

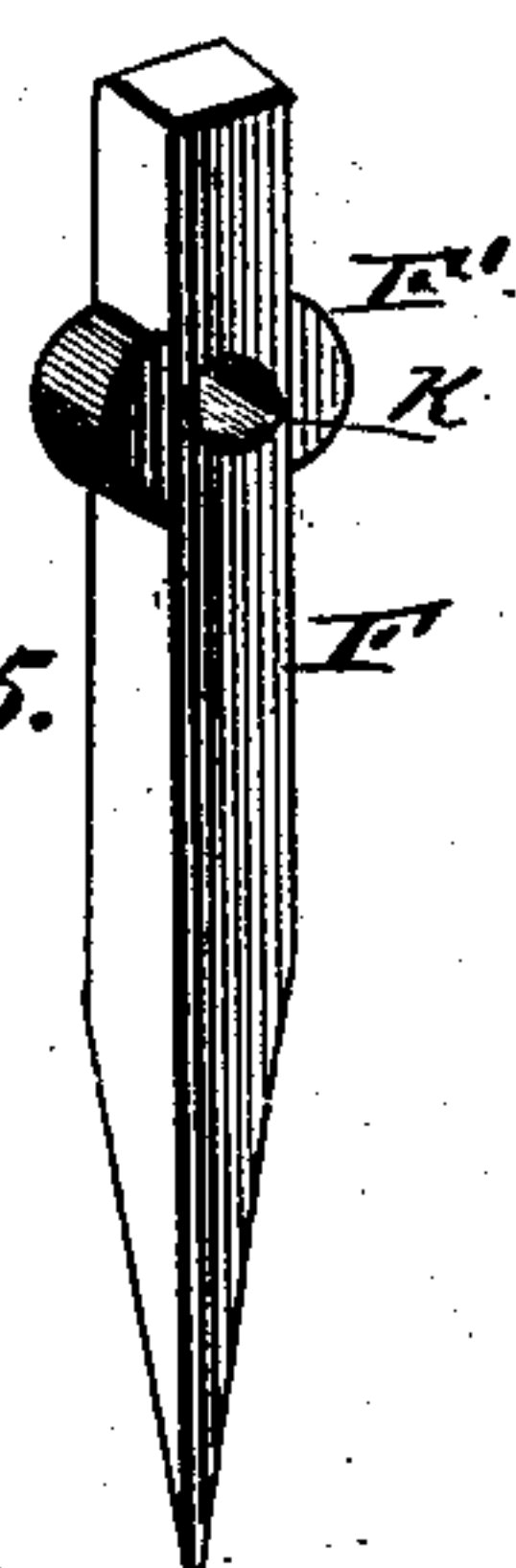
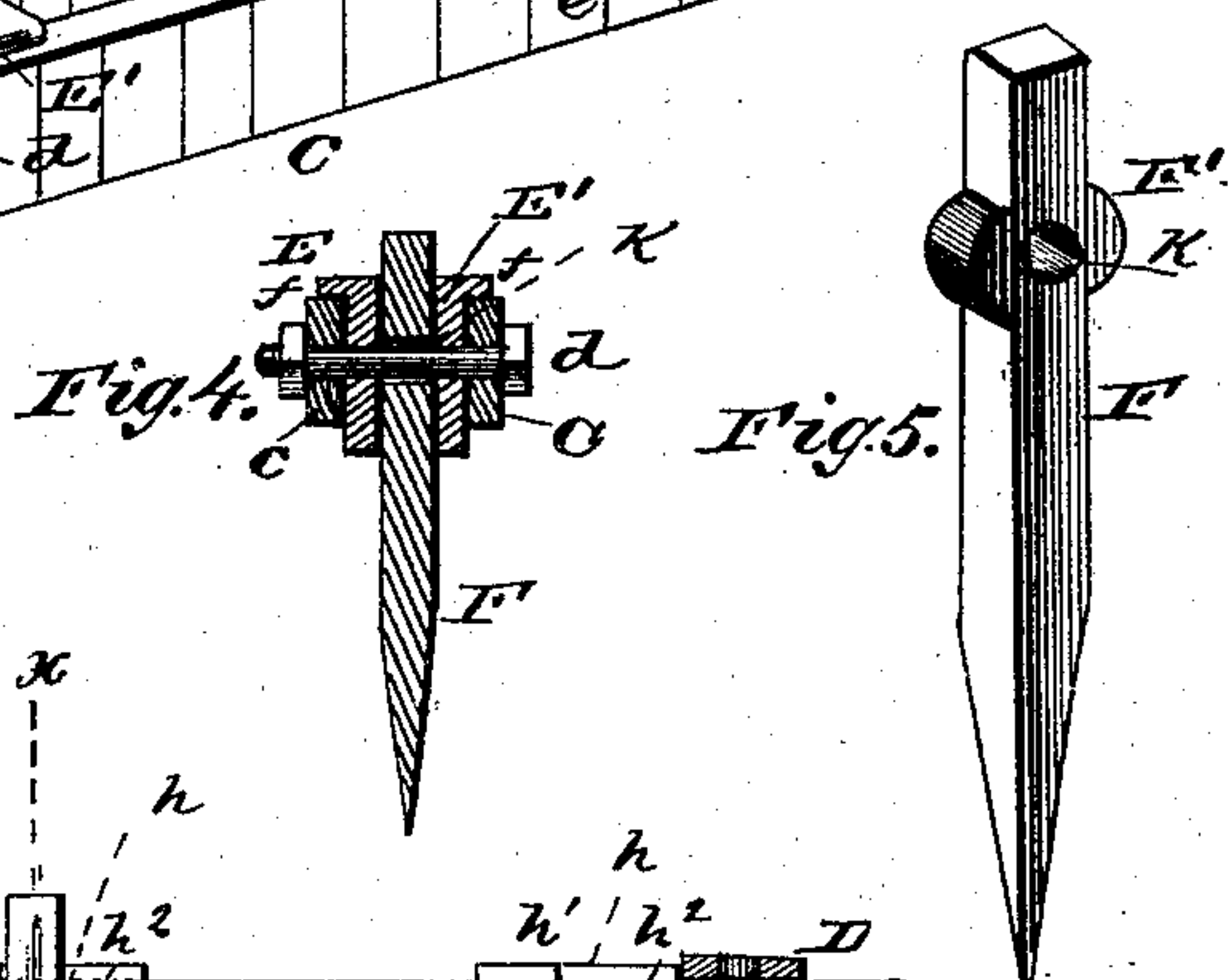
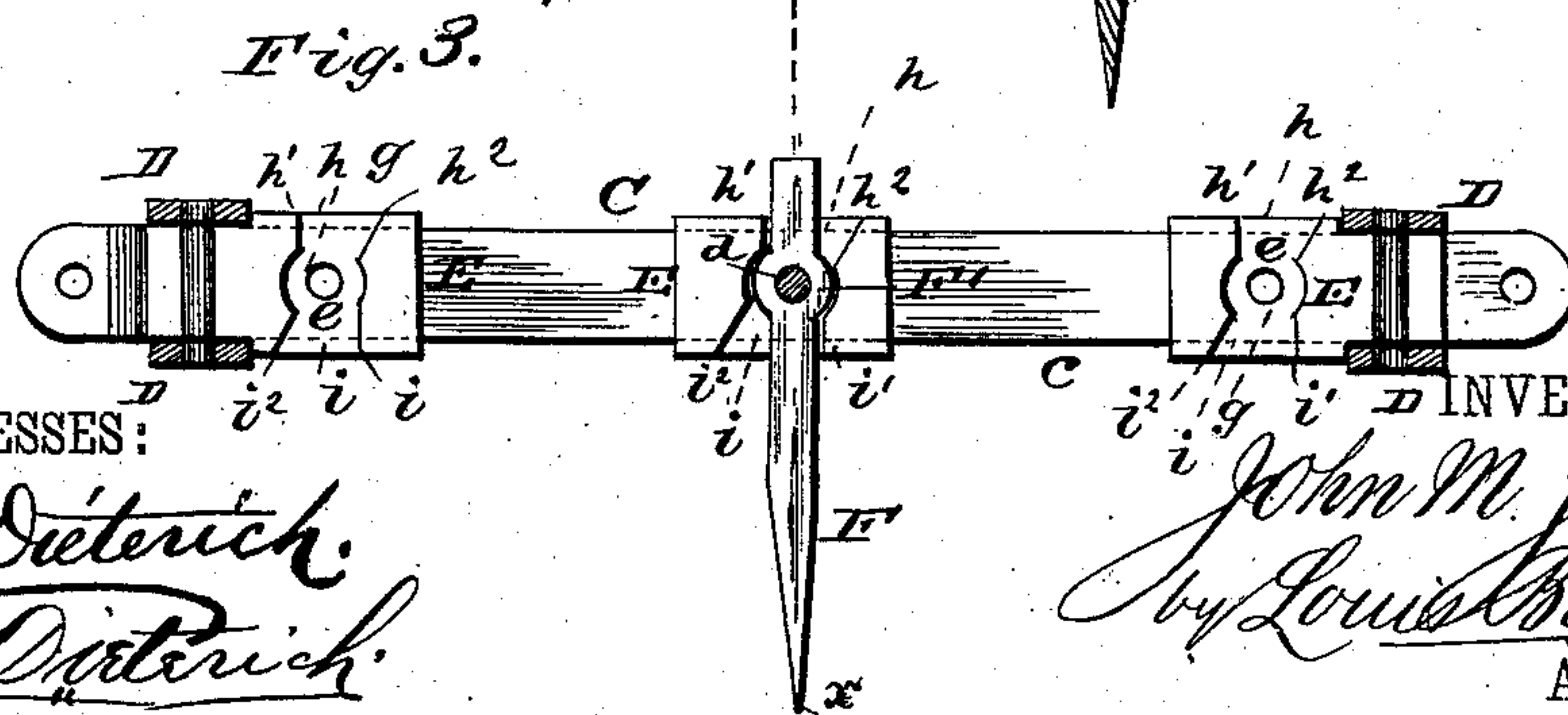
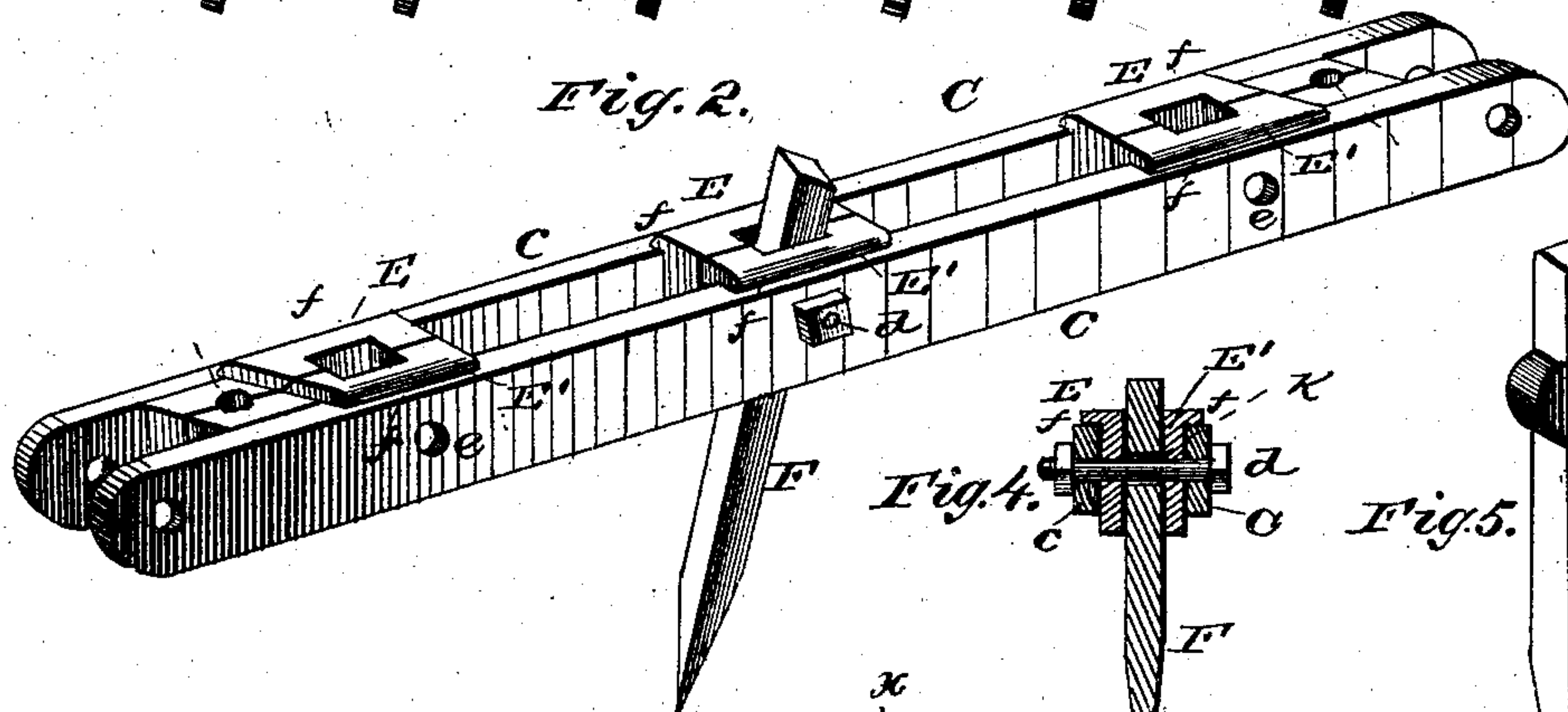
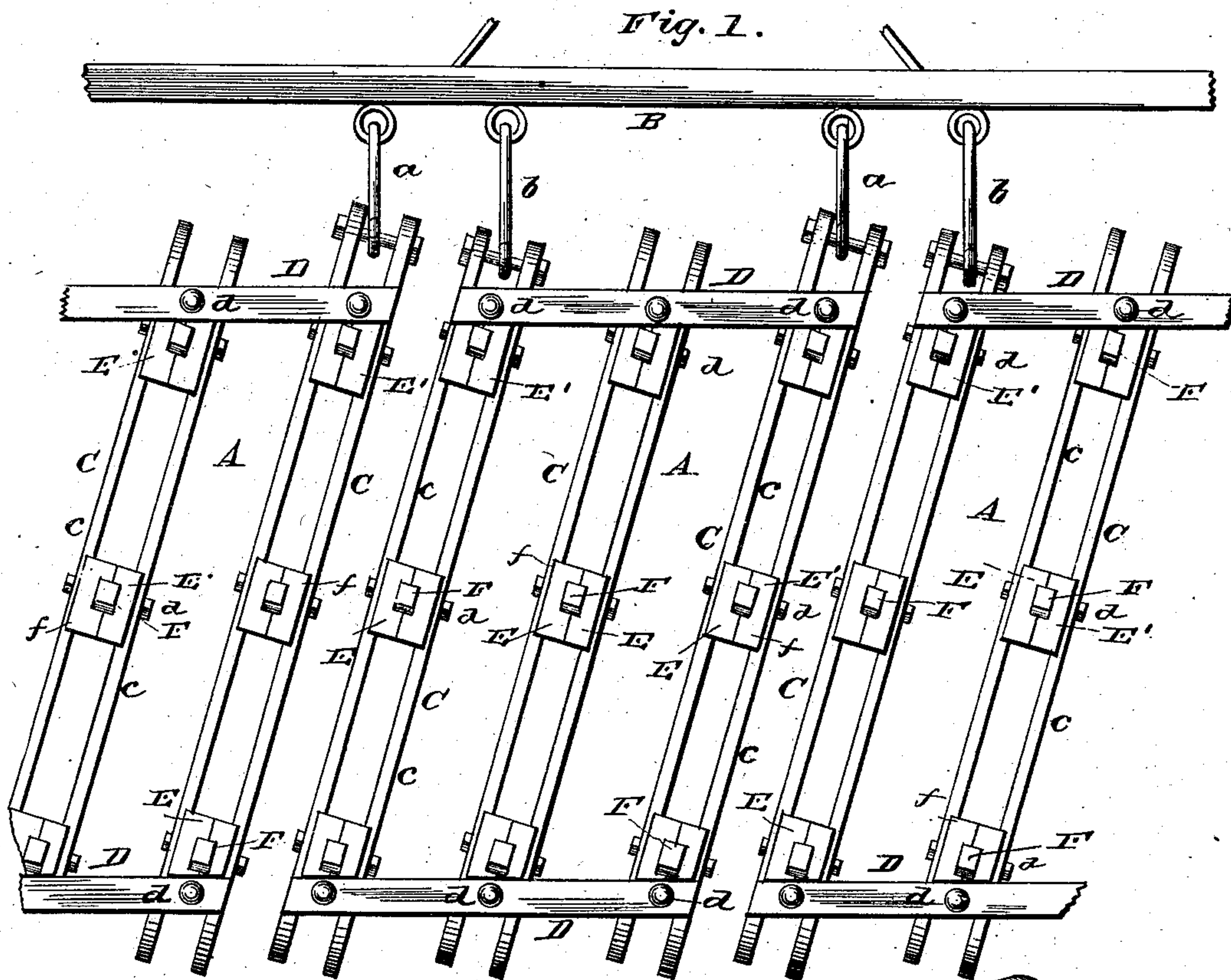
(No Model.)

J. M. JOHNSON.

HARROW.

No. 260,687.

Patented July 4, 1882.



WITNESSES:

Fred. H. Dieterich.  
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# UNITED STATES PATENT OFFICE.

JOHN M. JOHNSON, OF RARITAN, ILLINOIS.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 260,687, dated July 4, 1882.

Application filed April 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. JOHNSON, of Raritan, in the county of Henderson and State of Illinois, have invented certain new and useful Improvements in Harrows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a top or plan view of my improved harrow. Fig. 2 is a perspective view of one of the tooth-bars detached. Fig. 3 is a longitudinal section of the same. Fig. 4 is a cross-section of the same through line *xx* in Fig. 3, and Fig. 5 is a detail view of one of the movable teeth detached from the bar.

Similar letters of reference indicate corresponding parts in all the figures.

My invention contemplates certain improvements in harrows, which will be hereinafter more fully described, and particularly pointed out in the claim.

My improved harrow is composed of two, three, or more sections, A, each section consisting of three parallel bars, C, arranged slantingly or obliquely to the draft-bar B, to which they are connected detachably by links or eye-rods *a* and *b*, of unequal length—that is to say, all the short links *a* are of the same length and all the long links *b* are of even length, by which means the several sections A A A are kept in their oblique position relative to the drag-bar, parallel to one another.

The three bars C C C which compose each section are connected parallel to one another by cross-bars D D, one at each end, and each separate bar is composed of two parallel pieces of flat iron or bar-iron of suitable width and thickness, as shown at *c c*, which are connected by nutted bolts *d d*. These bolts are inserted also through bolt-holes *e* in the clamping-blocks E E', which are inserted between bars *c c*, and have a top flange, *f*, on each side, which rests upon the top edge of bars *c c*. Each of these blocks consists of two halves, E and E', as shown more clearly in Fig. 4 of the drawings, which are recessed on their inner

sides, or the sides facing each other, as shown in Fig. 3—that is to say, it has a circular recess, *g*, concentric with the bolt-hole *e*, and a top and bottom recess, (shown at *h* and *i*, respectively,) which open up into the central recess, *g*. These recesses, it will be seen, are formed each with a straight side or shoulder, *h'* and *i'*, and a slanting side or shoulder, *h''* and *i''*, the shoulders *h' i'* and *h'' i''* being respectively parallel to each other.

F represents the harrow-tooth, which is made of steel or iron and of the shape clearly shown in the drawings, from which it will be seen that it has a circular head, F', a short distance below the top, which has a central aperture or bolt-hole, *k*. The head F' is of such size and shape that it will fit into the recess *g*, formed by putting the halves E and E' of the clamping-blocks together, with its top part projecting up into the shouldered top recess, *h*, in said blocks. In other words, the tooth is pivoted upon bolt *d* within the clamping-block E E' in such manner that the top and bottom recesses, *h* and *i*, permit it to assume an inclined position in one direction, but a straight or vertical position in the opposite direction.

The number of teeth and blocks in each tooth-bar depends upon the size of the harrow, and by withdrawing its appropriate bolt any one of the blocks, with its tooth, may be detached from the bar. Thus teeth with different-shaped points may be substituted for the form of tooth shown in the drawings, and if a tooth is bent or broken a new one may readily be inserted in its place.

By the described construction and combination of the harrow-teeth F, blocks E E', and bars C, it will be observed that by changing the position of the draft-bar B from one end of the harrow to the other the latter may be changed from a "straight tooth" to an "inclined tooth" harrow at will, or vice versa, on account of the peculiar construction of the tooth-sockets *h g i*. The harrow, being made entirely of iron, will be found to be very strong and durable, its weight and draft being light at the same time, owing to the skeleton-frame construction of the several harrow-sections.

Having thus described my invention, I claim

and desire to secure by Letters Patent of the United States—

5 In a harrow, the pivotal teeth *F*, having the circular centrally-perforated heads *F'*, in combination with the clamping-bars *cc*, detachable clamping-blocks *E E'*, having sockets *h g i*, and nutted bolts *d*, inserted through the perforated circular heads *F'* and centrally through the clamping-blocks *E E'*, and connecting the

parallel bars *c c*, substantially as and for the purpose herein shown and specified. 10

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

JOHN M. JOHNSON.

Witnesses:

M. M. FIELD,

J. VOORHEES.