2 Sheets—Sheet 1.

W. D. EWART.

Corn-Planters.

No. 196,291. Patented Oct. 23, 1877.

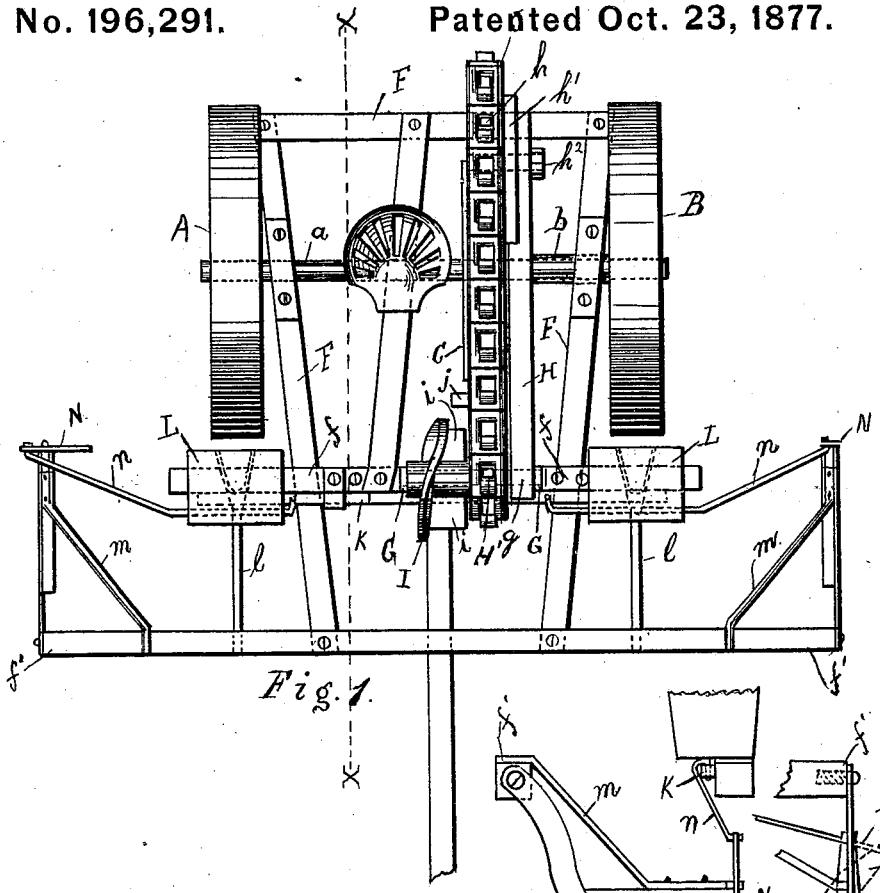

Fig. 1.

Fig 10.

Fig 11.

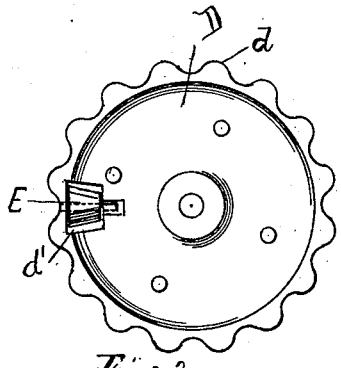

Fig 3

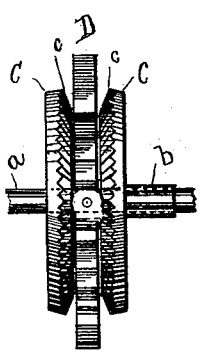

Fig. 2.

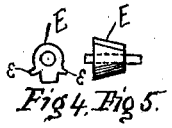

Fig 4. Fig 5.

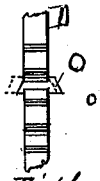

Fig 6.

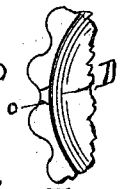

Fig. 7.

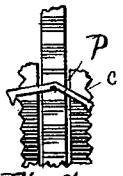

Fig 8.

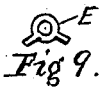

Fig 9.

Attest;

W. C. Curlies

E. L. Lloyd.

INVENTOR;

William D Ewart

By Coburn & Thacher

Atty's.

2 Sheets—Sheet 2.

W. D. EWART.
Corn-Planters.

No. 196,291. **Patented Oct. 23, 1877.**

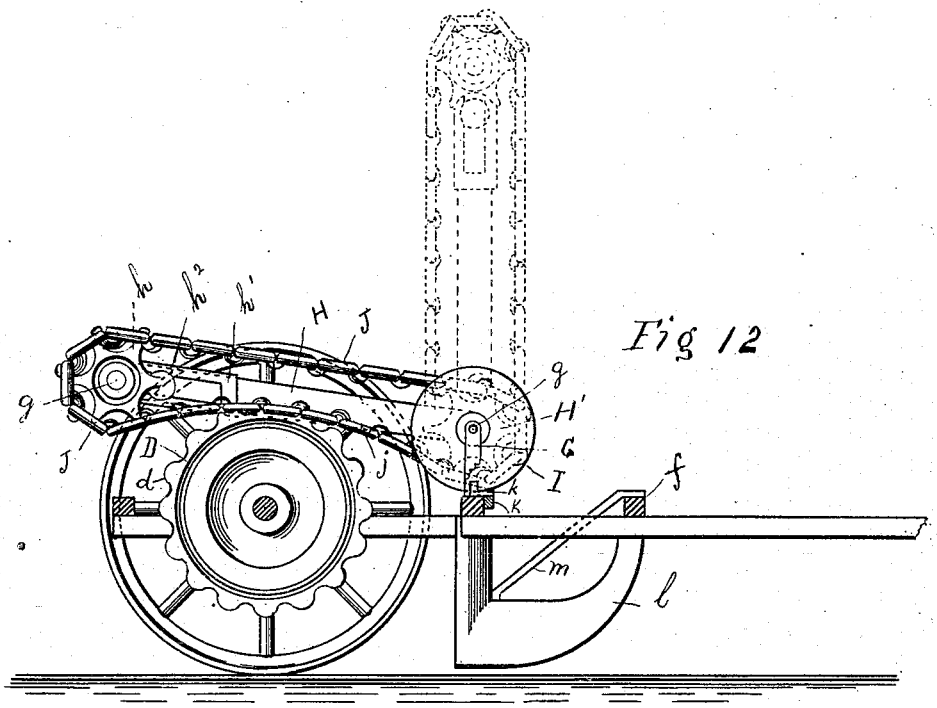

Fig 12

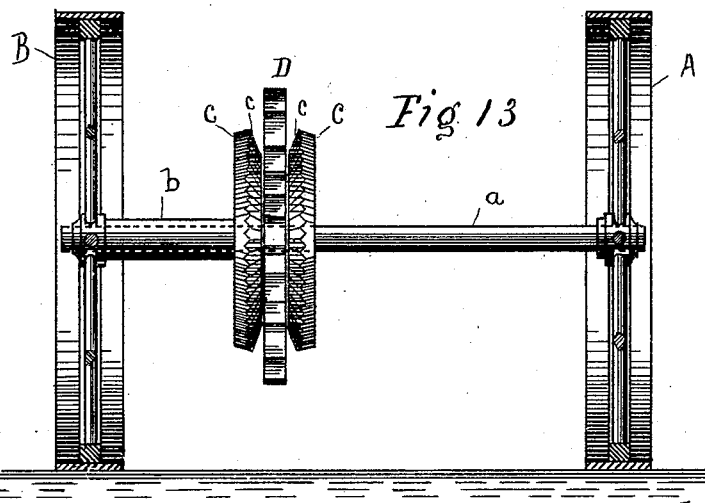

Fig 13

ATTEST
W. C. Corlies
E. S. Lloyd

Inventor.
William D Ewart
By Coburn & Thacher
ATTY'S.

UNITED STATES PATENT OFFICE.

WILLIAM D. EWART, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN CORN-PLANTERS.

Specification forming part of Letters Patent No. **196,291**, dated October 23, 1877; application filed December 18, 1876.

To all whom it may concern:

Be it known that I, WILLIAM D. EWART, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Corn-Planters, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a corn-planter with my improvements attached; Fig. 2, an edge view of the driving-gear and device for changing from one to the other; Fig. 3, a side view of the sprocket-wheel between the driving-wheels; Figs. 4 and 5, detail views of the vibrating dog or clutch and changing device; Figs. 6, 7, 8, and 9, detail views of modifications of the same. Fig. 10 is an end elevation of the marker and indicator; Fig. 11, a front elevation of the same; Fig. 12, a cross-section taken on the line *x x*, Fig. 1, with the seat removed; and Fig. 13, a cross-section of the ground-wheels and axles.

The object of my invention is to obtain a corn-planter in which the mechanism driving the feeding-slide shall always be driven by the ground-wheel moving the slowest, or, in other words, to prevent the acceleration in the motion of the seeding mechanism when one of the ground-wheels passes over an obstacle, which would destroy the regularity of the hills.

The invention consists in mounting the ground-wheels upon independent axles, each carrying a toothed wheel, between which is mounted an independent sprocket-wheel provided with a loose clutch or shifter, which is always forced to engage with the mores lowly moving wheel.

It also consists in the combination of this sprocket-wheel with an idle sprocket-chain mounted on a swinging arm, upon which it may be adjusted for transmitting motion to the slide-cam.

It also consists in a rotary cam for reciprocating the feeding-slide provided with wings, with which a stop or stops on the sprocket-chain engages, to rotate the cam at proper intervals.

It also consists in the arrangement of the markers outside of the shoes at a distance equal to one-half the distance between the rows.

It also consists in vibrating indicators connected to the slide, so as to make a cross-mark opposite each hill; and it further consists in various combinations of devices, all of which will be hereinafter fully set forth.

In the drawings, A represents one of the ground or supporting wheels, which is mounted rigidly upon a shaft, *a*, extending entirely across the machine, and B the other ground-wheel, which is attached to a sleeve-axle, *b*, mounted on the axle *a*, so that each wheel is independent of the other. Each one of the axles *a b* carries a driving-wheel, C, rigidly secured thereto, and arranged a short distance apart, between the wheels A and B.

The wheel C, attached to the sleeve-axle *b*, is mounted on the extreme inner end of the latter, and both wheels C are provided with teeth *c*. Between the two wheels C is a disk, D, which is mounted loosely on the shaft *a*, and is provided with teeth or sprockets *d*. The disk D is also constructed with a slot, *d'*, near its outer edge, on one side, in which is mounted, on pivotal bearings, a small clutch or shifter, E. This device is loose in the slot *d'*, so that it is free to vibrate back and forth therein. On each side of the clutch is a projection, *e*, the two being set at an obtuse angle to each other, as shown in Fig. 4 of the drawings.

The teeth *c* on the wheels C are made about like the teeth of a bevel-gear wheel, and in this case the vibrating dog or clutch E is shaped like a beveled pinion, the teeth *e* corresponding to two of the teeth thereof.

The wheels C, sprocket-disk D, and dog E are constructed and arranged so that when both wheels move forward together—that is, at the same rate of speed—the teeth *e* will just engage with the teeth *c* on the wheels C, on each side of the disk, and thus the latter will be carried around with the wheels. If, however, the motion of one of the ground-wheels is accelerated, thereby increasing the speed of the corresponding wheel C, the teeth *c* on said wheel will be carried by the tooth *e* on that side of the disk, the clutch E vibrating sufficiently to permit this, the depressions between the teeth *c* being sufficiently deep to allow the tooth *e* on the other side of the disk to pass farther in as the dog is vibrated, as described.

It is evident that this operation releases the

engagement between the accelerated wheel C and the disk D, while it continues between the latter and the other wheel C, which is revolving with a uniform motion.

This wheel is always the one corresponding to the ground-wheel which is moving along over level land, and, therefore, by the operation of these devices, as described above, not only is a uniform motion given to the disk D, but such motion always corresponds to the motion of a ground-wheel passing along over a continuous level, so that the irregularities in the revolution of the ground-wheels produced by the passing of either over an obstacle or uneven ground will not affect the regularity and uniformity of the rotation of the disk D.

A carrying-frame, F, is mounted upon the axles of the ground-wheels, and on a bar, *f*, just in front of said wheels, are two upright standards, G. A pivot-bolt, *g*, passes through the upper ends of these standards, on which is placed loosely an arm, H, which carries upon its outer end a small sprocket-wheel, *h*, which is adjustable back and forth thereon by means of a sliding plate, h^1, by which it is carried. The plate h^1 is slotted, and held in any desired position by means of an ordinary setting-bolt, h^2, passing through the arm H and slot in the plate.

At the inner end of the arm H a similar sprocket-wheel, H′, is mounted loosely on the pin *g*, and by the side of this wheel a disk-cam, I, is also mounted loosely on the same bearing. On the face of the cam, next to the wheel H′, are wings or flanges *i*.

A sprocket-chain, J, is placed around the sprocket-wheels *h* H′, and the arm H is so arranged that when swung backward the chain J will fall upon the sprocket-wheel or disk D, as shown in Fig. 12 of the drawings.

The arm H is made long enough to extend somewhat in rear of the wheel D, so as to afford an opportunity for the adjustment of the length of the chain and the position of the wheel *h*.

I prefer to construct the chain J with detachable links, like those heretofore patented by me, so that one or more may be removed or replaced at any time for the purpose of adjusting the length of the chain, which may be readily done by raising the arm H, as shown in dotted lines in Fig. 12 of the drawings, thereby disengaging the chain from the sprocket-wheel D. On one or more links of this chain is a projection, *j*, so arranged that as the chain is driven by the sprocket-wheel D the projection will strike against one of the wings *i* on the cam I, and give the latter a half-rotation, this operation being repeated each time the projection is brought round into contact with one of the wings on the cam.

On the cross-bar *f* the distributing-slide K is supported, which is of ordinary construction, and is provided with a forked guide, *k*, which embraces the edge of the cam I, so that the rotation of the latter will cause the slide to reciprocate back and forth, each half-revolution thereof throwing the slide-bar to its farthest extent in one direction.

Seed-boxes L are also mounted upon the frame, their distance from each other being the same as that desired between the rows of corn. The seed-bar operates in connection with these boxes in the usual manner, dropping two hills of corn with each reciprocation of the bar, and below the seed-boxes are located the usual shoes *l*, just in front of the ground-wheels.

Markers M are pivoted to the ends of a front cross-bar, *f*′, as shown in Fig. 10 of the drawings, and are braced by rods *m*, hinged at their forward ends to the bar *f*′, and rigidly attached to the markers at their rear ends, so that the latter are free to rise and fall, to conform to the surface of the ground over which they pass.

Small tapering bars N are pivoted to the rear ends of the markers M or braces *m*, so as to vibrate across the path of said markers, and they are connected to the slide-bar K by link-rods *n* attached to their upper ends. It is evident, therefore, that with each reciprocation of the feeding-slide K these bars N will be vibrated at right angles to the path of the markers M. The markers are arranged so that the bars N will be in line with the heels of the shoes *l*, and, as they are vibrated only when the feeding-slide is reciprocated to drop the corn for the hills, it is evident that they will simultaneously make a short transverse mark directly opposite each hill of corn, and thus indicate the line on which the hills of the next rows should be dropped.

The markers M are arranged outside of the shoes *l*, at a distance therefrom of only half the distance between the rows, instead of the full distance, as is usual in corn-planters, and as the machine is drawn back and forth across the field the inside marker always follows the line made by the outside marker in the preceding bout.

The rods *n*, connecting the indicators N to the feeding-slide K, are made of such length that the indicators are never vibrated outside of the markers, but are moved only from a perpendicular position inwardly, and back again, the two positions being shown in Fig. 11 of the drawings.

From this construction and arrangement it is evident that in each bout of the machine, if the mechanism is operated properly, the inside marker will strike a short line conforming to the transverse lines made by the indicator in the previous course, but on the opposite side of the line made by the marker M. The driver is thus enabled to easily determine whether the hills in the new rows are being dropped regularly in line with the preceding rows.

If the marks made by the indicators do not register with those previously made the driver can adjust the mechanism until this result is obtained, by simply raising the arm H until the chain J is disengaged from the sprocket-

wheel D, and then moving the chain backward or forward by hand, according as it is necessary to bring the projection *j* nearer to or farther from the cam I.

For convenience of adjustment I prefer to make the links of the chain J precisely one inch in length, so that the distance between the hills in a row may be easily regulated by adding links to or taking them from the chain; and, if desired, more than one lug or projection may be employed to increase the reciprocation of the feeding-slide K. The length of the links being known will also enable the driver to correct irregularities in the dropping more easily, for, as he sees about the amount of variation made by the indicators, he can determine how many links the chain should be moved backward or forward to correct it.

I have described one special construction of my vibrating clutch or shifter. In Figs. 6, 7, 8, and 9 of the drawings I have shown some modified forms of the latter, which I regard as equivalents. In Fig. 6 the shifter is a simple slide, O, with beveled ends fitted loosely in a dovetail-groove, *o*, in the wheel D, as shown in Fig. 7 of the drawings. In Fig. 8 the shifter P is pivoted to the wheel D and arranged to extend outside of the wheels C, which it embraces, and which are constructed with serrations *c* upon their outer faces instead of the inner ones, as shown in Fig. 2 of the drawings.

This construction may also be modified by putting the serrations upon the edges of the wheels, and arranging the shifter to vibrate vertically.

The shifter E may be modified slightly in construction, as shown in Fig. 9 of the drawings, in which there are simply two teeth, set at an angle to each other, and an enlargement to enable the shifter E to be pivoted to the wheel.

Instead of the cam I, the ordinary levers may be employed for reciprocating the feeding-slide, being arranged so as to be struck by the projection on the chain J.

I have described and shown vibrating indicators only; but it is evident that these indicators N may be constructed differently, it being necessary only that they shall make indicating-marks with each reciprocation of the feeding-slide.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The two independent wheels or disks C, having teeth or serrations *c*, in combination with an intermediate loose driving-wheel, D, and an automatic vibrating clutch or shifter, E, mounted on the wheel D, substantially as and for the purpose set forth.

2. The independent ground-wheels A and B, in combination with the toothed wheels or disks C, intermediate wheel D, and automatic vibrating clutch or shifter E, substantially as and for the purpose set forth.

3. A sprocket-wheel, D, in combination with a sprocket-chain, J, composed wholly or in part of independent detachable links, and a device attached to one or more of the links for operating the feeding slide, whereby the length of the chain may be readily changed and the distance between the hills regulated by such adjustment of the chain, substantially as described.

4. The sprocket-wheel D, in combination with the adjustable idle-chain J, provided with lugs or projections *j*, cam I, having wings *i*, and the feeding-slide K, substantially as described.

5. The pivoted arm H, in combination with the chain J, adjustable in length, and idle sprocket-wheels *h* H′, one of which is adjustable back and forth on the arm H, substantially as and for the purpose set forth.

6. In a corn-planter, the shoes or runners *l*, in combination with a stationary bar, *f*′, and markers M, hinged thereto and arranged on each side of the machine at a distance outside the shoes equal to half the distance between the rows, whereby the inner marker on each bout will run in the track of the outer marker on the preceding bout, substantially as and for the purpose set forth.

7. The feeding-slide K, in combination with the pivoted indicators N, linked thereto by rods *n* and markers M, substantially as described.

8. In a corn-planter, a continuous marker, M, arranged to run along outside of the machine to mark out the return-path, in combination with an indicator operating at suitable intervals to designate the proper location of the hills for the return-bout, substantially as described.

WILLIAM D. EWART.

Witnesses:
L. M. HARRIS,
L. A. BUNTING.