

(No Model.)

I. N. KYLE.
ROTARY GANG PLOW.

No. 250,739.

Patented Dec. 13, 1881.

Fig. 1.

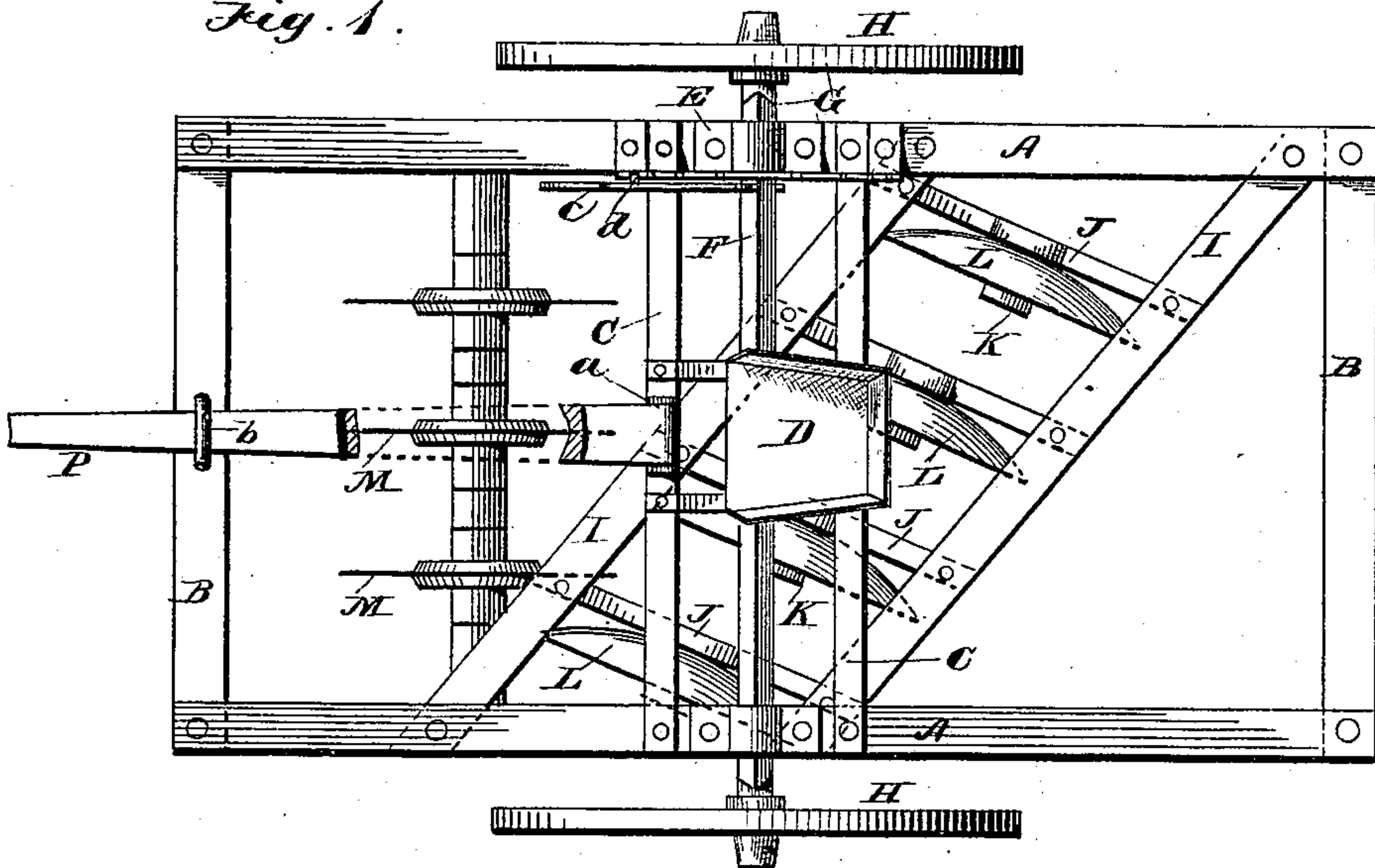


Fig. 2.

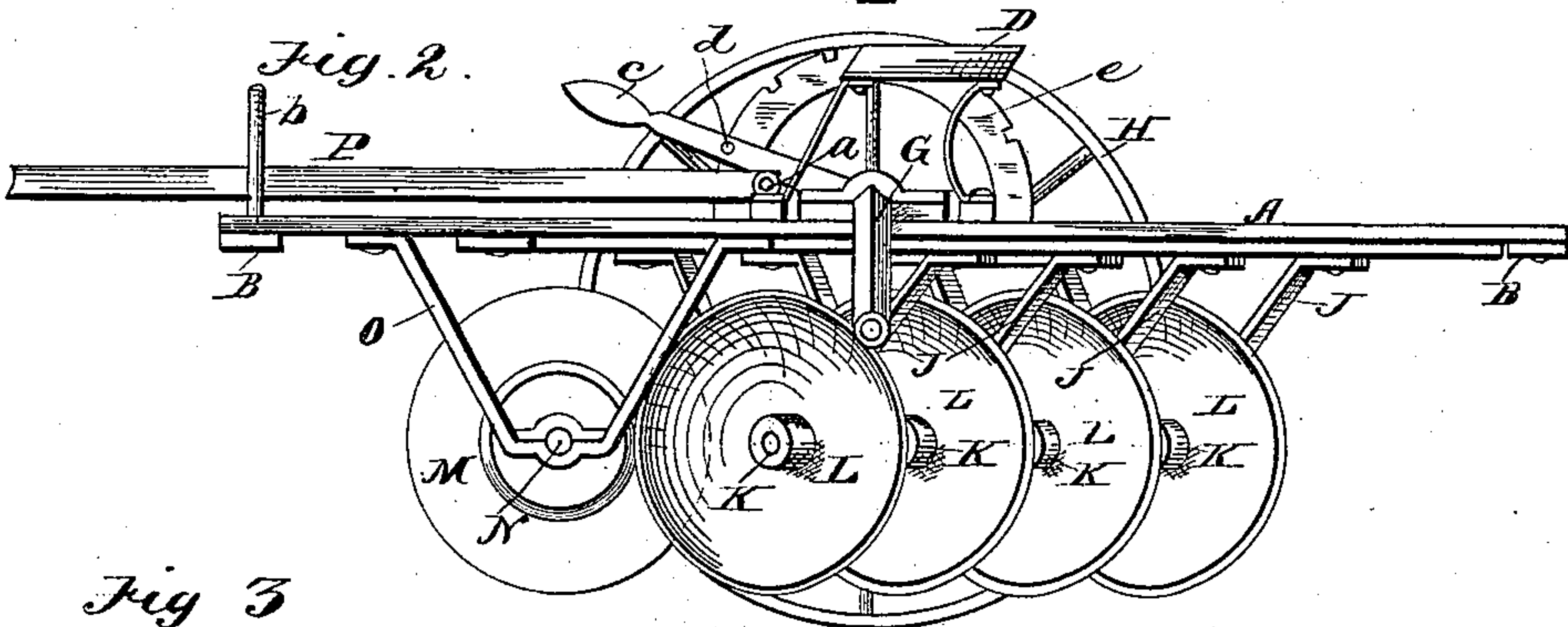
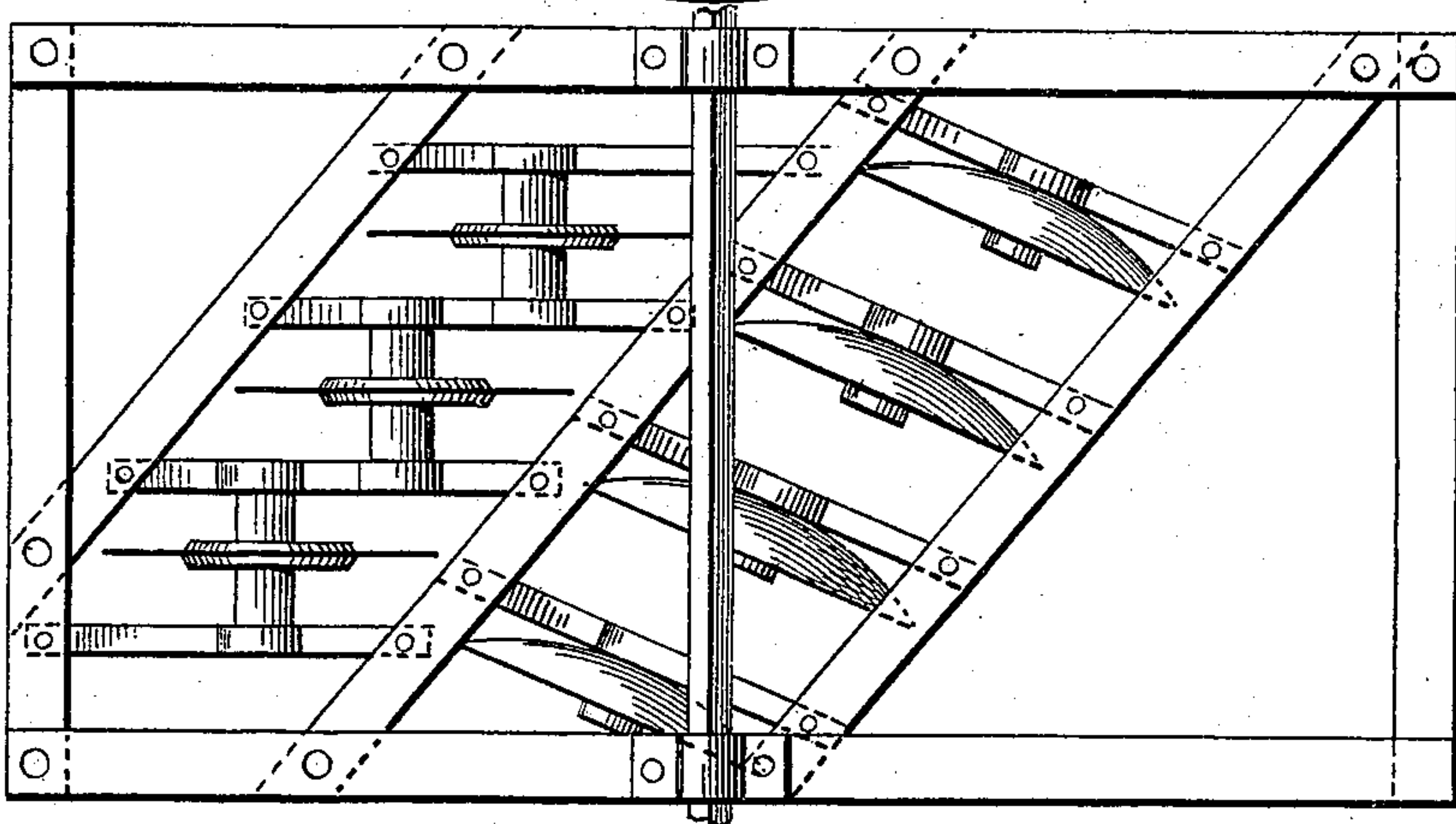


Fig. 3



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UNITED STATES PATENT OFFICE.

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ROTARY GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 250,739, dated December 13, 1881.

Application filed February 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, ISAAC N. KYLE, of Troy, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Rotary Gang-Plows; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in rotary gang-plows of that class which employ concavo-convex disks on annuli for turning the earth.

The machine consists, essentially, of a frame supported on wheels for sustaining the driver's seat, and made adjustable up and down to regulate the depth of penetration of the cutting and turning disks, which are attached to and supported by said frame-work. The disks for turning the furrow-slice are concavo-convex metal disks with sharpened edges, and set in a diagonal rank across the under side of the frame of the machine, and each turns upon an independent spindle, so as to permit of the proper adjustment and inclination of the disks. The colter-disks, with sharpened edges, are flat and are set in advance of the turning-disks, with their planes in line with and coincident with the direction of the machine. They are also, further, so set that each cuts at a point midway between the cutting-points of the slice-turning disks.

The novelty of my invention consists in the combination and arrangement, in a rotary gang-plow, of two series of disks, the rear one of which is set diagonal to the line of draft of the machine, and is composed of concavo-convex disks, and the forward one of which, composed of flat disks, is set in line with the draft of the machine, with each disk at a point midway between the cutting-edges of the following disks; also, in other details of construction, as will be herewith specifically set forth.

In the accompanying drawings, Figure 1 is a plan view of my improved rotary gang-plow. Fig. 2 is a side elevation of the machine. Fig. 3 is a plan view of a modification of the construction of the machine.

The same letters of reference indicate like parts in all the figures.

The frame-work of the machine is composed of the two side beams, A, and end beams, B, rigidly united, so as to form a rectangular platform. Upon the upper side of the beams A

are secured two cross-beams, C, which support the driver's seat D. About midway of the beams A, upon their upper sides, are bearing-boxes E, of any suitable construction, in which is secured the metal axle F. This axle has its ends bent down to form crank-spindles G, as shown, and upon these spindles the carriage or supporting wheels H revolve. Upon the under side of the beams A are secured two parallel beams, I, extending diagonally across the frame, as shown, and set at some distance apart. To the under side of these diagonal beams are bolted or otherwise secured the equidistant pendent brackets or hangers J, of the shape indicated.

Projecting laterally from the lower end of each of the brackets is a spindle, K, upon each of which revolves the concavo-convex slice-turning disks L. These disks are of metal, with sharpened edges, and are so set in advance of each other as to have no common axis. They should be about nine inches apart, and their front edges, in about the line of their horizontal diameters, should be vertical and in a line with the draft of the machine. The only essentials in the construction of these disks are that they should be concavo-convex, with sharp cutting-edges. Their centers may be solid, as represented, or they may be open and be connected to their hubs by radial arms or spokes. The diameter of these disks is about twenty-six inches, and they should be so constructed as to be perfectly rigid. Just in front of this gang of diagonal disks is a gang of flat colter-disks, M, free to turn upon a transverse shaft, N, secured in pendent brackets O, attached to the beams A, as represented. These latter disks are of the same diameter as the former disks L, and are so spaced upon their shaft that each one is in a line midway between the front edges of two of the disks L, as shown. Instead of this method of attaching the disks M to the frame, that shown in Fig. 3 may be employed. In this instance the colter-disks are each secured upon the spindle of a pendent bracket, just as the disks L are attached, and they are so set as to be in diagonal rank, though in the same planes as before, with their rear edges interposed between the front edges of the disks L, as seen in Fig. 3.

The frame of the machine is provided with a tongue, P, hinged in any suitable manner to

the frame, as at *a*, and confined in a staple, *b*, upon the front beam, *B*. This construction is such as to permit of the raising and lowering of the frame without affecting the position of the tongue with reference to the horses. To 5 raise or lower the frame, and with it the cutter-disks, I secure a hand-lever, *c*, to the axle *F* at one side of the machine, which lever is provided with a lateral detent, *d*, adapted to 10 engage with a vertical segment-plate, *e*, secured upon the frame-work at the side of the lever, and having notches into which the detent is thrown to hold the machine in its adjusted position. Now, when it is desired to 15 transport the machine or to turn it in the field without permitting the cutter-disks to come in contact with the ground, the lever is so locked to the segment-plate as to bring the crank of the axle into a vertical position, at which ad- 20 justment the frame will be so raised that the disks clear the ground. Upon arriving at the point where it is desired to commence plowing, the driver on his seat unlocks the lever *c* and draws it toward him, thereby oscillating the 25 axle and turning its crank-arms backward. As soon as the cranks are thrown out of vertical line the weight of the machine and driver carries it down and forces the cutters with a backward motion into the earth. When sufficiently 30 lowered to give the disks the desired amount of penetration into the earth the lever is relocked, and the machine is ready to start forward. As it moves forward the disks *M* cut into the earth and divide it into slices—say 35 nine inches wide. Now, as the disks *L* move forward they subdivide these slices and form a furrow-slice nine inches wide, though cut in two by the forward colter. These slices are cut and turned by the disks *L*, and each as it 40 is turned clears the other, owing to the set of the disks. The advantages of this relative arrangement of the two sets of disks are obvious. The front rank cuts up and overrides any trash

upon the surface of the ground, and at the same time holds the machine to its course and prevents side draft. The rear rank has only to 45 subdivide the already-divided earth and turn it, thus enabling the machine to work easily and with but comparatively little draft-power. Trash, instead of being carried along as with 50 a stationary colter, is cut up and overridden, and does not cling to or obstruct the machine.

When it is desired to stop plowing or to turn the machine the driver unlocks and presses from him the lever *c*. In this he is assisted by 55 the team, which, drawing from a point in line with the axis of the axle, has the wheel-spindles as fulcrums, and obtains a leverage equal to the length of the cranks. By this means the team is made to raise the plows out of the 60 ground, and when so raised the driver locks the frame and axle together, as before explained.

Having thus fully described my invention, I claim—

1. In a gang-plow, the combination, with a 65 diagonal series of concavo-convex disks having continuous cutting-edges, of a front series of flat cutting-disks arranged to operate in the line of draft, but equidistant between the cutting-points of the concavo-convex disks, where- 70 by the earth is first cut and then subdivided and turned over, substantially as described.

2. In a gang-plow, the combination, with a diagonal series of concavo-convex disks having continuous cutting-edges, of a front diagonal 75 series of flat cutting-disks arranged to operate in the line of draft, but equidistant between the cutting-points of the rear concavo-convex disks, substantially as described.

In testimony whereof I have hereunto set my 80 hand.

ISAAC N. KYLE.

Witnesses:

A. A. THOMAS,
CHAS. M. PECK.