

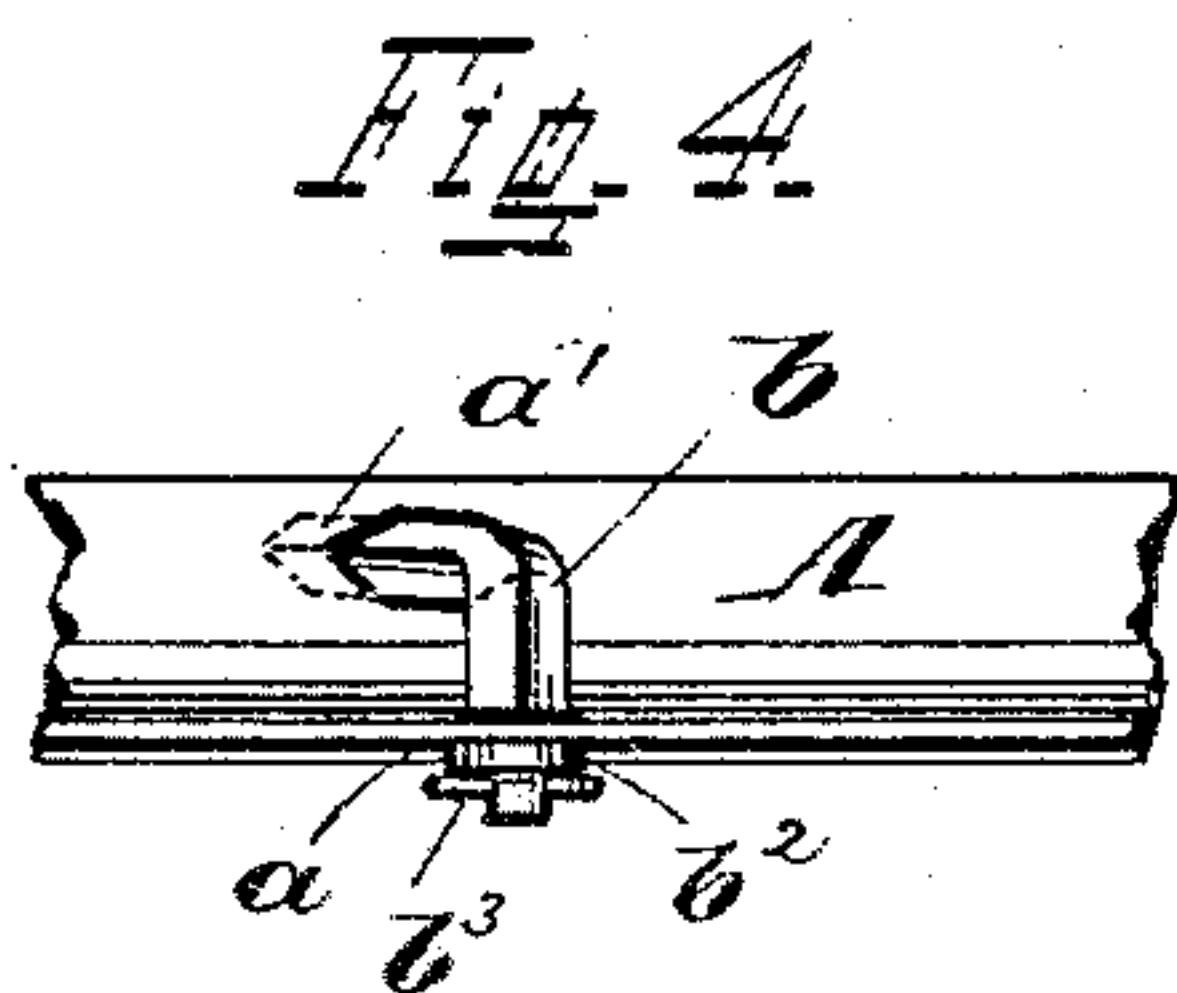
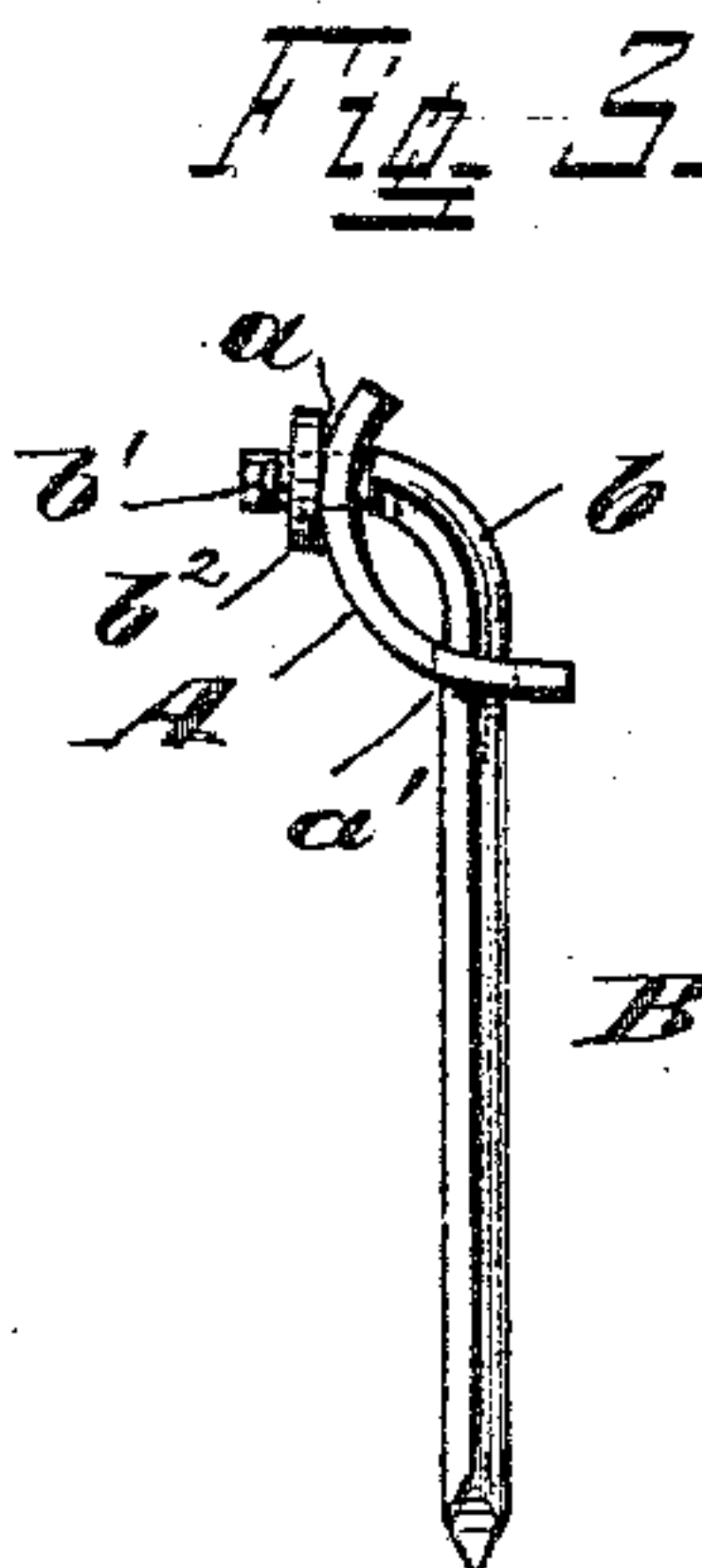
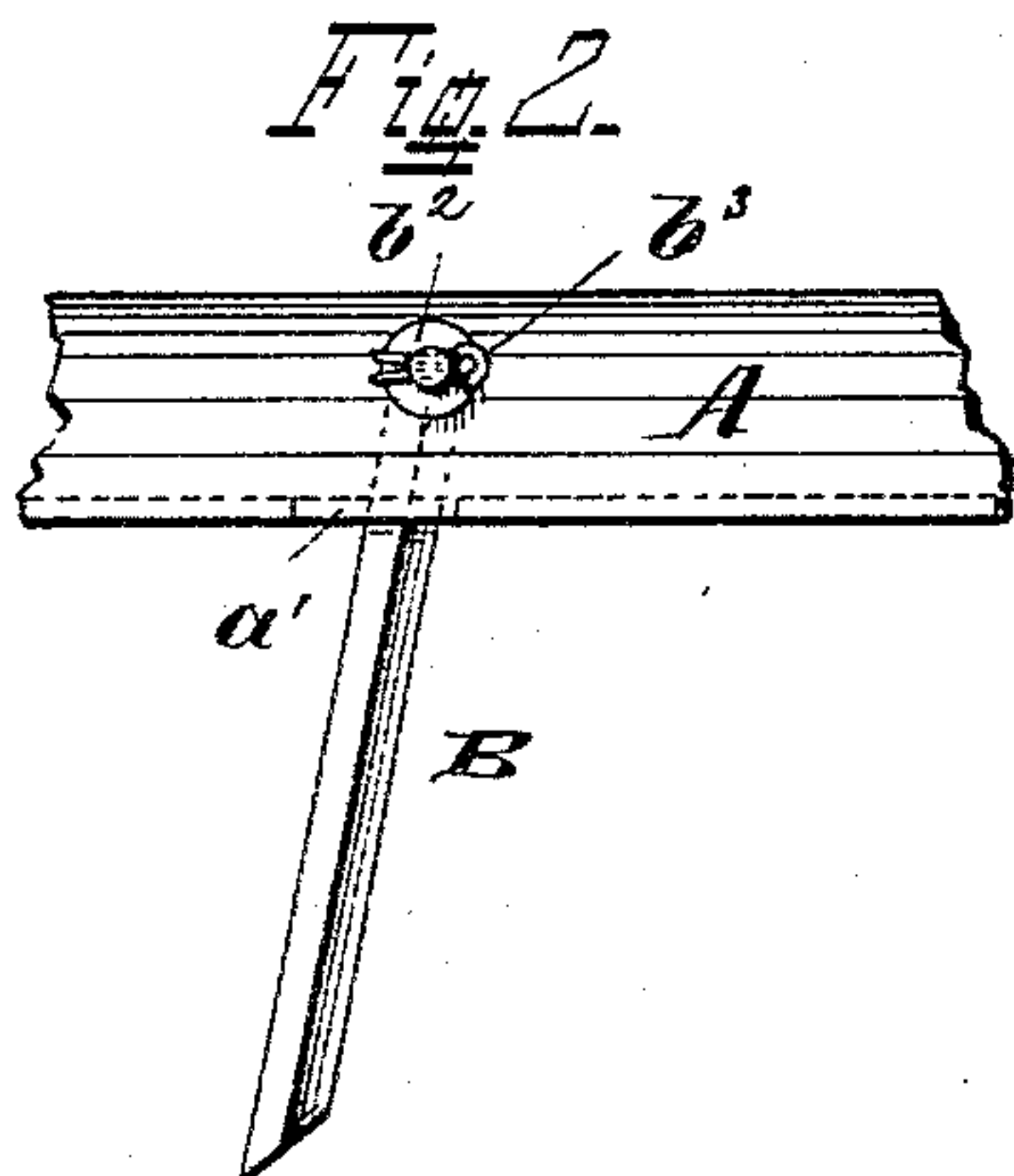
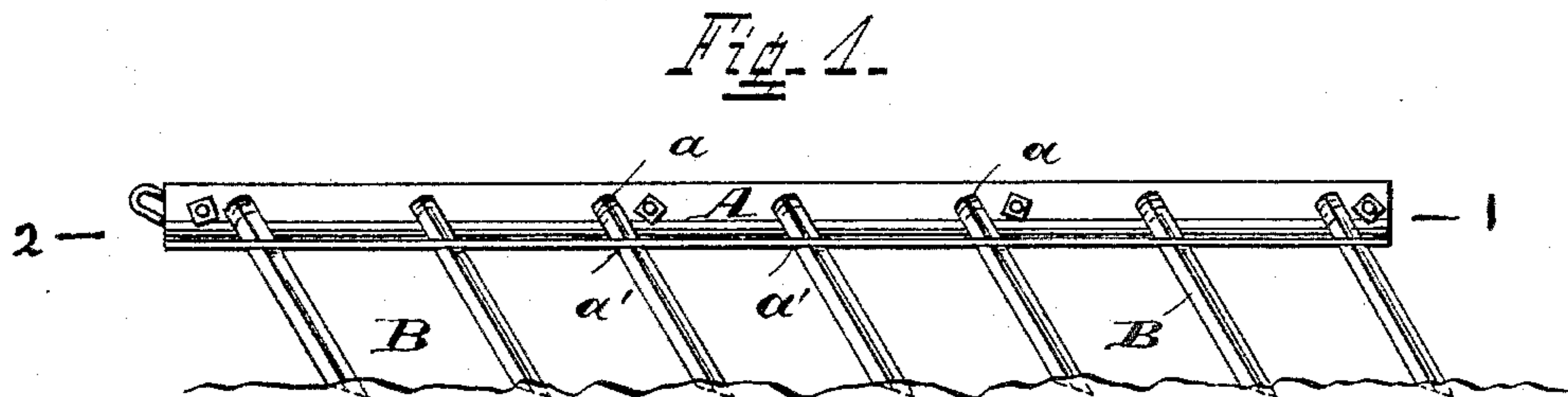
(No Model.)

J. C. LAFRENZ.

HARROW.

No. 339,432.

Patented Apr. 6, 1886.



Attest
Carl Spengel
W. S. Hartley

Inventor
John C. Lafrenz
By Harper and Blakemore Attys.

UNITED STATES PATENT OFFICE.

JOHN C. LAFRENZ, OF ROCK ISLAND, ILLINOIS, ASSIGNOR OF ONE-HALF
TO CHRISTIAN EINFELDT, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 339,432, dated April 6, 1886.

Application filed June 19, 1885. Serial No. 169,215. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. LAFRENZ, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to that class of harrows known as "combined sharp and smoothing harrows," depending upon the end to which the draft is applied; and it consists in a curved beam, with teeth having inversely-curved heads pivoted to the upper part of such beam and working through angular slots in the lower part thereof.

It consists, further, in the manner and devices for securing the teeth to the beam, and, generally, in the simplicity of construction, affording a light, strong, and durable machine, with little tendency to break when coming in contact with unusual obstructions in the field, and of great effectiveness in operation.

In the drawings, Figure 1 is a side view of a beam with a series of teeth therein. Fig. 2 is an enlarged view of a portion of a beam, looking from the rear side, with a tooth therein. Fig. 3 is an end view of a beam with a tooth pivoted thereto; and Fig. 4 is a top view of a portion of a beam and tooth.

A is a harrow-beam of a curved form, constructed of a single bar of steel, iron, or other suitable material, a series of which are arranged in an inclined position, as shown, and are adjusted together by suitable straps or connecting-pieces. These beams may be arranged in gangs of two or more single beams, which gangs may in turn be connected together by any of the ordinary strapping devices, or a single gang may be employed, and in either case with equal effectiveness. The upper portions of the beams are provided with a series of pivot-holes, *a*, to receive the tenoned upper curved end of the teeth, as hereinafter described, and have corresponding angular slots, *a'*, in their lower portions to afford lateral play thereto.

The lower portion of the teeth B may be of any form desired, but I have found a diamond shape cut down to a sharp point in front the preferable form for combined sharp and smooth harrowing. The upper portions of the teeth *b* are curved inversely to the curve of the

beam, and their ends are provided with long pivot-like tenons *b'*, which are adapted to fit into the holes *a* in the upper portion of the beam, and their shoulders, when the teeth are so adjusted, fit against the front side of the beam. The tenon of each tooth beyond the beam is provided with a washer, *b''*, of a shape to fit the back of the beam, and has beyond this point a small hole for the insertion of a pivot or spring key, *b'''*, to hold it in adjustment to the beam. The teeth are adjusted to the beam by placing the lower portions through the angular slots *a'* in the lower part of the beam and the tenoned ends through the openings *a* in the upper part thereof, then inserting the washers *b''* over such tenoned ends from the rear of the beam and placing spring-keys through the holes in such ends beyond such washers.

By constructing the beams with the lower angular slots and pivoting the teeth at the upper part of such beams, with lateral play through such slots, the device can readily be converted from a sharp to a smoothing harrow by changing the attachment of the draft from the front to the rear end of the machine. Thus in sharp harrowing the draft will be applied from end 1, and to convert the machine into a smoothing-harrow all that is necessary is to attach the draft-rods from end 2.

I am aware that it has been proposed to make an angular or L-shaped beam for harrows, having its side provided with perforations and its base with angular slots, and I make no claim to such construction. My beam, I believe, possesses advantages over those referred to in that the beam is lighter and cheaper to make. Neither do I wish to be understood as claiming, broadly, a harrow-tooth having its upper end bent at an angle to its body portion, my claim in this connection being limited to the construction shown and described.

I claim—

1. A harrow-tooth having a curved upper portion and tenoned upper end adapted to fit into an orifice in a harrow-beam, and provided with a washer and fastening key or pin, in combination with an inclined curved harrow-beam with holes in its upper portion and an-

gular slots in its lower part, substantially as described.

2. An inclined curved harrow-beam with holes in its upper portion and angular slots in
5 its lower part, in combination with harrow-teeth having their upper portions curved inversely to the curve of the beam, tenoned upper ends adapted to fit into the upper beam-holes, and provided with washers and pins or
10 spring-keys beyond such holes and working within the angular slots in such beams, substantially as described.

3. A harrow-frame composed of metallic

beams of curve form in cross-section, said beams being inclined transversely, substantially as and for the purpose set forth. 15

4. In combination with a harrow-frame composed of the transversely-curved beams A, having perforations in one web and angular slots in the other, the tooth B, having its upper bent end tenoned, and a fastening device for said tooth. 20

JOHN C. LAFRENZ.

Witnesses:

ADAIR PLEASANTS,
JAMES J. PARKS.