

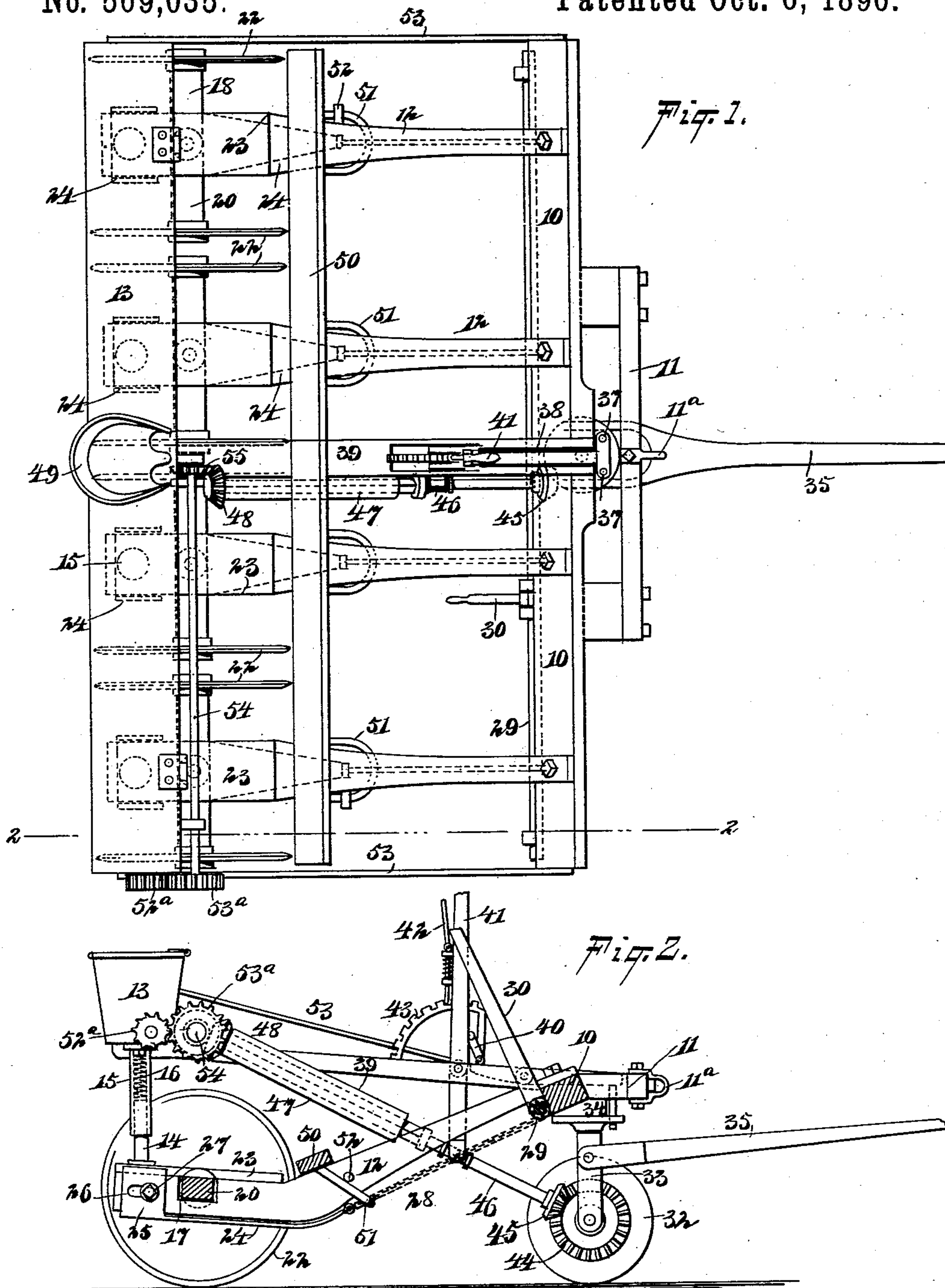
(No Model.)

2 Sheets—Sheet 1.

C. C. BLAIR.  
GRAIN DRILL.

No. 569,035.

Patented Oct. 6, 1896.



WITNESSES:  
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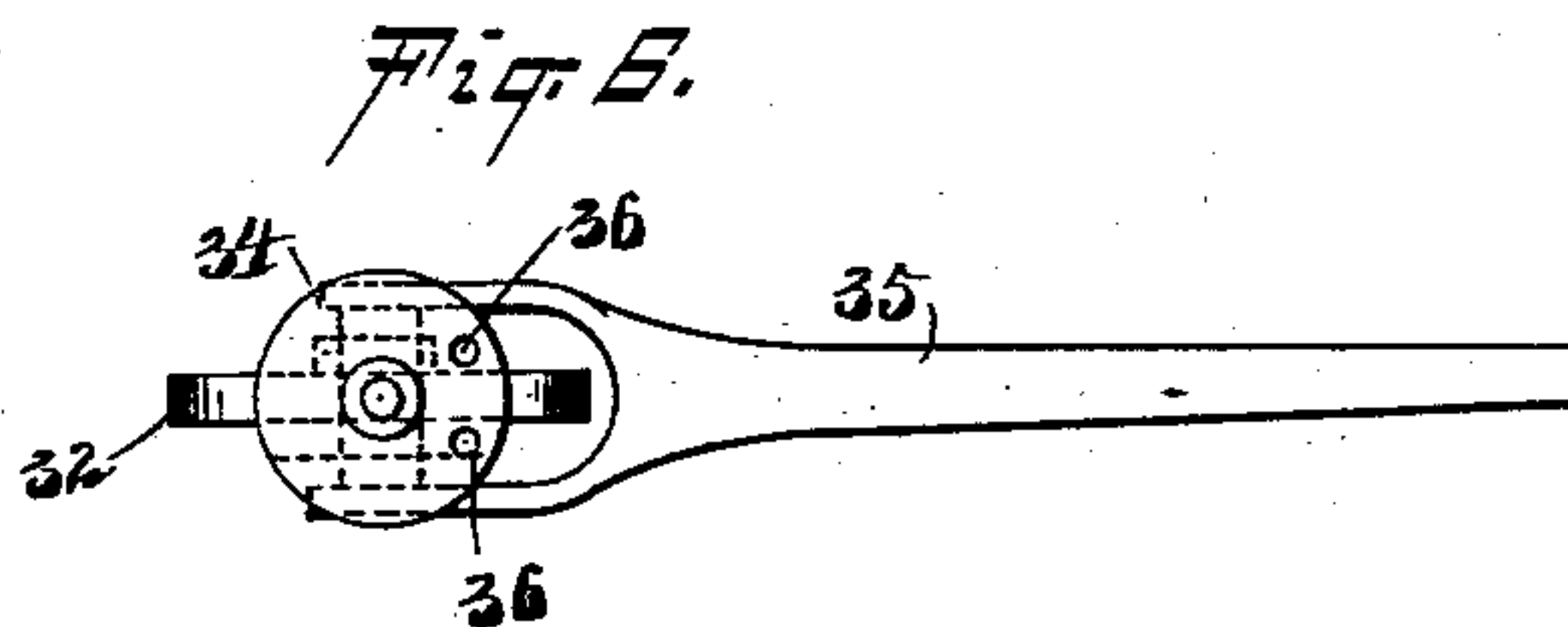
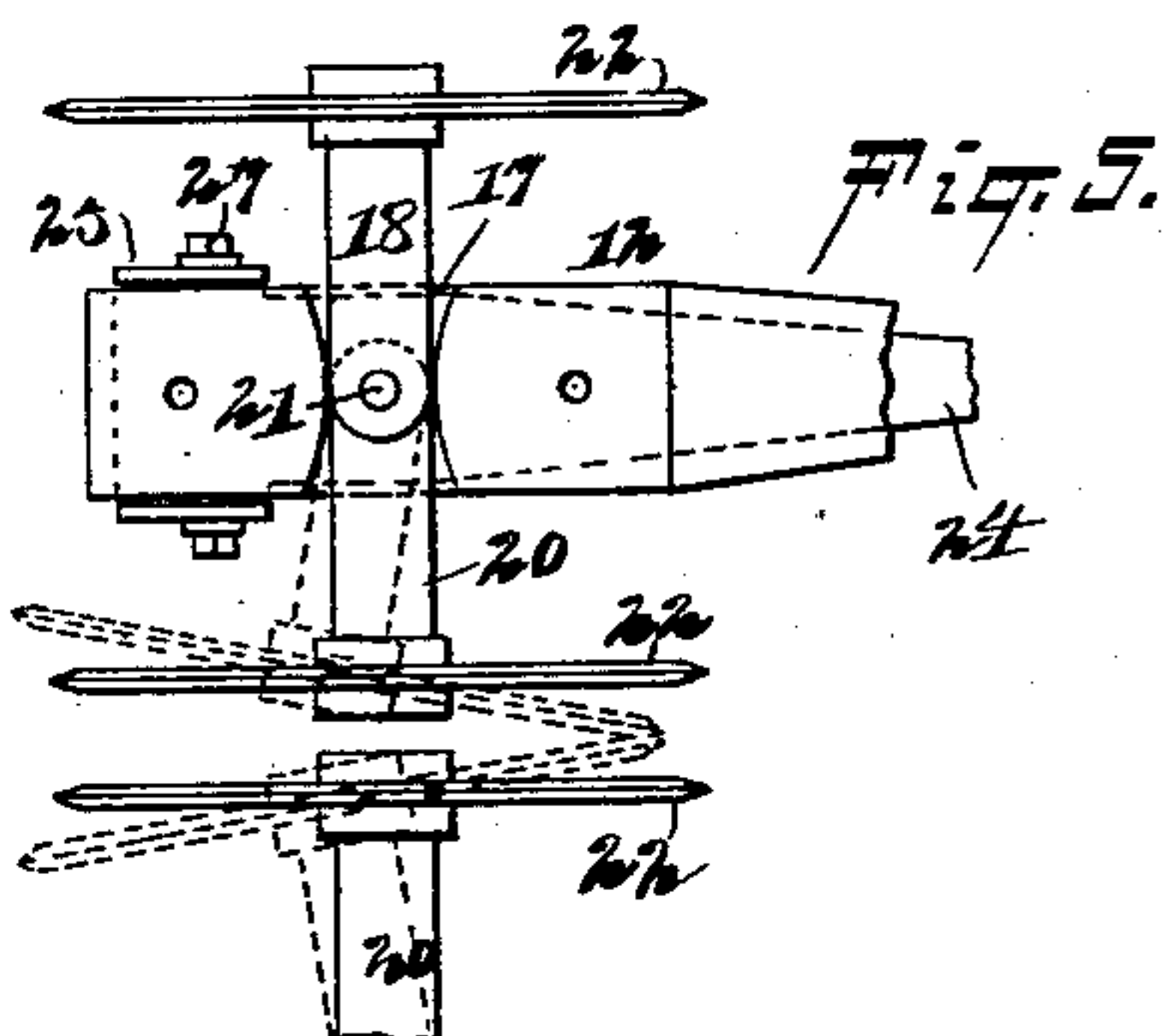
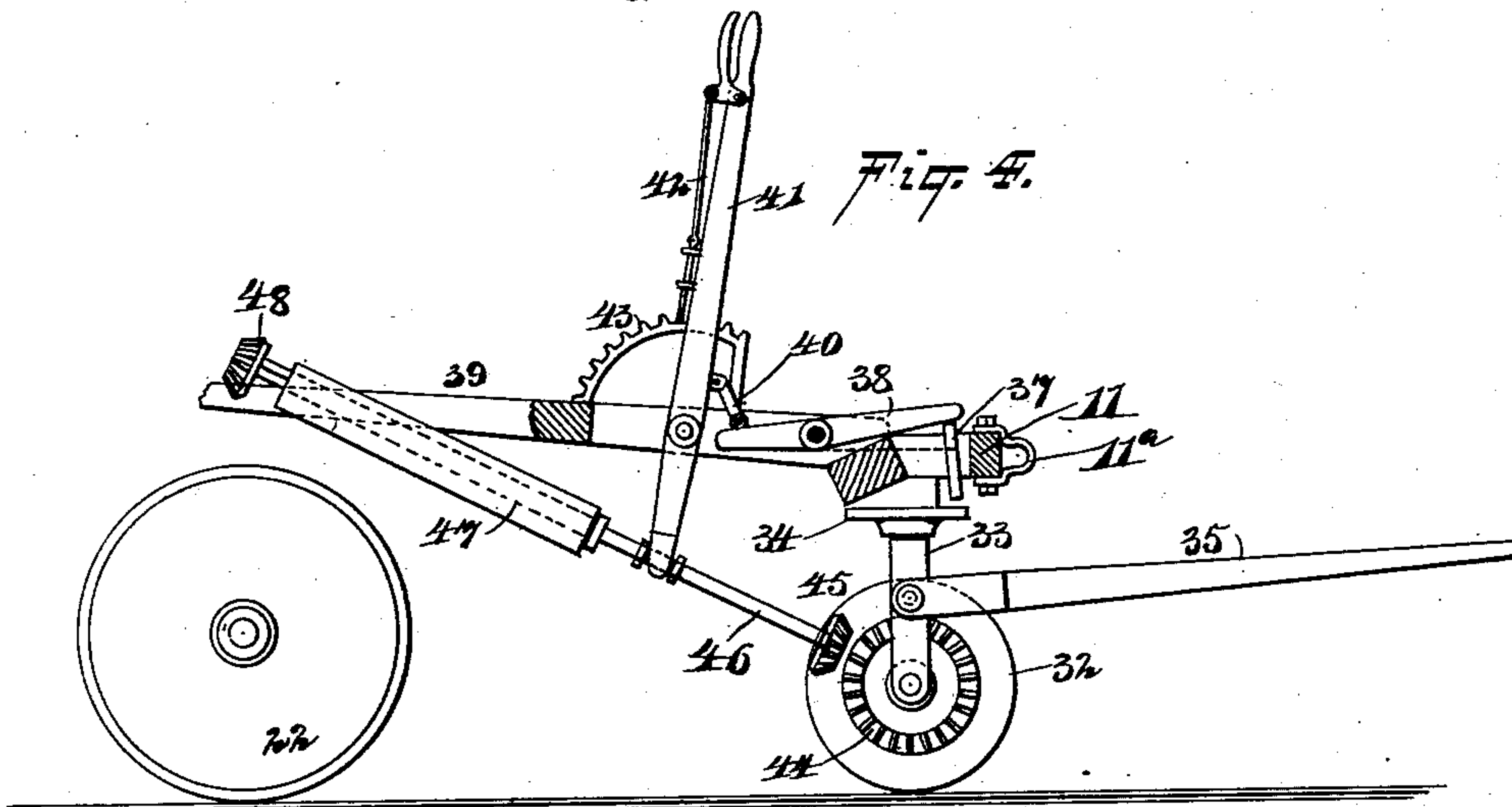
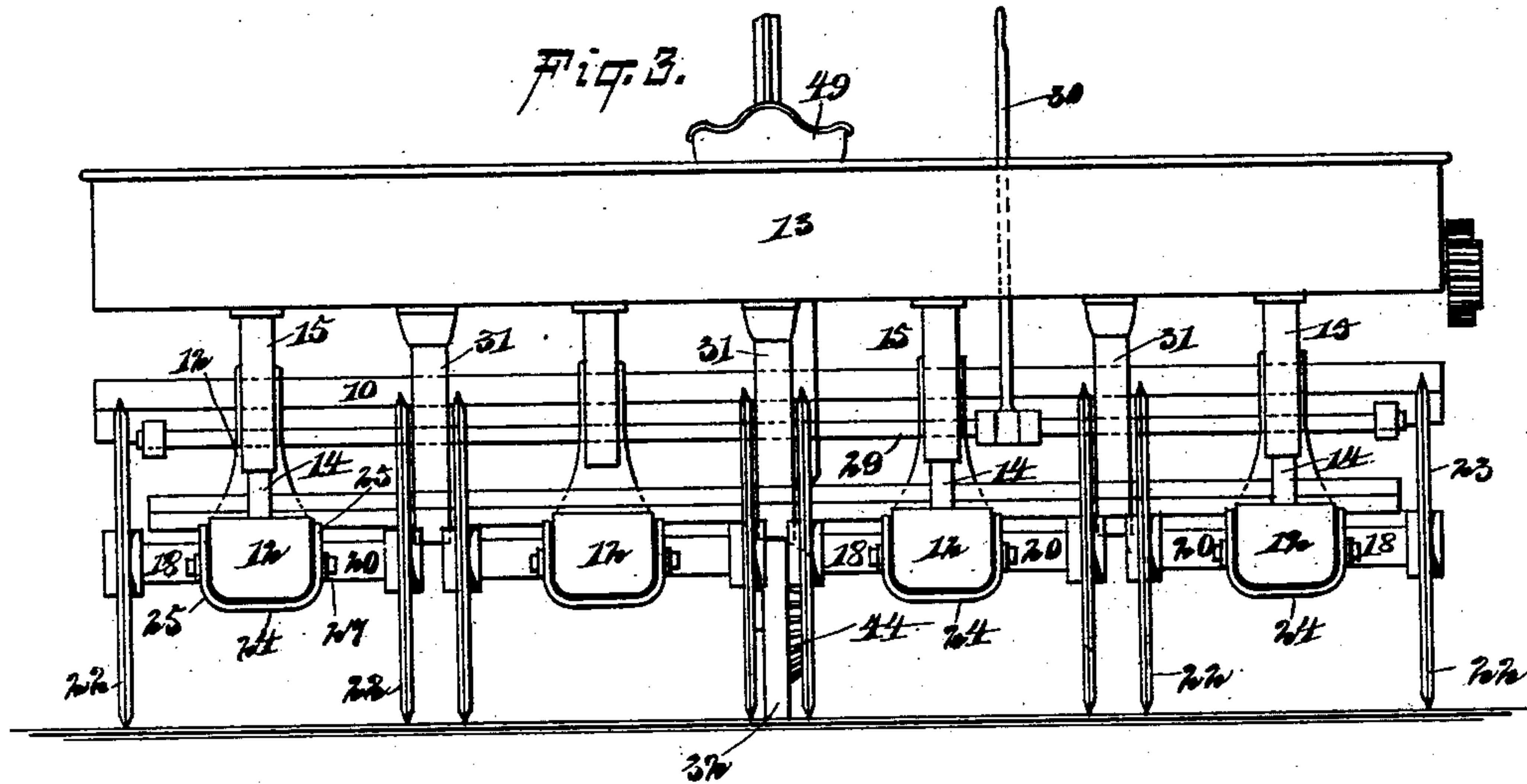
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2 Sheets—Sheet 2.

C. C. BLAIR.  
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No. 569,035.

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# UNITED STATES PATENT OFFICE.

CALVIN C. BLAIR, OF BELOIT, KANSAS.

## GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 569,035, dated October 6, 1896.

Application filed June 23, 1896. Serial No. 596,598. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN C. BLAIR, of Beloit, in the county of Mitchell and State of Kansas, have invented a new and useful Improvement in Grain-Drills, of which the following is a full, clear, and exact description.

The object of my invention is to provide a grain-drill or other form of planter with disk furrow-openers, each furrow-opener consisting of two disks having independent supports, each pair of disks being so mounted that when free from a locking device, in which condition they are used in planting, the said disks will come together at their forward edges of their own volition and remain so while the seeds are being dropped, the point of contact regulating itself according to the depth to which the disks enter the ground—the deeper the disks run the higher the point of contact.

Another object of the invention is to provide a means for straightening the disks when used for pulverizing purposes or when the machine is to be moved to and from the field.

Another object of the invention is to provide a caster-wheel for the machine and means for holding the caster-wheel in position to travel straight ahead while the machine is used for planting, and also to provide means for driving the seed-dropping mechanism of the seedbox from the aforesaid caster-wheel.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improved machine. Fig. 2 is a section taken substantially on the line 2 2 of Fig. 1. Fig. 3 is a rear elevation of the machine. Fig. 4 is a vertical sectional view of portions of the machine, illustrating particularly the shifting-lever and the driving mechanism of the seed-dropping mechanism. Fig. 5 is a detail plan view of a pair of disk furrow-openers and likewise illustrates the manner in which the disks are supported; and Fig. 6 is a plan view

of the caster-wheel and its head-piece, together with the pole, removed from the machine.

In carrying out the invention a front beam 10 is employed, which is usually given a slight downward inclination, and at the front central portion of this front beam a yoke 11 is stationarily secured, being provided with a clevis 11<sup>a</sup> or the equivalent of the same, whereby a whiffletree or a doubletree may be attached to the machine. Angled or curved beams 12 are secured to the front beam 10 in such manner that their rear ends may have vertical movement. Preferably the angled or curved beams 12 have a rigid connection with the front beam. These beams 12 extend downwardly and rearwardly from the front beam for a predetermined distance and are then carried rearwardly and in a measure upwardly, the rear portions of the beams constituting foot-sections for the same, and these foot-sections are preferably wider than the remaining portions of the beams.

The seedbox 13, which may be of any approved construction, is located over the foot-sections of all of the beams 12, and upon the foot-section of each of the said beams 12 a post 14 is secured in any approved manner, and each post 14 enters a tube 15, attached to the bottom of the seedbox, and within each tube a spring 16 is located, against which the posts 14 have bearing.

In the upper face of the foot-section of each beam 12 a transverse recess 17 is made, as shown in Fig. 5. The side walls of these recesses are convexed, so that the recesses are wider at their outer ends than at the center, and two short axles 18 and 20 are pivoted in each recess 17 at the center by a single pivot-pin 21, so that these axles may have an inclination in direction of the rear of the machine, as shown in dotted lines in Figs. 1 and 5, and may likewise have an inclination in direction of the front of the machine, if desired. Each axle at its outer end has a disk 22, loosely mounted thereon, and the edges of the disks are beveled from both sides. These disks are alike in size and construction, and are therefore interchangeable and reversible. The slotted face of the foot-section of each disk-carrying arm or beam 12 is covered by a cap-plate 23, as shown particularly in Fig. 2.



The downward inclination of the beam 12 from the back end to a point in front of the disks is for the purpose of making the point of contact between the disks below their centers.

A shoe 24 is held to slide beneath the foot-section of each disk-carrying beam or arm 12, and each shoe at its rear end is provided at each side with an upwardly-extending flange or member 25, each of the flanges or members having a longitudinal opening or slot 26 made therein, and bolts 27 are passed through these slots into the disk-carrying arms, but the heads of the bolts are not brought in close engagement with the shoes, so that the shoes may have lateral movement.

When the shoes are in their full rearward position, as shown in Fig. 2, they are out of engagement with the axles of the disks, and the said axles are free and have a rearward inclination; but when the shoes are drawn forward their side members 25 engage with the rear portions of the axles of the disks and will draw the axles to a straight position or a position at a right angle to the arms in which they are pivoted and will maintain the the axles in such position.

The forward movement of the shoes is accomplished by attaching chains 28 to their forward ends, which chains are carried around and secured to a winding-shaft 29, journaled at the front of the machine, and this winding-shaft is provided with a lever 30, by means of which it is operated, and a suitable rack may be and preferably is used in connection with the said lever.

The spouts 31, through which the seeds drop to the ground, are attached to the seed-box at such points that the said spouts will extend downward between each pair of disks, opposing disks constituting a pair, and each pair of disks constitutes a furrow-opener.

A caster-wheel 32 is provided for the front of the machine, and the shank 33, in which it is journaled, is attached to a cap-plate 34, and the said cap-plate and shank are pivoted upon the front frame of the machine in any suitable manner. A tongue 35 is pivotally attached to the shank of the caster-wheel, but this tongue simply serves as a guide, being located between the animals of the team, the said animals being harnessed to the yoke 11 above the pole, as heretofore stated. The cap-plate 34 of the caster-wheel is provided with preferably two apertures 36, as shown in Fig. 6, and when the machine is used for planting seed the caster-wheel is held stationary by reason of two pins 37 entering the apertures 36 in the cap-plate of the wheel, and these pins are secured to the weighted and forward end of a lever 38, fulcrumed in the bifurcated forward portion of a cross-beam 39, which extends from the front beam of the machine rearward to the seedbox. The rear end of the said lever 38 is connected by a link 40 with a shifting-lever 41, also fulcrumed in the bifurcated portion of the

cross-bar 39. This lever 41 is shown as provided with a thumb-latch 42, adapted for engagement with a rack 43.

A beveled gear 44 is secured to one face of the caster-wheel 32, and this beveled wheel is to be engaged by a beveled pinion 45, attached to a shaft 46, held to turn in a sleeve or its equivalent located at the lower end of the shifting-lever 41. The shaft 46 is made polygonal in cross-section at its upper end, and this polygonal end of the shaft 46 enters a correspondingly-shaped bore of an upper tubular shaft 47, journaled in suitable bearings attached, usually, to the cross-bar 39, and the tubular shaft 47 carries a pinion 48, and this shaft imparts movement to the seed distributing or dropping mechanism of the seed-box. The dropping-shaft of the seedbox is provided with a pinion 52<sup>a</sup> at one end, which meshes with a gear 53<sup>a</sup> on a line-shaft 54, journaled in front of the seedbox, and said shaft has a beveled pinion 55, that meshes with the pinion 48, driven from the caster-wheel. (See Fig. 1.)

The driver's seat 49 is located on the central portion of the seedbox. A spacing-bar 50 crosses all of the disk-carrying arms 12, and this spacing-bar is provided with stirrups 51, through which the disk-carrying arms pass, pins 52 being provided in the said arms to limit the rearward movement of the said stirrups. The stirrups are of sufficient depth to admit of a vertical movement at the rear ends of the disk-carrying arms, and such movement is necessary in order that any pair of disks may ride over an obstruction or drop into a depression without affecting the other disks.

In operation the machine is brought to a field and carried away therefrom while the axles of the disks are locked, bringing the disks parallel with each other, and the caster-wheel at that time will be released from the lock-lever 38, and the driving-shaft 46 will be disengaged from the gear on the caster-wheel. When the field is reached, the shoes 24 are released, the caster-wheel is locked to travel straight, and the driving-shaft 46 is thrown into mesh with the gear on the caster-wheel. As the machine is drawn forward to plant or deposit the seed in the ground the axles of the disks will naturally take a rearward inclination, as shown in dotted lines in Fig. 5, bringing the forward edges of each pair of disks in contact, whereby the space between each pair of disks when viewed in plan will be of a V shape, as is also shown in dotted lines in Fig. 5. Under this construction a series of disk furrow-openers is obtained, having a most effective cutting edge and widening out at the rear, so as to give ample space for the reception of the seed and to form practically a wide furrow. Most of the drills now in use pile the grain in a very narrow row, the grain lying too close together to do well, but when the disk furrow-opener just described is employed the same amount of grain



can be placed in two rows from two to four inches apart. It is further claimed that a drill having the improved attachments will run very much lighter than ordinary drills, and will take the weight off the neck of the horses. The furrow-openers will pass through all kinds of trash that would prove detrimental to furrow-openers of a different character, and will work on rough, stony, cloddy ground, or ground with roots above and below the surface, equally well. The disks will sharpen themselves by coming in contact with each other, and, being exactly alike, when they become worn upon one side they can be reversed.

This machine can be used as a pulverizer, and the furrow-openers and the supports therefor may be applied with good results to corn-planters and planters of other types. Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a planter or like machine, a caster-wheel journaled in the frame of the planter, and a lock-lever arranged for locking engagement with a portion of the shank of the said caster-wheel, whereby the said shank may be held in a fixed position when desired, a gear carried by the caster-wheel, a driving-shaft driven from the said gear, and a shifting-lever arranged to carry the driving-shaft to and from a connection with the gear of the said caster-wheel, as and for the purpose set forth.

2. In a grain-drill or like machine, the combination, with a frame, of arms connected with the frame and capable of a vertical movement at their rear ends, a pair of axles pivoted in each arm and capable of lateral movement, disks mounted upon the axles, a locking device provided for the axles and carried by the said arms, and means for operating the locking devices, as and for the purpose set forth.

3. The combination with a frame, of a sup-

porting-wheel, a shank carrying the supporting-wheel and turning on a vertical pivot, a tongue connected to the shank, means for holding the shank for turning, a shaft geared with the carrying-wheel, and a lever capable of simultaneously moving the shaft and moving the means for locking the shank, substantially as described.

4. The combination with a frame, of a driven gear-wheel, a tongue connected and moving in unison with said gear-wheel, means for locking the tongue, a shaft driven from the gear-wheel, and a lever capable of moving in unison the shaft and means for locking the tongue, substantially as described.

5. A planter having a carrying-wheel and seed-dropping mechanism driven from the carrying-wheel, a tongue in unison with which the carrying-wheel turns, means for holding the tongue from turning, and a shifting device capable of simultaneously releasing the said means and disconnecting the gearing by which the dropping mechanism is driven, substantially as described.

6. The combination with a frame, of an arm, two axles carried by the arm and having their adjacent ends pivoted thereto, a disk carried by the outer end of each axle, a shoe sliding on the arm and engaging the axles to hold the same, and means for controlling the shoe, substantially as described.

7. The combination with a frame, of an arm, an axle carried by the arm and having its inner end pivoted thereto, a cultivating instrument carried at the outer end of the axle, and means movable on the arm and capable of engaging the axle to hold the same from pivotal movement, substantially as described.

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Witnesses:

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