

(No Model.)

2 Sheets—Sheet 1.

J. E. CLARK.
FERTILIZER DISTRIBUTER.

No. 314,652.

Patented Mar. 31, 1885.

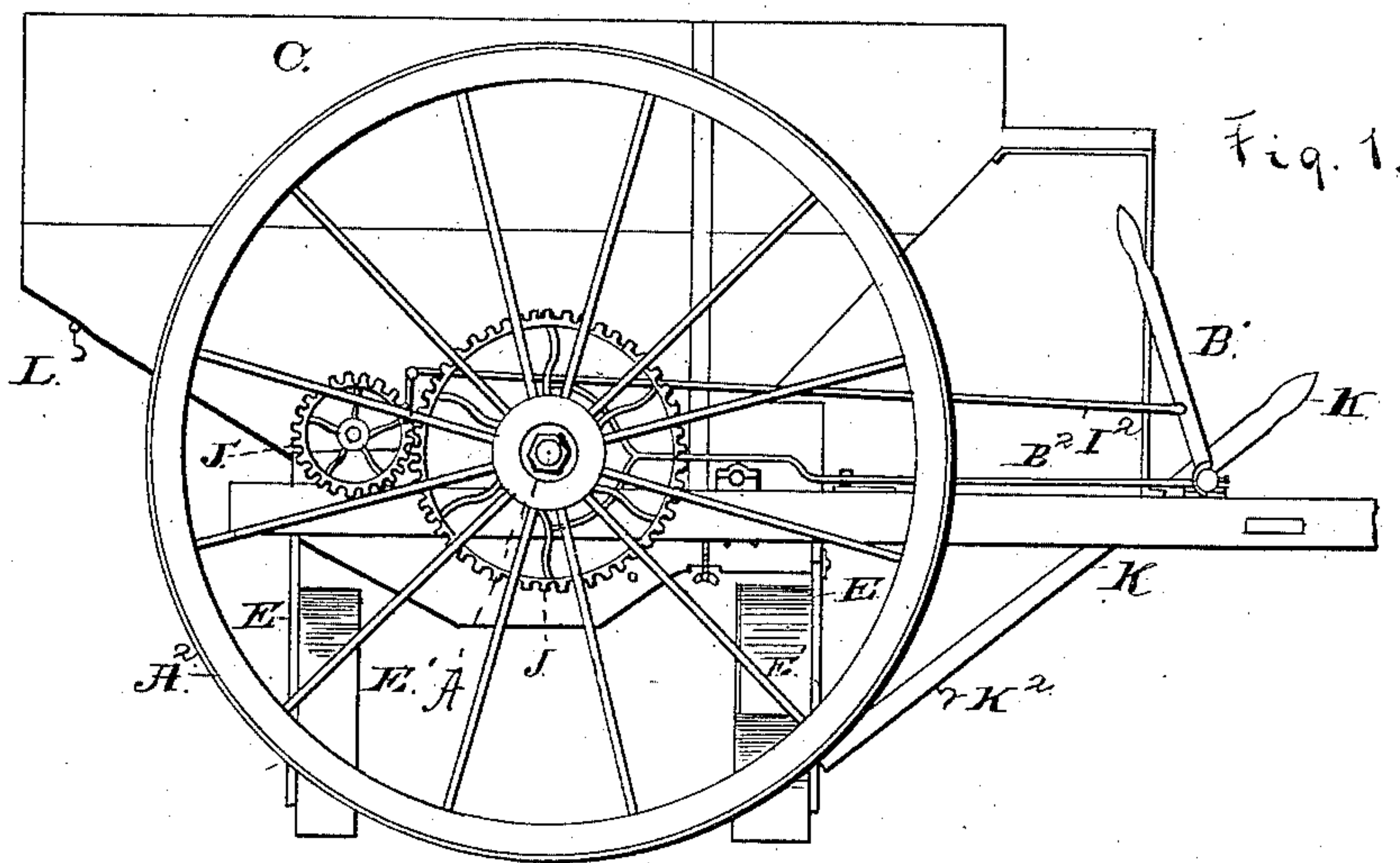


Fig. 2.

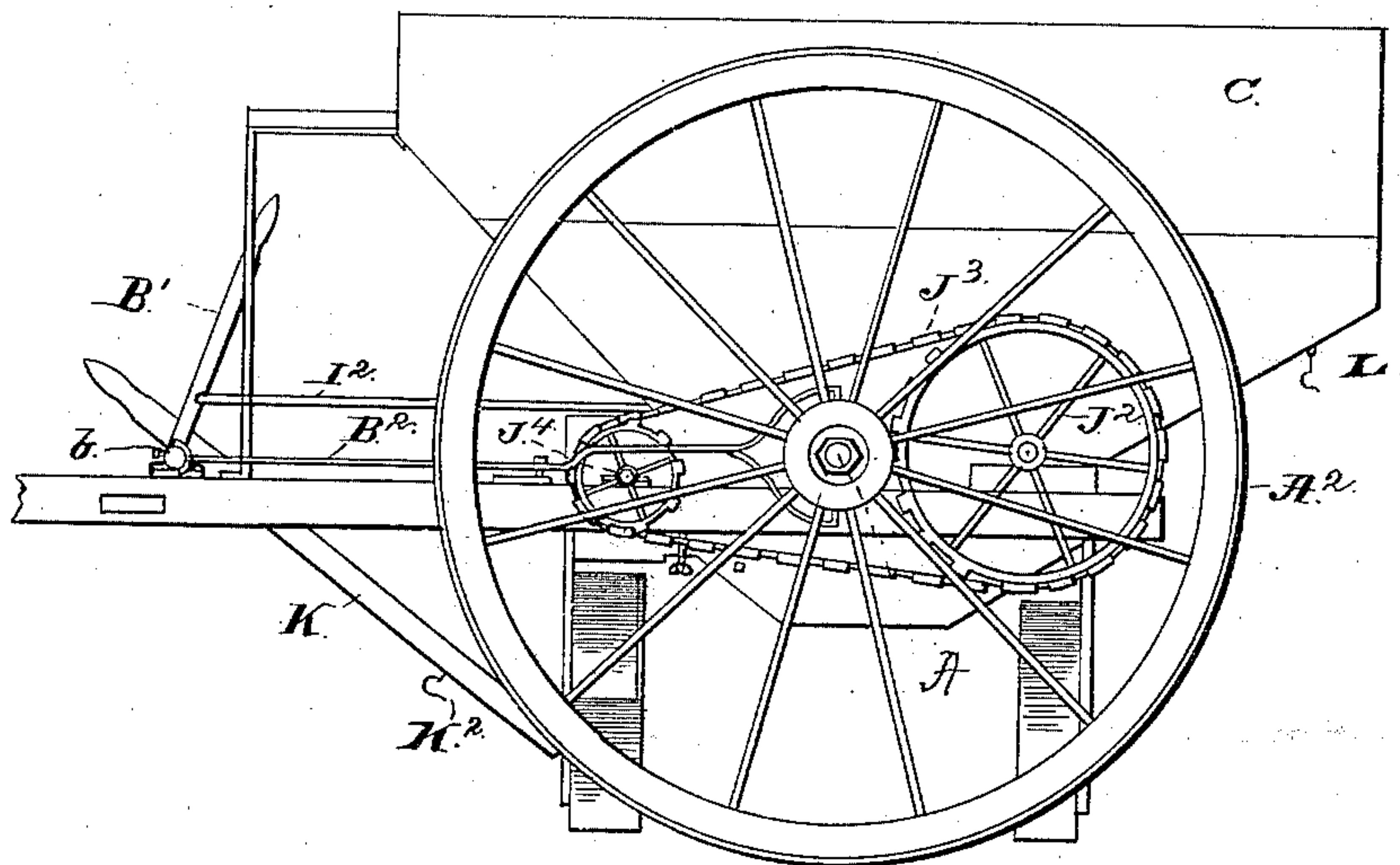
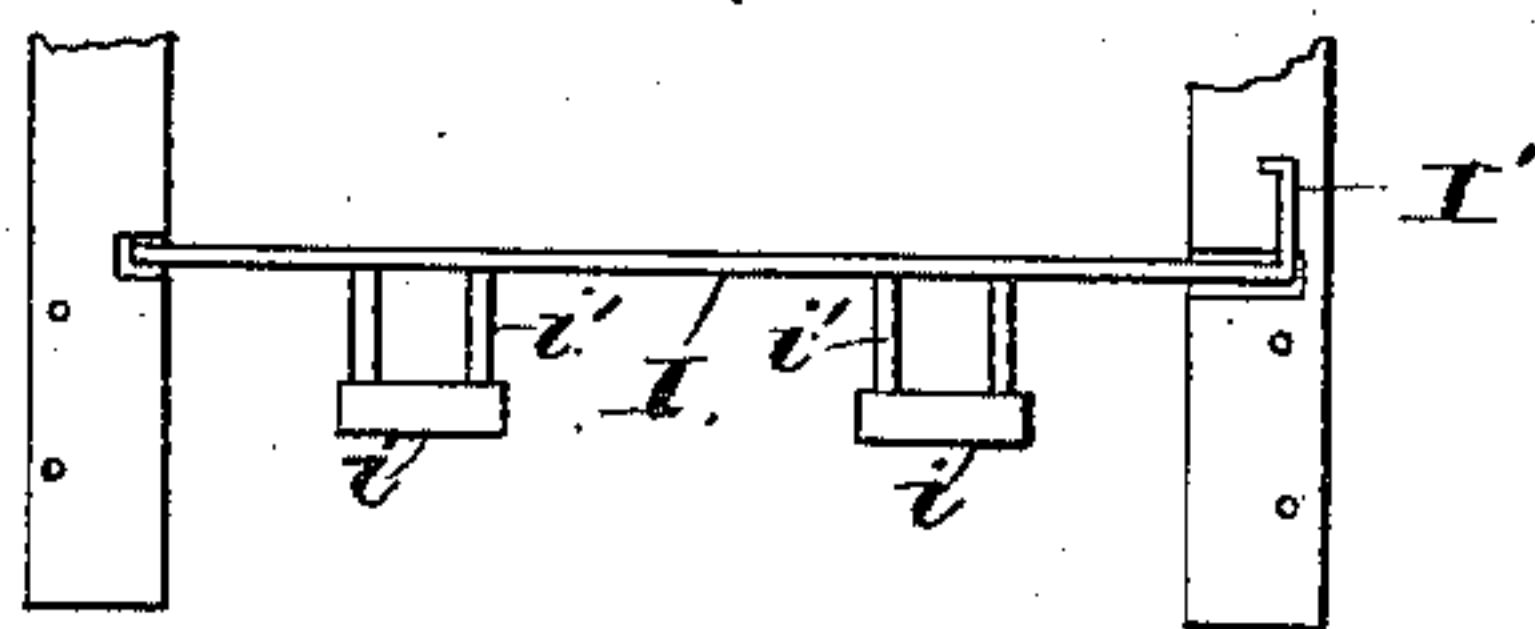


Fig. 5



WITNESSES:

N. A. Clark.
P. B. Turpin.

INVENTOR.

James E. Clark
By
R. H. Lacey
Attorney

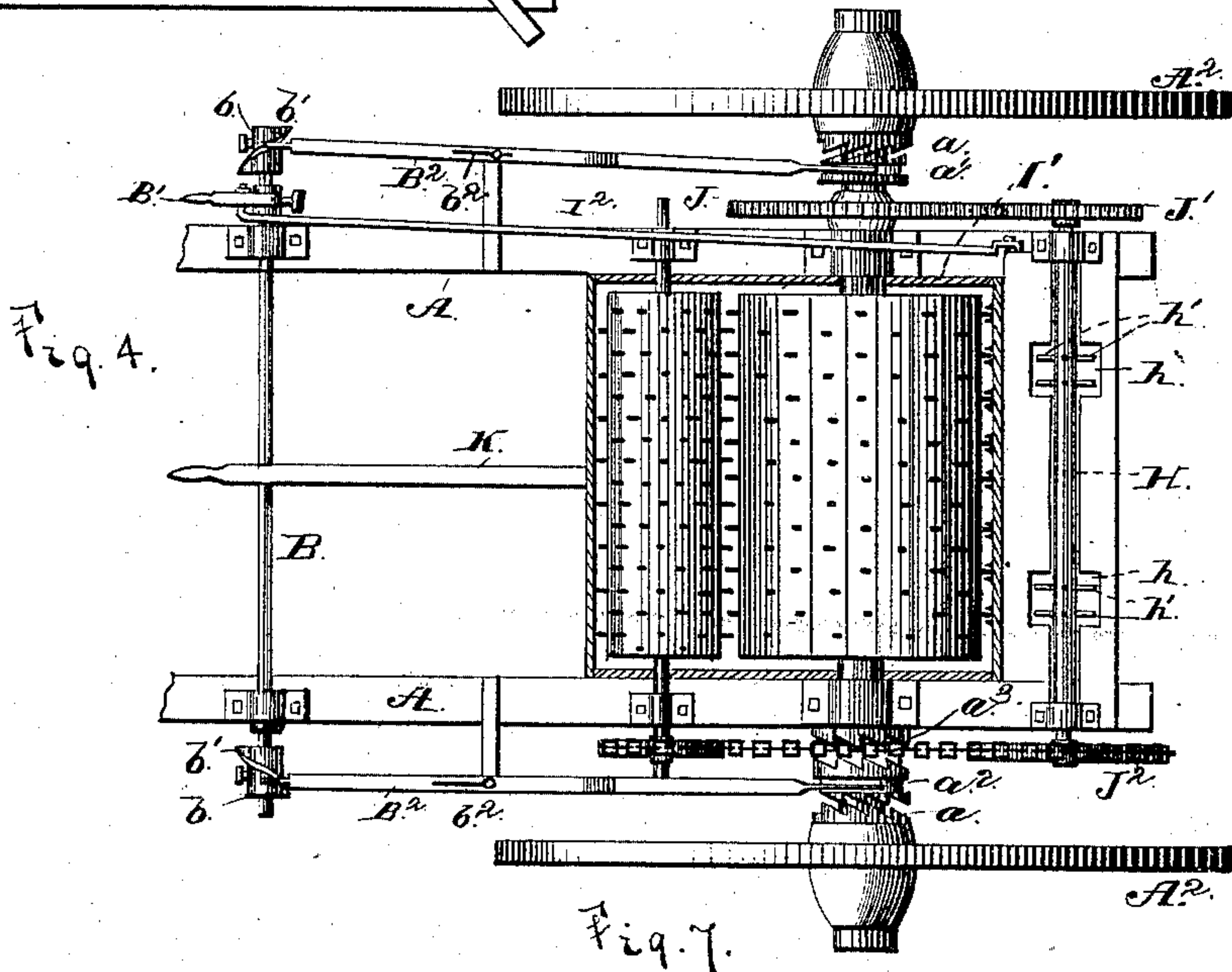
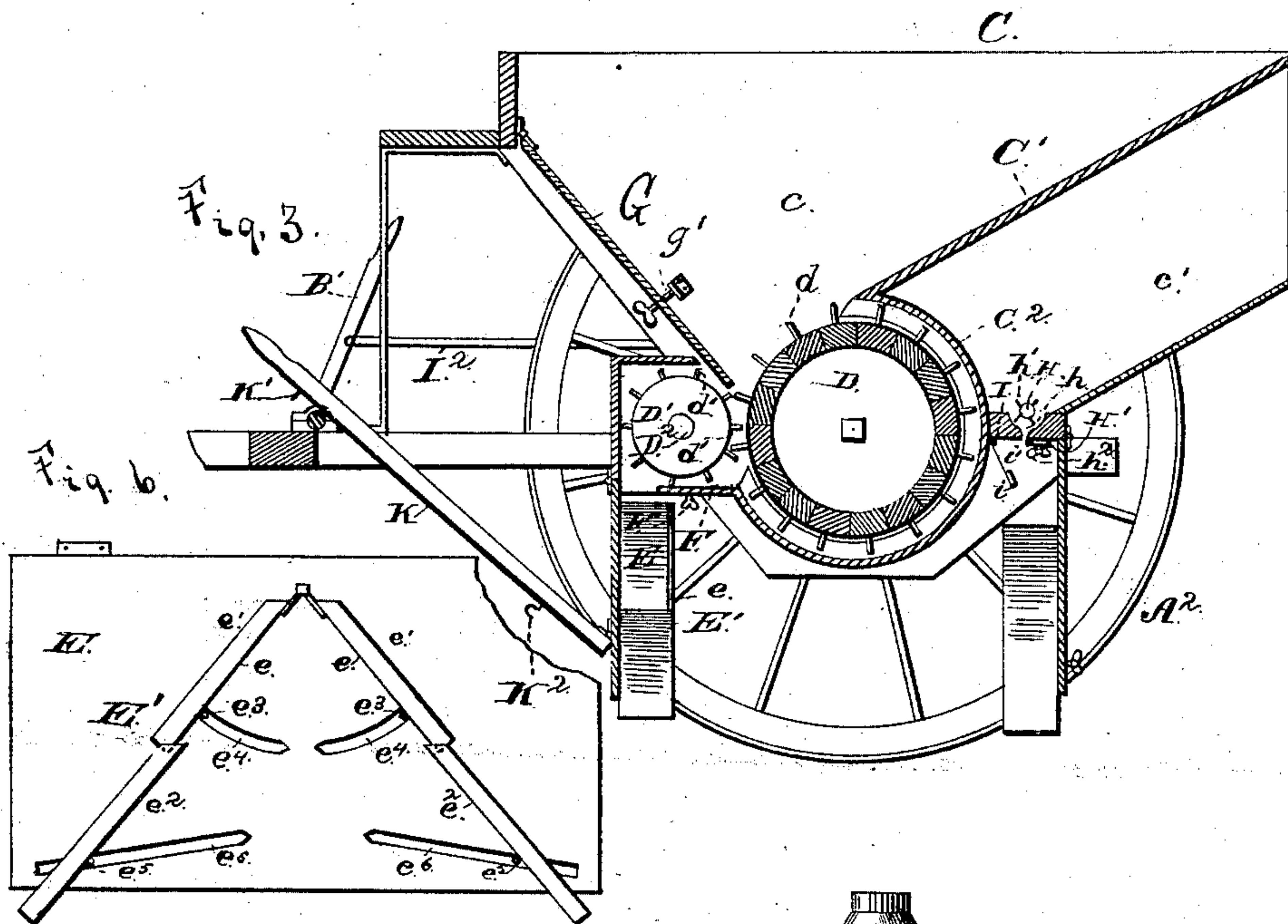
(No Model.)

2 Sheets—Sheet 2.

J. E. CLARK.
FERTILIZER DISTRIBUTER.

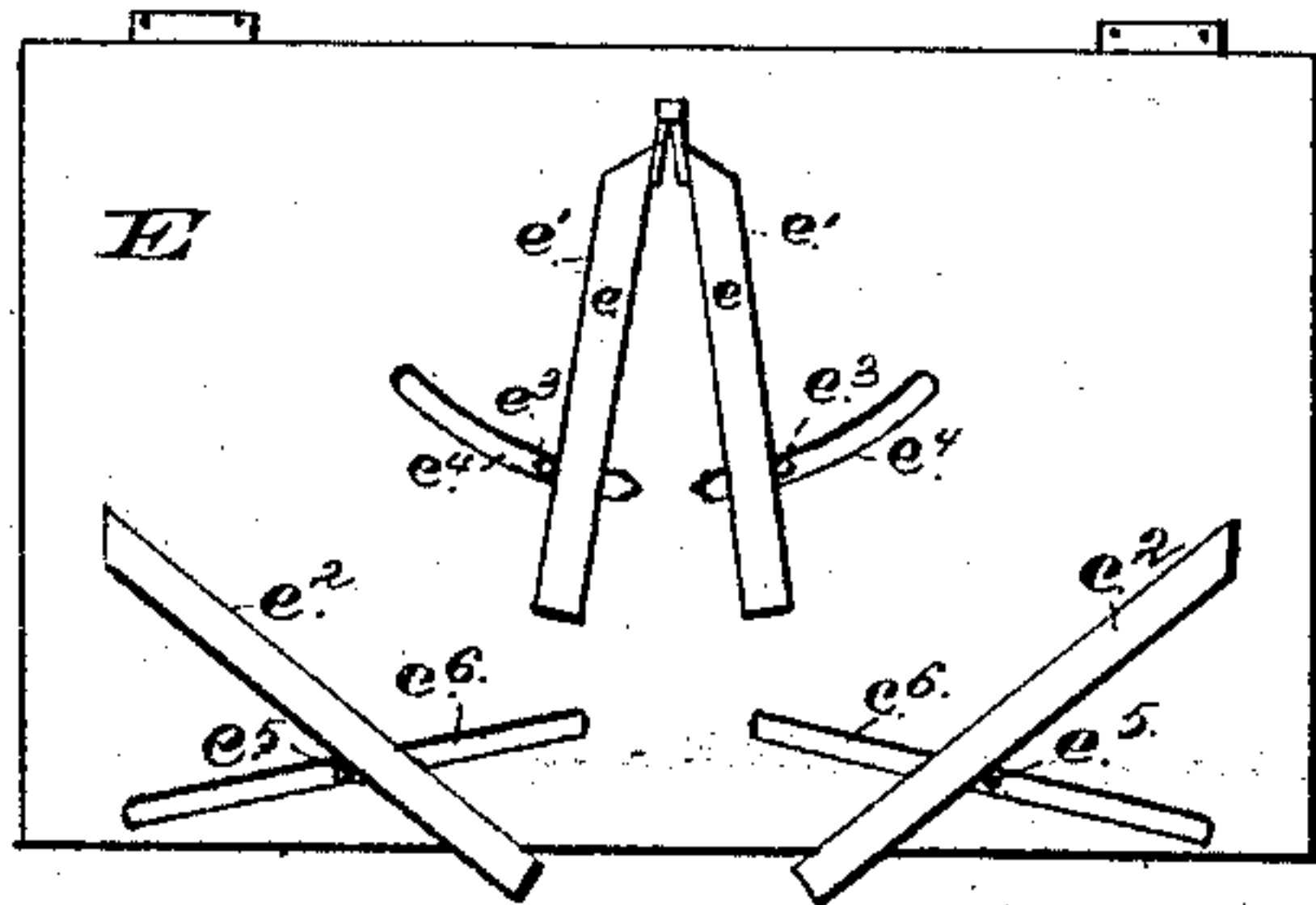
No. 314,652.

Patented Mar. 31, 1885.



WITNESSES

H. A. Clark.
P. B. Turpin.



INVENTOR

James C. Clark

By Robert H. Lacey
Attorney

UNITED STATES PATENT OFFICE.

JAMES EDGAR CLARK, OF WASHINGTON, NORTH CAROLINA.

FERTILIZER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 314,652, dated March 31, 1885.

Application filed March 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. CLARK, a citizen of the United States, residing at Washington, in the county of Beaufort and State of North Carolina, have invented certain new and useful Improvements in Fertilizer-Distributers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in fertilizer-distributers; and it consists in the novel construction and combination of the several parts hereinafter described and shown.

In the drawings, Figures 1 and 2 are elevations of the opposite sides of my machine. Fig. 3 is a vertical longitudinal section. Fig. 4 is a top plan view with the hopper removed. Figs. 5, 6, and 7 are detail views.

The thills A A have the axle A' journaled in their extended portions, and they are extended in rear of the hopper in order to firmly support the rear portion of the receptacle, presently described. The wheels A² are spindled on the ends of the axles A'. Ratchets a are formed on the inner ends of the wheel-hubs. Clutches a' a² are keyed on the axle and movable along the same to and from the wheel-hub. On the outer end of both these clutches I form ratchet-teeth, which are fitted to the ratchets on the wheel-hubs. The clutch a² is also provided with ratchets on its inner end, which are adapted to engage pins or ratchets a³, formed on the side of the receptacle. A shaft, B, is journaled on the thills at the forward part of the machine, and is formed or provided on its opposite ends with drums b, on which a cam-rib, b', is formed. A handle, B', is secured to the shaft so it may be revolved. Levers B² B² are pivoted midway their ends on the framing, and have their rear ends connected with the clutches a' or a², and their opposite ends provided with a slot, b², which slips over the cam-rib b'. This lever, it will be seen, is so pivoted as to rock in a horizontal plane, and as the shaft B is rocked the lever is operated to throw the clutches into or out of engagement with the wheels, so the latter may be keyed or spindled on the axle, as desired. The receptacle C is mounted on the side bars or the extended ends of the thills, as shown. It is divided by partition C' into what, for convenience of reference, I call

the "large hopper" c and "small hopper" c'. A discharge-opening is formed in the lower end of the hopper c at one side, as shown. The concave C² is arranged around said discharge-opening, its upper end being connected with the lower end of the partition C', and its other end being carried to a point under and nearly in vertical line with the forward edge of the discharge. The axle runs through the center of this concave, and the main feed-cylinder D is secured thereon, and moves close to the edges of ribs or cutters c², secured on the concave. This cylinder has teeth d, which pass between the ribs c², as shown. This cylinder works in the discharge-opening from one side, as shown. This arrangement throws the weight of the manures and heavy fertilizers off the cylinder, and the revolution thereof is consequently easier and the draft of the machine lighter. The supplemental cylinder D' has its shaft D² journaled in advance of and slightly below that of the cylinder D, and its teeth d' work between those of the main cylinder, as clearly shown. The door E is hinged at its upper end to the thills or other framing, and is provided with the discharge-troughs E', arranged under the cylinder D'. These troughs are inclined from their upper to their lower ends, their upper ends meeting close under the cylinder D', and their lower ends being carried down and out to a point about under the outer sides of the receptacle. They are provided on their rear edges with a guard flange or rib, e, to prevent the fertilizers dropping off at the side. I prefer to form the troughs of two sections, e' e², on each side, as most clearly shown in Figs. 6 and 7. The sections e' are pivoted close together on a common pivot at their upper ends, and have their lower ends secured to the door E by bolts e³, passed through slots e⁴ in the hinged door, and provided with nuts, so the section e' may be adjusted and held at any point in said slots. The sections e² are secured to the door by bolts e⁵, passing through slots e⁶, and provided with suitable clamping-nuts, so the section can be adjusted. By this construction the troughs may be set to form two rows, as shown in Fig. 6, or a single row, as shown in Fig. 7. A connecting-platform, F, is hinged at its rear end to the lower end of the concave, and its other end is carried under the cylinder

D' to a point over the rear edge of the discharge-trough. This forward end is adjustably supported by a screw, F', turning through a suitable bearing extended from the end of the platform. The other end of the screw may be threaded into or swiveled to a suitable bearing secured on the side-boards of the machine. The small hopper c' has discharge-openings h formed in its bottom, and the agitator-shaft H has pins h', working in these openings h. A plate, H', is secured on the bottom of the hopper c' by means of set-bolts h², so it may be adjusted over the discharge-openings h, to vary the amount of fertilizers fed through same. A shaft, I, is journaled on the under side of the small hopper in advance of the discharge-openings, and is provided with valves i, arranged to close the discharge-openings in the operation of the shaft. These valves are connected with the shaft by spring-stems i'. A crank-arm, I', is formed on one end of the shaft I and projected upward, as shown. A rod, I², connects the upper end of this arm and the lever B'. A door having discharge-troughs similar to the ones E E' is arranged under the discharge-openings h, as shown. The forward side or board, G, of the large hopper C' is hinged at its upper edge, and has its lower edge adjustable to and from the main feed-cylinder by means of set-screw g', as clearly shown in Fig. 3, so as to vary the size of the feed-discharge. An operating-handle, K, is hinged at its lower end to the forward door, E, and is provided with pins or shoulders K', which engage the shaft B when the door is down, and support same firmly in such position. This handle K also has near its lower end a hook, K², which catches on the shaft B when the door is elevated, and supports said door in such position. A hook, L, is secured on the rear of the hopper c', so as to support the rear trough-door when same is turned up, as will be understood.

In order to give motion to the several parts, I provide the axle A' with a gear-wheel, J, which is meshed with a gear, J', on the shaft H. A sprocket-wheel, J², is secured on the opposite end of the shaft H, which is geared by endless chain J³ with the sprocket-wheel J⁴, secured on the end of shaft D².

The speed of the various shafts may be altered at will by changing the wheels, substituting larger or smaller ones therefor, as desired. In operation, coarse manure—such as barn-yard compost, cotton-seed, fish-scrap, &c.—is put in the large hopper, and fine fertilizer—such as phosphate, kainit, or ground bone—into the small one, and the feeding of both being simultaneously carried on, the fine and coarse are distributed together onto the ground in quantities or proportions which may be varied by changing the gear-wheels, as before described. By adjusting the board G at its lower end to and from the main feed-cylinder the size of the discharge-opening may be varied. The two cylinders, having teeth and meshing as described, tear and cut the

coarse manure up and evenly distribute same. The platform F' serves as an additional feed-regulator. When more manure passes between the feed-cylinders than can be fed out between the supplemental cylinder and the platform F, the surplus is carried back into the hopper, the ribs c², in connection with pins d, preventing any clogging of the parts.

By the double-ended clutch, operating as described, the axle may be locked from revolving, so that any involuntary turning of the feed-cylinders is avoided. It will be seen that as the clutches are thrown out of gear with the hubs of wheels the rod I² operates, in connection with crank I', to turn shaft I and close the discharge-openings h. This is desirable when the machine has its hoppers full, and is being moved from point to point along the road or across a field.

It will be seen that by means of the drop door or apron and the elevating-handle the device may be instantly changed from a drill to a broadcaster; or the door may be raised to pass any obstruction in the path, as will be readily understood.

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

1. In a fertilizer-distributor, the combination, with the hopper and the feed-roller, of the regulating-board hinged or pivoted at its upper end within the hopper and adjustable on said hinge or pivot, whereby its lower end may be set to and from the feed-roller in a line approximating the radius of said roller, substantially as set forth.

2. The combination of the hopper, the feed-roller, the board G, hinged at its upper end within the hopper and adjustable on said pivot, and the set-screw g', all substantially as and for the purposes set forth.

3. The combination, with the concave, the main feed-cylinder, and the supplemental cylinder, of the board F, hinged at its rear end to the concave and extended forward under the supplemental cylinder, and having its forward edge adjustable to and from the supplemental cylinder, and means for holding said board at any proper point of adjustment, substantially as set forth.

4. The combination, in a fertilizer-distributor, of the large and small hopper, the feed mechanism, the shaft having valves i, the clutch, and the operating-lever connected with the clutches and the shafts, whereby the said shaft and the clutches are simultaneously operated, substantially as set forth.

5. In a fertilizer-distributor, the combination of the hopper, the concave, the cutting-ribs c², secured on said concave, the toothed feed-cylinder, and the necessary operating mechanism.

6. The combination of the hopper having discharge-opening, the door or apron hinged at its upper end adjacent to and on one side of said discharge-opening, and provided with troughs arranged thereunder, and means

whereby said door may be elevated and held in suspension, substantially as and for the purposes set forth.

5 7. The combination, in a fertilizer-distributor, of the door or apron, the troughs composed of sections $e e e^2 e^2$, and adjusting and retaining bolts $e^3 e^5$, operating through slots in the apron, substantially as and for the purposes set forth.

10 8. The combination of the hoppers, the feed-cylinder, the wheels having ratchets a , the clutch a' , the shaft I, having valves i and a crank, I' , the shaft B, having cams b' , the lever B^2 , having its forward end engaged with
15 the cam b' and its rear end with the clutch a' , the operating-lever B' , secured to shaft B, and the rod I^2 , connecting said lever B' and the crank I' , substantially as and for the purposes set forth.

9. The combination, with the hopper having 20 discharge-opening, and the shaft B, of the door or apron hinged at its upper end, and provided with troughs projected under the discharge-opening, and the handle-bar K, secured at its lower end to the door or apron, and having its other end carried up over shaft B, and 25 hooks $K' K^2$, secured on said handle-bar, and adapted to engage the shaft B and hold the door in its several positions, substantially as set forth.

30 In testimony whereof I affix my signature in presence of two witnesses.

JAMES EDGAR CLARK.

Witnesses:

J. N. BELL, Jr.,
LEMUEL S. GRIST.