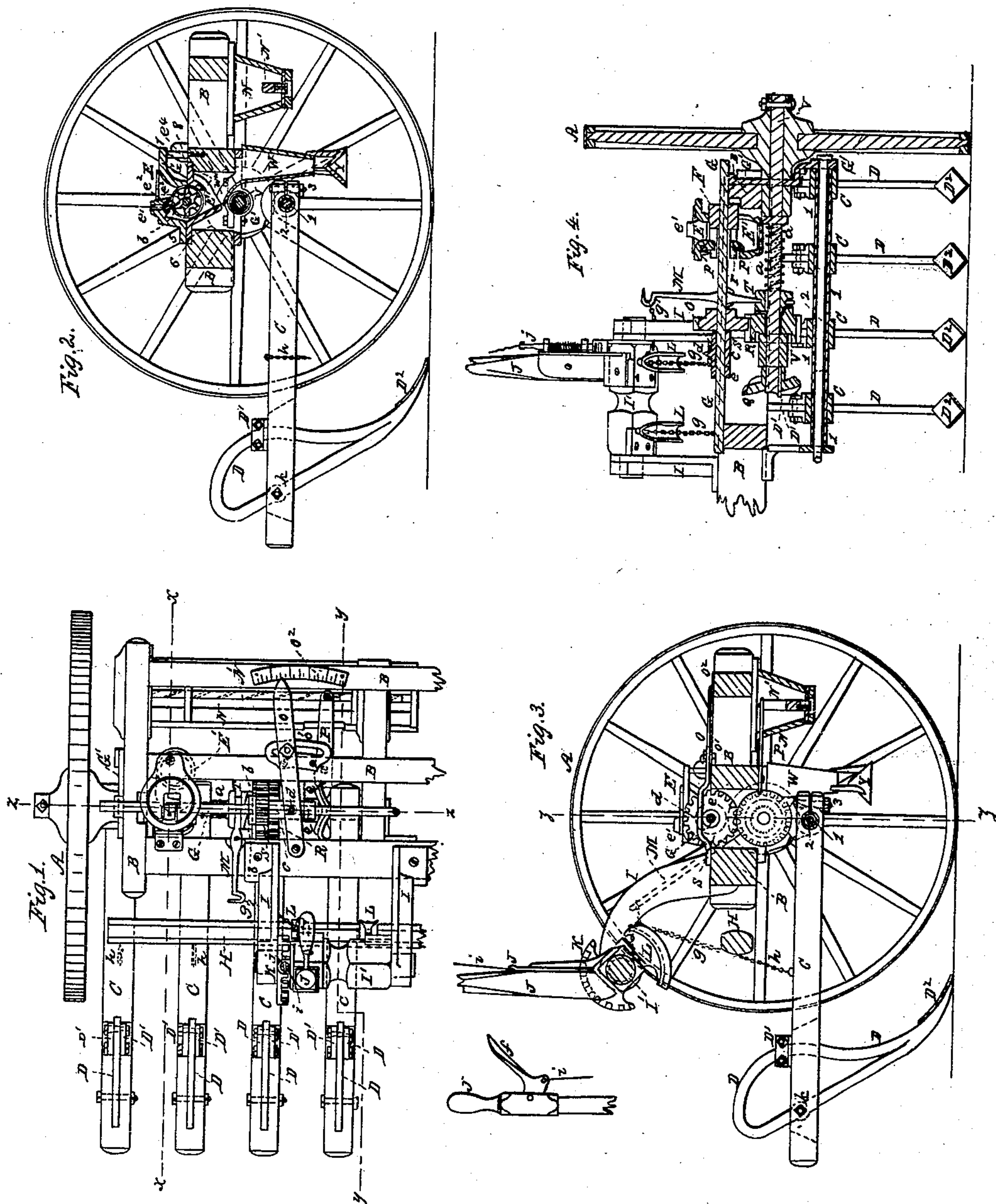


G. ESTERLY.
Seeding Machine.

No. 85,221.

Patented Dec. 22, 1868.



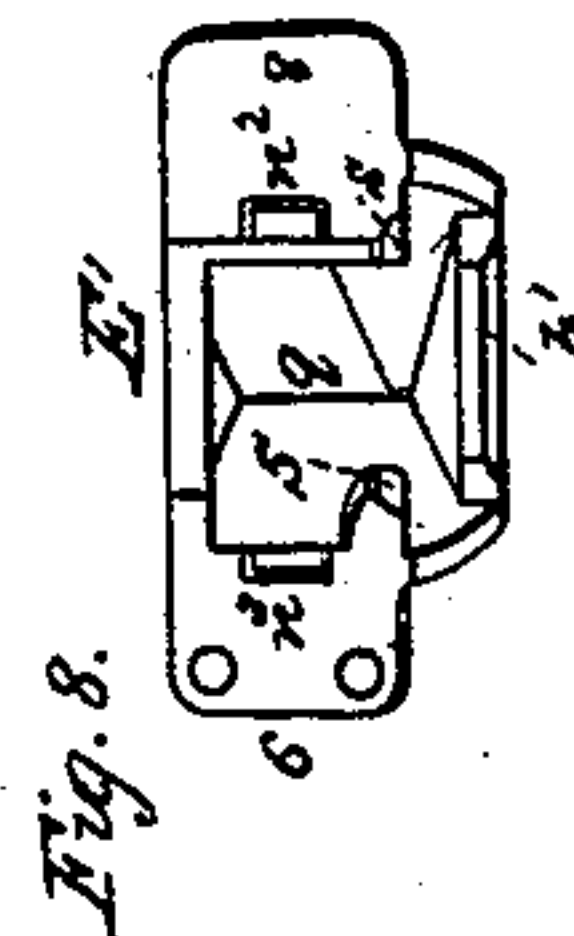
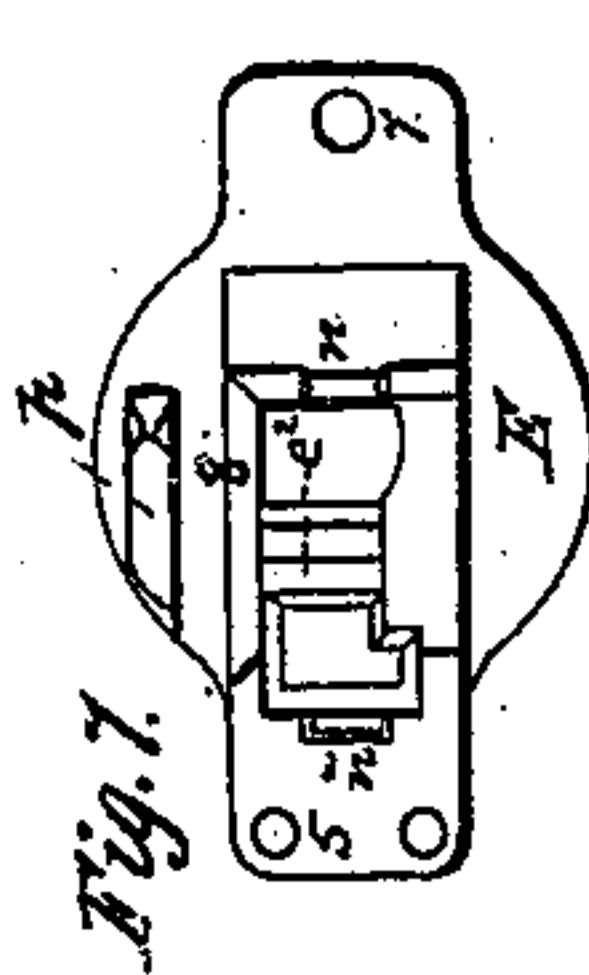
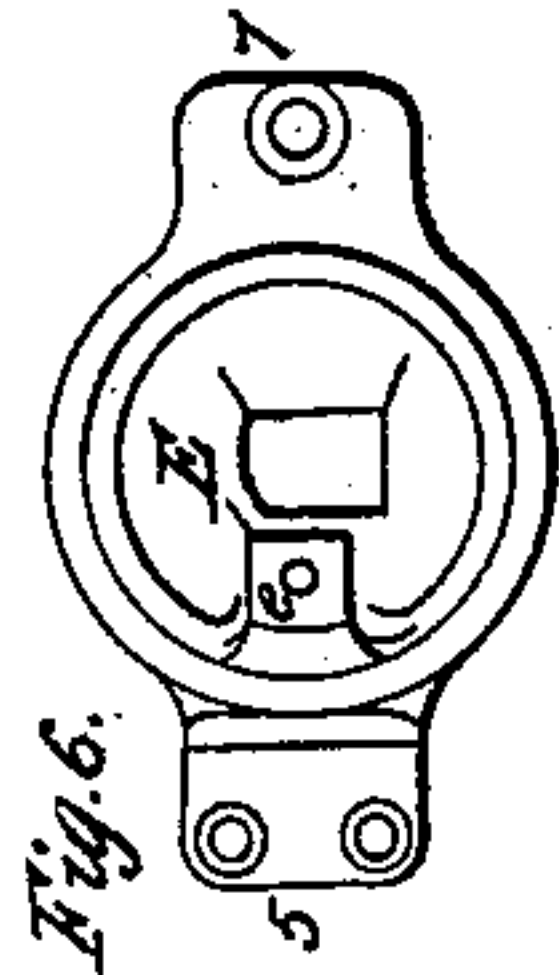
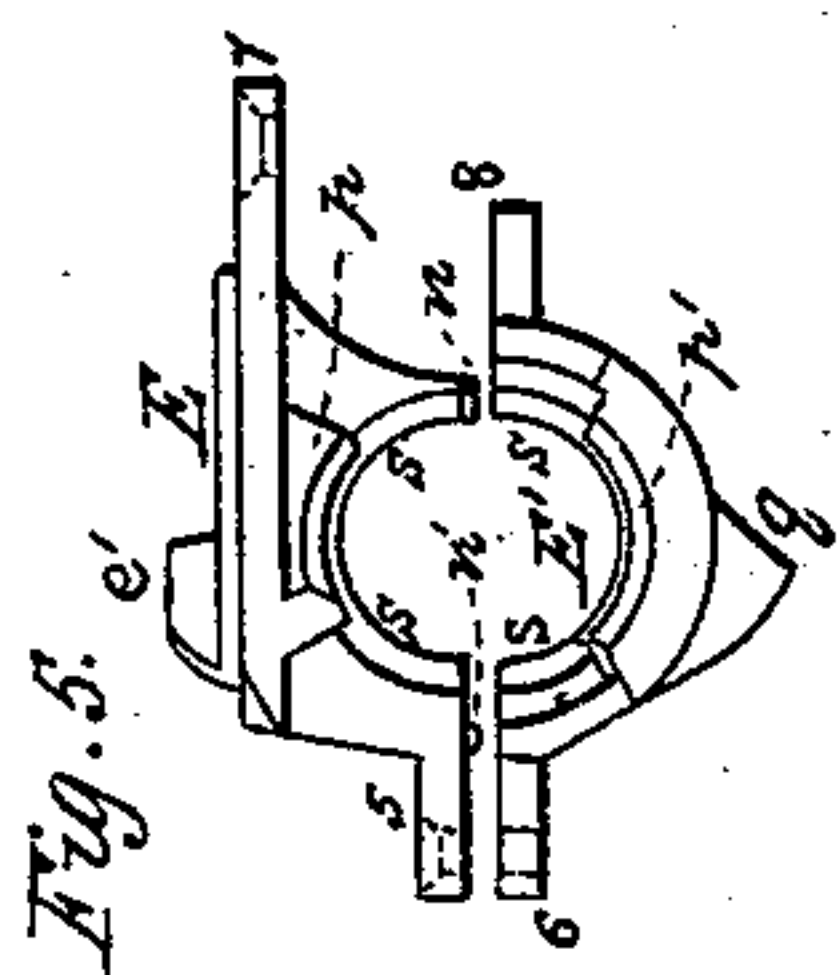
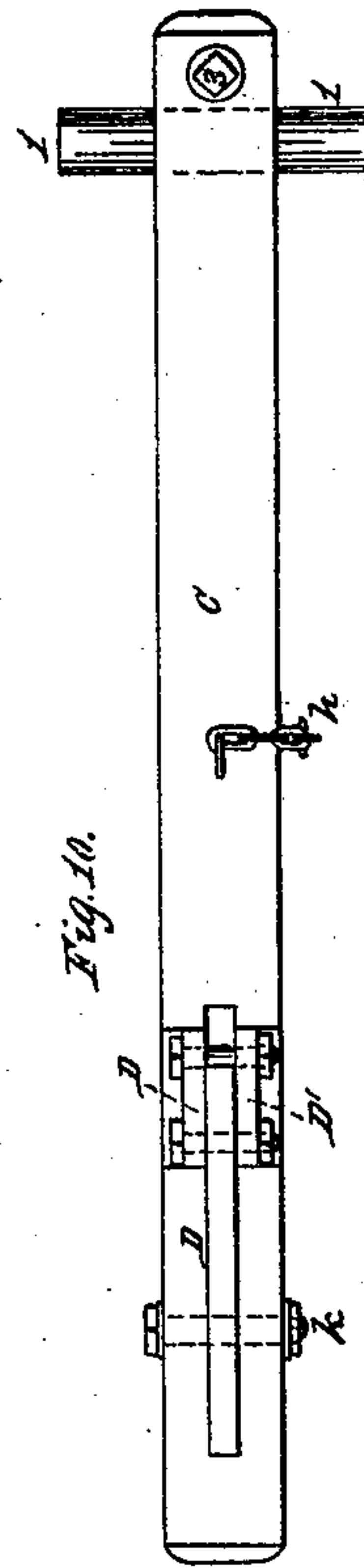
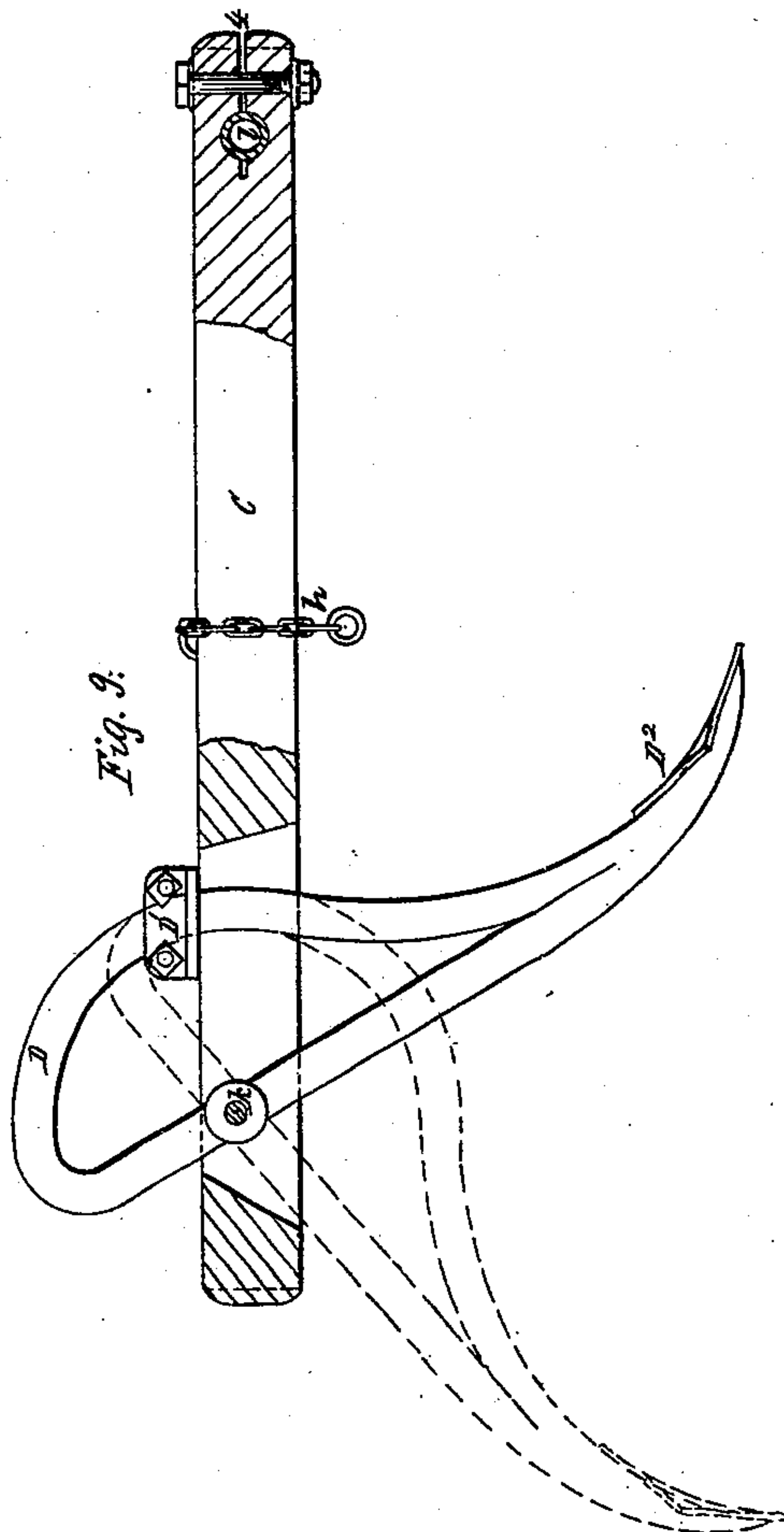
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GEORGE ESTERLY, OF WHITEWATER, WISCONSIN.

Letters Patent No. 85,221, dated December 22, 1868.

IMPROVEMENT IN SEEDING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all-whom it may concern:

Be it known that I, GEORGE ESTERLY, of White-water, in the county of Walworth, and State of Wisconsin, have invented certain novel Improvements on Seeding-Machines with cultivator-attachment; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, sheet 1, is a top view of a portion of the main draught-frame, with the improved cultivator and seeding-devices applied to it.

Figure 2, sheet 1, is a vertical section, taken longitudinally through fig. 1, as indicated by red line *x x*.

Figure 3, sheet 1, is a vertical section longitudinally through fig. 1, as indicated by red line *y y*.

Figure 4, sheet 1, is a section taken through fig. 1, as indicated by red line *z*.

Figures 5, 6, 7, and 8, sheet 2, are views representing the construction of one of the seed-caps and its bearing.

Figures 9 and 10, sheet 2, are enlarged views showing the manner of applying thimble-bearings and self-releasing clamps to the drag-bars.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements which are particularly applicable to the combined seeder and cultivator for which Letters Patent of the United States were granted to me on the 30th day of June, 1868.

One object of my invention is to so construct a flaring cap and its bearing, between which a rotary distributor works, for discharging seed in given quantities from the hopper, that during the rotation of said distributor there will not be a liability to cut, crush, or otherwise injure the seeds, in the act of discharging them, as will be hereinafter explained.

Another object of the invention is to so construct the flaring seed-discharging cap, and fit upon its bearing, that it shall lie solidly thereon, and be prevented from being drawn out of its proper position during the act of fastening it down upon said bearing, as will be hereinafter explained.

Another object is to countersink a bevelled flange, which is applied upon and rotates with the distributor into one end of the cap and bearing, in such manner that the inner surface of this flange shall be flush with the inner surface or edge of one side of the flaring throat of said cap, thereby keeping the closing-point of the seed-cells within the flaring throat and in view, and insuring the equal filling of these cells, as will be hereinafter explained.

Also, to construct the upper end of each seed-tube, through which the seed is conducted on its discharge from the hopper to the ground, with a flaring trough-extension upon its upper end, for the purpose of allow-

ing the tubes to be arranged considerably in advance of the seed-discharging devices, and at the same time conducting the seed from the bearings beneath the caps safely into the upper ends of said tubes, as will be hereinafter explained.

Another object is to connect the means used for stopping and starting the seed-discharging devices with the means which are employed for lifting the drag-bars, carrying the cultivator-hoes or teeth, so that when these hoes or cultivator-teeth are raised free from the ground, the operation of dropping seeds will cease, as will be hereinafter described.

Another object is to arrange the driving-shafts or rods and the axle of the transporting-wheels in the same vertical plane, or nearly so, for the purpose of simplifying the machine, and lessening the friction of the driving-gear, as will be hereinafter explained.

Another object is to provide for securely applying bearing and spacing-thimbles to the hinging ends of the drag-bars, for the purpose of obtaining a longer and more durable bearing for each drag-bar than would be afforded by the wooden bars alone, as will be hereinafter described.

Another object of my invention is to suspend all of the drag-bars, by flexible connections, from a horizontal bar which is suspended from lifting-segments, so that any one of the drag-bars can be lifted by hand, should it become clogged, independently of the other bars, and when desired, all of the drag-bars can be lifted at the same time by the movement of a single lever applied to the segment-rod, as will be hereinafter explained.

Another object of my invention is to arrange, in advance of the broadcast-seeding devices, and beneath the draught-frame, a grass-seed sower, and to operate the seed-slide thereof by means of a rotary cam-plate on the axle of the transporting-wheels, and a single lever connection, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, figs. 1, 2, 3, and 4 of sheet 1, I have represented only so much of the working-machine as will be necessary to illustrate the construction, application, and operation of my improved devices.

B represents a portion of the main draught-frame of the machine, which frame is of a rectangular form, and mounted upon transporting-wheels A, one of which is secured to its axle, V, in a suitable manner, so that this axle turns with it, and is thus made to serve as a means for driving the seeding-devices. The axle V passes through bearing-plates G, which are secured to the sides of the frame B, and so formed as to serve as bearings for the axle and two horizontal shafts G and 2. A front elevation, which is formed on each bearing-plate G, serves as a means for attaching the seed-hopper of the broadcast-seeding devices in its proper place.

At a suitable point upon the axle V, and applied

loosely thereon, is a wide-faced spur-wheel, R, having clutching-teeth formed on one end, for engaging with teeth *b*, upon a sliding clutch, T. This clutch is applied upon axle V by a key-tenon, so as to turn therewith, and, when in gear with the teeth on wheel R, to cause this wheel to turn with its axle. Spring *a*, around axle V, holds the clutch T in gear with the teeth on wheel R, and the forked lever M, which is pivoted to the rear bar of the frame B, is used for shifting the clutch T, and stopping or starting the wheel R.

The front end of lever M is forked, and embraces a grooved portion of the clutch, and the rear end of this lever is bent in the form of a hook, for having attached to it one end of a chain *g*, the opposite end of which chain is fastened to one side of one of the grooved lever-segments L, as shown in figs. 1 and 2.

The lever-segments L are applied fast to a rock-shaft, I, which has its bearings in the upper overhanging ends of two goose-necks I I, and to which is secured, in a convenient position to the operator, a hand-lever, J. To this hand-lever a spring-bolt, *j*, is applied, so as to engage with any one of the teeth, which are formed upon a segment, K, of one of the goose-necks I, and thus lock the rock-shaft I, so as to prevent it from turning. The wire connection *i*, and the hand-key *f*, on lever J, are used to withdraw the bolt *j* from the toothed segment K, when it is desired to rock the said shaft by its lever. The chain *g* passes from the upper end of the lever M, beneath one of the goose-necks I, so that when lever J is forced backward, the lever M will be moved so as to disengage clutch T from wheel R, and allow the axle V to turn without acting upon this wheel.

The grooved lever-segments L, and their lever J, are designed for raising and depressing the rear ends of the drag-bars O, as will be hereinafter explained.

Upon the axle V, a four-throw circular cam-plate Q is keyed, the edge of which receives the rear forked end of a laterally-vibrating lever, P, which has its fulcrum beneath the intermediate cross-bar of frame B, and which is pivoted at its front end to a reciprocating seed-slide, N', arranged in a hopper, N. This hopper N is located forward of the axle V, beneath frame B, and is designed for scattering grass-seeds, during the operation of sowing grain, by the rear devices hereinafter explained.

The long spur-wheel R engages with, and, when desired, gives motion to a spur-wheel, S, which is keyed upon the distributor-shaft G, which has its bearings on the top of frame B, as shown in figs. 1 and 4, and which carries the distributing-cylinders F, only one of which is shown in the drawings, on this shaft G.

The shaft G is arranged in a vertical plane, intersecting the axes of the axle V, and a rod or shaft 2, as shown in figs. 2, 3, and 4, and it is allowed to have a play in a direction with its length, for the purpose of regulating the capacity of the seed-cells of the distributors F for discharging seed.

Upon the shaft G, a sleeve, *c*, is loosely placed; but prevented from having end-play by confining it between wheel S and a collar, *e*.

This sleeve *c* is constructed with a teat, *d*, upon its periphery, which forms a conical pivot, and passes through a gauge-lever, O, which is pivoted to the rear bar of frame B, and extends forward to a graduated segment, O², fastened to the front bar of frame B.

The front end of gauge-lever O is tapered, so as to point to the gauge-marks upon plate O². By means of a bolt and nut and a slotted segment, O¹, shown in fig. 1, gauge-lever O can be fixed to point at any desired mark upon plate O², and, when thus secured, it will hold the shaft G, so that it cannot casually move endwise, but can be rotated freely.

The seed-distributors are all secured to the shaft G in any suitable manner.

F represents one of these distributors, which is a

cylinder, having spaces or cells formed in one part of it, which are divided by longitudinal teeth or ribs, extending to one end of the distributor. The other part of this distributor is a right cylinder, as shown in figs. 1, 2, and 4. A further description of this distributor is not necessary, as it is fully set forth in the specification annexed to my Letters Patent of June 30, 1868.

The distributor is fitted snugly between a cap, E', and its cellular end is closed by means of a circular collar, *r*, shown in the sectional view, fig. 4, which collar turns with the distributor, and is also fitted between flanges *p p'*, that are formed on the said cap, on bearing outside of the throat or flaring space through cap E, and seed-passage through bearing E', as shown in fig. 4. The collar *r* is intended for preventing seed escaping from one side of the throat through cap E, and also allowing the distributor to be adjusted endwise with its shaft G, in order to shorten or lengthen the capacity of the seed-cells for discharging seed.

The peculiarity of the collar *r* is, that its edge is bevelled, and countersunk into the cap and bearing, so as to bring its inner surface flush with one side of the throat, through cap F, as shown in fig. 4. This will prevent the closing ends or shoulders of the seed-cells F from passing beneath one side of cap E, when these cells are not exposed beneath the throat of E.

By thus constructing and applying the collar *r*, the closing-point of the ends or shoulders of the cells in the distributor will be brought even with the inside edge of the cap E, when this distributor is drawn out to stop the discharge; and in exposing the cells within the throat of cap E, the openings will all commence at the edge of the opening in the cap E. This will also insure the equal filling of the cells, and also keep the closing-point always in sight.

The cap E is constructed with an upwardly-flaring throat, through which the seed from a hopper (not shown) passes to the seed-cells in the distributor F. One side of this throat is straight; that is to say, it is in a plane at right angles to the length of shaft G, and coincides with the inner face of the collar *r*.

At the back of this throat a chamber is formed in the cap, in which a block of India rubber, *e'*, is suitably confined, the lower edge of which presses lightly upon the surfaces of the distributor, and thus serves as a "striker," to prevent seed from crowding between the distributor and cap; also to prevent seed from being injured in the act of escaping from the throat of the cap.

It will be seen that the throat of cap E inclines most on that side next the collar *r*. This is shown in figs. 6 and 7. At the back of this throat the rubber *e'* is fixed, and it prevents the seed from injury while being carried by the distributor-cells over to the rubber.

The cap E is constructed with a rear-depressed foot-piece, 5, and a front extension, 7, which are perforated, to receive screws through them.

The bearing E' is constructed with front and rear extensions, 6 and 8, which are seated upon the cross-bars of frame B, and let into recesses formed in these bars. This brings the spout or discharge-opening for the seed between the said bars, and over the inclined trough *w* of the seed-tube W.

The foot-piece 5 of cap E rests squarely upon the rear extension 6 of the bearing E', and thus forms a good foundation for the cap, and prevents its displacement from a true position while screwing it down in place over the distributor F.

The lugs *n* on the cap F fit into recesses, *n'*, in the bearing, and assist in holding the cap in its place. The screws which hold the cap in place also confine the bearing down in place.

The tapering or upwardly-flaring tube W, one of which is provided for each one of the distributing-devices, is used for conducting the seed below the front ends of the drag-bars O to a conical scatterer, Y, and

is constructed with a trough-extension, *w*, upon its upper end, which extends upward and backward, beneath the orifice or outlet at the bottom of the bearing *E'*, as clearly shown in fig. 2. This extension *w* allows the tubes *W* to be arranged sufficiently far forward to clear the front ends of the drag-bars *C*, and admits of these bars being pivoted to rod 2, directly beneath the axle *V*, as shown.

The rod 2, which is supported by plates or bearings, *G'*, at both ends of frame *B*, and also by intermediate bearings, if necessary, has pivoted to it the drag-bars *C*, which carry cultivator-teeth, *D*. This rod is located in a vertical plane beneath the axle *V*, so that the backward strain upon it will not offer disadvantageous resistance to the team drawing the machine.

The front ends of the drag-bars have thimble-bearings, *1*, inserted transversely through them, which bearings are considerably longer than the width of the drag-bars respectively, thereby serving to space these bars, and keep them at proper distances apart when applied to rod 2. The thimbles also afford very wide bearings to the hinging ends of the bars, and being made of metal, they are more durable than the wooden bars would be.

The mode of securing the metal tubes to each bar is by boring a hole transversely through a bar, *C*, near one end, and then sawing longitudinally into the end of the bar, as far as said hole.

The tube *1* being adjusted in place, a bolt, *3*, is passed through the bar, at right angles to the plane of the saw-kerf, and, by means of a nut on this bolt, the tube is clamped firmly, and thus rigidly secured in its place.

Near the rear end of each bar *C*, a long slot is made through it, through which passes a segmental standard, *D*, carrying a shovel, *D*², of suitable shape. The standard is pivoted at *k* to bar *C*, and when adjusted to run at the required angle with respect to its bar *C*, two clamps, *D*¹, are secured, by bolts and nuts, on opposite sides of the curved or segmental portion of this standard, as shown in figs. 9 and 10.

The clamps *D*¹ are right-angular pieces, seated upon the top of bar *C*, which pieces receive through them the bolts, which latter will be prevented from turning, by their heads impinging against the foot-piece below them. The foot-piece, under the bolt-heads, is made thicker than the foot-piece of the clamp on the nut-side of the bolt. This prevents the bolt from casually turning loose.

In adjusting and setting the standard *D* for work, the clamp-plates *D*¹ *D*¹ are confined by thin bolts and nuts to this standard, at the desired point, so that by resting upon the bar *C*, the said plates will act as stops to resist all ordinary backward strain upon the hoe or shovel *D*². The clamps should not be fastened so firmly to their standards as to resist a strain which would be liable to break or derange the machine.

The drag-bars *C* are all suspended from a horizontal bar, *H*, by means of chains, *h*, and this bar is suspended from the two segments *L* by chains *g g*, so that by releasing the shaft *I* from the toothed segment *K*, and pressing backward lever *J*, the suspension-bar *H*, with all of the drag-bars *C*, will be raised; and should

any one of the hoes *D*² of the drag-bars become clogged, the chain *h* of such bar will allow it to be raised, independently of the other bars.

It will be seen that when the lever *J* is pressed back far enough to raise the hoes free from the ground, the chain *g'*, drawing beneath one of the goose-necks *I*, will so act upon lever *M* as to disengage clutch *T* from wheel *R*, thus stopping the rotation of shaft *G*, and the dropping of seed. And by drawing back lever *J* again, spring *a* will restore clutch *T* in gear with its wheel *R*, and the dropping of seed will again commence, simultaneously with the depression of the drag-bars and hoes.

The gauge-plate *O*² is so marked off, with reference to the different positions of the distributor *L*, that by adjusting lever-pointer *O* to the different prearranged marks on said plate, the distributor can be set for discharging any desired quantity of seed from its cells.

The conical teat *d*, on the loose sleeve *c*, will allow the distributor-rod *G* to be moved by a gauge-lever *O*, for adjusting the capacity of the seed-cells for discharging seed, and will prevent any lost motion, which it is so difficult to prevent by slot and stud-connections.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of the rubber *e*², or its equivalent, on a line with the seed-cells, and in relation to the upwardly-flaring throat of the cap *E*, substantially as and for the purpose described.

2. The bevelled collar or flange *r*, on the distributor *F*, fitted into a bevelled seat formed in the side of the cap *E* and bearing *E'*, substantially as described.

3. Gauge-plate *O*², gauge-lever *O*, longitudinally-adjustable shaft *G*, carrying distributor *F*, and sleeve *c*, with cone or teat *d*, for connecting lever *O* to it, all combined and adapted to operate substantially as described.

4. Connecting the lever *M*, which operates clutch *T*, to a segment, *L*, on the shaft *I* of hand-lever *J*, in combination with cultivators, which are connected to segments *L*, for the purposes and in the manner substantially as described.

5. In a machine, constructed to operate substantially as described, the arrangement of the shafts *G* and *2* in the vertical plane of the axle *V*, substantially as and for the purposes described.

6. The thimble-bearings *1*, secured to the drag-bars *C*, substantially as described.

7. The suspension-bar *H*, hung by flexible connections from lifting-segments *L*, and connected by chains, or the equivalent thereof, to the drag-bars *C*, substantially as described.

8. In combination with a cultivator-tooth or standard, *D*, which passes through a drag-bar, self-releasing clamp-plates *D*¹ *D*¹, confined to said tooth, substantially as described.

9. In combination with the combined seeder and cultivator herein described, a grass-seed sower, *N N'*, arranged and operated substantially as set forth.

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Witnesses:

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