

(No Model.)

J. I. HOKE.
HARROW.

No. 603,446.

Patented May 3, 1898.

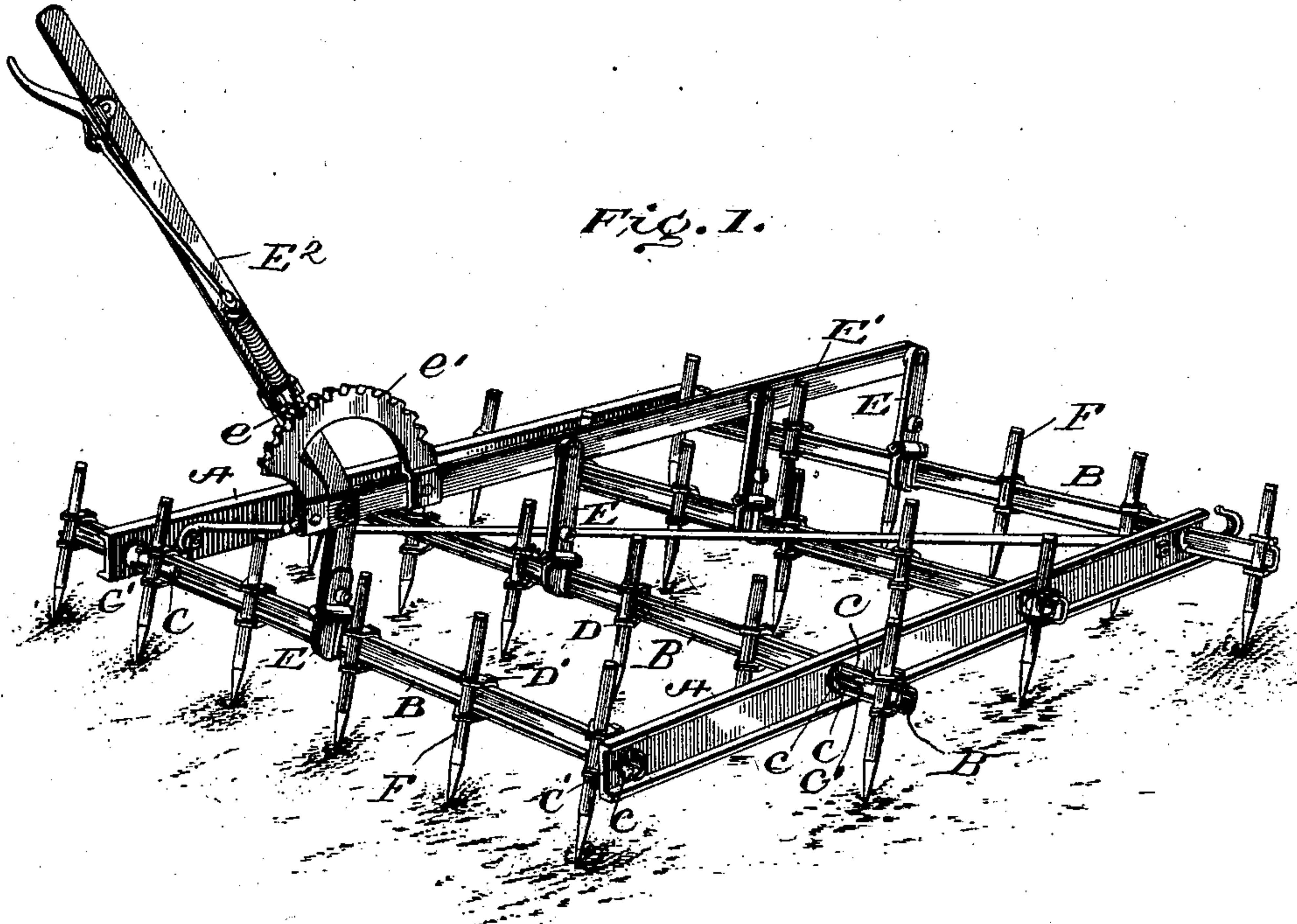


Fig. 2.

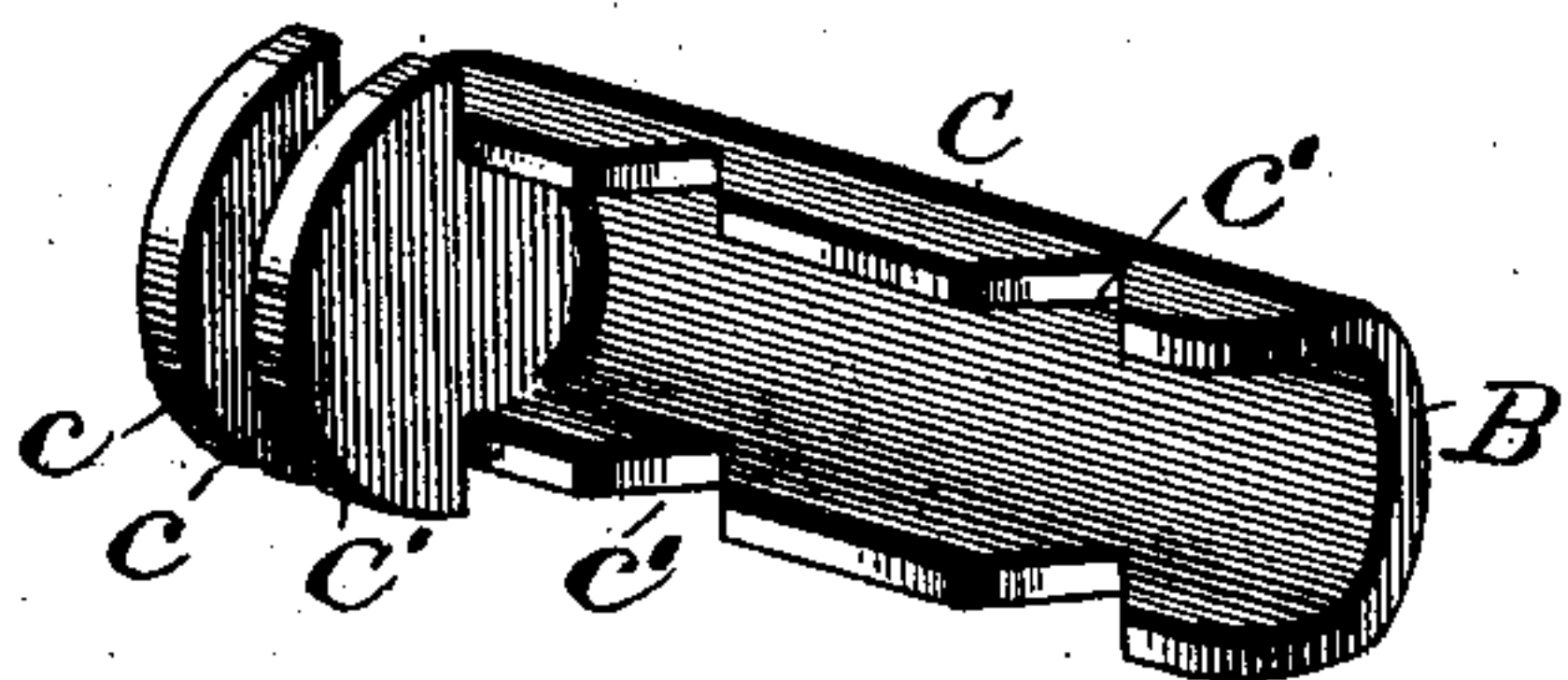


Fig. 3.

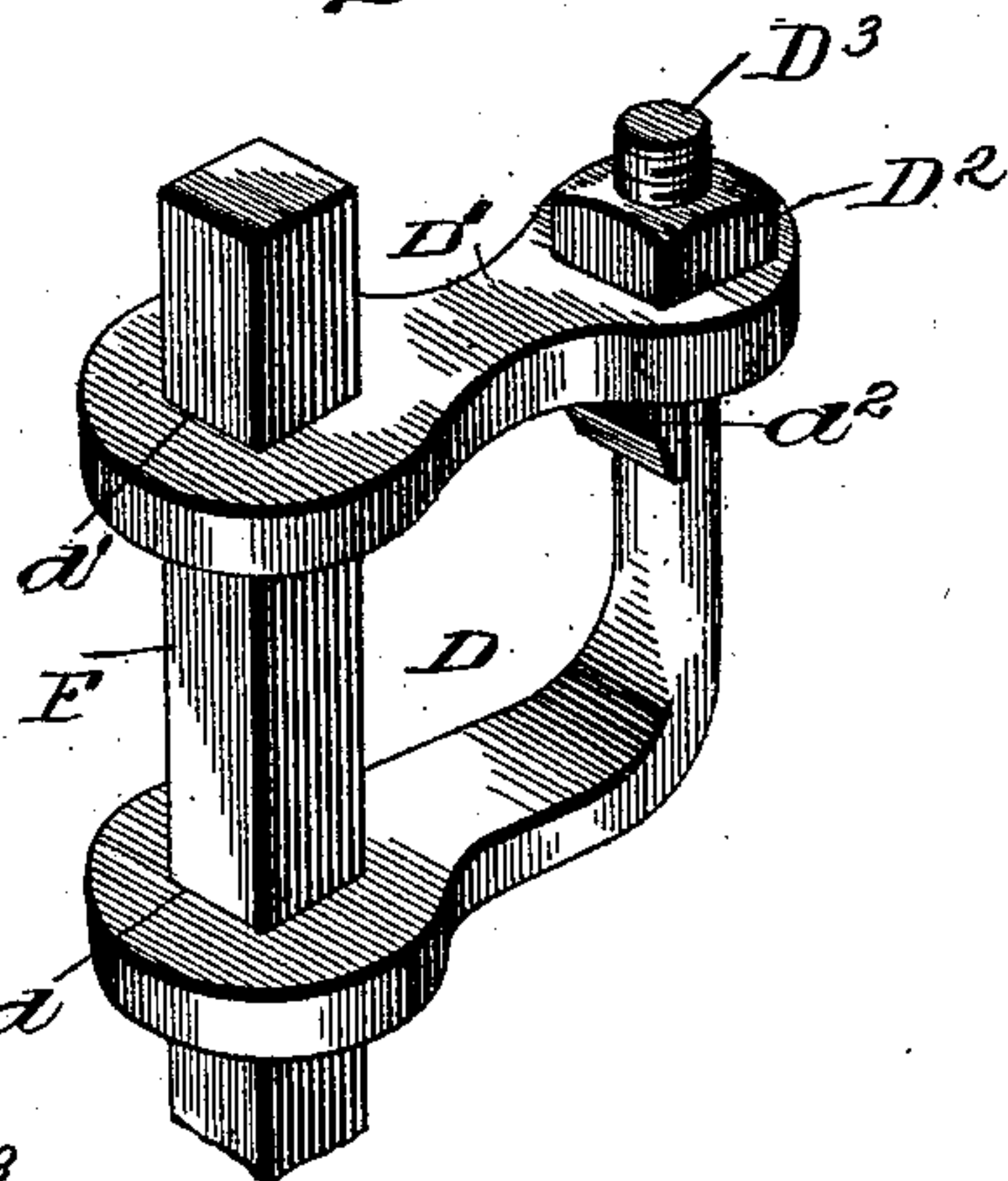
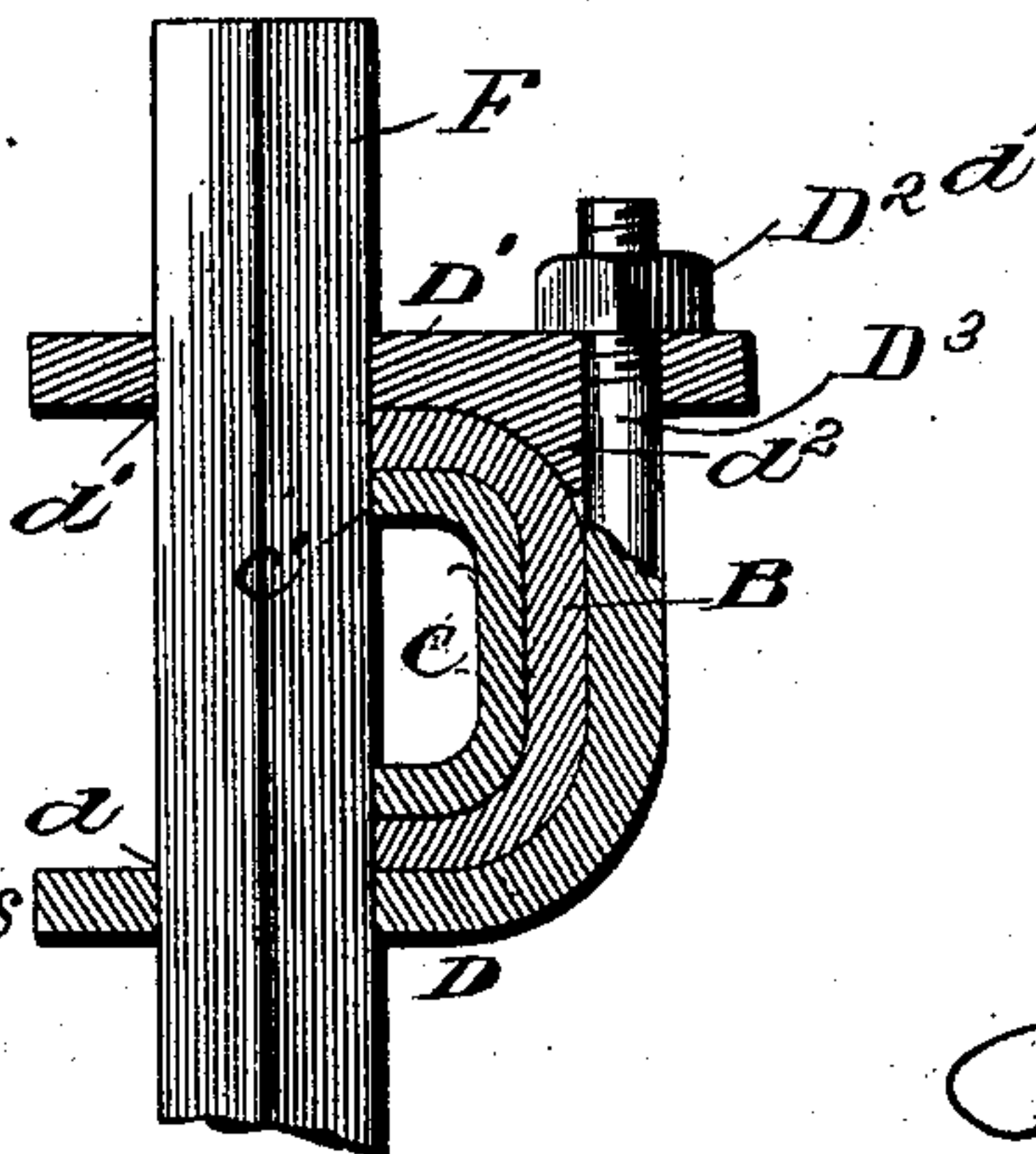


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN I. HOKE, OF SOUTH BEND, INDIANA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 603,446, dated May 3, 1898.

Application filed May 7, 1897. Serial No. 635,580. (No model.)

To all whom it may concern:

Be it known that I, JOHN I. HOKE, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Harrows; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

10 This invention relates to an improvement in harrows; and it consists in the novel means of mounting the harrow-teeth on the tooth-bars, whereby the teeth may be adjusted vertically at will of the operator, the novel means
15 of securing the tooth-bars to the side beams, and in other novel details of construction and combinations of parts, as illustrated in the accompanying drawings and summarized in the claims hereunto appended.

20 Referring to the drawings, Figure 1 is a perspective view of a harrow embodying my invention. Fig. 2 is a detail perspective view of one of the grooved retaining-plugs. Fig. 3 is a perspective view of a clip and a tooth;
25 and Fig. 4 is an enlarged section through the bar, plug, and clip.

Referring to the drawings by letters of reference, A A designate the opposite side beams of the harrow-frame, which are bored out at
30 proper intervals for the reception of the tooth-bars B, which are preferably U-shaped in cross-section and arranged parallel.

The bars B are detachably secured to the side beams A, so as to be capable of rotation,
35 by means of novel retaining-plugs C, each of which is formed with a head C' at one end, having semicircular flanges c c on one side adapted to embrace the edges of the openings in beams A, as hereinafter described. Each
40 plug C is adapted to fit in or to the bars B, and are provided with notches c', adapted to register with like notches in the ends of bars B. The head C' of a plug C is first inserted in one of the openings in a beam A, so that
45 flanges c c embrace the edges of the opening in the beam, preventing longitudinal movement of the plug while allowing it to be rotated. The end of a U-shaped tooth-bar B is then slipped through said opening and embraces the plug C, as shown in Fig. 4, and the
50 bar is slipped over or by the plug, so as to project a greater or less distance through the

beam A, and when the notched end of bar B registers with the notch in the plug a tooth F is placed in the notches, as shown in Figs. 55
1 and 4, and secured by means of a suitable clip. By this means the bars B are secured to the side beams A, so that they cannot move longitudinally, but can be rotated on the
60 beams.

In order to prevent the harrow-teeth on the several bars B tracking, the retaining-plugs C may be made of any desired length or reversed at opposite ends of the bars B, as shown, so that the alternate bars B project
65 at opposite sides of the harrow, as shown in Fig. 1.

The bars B are notched at suitable points for the reception of the harrow-teeth F, and the teeth, as shown, are secured to the bars
70 by novel clips, each consisting of two parts D D', which are provided with eyes d d', respectively, in their rear ends, through which the teeth pass. The upper part D' of the clip is provided also with an eye in its front
75 end, Fig. 3, and with a depending lug d², adapted to fit the upper edge of a bar B, and the lower part D is bent upwardly to fit around the lower part of bar B, and its front extremity D³ passes through the front eye in part D' and
80 is threaded for the engagement of a nut D².

Each tooth is set across the tooth-bars in the notches therein, and the front ends of the two portions of the engaging clip are drawn
85 together by means of the nut D², thereby drawing the sharp edge of the tooth firmly against the front edge of the bar and clamping it so firmly as to make it practically impossible to move the tooth through the eyes
90 in the clips.

The tooth-bars B are provided with upwardly-projecting levers E and are connected to and by a horizontal rod E'. One of the levers E is extended above the bar E' to form a hand-lever E², having a hand-latch e, adapted
95 to engage a toothed sector e', secured to the adjoining end of bar E'. When latch e is disengaged from the sector, lever E² can be thrown to the desired position, so as to rock the bars B and set the teeth to any inclination
100 desired with the ground.

Only one section of a harrow is shown in the drawings for sake of convenience, and by providing the beams A with hooked ends, as

shown, it is obvious that any number of sections can be attached together to form as extended a harrow as may be required.

5 The method of assembling and attaching the various parts gives me an entirely new construction of harrow which possesses advantages of superior accuracy in working and firmness of the parts.

10 The construction of the clips and of the grooved plug shown are preferred; but other forms may be made without departing from the essence of the invention.

Having thus described my invention, what I therefore claim as new, and desire to secure 15 by Letters Patent thereon, is—

1. The combination in a harrow of side beams having circular openings and transverse U-shaped tooth-bars passing loosely through said openings; with grooved plugs C 20 fitted in the channels of the transverse tooth-bars and having enlarged heads C' on one end provided with flanges c, c, adapted to embrace the edges of the openings in the beam and prevent longitudinal movement of the 25 plug and bar, and means for securing the plugs in the bars, all constructed and arranged to operate substantially as and for the purpose described.

2. The combination in a harrow, of the perforated and notched side beams, and transverse tooth-bars adapted to rotate in openings in said side beams; with rotatable retaining-plugs as C having flanged heads C' fitted in 30 said openings and to said tooth-bars and having notches c in their bodies adapted to coincide with notches in the beam, and teeth engaging the coincident notches in the beams and plugs, and secured thereto, all substantially as and for the purpose set forth.

40 3. In a harrow the combination of the tooth-bar U-shaped in cross-section; and the harrow-tooth; with a clip extending above

and below said bar, one part of said clip being bent and terminating in a bolt which is threaded on its outer end and the other part 45 of said clip being provided with a lip d^2 on its rear end, all substantially as and for the purpose described.

4. In a harrow the combination of a tooth-bar provided with a series of teeth; of the 50 two-part clips extending above and below the harrow-bar, each of said clips having eyes in its rear ends to receive said teeth and provided at their front ends with inner curved surfaces adapted to engage the tooth-bar, and 55 one part of the clip having a threaded end adapted to engage an eye on the other part of the clip, all substantially as described.

5. The herein-described clip consisting of the lower part D having eye d , and upturned 60 threaded front end D^3 ; and the upper part D' having rear eye d' and a front eye for the passage of end D^3 , and a depending lug d^2 , and the nut D^2 , all substantially as described.

6. In a harrow the combination of the side 65 beams A, A, and transverse parallel notched tooth-bars B passing loosely through openings in said beams; with the retaining-plug C fitted to the tooth-bars, provided with head C', and flanges c, c, which embrace the edges 70 of the opening in the side beams; the harrow-tooth F secured in coinciding notches in the tooth bars and plugs and the clip D, D', for securing the teeth in place, all constructed and arranged substantially as and for the pur- 75 pose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN I. HOKE.

In presence of—

JAMES DUSHANE,
ISABELLA MCINTYRE.