(No Model.) 3 Sheets—Sheet 1.

H. DILLER.

COMBINED CORN PLANTER AND GRAIN DRILL.

No. 290,670. Patented Dec. 25, 1883.

Fig. 1.

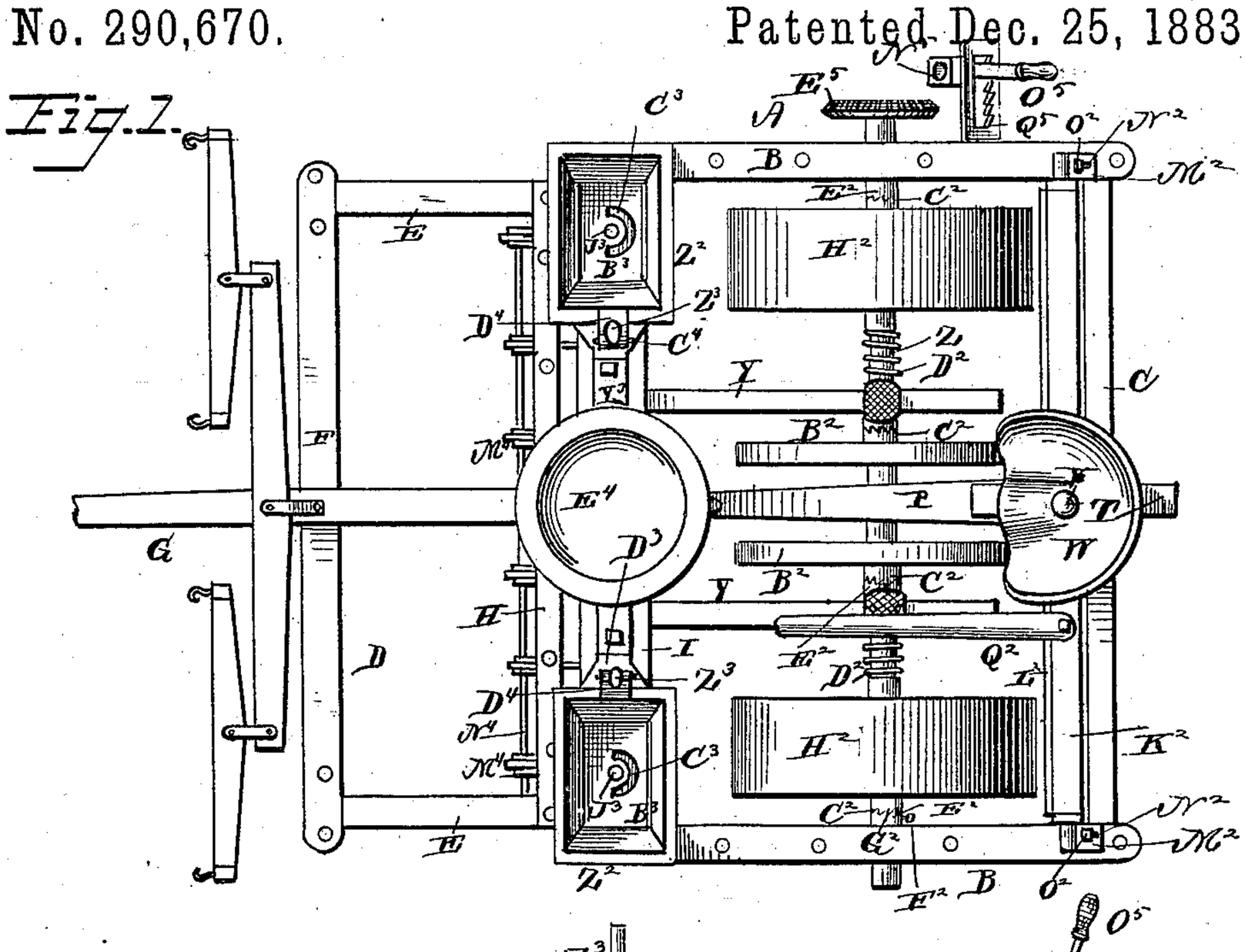


Fig. 2.

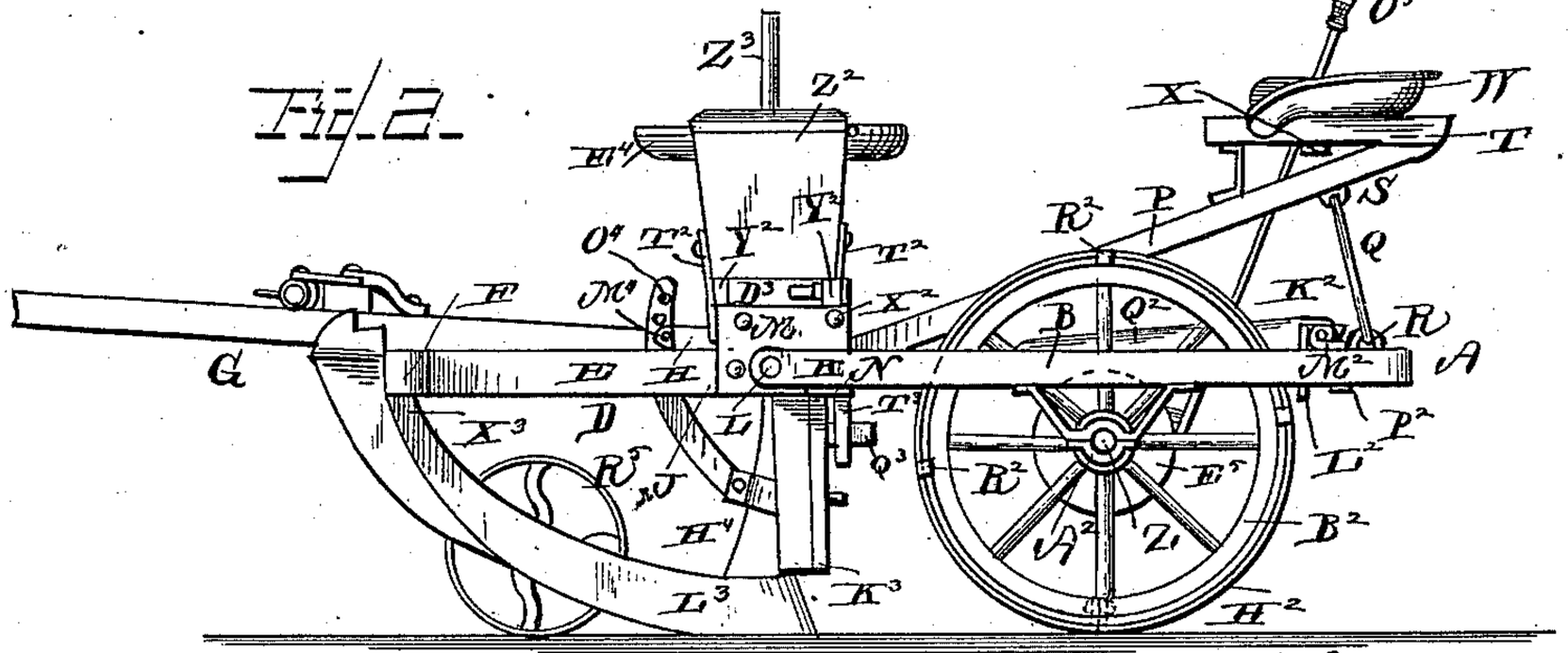
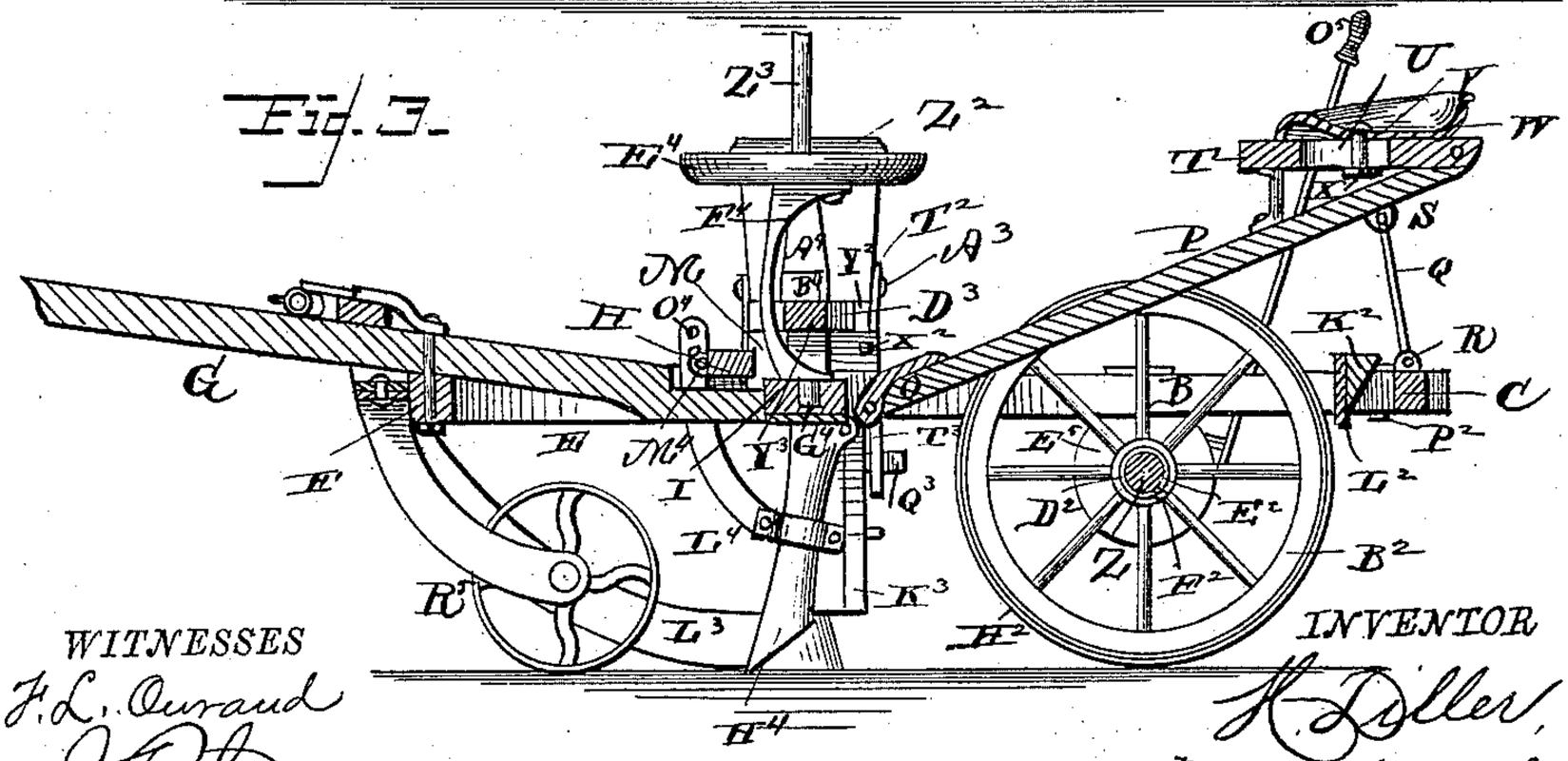


Fig. 3.



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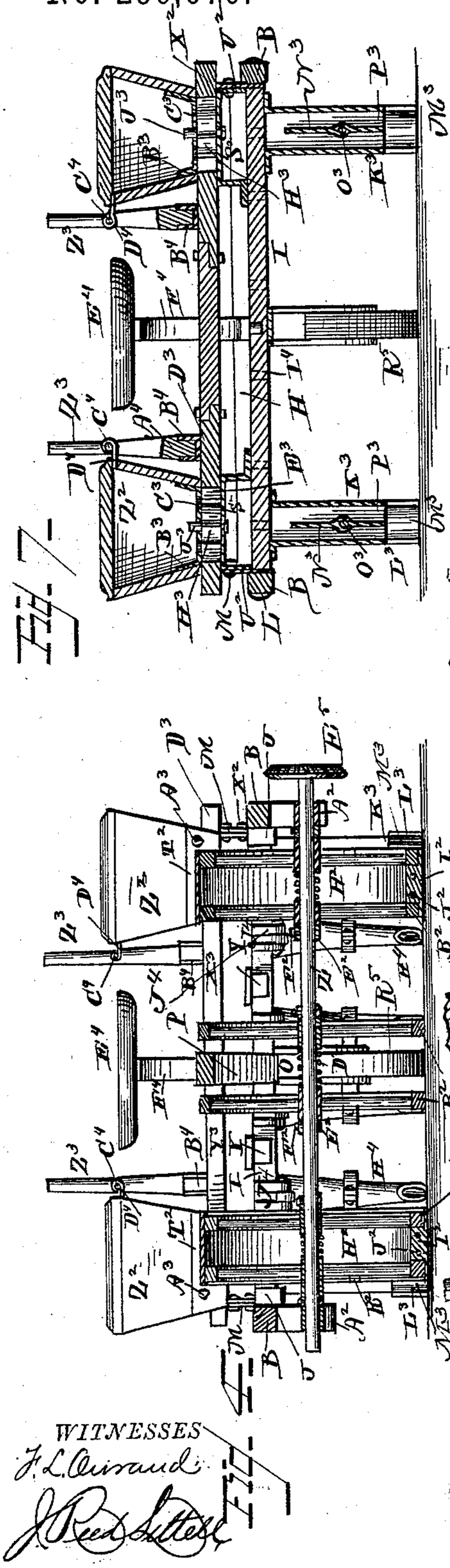

FIG. 1.

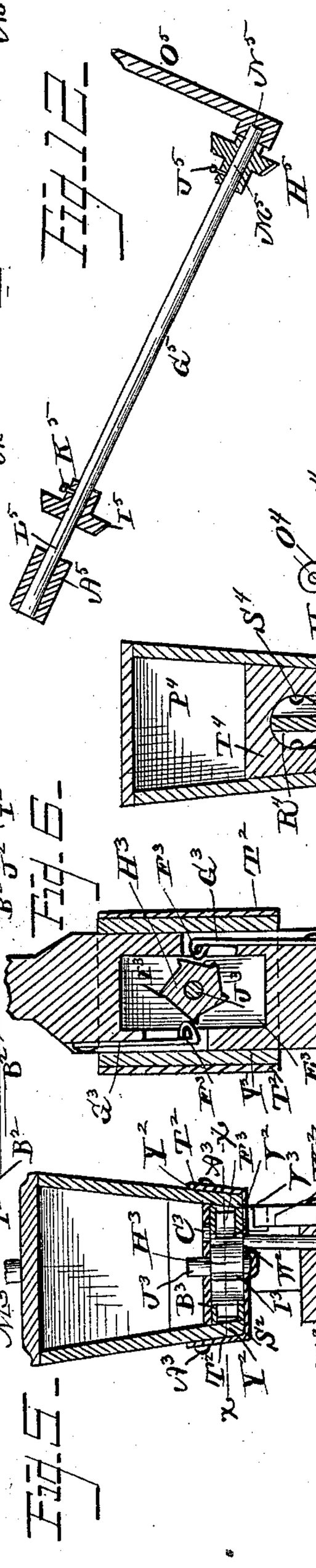

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

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Fig. 8.

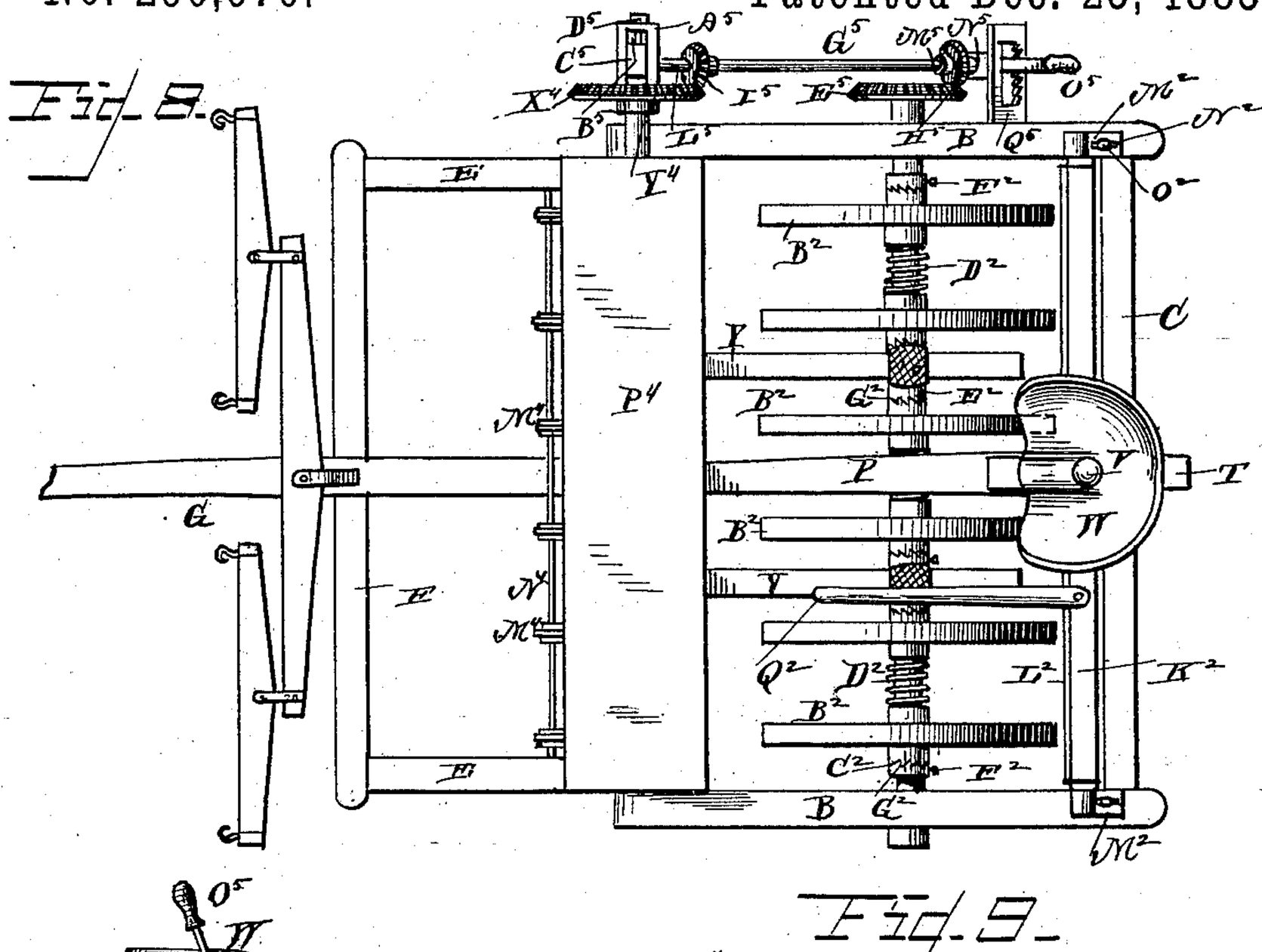


Fig. 9.

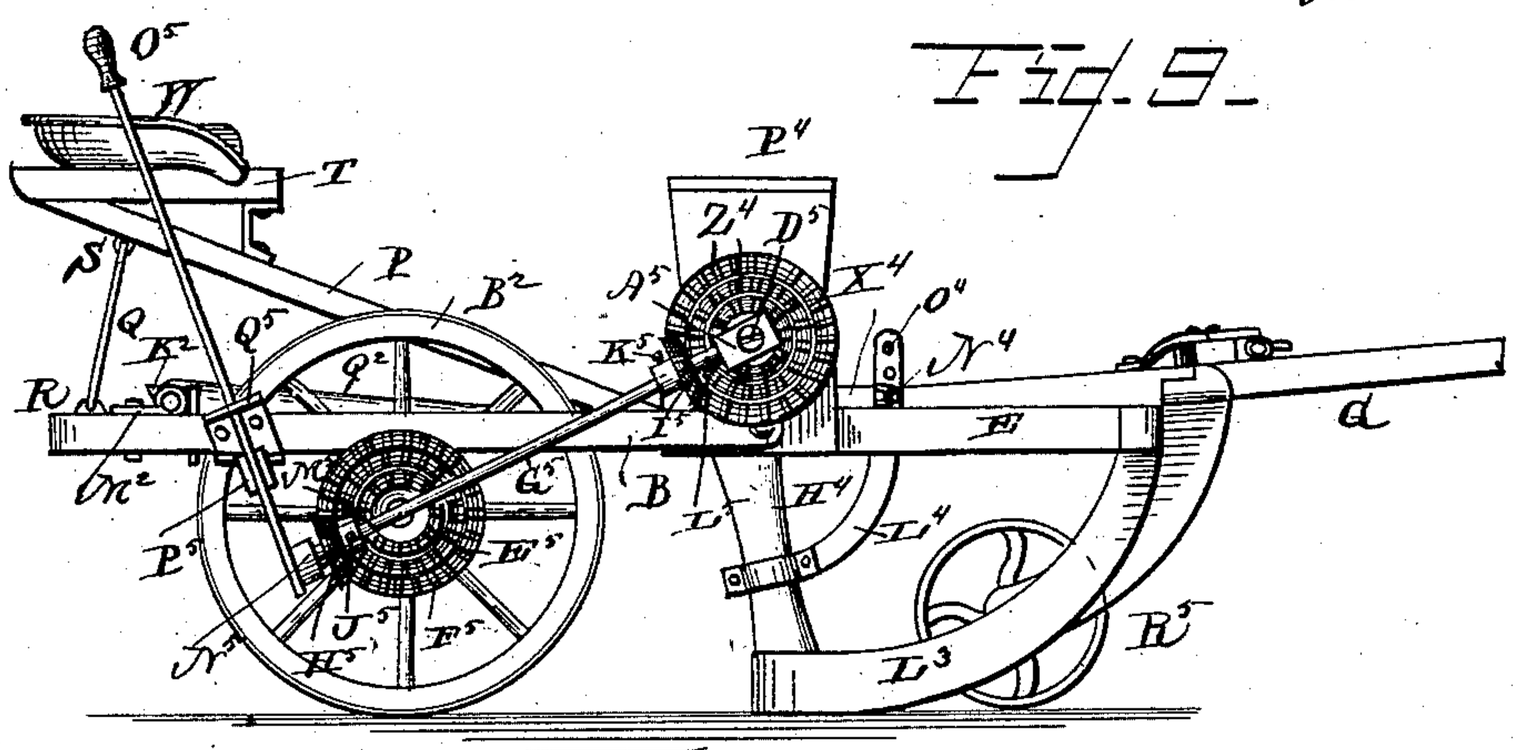
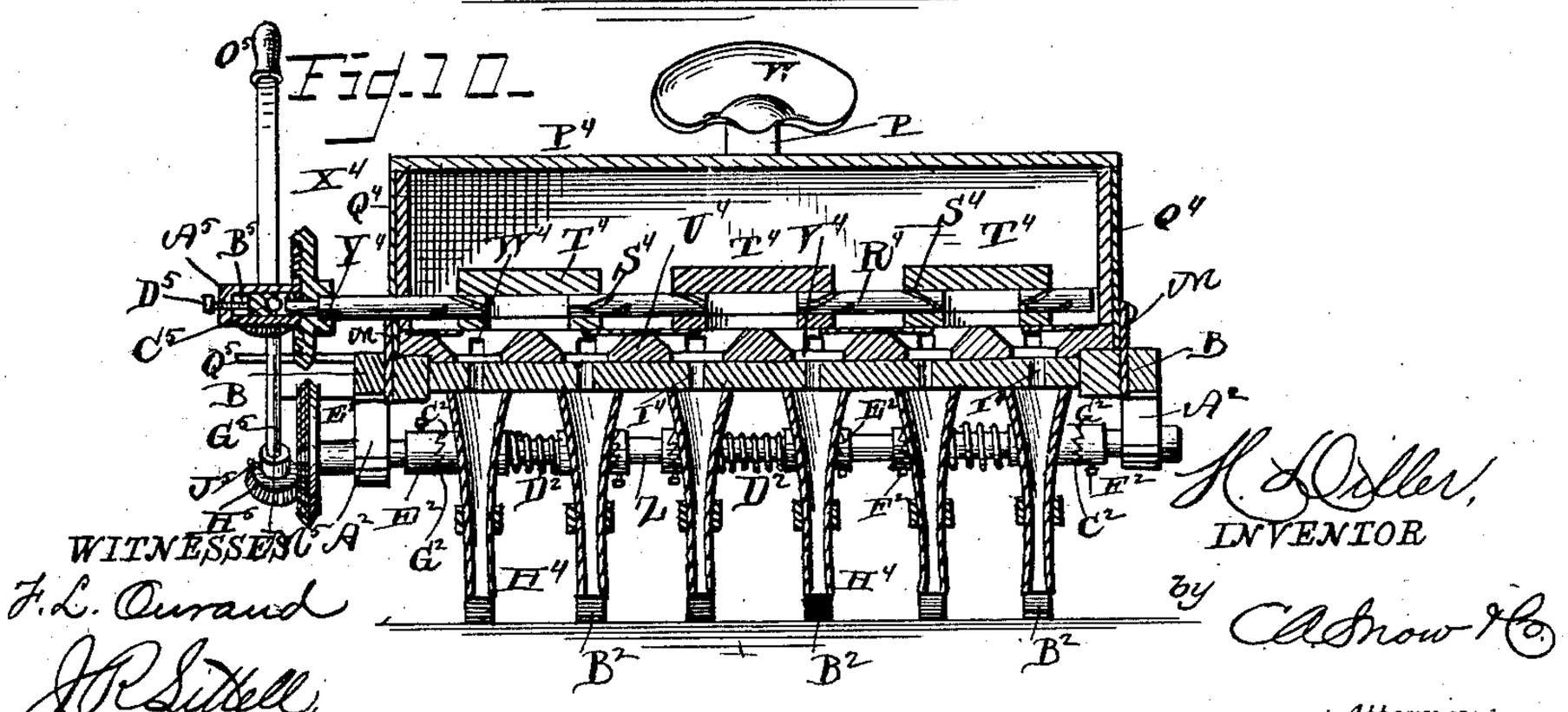


Fig. 10.



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UNITED STATES PATENT OFFICE.

HENRY DILLER, OF YALE, KANSAS.

COMBINED CORN-PLANTER AND GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 290,670, dated December 25, 1883.

Application filed April 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY DILLER, a citizen of the United States, residing at Yale, in the county of Ottawa and State of Kansas, have invented a new and useful Combined Corn-Planter and Grain-Drill, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a combined corn-planter and grain-drill, and has for its object to provide a simple and efficient machine in which the parts can be readily adjusted and removed to enable the machine to perform its double function at different times.

In the drawings, Figure 1 is a plan view of the machine with its parts adjusted so as to adapt it for use as a corn-planter. Fig. 2 is a side view of the same. Fig. 3 is a vertical longitudinal sectional view of the machine with the parts in the same position. Fig. 4 is a transverse vertical sectional view taken through the main axle of the machine when in use as a corn-planter, and looking toward its front end. Fig. 5 is a detail vertical sectional view taken through one of the seed-hoppers from front to rear. Fig. 6 is a detail horizontal sectional view taken through one of the seed-hoppers on the line *x x*, Fig. 5. Fig. 7 is a vertical transverse sectional view taken through the seed-hoppers and adjacent mechanism. Fig. 8 is a plan view of the machine with its parts adjusted so as to adapt it for use as a grain-drill. Fig. 9 is a side view of the machine in use as a grain-drill. Fig. 10 is a vertical transverse sectional view taken through the grain-box and looking toward the rear end of the machine. Fig. 11 is a detail vertical sectional view taken through the grain-box and one of the drills from front to rear. Fig. 12 is a longitudinal sectional view taken through the gear mechanism by which the shaft of the grain-box is operated.

Referring to the drawings, A designates the rear frame of the machine, which comprises side beams, B B, and a rear cross connecting-beam, C.

D is the front frame, which comprises side beams, E E, and a front cross connecting-beam, F.

To the front frame, D, is secured the pole or tongue G, and a cross-piece, H, is arranged on the beams E E of the said frame, the purpose of which will be hereinafter described.

At the rear ends of the beams E E is arranged a transverse plank, I, above which the seed-hoppers or grain-box are arranged to be placed in position, and the beams E E are pivoted at their rear ends, J, to the front ends, K, of the beams B B, as shown at L. The front and rear frames are thus hinged together, and vertically-disposed plates M M are arranged at the joints L, and are provided with horizontal bottom extensions or flanges, N, that project under the front ends of the beams B B, and serve to limit the downward movement of the front end of the front frame.

To the rear edge of the transverse plank I is pivoted or hinged, as shown at O, an upwardly and rearwardly extending beam, P, supported at its rear end by a rod or loop, Q, hinged at its bottom R on the beam C, and hinged at its top S to the under side of the beam P. The said beam P will not interfere with the movement of the front and rear frames on their hinges, and it is provided at its top end with a horizontal plank or extension, T, having a longitudinal slot, U, in which the shank V of the seat W is adjustable by means of a nut, X, working on the said shank. Two beams, Y Y, are arranged to project rearwardly from the plank I at each side of the beam P, to provide foot-rests for the driver when he is mounted in the seat W.

Z is the axle of the machine, which has its bearings A^2 A^2 on the beams B B.

On the axle are arranged the wheels B^2, having their hubs provided with teeth or ratchets C^2, the said wheels being retained in position by means of coiled springs D^2, arranged on the axle, and having their tension controlled by collars E^2, that are adjustable on the axle by means of set-screws F^2, and are provided with teeth or ratchets G^2, adapted to engage the ratchets C^2. The said collars being secured on the axle, the wheels, as they move forward, will turn the latter by reason of their ratchets C^2 engaging the teeth or ratchets of the collars; but when the wheels move backward in backing the machine their teeth will slip past the teeth on the fixed collars and the axle will not be turned. The springs D^2 force the teeth of the wheels and the fixed collars into en-

gagement, and by means of the said collars the wheels can be adjusted to any desired position on the axle.

In sowing grain with this machine the wheels are to be arranged equidistantly on the axle, so that one wheel will follow just in rear of each drill; but in planting corn the two wheels nearest the side of the machine are to be adjusted closely together and be provided with a broad band or tire, H^2, that will follow just in rear of the shoes of the corn-planter mechanism at the front of the machine and cover the corn as it is planted. The band H^2 is formed by a curved elastic strip having inturned flanges I^2 at its ends, which flanges project inwardly when the said band is arranged on the wheels, and the flanges of the two ends of the strip are secured together by bolts J^2, to retain the band on the wheels. These flanges also serve to retain the band H^2 from lateral displacement.

K^2 is a transverse bar, that is provided with a scraping-plate, L^2, and is journaled in plates M^2 M^2, having slots N^2, by which the said plates are adjustable on the beams B B by means of bolts O^2 and nuts P^2. The said bar K^2 is arranged transversely in rear of the wheel, and is provided with a rod or handle, Q^2, in easy reach of the driver, by which it can be operated to be brought in contact with the rims of the wheels to scrape the same.

It may be here stated that the bands H^2 can be provided with small inturned flanges R^2 around its outer edges at its periphery, to serve as an additional guard against lateral displacement of the said bands.

When in use as a corn-planter, bottom plates, S^2, having vertical side flanges, T^2 T^2, downwardly-extending flange U^2, slot V^2, and seed-opening W^2, are secured to the plates M M by means of bolts X^2.

To the flanges T^2 T^2 are secured the flanges Y^2 Y^2 on the bottom of the hopper Z^2 by bolts A^3, the hoppers being provided with a bottom plate, B^3, above the said flanges Y^2, in which is formed a segmental opening, C^3.

Between the bottom plates, S^2 and B^3, the slide D^3 works. This slide has a slot or opening, E^3, into which enter the heads F^3 F^3 of two spring-plates, G^3 G^3, these heads engaging a disk, H^3, having notches I^3 in its periphery. This notched disk H^3 works in the slot E^3, between the plates S^2 and B^3, and as the slide reciprocates its spring-plates G^3 G^3 engage the notches of the said disk and cause it to turn on its pivot J^3. The corn will, therefore, as the slide reciprocates, pass through the opening C^3 into the notches of the disk H^3 and be carried by the latter around to the opening W^2, from which it is dropped.

From the opening W^2 extends the tube K^3, that is secured at its top to the under side of the plank I, and has the shoe L^3 bolted to a flange, M^3, at its bottom. In this tube K^3 is arranged a pivoted plate or partition, N^3, adapted to turn on its pivot O^3, to alternately close the open lower end, P^3, of the tube at each side. This plate N^3 has a lateral extension, Q^3, at its top, which projects through an opening, R^3, in the said tube, and is engaged by the bifurcated lower end, S^3, of a lever, T^3, that is fulcrumed on the edge of the plank I, as shown at U^3. By the vibration of this lever the plate N^3 is turned on its pivot, to alternately drop the corn as it falls from the seed-opening in the bottom of the hopper into the said tube K^3. The lever T^3 is operated by the reciprocation of the slide by means of two flanges, V^3 V^3, that project from the bottom of the latter through the slot V^2, and are engaged by the top end, W^3, of the said lever. The shoe-plate L^3 is removable, and has its top end, X^3, secured to the beam F.

It is understood that a hopper, with its slide, tube, lever, shoe, and other seeding mechanism, is arranged at each side of the machine, and the slides of the seeding mechanisms are connected by a rod or bar, Y^3, so that both slides are operated by one movement. The reciprocation of the slide is effected by a rock-lever, Z^3, the lower end, A^4, of which engages a socket, B^4, on the said slide, the lever being provided with a cross-bar, C^4, that forms the fulcrum of the lever, and has its bearing in a curved plate, D^4, projecting from the top of the hopper. A removable seat, E^4, having a stem or support, F^4, is adapted to be fitted in a socket, G^4, on the plank I, and serve for the slide reciprocator or operator.

I do not wish to be understood as limiting myself to the exact construction of seeding mechanism herein shown, as any reciprocating slide mechanism is adapted to be used on my improved machine.

When it is desired to use the machine as a grain-drill, the seeding mechanism is removed by simply disconnecting the hoppers from the machine, and by removing the seat E^4, levers T^3, and adjusting the wheels. The tubes and shoes of the seeding mechanism can be left on the machine, if desired. The grain-tubes H^4 are placed in position, and are brought up under the perforations or grain-openings I^4 in the plank I, and secured in this place between ears or lugs J^4 on the rear edge of the said plank by a cross-pin, K^4.

To the front of the grain-drills H^4 are pivoted rods L^4, that extend up to and between lugs or ears M^4 on the front edge of the cross-piece H, and are retained in position by a cross-pin, N^4, passing through any one of the series of perforations O^4 in the said rods L^4. The transverse grain-box P^4 is secured above the plank I by having the flanges or plates Q^4 at its ends bolted to the plates M M. The grain-box P^4 is provided with a longitudinal shaft, R^4, having suitable grooves, S^4, and working through blocks T^4 inside the said box P^4. As the shaft revolves, the grain is carried in the said grooves under the blocks to the dished bottom U^4, and through openings

in the latter, which openings are designated by V^4 and W^4.

To provide for operating the said rotary shaft R^4, a wheel or disk, X^4, is secured to its outer end, Y^4, and provided with three or more series of cogs, Z^4, on its outer face. A block, A^5, is swiveled on the end Y^4, and is provided with a slot, B^5, in which is arranged to slide a bearing-block, C^5, the latter being adjustable by means of a set-screw, D^5, working through the end of the block A^5. On the end of the axle is secured a wheel or disk, E^5, provided, like the disk X^4, with three or more series of cogs, F^5, on its outer face.

G^5 is a shaft for communicating the motion of the disk E^5, as the axle revolves, to the disk X^4, to turn the shaft R^4. The shaft G^5 is provided with a pinion, H^5, at its rear end, and with a pinion, I^5, at its front end. These pinions H^5 and I^5 are adjustable on their said shaft by means of set-screws J^5 and K^5, respectively. By means of this adjustment of the pinions they can be caused to mesh with any one of the series of cogs on the said disks, and, as the circumference of these series varies according to the distance of the series from the center of the disk, the number of turns of the shaft R^4 to one revolution of the axle is regulated, so that more or less grain can be sown at will. The front end, L^5, of the shaft G^5 has its bearing against the adjustable block C^5, while the rear end, M^5, of the said shaft has its bearing in a socket, N^5, in the bottom of a lever, O^5, that is fulcrumed in a bracket, P^5, projecting from the beam B, and has its upper end adjustable in a rack, Q^5, also projecting from the beam B. By operating this lever the pinion H^5 can be thrown into or out of engagement with the disk E^5. The front frame is preferably supported upon a caster-wheel, R^5, as shown.

The operation and advantages of my invention will be readily understood by reference to the foregoing description, taken in connection with the drawings hereto annexed. It is exceedingly simple in operation and construction, and can be transformed from a corn-planter into a grain-drill by simply changing a few of the parts, as above specified.

I claim as my invention—

1. The combination, with the wheels adjustable on the axle, of the broad band or tire having inturned flanges at its ends, the said band being arranged around the two wheels after they are brought near together, with its end flanges projecting inwardly, and secured together to retain the band on the wheels and obviate lateral displacement, as set forth.

2. As an improvement in combined corn-planters and grain-drills, the combination of the frame of the machine, the rotary axle, the pairs of wheels adapted to slide on the axle, and having the ratchet-faced hubs, the clutch-collars adjustable on the axle by means of set-screws, the coiled springs arranged around the axle, and the broad band H^2, having inturned flanges, by which it is arranged to straddle two of the wheels to form a broad removable coverer, substantially as and for the purpose set forth.

3. The combination of the rotary shaft R^4, the disk X^4, secured thereon, the block A^5, swiveled on the end of shaft R^4, and having slot B^5, the bearing-block C^5, sliding in the slot, the set-screw D^5, working against the bearing-block to adjust the same, the rotary operating shaft or axle, the disk E^5, secured thereon, the shaft G^5, the adjustable pinions H^5 and I^5, having the set-screws J^5 and K^5, and the lever O^5, having the socket N^5, substantially as and for the purpose set forth.

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

HENRY DILLER.

Witnesses:
D. W. CHASE,
E. M. POTTERF.