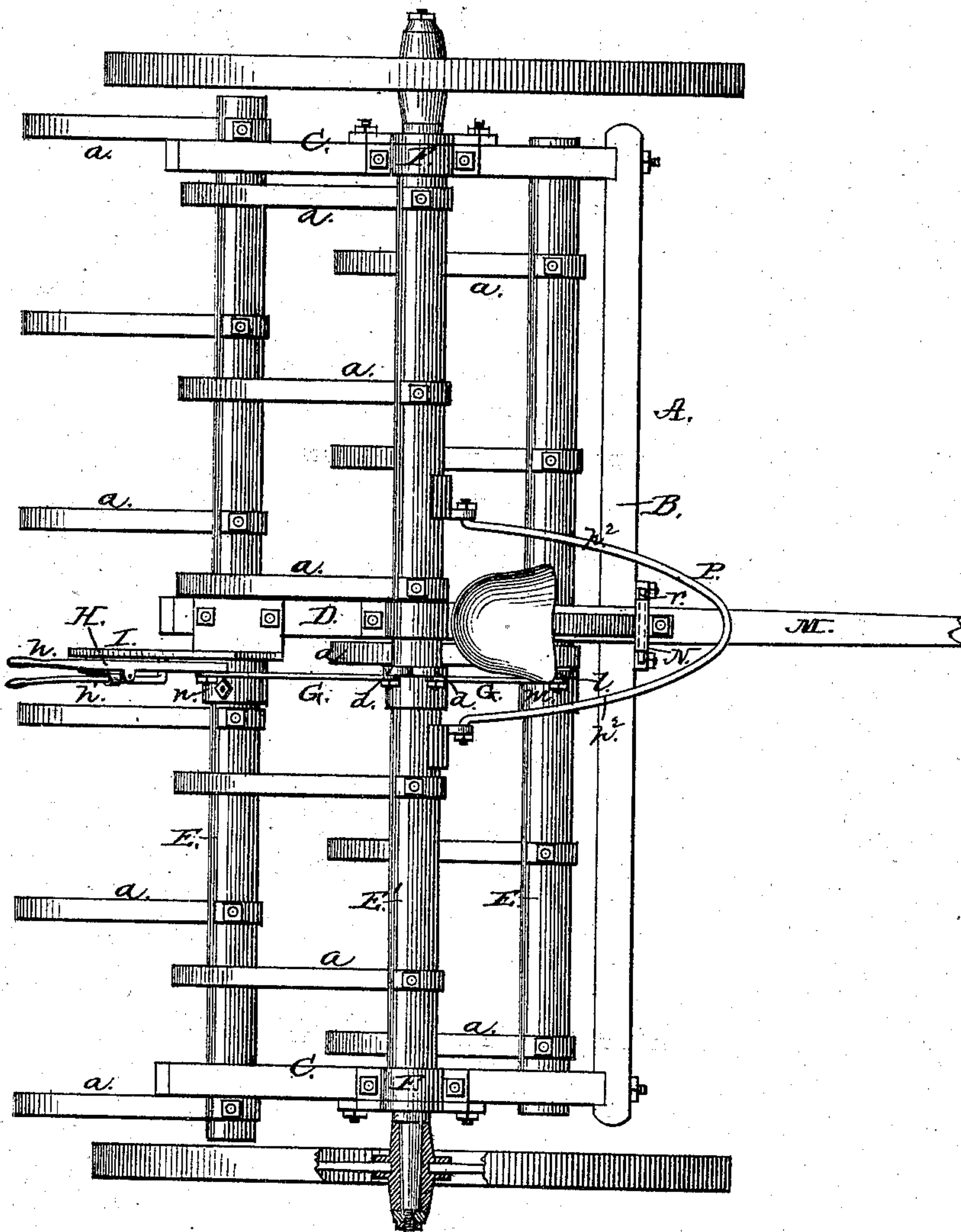


(Model.)

2 Sheets—Sheet 1.

H. SPRINGER & G. L. IVES.
Spring Tooth Harrow or Cultivator.
No. 241,744. Patented May 17, 1881.

Fig. 1.



WITNESSES

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(Model.)
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Spring Tooth Harrow or Cultivator.
No. 241,744.
2 Sheets—Sheet 2.
Patented May 17, 1881.

Fig. 2.

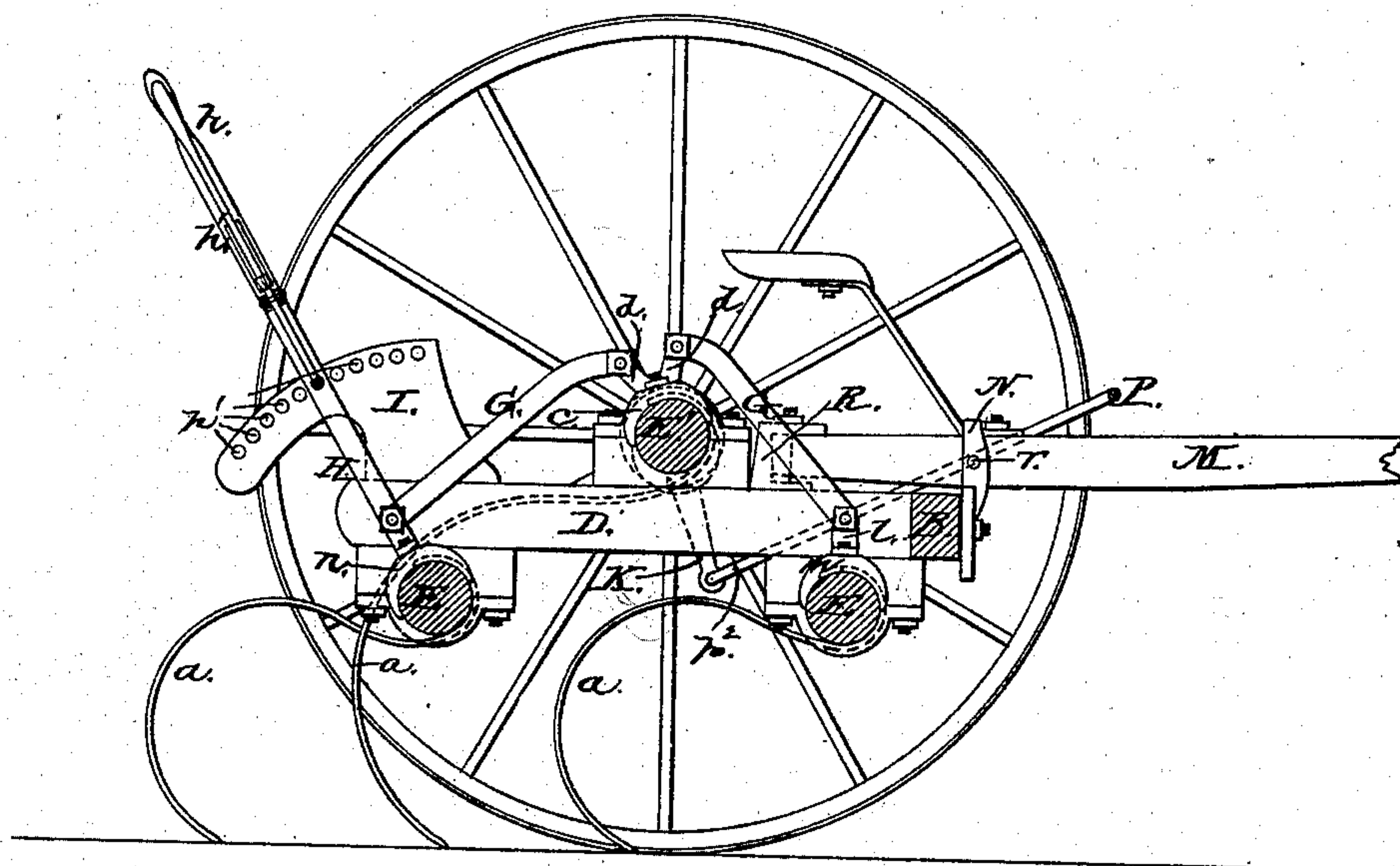


Fig. 4.

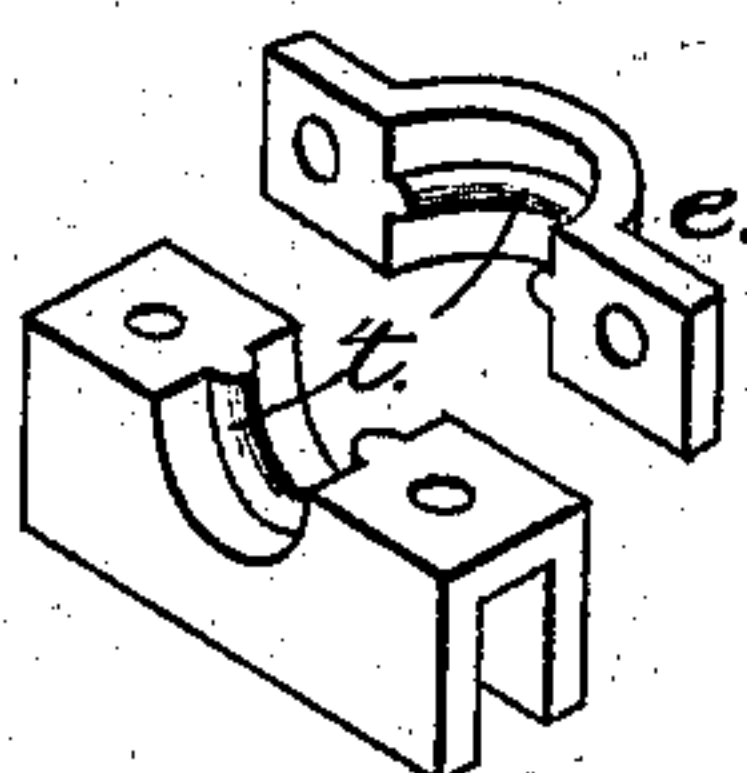


Fig. 3.

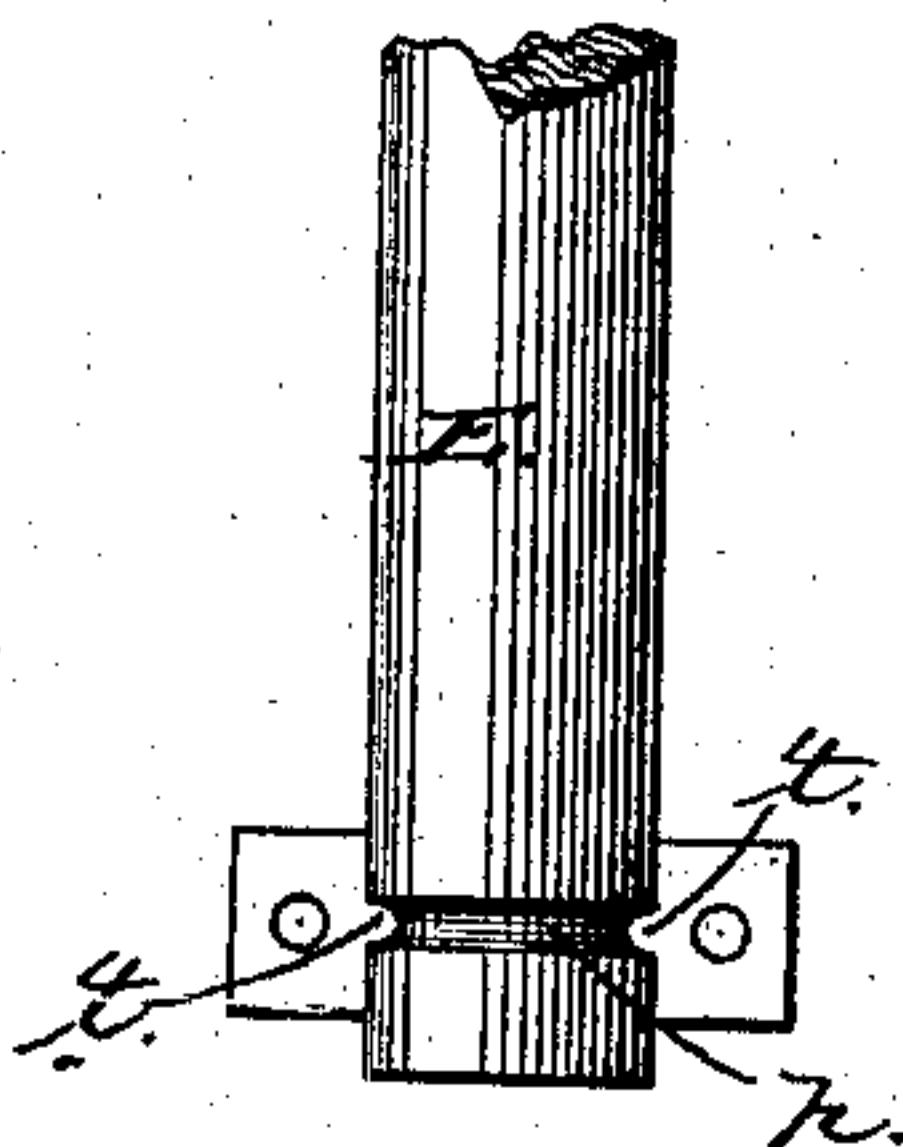
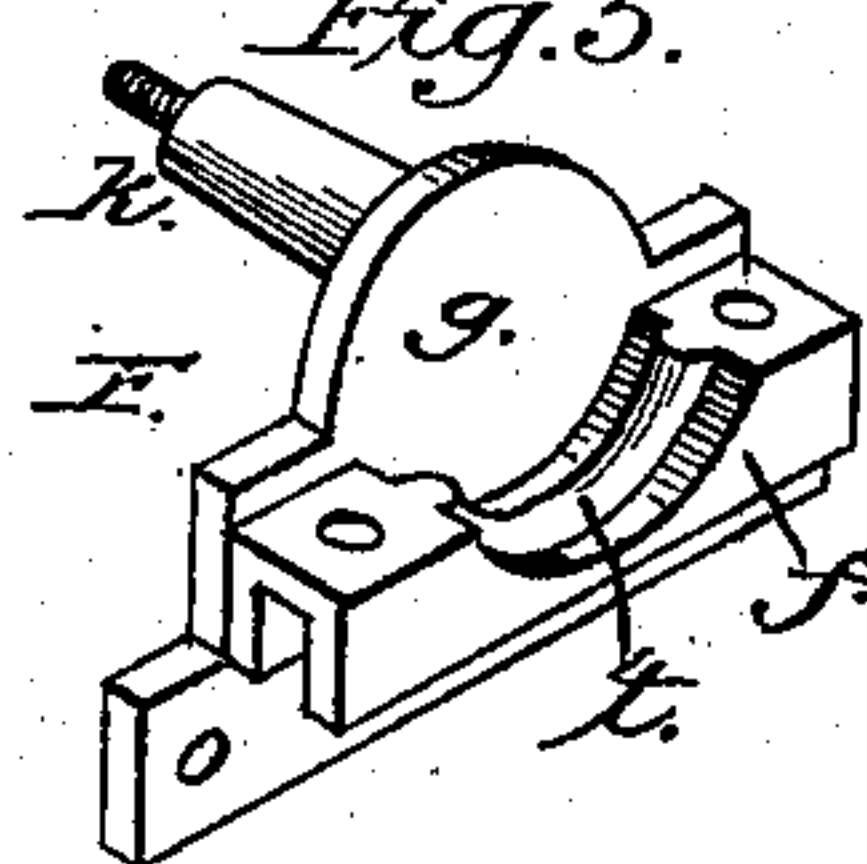


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY SPRINGER AND GEORGE L. IVES, OF VICKSBURG, MICHIGAN.

SPRING-TOOTH HARROW OR CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 241,744, dated May 17, 1881.

Application filed October 30, 1880. (Model.)

To all whom it may concern:

Be it known that we, HENRY SPRINGER and GEORGE L. IVES, of Vicksburg, in the county of Kalamazoo and State of Michigan, have invented a new and valuable Improvement in Spring-Tooth Harrows or Cultivators; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a plan view. Fig. 2 is a cross-section. Figs. 3, 4, and 5 are details.

This invention relates to harrows or cultivators; and it consists in the construction hereinafter described.

In the annexed drawings, A represents the frame, consisting of cross-beam B, end beams, C C, and middle beam, D, the beams all being securely fastened.

E E E' are rock-shafts running across the frame, the middle one, E', above and the other two, E E, below, one in front of, and the other behind, the shaft E'. These shafts are hung in split boxes to said frame, the boxes F, at the ends of shaft E', being formed of one piece, e, at top and a lower piece, f, and side flange, g, said lower piece, f, side flange, g, and the axle-arm k all being in one piece. To these rock-shafts E E E' are securely attached the spring-teeth a, the shaft E' being far enough above front shaft, E, to give the teeth of the latter plenty of room, and the teeth of shaft E' extended over and down behind rear shaft, E, between the teeth of the latter, the arrangement of the teeth on the shafts being such that the series are out of line. The portion of the shafts turning in the split boxes have grooves p, fitting-ribs t in said boxes, so as to prevent end play of said shafts.

Attached to the top of shaft E' is a clip, c,

having forked lugs d d, connected by loosely-pivoted arms G G to a lug, l, upon a clip, m, secured to front shaft, E, and to a lever, H, made fast to a clip, n, upon rear shaft, E, said lever H extending upward and ending in a handle, h, and having a spring-catch, h', engaging a series of holes, p', arranged upon a sector-plate, I, fastened to the top of the rear end of middle beam, D, of frame A.

Attached to the under side of rock-shaft E', upon each side of middle beam, D, is a downwardly-projecting arm, K, to which arms are connected the arms p² p² of a bail, P, which extends up in front and to which the draft is applied.

M is the tongue, fastened by a bolt, r, in loop N, made adjustable by slots and set-screws, the rear end of said tongue having play in a socket, R, secured to the top of beam D.

In operation the pitch of the teeth is regulated by means of lever H, which is locked at any desired point by means of catch h' and perforated sector-plate I. The draft at end of bail P causes the teeth a to be set firmly and be held stoutly in the ground.

What we claim is—

1. In a cultivator, the combination of three rock-shafts carrying the spring-teeth, the middle one arranged above the plane of the other two, and having its teeth extending over and back of the rear shaft.

2. The box F, having the top piece, e, and lower piece, f, side flange, g, and axle-arm K, the latter three parts made in one piece.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

HENRY SPRINGER.
GEORGE L. IVES.

Witnesses:

CHARLES CHASE,
C. W. BAILEY.