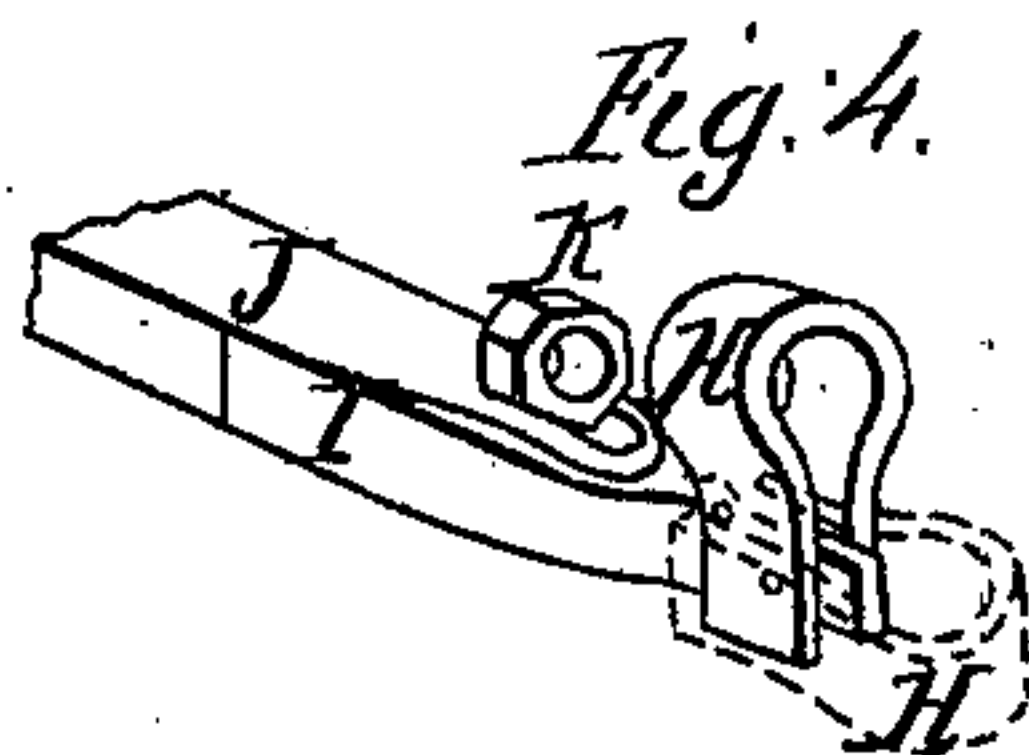
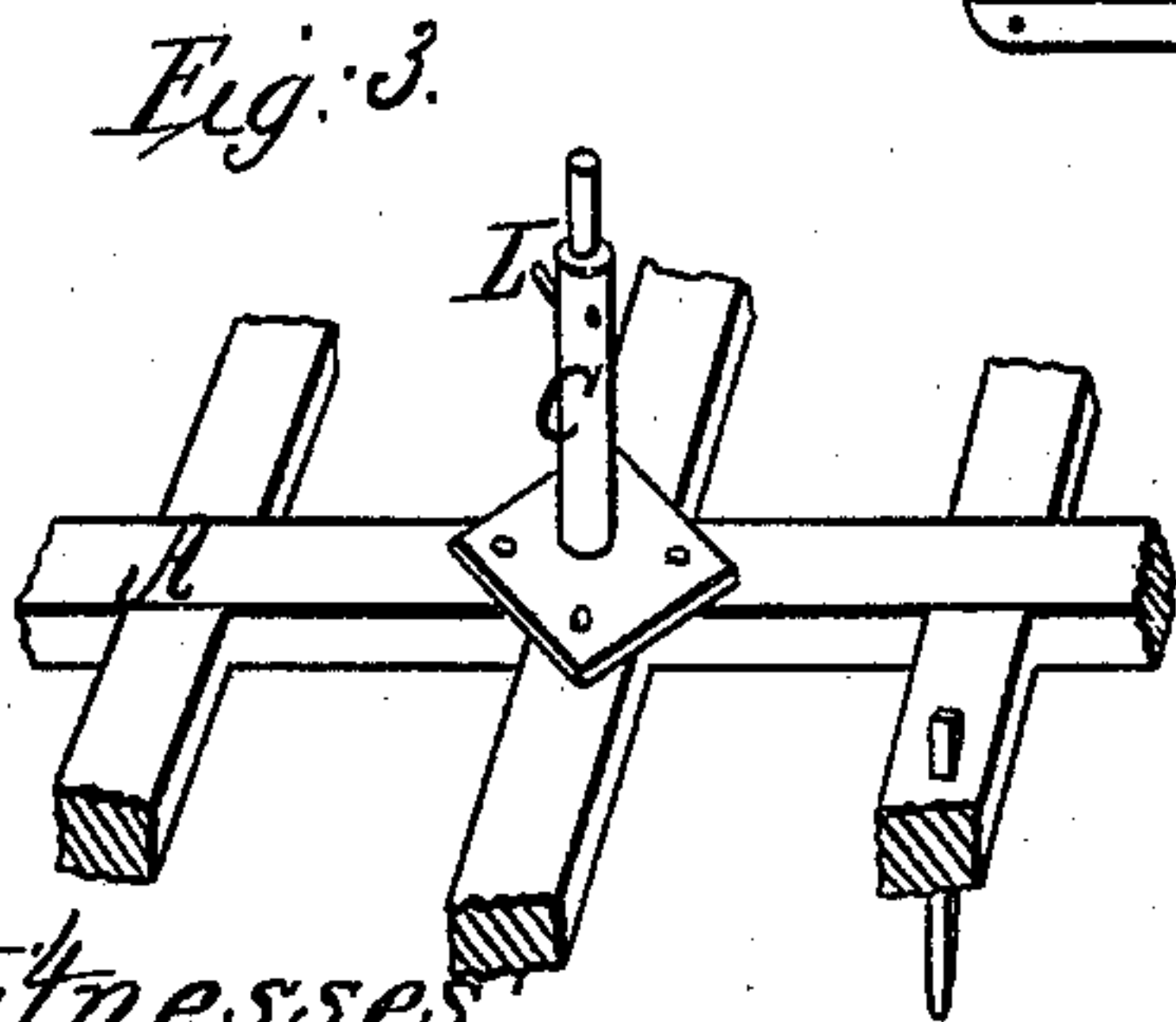
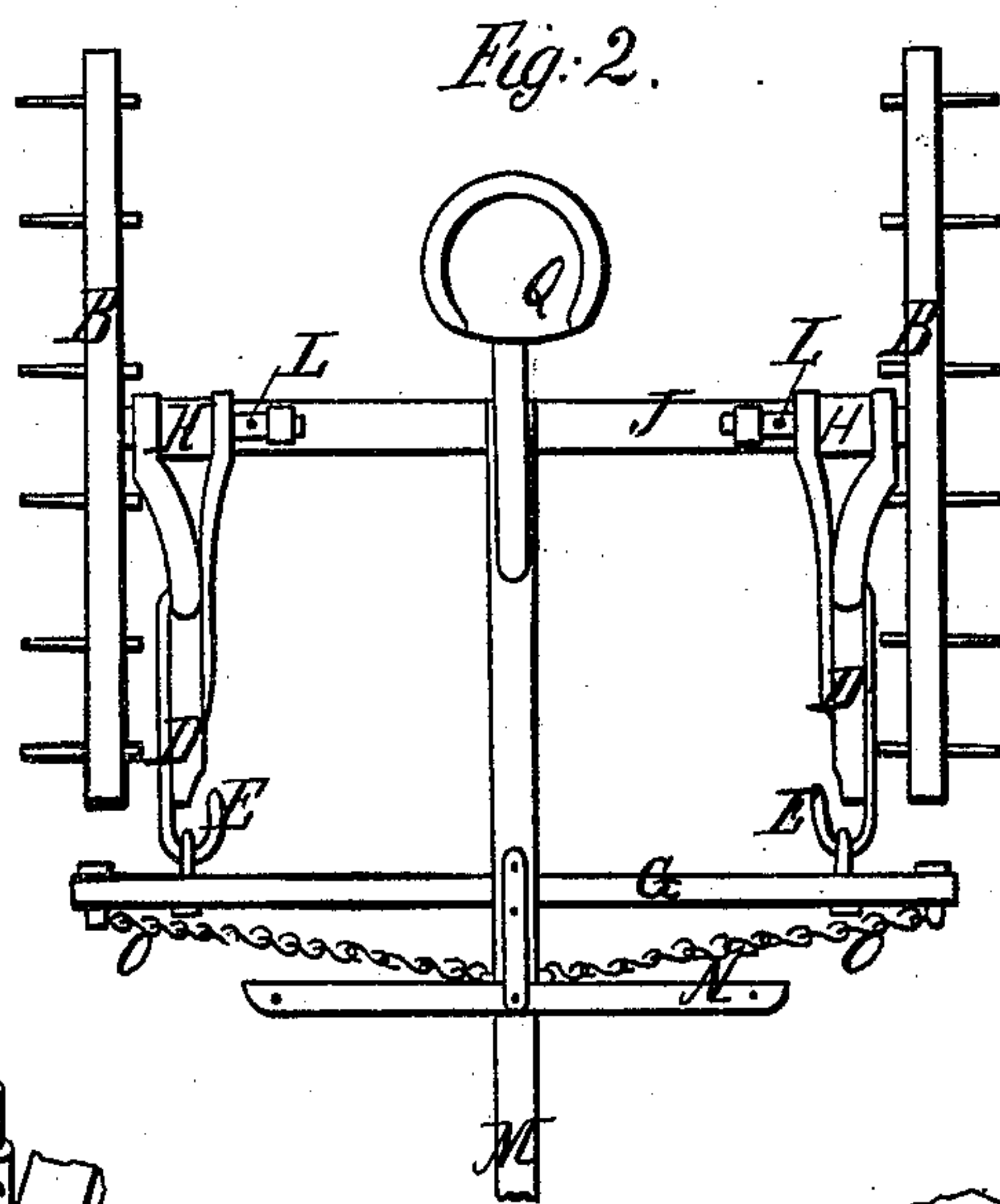
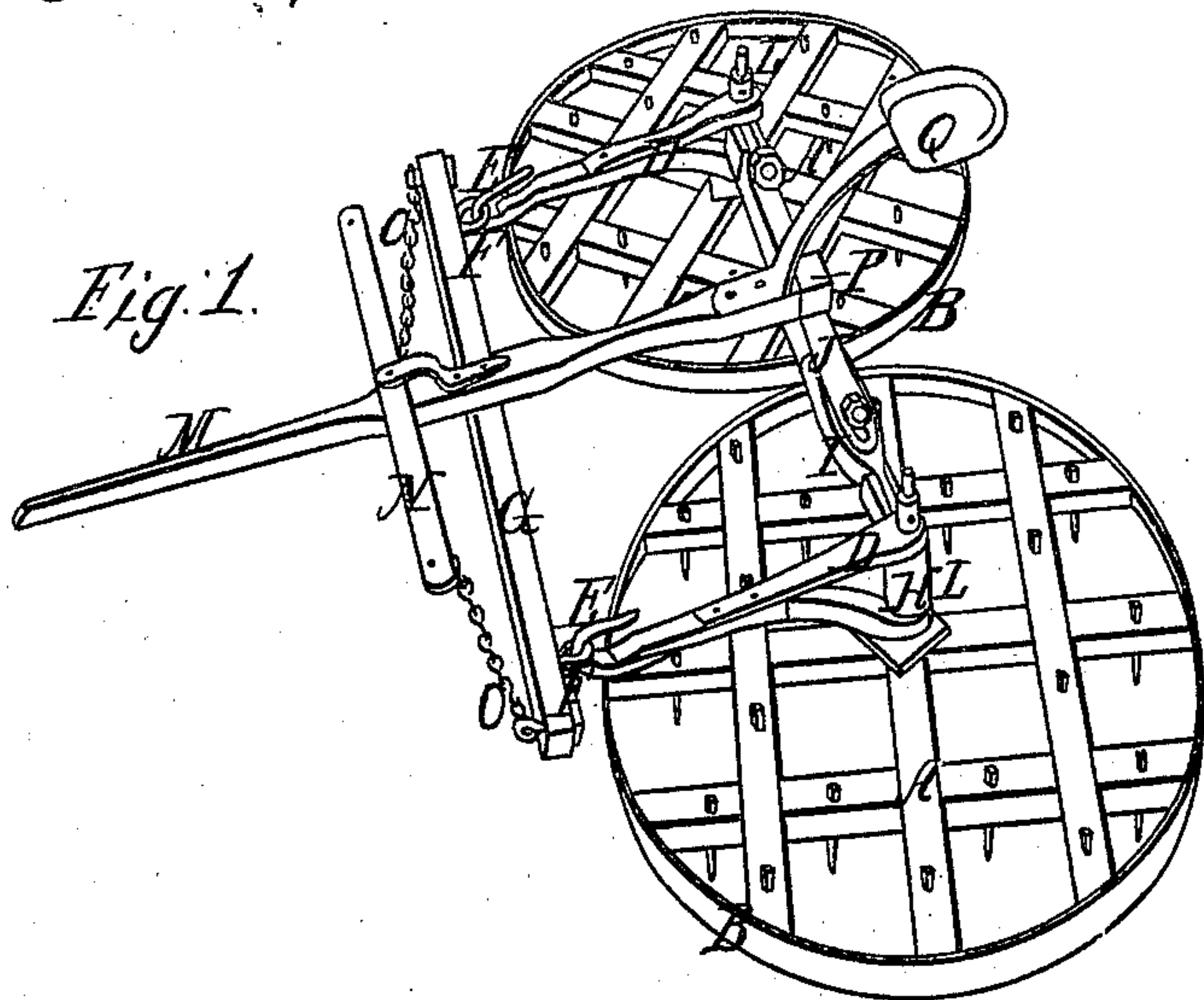


B. A. & M. H. Welds & H. W. Strong,

Harrow.

No. 86,478.

Patented Feb. 2. 1869.



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Letters Patent No. 86,478, dated February 2, 1869.

IMPROVEMENT IN ROTARY HARROWS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern :

Be it known that we, BENJAMIN A. WELDS, MARTIN H. WELDS, and HENRY W. STRONG, of Reading, in the county of Hillsdale, and State of Michigan, have invented a new and useful Improvement in Rotary Harrows; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is a perspective view of our harrow ready for operation;

Figure 2 is a perspective view of the same folded up, and ready to be moved as a cart;

Figure 3 shows the construction of the trunnions; and

Figure 4 is a perspective view of the folding joint and its connections.

Similar letters refer to similar parts in each figure.

The nature of our invention consists in the peculiar construction of the hinged joints, and other relative parts, by means of which the rotary harrows are made to assume either a horizontal or a vertical position, as hereinafter more fully described.

To accomplish this purpose, we construct the circular harrows A in the manner hereinbefore described, and provide them with an iron band, B, to serve as a tire, when revolving on their peripheries.

At the top and centre of each section we erect a vertical trunnion, C, fig. 3, provided with a hole at a suitable point, through which passes a pin, to secure its connections in position.

The upper end of the trunnion is turned down, to form a shoulder and journal, which enters and revolves in a box at the end of the cross-bar, when used as a cart.

D are draw-bars, the rear ends of which are forked, and vertically bored, to receive the trunnions, and whose front ends terminate in hooks, E, which engage with the swivel-eyes F on the spreader G.

Between the forked ends of the draw-bar D is a strap, H, embracing the trunnion C, which, with the strap-but I, on the end of the cross-bar J, forms a knuckle-joint, allowing the harrow to be tilted to a vertical position.

K is a box, placed at each end of the cross-bar, for the purpose of receiving the smaller end of the trunnion, when the harrow is tilted up, and in which it revolves.

L is a pin, which passes through the trunnion, and secures the draw-bar D and strap H in their proper positions.

M is the pole, provided with an evenner, N, to which the team is secured.

O are draught-chains, connecting the tongue or pole with the ends of the spreader G, by means of which the implement is drawn forward.

P is a square socket on the cross-bar J, in which the squared rear end of the pole is inserted, for the purpose of steadying it.

Q is a seat for the driver, secured to the tongue over the cross-bar.

The operation of the implement is so clearly shown in the drawings that a further description of the same is deemed unnecessary.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The straps H, strap-buts I, and forked draw-bars D, provided with hooks E, in connection with the trunnions C and pins L, when arranged and operating substantially as described, and for the purposes specified.

2. The cross-bar J, provided with the boxes K and socket P, substantially as and for the purposes set forth.

3. In combination with the forked draw-bars D, hooks E, straps H, and trunnions C, the spreader G, when provided with swivel-eyes F and draught-chains O, all arranged substantially as and for the purpose specified.

4. The combination and arrangement of the above-named parts with the harrows A, provided with tires or bands B, pole M, evenner N, and seat Q, when constructed, arranged, and operating substantially as herein described, and for the purposes set forth.

BENJAMIN A. WELDS.
MARTIN H. WELDS.
HENRY W. STRONG.

Witnesses:

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