

No. 649,479.

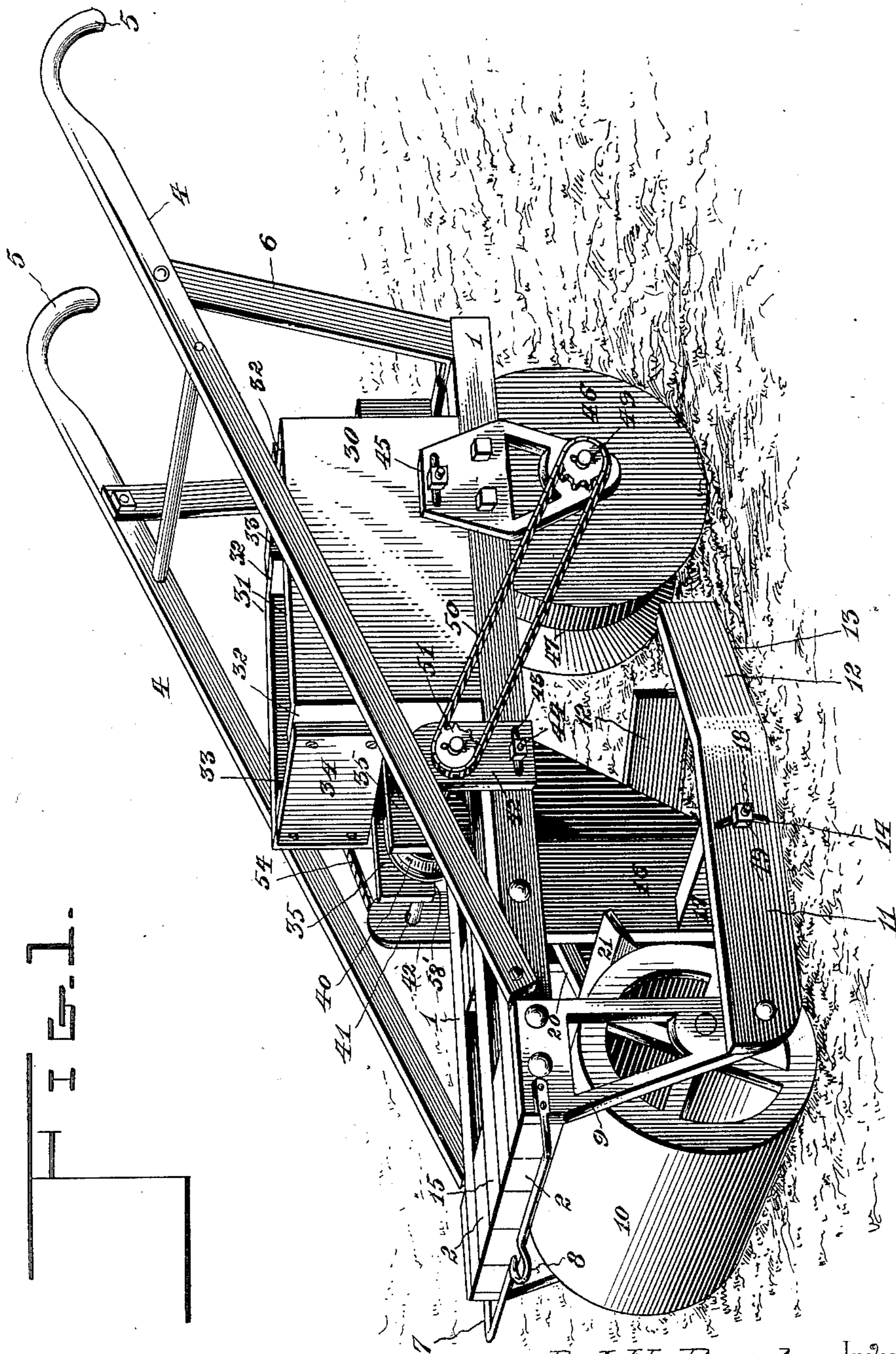
Patented May 15, 1900.

A. J. H. REID.
SEEDING MACHINE OR DRILL.

(Application filed Sept. 26, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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A. J. H. Reid, Inventor

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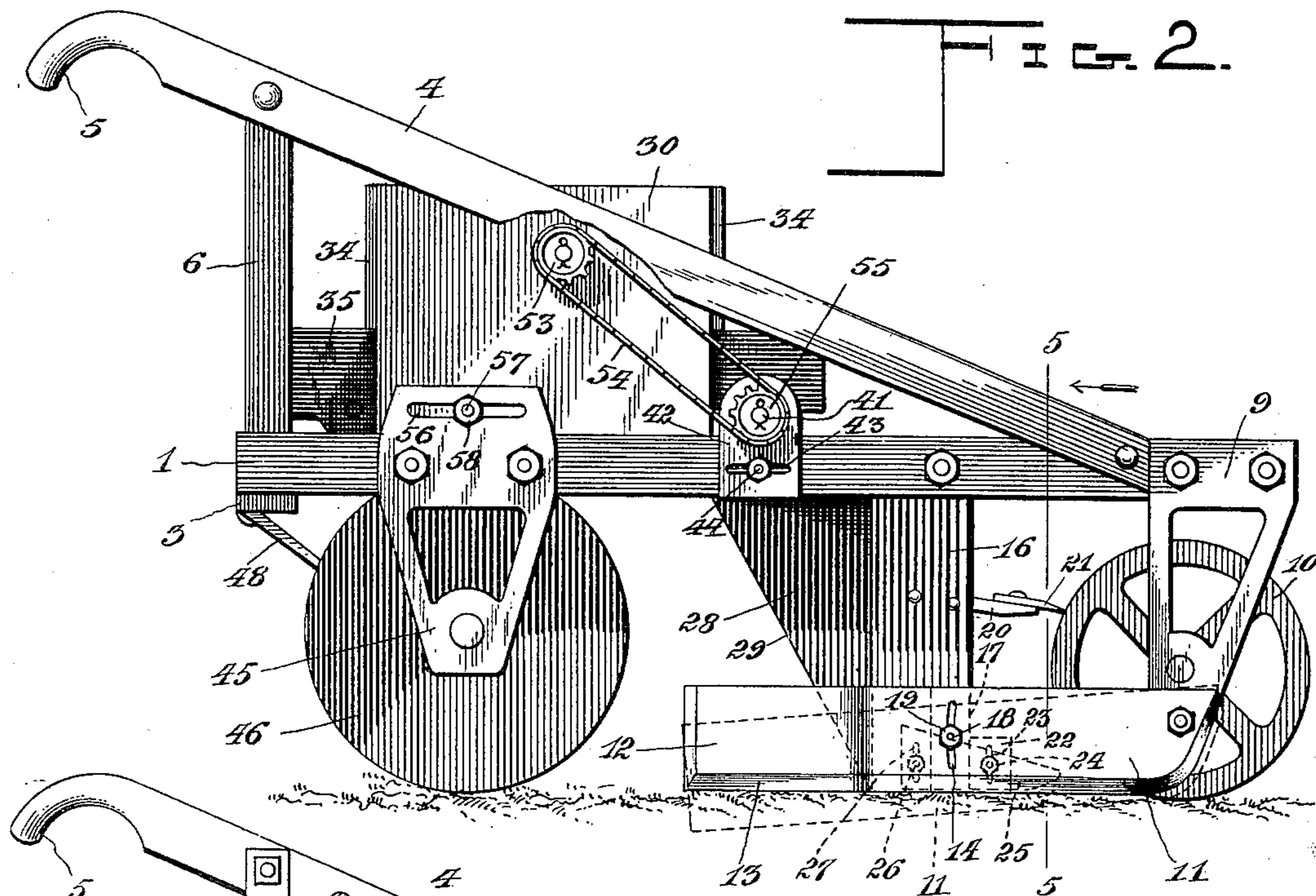
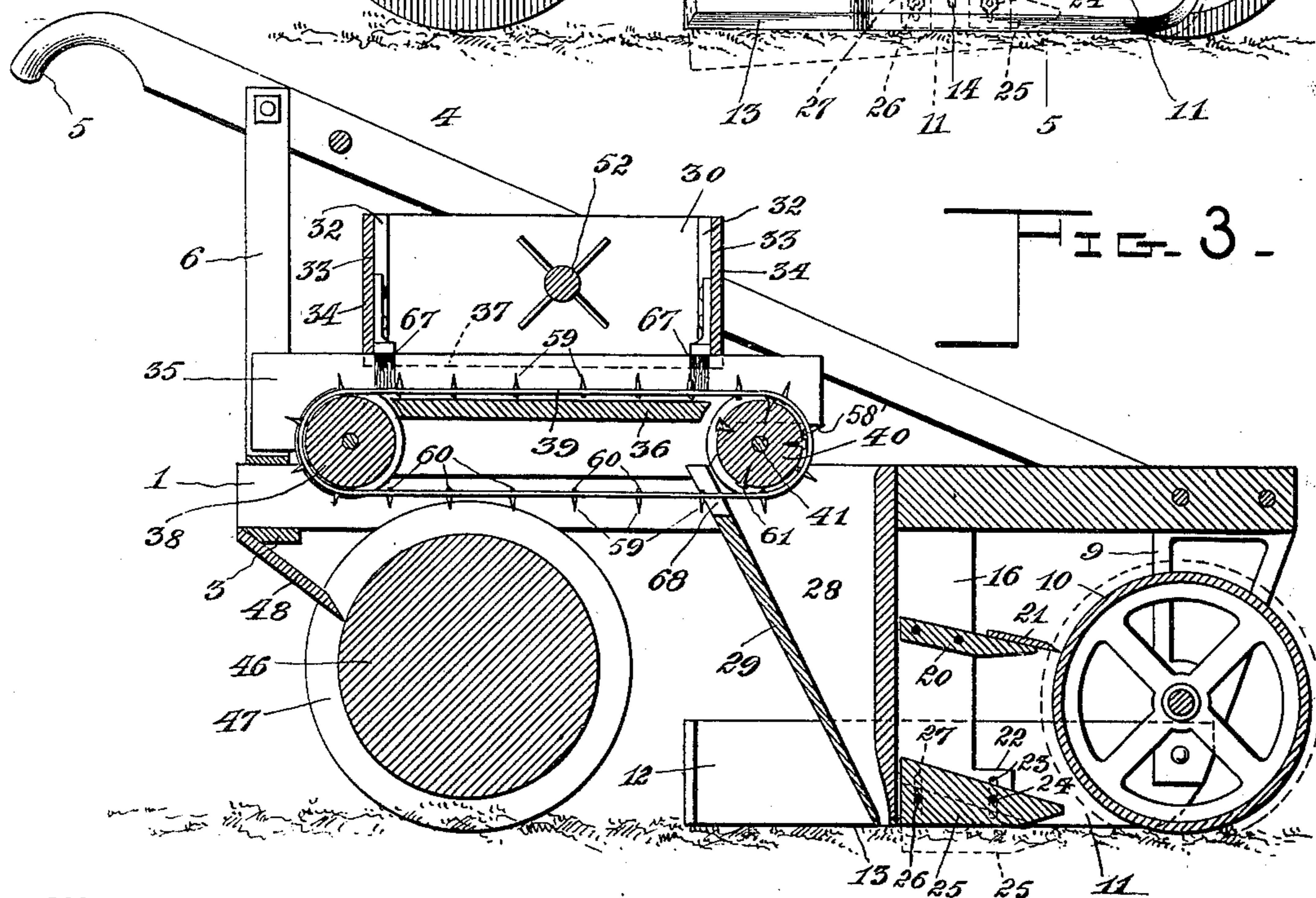


FIG. 3.



Witnesses

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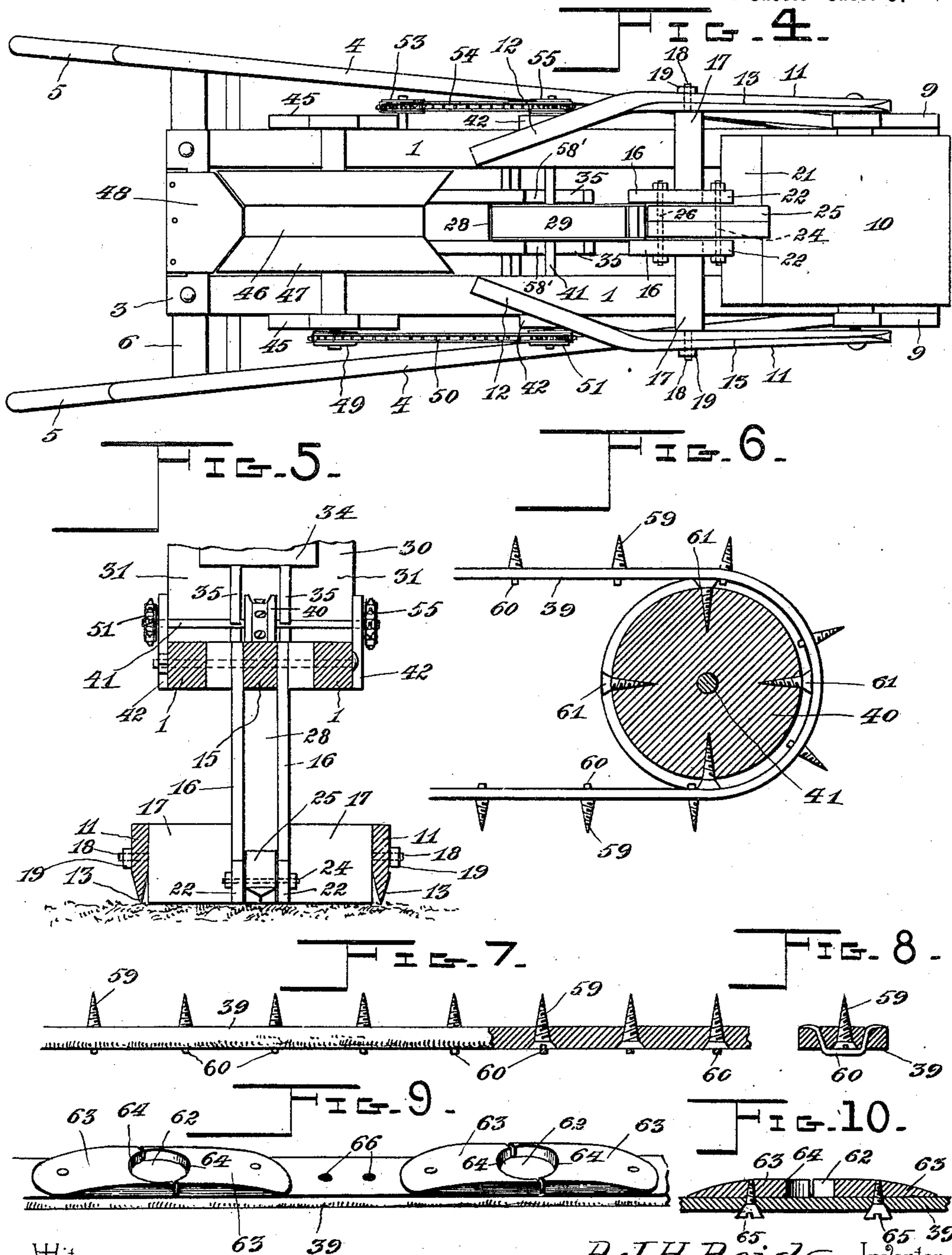
C. A. Snow & Co.

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UNITED STATES PATENT OFFICE.

ALFRED JERE HORN REID, OF HENDERSON, TENNESSEE.

SEEDING-MACHINE OR DRILL.

SPECIFICATION forming part of Letters Patent No. 649,479, dated May 15, 1900.

Application filed September 26, 1899. Serial No. 731,756. (No model.)

To all whom it may concern:

Be it known that I, ALFRED JERE HORN REID, a citizen of the United States, residing at Henderson, in the county of Chester and State of Tennessee, have invented a new and useful Seeding-Machine or Drill, of which the following is a specification.

This invention relates to seeding-machines or drills, and has for one object to provide a novel construction and arrangement of parts whereby seed may be deposited at predetermined intervals under adjustable control and simultaneously covered at any desired depth and the soil ridged thereover, the seed being delivered from the hopper by belts having in part adjustable means and moving through the bottom of the hopper in a regular and positive manner and also adapted at times to feed commercial fertilizers.

Other objects and advantages will appear in the following description, and the novel features will be pointed out in the appended claims, the preferred embodiment of the improved device being illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of a seeding-machine or drill embodying the features of the invention. Fig. 2 is an elevation thereof looking toward the side opposite that shown by Fig. 1. Fig. 3 is a central longitudinal vertical section. Fig. 4 is a bottom plan view. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 2. Fig. 6 is an enlarged sectional view of one of the seed-belt rollers and a portion of the belt thereon. Fig. 7 is a side elevation of one of the seed-belts, partially in section. Fig. 8 is a transverse vertical section through the belt shown by Fig. 7. Fig. 9 is a detail perspective view of a portion of another seed-belt. Fig. 10 is a transverse vertical section through the seed-belt shown by Fig. 9.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates longitudinal side beams, which are separated at the front end by space-blocks 2, and at the rear by lower cross-tie 3, and are connected to maintain their proper space position, said cross-tie also serving in a capacity which will be presently set

forth. Adjacent the front extremities the said beams 1 have the front ends of handle-bars 4 secured thereto and extend upwardly at an inclination and terminate over the rear of the machine, being provided with the usual grips 5 and braced at the rear by a U-shaped strap 6, having the terminals secured thereto and the intermediate bent portion firmly fastened on the said beams 1 at a point above the cross-tie 3.

A draft attachment of any preferred form is secured to the front of the machine and, as shown, consists of a bent bar 7, having a central loop 8; but it will be understood that this device may be varied at will.

On the outer portions of the front extremities of the beams 1 depending bearing-brackets 9 are firmly secured and rotatably support a front roller 10, which, as shown in dotted lines in Fig. 3, may have a central colter or a concave face for use in guiding or directing the course of the machine over the ground-surface. To the lower extremities of the brackets 9 the front ends of covering-drags 11 are pivotally applied and have rear inwardly-directed extremities 12 with lower reduced edges 13 and adapted to operate behind the seed-depositing device to draw the soil inwardly over the furrow in which the seed is deposited. The covering-drags 11 have segmental slots 14 at an intermediate point and disposed vertically, being struck from the pivots for the said drags as the centers thereof. Centrally depending from a longitudinal center support 15 between the beams 1 are a pair of spaced hangers 16, having lower front laterally-extending wings 17, and against the said wings the covering-drags 11 have adjustable bearing and are held in a fixed adjusted position by studs 18, extending out from the ends of said wings through the slots 14 and adapted to receive clamping-nuts 19, which have a bearing extent on the outer faces of the drags of sufficient extent as to afford a firm binding means. It will be observed that the covering-drags may be swung on their pivots to elevate or depress the inwardly-extended rear extremities 12, and thereby control the amount of soil pulled inwardly thereby. The hangers 16 also have a shank 20 connected thereto and supporting

a scraper 21 at an angle of inclination and in bearing contact with the roller 10, so as to clean the latter and keep it free from accumulations of soil. As clearly shown by Figs. 2 and 3, the hangers 16 have ears or extensions 22 in advance of the wings 17, and in said extensions vertical slots 23 are provided to receive adjusting-bolts 24, secured or extending outwardly from the opposite sides of the front portion of a furrow-former 25, which is located between the lower ends of the said hangers 16 and is also adjustably connected at its rear end through the medium of outwardly-extending bolts or analogous devices 26, which project through slots 27 in the hangers in rear of the said wings. The bolts 24 and 26 are adapted to receive adjusting-nuts or similar devices, and by this means the elevation or depression of the furrow-former can be changed at will to regulate the depth of the furrow to accommodate various kinds of seeds. The said hangers 16 also have the front end of a feed chute or spout 28 firmly held between them, and said chute or spout is gradually reduced toward its lower exit end by a rear forwardly-inclined wall 29, the open entrance end of said chute or spout at the top being held in receptive relation to the feeding devices movable outwardly from the forward end of a seed-hopper 30. As clearly shown by Fig. 3, the lower reduced exit end of the chute or spout 28 is closely arranged to the heel of the furrow-former 25, and the distance between the said reduced exit end of the chute or spout and the inwardly-inclined rear extremities of the covering-drags is such that a full charge of seed fed at intervals into the chute or spout and in accordance with a predetermined adjustment will have been fully deposited in the furrow formed in advance before the said portion of the covering-drags operates to draw the soil inwardly toward the center of the machine.

The hopper 30 comprises opposite sides 31, which are firmly held on the upper edges of the rear portions of the beams 1, and at the opposite ends have inwardly-extending vertically-disposed angle-strips 32, which provide vertical openings 33 at the opposite ends of the hopper. The upper portions of these openings 33 are closed by cover-plates 34, secured to the angle-strips, and below the lower edges thereof the said openings are clear for a purpose which will be now described. A pair of longitudinal guides 35 extend through the bottom portion of the hopper 30 and the lower clear openings 33. These guides are spaced apart and connected at an intermediate point by a horizontal bottom board 36, and by this means a trough is formed into which the seed falls, the said hopper being provided with horizontal bottom strips 37, as shown in dotted lines in Fig. 3, which have their upper edge 5 flush with those of the guides 35. Between the rear portions of the guides 35 and extending partially through the adja-

cent opening 33 a grooved roller 38 is journaled and is traversed by an endless belt 39, which may be of either of the forms shown by Figs. 7 and 9, and which also moves over a front grooved roller 40, having bearing on an axle or shaft 41, fixed therein, and projecting outwardly toward opposite sides of the machine and through upstanding journal-plates 42. The said journal-plates 42 have lower slots 43 to receive bolts or analogous devices 44 to permit them and the parts carried thereby to be adjusted longitudinally of the machine and regulate the tension of the belt 39 in either of its forms.

Securely fastened on the outer sides of the beams 1, adjacent the hopper 30, are depending bearing-hangers 45, which have an operating-wheel 46 journaled in their lower extremities and provided with a circumferential groove 47, the said wheel moving in direct alinement with the lower exit end of the chute or spout 29 and serving to actuate the moving mechanism in a manner which will be presently set forth, and also by means of the groove 47 therein ridge and press down the soil drawn inwardly by the drags. A scraper 48, secured to the cross-tie 3, projects forwardly at a downward angle and fits within the groove 47 of the wheel 46 to free the same of accumulations of dirt or clinging soil, and said wheel will also have a firm contact with the ground over which it moves and produce a steady actuation of the parts dependent thereon for operation. On one projecting end of the axle of the wheel 46 a sprocket-wheel 49 is keyed, and thereover travels a chain belt 50 and also around a sprocket-wheel 51 on the adjacent projecting end of the axle or shaft 41 of the roller 40. By this means the said axle or shaft 41 is rotated and the belt 39 caused to regularly move through the lower portion of the hopper 30. To agitate the seed within the said hopper 30 and prevent it from packing or clogging, a rotating agitator 52 is provided and extends transversely across the upper portion of said hopper and has on a projecting end thereof a sprocket-wheel 53, which is traversed by a chain belt 54, also movable around and actuated by a sprocket-wheel 55 on the end of the shaft or axle 41 opposite to that having the sprocket-wheel 51 thereon. By the mechanism just set forth the several movable parts are actuated in timed relation and in a positive manner, and it will be observed that the adjustment of the plates 42 will control the belts 50 and 54 as well as the seed-belts. It will also be necessary at times to move the hopper 30 to compensate for the adjustment of the plates 42, and for this purpose the bearing-hangers 45 have their upper extremities located above the plane of the top edges of the beams 1 and are formed with elongated slots 56 to adjustably receive outwardly-projecting bolts or studs 57, carried by the lower rear portions of the hopper, said bolts or studs being adapt-

ed to receive clamping-nuts or analogous devices 58. To permit the hopper 30 to be moved longitudinally and without interfering with the shaft or axle 41, the front under edges of the guides 35 are provided with enlarged recesses 58'.

The seed-belts are made in two forms and interchangeable to adapt the machine for planting different kinds of seeds or distributing commercial fertilizers. The belt shown by Fig. 7 is adapted particularly for use with cotton-seed and has at regular intervals upstanding roughened projections 59, which in the present instance are in the form of screws having their heads on the under side and their screw-shanks uppermost. These projections are arranged at regular intervals, so as to provide a uniformity in the feed and to prevent the heads from turning and also provide transverse projections. Staples 60 are upset in the belt and transversely disposed, so that the head-bars thereof will stand across the heads of the screws or projections 59. This arrangement produces on the underside of the belt a series of regularly-arranged ribs or contacting devices, which are adapted to bear against regularly-arranged and uniformly-spaced projections 61 in the groove of the roller 40 and insure a regular progress of the belt without incurring the uncertainty of movement due to frictional contact solely. In Fig. 9 the belt is shown provided with pockets 62, composed of opposite members 63, having their conterminous edges formed with semicircular recesses 64 and unitedly giving the pockets a circular form. The upper surfaces of the members 63 slope gradually in curved contour from the recesses 64 downwardly to the opposite terminals, and to secure the said members in place removable headed screws or other fastenings 65 are used, as shown by Fig. 10, and are adapted to have their heads projecting below the under surface of the belt to engage the projections 61 in the groove of the roller 40 in a manner similar to and for the same purpose as the belt heretofore described. The members 63 of the pockets are divided at the center in a transverse direction to prevent detracting in the least from the flexibility of the belt. These pockets are also adjustable lengthwise of the belt to vary the intervals between them and increase or decrease the rapidity of their dropping action, and to provide for this important and desirable feature the belt is formed with openings 66, which are longitudinally aligned and regularly spaced, and by withdrawing the screws or fastenings 65 from one set of openings and the members 63 the latter can be shifted and afterward in like manner secured. The material of which the belt is formed in either instance will be of that nature best adapted to serve the intended purpose, and it has been found that leather best preserves its flexibility and is more durable, and consequently will be used for this purpose almost exclusively. The members 63 of the

pockets are preferably formed of metal to increase their wearing qualities, and the projections 59 will also be made of a similar material. The width of the belts is such as to practically close the lower part of the trough through which they travel and prevent the seed or material carried out thereby from passing down between the edges of the same and the guides 35. At each end of the hopper 30 a cleaning-brush 67 is mounted for regulating the quantity of seed or fertilizer carried out from the trough by either of the belts and also to clean the projections or pockets as much as possible just as they enter the trough, and the rear brush will also have the additional function of preventing the escape and waste of the seed or fertilizer at the rear. In their movement through the trough at the base of the hopper the belts travel close to the upper surface of the bottom board 36, and the roller 40 is positioned far enough over the upper open receiving end of the spout or chute 29 to insure a full deposit of the seed or fertilizer in said spout or chute, and to accommodate the travel of the belts the rear inclined wall of said spout or chute has a slot 68 cut through the upper end portion thereof at the center. The contiguous ends of the belts will be coupled by any desired and approved form of device for this purpose and of such a nature that a disconnection may be obtained at any time and when the work to be performed requires a substitution of one belt for the other. To accommodate the application and removal of the belts, the end plates 34 are detached and will be supplied with fastening devices of such a nature that they can be quickly manipulated for this purpose. Furthermore, the hopper 30 may be supplied with any suitable cover, if so desired, and other incidental attachments well known in the art may be used if found necessary to increase the efficiency of the improved machine.

In the operation of the machine the roller 10 breaks up the lumps and levels the soil, and the furrow-former 25 produces the furrow of the depth required and has a central ridge for this purpose, as shown by Figs. 4 and 5. The seed falls at regular intervals into the chute or spout 28 from the belt moving through the trough in the lower portion of the hopper and is deposited in the deepest part of the furrow and afterward properly covered by the rear extremities of the covering-drags 11 to a depth proportionate to the adjustment of the said drags. The soil drawn inwardly over the seed thus deposited is then shaped and bedded or ridged by the operating-wheel 46, and in traveling over the ground-surface the machine can be easily controlled and directed through the medium of the handles, and the seeding or planting operation can thus be easily and quickly carried on by mechanism having a comparatively-simple construction.

Changes in the form, proportions, and mi-

nor details may be resorted to without in the least departing from the nature or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is—

1. In a device of the character set forth, the combination of seed-delivering mechanism, an adjustable furrow-former, and adjustable covering-drags extending longitudinally on opposite sides of the former and having rear inwardly-deflected extremities and adapted to draw in the soil in rear of the said former.

2. In a device of the character set forth, the combination of seed-delivering mechanism, an adjustable furrow-former having a longitudinally-disposed reduced working surface inclined downwardly in lateral directions, adjustable covering-drags adapted to draw the soil inwardly over the furrow formed in the rear of said furrow-former having rear inwardly-deflected extremities, and a grooved operating-wheel in rear of said drags.

3. In a device of the character set forth, the combination of a frame, an advance roller, an adjustable furrow-former having a lower working surface inclined in opposite directions to a central longitudinally-disposed reduced edge, adjustable covering-drags adapted to draw the soil inwardly in rear of the said former, the said drags being longitudinally disposed on opposite sides of the former and having their rear extremities inwardly deflected, a grooved operating-wheel in rear of the said drags, and seed mechanism adapted to deliver the seed immediately in rear of the said furrow-former.

4. In a device of the character set forth, the combination of a supporting-frame, depending hangers, a furrow-former adjustably mounted between the lower portions of the said hangers and having a lower working face inclined equally in opposite directions to a central longitudinally-disposed reduced edge, a feed chute or spout having an exit end directly in rear of the said furrow-former, adjustable covering-drags having rear inwardly-extending extremities adapted to draw the soil inwardly over the furrow and behind the furrow-former, a grooved roller in rear of the said drags, a hopper, and mechanism in said hopper for delivering the contents thereof into the feed chute or spout.

5. In a device of the character set forth, the combination of a furrow-former having a longitudinally-disposed double-inclined working surface with a central longitudinally-disposed reduced edge, seeding mechanism, and pivotally-mounted covering-drags having inwardly-extending rear extremities and adapted to be adjusted to vary the depression of the same.

6. In a device of the character set forth, the combination with seeding mechanism, of a vertically-adjustable furrow-former in advance thereof and below the same and having a lower working face inclined laterally to a longitudinal reduced edge.

7. In a device of the character set forth, the combination with a feed spout or chute, of a hopper having lower openings in the opposite ends, a trough extending through the bottom of the hopper in a longitudinal direction and having the ends thereof extending beyond the opposite ends of the said hopper, a continuous belt movable through the said trough and over the upper portions of the feed chute or spout, and means outside of the said hopper for adjusting said belt to regulate its tension.

8. In a device of the character set forth, the combination with a feed chute or spout, of a hopper adapted to contain the material to be distributed through the said spout, a trough extending centrally through the lower portion of the hopper in a longitudinal direction and having the opposite extremities extended beyond the opposite ends of the hopper, opposite rollers at the front and rear end portions of said hopper, a feeding-belt movable over the said rollers and through the trough, the end extensions of the trough serving as guards for the belt and means for adjusting the shaft or axle of the front roller to regulate the tension of the belt.

9. In a device of the character set forth, the combination of a feed chute or spout, a hopper adapted to contain material to be distributed through the chute or spout, a trough in the lower portion of the hopper having sides extended beyond the opposite ends of said hopper, a distributing-belt movable through the trough, and means for longitudinally adjusting the said hopper and belt over and through the trough.

10. In a device of the character set forth, the combination of a stationary feed chute or spout, a hopper longitudinally adjustable in relation to said chute or spout, a longitudinally-disposed distributing-belt movable through the center of the hopper and also adjustable, an agitator in the hopper above the belt, and operating devices for the belt and agitator exterior of the hopper and simultaneously adjustable with the latter to compensate for the movement of the same and also designed to be adjusted independent of the hopper.

11. In a device of the character set forth, the combination of a hopper, front and rear rollers adjacent the opposite ends thereof, the front roller having projections thereon, an endless belt movably mounted on the said rollers and having contacting projections on the under surface to engage the projections of the front roller and upper feeding devices, and means for operating the said parts.

12. In a device of the character set forth, the combination of a hopper, rollers adjacent opposite ends thereof, one of said rollers having projections thereon, an endless belt traversing the said rollers and provided with contacting projections on the lower side adapted to engage the projections on one of the rollers and also provided with upper delivering devices, means for adjusting one of the roll-

ers to regulate the tension of the belt, and means for operating said parts.

13. In a device of the character set forth, the combination of a hopper having openings 5 extending upwardly through the opposite ends thereof, plates removably mounted over the upper portions of said openings, and a distributing-belt movable longitudinally through the lower portion of the hopper and adapted 10 to be withdrawn upwardly through the openings in the opposite ends of said hopper.

14. In a device of the character set forth, a belt for conveying material from a source of supply having cups thereon composed of 15 adjustable sections to vary the carrying capacity of the same.

15. In a device of the character set forth, a belt for conveying material from a source of supply having cups thereon composed of adjustable sections to vary the carrying ca- 20 pacity of the same, and holding devices for said sections having projecting portions on the side of the belt opposite to the location of the cups.

In testimony that I claim the foregoing as 25 my own I have hereto affixed my signature in the presence of two witnesses.

ALFRED JERE HORN REID.

Witnesses:

R. E. MCKINNEY,
C. M. WILLIAMS.