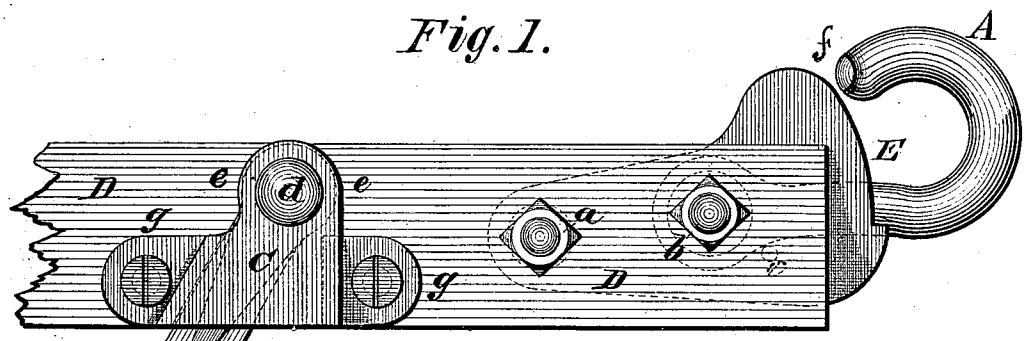
G. NEWTON.
Harrow.

No. 226,414. Patented April 13, 1880.

Fig. 1.



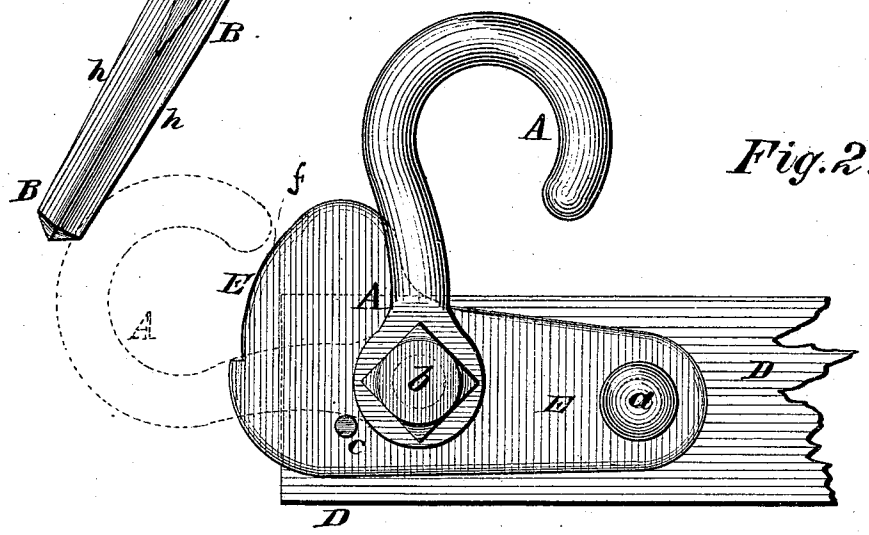
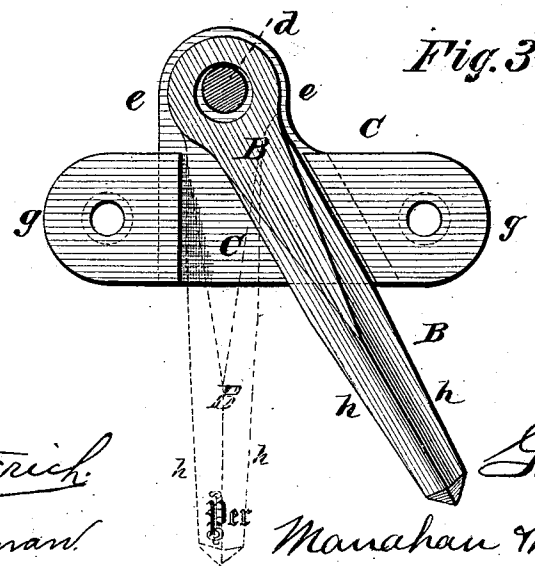


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE NEWTON, OF STERLING, ILLINOIS.

HARROW.

SPECIFICATION forming part of Letters Patent No. 226,414, dated April 13, 1880.

Application filed June 10, 1879.

To all whom it may concern:

Be it known that I, GEORGE NEWTON, of the city of Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Harrows; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

My invention has reference to an improvement in harrows; and it consists in a novel means for attaching the harrow-teeth, all as will be hereinafter fully described, and specifically pointed out in the claim.

Figure 1 is a side elevation of a section of harrow-beam with my invention attached thereto. Fig. 2 is an enlarged view of the hook A and plate E. Fig. 3 is an enlarged view of the tooth B, pendent in the box C.

D is a section of harrow-beam, shown for the purpose of illustrating the mode of attaching my invention. E is a metallic plate bolted to the side of the front end of the harrow-beam D by means of the rear bolt, *a*, and front bolt, *b*. The hook A is pivoted at the end of its shank, on the outer side of the plate E, on the bolt *b*, so that the hook A, which has its open end coterminous with the outer edge of the front end, *f*, of the plate E, is free to oscillate on such bolt *b*.

The plate E is formed at its front end of such width as to close the internal part of the hook A at any point in the front part of the circle which the latter describes in its oscillation on the bolt *b*. I provide a stop, *c*, on the plate E, on which the shank of the hook A when in position rests; but such stop is not essential, as the draft-iron, (not shown,) which engages the hook A, cannot escape from the hook A except when the latter is in a perpendicular position; and as the weight of the whiffletrees and draft-irons, even when no draft is being applied, is forward and downward, the hook A can never automatically assume the perpendicular position. The hook is turned by hand to the perpendicular position for the purpose of fastening and unfastening the draft-iron.

B is a harrow-tooth pivoted at its upper end by the bolt *d*, passing through the upper projection, *e*, of the box C, which latter is otherwise fastened to the beam D by screws passing into the latter through the lugs G G.

The front wall of the box C is perpendicular and the rear wall oblique downward and backward. By this conformation of the box C, together with the pivoting of the tooth B, when the harrow is drawn in one direction the tooth automatically assumes the vertical position, and when the harrow is drawn in the opposite direction the tooth automatically adjusts itself in a position slanting to the rear.

I furnish the harrow with the hooks A at each end, so that the harrow, by the use of such hooks and teeth, is readily convertible from a stirring-harrow to a smoothing-harrow, and vice versa, by merely changing ends with the draft.

I form the tooth B with its cutting-sides oblique to the sides of the beam D, and bring the front and rear edges of such tooth to cutting-edges *h h*.

The advantage I claim for the box C, and as a new feature therein, is the upward projection, *e*, by means of which I am enabled to use such box not only as a guide and front and rear support for such tooth, but also to provide an outward support for the bolt *d*, and thereby prevent the strain on such bolt from twisting or breaking it.

It will also be observed that the tooth does not extend above the beam of the harrow, and in having the tooth pivoted at its upper end I am enabled to increase the size at that end, and thereby increase the strength of the tooth at its pivotal point without increasing the size of the tooth throughout its length, and thereby preventing or obviating weakening the tooth by having the holes for the pivot through the tooth at or near the point where they are subjected to the greatest strain.

I am aware that harrow-teeth pivoted in boxes having oblique and vertical bearings

are common, and such I do not wish to be understood as claiming broadly as of my invention; but

What I claim as my invention, and desire to secure by Letters Patent, is—

In a harrow, the combination, with the beam D, of the box C, having the vertical and oblique inner walls and upper projections, *e*, for supporting the outer end of the bolt *d*, and the tooth B, enlarged at its upper or pivotal end, substantially as and for the purpose herein shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of June, 1879.

GEORGE NEWTON.

Witnesses:
M. H. KNIDER,
R. L. MANGAN.