

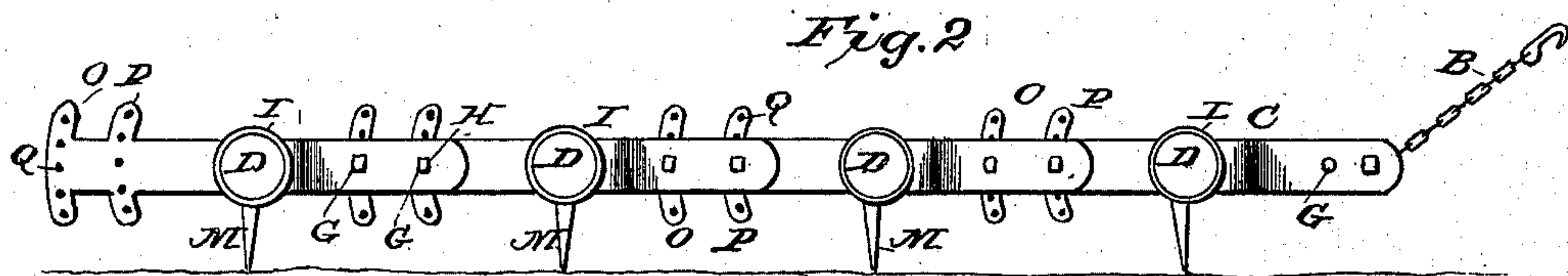
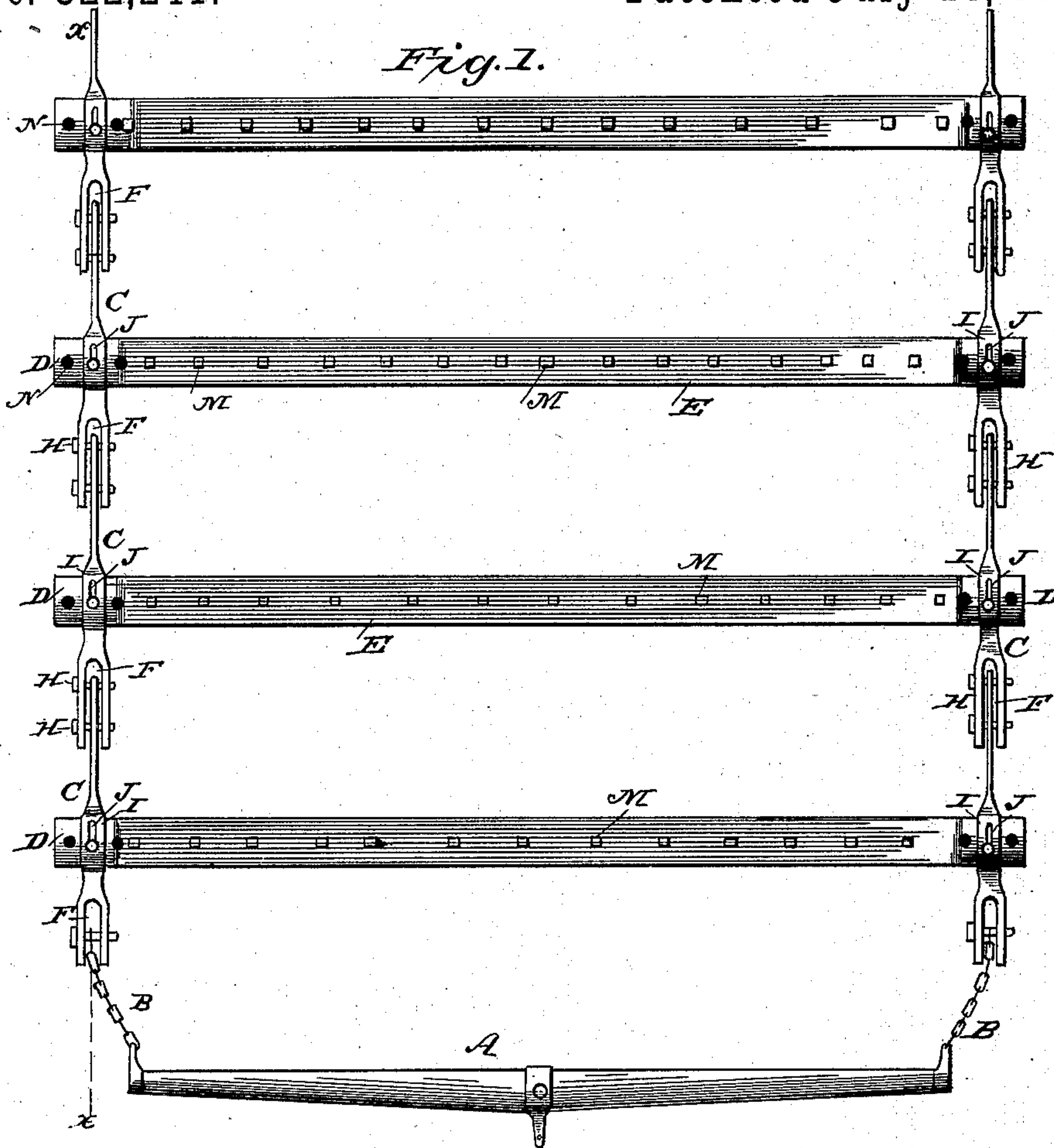
(No Model.)

2 Sheets—Sheet 1.

E. R. BERNHAMER.  
HARROW.

No. 322,241.

Patented July 14, 1885.



WITNESSES:

*Wm. S. Dieterich*  
*Wm. S. Dieterich*

*Edward R. Bernhamer*  
INVENTOR.

*By Louis Baggett & Co.*  
ATTORNEYS.

(No Model.)

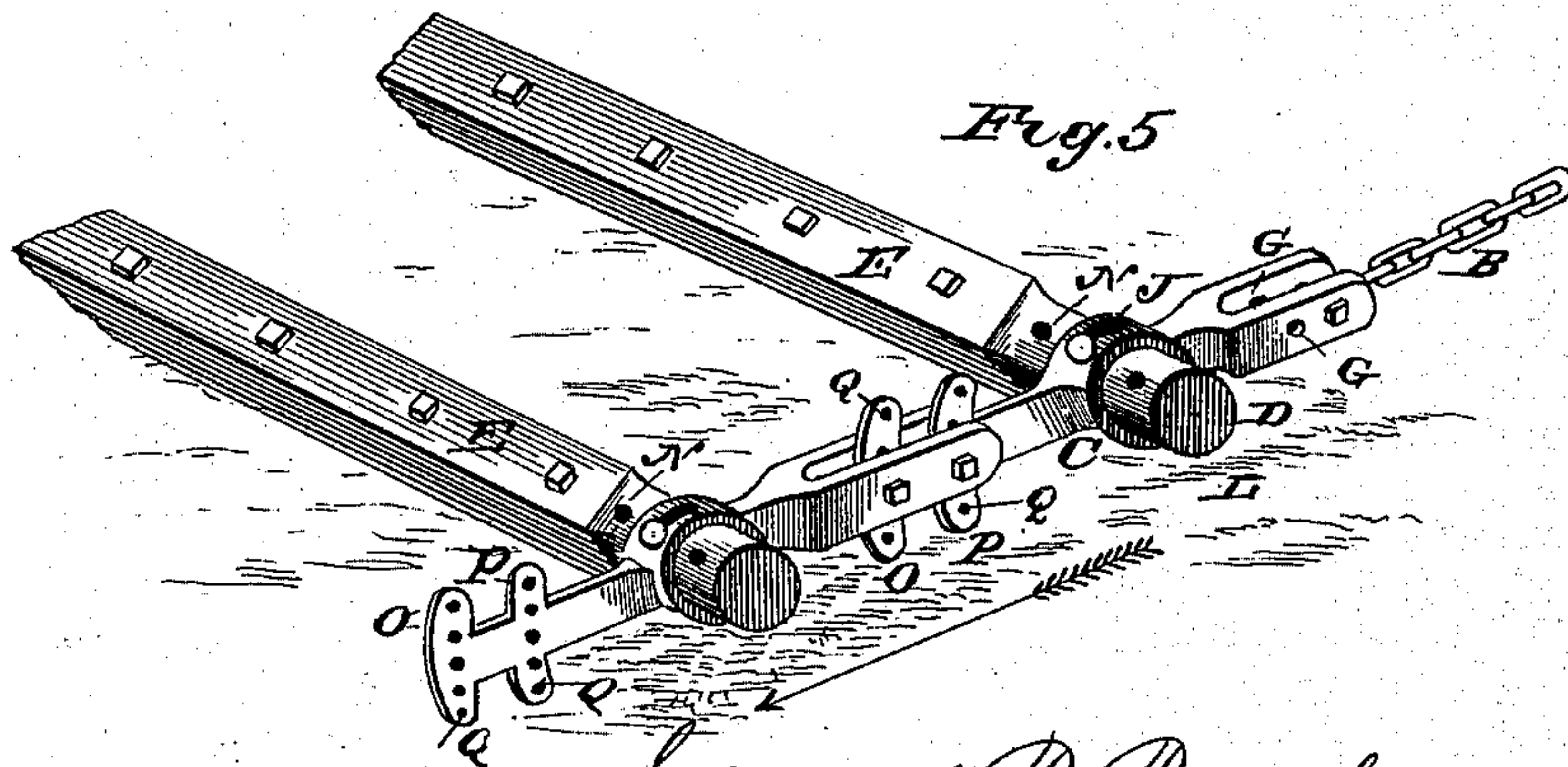
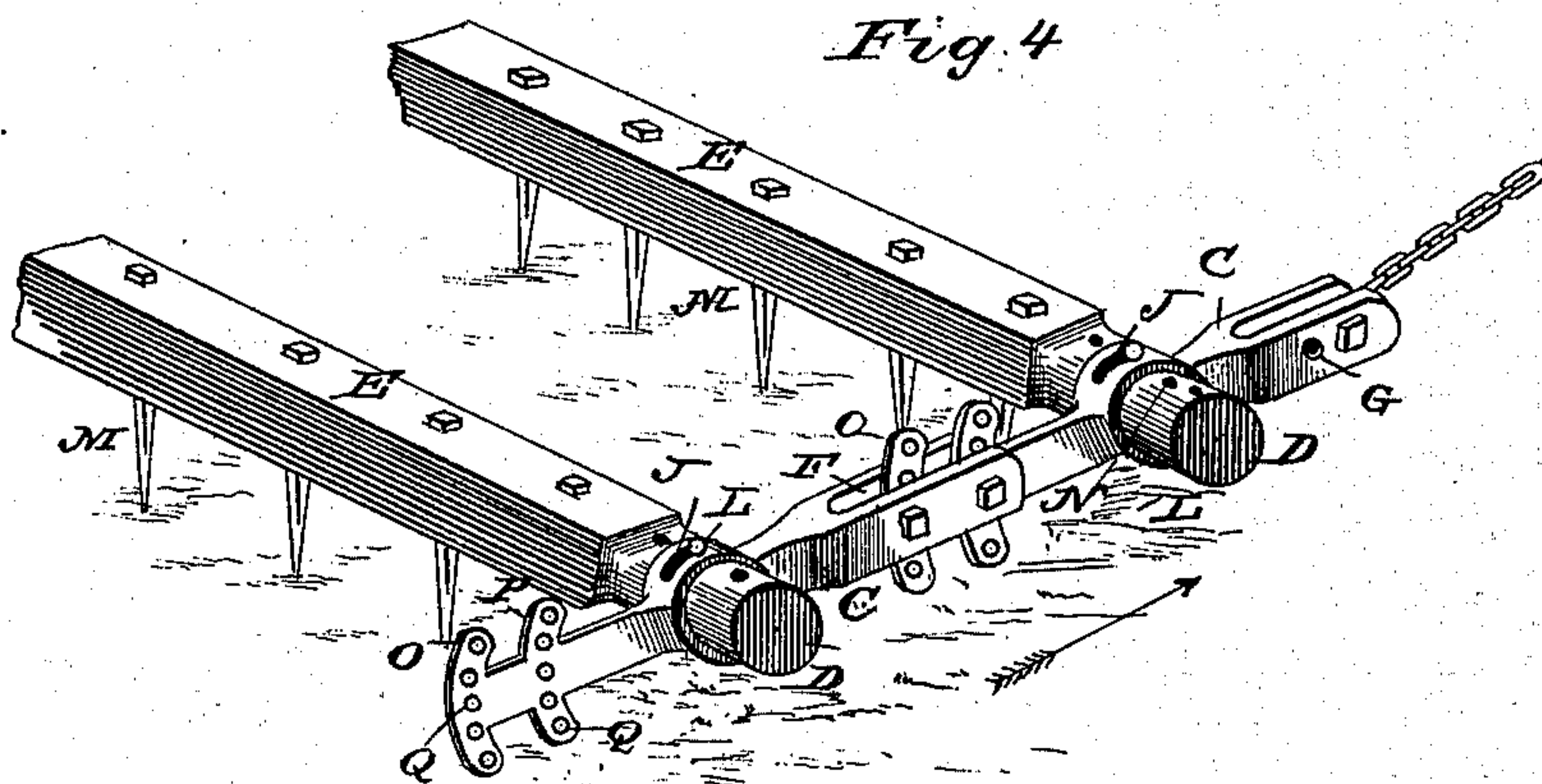
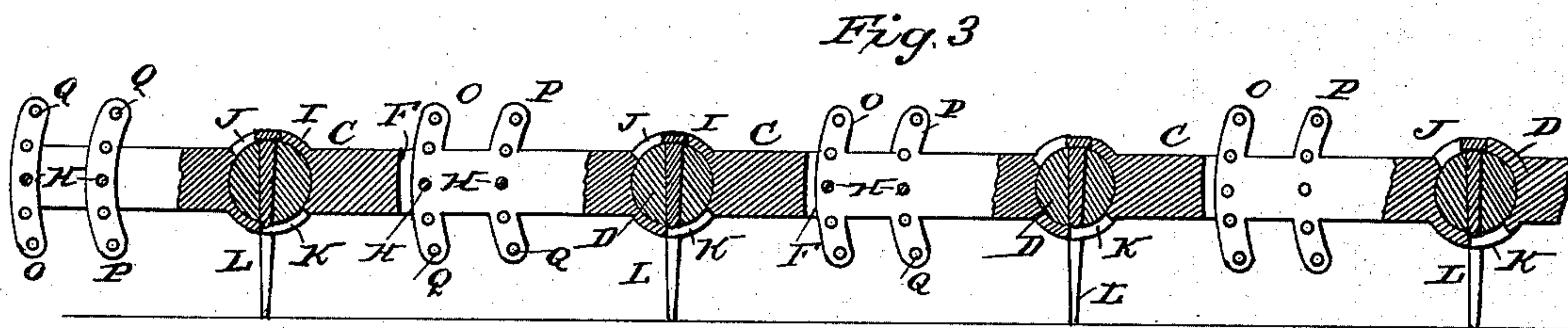
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WITNESSES:

*Fred. S. Dietrich*  
*Witness*

*Edward R. Bernhamer*  
INVENTOR.

*By Louis Ragger & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

EDWARD R. BERNHAMER, OF INDIANAPOLIS, INDIANA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 322,241, dated July 14, 1885.

Application filed February 16, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD R. BERNHAMER, of Indianapolis, in the county of Marion and State of Indiana, have invented certain  
5 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  
10 same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a top view of my improved harrow. Fig. 2 is a side view of the same. Fig.  
15 3 is a longitudinal vertical section on line *x x*, Fig. 1; and Figs. 4 and 5 are perspective views of a portion of the harrow, showing it drawn in different directions.

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

My invention has relation to that class of harrows which have their teeth adjustable at different angles, and it contemplates certain improvements upon the harrow for which  
25 Letters Patent No. 273,246 were granted to me on the 6th day of March, 1883; and it consists to that end in the improved construction and combination of parts of such a harrow, as hereinafter more fully described and claimed.

30 In the accompanying drawings, the letter A indicates the draft-bar, to the forward side of which the draft-animals are hitched. B B indicate two chains attached to the ends of the draft-bar and to the forward ends of the forward coupling-plates, C, in which the rounded ends D of the harrow-beams E are pivoted.

The forward ends of the coupling-plates are bifurcated, forming a longitudinal vertical  
40 slot, F, which is provided with two pairs of registering transverse perforations, G G—one pair behind the other—for the passage of bolts H H, and the middle portion of the coupling-plates forms a transverse bearing, I, for the  
45 end of the harrow-beam, which bearing has a segmental slot, J, in its upper side, extending from the middle of the bearing rearward, and a similar slot, K, in its under side, extending from the middle forward, into which  
50 slots the ends of a pin or bolt, L, passing through the rounded end of the beam, project and slide, the said ends limiting the rocking play of the beam, and allowing the teeth M of the beam to be vertical when the harrow is

drawn forward, while they will be tilted so as to point forward when the harrow is drawn backward.

The bolt L passes through one of a number of perforations, N, in the end of the beam, and by changing the bolts at the ends of the  
60 several beams from one perforation to another the teeth may be placed in different relative positions to each other.

The rear end of each coupling-plate is provided with two segmental clevises, O and P,  
65 having each a series of perforations, Q, into which perforations the bolts H fit, and by adjusting the said bolts in the perforations the angles of the teeth may be adjusted at will and the beams connected rigidly; or by only  
70 using one of each set of bolts the beams will be coupled flexibly, in the same manner as in my former patent.

It will thus be seen that the teeth may be slanted in a forward and rearward direction,  
75 the harrow may be rigid or flexible, and the teeth placed so as to be immediately one behind the other, or the teeth of the several bars one to the side of the other, thus making the harrow convertible to a pulverizer, as  
80 well as adapting it to be used in any kind of soil.

I am aware that harrows have been made with the ends of the harrow-beams playing in transverse bearings formed in couplings unit-  
85 ing the ends of the beams, and I am likewise aware that clevises are not new, and I do not wish to make broad claims for such; but

I claim—

In a harrow, the combination of the harrow-beams and the coupling-plates formed with longitudinal vertical slots in their forward ends having two pairs of transverse perforations, formed with the bearings at their  
90 middles, and formed with two segmental perforated clevis-plates—one behind the other—at their rear ends, and the bolts fitting in the perforations of the bifurcated ends and in the perforations of the clevises, as and for the purpose shown and set forth.

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

EDWARD R. BERNHAMER.

Witnesses:

ARTHUR T. TRULL,  
HENRY LOYD.