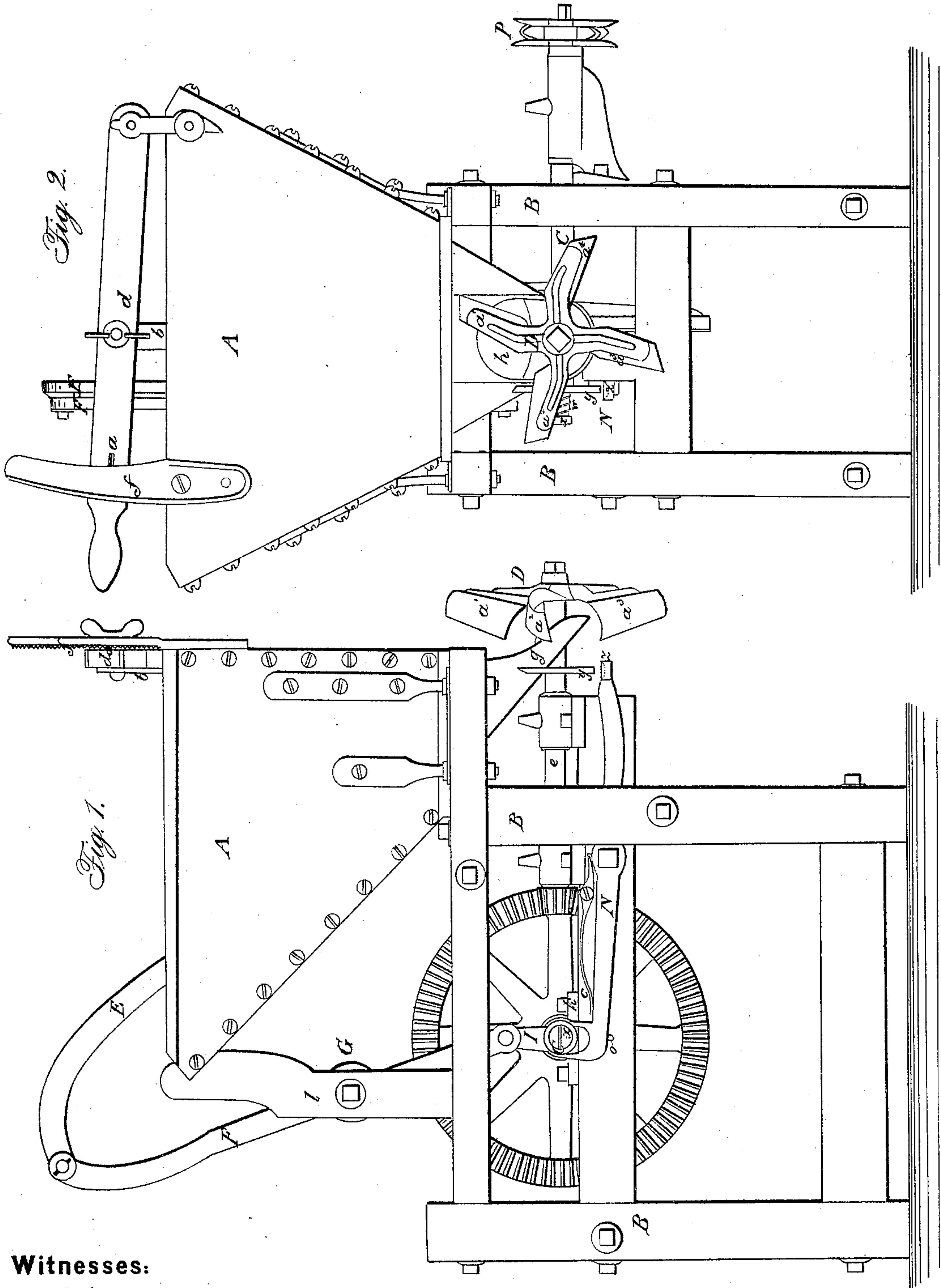


P. D. CUMMINGS.
Broadcast-Seeder.

No. } 568, {
31,572. }

Patented Feb. 26, 1861.



Witnesses:

Chas. Mahon
Clinton Furber

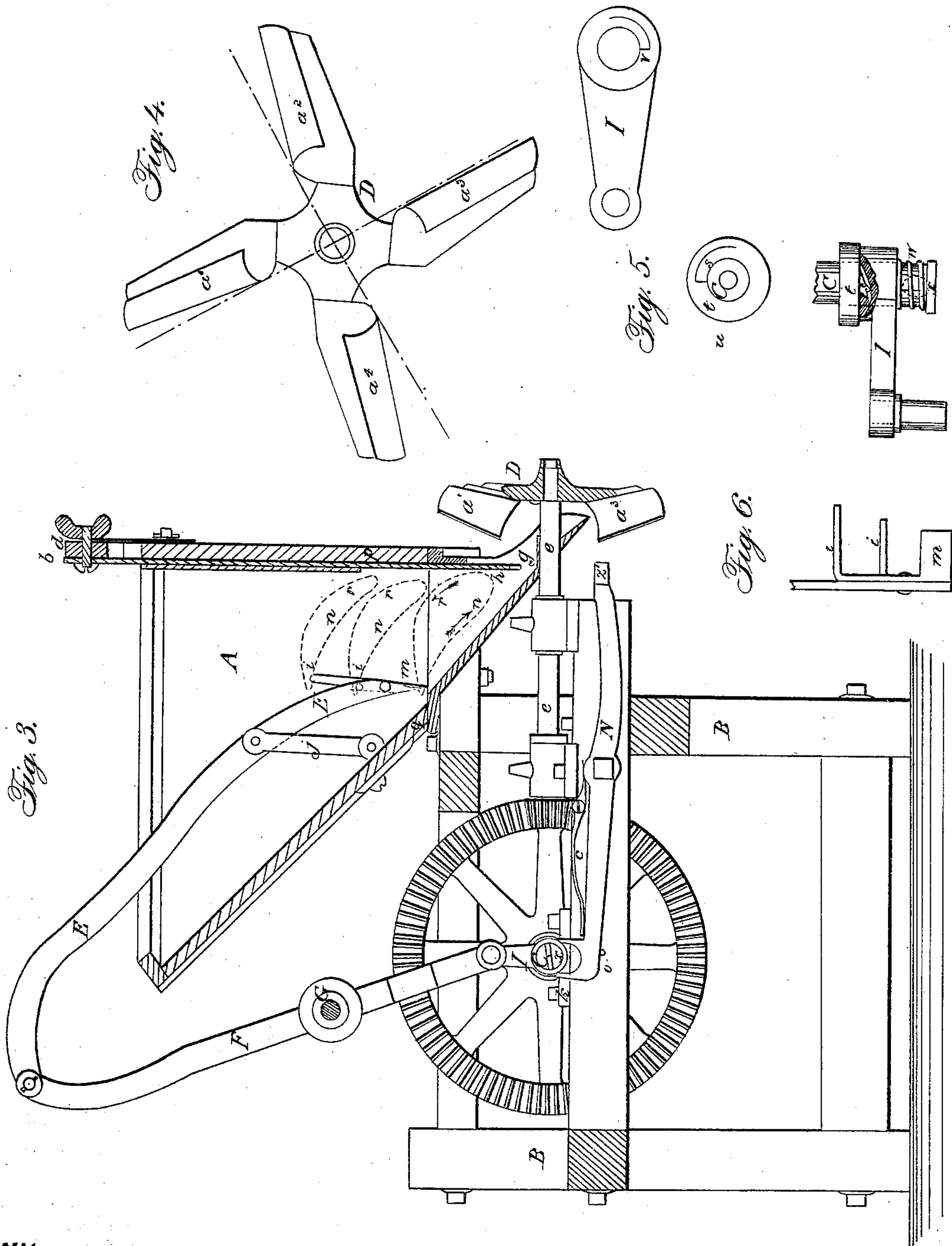
Inventor:

Perley Cummings

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UNITED STATES PATENT OFFICE.

PERLEY D. CUMMINGS, OF PORTLAND, MAINE, ASSIGNOR TO D. H. FURBISH,
OF SAME PLACE.

IMPROVEMENT IN SOWING-MACHINES.

Specification forming part of Letters Patent No. 31,572, dated February 26, 1861.

To all whom it may concern:

Be it known that I, PERLEY D. CUMMINGS, of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Machines for Sowing Seed and other Substances for Farmers' Use, and that I have assigned all my right, title, and interest in the said invention to DEPENDENCE H. FURBISH, of Portland, aforesaid; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a seed-sowing apparatus embodying my invention and properly constructed to be applied to a cart or wagon. Fig. 2 represents a view of the face of the same. Fig. 3 represents a vertical longitudinal section of the same. Fig. 4 represents a view of the inner side of the rotating centrifugal discharger on an enlarged scale. Fig. 5 represents several details of the mechanism upon an enlarged scale, and Fig. 6 represents a face view of the stirrer.

My invention has reference particularly to sowing-machines for distributing seed and other materials broadcast by centrifugal force; and my invention is divided into several parts.

Previous to my invention rotating dischargers have been constructed in which the spouts or channels through which the seed passes centrifugally from a central eye to the periphery all diverge from the axis of rotation, either in precise radial lines or at the same angle with the radii thereof, the result of which mode of construction is that each spout discharges the substance sowed precisely as all the other spouts. Hence, if the speed and length of spout from the axis of rotation do not bear the exact relation to each other which is necessary to secure even distribution of material sown at both sides of the machine, an unequal distribution of material occurs. As the speed of the machine depends upon the user, it varies with each operator, and hence in the practical operation of the machine the distribution of seed from seed-dischargers of the usual construction is rarely equable.

The first part of my invention is designed to equalize the distribution of the material sowed under varying speeds of the machine, and con-

sists in a centrifugal seed-discharger which is a combination of two or more spouts that diverge from a common axis of rotation at different angles with the radii drawn respectively through the inner ends of said spouts.

The second part of my invention relates to the stirrer by means of which the material to be sowed is agitated and caused to pass down the hopper to the discharger, and consists in combining the stirrer with mechanism that imparts to it what may be termed a "triangular movement," so that the stirrer in its descent may present a broad face to the material and shove the latter downward, and that in its ascent it may pass edgewise through the mass of material in the hopper, thus loosening the material without imparting any injurious ascending movement to it.

The third part of my invention consists in combining the stirrer with the rotating shaft or other moving part of the machine that imparts motion to the stirrer mechanism in such manner that the stirrer will be in gear and continue to operate so long as the vehicle carrying the machine continues to move forward, and that the stirrer will be thrown out of gear and stand still when the vehicle is backed or its wheels turned in the same direction that they are when backing takes place. By this part of my invention the stirring of the material to be sown and its consequent delivery to the rotating discharges cease whenever from any cause the rotating shaft of the centrifugal discharger is turned in a wrong direction, and the loss of material at such times is prevented.

The fourth part of my invention consists in combining the stirrer mechanism with the seed gate or valve which regulates the flow of material from the hopper to the rotating discharger in such manner that the closing of the seed-gate throws the stirrer out of gear. By this part of my invention the packing of the material to be sown by the stirrer against the inner face of the seed-gate at times when the gate is closed is prevented, as the operation of the stirrer is caused to cease by the act of closing the seed-gate.

My improvements are all embodied in the centrifugal sowing apparatus represented in the accompanying drawings. The hopper A of this apparatus is mounted upon and secured

to a frame, B, which also sustains the main shaft C and the shaft of the rotating centrifugal discharger D. The hopper A is fitted with a spout, *g*, which conducts the material into the eye of the discharger, or, in other words, into the central space between the inner extremities of the spouts thereof. The opening in the hopper from which the material issues is fitted with a sliding gate, *h*, having a stem, *b*, which is connected with a lever-handle, *d*, by raising or lowering which the gate is raised or depressed to vary the issue of the material to the discharger, and consequently the quantity of material sown. This lever is fitted with a click, *a*, which is caused to engage by the spring of the lever in any one of a series of notches in a standard, *f*, so that the lever is retained in any position in which it may be set, and the inner face of this standard is graduated to show the approximate quantity of material issuing with any opening of the seed-gate.

The stirrer is located within the hopper, and consists in this instance of a flat paddle, *m*, and two rods, *i i*, projecting horizontally from the lower arm of the lever E. This lever is pivoted to a radius-bar, *j*, in the hopper, which forms a moving fulcrum. Its longer arm projects upward, is bent to pass over the edge of the hopper, and is connected by a rocking lever, F, with the crank-pin of a crank, I, whose hub is fitted loosely upon the extremity of the main shaft C of the apparatus. The rocking lever F slides in a rocking boss, G, pivoted to an upright, *l*, of the frame, and fulfills the double office of connecting-rod and lever to impart a peculiar reciprocating movement to the stirrer-lever E from the rotating pin of crank I. This motion is modified by the action of the radius-bar *j*; but the operation of the machine is such that during a portion of an entire revolution of the crank the horizontal members of the stirrer are caused to descend in the hopper in lines nearly parallel with the inclined side thereof, as indicated by the red lines *n n n* in Fig. 3, the paddle *m* bearing its face against the material in its range of motion, while during the remainder of the revolution of the crank the horizontal members of the stirrer are caused to ascend in lines nearly parallel with the upright side *p* of the hopper, and to pass over toward the inclined side *q* thereof, as shown by the lines *r* in Fig. 3. During the ascending movement the edge of the paddle *m* is presented to the material, so that the latter is loosened up without having any material upward movement imparted to it. From the construction of the mechanism it follows that the descending movement of the stirrer is effected in less time than the remainder of the movement thereof, as during the former movement the crank-pin in its revolution moves nearer the rocking center of the rocking lever F. The hub of the crank I is fitted to turn freely on the extremity of the shaft C, and also to slide endwise there-

on. It is pressed toward the collar *t*, Fig. 5, of the shaft by means of a helical spring, *w*, coiled thereupon, and held in place by a bolt, *x*. The face of the collar *t* adjoining the crank-hub is fitted with a wedge-formed snug, *s*, and a corresponding snug, *v*, is formed in the adjacent face of the crank-hub, so that when the shaft C turns in the direction of the arrow *u* the butt-end of the snug on the collar bearing against the butt-end of the snug on the crank-hub causes the crank to turn with the shaft and impart motion to the stirrer. When, however, the shaft C is turned in a direction the reverse of that indicated by the arrow *u*, the butt-end of the snug of the collar moves away from that on the crank-hub, and the long inclined face of the former, bearing against the corresponding inclined face of the crank, moves the crank endwise on the shaft without imparting rotary motion to it. Consequently under such circumstances no motion is imparted to the stirrer. The helical spring *w* permits the endwise movement of the crank and returns it toward the collar of the shaft, so as to place the butt of the snug of the crank in range with that of the collar whenever the shaft moves in the direction of the arrow, and the butts of the two snugs are made slightly hooked, so as to prevent any tendency of the crank to move away from the collar while it is being turned with the shaft. The snugs and spring thus constitute a species of self-acting spring-clutch, which throws the stirrer into gear or out of gear, according as the driving-shaft is turned in one direction or the other.

In order that the stirrer may be thrown out of gear when the hopper-gate is closed, the latter has a rod, *y*, made fast to it, and a lever, N, is pivoted to the frame of the machine with one of its ends *z* within the range of motion of the gate-rod when the latter is depressed to its lowest limit by the depression of the hopper-gate. The other end of the lever is forked to embrace the extremity of the main shaft C, and its forked end is made wedge-shaped, so that when it is raised and inserted between the hub of the crank I and the side of the adjacent box *k* of the shaft it moves the crank-hub endwise on the shaft, so that the two snugs are no longer engaged, and the crank is no longer driven by the main shaft. When the crank ceases to turn the stirrer of course ceases to operate. Hence by the combination described the stirrer is thrown out of gear whenever the hopper-gate is closed by the operation of closing it. The lever N is pressed upon by a spring, *e*, which depresses its forked end whenever the raising of the hopper-gate lifts the gate-rod *y* from the front end of the lever. It is also fitted with a stop, *o*, which limits the movement of the lever by the spring.

The rotating seed-discharger consists of a series of spouts, *a' a² a³ a⁴*, which diverge from the axis of rotation at different angles with the radii thereof, as indicated at Fig. 4 by the

red lines, representing radii diverging from the axis of rotation. In the example represented in the drawings the spouts are four in number, and each has the form of a half-tube whose inner extremity revolves around the seed-spout. Each spout in its revolution intercepts the material passing from the seed-spout toward the ground, carries it laterally, and discharges it centrifugally in the air, so that it falls broadcast upon the ground as the machine is carried over the latter. The general principle of this apparatus is the same as that of Cahoon's invention, patented the 1st of September, 1857; but it has the advantage of causing a more equable spread of the material over the ground under varying speeds, by reason of the peculiarity by which it is characterized—viz., the different divergence of the several spouts from the axis of rotation.

The sowing apparatus thus described and represented in the drawings is designed to be carried by a wheel-carriage, and to have motion communicated to the main shaft C from one of the wheels of the carriage. To this end the main shaft is fitted with a sprocket-wheel, P, to which a chain leading from a sprocket-wheel secured to one of the wheels of the vehicle can be applied. The sowing apparatus thus described embodies all the improvements described in this specification; but my improvements may be applied in whole or in part to sowing-machines, as may be deemed expedient. The mechanical devices also by which they are carried into effect may be modified, and the mechanical equivalents in the same combinations may be employed in place of the specific devices described herein. The apparatus described is designed to be operated by power; but it may also be operated by hand,

and smaller hand-machines embodying my improvements in whole or in part may be constructed to be carried upon the body of the operator.

I do not claim to be the first who applied centrifugal force to the distribution of seed or other material broadcast; but

What I claim as my invention in sowing-machines, and desire to secure by Letters Patent, is—

1. A rotating centrifugal discharger for seed and other materials which is a combination of spouts that diverge from the same axis of rotation at different angles with the radii drawn respectively through the inner ends of said spouts, substantially as described.

2. The combination of the stirrer with mechanism that causes the stirrer to descend and rise in the hopper in a path substantially such as described, the descent and ascent being made in different directions, for the purpose specified.

3. The combination of the stirrer with the rotating shaft (or other moving part of the machine) that drives it in such manner that the stirrer is in gear when the shaft is turned in one direction and out of gear when the shaft is turned in the reverse direction, substantially as described.

4. The combination of the stirrer mechanism with the hopper-gate in such manner that the closing of the hopper-gate throws the stirrer out of gear, substantially as described.

In testimony whereof I have hereunto subscribed my name.

PERLEY D. CUMMINGS.

Witnesses:

CHAS. W. CAHOON,
CLINTON FURBISH.