

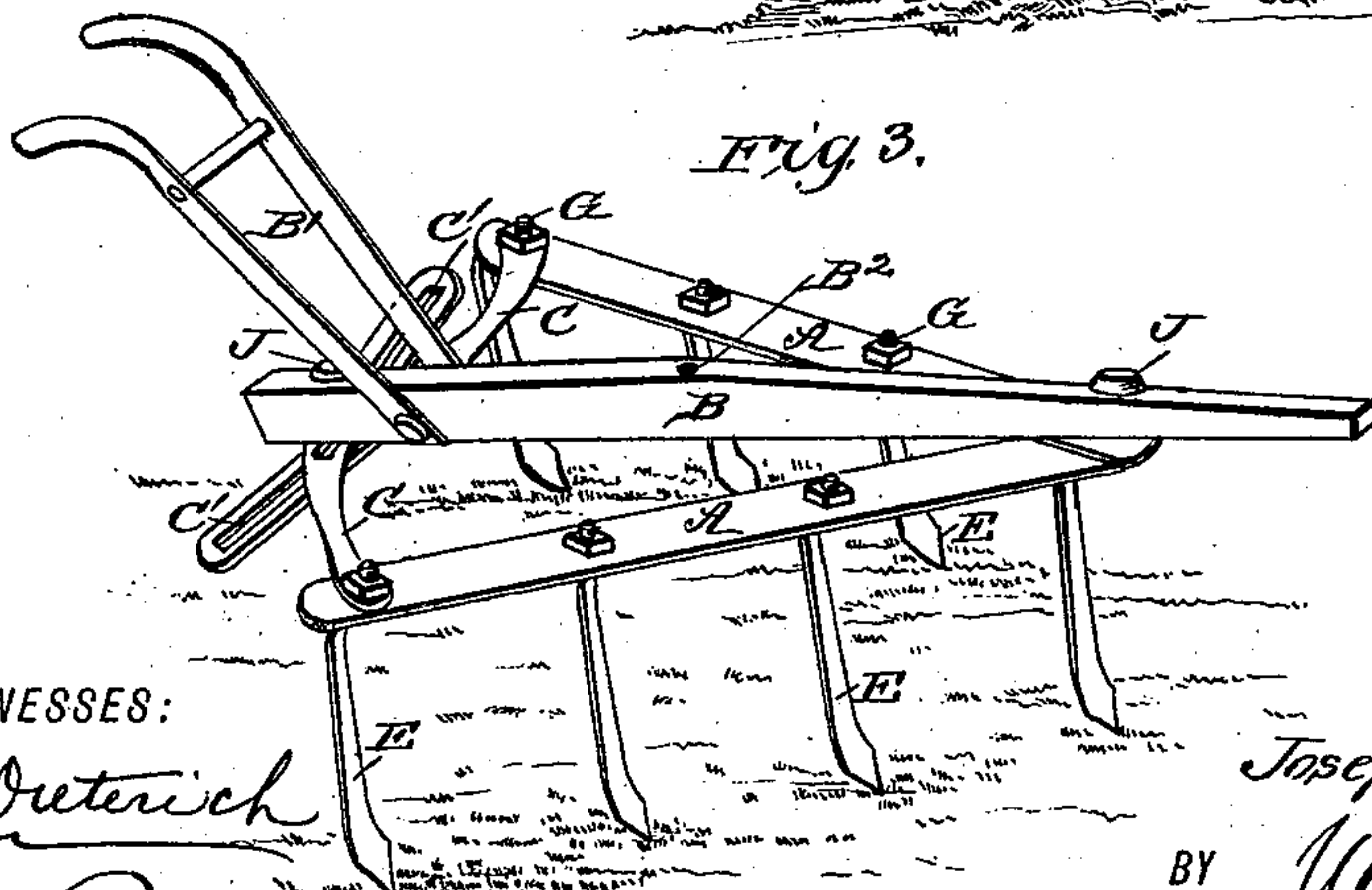
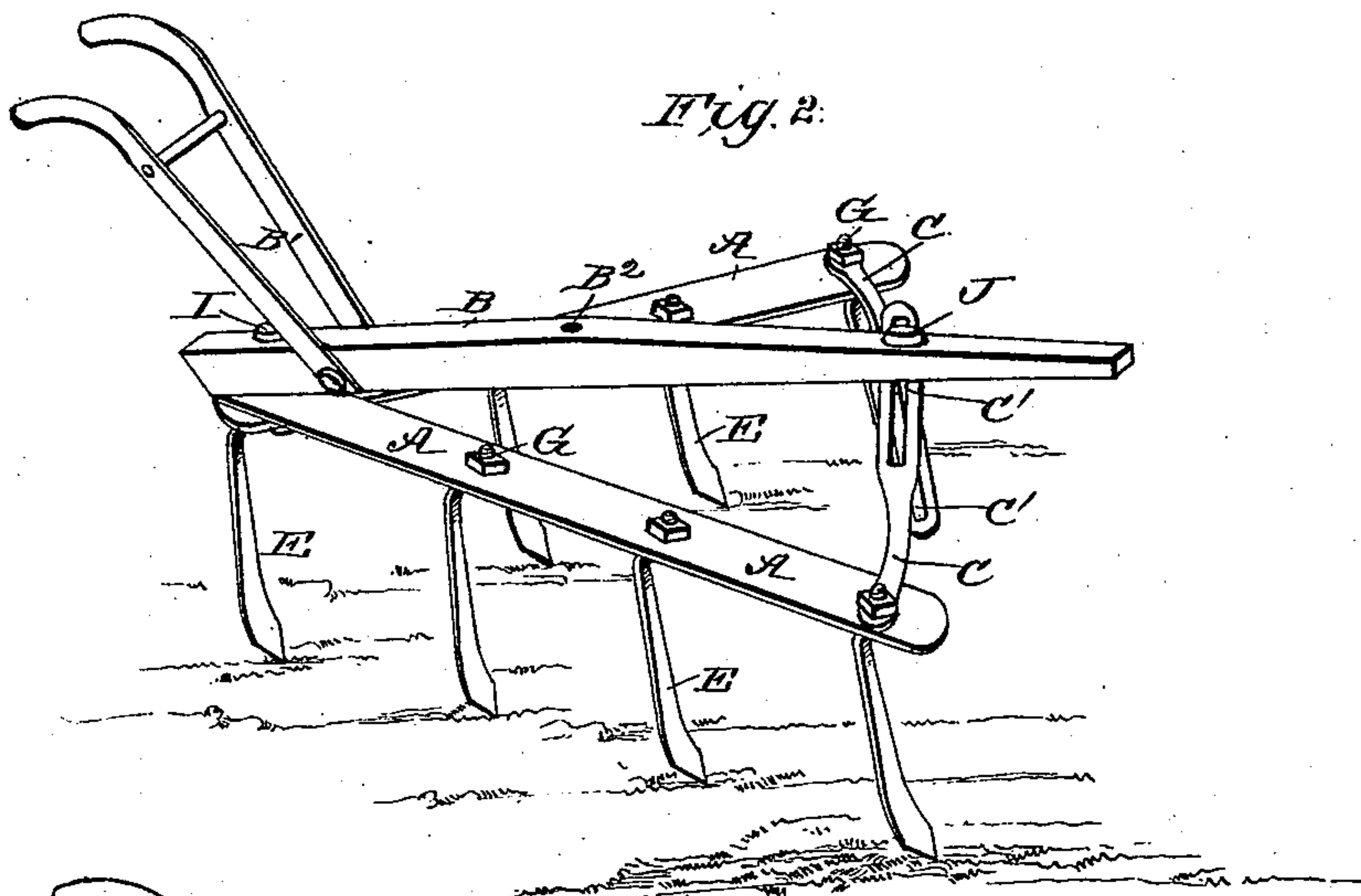
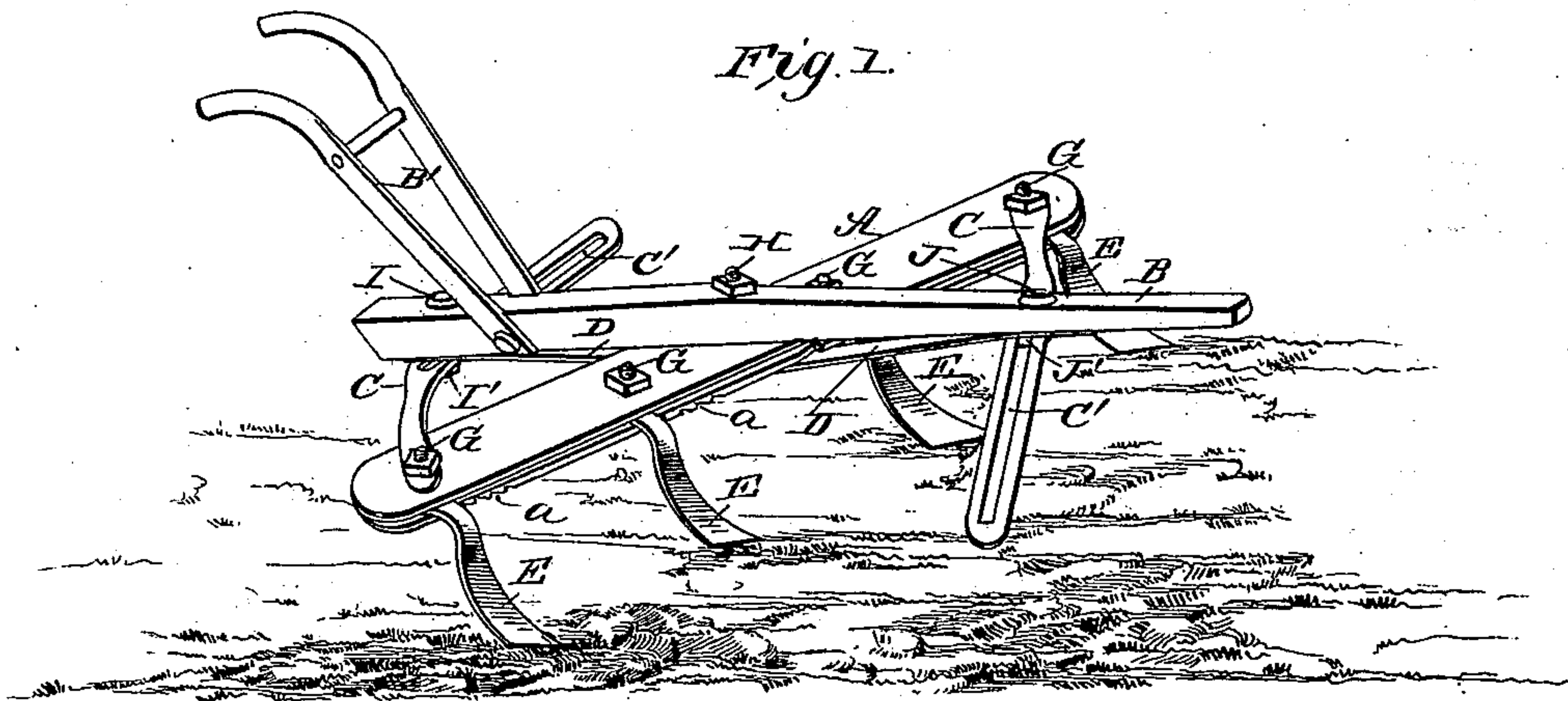
(No Model.)

2 Sheets—Sheet 1.

J. A. BEARD.
HARROW.

No. 414,896.

Patented Nov. 12, 1889.



WITNESSES:

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INVENTOR

Joseph A. Beard.

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ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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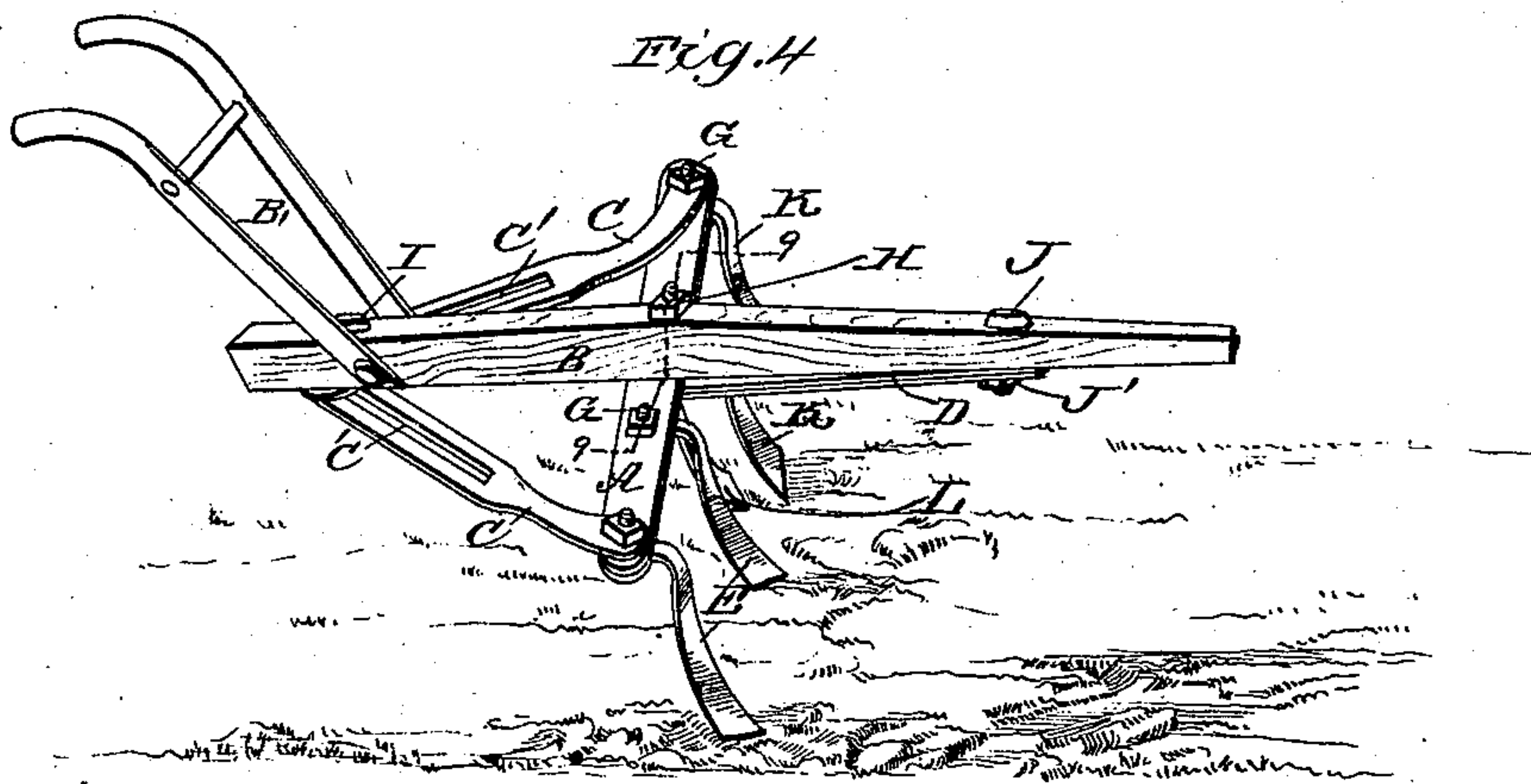


Fig. 5.

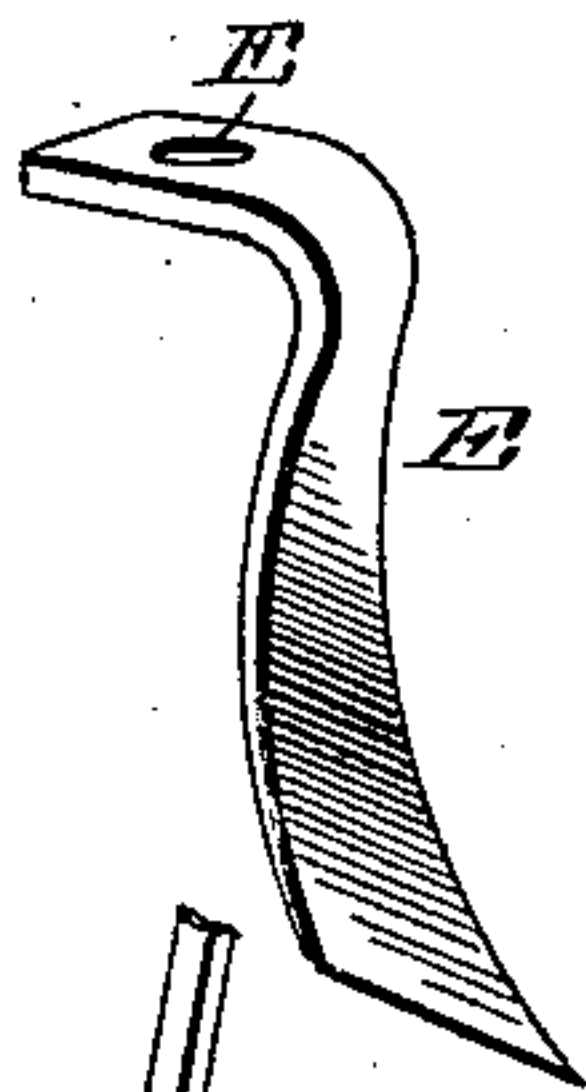


Fig. 6.

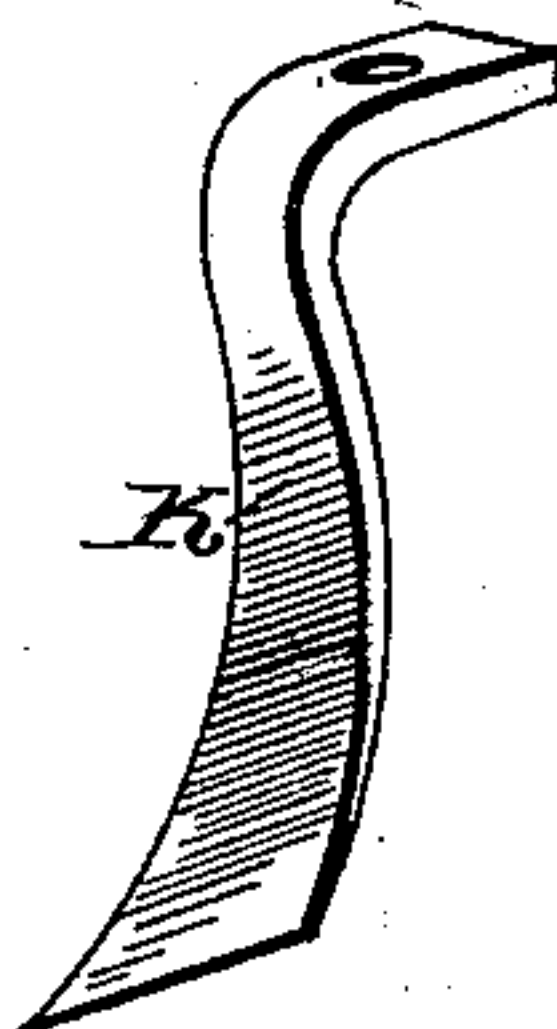


Fig. 9.

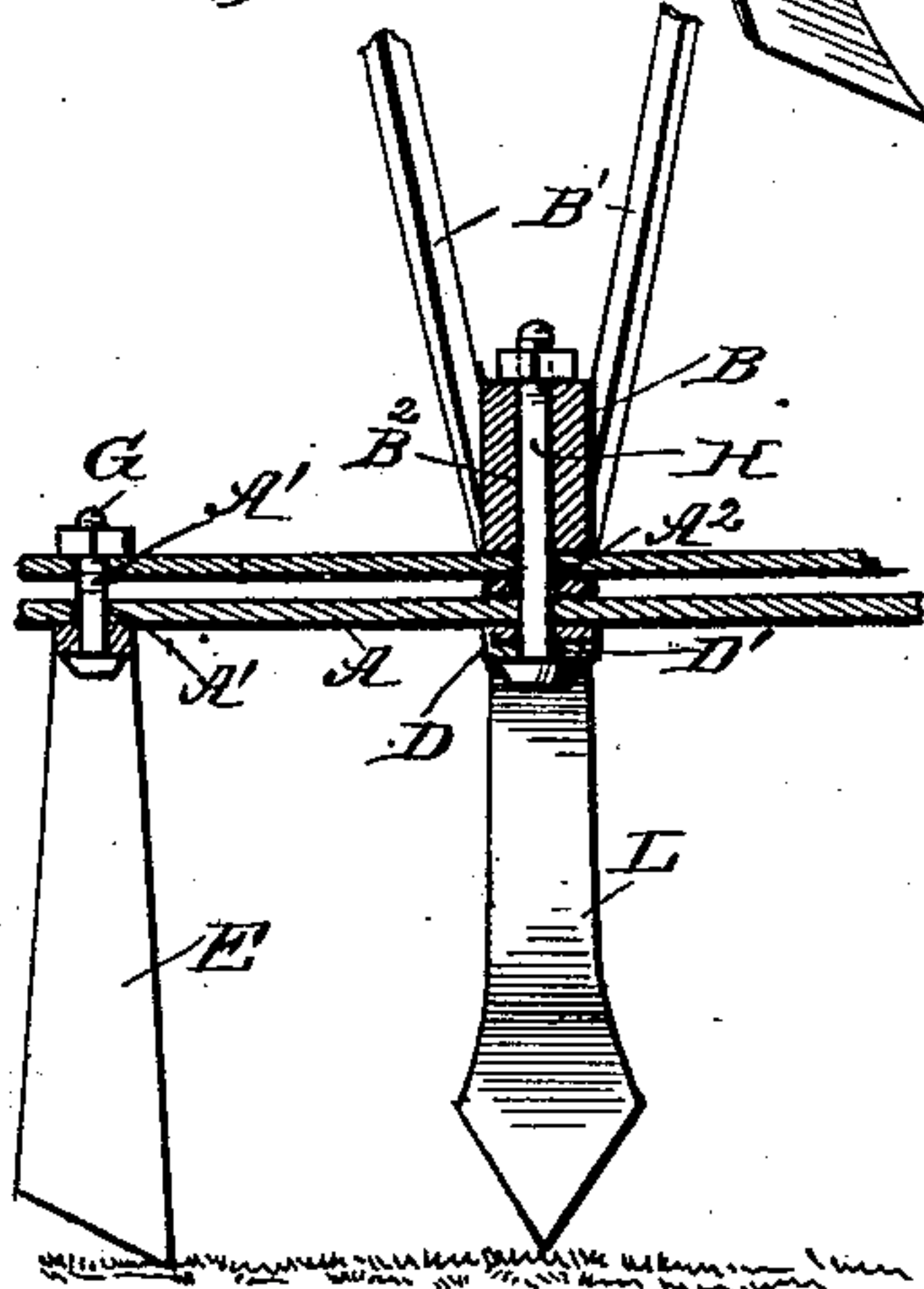


Fig. 7.

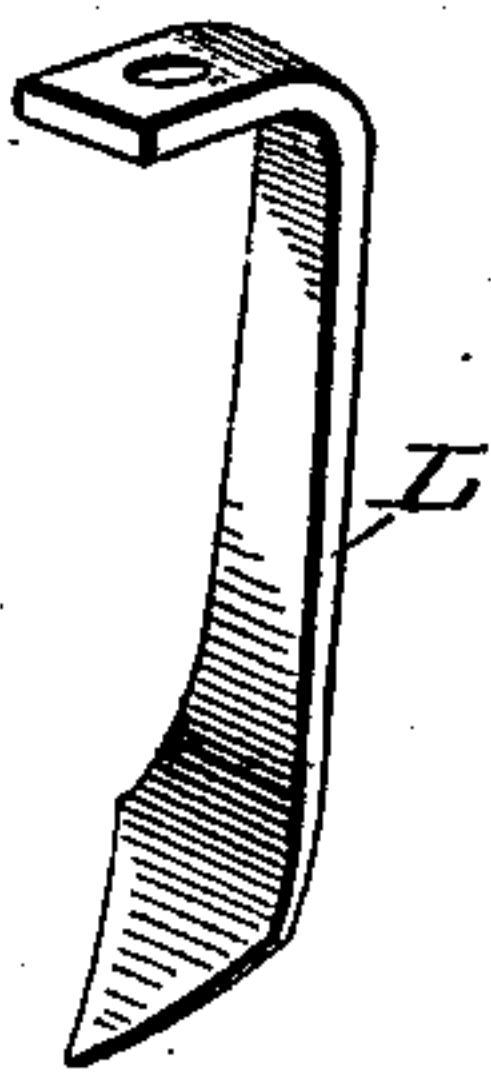
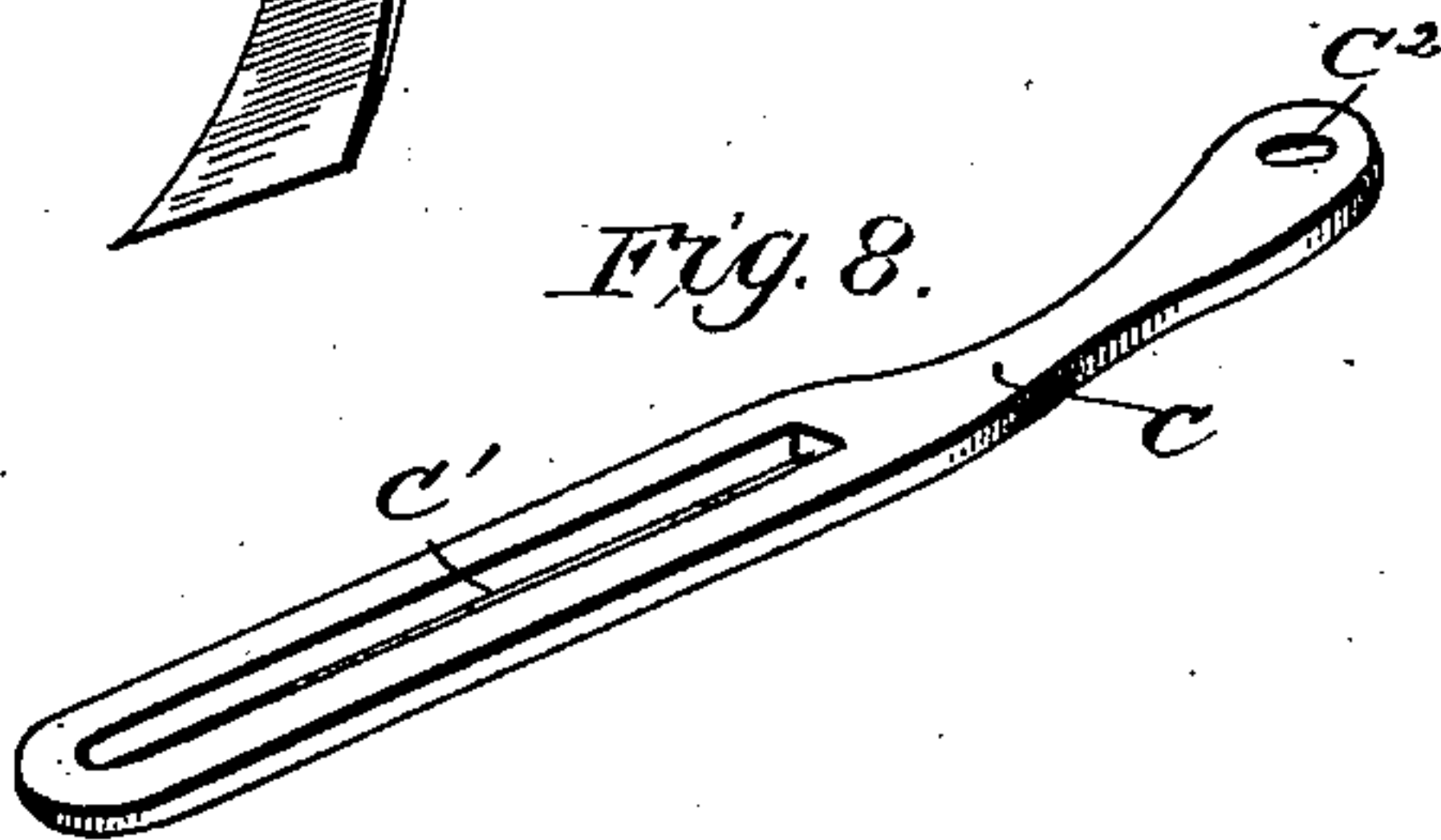


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH ALONZO BEARD, OF LIBERTY, MISSISSIPPI.

HARROW.

SPECIFICATION forming part of Letters Patent No. 414,896, dated November 12, 1889.

Application filed July 24, 1889. Serial No. 318,589. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ALONZO BEARD, of Liberty, in the county of Amite and State of Mississippi, have invented a new and useful Improvement in Convertible Harrows, of which the following is a specification.

My invention consists in a new and improved convertible harrow, which is simple and strong in construction and can be readily changed to and used as a side harrow, a V-harrow, an A-harrow, and a T-harrow, and my invention will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 shows my harrow arranged as a side harrow. Fig. 2 shows the harrow arranged as a V-harrow. Fig. 3 shows the harrow arranged as an A-harrow. Fig. 4 shows the harrow arranged as a T-harrow. Figs. 5, 6, and 7 are detail views of the harrow-teeth. Fig. 8 is a detail view of one of the slotted braces C, and Fig. 9 is a vertical sectional view taken on line 9 9 of Fig. 4.

The same letters of reference indicate corresponding parts in all the figures.

Referring to the several parts by letter, B indicates the beam, having the usual handles B'. The head A, in which the teeth are secured, is formed of two flat parallel sections of the same size and preferably of metal.

C C indicate two braces, which are formed with the longitudinal slots C' and the end aperture C². My harrow also comprises two straight braces D, having an aperture D' formed at each of their ends.

To arrange the harrow as a side harrow, the four teeth E are secured to the head A by having their bent upper ends, which are formed with the apertures E', placed between the two sections of the head, where they are secured by the bolts G, which pass through apertures A' in the upper and lower head-sections and through the apertured ends of the teeth. The lower head-section is formed with the edge notches a, in which the edges of the teeth E fit. A main bolt H passes up through the overlapping apertured ends of the two flat braces D and through a central aperture A² in the head A and up through a vertical aperture B² in the beam, having a nut upon its upper threaded end.

The slotted braces C are secured at their apertured ends C² to the ends of the head A by the end bolts G. Bolts I J pass down through the beam B at its rear end and at an equal distance in front of the central bolt H, their lower ends passing through the outer apertured ends of the braces D and through the slots C' of the braces C, having nuts I' J' on their lower threaded ends.

It will be seen that by means of the slotted braces C the inclination of the head A and its teeth can be changed and regulated as desired.

In Fig. 2 the harrow is shown arranged as a V-harrow. The two sections of the head A are separated by removing the bolts passing through them, when they are bolted together at one end by the rear bolt I and the teeth F bolted to them, as shown, seven of these teeth being used. The braces C are bolted at their apertured ends to the diverging ends of the head-sections, and the front bolt J passes through their slotted ends, which cross each other, as shown in Fig. 2.

To arrange the harrow as an A-harrow, the parts of the V-harrow are simply reversed, as clearly shown in Fig. 3.

To arrange the harrow as a T-harrow, the head-sections and the slotted braces C are bolted together, as for the side harrow before described; but the slotted ends of the braces C are both carried back and secured on the rear bolt I, holding the head at right angles to the beam. The two braces D are placed on top of each other, and bolted at one end on the front bolt J and at their rear ends on the main bolt H below the head. Five teeth are used for the T-harrow—two right-hand E and two left-hand K—and a tooth L is secured in the center of the head, having its forwardly-bent upper end inserted in from the back between the head-sections and secured by the main bolt H.

From the foregoing description, taken in connection with the accompanying drawings, the construction and advantages of my invention will be readily understood. It will be seen that my convertible harrow is exceedingly simple and strong in construction, and combines four harrows in one.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The combination of the beam having the central main threaded bolt H and the front
5 and rear bolts J and I and their nuts, the head composed of the two sections formed with the registering apertures, the teeth formed with the bent apertured ends, the removable threaded bolts G and their nuts, and
10 the braces C, formed with the longitudinal slots and the end apertures, substantially as set forth.

2. The combination of the beam having the main central threaded bolt H and the front

and rear bolts J and I and their nuts, the 15 head composed of the two sections formed with the registering apertures, the teeth formed with the bent apertured ends, the removable threaded bolts G and their nuts, the braces D, formed with the end apertures, and 20 the braces C, formed with the longitudinal slots and the end apertures, substantially as set forth.

JOSEPH ALONZO BEARD.

Witnesses:

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J. R. GALTNEY.