(No Model.) 3 Sheets—Sheet 1.

S. B. HART.

MACHINE FOR DISTRIBUTING FERTILIZING MATERIAL.

No. 251,226. Patented Dec. 20, 1881.

Fig. 1.

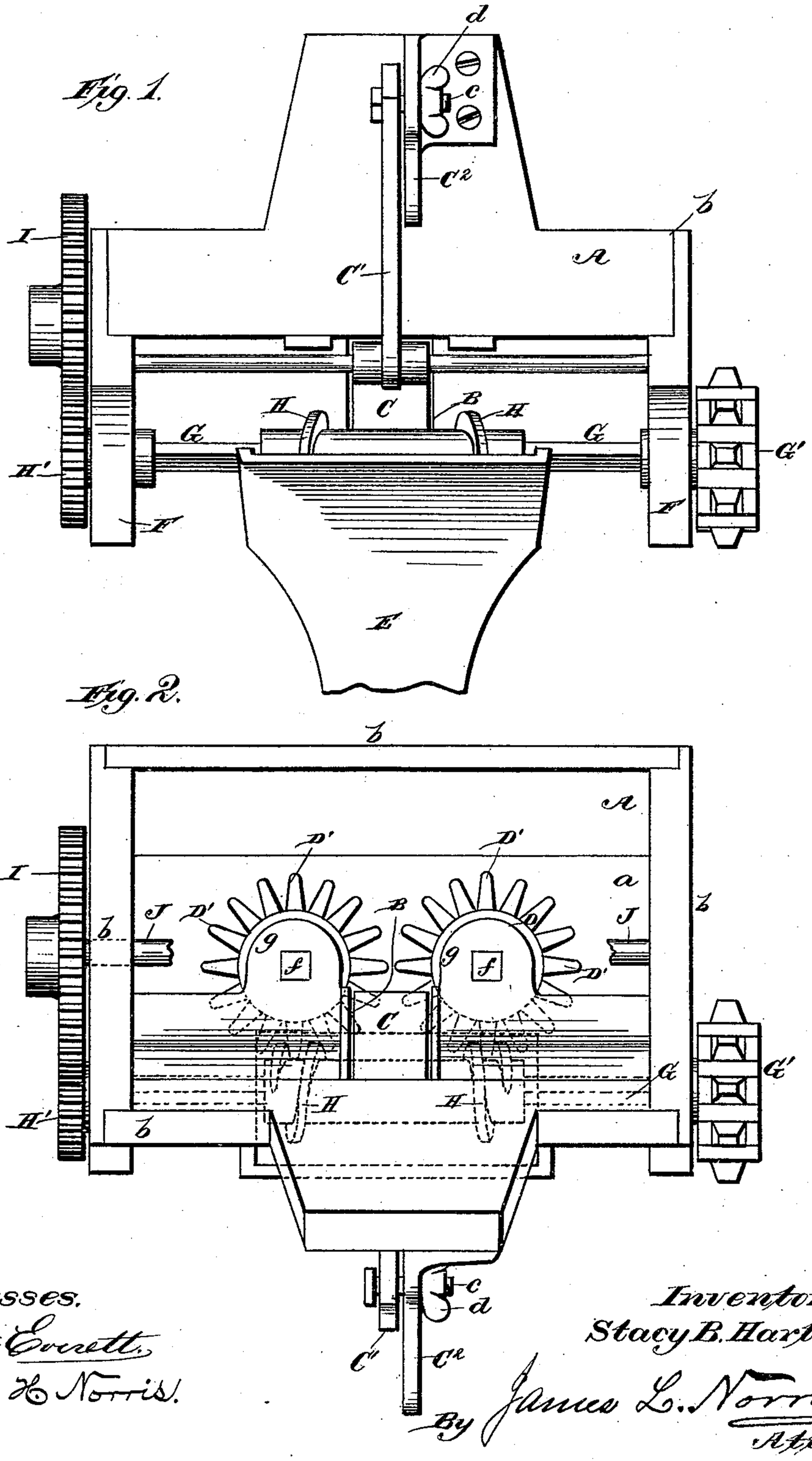

Fig. 2.

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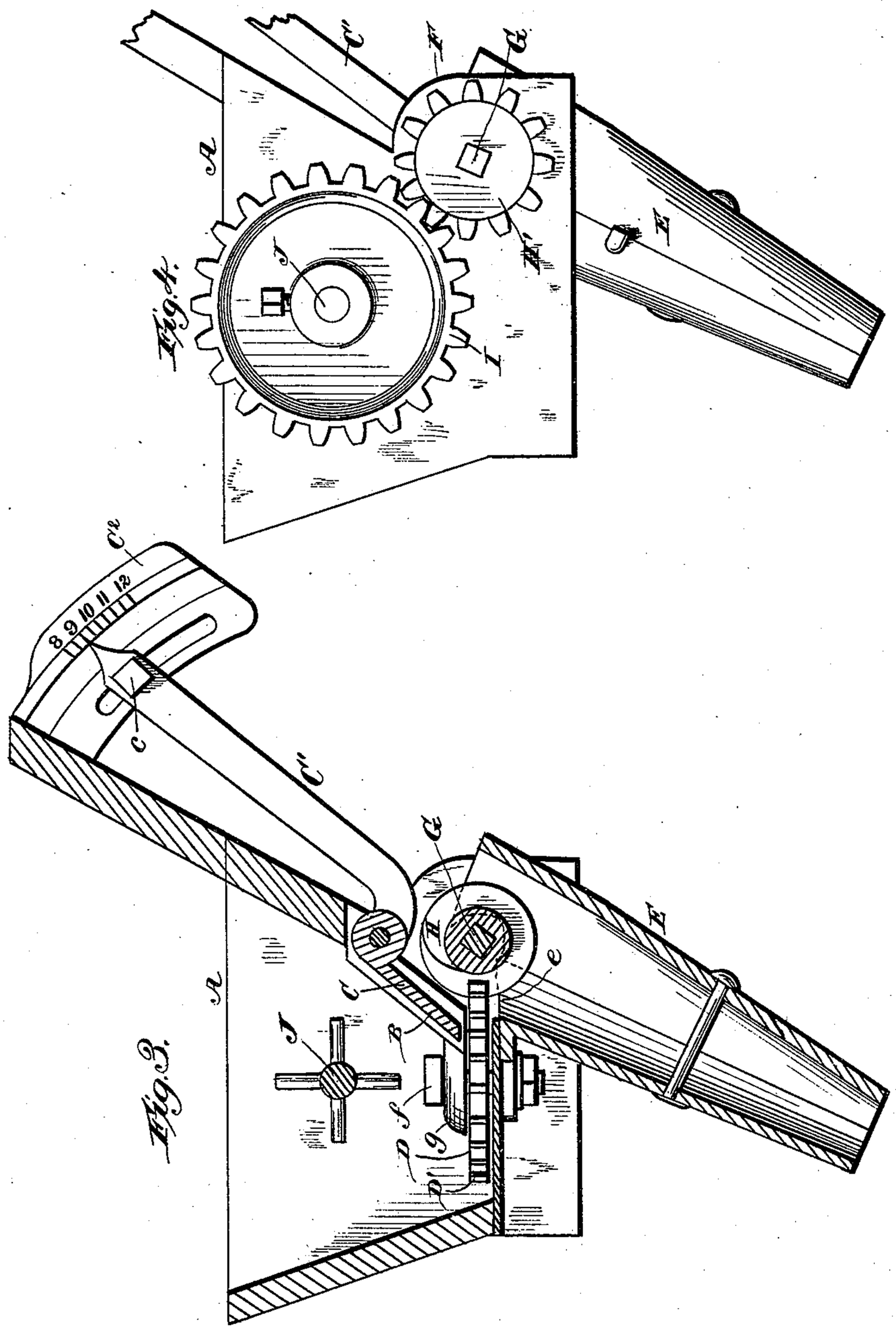

Fig. 3.

Fig. 4.

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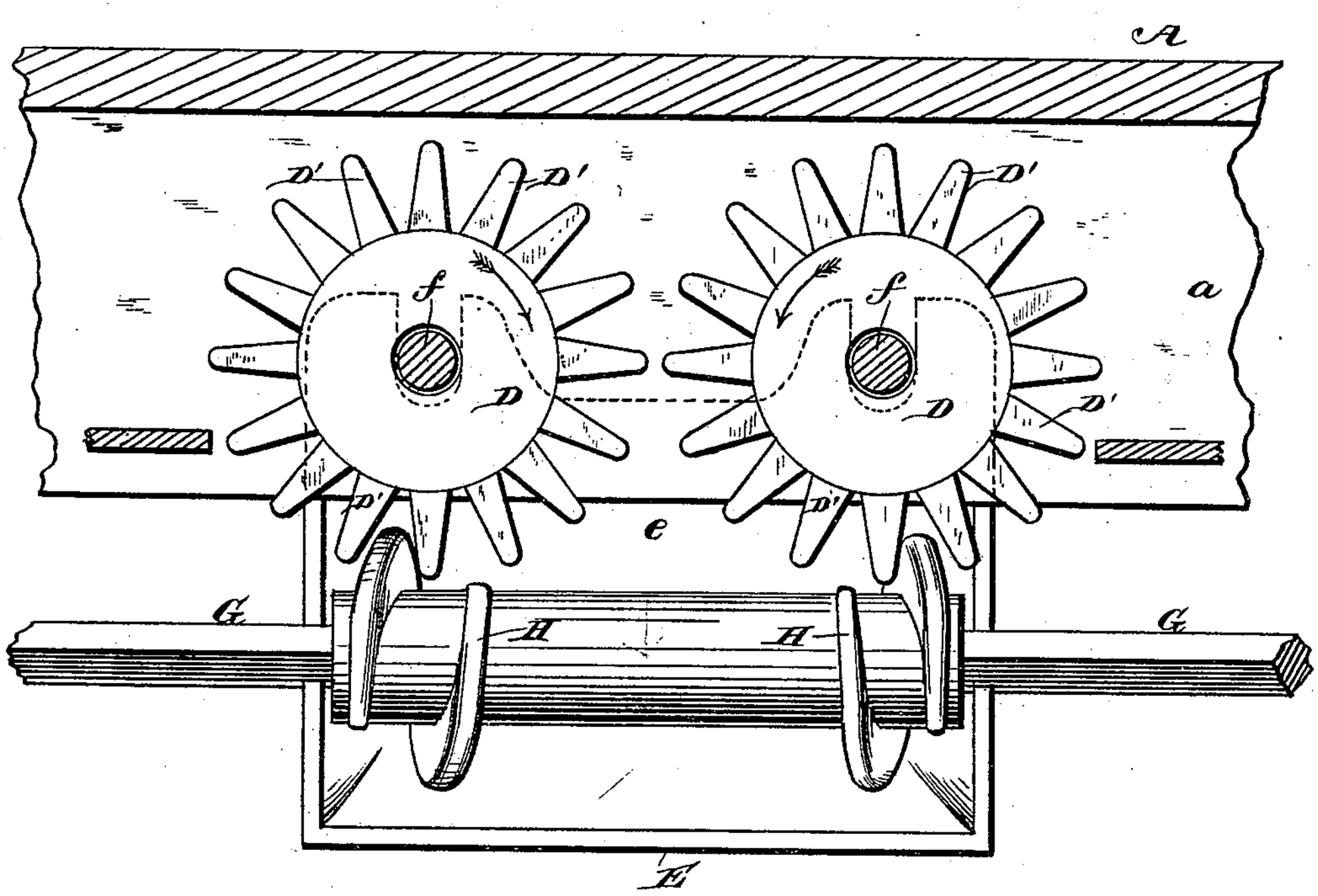
Fig. 5.



Witnesses.
Robt Currett.
Albert H Norris.

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UNITED STATES PATENT OFFICE.

STACY B. HART, OF PEORIA, ILLINOIS.

MACHINE FOR DISTRIBUTING FERTILIZING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 251,226, dated December 20, 1881.

Application filed September 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, STACY B. HART, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented new and useful Improvements in Machines for Distributing Fertilizer Material, of which the following is a specification.

It is well known that fertilizing materials are of a pasty or sticky nature, and owing to such fact it is exceedingly difficult to deliver the same in a uniform manner from the hopper or box which contains the same, because the mass of material clogs up the delivery-orifices in the hopper or box, or else becomes so compact as to render the feeding devices inefficient or incapable of properly performing their function.

The object of my invention is to provide a machine for distributing fertilizing materials which will discharge the material in a uniform and continuous stream through a lateral or horizontal delivery-orifice in the hopper and distribute it in an efficient manner to a discharge-spout having its receiving-mouth arranged at the rear of the hopper. This object I attain by devices embodied in the structure illustrated in the accompanying drawings, in which—

Figure 1 represents a rear elevation of my improved machine; Fig. 2, a top or plan view of the same, with the agitator-shaft broken away to properly illustrate the position of the armed feed-wheels; Fig. 3, a transverse vertical sectional view through the lateral delivery-orifice in the hopper; Fig. 4, a view looking at one end of the hopper; and Fig. 5, a top or plan view of a portion of the hopper, the armed feed-wheels, the worm-shaft, and the discharge-spout, the other parts of the machine being omitted to more clearly illustrate the feed devices and their operative mechanism.

In the drawings, the letter A indicates a hopper consisting of a horizontal flat bottom, *a*, and upright walls *b*. The rear portion of the hopper, adjacent to the bottom thereof, is provided with a lateral delivery orifice or chute, B, within which is pivoted a swinging gate, C, said gate being provided with an upward and rearward projecting arm, C′, connected at its outer end to a slotted plate, C^2, supported on the hopper, the connection of the arm and slotted plate consisting, as shown, of a transverse pin or bolt, *c*, passing through the arm and the slot in the plate, and adjustable by means of the clamping thumb-nut *d*, all in such manner that the gate can be swung and held more or less within the hopper to adjust the area or capacity of the lateral delivery orifice or chute.

Upon the bottom wall of the hopper are arranged two rotating wheels, D, provided on their peripheries with a series of radial arms or teeth, D′, the whole constituting armed wheels of a shape and construction similar to an ordinary pinion or gear wheel. These feed-wheels are arranged upon opposite sides of the delivery orifice or chute B, and at such distance apart as to form between them a horizontal feed channel or passage, which is bounded at the sides by the rotating feed-wheels, and which channel or passage terminates in the lateral delivery orifice or chute through the rear portion of the hopper. The arms or teeth of the feed-wheels serve to catch up and sweep or force the material horizontally along the channel or passage between them and discharge it horizontally through the delivery orifice or chute, and the rotary movements of the wheels are so timed in unison that the arms or teeth of one wheel will be in line or coincident with those on the other wheel when brought to a position parallel with a longitudinal line through the hopper, and as the teeth approach each other their adjacent faces form pockets or compartments, which catch and sweep the material along. The length of the radial arms or teeth on the feed-wheels is such that those of one wheel do not project into the path traveled by the arms or teeth on the other wheel; but they come sufficiently close together as to insure their effective operation in sweeping the material along. The feed-wheels are so arranged that some of their radial arms or teeth at all times project through the rear wall of the hopper and extend over a portion of the receiving-mouth *e* of the discharge-spout E, as more clearly illustrated in Fig. 3. In the example shown in the drawings the feed-wheels rotate in a horizontal plane on the vertical bolts *f f*, which serve to secure the discharge-spout to the under side of the hopper, said bolts extending up through the hopper-bottom, and having their upper ends secured to the brackets *g g* by means of nuts. These brackets project from the rear portion of the hopper, and overhang the feed-wheels to sustain the upper ends of the bolts *f*, and they are part of a cast-iron frame, which forms a portion of the rear

wall of the hopper, the lateral delivery orifice or chute B being also formed, as here illustrated, in this cast-iron frame.

At the rear of the hopper, and journaled in brackets or supports F, is arranged a horizontal shaft, G, provided at a point opposite the feed-wheels with a sleeve having two short arms or spiral flanges, H, the pitch of which being arranged in reverse directions and made to engage the radial arms or teeth of the feed-wheels, whereby the rotation of the worm-shaft imparts a uniform and positive revolving motion to the feed-wheels, thereby causing their adjacent peripheries to travel in the same direction as indicated by arrows in Fig. 5. The arms or spiral flanges, engaging the feed-wheels in the manner described, not only serve to rotate the said wheels, but also act to clear the teeth of fertilizing material and force the same downward, thereby permitting the teeth to again pass into the hopper free of fertilizing material, to catch up and force out a new supply. As shown, that portion of the horizontal shaft which is provided with the worms or spiral flanges is arranged within the upper portion of the discharge-spout E, as more clearly seen in Figs. 1 and 5, and for this purpose the receiving-mouth of the discharge-spout is widened, or extended laterally, whereby the possibility of the material clogging or accumulating therein is effectively avoided.

The worm-shaft is driven from the axle of the usual ground-wheels by a chain-wheel, G′, in a manner not necessary to illustrate, and one or both ends of the said shaft is provided with a pinion, H′, engaging a gear-wheel, I, secured to the outer end or ends of a shaft, J, which is arranged to rotate within the hopper. The shaft J is furnished with means to agitate or loosen the fertilizing material and prevent its being packed, and, as shown, the agitating means consist simply of radial arms.

I have illustrated and described a single delivery-orifice, a pair of feed-wheels, and a single discharge-spout; but in practice a series of delivery-orifices are provided in the hopper, and each orifice is arranged in relation to feed-wheels and a discharge-spout, as represented in the drawings.

It will, of course, be evident that other forms of agitators can be employed, it only being essential to provide some mechanical device to keep the fertilizing material loose and prevent its packing in the hopper.

A fertilizer-distributing machine has heretofore been constructed of a hopper having at or near the center of its bottom wall a delivery-orifice, through which the material drops by gravity when carried over the orifice by a series of long cylindrical arms mounted upon vertical revolving shafts projecting through the hopper-bottom, the said arms being of such length that those on one shaft travel in the path of those on the other shaft, and each of the arms on one shaft successively follows in the rear of those on the other. This structure, however, is not my invention, and, moreover, possesses serious objections to the practical operation of the machine, in that the cylindrical arms do not efficiently feed the material along, and the delivery-orifice clogs up, because the discharge from the hopper depends entirely upon gravity, whereas in my invention a positive and uniform feed is provided for sweeping the material laterally or horizontally through a delivery-orifice in the rear wall of the hopper, thereby rendering it impossible for the material to clog or accumulate in the delivery-orifice.

A single rotating feed-wheel has also been arranged adjacent to a delivery-orifice in the bottom wall of the hopper, said wheel being provided on its upper side with vertical projections, which serve as conveyers; but in this form of machine the discharge from the hopper depends entirely upon gravity, which, as before stated, is inefficient.

What I claim as my invention is—

1. The combination of a hopper having a single lateral delivery-orifice through its rear portion and two rotating armed wheels, the adjacent peripheries of which travel in the same direction and arranged on opposite sides of the delivery-orifice to form an unobstructed feed channel or passage, which is bounded on two sides by the rotating wheels, whereby the material is fed along the hopper and discharged horizontally through the single lateral delivery-orifice.

2. In a fertilizer-distributing machine, the combination of a hopper provided with a single lateral delivery-orifice in its rear portion and two feed-wheels rotating, as described, on opposite sides of the delivery-orifice, and projecting through the rear wall of the hopper, to carry the material between them and discharge it through the single lateral delivery-orifice at the rear of the hopper.

3. In a fertilizer-distributer, the combination of two armed or toothed wheels located on opposite sides of a single delivery-orifice in the hopper and acting to carry the material between them, with two worms or spiral flanges arranged on a shaft with their pitch in reverse directions, whereby the two wheels are rotated and their adjacent peripheries caused to travel in the same direction, substantially as and for the purpose described.

4. In a fertilizer-distributer, the combination of a hopper, an agitator therein, two armed wheels arranged in the bottom portion of the hopper, a shaft provided with worms or spiral flanges engaging the armed wheels and rotating them, as described, and cleaning the teeth thereof, and connecting mechanism between the worm-shaft and the agitator for simultaneously operating the parts.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

STACY B. HART.

Witnesses:
ALBERT H. NORRIS,
JAMES A. RUTHERFORD.