

(No Model.)

J. MACPHAIL.
HARROW.

No. 445,587.

Patented Feb. 3, 1891.

Fig. 1.

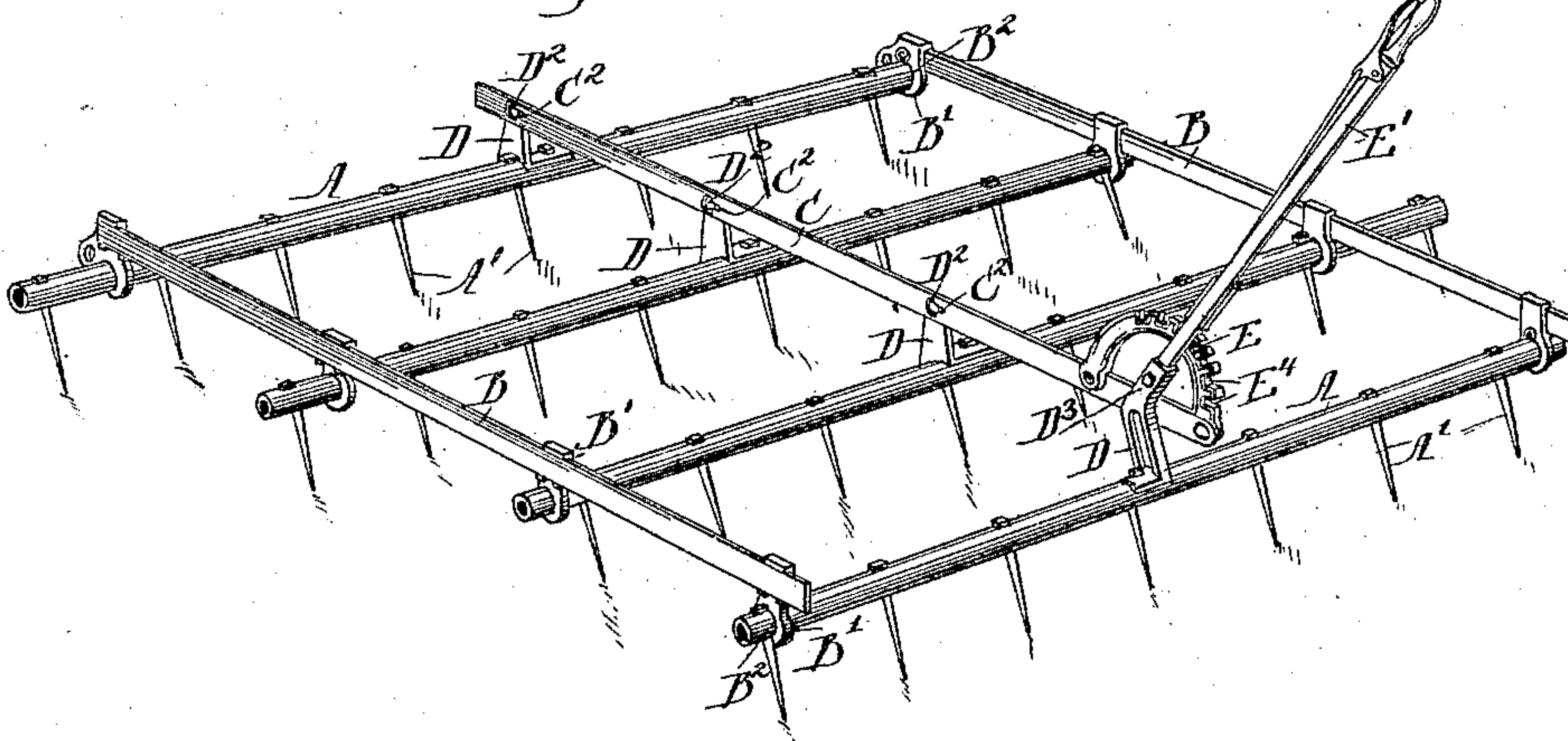


Fig. 2.

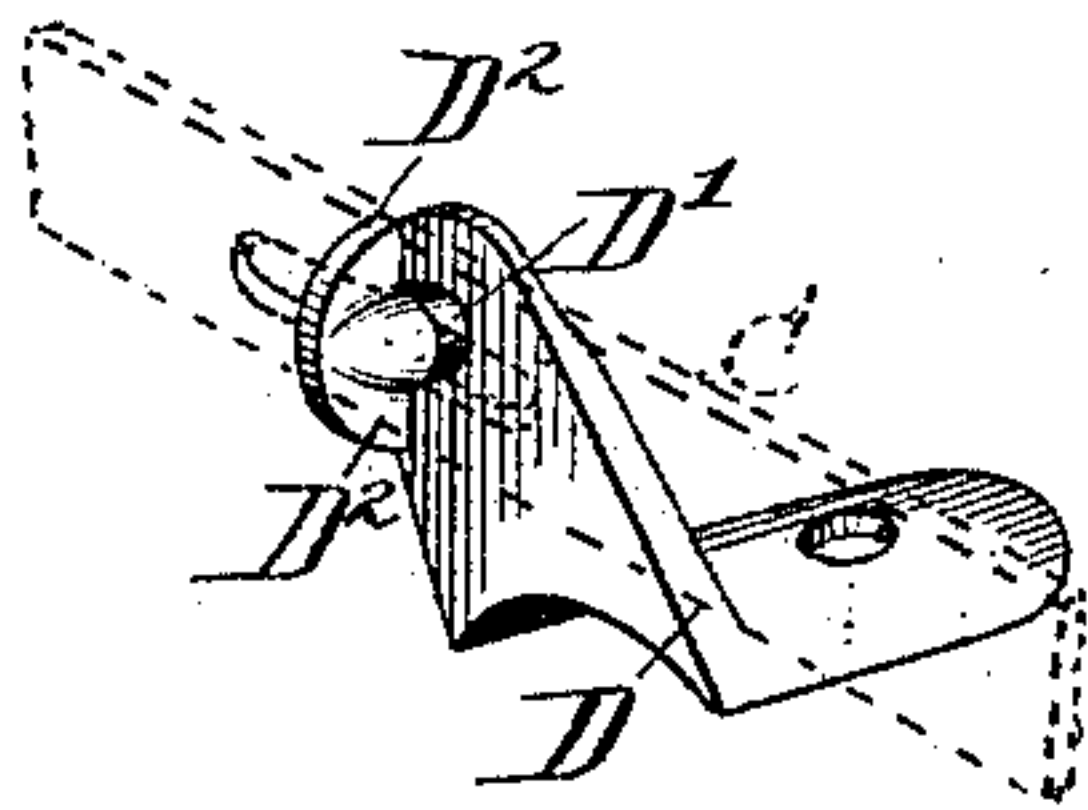


Fig. 3.

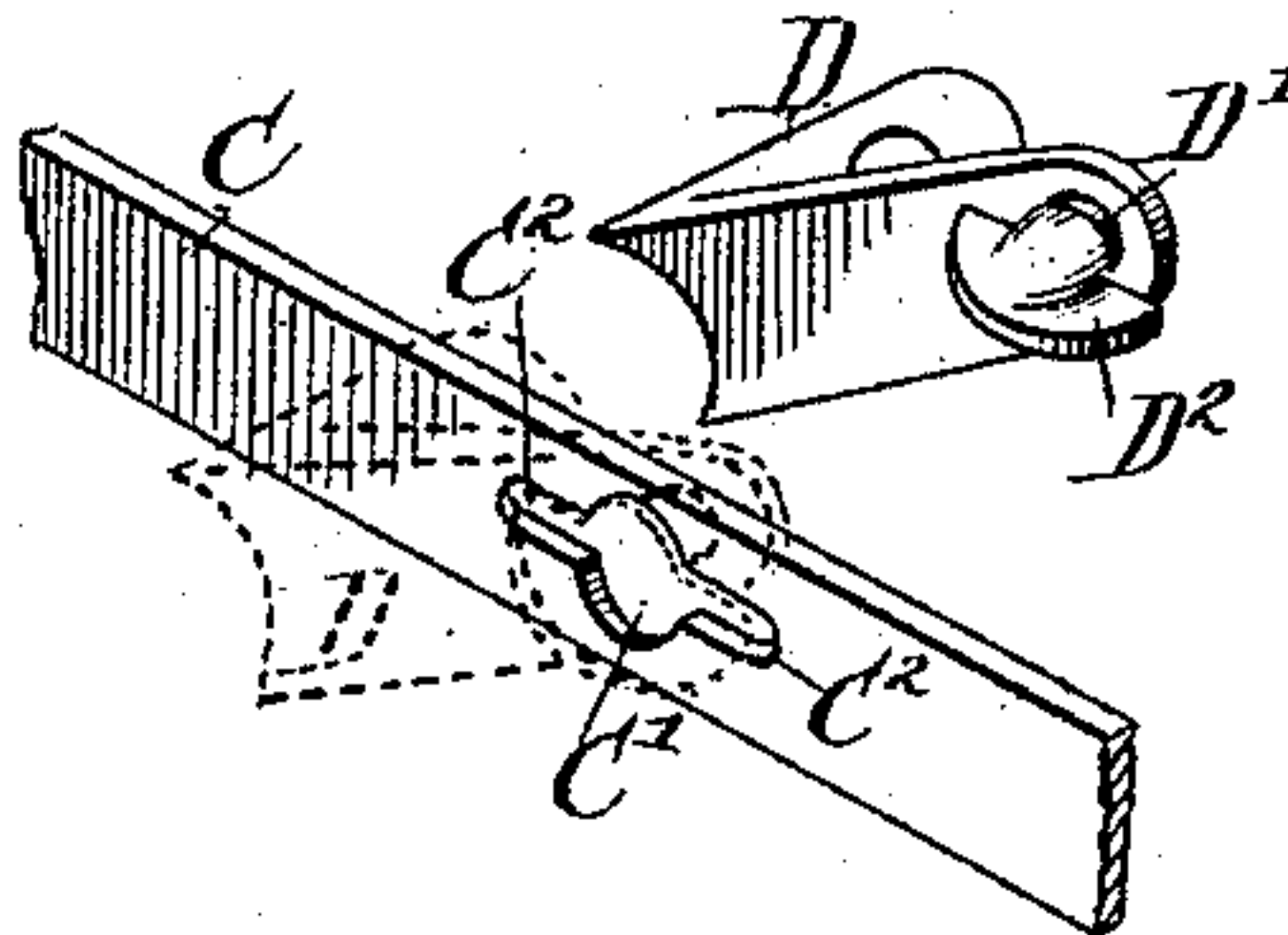
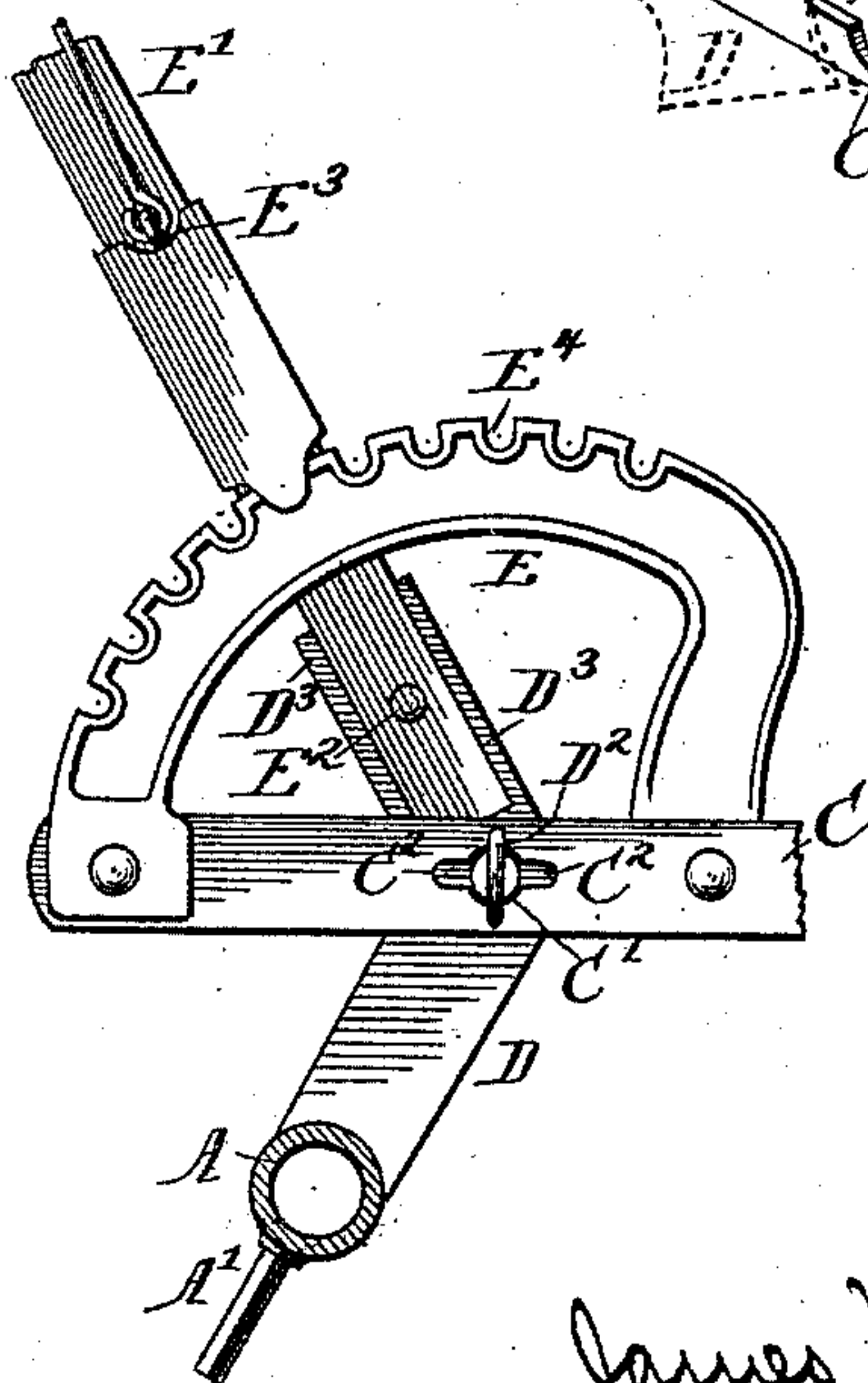


Fig. 4.



Witnesses:
Fred Balach
E. F. Dowling.

Inventor:
James Macphail,
By H. H. Morrison,
Attorney.

UNITED STATES PATENT OFFICE.

JAMES MACPHAIL, OF ROCKFORD, ILLINOIS.

HARROW.

SPECIFICATION forming part of Letters Patent No. 445,587, dated February 3, 1891.

Application filed July 25, 1890. Serial No. 359,942. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACPHAIL, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

The object of my invention is to provide improved knockdown connections between the tilting beam and tilting-beam posts of lever-harrows; and it consists of certain new and useful features of construction and combinations of parts hereinafter described, and specifically pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is an isometric view of a section of a lever-harrow provided with my improvement. Figs. 2 and 3 are like views in detail of devices for connecting the tilting beam with the tilting-beam posts. Fig. 4 is a back side view of the segment-rack seen in Fig. 1, showing the connection of the combined tilting-beam post and tilting lever with the tilting beam.

Like letters of reference indicate corresponding parts throughout the several views.

A are harrow-beams, preferably cylindrical and tubular in form, provided with teeth A', inserted through holes therein.

B are cross-beams. B' are hangers secured to and depending therefrom.

B² are circular openings in the hangers B', through which the beams A are inserted and wherein they may be oscillated.

C is a tilting beam, having circular openings C' therein provided with lateral slots C².

D are tilting-beam posts, having horizontal stud-journals D' projecting therefrom and adapted to be inserted through the circular openings C' in the tilting beam, and provided at their free ends with laterally-projecting lugs D² for retaining the stud-journals therein.

E is a segment-rack secured to the rear end of the tilting beam C.

E' is a tilting lever secured to the produced end D³ of the rear tilting-beam post by means of the bolt E².

E³ is a detent for connecting the tilting lever E' with the segment-rack E by engaging the peripheral slots E⁴ therein.

To disengage the tilting beam C from the posts D, take out the bolt E² and remove the lever E', tilt the harrow-section backward, the points of its teeth being to the front, until the tilting beam rests on the beams A. The lugs D² will then be opposite the slots C², and the stud-journals D' can be withdrawn from the openings C' therein. Obviously a reversal of the operations just detailed would restore the tilting beam to the position shown in Fig. 1. The tilting beam cannot be tilted forward far enough to allow the stud-journals to be withdrawn therefrom.

I claim—

1. In combination in a lever-harrow, the tilting beam having circular openings therein provided with lateral slots, and the tilting-beam posts having horizontal stud-journals projecting therefrom and adapted to be inserted through the circular openings in the tilting beam, and provided at their free ends with laterally-projecting lugs for retaining the stud-journals therein, substantially as and for the purpose specified.

2. In combination in a lever-harrow, the harrow-beams, the cross-beams, the hangers secured to and depending from the cross-beams and having circular openings therein, through which the harrow-beams are inserted and wherein they may be oscillated, the tilting beam having circular openings therein provided with lateral slots, and the tilting-beam posts having horizontal stud-journals projecting therefrom and adapted to be inserted through the circular openings in the tilting beam, and provided at their free ends with laterally-projecting lugs for retaining the stud-journals therein, substantially as and for the purpose specified.

JAMES MACPHAIL.

Witnesses:

L. L. MORRISON,
E. F. DOWLING.