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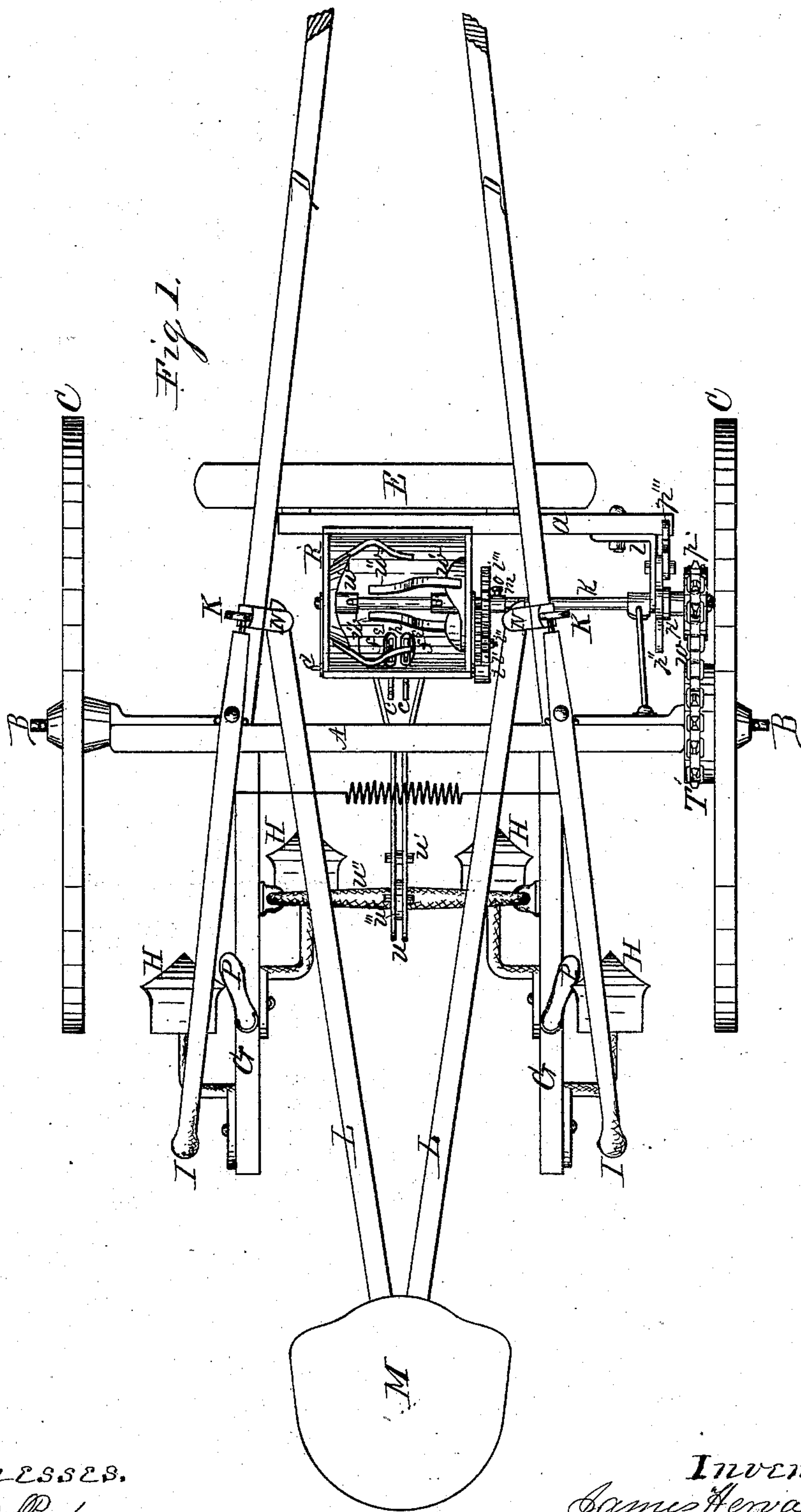
3 Sheets—Sheet 1.

J. H. JONES.

Combined Seed Planter and Cultivator.

No. 239,799.

Patented April 5, 1881.



Witnesses.
P. D. Peck
A. O. Behel.

Inventor.
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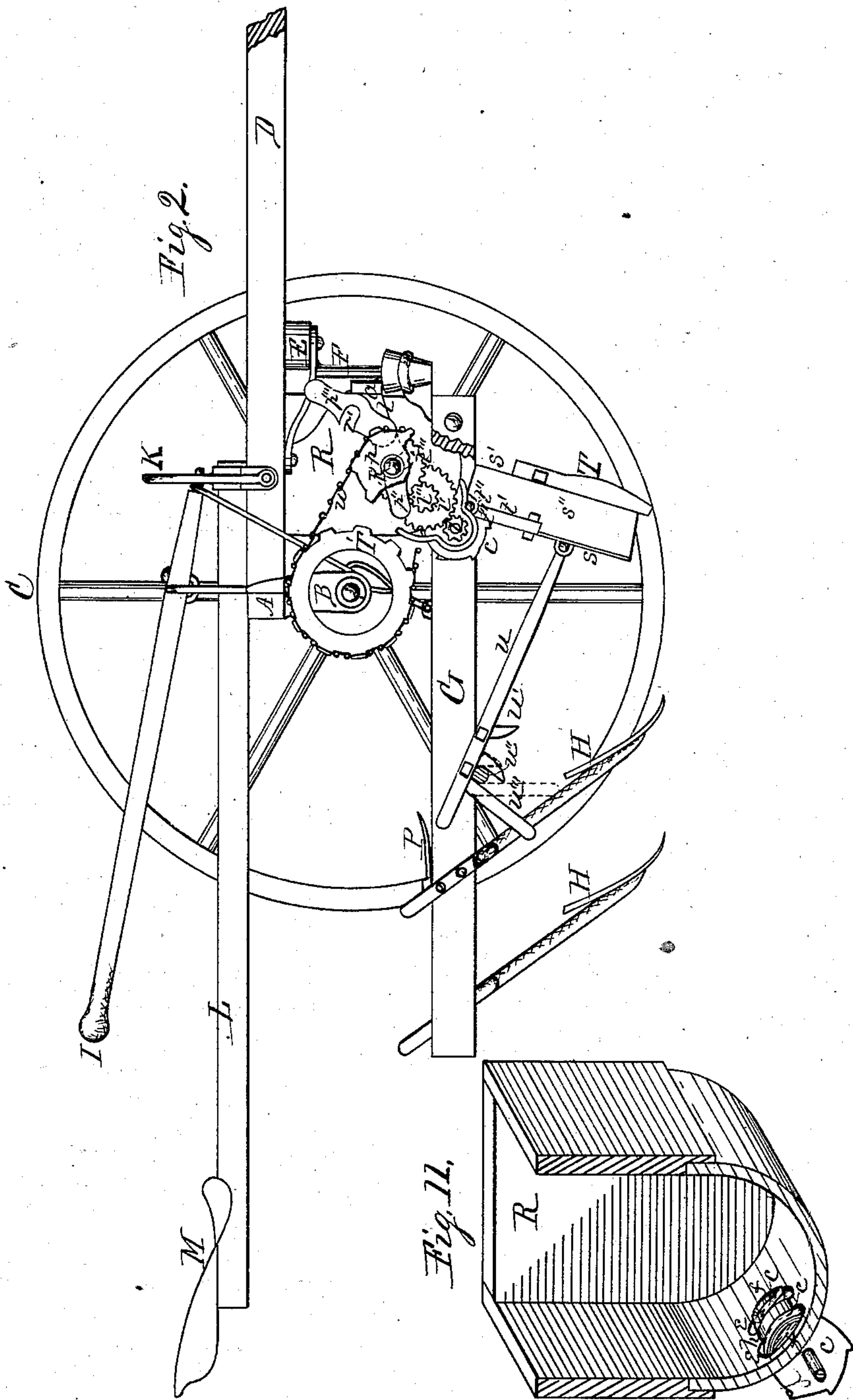
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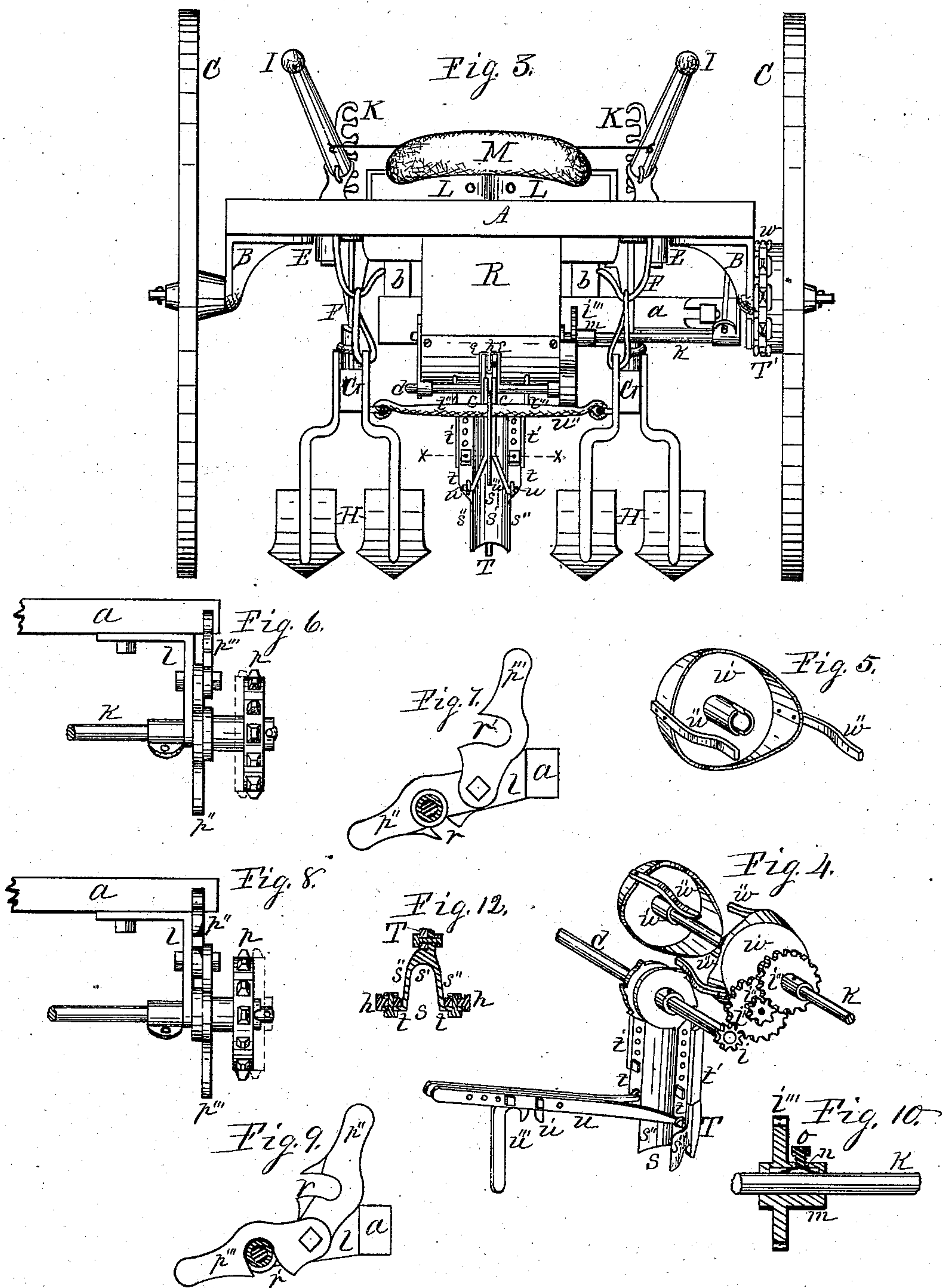
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UNITED STATES PATENT OFFICE.

JAMES H. JONES, OF ROCKFORD, ILLINOIS.

COMBINED SEED-PLANTER AND CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 239,799, dated April 5, 1881.

Application filed June 15, 1880. (Model.)

To all whom it may concern:

Be it known that I, JAMES HERVA JONES, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Seed-Planter and Cultivator, of which the following is a specification.

This invention relates to improvements in seed-planters and cultivators, and in their combination to produce a machine capable of useful results in its combined or separate capacities, and as a seed-planter designed more especially as a cotton-seed planter; and it consists in certain features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a machine embodying my invention, of which Fig. 2 is a side elevation, in which the carrying-wheel is omitted and some of the parts are broken away to more clearly reveal the parts. Fig. 3 is a rear elevation. Fig. 4 is an isometrical representation of the seeding mechanism and of the parts immediately connected therewith. Fig. 5 is an isometrical representation of one of the stirrer-heads with stirrer-arms attached. Fig. 6 is a plan view of the clutching mechanism and shifting-levers with the clutch in gear. Of this plan view, Fig. 7 is an elevation with sprocket-wheel removed, and in which the position of the shifting-levers are shown. Fig. 8 is a like plan view of the same parts as shown in Fig. 6; but in this figure the clutch is out of gear. Of this plan view, Fig. 9 is an elevation with sprocket-wheel removed, and in which the position of the shifting-levers is shown. Fig. 10 is a central section, showing the slip-connection of the master-wheel of the gear-train with the shaft. Fig. 11 is an isometrical representation of the seed or picking wheels and a portion of the hopper. Fig. 12 is a transverse section of the seed-spout on dotted line X of Fig. 3.

In the figures, A represents an axle-tree, of suitable dimensions, having fixed to its end portions axle-arms B, which receive carrying-wheels C, fitted to revolve thereon.

D are tongue-beams, having their rear ends joined to the axle-tree, from which points they converge, meeting forward at a central point, producing a suitable tongue. A cross-bar, E, is fixed to the under side of the tongue-beams,

forward of the axle-tree and parallel thereto. To the end portions of this cross-beam and to the tongue-beams are fixed pendants F. The lower end portions of these pendants are connected to the forward ends of the drag-bars G by a suitable hinge-joint, to permit of the vertical and lateral movements common to drag-bars in like implements. These drag-bars extend from their hinged connection with the pendants rearward under the axle-tree, and their rear portions are provided with shovels H, adjustably fixed to their opposite sides by any of the usual known methods.

At I are represented raising and lowering levers, pivoted on supports rising from the main frame, and their forward portions are connected with the drag-bars, rearward of their hinged connection with the pendants, by means of suitable hook-link connection, through which, by means of the levers, the drag-bars can be raised and lowered. The forward ends of the raising and lowering levers are fitted with an arm, projecting forward therefrom to engage the teeth of ratchets K, fixed to the tongue-beams, from which they rise to receive the arm projecting from the forward end of the levers, operating to hold the beams at any elevation within the limits of the devices. The upper portion of the link-connection of the levers with the drag-bars are of hook form, adapted to embrace the tongue-beams when the drag-bars are raised, to limit the lateral swaying thereof in transportation.

At L are represented beams suitably joined at their rear ends, producing a V-formed frame, having a driver's seat, M, mounted on its rear end. The forward portion of this seat-frame has its fulcrum-support on the axle-tree, and its extreme forward ends, in advance thereof, are held in position and made vertically adjustable to raise and lower the seat over its fulcrum-support by means of brackets N, fitted to engage the beams, and made vertically adjustable in their connection with the tongue-beams.

At P are represented foot-supports, adjustably fixed to the drag-bars to receive the feet of the operator, to enable him to control the lateral movements of the drag-bars. These several parts hereinbefore described, in their construction, arrangements, and operation, are substantially the same as like parts represent-

ed and described in my application for improvements in cultivator and seeder combined filed in the United States Patent Office on or about April 15, 1880, and I do not therefore
 5 deem it necessary to enter into a more detailed description of the several parts and of their operation in this specification.

At R is represented a seed box or receptacle, of rectangular form in plan, having a curved
 10 bottom semicircular in cross-section, having its center portion enlarged in depth in barrel form, which, in connection with a rotary stirrer or agitator, operates to carry the seed to the center of the receptacle to subject it to the ac-
 15 tion of the seed-wheels. This seed-box is placed in the lengthwise center of the herein-before-described machine, forward of its axle-tree and under the main frame, having the axial center of its curved bottom crosswise of
 20 the machine and parallel with the axle-tree thereof, and in this instance is supported in position by means of a transverse bar, *a*, rectangular in cross-section, fixed to the forward side of the box parallel with the axial center
 25 of its curved bottom.

At *b* are represented angle-brackets having their vertical arms fixed to the transverse bar *a* on the seed-box and their horizontal arms fixed to the cross-bar E of the main frame of
 30 the machine, which fixes the seed-box firmly in position thereon.

At *c* are represented seed-distributing or picker wheels, of disk form, about one-half of the periphery of which is formed with picker-teeth resembling the teeth of a saw, and the remainder of their periphery is reduced to a circle about equal in diameter to the portion forming the bottom of the teeth. These wheels, suitably separated and placed with the toothed
 35 portion of the one by the side of the plain portion of the other, are mounted on a shaft, *d*, to revolve therewith. This shaft *d* is fitted to revolve in suitable bearings fixed to the seed-box, in such relative position therewith
 40 that the seed-wheels extend into the seed-box, entering through transverse slots *e* cut in its rear under portion. These transverse slots, on the inner surface of the curved bottom, are provided with uprising cheek-pieces *f*, formed to
 45 protect the sides of the disk seed-wheels from the action of the seed in the hopper, and having their upper edge curved to coincide with the periphery of the plain portion of the seed-wheels. The space between the seed-wheels
 50 on the inside of the seed-box is fitted with a curved bar, *h*, which rises to coincide with the curve of the plain portion of the periphery of the seed-wheels. With this arrangement it will be seen that in the rotations of the disk seed-
 55 wheels only the toothed portion thereof will rise above the guards, consisting of the cheek-pieces *f* and the curved center bar, *h*, and that these portions will act upon the seed contained in the seed-box alternately on opposite sides.

65 The outer portion of the seed-wheel shaft is fitted with a gear-wheel, *i*, the teeth of which

engage the teeth of a counter gear-wheel, *i'*, mounted to revolve on a stud projecting from the end of the seed-box, and carrying a gear-pinion, *i''*, the teeth of which engage the teeth
 70 of the master gear-wheel *i'''*, mounted on the main driving-shaft *k*, which is supported to revolve in the axial center of the curved bottom of the seed-box in suitable bearings in its ends, and in a bracket-arm bearing, *l*, fixed to
 75 the end portion of the transverse bar *a*.

The relative size of the wheels of the gear-train connecting the seeding device with the driving-shaft will determine the distribution of the seed. These, however, may be varied,
 80 and additional sets may be made of various proportions to meet the various requirements of the distribution of the seed. The master-wheel *i'''*, mounted on the shaft *k*, is held in position thereon by a friction mechan-
 85 ism, to permit the shaft to revolve therein to prevent breakage when the parts of the seeding mechanism become clogged or otherwise disarranged. This friction mechanism employed in this instance consists in the cham-
 90 bered hub *m*, provided with a curved spring, *n*, and a set-screw, *o*, fitted to operate upon the spring to hold the wheel to the shaft with greater or less force as the screw is moved in one or the other direction.

The outer end of the main driving-shaft *k* is provided with a sprocket-toothed wheel, *p*, fitted to revolve loosely thereon, and capable of a limited endwise-sliding movement on the shaft, and having its hub end fitted in clutch
 100 form to engage a clutch-pin passed through the outer end of the shaft. The inner end portion of the hub of this sprocket-wheel is provided with an annular collar, *p'*, which, in connection with a shifting-lever, serves to hold
 105 the clutch disengaged.

At *p''* and *p'''* are represented shifting-levers, pivoted at one end to the arm of the bracket-bearing *l* in such a manner that their free ends may swing freely in a vertical plane.
 110 Of these the lever *p''* is provided with a notch, *r*, in its lower edge, adapted to receive the main shaft between the bracket-bearing and the inner end of the hub of the sprocket-wheel, as shown in Figs. 6 and 7, which serves to
 115 hold the clutch engaged to impart motion to the shaft and to the seeding mechanism through its gear-train connection therewith. The lever *p'''* is provided with a notch, *r'*, in its lower edge, adapted to receive the hub of the sprocket-wheel between the collar *p'* and the wheel, which serves to hold the clutch dis-
 120 connected, as shown in Figs. 8 and 9.

At *s* is represented a seed-tube having a curved front wall, *s'*, and opening flaring side
 125 walls, *s''*, producing a seed-tube open in its rear, and in cross-section of the form represented in the sectional view at Fig. 12, having the upper portions of its edges, as at *t*,
 130 formed to receive the hinge-slides *t'*, made vertically adjustable thereon by means of a series of holes formed in the slides and in the

outturned edges *t* of the tube, adapted to receive a suitable screw-bolt to fix them in position when adjusted. The upper end of the slides *t'* are fitted with outward-projecting trunnions *t''*, fitted to enter suitable perforations in ears *t'''*, which depend from the curved bottom of the seed-box, producing a hinged connection of the seed-tube therewith, to permit it to swing in the lengthwise direction of the machine.

At *T* is represented a furrow-opener, which in this instance is of knife form, and is suitably fixed in a vertical position to the front of the seed-tube, having its knife-edge forward.

At *u* is represented a brace, formed of like bars, having their forward opened ends joined by hinge connection to the seed-tube at a suitable point below its hinged connection with the seed-box. The rear portions of the brace-bars are separated, having a hook or catch-block, *u'*, placed between them at a suitable point, and fixed in position by a screw-bolt passed transversely through the bars and catch-block. This catch-block extends below the bars, and produces a hook adapted to engage a transverse bar, *u''*, placed between the rearward portion of the drag-bars, having its ends joined thereto by an eye-joint connection. This hook-connection of the brace with the transverse bar serves to hold the seed-tube elevated for transportation or other purposes requiring it to be suspended.

The brace-bars, rearward of their hook-block connection, are provided with a safety slip-hook connection, consisting of a lever-hook, *u'''*, fitted to engage the transverse bar, and are pivoted between the brace-bars on a suitable screw clamping-bolt, by means of which it may be held with greater or less force. This safety slip-hook, when in the position represented in the solid lines in Fig. 2, producing an acute angle with the rear portion of the brace, serves to hold the seed-tube against the earth-resistance in opening furrows to receive the seed, and when it meets with rigid obstructions the increased resistance will cause the safety-hook to turn on its pivot to the position in dotted lines, which will permit it to slide over the transverse bar and permit the tube to rise and pass the obstruction, when it can be readjusted in working position. By this construction and arrangement of the hinged seed-tube, having an open rear, and its relative arrangement with the seat, the driver mounted thereon is enabled to detect irregularities in the distribution of the seed.

At *T'* is represented a sprocket-wheel, fixed to the carrying-wheel to revolve therewith, which is placed in the same vertical plane with the sprocket-wheel *p*. These sprocket-wheels are connected by a chain-belt, *w*, having links fitted to engage the teeth thereof in such a manner that the forward movement of the machine will impart motion to the seeding devices.

At *w'* are represented reel-heads mounted on

the main shaft in the seed-box, one at each end thereof, fixed to revolve with the shaft. These reel-heads are fitted with arms *w''*, extending lengthwise of the shaft, overlapping each other over the seed-wheels in the center of the seed-box, and are placed in such relative position with each other that the end portions of the arms of each head extend between the arms of the opposite head, and the several arms are of the irregular curved form represented in the drawings, fitted to agitate the seed from near the circumference of the seed-box to near its center throughout its length, and to carry the seed alternately from opposite ends of the box onto the seed-wheels.

From the foregoing it will be seen that my improved machine is fitted with all the appliances and necessary devices to render it a complete riding straddle-row cultivator, in which capacity it may be used by removing the chain-belt and the hinged seed-spout, or by removing the seed-box and its appliances; and it is capable of use as a seed-planter, in which capacity it will only require the removal of the shovels connected with the drag-bars. It is also capable of use as a seeder and cultivator to cover the seed, in which capacity the inner shovels only will be required; or it is capable of use as a complete seeder and cultivator, in which capacity the complete machine as a whole may be used.

In use as a cotton-seed planter the seed is placed in the seed-box and the other parts of the machine properly adjusted. The machine is then put in motion, and the forward movement thereof will produce a furrow to receive the seed, and will put in motion the seed-wheels, the teeth of which, in their rotation, will engage the fibrous material remaining on the seed alternately on opposite sides, and carry the seed, with their movement, through the openings in the curved bottom of the seed-box in front of the seed-wheel, and deliver it into the seed-spout, through which it descends into the opened furrow. This action of the seed-wheels, in connection with the alternate action of the stirrers from opposite sides, will prevent clogging or packing of the seed and insure a regular and uniform distribution thereof, and the cotton-fiber adhering to the seed, and heretofore the greatest obstacle in the way of a uniform distribution thereof I have utilized as a leading feature to insure a more uniform distribution of the seed than has heretofore been produced as known to me. With this distribution of the seed, in the onward movement of the machine the inner shovels will cultivate or stir the earth on each side of the furrow and cover the seed.

I claim as my invention—

1. The combination, with an axle, two tongue-beams, and a cross-bar connecting the latter, of a seed-box located within the space formed by said parts, transverse bar *a*, secured to the front of the box and extending beyond the latter at one side, and hangers de-

pending from the cross-bar and connected to bar *a*, the side extension of the latter bar being provided with arm *l*, substantially as set forth.

2. The combination, with drag-bars, means for maintaining them raised or lowered, and a cross-bar connecting said drag-bars, of a swinging seed-tube and a connecting device between the latter and said seed-tube, whereby the raising or lowering of the drag-bars operates to correspondingly swing the seed-tube forward or backward, substantially as set forth.

3. The combination, with a master gear-wheel for actuating a seeding-wheel and a driving-shaft, said master gear-wheel having its hub provided with a recess in its shaft-bearing surface, of an arch spring fitted in said recess and having its extremities bearing on the shaft, and a set-screw threaded in the longitudinal wall of the recess and having end bearing against the central arch portion of the spring, substantially as set forth.

4. The combination, with a seed-box having its bottom provided with two depending ears, and hangers having longitudinal grooves, of a seed-tube provided with lateral flanges fitting in said grooves, and fastenings which secure the flanges in position, substantially as set forth.

5. The combination, with a seed-box having its bottom provided with two depending ears, and hangers swinging from the latter and provided with grooves on their rear sides, of a seed-tube provided with lateral flanges which fit in the grooves, and bolts securing the flanges thereto, substantially as set forth.

6. The combination, with a seed-box having its bottom provided with two depending perforated ears, and hangers provided with lateral journals which fit in the perforations, of a seed-tube having its upper rear portion formed with lateral flanges fitting in grooves formed on the rear side of the hangers, and bolts which secure said flanges to the hangers, substantially as set forth.

7. The combination, with a seed-box and hangers depending therefrom, of a seed-tube and adjusting mechanism for raising or lowering the latter on said hangers, substantially as set forth.

8. The combination, with a swinging seed-tube, a rear-brace connected thereto, and a hook adapted to be adjustably locked to the brace so as to withstand greater or less strain without turning on its pivot, of drag-bars, mechanism for maintaining them raised or lowered, and a cross-bar connected to the drag-bars, the hook being adapted to engage with said cross-bar, substantially as set forth.

9. The combination, with a seed-box and an interior rotary shaft, of two agitating-heads secured to the latter, each head being provided with arms whose extremities overlap the extremities of the arms of the companion head, substantially as set forth.

10. The combination, with a rotary shaft for

actuating the seed-distributing mechanism and a driving-wheel having clutch-connection with the shaft, the hub of said wheel being provided with a collar, of a shifting-lever adapted to rest upon the axle at the outer side of said hub-collar, and thereby maintain the wheel in clutch with the shaft, substantially as set forth.

11. The combination, with a rotary-shaft for actuating the seed-distributing mechanism and a driving-wheel having clutch-connection with the shaft, of a shifting-lever having its under side formed with a recess, in which the axle fits as the lever rests upon the latter, said lever having lateral bearings against the end of the hub and maintaining the latter in clutch with its shaft, substantially as set forth.

12. The combination, with a rotary shaft for actuating the seed-distributing mechanism and a driving-wheel having clutch-connection with the shaft, said driving-wheel having the outer end of its hub provided with a collar, of a shifting-lever pivoted to the machine-frame, and adapted, when swung over upon the hub, to bear laterally against the inner side of the collar, and thereby maintain the wheel out of clutch with its shaft, substantially as set forth.

13. The combination, with a rotary shaft for actuating the seed-distributing mechanism and a driving-wheel having clutch-connection with the shaft, the hub of the wheel being provided with a collar, of a shifting-lever pivoted to the machine-frame and having its under side provided with a recess, in which the hub fits as the lever is swung down upon the latter, said lever having lateral bearing against the inner side of the collar, and thereby maintaining the wheel out of clutch with the shaft, substantially as set forth.

14. In a combined seeder and cultivator, the combination, with a seed-receptacle provided with a seed-distributing device, of an agitator consisting of heads of practically the same size and located at opposite ends of the seed-receptacle, said heads having arms attached thereto, which extend practically at right angles to the revolving heads, the arms on each head being of greater length than one-half the length of the seed-receptacle, substantially as set forth.

15. The combination, with a seed-receptacle having elongated openings formed in the central portion of its bottom, and cheek-pieces extending upwardly on the outer edges of said openings, and a curved center-guard located between said openings, of disk-wheels mounted on the same shaft and arranged to project through said elongated openings, each of said disk-wheels having part of its periphery plain or toothless and the remaining portion provided with teeth, the disk-wheels being relatively arranged on the shaft so that the plain portion of one disk will be located in line with the toothed portion of the other disk-wheel, substantially as set forth.

16. The combination, with the hub-clutch

connection of the sprocket-wheel with the driver's shaft, of independent shifting-levers, operating to hold the sprocket-wheel in or out of clutch-connection therewith as one or
5 the other of the levers is employed, substantially as and for the purpose hereinbefore set forth.

17. The combination, with a seed-receptacle provided with a seed-distributing device, of an
10 agitator having curved arms which extend

practically at right angles to revolving heads located at opposite ends of the seed-receptacle, the arms attached to one head being arranged and constructed to overlap the arms of the other head, substantially as set forth.

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