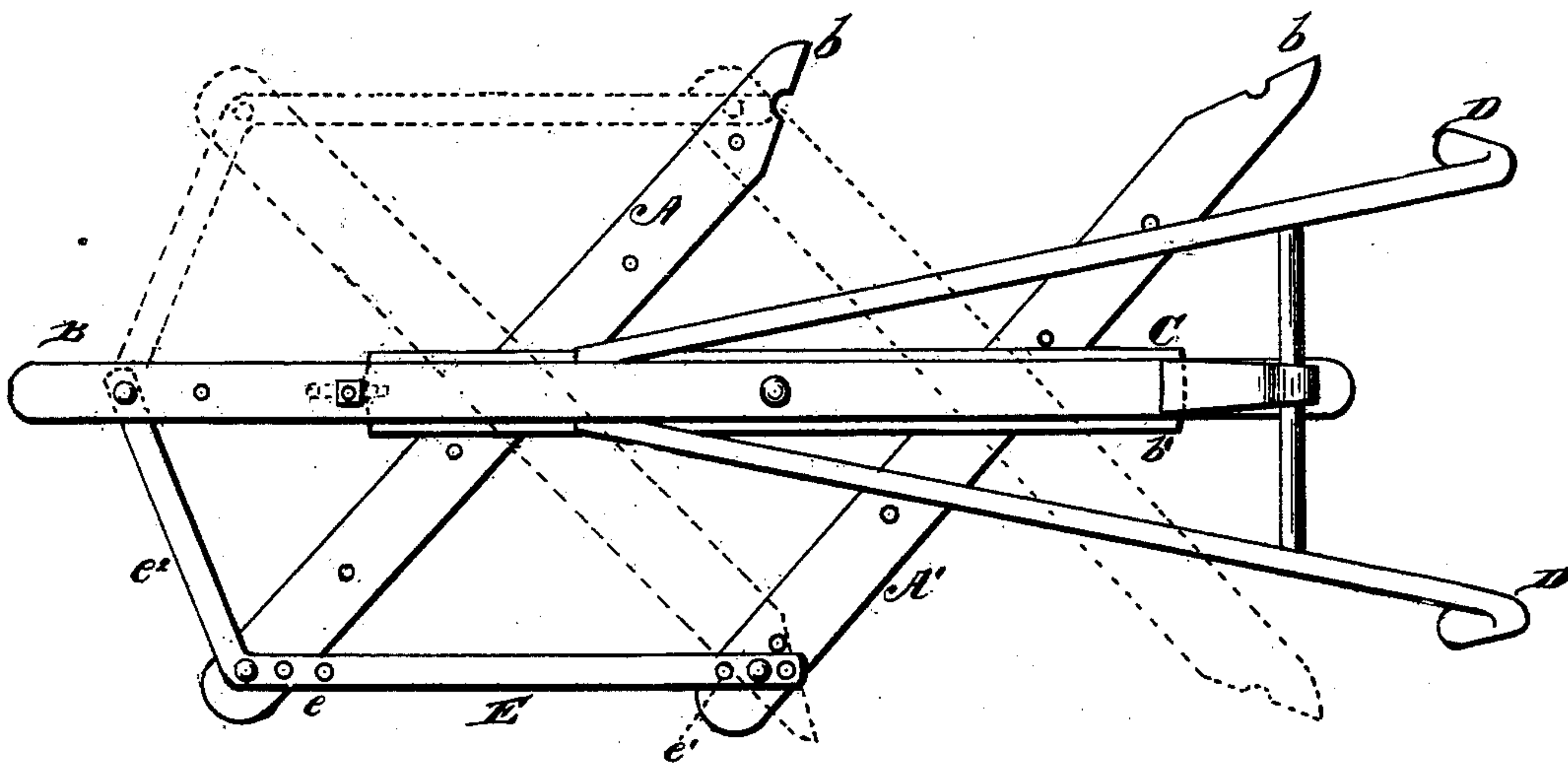


Fig. 4.

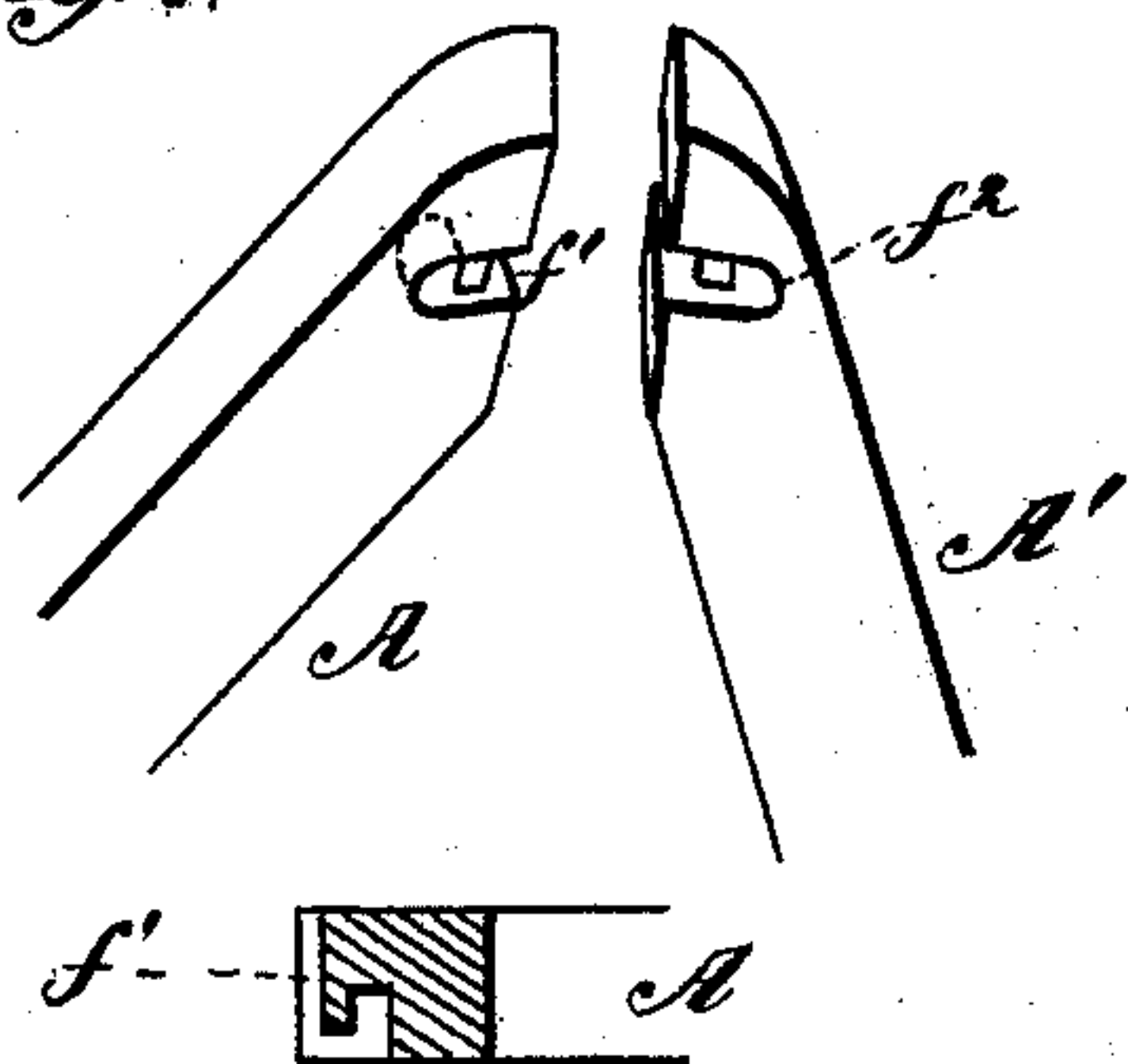
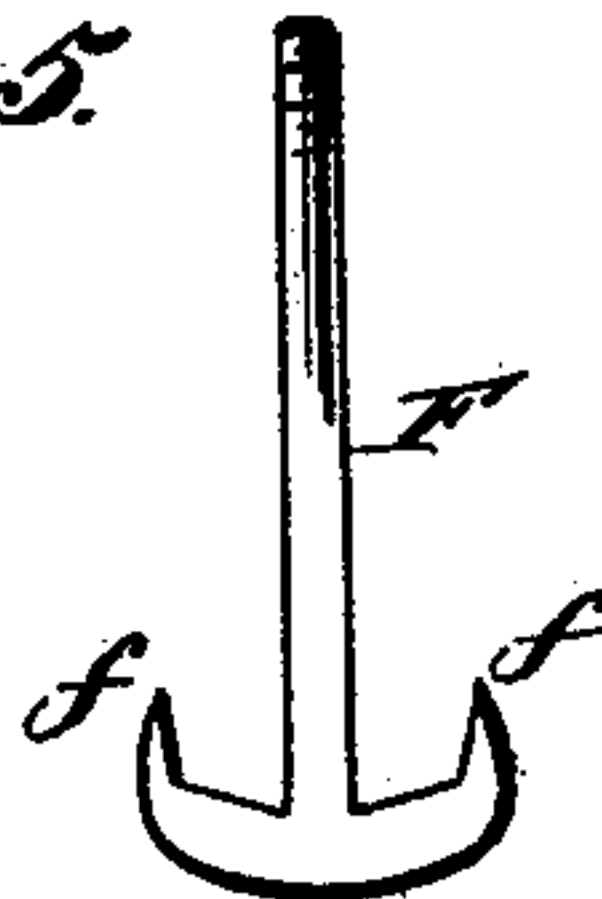


Fig. 5.



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UNITED STATES PATENT OFFICE.

TOLBERT V. CARDWELL, OF ROSE HILL, MISSISSIPPI.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **221,664**, dated November 18, 1879; application filed March 26, 1879.

To all whom it may concern:

Be it known that I, TOLBERT V. CARDWELL, of Rose Hill, in the county of Amite and State of Mississippi, have invented certain new and useful Improvements in Harrows; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of my **A**-formed harrow, in perspective. Fig. 2 is a plan view of same changed to a **V**-formed harrow. Fig. 3 is a plan view of the same changed in drawn lines to a two-barred right-hand harrow. The dotted lines represent the same changed to a two-barred left-hand harrow. Fig. 4 is a plan view of the manner of constructing the bars for joining them together. Fig. 5 is an elevation of **T**-headed bolts used in locking the harrow.

Identical parts in the drawings are designated and referred to by the same letters.

This invention relates to harrows; and it consists in the improvements in the construction of the same, hereinafter fully described, and particularly pointed out in the claims.

A A' represent the bars of the harrow, which carry the teeth. **B** represents the draw-beam. **C** represents the cross-bar of the harrow in the various positions in the combinations formed. **D D** are the handles, and **d** the supports, which are readily attached to the draw-beam **B**. **E** is an angled bar, which attaches to the free end of the draw-beam and to the bars **A A**, for the purpose of forming the right or left handed side harrows and square harrow, which is provided with two series of holes, **e e'**, for these several purposes.

The **T**-headed bolt **F** is provided with two hooks, **f**, which bolt-head and hooks enter from the under side of the bars **A A'**, and set in the recesses **f f'** and the hole **f²** of the draw-beam when the device is used as an **A**-harrow, and hole **f³** of the draw-beam when used as a **V**-harrow.

G is the king-bolt which attaches the draw-

beam **B** to the cross-bar **C**, and provides a pivot for reversing the direction of draft.

Fig. 1 represents the bolt **F**, uniting the draw-beam and the converging ends **b b** of the bars **A A'**, thus forming an **A**-harrow provided with handles **D**.

Fig. 2 represents a **V**-harrow, which is formed by removing bolt **F**, reversing the draw-beam **B**, and inserting bolt **F** in recesses **f f'** and hole **f³**.

Fig. 3 represents a right- and -left-handed side harrow, formed by means of the bar **E**, which is so angled as to hold the bars **A A'** in position, as shown, by being attached at the draw-beam and the outer ends of **A A'**. These bars, being pivoted to the cross-bar at **c c**, they may be set at any desired angle by changing or lengthening the arm **e²** of the bar **E**. A square harrow may thus readily be made of the parts involved in the side harrows.

Cultivator-teeth may be used instead of common harrow-teeth, thus changing the purposes of the implement from a harrow to a cultivator.

When the device is used as a right or left hand or square harrow, the **T**-bolt hooks **f f** enter holes in either end of the cross-bar **C**, which is turned into the recess under the draw-beam, as shown at **b' b'**.

What I claim as new is—

1. In a harrow, the combination of the bars **A A'**, constructed as described, in combination with the cross-bar **C**, the recessed draw-beam **B**, the **T**-headed hook-bolt **F**, and the angle-bar **E**, constructed and operating together, as and for the purposes substantially as set forth.

2. In a harrow, the combination of the cross-bar **C**, pivoted at **G** to the draw-beam **B**, with the side bars, **A A'**, pivoted to the outer ends of the cross-bar **C**, and adapted to be reversed and secured to the draw-beam to form either a **V**-shaped or an **A**-shaped harrow, as set forth.

3. In a harrow, the bars **A A'**, provided with recesses **f' f²** in their under faces, near one end, said recesses **f' f²** being adapted to

receive a portion of the shank F and the hooks *ff* of a T-shaped hook, in combination with the draw-beam B, perforated to receive the remainder of the shank F, which is securely held in place by the nut *f'*, and the bar C, pivoted to the upper faces of the bars A A', and to the under face of the draw-beam B, substantially as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

TOLBERT V. CARDWELL.

Witnesses:

JAMES J. SHEEHY,
W. N. SEVERANCE.