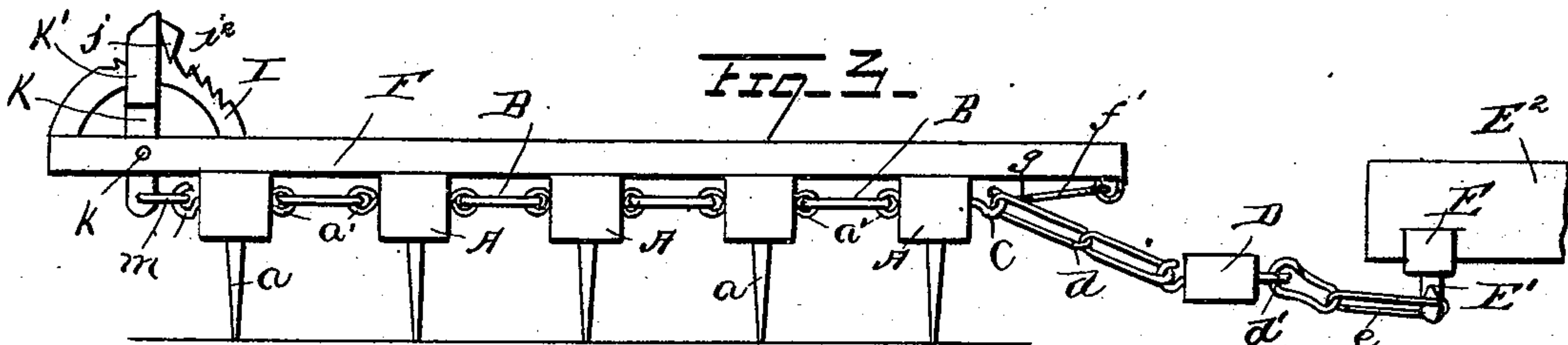
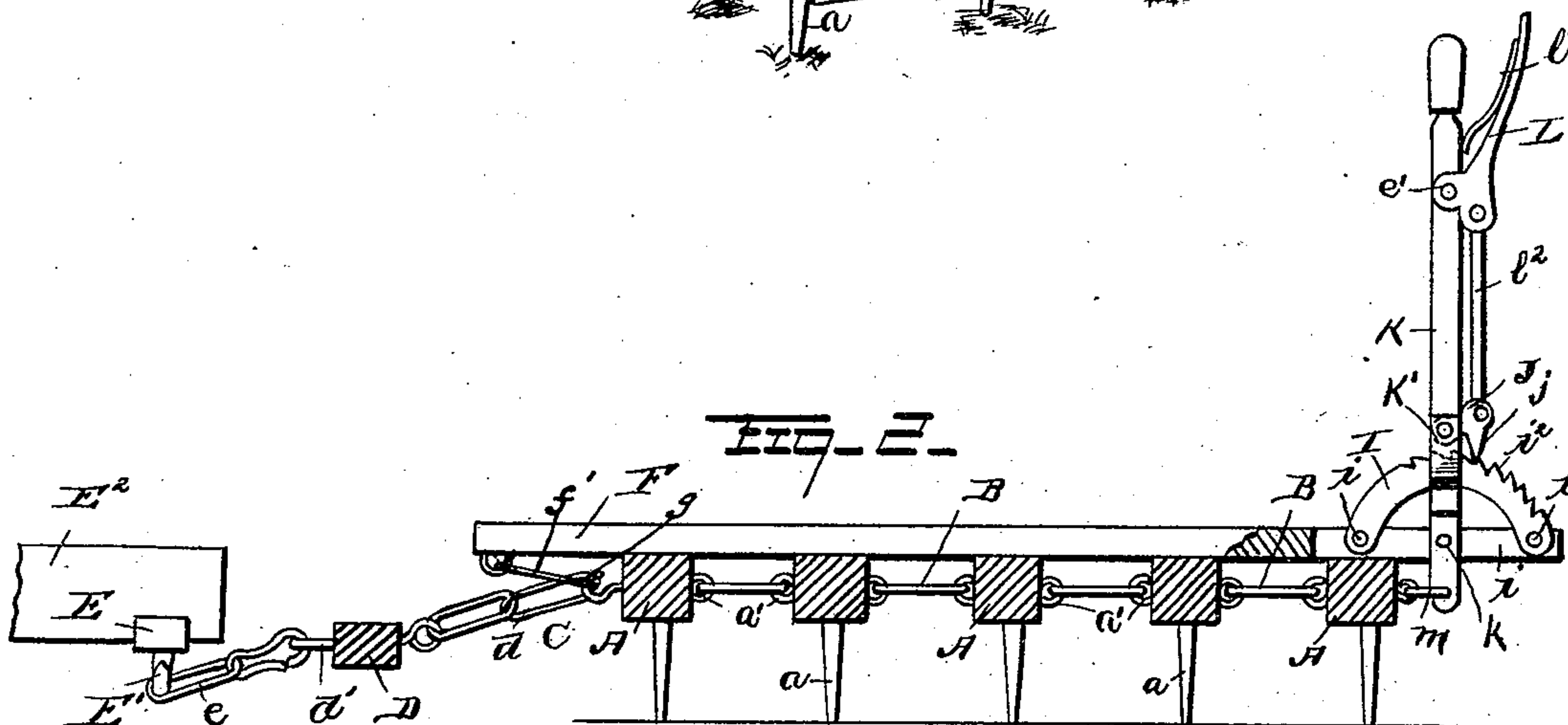
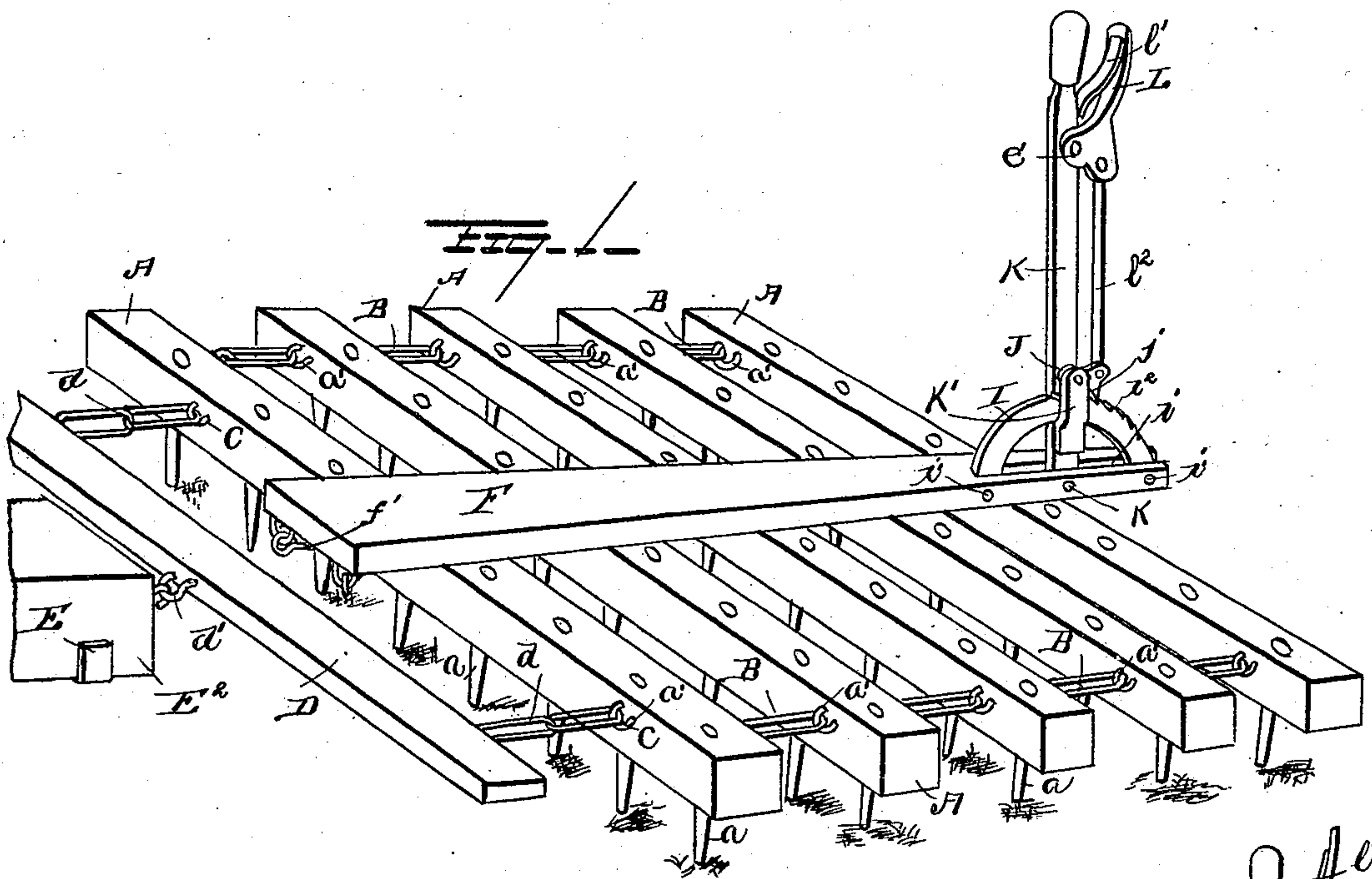


(No Model.)

G. J. MANSFIELD.
HARROW.

No. 355,458.

Patented Jan. 4, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE J. MANSFIELD, OF VIOLA, TENNESSEE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 355,458, dated January 4, 1887.

Application filed May 22, 1886. Serial No. 203,018. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. MANSFIELD, a citizen of the United States, residing at Viola, in the county of Warren and State of Tennessee, have invented a new and useful Improvement in Harrows, of which the following is a specification.

My invention relates to improvements in harrows; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and specifically pointed out in the claims.

The object of my invention is to provide means whereby the harrow will easily and readily accommodate itself to any unevenness in the ground, and thus cause the teeth thereof to more effectually and thoroughly act upon the soil; to provide means whereby the draft-animal can be easily and quickly connected to either end of the harrow to draw it in either direction without turning or shifting the harrow; to provide means for equalizing or relieving the strain on the front beam of the harrow; and, finally, to provide a device for regulating the depth at which the teeth of the harrow-beams enter the ground.

In the accompanying drawings, Figure 1 is a perspective view of a harrow embodying my invention. Fig. 2 is a vertical central longitudinal sectional view thereof. Fig. 3 is a side elevation of the same, showing the draft appliances and the equalizing-bar reversed.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the beams of my improved harrow, which are each provided with the usual teeth or spikes, *a*, and near their ends with eyes or hooks *a'*. These beams are connected together, so that they are free to move vertically, longitudinally, or laterally of each other, by means of links or loops B, which separate or hold the beams equidistant apart, and the links are loosely connected to the eyes or hooks, so that the beams are allowed to flex or move freely independently of each other.

Any desired number of beams may be employed, and I prefer to employ five beams, although the number can be varied, and the front and rear beams are provided with a series of eyes or hooks, C. To the series of one beam a draft-bar, D, is connected by in-

termediate links, *d*, which loosely and flexibly connect the parts together. The draft-bar is provided at its middle with an eye or hook, *d'*, to which is loosely connected one end of a link, *e*, which is also connected with a hook, *E'*, that is formed integral with a bracket, E, which is bolted or otherwise suitably secured to the lower edge of a draft-pole, *E'*, to which the draft-animals are connected, the ends of the draft-bar being further provided with eyes *D'*, to each of which a whiffletree is to be connected, as will be very readily understood. The draw-bar and pole can be connected to the end beam of either the front or rear of the harrow, so that the same can be drawn in either direction without turning the harrow around or reversing the same.

F designates the equalizing-bar, which is arranged transversely across the longitudinal axis of the beams of the harrow, and at the middle of the latter, and the front end of the bar or beam F is provided near its lower side edges with eyes *f*, to which are connected links or loops *f'*. One or more of these links *f'* may be employed, as is obvious, and when two of the links are employed the free ends thereof are connected by a ring, *g*, which is common to both links, this common ring being detachably connected to an open hook or eye, *g'*, which is rigidly affixed or connected to the end beam of the harrow.

The equalizing beam or bar is in line with the draft-pole and made tapering in form, and to the enlarged end thereof is secured the eyes *f*, and the rear reduced end of the equalizing-bar is slotted longitudinally, as at *i*.

I designates a segment or bow-shaped piece, which has its ends fitted in the slot and secured rigidly and firmly in place by through-bolts *i'*, which pass through the equalizing-bar and the segment. The upper surface of the segment is provided with a series of teeth or serrations, *i''*, into one of which takes a pawl, *j*, that is formed integral with the bell-crank lever J, which is pivoted on a vertically-disposed lever, K, which passes at its lower end through the slot *i* of the equalizing-bar. The lower end of the adjusting or hand lever K is pivoted to the equalizing-bar, as at *k*, and the lever also carries a guide or bracket, *K'*, which is rigidly secured thereto and embraces the segment I, to prevent lateral play of the

lever and retain it in its proper position relative to the segment.

L designates a finger-piece, which is provided with a lug, *l*, that is pivoted to and carried by the hand-lever, and this hand-piece is normally forced away from the adjusting-lever by a flat spring, *l'*, that is secured at one end to the lever and bears against the pivoted finger-piece at its opposite end, and the hand-piece is pivotally connected to a rod, *l''*, intermediate of lever J and the hand-piece L.

The lower end of the lever K is connected with one of the draft-eyes on the rear beam of the harrow by a link or loop, *m*, and by adjusting this lever K back and forth the angle or inclination of the teeth is varied, and also the depth which the teeth or spikes enter the ground, as will be hereinafter more fully described.

The lever K is held in its adjusted positions by the pawl which it carries engaging with the toothed segment, and the pawl can be easily withdrawn from engagement with the toothed rack to permit the lever to be adjusted by pressing upon the free end of the pivoted hand-piece to elevate the connecting-rod *l''*, the release of the hard pressure on the pivoted hand-piece permitting the spring to again act upon the hand-piece to cause the rod to depress the pawl and engage it with the toothed segment.

The draft bar and pole can be connected with the corners or angles of the harrow to convert it into one of that class known to the art as a "diamond" harrow.

Slight changes in the form and proportion of parts can be made without departing from the spirit of my invention.

The equalizing-bar is reversed when the position of the draft bar and pole is turned, so that the operator can easily and readily grasp the adjusting-lever from the rear of the harrow without danger while it is in motion.

The equalizing bar is connected at one end of the harrow through the intermediate links, *f'g*, and at its opposite end through the lever K and the link M. By turning the free end of the lever into an upright or vertical position the sliding equalizing-bar is forced toward the front end of the harrow, so that the links *f'* will draw upon the front end beam, which in turn draws upon the remaining beams, which are flexibly connected together by the intermediate links, thereby causing the teeth of the beams to assume a vertical position. When the lever is adjusted toward the rear end of the harrow, the sliding equalizing-bar is pulled in the same direction, and thereby slackens the tension on the links *f'* and the links B intermediate of the harrow-beams, which are thus free to move rearwardly, owing to the resistance offered to their progress by

the contact with the ground. The adjustable hand-lever thus controls the position of the toothed bars, and it is within convenient reach of the operator.

The draft is applied to the front beam of the harrow, and the draft appliances can be readily reversed to permit the harrow to be drawn in either direction without reversing the same, the sliding bar being also adjusted so that the lever is always at the rear end of the harrow.

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

1. In a harrow, the combination of the toothed beams loosely and flexibly connected by intermediate links, the draft-beam or pole connected with one of the end beams, the equalizing-bar resting on the beams and arranged in line with the draft-pole and connected at one end with one of the end beams, and a pivoted lever carried by the opposite end of the sliding bar and connected with one of the beams, substantially as described, for the purpose set forth.

2. In a harrow, the combination of the toothed beams connected by the intermediate links, the draft-beam detachably connected to one of the end beams, the reversible sliding bar detachably connected at one end to one of the beams, and a pivoted lever carried by the sliding bar and detachably connected with the opposite end beam of the harrow, whereby the draft-pole and sliding bar can be reversed to drag the implement in the opposite direction without reversing the harrow-beams, for the purpose set forth, substantially as described.

3. In a harrow, the combination of the toothed beams connected loosely together by the intermediate links, a draft-bar, D, connected with the fixed hooks on one of the beams and having the draft-beam connected thereto, the sliding bar having a link at one end which is detachably connected to one of the end beams, a pivoted lever carried by the rear end of the sliding bar and having its lower end connected with the opposite end beam of the harrow, a toothed segment, and a pivoted hand-piece connected with a pawl adapted to engage the segment and thereby hold the pivoted lever in its adjusted position, substantially as described, for the purpose set forth.

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

GEORGE J. MANSFIELD.

Witnesses:

A. J. CURL,
W. L. SWANN.