

(No Model.)

2 Sheets—Sheet 1.

T. D. GERE.
FERTILIZER DISTRIBUTER.

No. 271,833.

Patented Feb. 6, 1883.

Fig. 1.

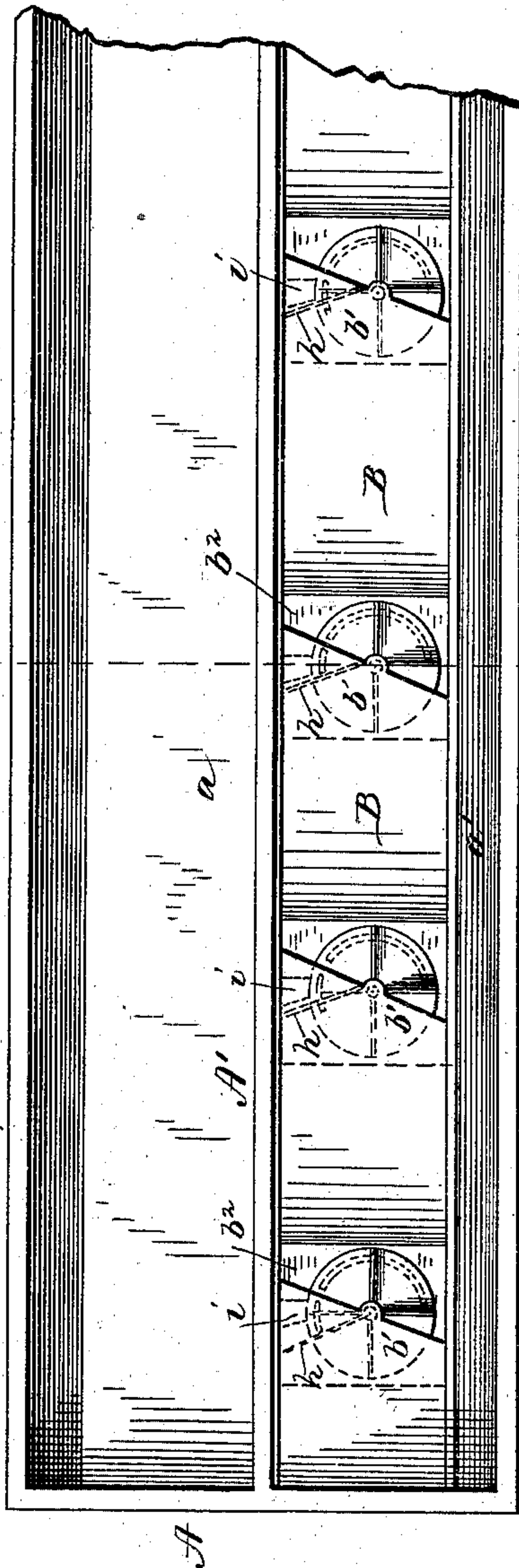


Fig. 2.

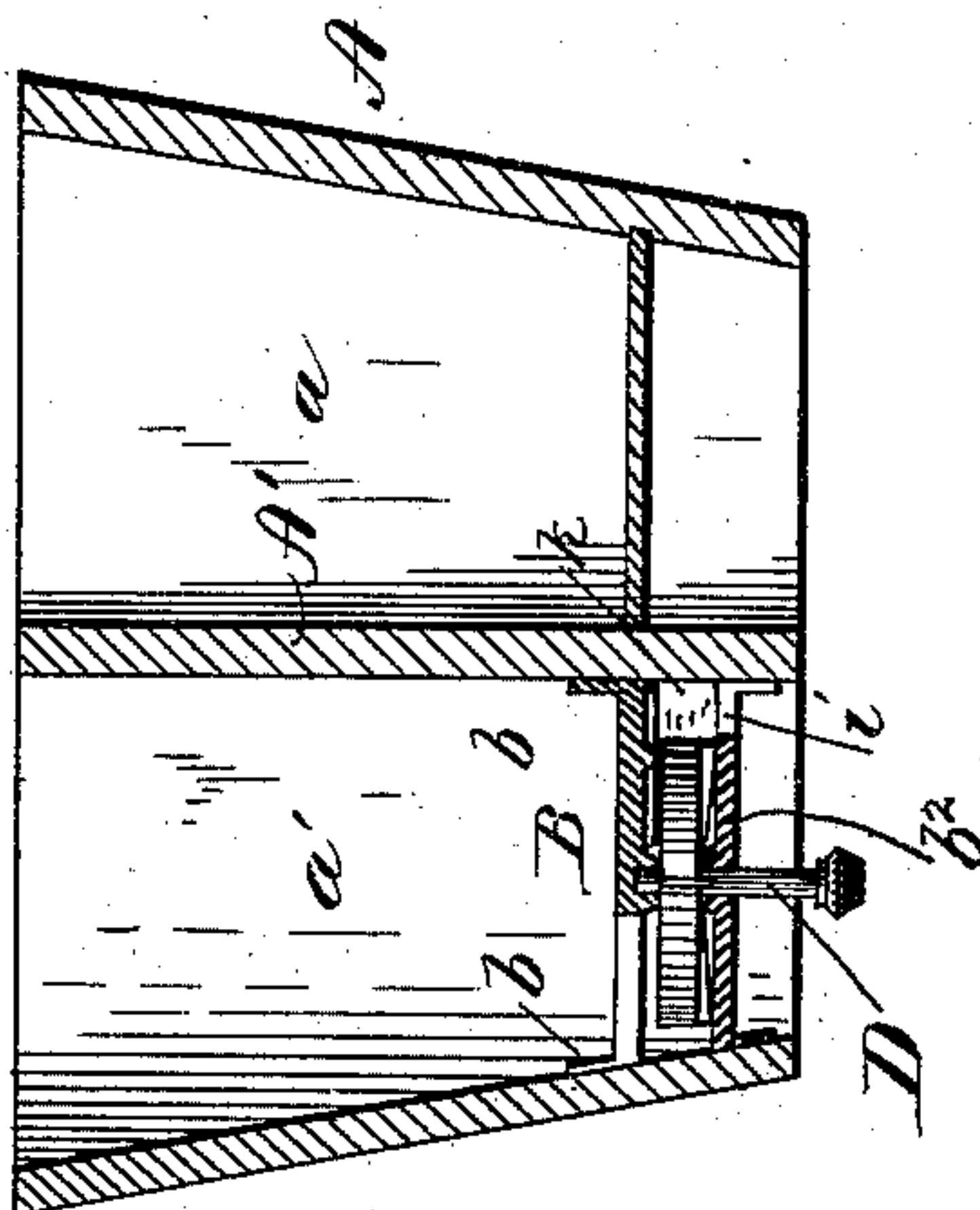
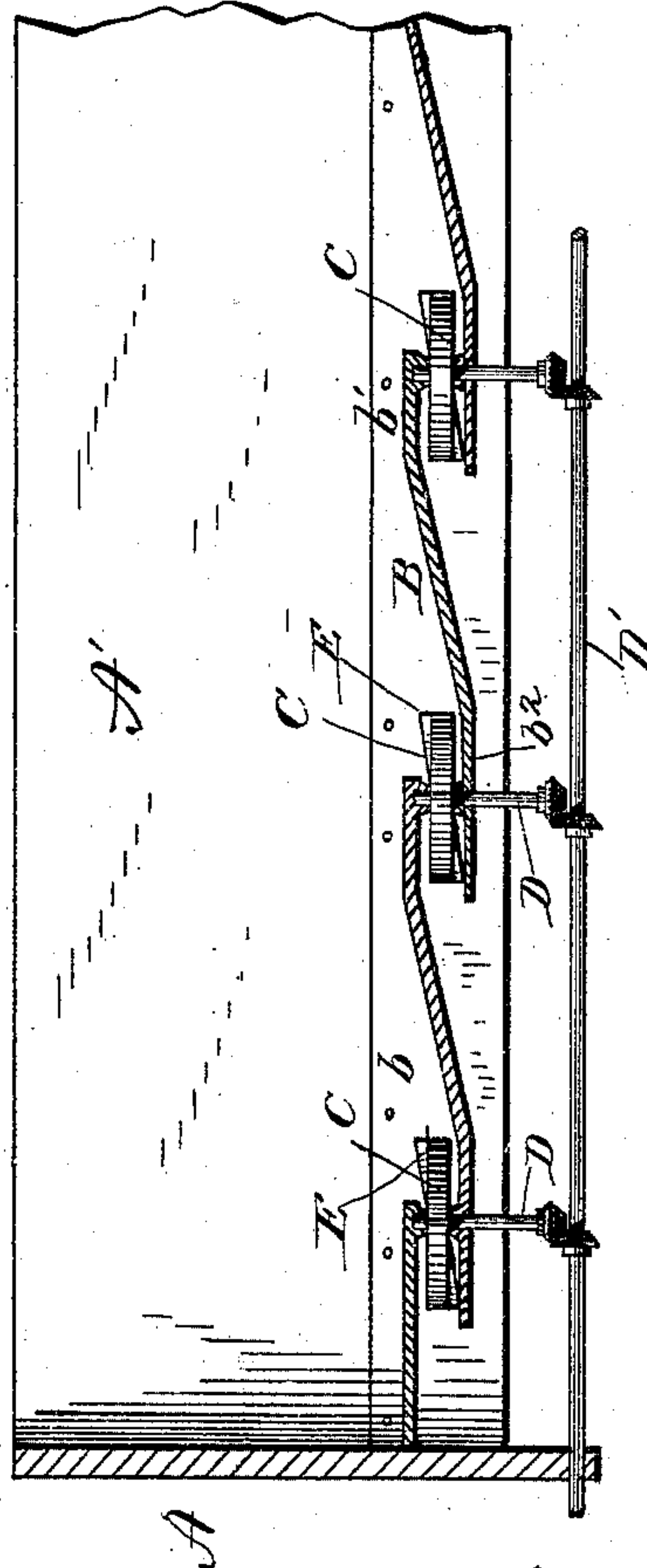


Fig. 3.



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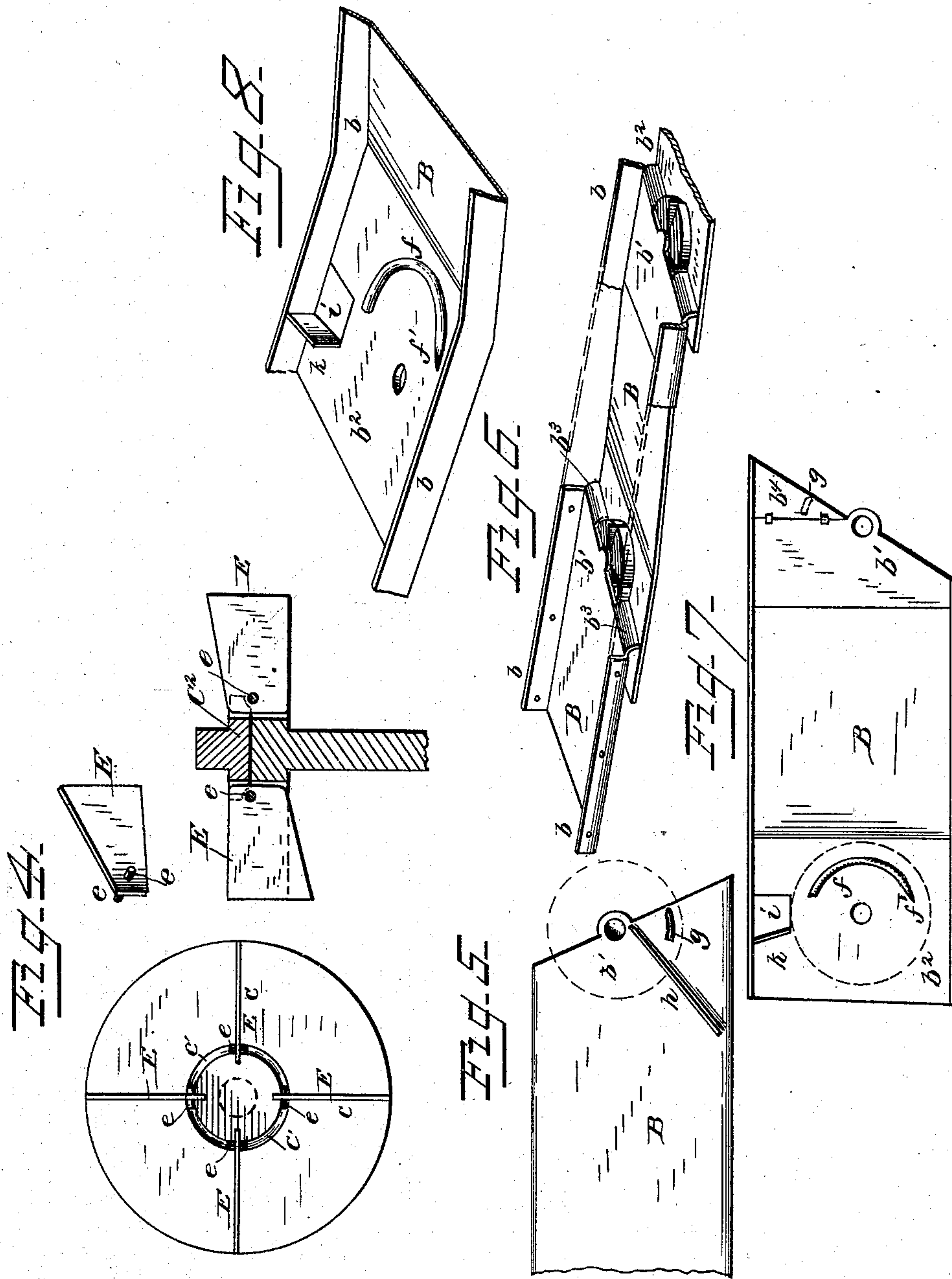
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

THEODORE D. GERE, OF OWEGO, NEW YORK.

FERTILIZER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 271,833, dated February 6, 1883.

Application filed December 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, THEODORE D. GERE, of Owego, county of Tioga, and State of New York, have invented a new and useful Improvement in Fertilizer-Distributers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of fertilizer-distributers in which the hopper-bottom, or a portion thereof, consists of a rotating horizontal disk or series of disks, on which the material in the hopper, or a portion thereof, rests by its own gravity, aided by the jolting of the machine in being drawn over rough or uneven ground; and it consists in providing said disks with radial slots and with blades or buckets moving up and down in said slots, actuated by suitable cam projections, whereby they are projected upward into the hopper and made to grasp and carry out with them a portion of its contents, as hereinafter explained.

It further consists in certain details of construction of the hopper-bottom, and in the arrangement of the cams for actuating the buckets, and of the scraper and outlet or discharge-opening, as hereinafter explained.

In the accompanying drawings, Figure 1 is a plan or top view of a portion of a hopper with the cover removed. Fig. 2 represents a vertical section through the same. Fig. 3 represents, also, a vertical section taken at right angles to that shown in Fig. 2. Fig. 4 shows the rotary disk in plan and in vertical section, and one of its buckets detached in perspective. Fig. 5 is a bottom view of the upper end of one of the sectional hopper-bottom plates, with the disk in dotted outline to show the relation thereto. Fig. 6 is a perspective view, showing the relation of the hopper-bottom sections detached from the hopper. Fig. 7 is a plan view of one of the hopper-bottom sections, and Fig. 8 is a perspective view of the lower end of one of said sections enlarged.

My invention is designed more especially for use in connection with a grain-drill, seeding-machine, or planter; and in the drawings I have shown the hopper as divided into two compartments, the one for the grain being ordinarily in front of the one designed for the

fertilizer; but it will be apparent from the following description that a different arrangement of said parts may be made, and also that the fertilizer-distributer may be used disconnected from and independently of the seed-machine or seed-hopper.

A represents the hopper, divided by a vertical partition, A', into two compartments, a and a', the former, a, being designed for the reception of the seed, and provided in practice with any usual or preferred arrangement of devices for discharging and depositing the seed, and the latter, a', as the fertilizer-compartment. The bottom of this compartment, in the construction shown in the drawings, is composed of overlapping flanged sections B B, provided on their forward and rear edges with upright flanges b, through which they are secured to the front and rear walls of the hopper. These sections are made by preference in the angular form (shown in transverse section, Fig. 2,) with horizontal portions b², underlying the distributing wheel or disk, hereinafter described, at one end, and partly overhanging said disks at the other or upper end, b', with an inclined portion or body connecting the two horizontal portions. The end b', overhanging the end b² of the adjoining plate or section, is provided in front and in rear of the distributing-disks C with a pendent lip or flange, b³, which rests upon the end of the adjoining plate, the central portion of said flange being cut away to permit the wheel or disk to project about half its diameter beyond the end b' of the plate B, the lips or flanges b³ closing the space between the overlapping ends of the plates in front and rear of the disk, and preventing the escape of any material, except such as may be carried out upon the upper exposed portion of the disk.

CC represent the disks, secured to and turning with upright shafts D, mounted in suitable bearings in the overlapping ends of the plates B, the lower end, b², having a perforation, forming the bearing, through which the shaft D extends, its lower end being geared to the transverse shaft D', to which motion is communicated from the ground or carrying wheel or wheels of the machine in any suitable manner. The disks C are provided with radial slots c,

four being shown; but more or less may be used, as desired, in which are secured blades or buckets E, connected by horizontal pins *e* at their inner ends with the disk. To facilitate the attachment of the blades to the disks the latter are provided with annular or circular sockets in their upper ends, surrounding or including the upper end of the shaft D, and having an annular groove, *c'*, in its outer edge for the reception and retention of the pivot-pins *e*, the outer edge of the cap-piece C², fitting in said socket, being similarly grooved to accommodate the upper half of the pins. The blades E are of a width somewhat greater than the thickness of the wheel at their outer swinging ends, tapering thence to a width about the same as the thickness of the wheel at their inner pivoted ends, as shown, the arrangement being such that by means of suitable cams they may be projected above the plane of the upper face of the wheel while passing through that portion of their revolution where the wheel is uncovered and exposed to the material in the hopper, and depressed so as to be flush with or slightly below such upper surface while passing the covered portion of the disk. The horizontal portion *b*² (see Figs. 7 and 8) is provided with a rib, *f*, formed in the arc of a circle, of which the shaft D is the center, its end *f'*, with which the blades E, in the rotary movement of the disk C, first come in contact, being made wedge or cam shaped, adapting it to act upon the blades or buckets, as they enter the uncovered portion of their circuit, for raising them above the plane of the upper face of the wheel and causing them to grasp and carry out with them a portion of the contents of the hopper. The cam or rib *f*, except near its point or cam portion *f'*, may be of uniform height for simply upholding the buckets until they pass under the upper end, *b'*, of the plates B, where said ribs *f* terminate. The lower faces of the ends *b'* of plate B are provided with short pendent ribs *g*, also wedge shape, similar to the points *f'* of ribs *f*, and of sufficient length merely to depress the buckets until their upper edges are flush with the upper surface of the disk C. By this arrangement the material carried by the buckets under the overhanging end *b'* of the plate B, after the bucket is withdrawn, will be carried onward by the rotation of the disk until it comes in contact with a pendent obliquely-arranged rib or scraper, *h*, formed on the lower face of the upper end, *b'*, (see bottom view, Fig. 5,) which closes the space between the disk and the end *b'* and serves to scrape off said material, crowding it outward over the edge of the disk, where it drops through an outlet-opening, *i*, in the lower plate, *b*², and is conducted thence to the ground in any usual or preferred manner. The lower plate, *b*², should be provided with a vertical lip, *k*, in rear of the opening (relatively to the direction of movement of the buckets) to prevent the material being carried beyond the outlet *i* and

to insure its discharge through the same. The upper ends, *b'*, of the sectional bottom plates, B, are shown as crossing the hopper-bottom obliquely, this construction enabling me to locate the discharge-outlets *i* adjacent to the partition-wall A', between the seed and fertilizer compartments, adapting the fertilizer to be conveniently conducted to the tubes, through which the seed is conveyed to the ground, and being therefore the preferred one in a grain-drill or seeding-machine; but it will be obvious that the arrangement may be varied to suit the machine to which my distributor may be applied. Partitions may be made in the hopper between the wheels, and these partition-walls may be made to converge downward, and so arranged as to direct the entire contents of each compartment to the uncovered portion of the wheel, thus insuring an even and regular discharge of such contents as long as anything remains in such compartment.

Modifications may be made in the arrangement of the blades—as, for example, by forming the slots in lines tangential to the hub or shaft of the wheel, thus giving the blades an oblique instead of a radial position. The lower rib, *f*, may be made detached from the ends *b*² and adjustably secured thereto for increasing or diminishing the throw of the buckets, thereby varying their carrying capacity and the amount of the fertilizer discharged, and in this latter case the extreme end of the upper portion, *b'*, of the plates may be hinged, as shown at *b*⁴, and made adjustable by any suitable means to suit the upward throw of the buckets and enabling them to pass under said end, and the body of the sections B, instead of being inclined, may be horizontal and on the same plane with its upper end, *b'*, and in such case may be united with the lower end or arm, *b*², by a vertical offset; but these, with various other modifications, will be obvious to the manufacturer in adapting the distributor to the conditions under which it is to be used.

The machine proper, whether it be a grain-drill, seeding-machine, planter, or be for the separate distribution of the fertilizer only, may be of any usual or preferred construction aside from the special features hereinabove described, and any description of such machine is therefore unnecessary, except to say that the usual arrangement of gearing for varying the speed of the distributor-shaft may be employed, if desired, for varying the speed and consequent capacity of the distributing devices.

Having now described my invention, what I claim as new is—

1. The combination, with the hopper-bottom, of a horizontal wheel or disk having one or more moving blades or buckets, and means for imparting a vertical vibratory movement to said buckets during the rotation of said disk, substantially as described.

2. The hopper-bottom composed of short overlapping sections, in combination with ro-

tating distributing-disks mounted in bearings in the overlapping ends of said sections, substantially as described.

5 3. The horizontal distributing-disks arranged between the overlapping ends of the sectional hopper-bottom plates, in combination with vertically-vibrating blades or buckets, and means for vibrating said buckets, substantially as described.

10 4. The combination, with the hopper-bottom, of the rotating horizontal disk or disks provided with vertically-vibrating buckets, cams for vibrating said buckets, and a scraper for removing from the surface of the disk and dis-
15 charging the material operated upon by the buckets, substantially as described.

20 5. A sectional hopper-bottom composed of a series of plates overlapping at their ends, in combination with a series of rotating horizontal disks arranged between said overlapping

ends and provided with movable buckets, and means for imparting a vertical movement to said buckets in their rotary movement with the disks, substantially as and for the purpose described.

25 6. The hopper-bottom sections provided each with bearings for the horizontally-rotating distributing-disk, cams for operating the movable buckets of said disk, a discharge-outlet and a scraper for removing the material oper-
30 ated upon by said buckets from the face of said disk and conducting it to the discharge-outlet, substantially as described.

In testimony whereof I have hereunto set my hand this 27th day of November, A. D. 1882.

THEODORE D. GERE.

Witnesses:

C. F. PARMELE,
T. E. BROCKWAY.