

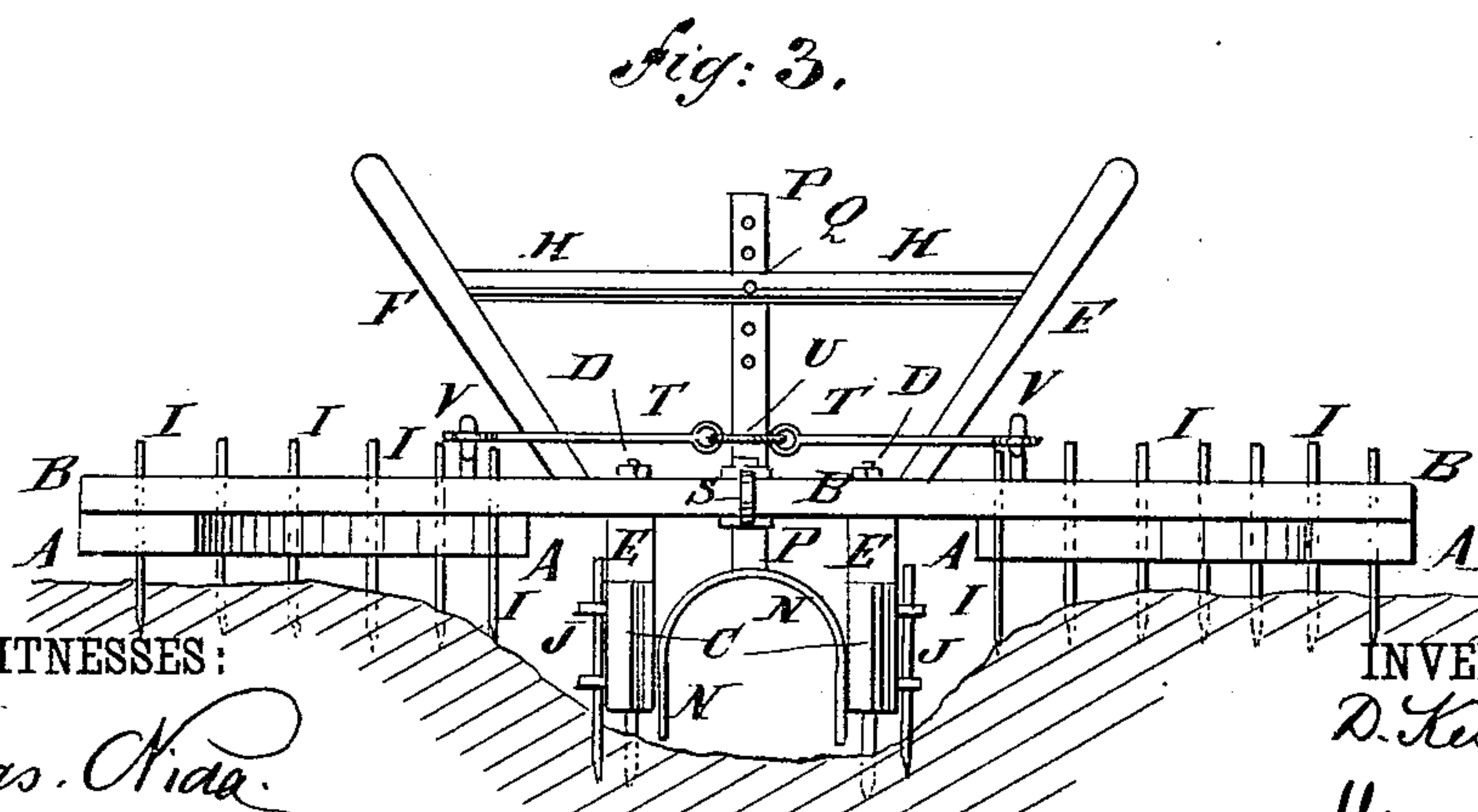
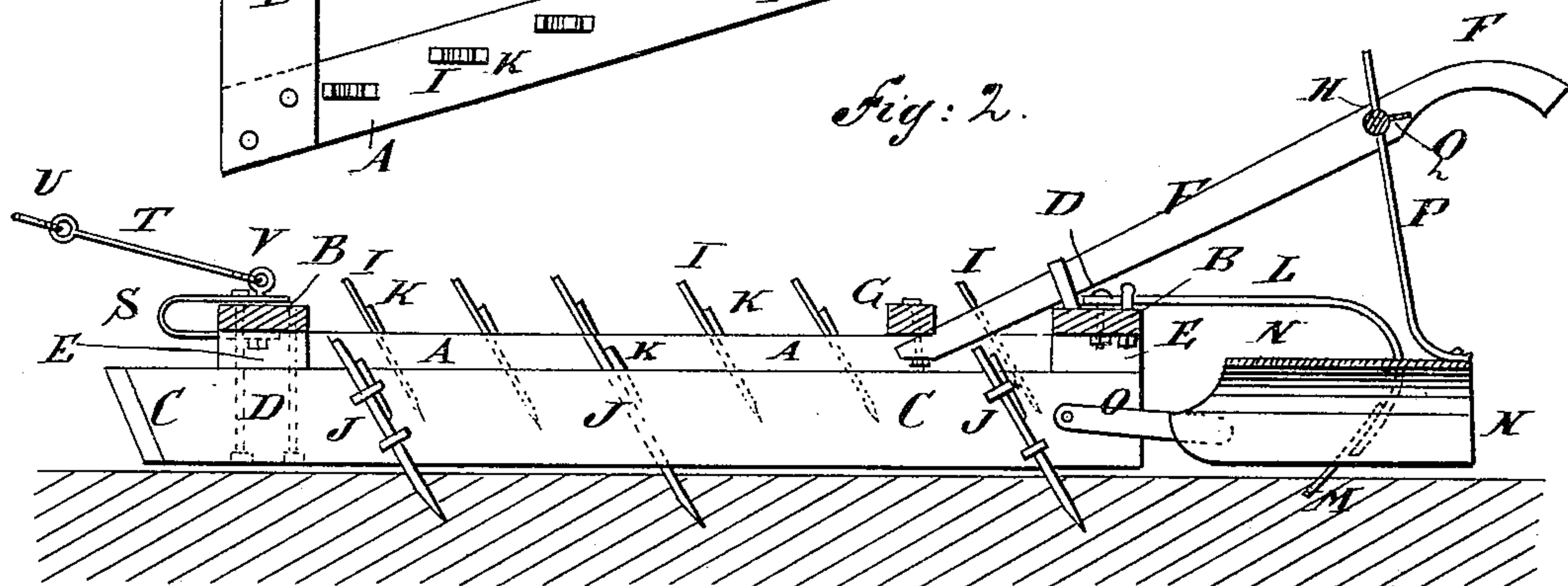
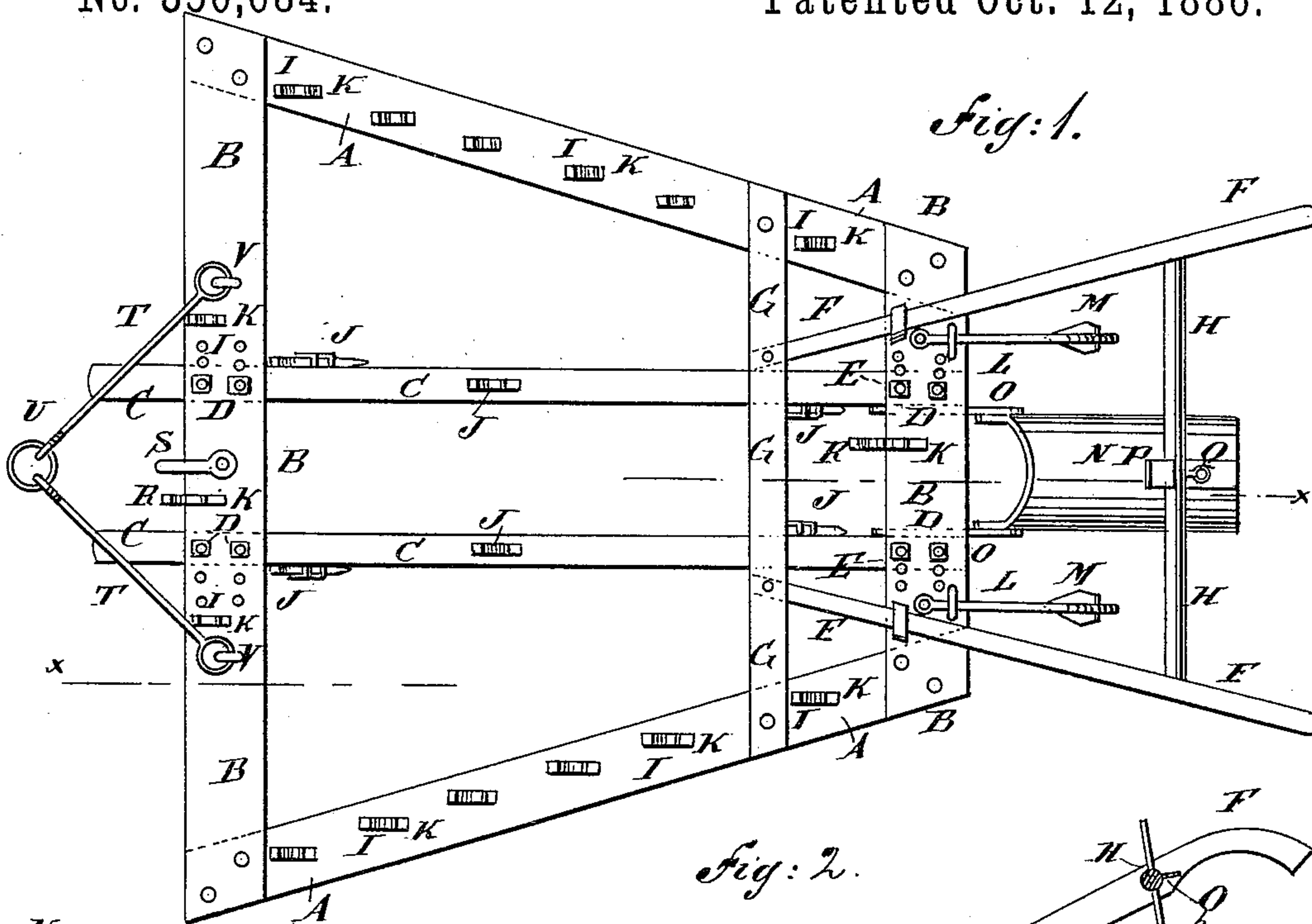
(No Model.)

D. KESSLER.

COMBINED HARROW AND CULTIVATOR.

No. 350,684.

Patented Oct. 12, 1886.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

DAVID KESSLER, OF WILLIS, KANSAS.

## COMBINED HARROW AND CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 350,684, dated October 12, 1886.

Application filed May 25, 1886. Serial No. 203,225. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID KESSLER, of Willis, in the county of Brown and State of Kansas, have invented a new and useful Improvement in a Combined Harrow and Cultivator, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my combined harrow and cultivator, shown as adjusted for cultivating listed corn. Fig. 2 is a sectional side elevation of the same, taken through the broken line *x x*, Fig. 1. Fig. 3 is a front elevation of the same.

The object of this invention is to provide combined harrows and cultivators constructed in such a manner that they can be readily adjusted for cultivating listed corn, or surface corn, or for ordinary harrowing, and which shall be reliable and effective in operation with either adjustment.

The invention consists in the construction and combination of various parts of the combined harrow and cultivator, as will be hereinafter fully described, and then claimed.

A are the side bars of the harrow, which incline from each other toward their forward ends, and are connected at their ends by cross-bars B.

C are two parallel bars, placed at such a distance apart as to pass along the opposite sides of a row of plants, and which are secured by bolts D to the under sides of the cross-bars B, upon the opposite sides of and equally distant from the centers of the said bars B. Blocks or bars E are interposed between the upper edges of the parallel bars C and the lower sides of the cross-bars B, to bring the lower edges of the said bars C to the desired distance from the lower sides of the said cross-bars B, as the depth of the listed furrow may require. Several holes are formed in the cross-bars B to receive the bolts D, so that the parallel bars C can be readily adjusted at a greater or a less distance apart, as may be required.

F are the handles, the lower parts of which are passed through keepers attached to the rear cross-bar B, and their lower ends are bolted to the lower side of the cross-bar G,

bolted to the upper sides of the side bars, A, at a little distance from the said rear cross-bar B. The rear parts of the handles F are connected by a round, H.

To the side bars, A, and to the front cross-bar B are attached harrow-teeth I, which are inclined to the rearward, as shown in Figs. 1 and 2, and which are designed to cultivate the ridges between rows of listed corn, as illustrated in Fig. 3. To the opposite sides and the centers of the parallel bars C are secured teeth J, to cultivate the bottoms of the listed furrows at the opposite sides of the rows of plants, as illustrated in Figs. 1 and 3. The teeth I J are secured in place by wedge-keys K, as shown in Fig. 2, so that the said teeth can be readily adjusted to enter the soil to any desired depth.

To the rear cross-bar B, at a little distance from the outer sides of the parallel bars C, are attached the forward ends of plow-beams L, the rear parts of which are curved downward, and to their lower ends are attached or upon them are formed cultivator-teeth M, to plow down the shoulders of the ridges and throw the soil around the plants. The plants are protected from the soil thrown by the cultivator-teeth M by an arched fender, N, the forward ends of the sides of which are connected with the rear ends of the parallel bars C by bars O.

To the rear part of the top of fender N is attached the lower end of a standard, P, the upper end of which passes through a slot in the round H, and is secured in place by a pin or bolt, Q, passing through it and through the said round H. Several holes are formed through the standard P to receive the pin Q, so that the rear end of the fender N can be readily raised and lowered to allow more or less soil to pass around the plants, as may be required.

When the machine is to be used as an ordinary harrow, the bars or blocks E are removed from below the cross-bars B, and placed above the said cross-bars, and the beams and plows L M and the fender N are detached. In this case harrow-teeth R are attached to the cross-bars B at the opposite sides of their centers to cultivate the space between the bars C.

The draft can be applied to the machine by means of a clevis, S, attached to the center of the forward cross-bar B, or by means of draw-



rods T, connected at their forward ends by a ring or link, U, and connected at their rear ends with staples or studs V, attached to the forward cross-bar B at the opposite sides of and  
5 equally distant from the center of the said cross-bar.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

10 1. A combined harrow and cultivator, consisting of diverging side bars connected by cross-bars, harrow-teeth projecting below said side and cross bars, and longitudinal central parallel bars having teeth projecting below  
15 the said teeth on the side and cross bars to work the ground between the ridges, substantially as set forth.

2. In a combined harrow and cultivator, the combination, with the inclined side bars, A,  
20 and the cross-bars B, provided with harrow-teeth I, and the handles F H, and cross-bar G, of the parallel bars C, the fastening-bolts D, the bars or blocks E, connected with the said parallel bars and cross-bars, and the teeth J,  
25 substantially as herein shown and described, whereby the ridges and furrows of listed plants can be readily cultivated, as set forth.

3. In a combined harrow and cultivator, the combination, with the inclined side bars, A, the cross-bars B, the parallel bars C, the harrow-teeth I J, and the handles F H, of the beams and cultivator-teeth L M and the fender N, substantially as herein shown and described, whereby the shoulders of the ridges will be plowed down and the plants protected  
35 from the soil, as set forth.

4. The combined harrow and cultivator herein shown and described, comprising the diverging side bars having harrow-teeth, the longitudinal central bars having harrow-teeth,  
40 the cross-bars, cultivator-teeth on the rear cross-bar, the handles connected by cross-piece, the fender formed of a U-shaped plate pivoted to the rear ends of the central bars between the cultivator-teeth, and a vertical adjustable rod  
45 connected to the rear end of the fender and secured adjustably to the handle cross-piece, substantially as set forth.

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Witnesses:

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