J. F. WILCOX.

Harrow.

No. 213,020. Patented Mar. 4, 1879.

Fig. 1.

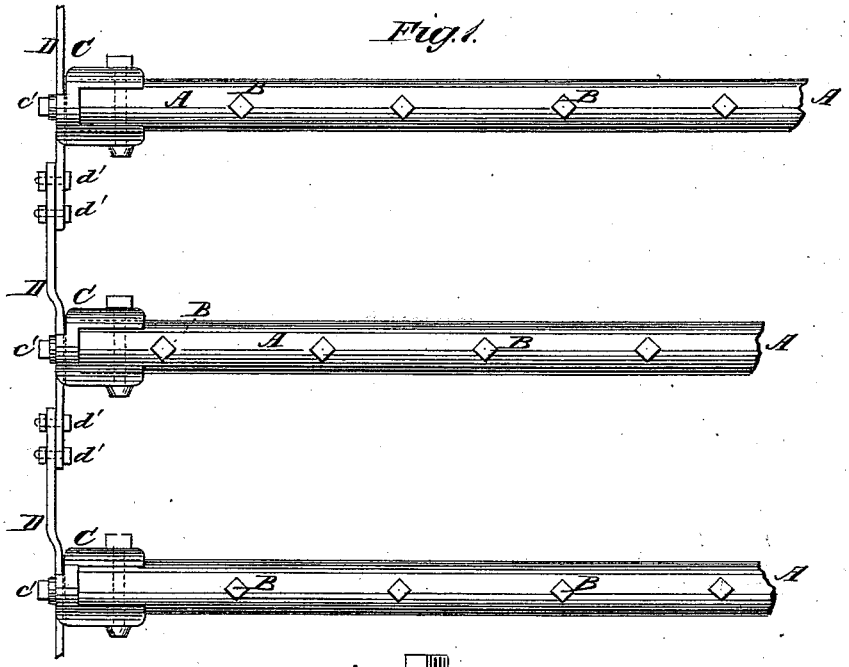


Fig. 3.

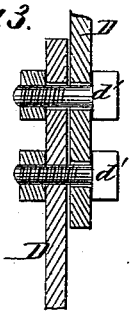


Fig. 2.

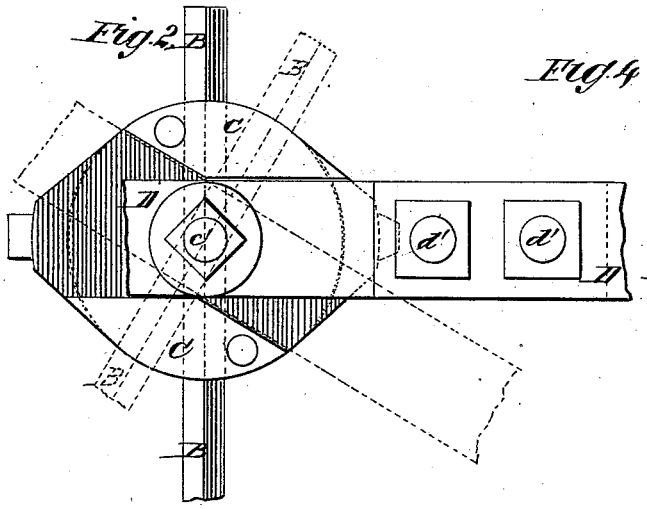


Fig. 4.

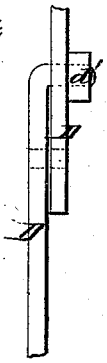


Fig. 6.

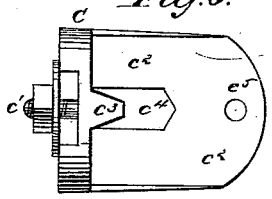
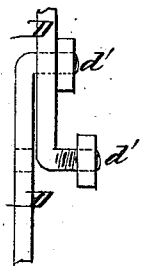


Fig. 5.



WITNESSES:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN F. WILCOX, OF GOODLAND, INDIANA.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **213,020**, dated March 4, 1879; application filed October 2, 1878.

To all whom it may concern:

Be it known that I, JOHN F. WILCOX, of Goodland, in the county of Newton and State of Indiana, have invented a new and Improved Harrow, of which the following is a specification:

Figure 1 is a top view of a part of a harrow to which my improvement has been applied. Fig. 2 is a side view of the same, showing, in full lines, the device adjusted to form a straight-tooth harrow, and showing, in dotted lines, the device adjusted to form an inclined-tooth harrow. Fig. 3 is a detail longitudinal section of the connecting-bars. Fig. 4 shows a modification of the connection. Fig. 5 shows another modification of the same. Fig. 6 is a detail view, showing a modification of the cap.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved harrow which shall be so constructed as to be an upright-tooth harrow when drawn with one side forward, and an inclined or slanting tooth harrow, when drawn with the other side forward, which may be readily adjusted as a rigid or as a flexible or semi-flexible harrow, as may be desired, and which shall be simple in construction, strong, durable, and not liable to get out of order.

A represents the cross-bars to which the teeth B are attached. To the ends of the bars A are attached caps C, which may be made U-shaped, as shown in the drawings, or cup-shaped, and which are secured in place by bolts passing through their sides and through the ends of the bars A.

The caps C may be made with a metallic web, c^2, extending from side to side horizontally, with a flange upon either side.

The web c^2 is designed to be inserted in a horizontal saw-cut in the end of the tooth-bars A, and have a bolt pass through them, and through the wood above and below them.

Upon the upper and lower sides of the caps C are formed spurs c^3, to rest upon the upper and lower sides of the ends of the tooth-bars A, to protect the wood and prevent the parts of the said ends between which the web c^2 is placed from spreading.

c^4 is an opening formed through the web c^2, to enable a tooth, B, to be passed through the ends of the bars A. c^5 is the hole for the fastening-bolt.

Upon the ends of the caps C are formed, or to them are attached, bolts c^1, which pass through holes in the bars D. The caps C are notched to receive the bars D, which are placed edge upward, and the said notches are made of the same width as the bars D at the center of the said caps C. They are flared in both directions, and are so arranged that when the draft is applied to one side of the harrow the resistance of the soil against the teeth B will cause the said teeth to take an upright position, and when the draft is applied to the other side of the harrow the resistance of the soil against the teeth B will cause the said teeth to take an inclined position, the bars D in both cases resisting against the shoulders of the said notches, as indicated in full and dotted lines in Fig. 2.

Each of the tooth-bars A is provided with a cap, C, and a bar, D, at each end, which bars D are secured in place by nuts screwed upon the ends of the bolts c^1.

The adjacent ends of the bars D overlap each other, and have holes formed through them to receive the bolts d'.

By this construction, when both the bolts d' are used, as shown in Figs. 1, 2, and 3, the harrow is rigid. By omitting one of the bolts d' the harrow becomes flexible.

If desired, one or both of the bolts d' may be forged upon the ends of the bars D, as shown in Figs. 4 and 5. In the former case the harrow is made flexible by detaching the separate bolts, as shown in Fig. 4, and in the latter case the harrow is made flexible by detaching every other bar D and reversing it, as shown in Fig. 5.

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

1. In combination with the side bars and tooth-bars of a harrow, caps fixed upon the

ends of said tooth-bars, said caps being provided with bolts for pivoted connection with the side bars, and with notches having inclined sides, to limit the motion of the tooth-bars, as set forth.

2. The cap C, formed with a notched head or end, fitted to the side bar, and with inclined faces on said notches, to permit a limited motion of the tooth-bars to which the cap is connected, as set forth.

3. The combination of the cap C, of the notched end fitted to the side bar, of the pivot or bolt for connection with said bar, and of a flange for connection with the tooth-bar, as set forth.

JOHN F. WILCOX.

Witnesses:
H. A. STREETER,
JOHN A. BUCHER.