

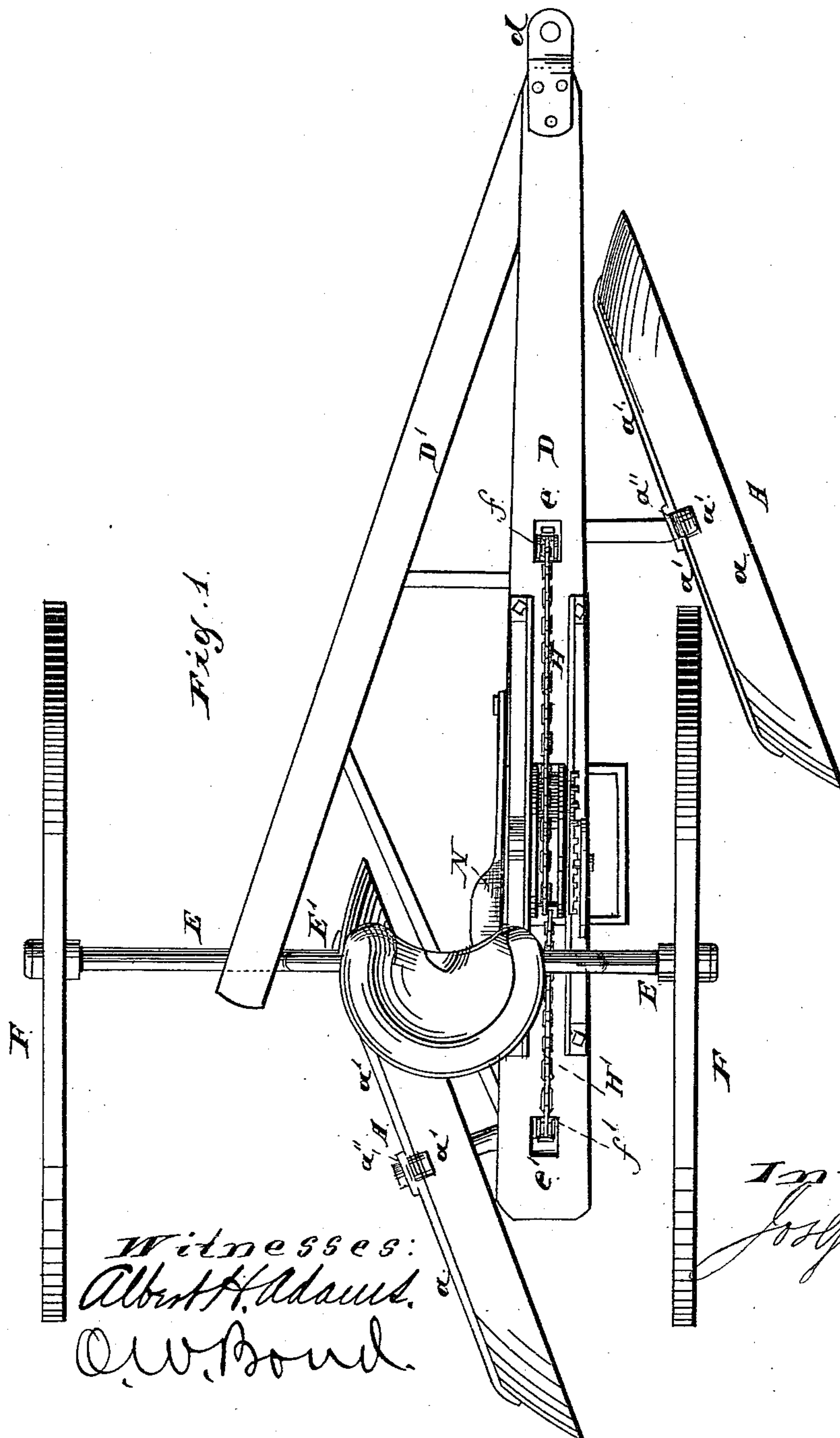
(No Model.)

3 Sheets—Sheet 1.

J. LANE.
ROTARY PLOW.

No. 278,711.

Patented June 5, 1883.



Witnesses:
Albert H. Adams.
O. W. Bond.

Inventor:
Joseph Lane

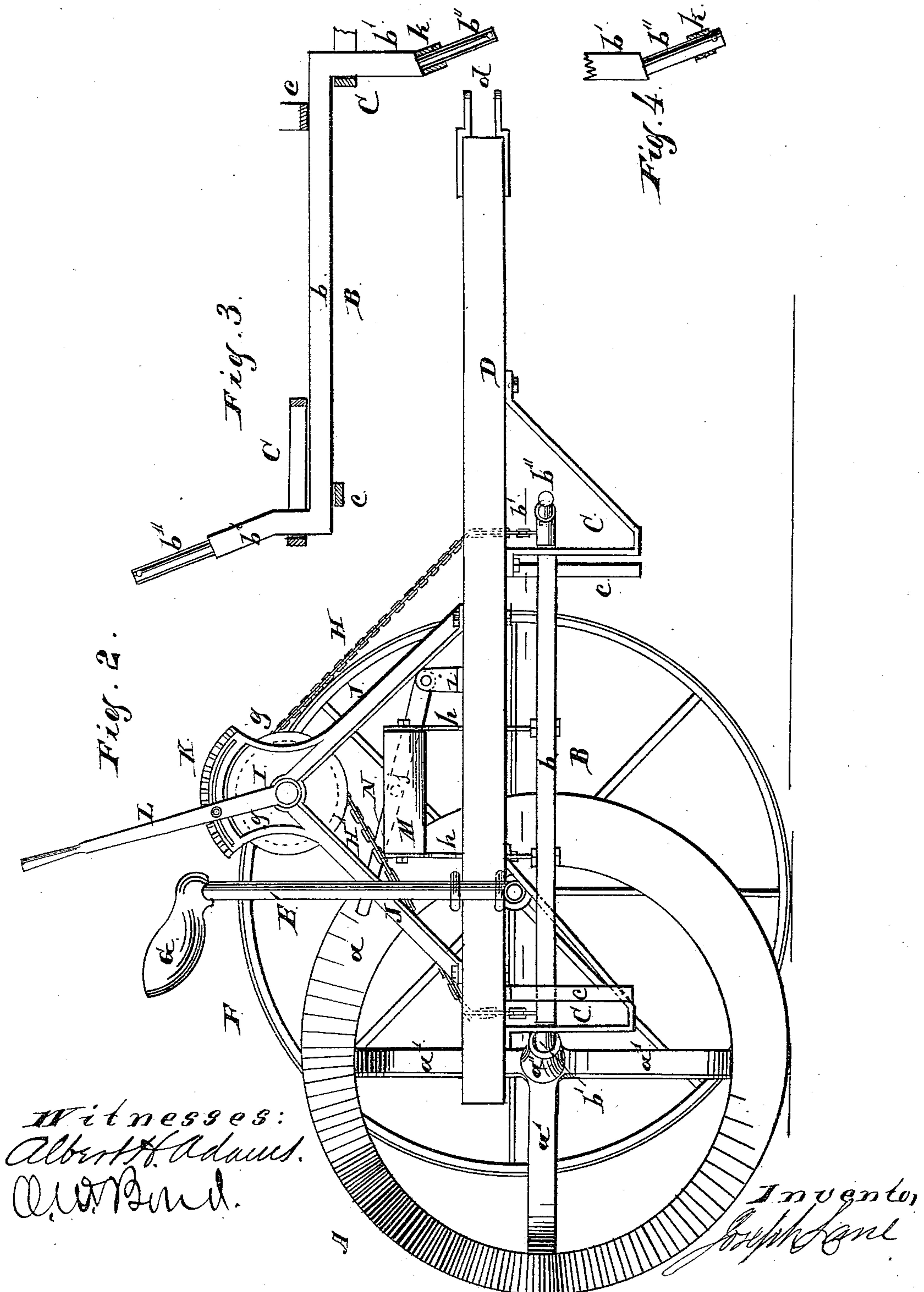
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ROTARY PLOW.

No. 278,711.

Patented June 5, 1883.



Witnesses:
Albert H. Adams.
C. W. Smith.

Inventor
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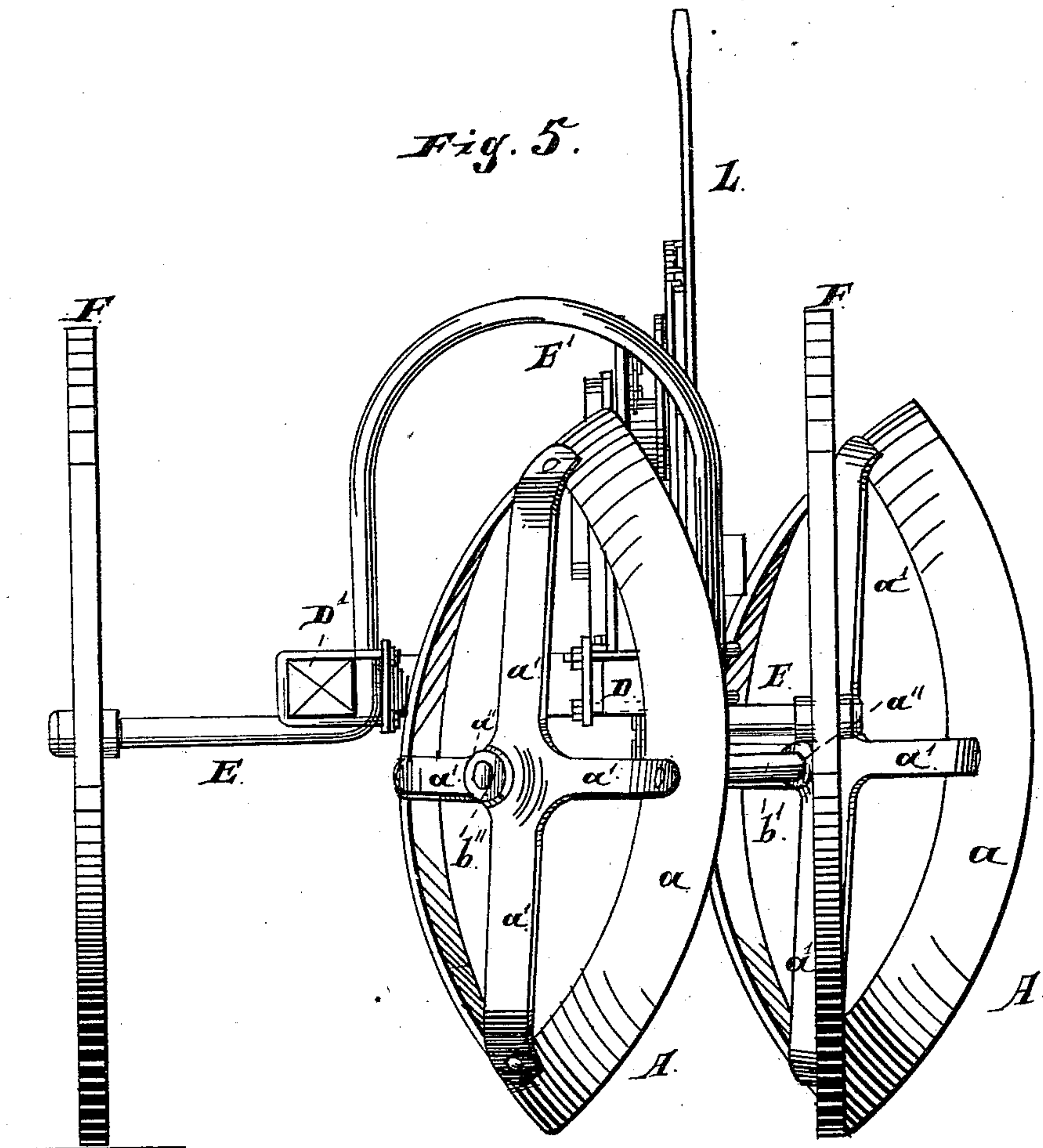
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Joseph Lane

UNITED STATES PATENT OFFICE.

JOSEPH LANE, OF CHICAGO, ILLINOIS.

ROTARY PLOW.

SPECIFICATION forming part of Letters Patent No. 278,711, dated June 5, 1883.

Application filed November 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LANE, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Rotary Plows, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation; Fig. 3, a detail showing the plow-beam; Fig. 4, a detail showing one of the spindles of the rotary cutters or disks with the width-adjusting thimble in a different position from that shown in Fig. 3; Fig. 5, a rear elevation with the seat removed.

This invention relates to that class of rotary plows in which disks or wheels are employed for doing the plowing, and has for its objects to simplify the construction and arrangement of the several devices composing the plow; to give the rotary disks or plows a free and independent support, by which each can rise or fall independent of the other, and a support by which both cutters or plows can be raised clear of the ground; to locate the plows in a better position relative to each other and to the carrying or supporting frame; to insure the holding of the cutters or plows down to their work without interfering with the vertical movement, and to improve generally the construction and relative arrangement of the devices; and its nature consists in the several devices and combinations of devices for producing the results above named, which are hereinafter described, and pointed out in the claims as new.

In the drawings, A represents rotary cutters or plows, which may be made of an annular concave rim or flange, *a*, braced or supported by arms *a'*, joined at their center to a hub or bearing, *a''*, or in any other suitable manner to cause them to enter the ground and turn the necessary furrow for plowing.

B is the plow-beam, made of wrought-iron or other suitable material, and having a main or body portion, *b*, and end portions, *b'*, each of which is provided with a spindle, *b''*, to receive the hub or center *a''* of the cutter or plow. The forward end, *b'*, of this plow-beam stands at right angles, or nearly so, to the main or body portion, while its spindle *b''* stands at an inclination forward to its arm or end *b'*, and the rear arm or end, *b'*, of this beam stands at

right angles to the main or body portion for a portion of its length, and has for the balance of its length a back or rearward inclination, which is continued with its spindle *b''*. The form of this plow-beam B is shown in Fig. 3; but the angle at which the arms or ends *b'* stand to the main portion and the inclination of the spindles can be varied from that shown so long as the ends or arms furnish a connection by which the plows can be drawn forward, and the spindles have the requisite inclination to hold the plows or cutters in position for work.

C represents the pendants or brackets, each formed of a vertical portion, inclined portion, and a horizontal portion, or in some other suitable manner to leave an opening or space for the passage of the ends or arms *b'* of the beam B.

D is the draw-bar, made of a piece of wood or other suitable material, braced at its forward end against lateral pressure by a bar, *D'*, the forward end of which is bolted or otherwise attached to the forward end of the draw-bar. The forward end of the draw-bar is provided with a suitable clip or clevis, *d*, for the attachment of a double-tree, tongue, or other draft device, or for attachment to or with a traction-engine.

E is an axle having a raised or arched portion, *E'*. This axle E has at each end a suitable spindle to receive the carrying-wheels, and to it are attached, by clips, bolts, or otherwise, the rear ends of the draw-bar D and brace *D'*. As shown, the draw-bar D is attached inside the arch by suitable clips passing around the draw-bar and the vertical portion of the arch, and the rear end of the brace-bar is attached outside of the arch in a similar manner; but this attachment could be by other means and in some other manner. The rear end of the draw-bar extends a sufficient distance beyond the axle for the location of the disks or cutters in proper relation to each other.

F are carrying-wheels, one on each end of the axle.

G is a seat mounted, as shown, on the horizontal or top portion of the arch *E'*.

H H' are chains connected at one end to a lifting drum or wheel, and at the other end to the front and rear ends, respectively, of the beam B. The chain H passes through the opening *e* in the draw-bar and over an anti-

friction roller or pulley, *f*, located in such opening, and the chain *H* passes through an opening, *e'*, and over a pulley, *f'*, at the rear end of the draw-bar. These openings *e e'* are
 5 located at the proper distance apart for the attachment of the ends of the chains *H H'*, respectively, to the front and rear ends of the plow-beam, the attachment being by means of hooks or eyes, or in some other suitable manner.

10 *I* is the lifting drum or wheel, to which the inner ends of the chains *H H'* are attached; *J*, a frame supporting the drum or wheel *I*, and mounted or secured to the draw-bar *D*; *K*, a rack mounted on the frame *J* by connect-
 15 ing rods or bars *g*, or in some other suitable manner; *L*, a lever attached at its lower end to the journal or trunnion of the wheel *I*, and extending up to be within reach of the driver on the seat *G*, and arranged to engage with
 20 the rack *K* and hold the wheel *I*.

M is a box or receptacle, connected by rods *h* with the plow-beam *B*, and located to be over the center longitudinally of the plow-beam. The rods *h* pass through suitable open-
 25 ings in the draw-bar, so that the plow-beam and box are free to rise and fall vertically.

N is a lever, one end of which is pivotally connected to an ear or bracket, *i*, or in some other suitable manner to the draw-bar. This
 30 lever is pivotally connected to the side of the box or receptacle *M* by a pin or pivot, *j*, and its free end extends back to be within reach of the foot of the driver when on the seat *G*.

The pendants or stirrups *C* are attached to
 35 the under face of the draw-bar *D* at such distance apart that when the plow-beam *B* is in place its forward arm, *b'*, will pass through the forward stirrup *C*, and its rear arm, *b*, will pass through the rear stirrup *C*, so that when
 40 the draft is applied the vertical portions of the brackets or stirrups will come in contact with the face of the respective arms *b'* and carry the plow-beam forward with the machine. The plow-beam *B*, when in place, is held against
 45 lateral movement at each end by a guide or strip, *c*, depending from the under side of the draw-bar *D*, and so located with reference to the stirrup at each end as to leave a space be-
 50 tween the guide or strip and the stirrup for the passage of the plow-beam, and allow such beam to rise and fall freely. The stirrups *C* are made as shown, so that the inclined por-
 55 tion will form a brace or resistance against the pull, and the lower end is closed to prevent the beam from dropping clear of the stirrup; but it is to be understood that other forms of stirrups or brackets, and that other means than stirrups or brackets, could be used for drawing the plow-beam and plows, and that
 60 other means than the guide or strip, in connection with the stirrup or draft device, could be used for preventing lateral swing of the beam, and maintaining a correct line of draft for the cutters or plows, while permitting free verti-
 65 cal play of the beam.

As shown, each spindle *b''* is provided with

a collar or washer, *k*, by means of which the width of plowing can be changed, to do which all that is necessary is to place the washer in front or in the rear of the hub of the plow or
 70 cutter, as desired; the placing of the washer in front on each spindle narrowing the furrow, and in rear widening it. The drawings show this washer applied to the front spindle only; but the rear spindle is likewise to be provided
 75 with a washer, and Figs. 3 and 4 show the two positions of the washer on its spindle for wide or narrow furrows. Where the machine is desired only to cut one width of furrow the washers are not necessary; but, as in plowing,
 80 furrows of different widths, according to the character of the soil, are required, these washers furnish a ready means for changing the width of the furrow as desired.

The arched axle *E'* enables the rear wheel
 85 or cutter to be located partly beneath the axle, bringing the two cutters or plows nearer together, and bringing the machine, as a whole, into a very compact space without interfering with its working qualities, and also making
 90 the machine less cumbersome and more easily handled and operated.

The plow-beam, with the plows, is supported from the chains *H H'*, and it is not held rigid vertically, the result being that the beam is
 95 free to rise and fall vertically to suit the inequalities of the ground, and one plow or cutter is free to rise independent of the other in case of striking an obstruction which cannot
 100 be cut through, and such rise will not affect the other plow, and this free vertical play of either plow independent of the other allows the cutters or plows to ride over any obstacle that may be met without liability of injury or
 105 producing injurious effects to either the plows or the machine.

The box or receptacle *M* is mounted on the plow-beam, and is for the purpose of securing the requisite amount of weight to hold the beam and plows down to their work, and for
 110 this purpose the box or receptacle can be filled with sand, stones, or other heavy substance to the amount required for the nature of the soil, a greater amount of weight being required in clay or other hard soil than in loam or other
 115 soft soil, and in case a greater amount of weight than can be placed in the box or receptacle is required, such additional weight can be produced by the driver placing his foot on the lever *N* and bearing down thereon; and
 120 this lever *N* could be arranged and connected with the box or receptacle in some other manner than that shown, so long as it furnishes a means by which the driver can apply additional weight in holding the plow down, and
 125 for some soil this lever alone, or the weight in the box alone, will be all that is required to hold the plows down to their work.

The operation is as follows: The machine is hitched to a traction-engine by the clevis or
 130 connection *d*, or has a team connected therewith in any suitable manner, so as to be drawn

by the motive power. The lever L is released, allowing the beam and its plows to drop in position for use. As the machine moves forward the cutters or plows are rotated, cutting the soil and turning it over, as usual, and the plows are maintained at their running depth by the weight in the box or receptacle M, or the foot-lever N, or both. In case the forward plow strikes an obstruction that end of the beam rises, so that the plow can ride over the obstruction, and the same is true of the rear plow; and when the plowing is completed the driver, by taking hold of the lever L can, through the chains H H', raise the plow-beam and plows clear of the ground, leaving the machine free to travel on its carrying-wheels, in which position the plow-beam and plows are also held in traveling from place to place and not operating.

This machine is adapted to be used with a traction-engine, or with a team or other motive power. It is very compactly built, occupies but a small space, and can be readily turned or otherwise handled. The driver is mounted on the axle, so that his weight is carried by the carrying-wheels and assists in holding the machine down. The two plows or cutters are brought closer together, and each can rise and fall vertically independent of the other, and at the same time both cutters or plows can be raised simultaneously, and the required amount of weight for holding the plows down to their work can be easily provided or applied. Another advantage arising from this independent movement of either plow is that, if desired for any purpose, either plow can be raised and held clear of the ground, leaving one plow in position for use, so that the same plow can be used to cut double or to cut single, at the will of the operator.

It is preferred to use both the weight-box and the weight-lever, as in that case the lever is ready to produce such additional weight as may be required for the hardness of the ground; but where the ground is light the weight-lever N is not a necessity, as sufficient weight can be placed in the box.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a plow-beam provided at each end with a rotary plow or cutter, of a support composed of chains or similar flexible devices connected with the beam adjacent to each end, whereby either end of the beam can freely rise and fall independently of the other end, and the entire beam is permitted to move bodily in a vertical plane, substantially as described.

2. The combination of a non-rotating plow-beam having at each end a projecting spindle, a cutter or plow journaled to revolve on each of the said spindles, and a support for the beam, which permits it to freely rise and fall at either end independently of the other end, or move

bodily in a vertical plane, substantially as described, whereby one cutter or plow can rise and fall independently of the other, as set forth.

3. The combination, with a stirrup or draw, C, of a plow-beam extending through an opening in the stirrup or draw, and provided at each end with a rotary cutter or plow, and a support for the plow-beam, which permits either end of the latter to rise and fall independently of the other end, substantially as described.

4. The combination, with the stirrups or draws C, of a plow-beam, B, extending through openings in the stirrups or draws, and provided at each end with a rotary cutter or plow, side pressure-bars, c, and a support for the plow-beam, which permits either end of the latter to rise and fall independently of the other end.

5. A plow-beam, B, carrying at each end a rotary plow or cutter, in combination with a lifting device for lifting the beam bodily, or allowing either end to rise and fall independently, substantially as and for the purposes specified.

6. A plow-beam, B, carrying at each end a rotary plow or cutter, in combination with the chains H H' and lifting wheel or drum I, for raising the plow-beam and plows bodily and allowing either plow to rise and fall independently when at work, substantially as specified.

7. The combination of a plow-beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with the draw-bar D, stirrups or draws C, and carrying-wheels, substantially as described.

8. The combination of a plow-beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of the other end, with stirrups or draws C, draw-bar D, arched axle E E', and carrying-wheels, substantially as described.

9. The combination of a plow-beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of its other end, with a draw-bar, D, and a lever, N, pivoted at one end upon the draw-bar, and connected with the beam for holding both of the rotary cutters or plows to their work, substantially as described.

10. The combination of a plow-beam, B, provided at each end with a rotary cutter or plow, and a support for the beam, which permits either end thereof to rise and fall independently of the other end, with a weight box or receptacle, M, and a lever, N, substantially as described.

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