

(No Model.)

W. S. PATES.
REVERSIBLE HARROW.

No. 350,893.

Patented Oct. 12, 1886.

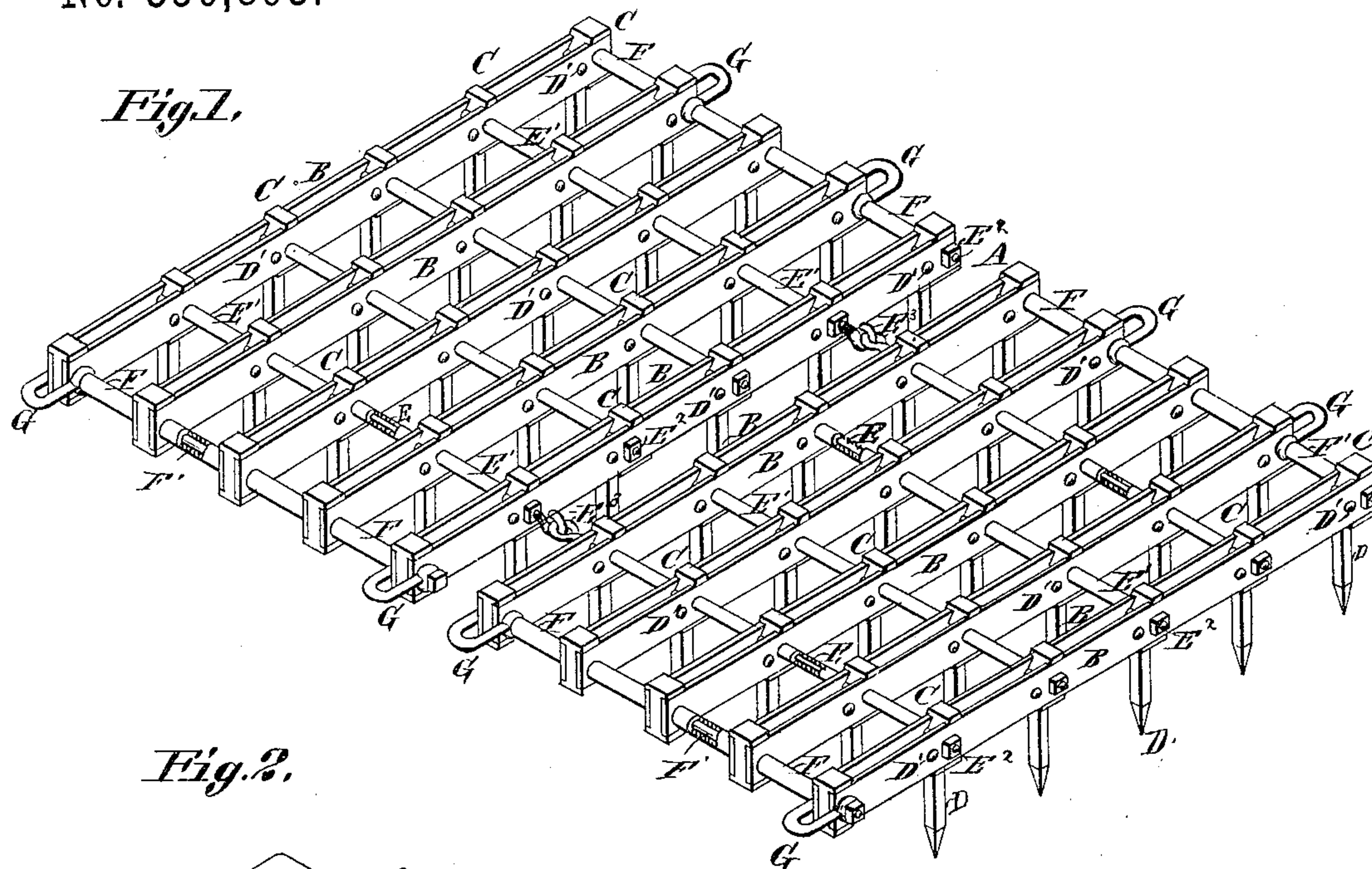


Fig. 2.

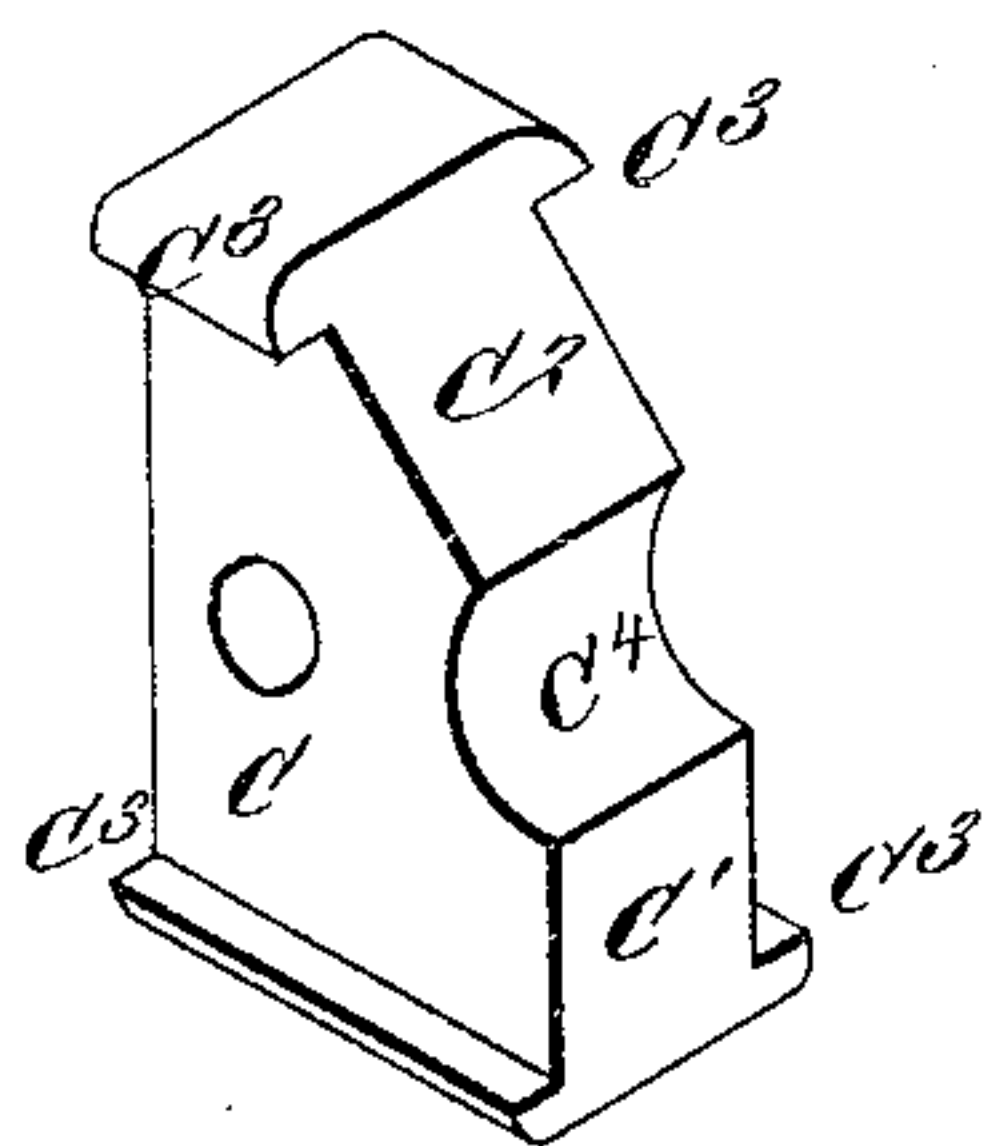


Fig. 3.

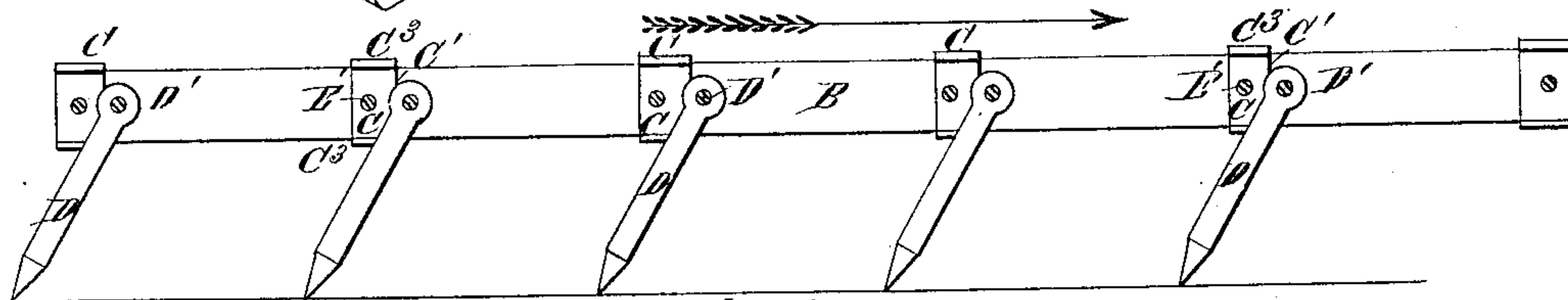


Fig. 4.

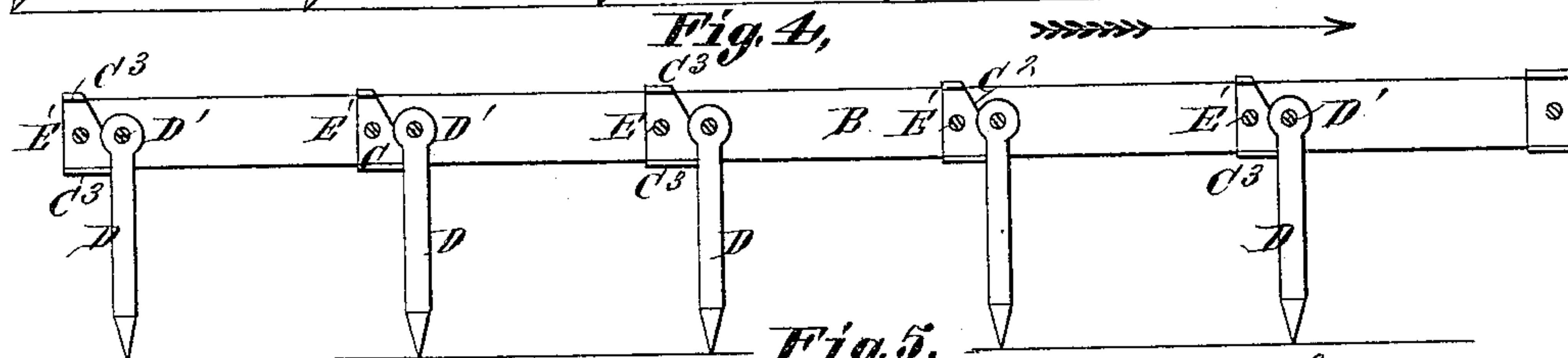
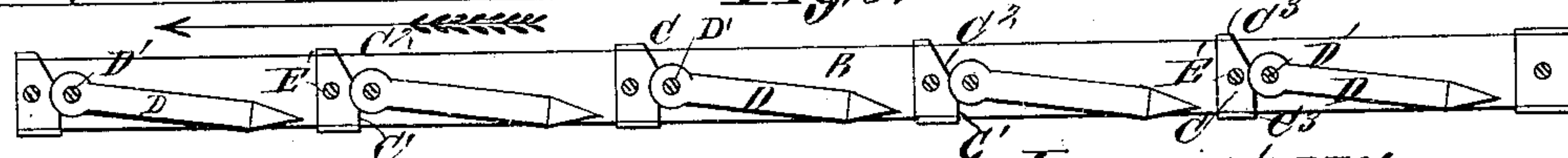


Fig. 5.



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REVERSIBLE HARROW.

SPECIFICATION forming part of Letters Patent No. 350,893, dated October 12, 1886.

Application filed May 29, 1886. Serial No. 203,637. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. PATES, of Jonesburg, in the county of Montgomery and State of Missouri, have invented a certain
5 new and useful Improvement in Reversible Harrows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

10 Figure 1 is a perspective view of my reversible harrow. Fig. 2 is an enlarged perspective view of one of the vertical shoulder blocks that brace the teeth in their vertical and inclined positions; and Figs. 3, 4, and 5
15 are longitudinal sections, showing the relative situation of the teeth in their inclined vertical and closed positions.

My invention relates to improvements in reversible-tooth harrows, which are adjustable
20 in vertical, inclined, and closed positions; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which similar letters of reference indicate like parts, a
25 represents my reversible harrow, provided with the teeth D in their vertical position. C are my vertical abutment-blocks, located on one side of the teeth. The teeth are reversible,
30 and are pivoted between longitudinal twin bars B B by pins D', that pass through both bars and teeth. There are a series of these twin bars connected by rods E at suitable distances, the number of the bars being
35 contingent on the width it is desired to construct the harrow. The rods are provided with sleeves E', that surround them between the longitudinal bars, and which, with the rods, tightly clamp said bars and are secured
40 by nuts E' at their ends, and when the harrow is of more than a single section, they are connected by hooks E' at the ends of said rods. Heavier draft-rods F connect the bars at the
45 ends of the harrow and pass through said bars and their intermediate abutment-blocks, C, and, like the other connecting-rods, are provided with sleeves F', that fill the spaces between the bars. Draft-clevises G are secured
50 to the draft-rods F, and where they grasp said rods inclose ends of the longitudinal bars within their grip. The teeth have free pivotal

action until they are braced by the abutment-blocks C, which have vertical faces C', and inclined ones C'', that hold the teeth relatively
in vertical and inclined positions, the change 55 of position from one to the other being obtained by inverting the harrow. The face edges of the blocks are also provided with concave recesses C', in which the circular heads of the teeth work. The third position, 60 that of the closed teeth, in which they are retired between the bars, is effected by attaching the draft to the reverse end of the harrow to that used in working the ground. When
in this closed position the teeth trail upon the 65 ground. To place the teeth in working position the harrow is lifted sufficiently at the draft end to permit the teeth by their own gravity to return to working position. The
blocks are provided with flanges C'', that grip 70 the edges of the longitudinal bars above and below, and which, in conjunction with the rods that pass through both bars and blocks, firmly brace and securely hold the several
parts together, and at the same time the flanges 75 brace the blocks themselves and enable them to withstand the pressure of the teeth against them.

I prefer to make the bars or frames of iron; but I do not confine myself to the use of that
80 material, as they may be made of wood, or any other suitable material, without departing from the essential features of my invention; neither do I confine myself to the number of bars and section-frames shown, as the harrows 85 can be constructed either with more or less bars and sections to suit the nature of the ground to be worked.

It will be seen that the conjoint use of the abutment-blocks with their flanges bracing 90 and gripping the bars, in combination with the rods and their sleeves, makes a strongly-braced and durable harrow-frame. It is easily reversible from a vertical (see Figs. 1 and 4) to an inclined tooth or smoothing harrow (see 95 Fig. 3) by simply inverting the harrow. It has also another useful transformation, (shown in Fig. 5,) in which by hitching the team to the other end of the harrow, the teeth turning
on their pivots retire between the bars. This 100 feature of the invention enables it to slide smoothly on the ground when passing over

grass that it is not desired to tear up in pasture or meadows, or when in course of removal from field to field.

I claim as my invention—

5 1. The combination of a bar, B, a reversible tooth, D, having a circular head pivoted thereto, and a block, C, located on one side of the tooth, having a vertical face, C', inclined face C², and recess C⁴ between the faces, the
10 recess being occupied by the circular head, substantially as described.

2. The combination of twin bars B, a block, C, having vertical face C', recess C⁴, inclined face C², and flanges C³, means by which the
15 block is secured from longitudinal movement

between the bars, and a reversible tooth, D, having a circular head pivoted to the bars and occupying the recess on one side of the block, substantially as described.

3. A harrow consisting of twin bars B, rods 20 E, having sleeves E', rods F, having sleeves F', blocks C, having vertical faces C', recesses C⁴, and inclined faces C², secured between the bars, and reversible teeth D, located on one side of the blocks, having circular heads and pivoted 25 between the bars, substantially as described.

WILLIAM S. PATES.

In presence of—

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