D. D. JOHNSTON.
Harrow-Teeth.

No. 213,428. Patented Mar. 18, 1879.

Fig. 1.

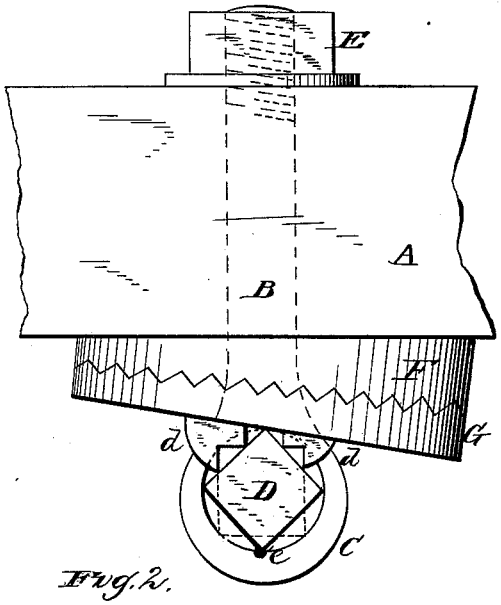


Fig. 3.

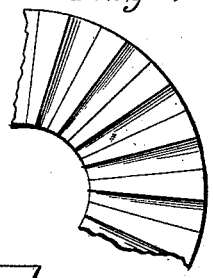
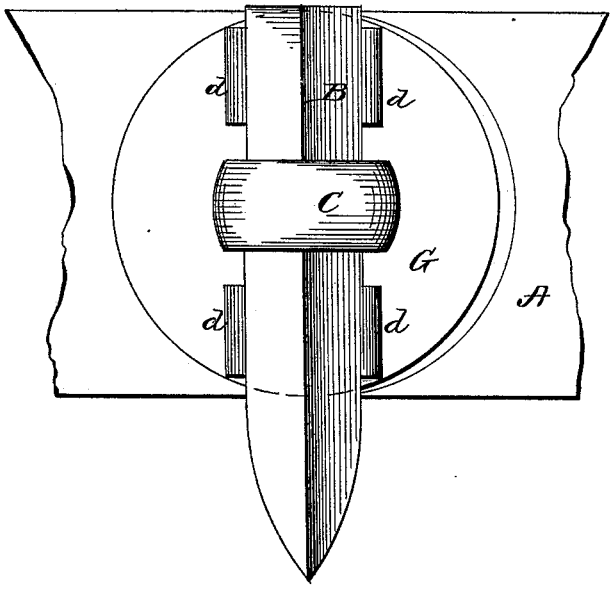


Fig. 2.



WITNESSES
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By

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UNITED STATES PATENT OFFICE.

DANIEL D. JOHNSTON, OF NEW WASHINGTON, OHIO.

IMPROVEMENT IN HARROW-TEETH.

Specification forming part of Letters Patent No. **213,428**, dated March 18, 1879; application filed December 18, 1878.

To all whom it may concern:

Be it known that I, DANIEL D. JOHNSTON, of New Washington, in the county of Crawford and in the State of Ohio, have invented certain new and useful Improvements in Harrow-Teeth; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a device for holding and securing harrow-teeth, whereby the teeth may be adjusted vertically and laterally, and at the same time set at an angle either backward or forward, as will be hereinafter more fully set forth.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, making part of this specification, Figure 1 represents a plan view of a tooth with its fastening and a portion of the harrow-frame. Fig. 2 represents a side view of same; and Fig. 3, a plan of a portion of one of the serrated plates.

In the figures, A represents a portion of the harrow-frame, to which the teeth are attached. To the side of this frame (for securing one tooth) is a serrated annular plate, F, the serrations, of course, being upon its face. This plate is made thicker at one side than the other, for the purpose of lateral adjustment of the tooth at its lower end.

G represents an annular plate, which is serrated on its inner face to correspond with the serrations of plate F. Upon the outer face of the plate G are formed serrated or shouldered lugs *d d*, between which the tooth is placed and held.

The lugs *d* are formed with steps, as shown, so as to bring a portion of said lugs closer together than the remaining portions, for the purpose of accommodating the shank of the tooth. This shank being made square, the distance across diagonally from corner to corner is longer than from side to side, and by the construction of the lugs *d* the shank may be turned and yet held firmly by said lugs.

B represents an eye-bolt, which passes through the two plates and then through the harrow frame-piece A. This bolt is provided at one end with an eye, C, through which or into which the tooth passes. When the nut E upon the other end of the bolt is screwed up, the tooth is forced between the serrated jaws *d d*, and is firmly held in position. By loosening up the nut the outer plate G may be partially revolved in either direction, and thus the tooth moved from a vertical line either backward or forward as to its lower end, or may be raised or lowered in the eye, so as to run deeper or shallower as circumstances require. When the harrow is drawn from one corner, the lateral adjustment caused by the serrated plates causes the harrow-teeth to run straight.

I am aware that it is not new to adjust harrow-teeth at different angles by means of serrated disks engaging with each other; but in such case as known to me the serrated disks are of uniform thickness, and while the harrow-tooth can be adjusted at different angles there is no lateral adjustment of the tooth. In my invention the serrated plates are beveled, so that by turning the movable plate which holds the tooth there is also a lateral adjustment thereof.

Having thus fully described my invention, what I claim is—

1. In a device for holding and adjusting harrow-teeth, the serrated plate G, provided with the stepped lugs *d d* on its outer face, and adapted for securing and adjusting the angular tooth at different angles, as shown and described.

2. In a harrow, the plate G provided with serrations and with stepped lugs *d d*, as described, in combination, with the eye-bolt B, beveled and serrated plate F, and beam A, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of November, 1878.

DANIEL D. JOHNSTON.

Witnesses:
C. G. GROSSCUP,
I. E. MILLER.