(No Model.) 2 Sheets—Sheet 1.

A. CORBIN, Jr.

DISK HARROW AND SEEDER.

No. 351,625. Patented Oct. 26, 1886.

Fig. 1

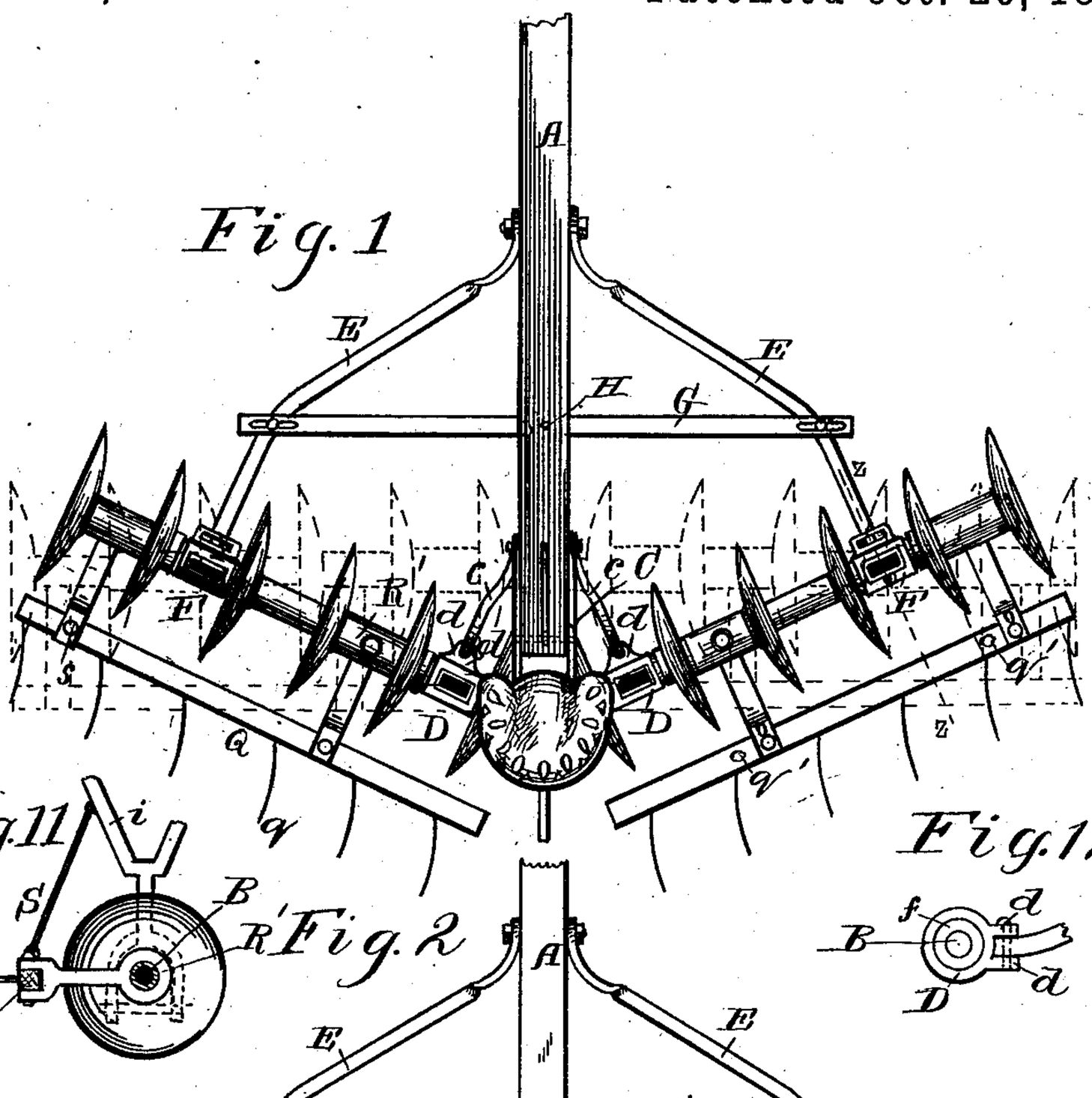


Fig. 11

Fig. 2

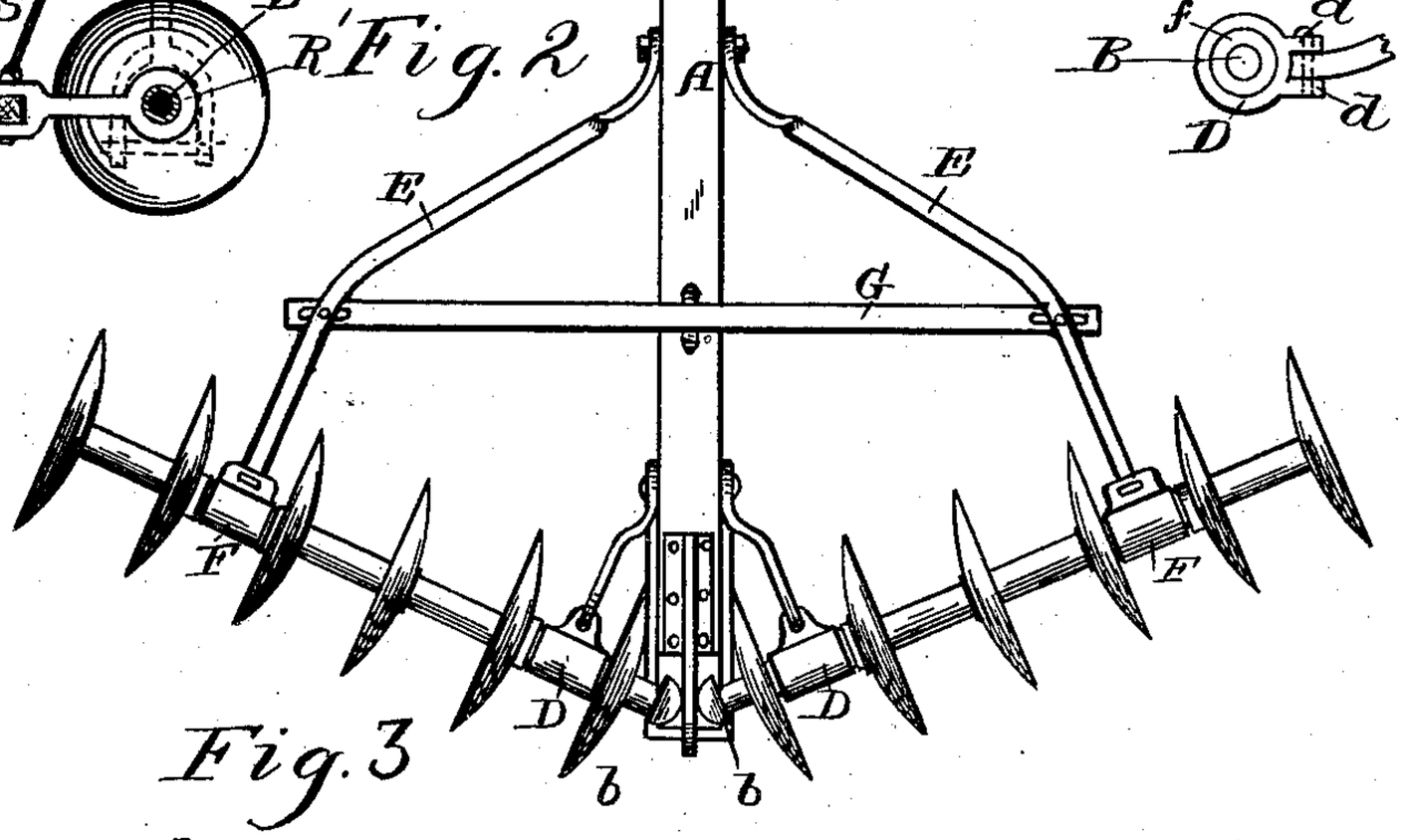
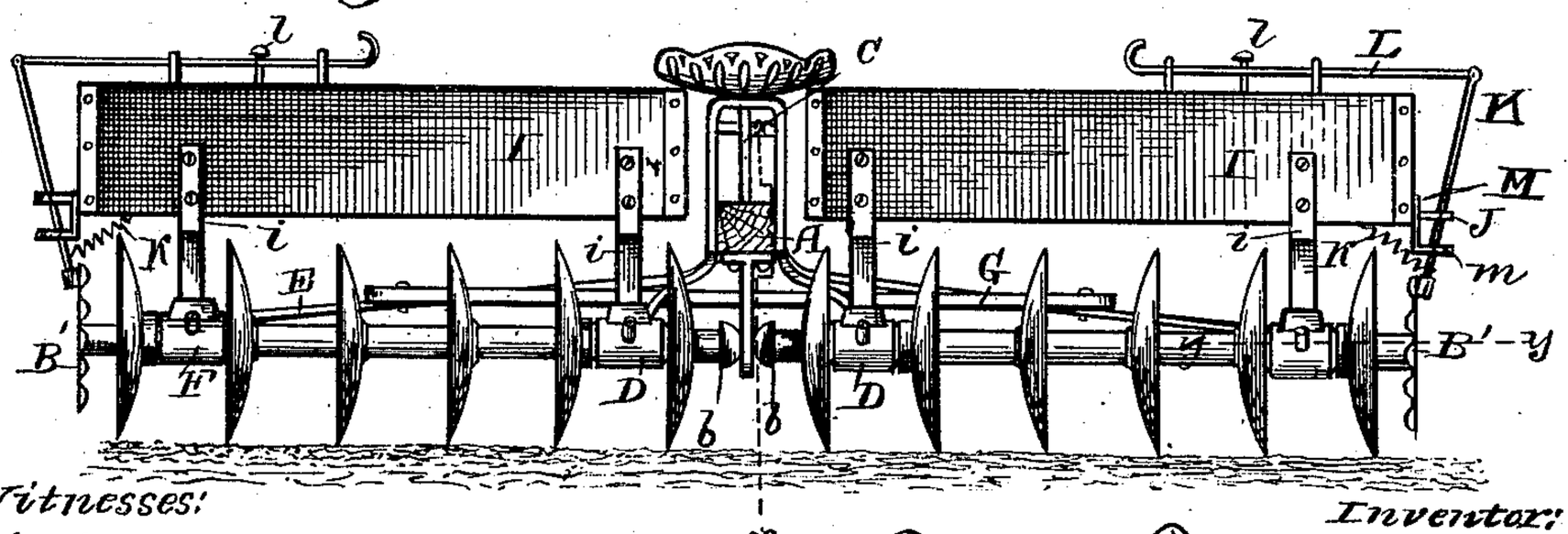


Fig. 12

Fig. 3



Witnesses:
J. S. Barker.
B. A. Sommers.

Inventor:
Amasa Corbin Jr.
by Dableday & Bliss Jr.

(No Model.) 2 Sheets—Sheet 2.

A. CORBIN, Jr.

DISK HARROW AND SEEDER.

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Fig. 4

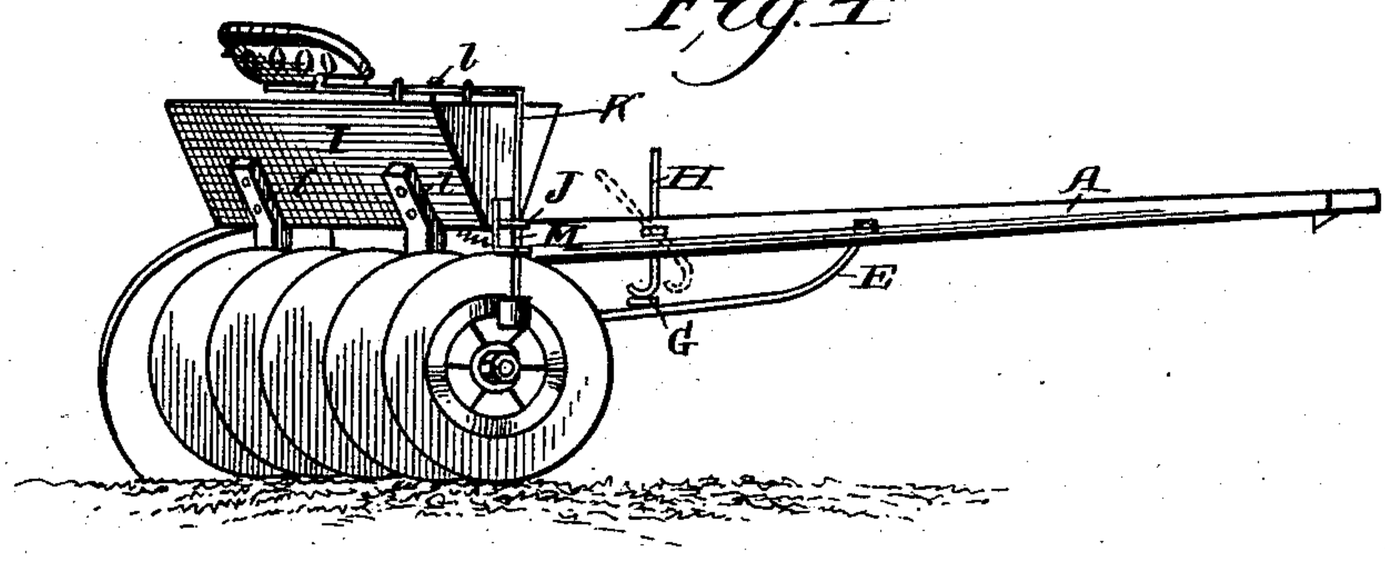


Fig. 5.

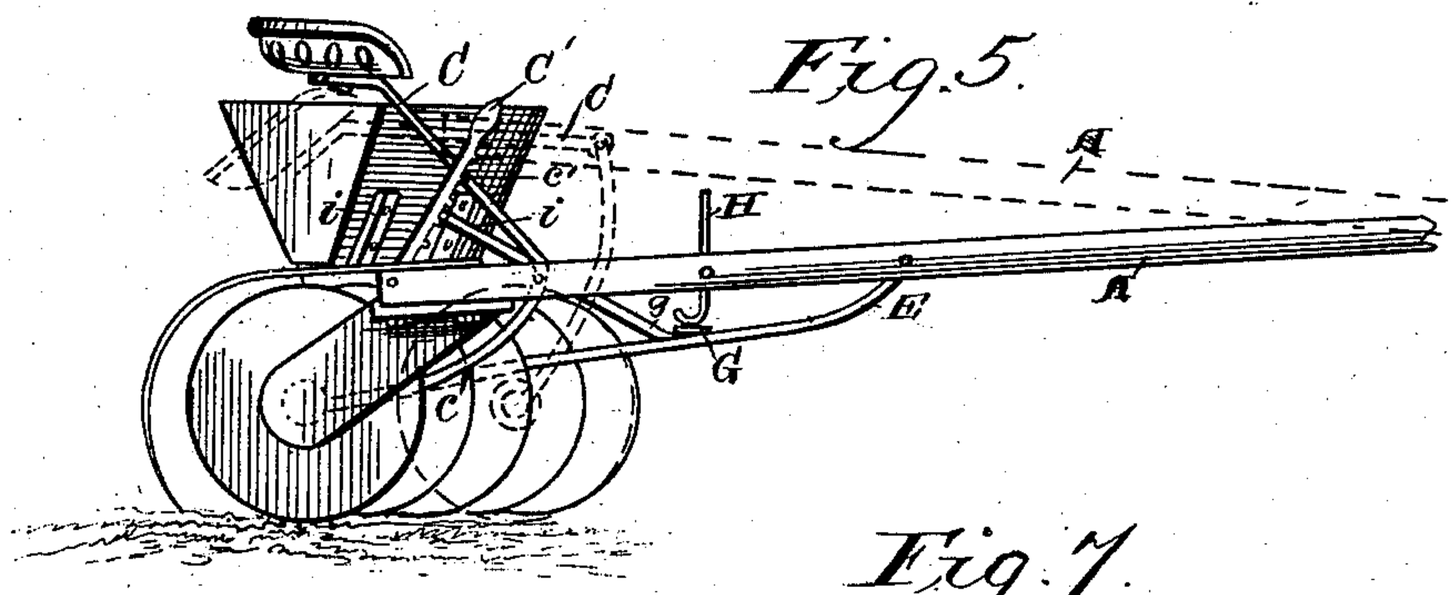
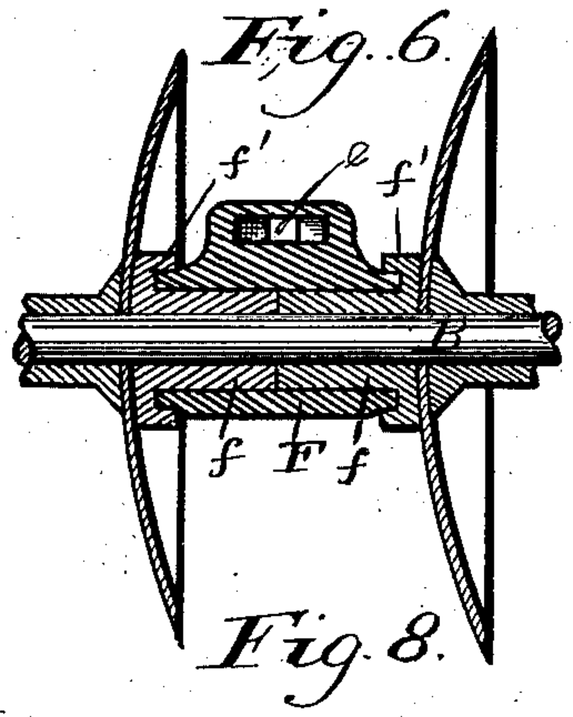


Fig. 7.

Fig. 6.



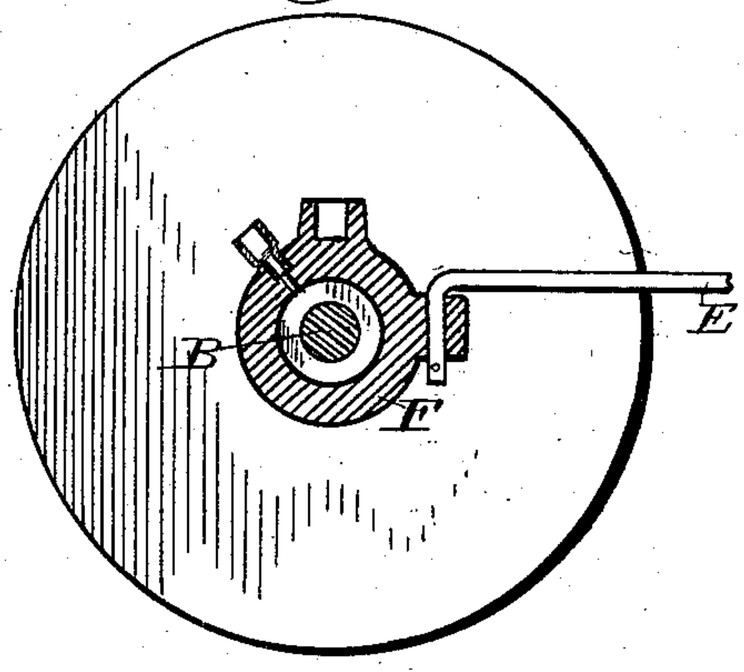


Fig. 8.

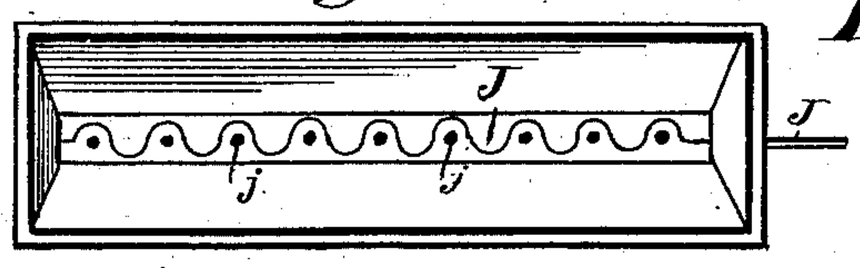
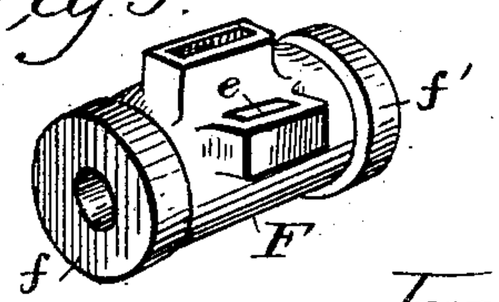
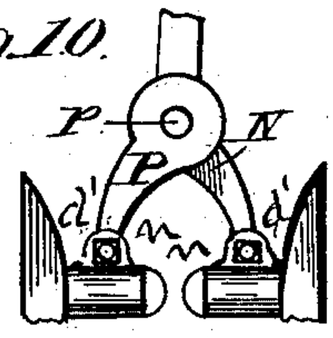


Fig. 9.



Witnesses:
L. S. Barker.
B. H. Sommers

Fig. 10.



Inventor
Amasa Corbin Jr.
by Dowdeday & Bliss
attys

UNITED STATES PATENT OFFICE.

AMASA CORBIN, JR., OF GOUVERNEUR, NEW YORK.

DISK HARROW AND SEEDER.

SPECIFICATION forming part of Letters Patent No. 351,625, dated October 26, 1886.

Application filed February 18, 1886. Serial No. 192,455. (No model.)

To all whom it may concern:

Be it known that I, AMASA CORBIN, Jr., a citizen of the United States, residing at Gouverneur, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Disk Harrows and Seeders, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a plan view of my improved seeder and harrower, the seed-boxes having been removed. Fig. 2 is a partial bottom view. Fig. 3 is a rear elevation showing part of the invention, the disk-gangs being in line with each other. Fig. 4 is an end view of Fig. 3. Fig. 5 is a vertical section on line *x x*, Fig. 3. Fig. 6 is a partial horizontal section taken centrally of the harrow on line *y y*, Fig. 3. Fig. 7 is a vertical section enlarged on line *z z*, Fig. 1. Fig. 8 is a plan view of one of the seed-boxes, with the top removed. Fig. 9 is one of the bearings and thimbles enlarged. Fig. 10 is a modification of one part of the invention. Fig. 11 is a detail in section. Fig. 12 is a partial vertical section of the gang-axle, a thimble, and its bearing near the inner end of the axle.

One part of the invention relates to a novel combination of devices for adjusting the angles of the disk-gangs to the line of draft for the purpose of regulating the depth of cut of the disks. Other parts of the invention relate to an improved construction and combination of devices for connecting the disk-gangs with the pole. Other parts of the invention relate to means for supporting the disk-gangs against the endwise thrust produced by the action of the disks when cutting. Other parts of the invention relate to devices for distributing the seed. Other parts of the invention relate to features of construction which will be hereinafter more fully explained.

Similar letters of reference indicate like parts in all the figures.

A is the pole.

B B are the gang-axles, each preferably round in cross-section and of substantially the same diameter throughout, except that at its inner end it is provided with an expanded head, *b*, the adjacent faces of these heads being partispherical, whereby they are adapted to rotate in contact with each other or with an interposed plate, even when the disk-gangs are at different angles to each other. The inner ends of these gangs are connected to the lower end of a seat-standard, C, which is pivoted to the tongue. By preference I employ for this purpose links *c c*, connected at their forward ends to the lower end of the seat-standard or formed in one piece therewith, and at their rear ends to sleeves or boxings D, having forward projecting lugs *d d*, to which the rear end of the links are attached by pivots or bolts. In either case the seat-standard and links are substantially integral and rigid, except that there will be more or less elasticity when made of a bar of iron of suitable size in cross-section.

E E are links, each pivoted at its forward end to the tongue and connected at its rear end to the gang-axle by a similar boxing or bearing, F.

The disks are separated from each other by thimbles, each made in two parts. These thimble parts *f f* are cylindrical, fit closely to the axle, and also fit closely within the bearings. The expanded outer ends of these thimble sections are formed with inwardly-projecting flanges, which overlap the outer ends of the boxes or bearings *f* and fit closely thereto, so as to practically exclude dirt.

G is a foot-rest within convenient reach of the driver while riding in the seat *c'*, and engages at its ends upon the outer pair of links.

H is a stop pivoted to the tongue and having its lower end in the form of a cam, which bears upon the upper side of the foot-rest, whereby pressure may be transferred from the tongue to the foot rest or bar G, and the outer ends of the disk-gang made to cut more deeply than they otherwise would. When the adjustable stop is moved into the position shown in dotted lines, the outer ends of the disk-gangs are free to rise and fall relatively to the horizontal plane of the tongue. The rear end of the tongue carries an arm, which projects beyond the inner ends of the disk-gangs, and is provided with a downward-projecting tooth or plow or a disk placed at a suitable angle to the line of draft, so as to assist in pulverizing the soil at that point, and by an examination of the drawings it will be readily seen that when the gangs are in line

with each other or thereabouts, as indicated in dotted lines, Fig. 5, the rear end of the tongue and this supplemental disk, tooth, or plow will be elevated so far that under ordinary circumstances it will not engage with the soil, or, at least, not to any objectionable depth.

I I are seed-boxes mounted upon standards *i i*, which at their lower end rest in sockets formed for their reception in the bearings.

The seed may be distributed by means of the following devices:

J is a wire or rod mounted upon the upper face of the perforated bottom of the seed-box in such relation to a series of openings, *j j*, that as the rod is reciprocated its zigzag sections shall travel backward and forward over these openings to facilitate the discharge of the seed.

K K are levers, each pivoted or loosely connected at its upper end to a sliding bar, L, and carrying at its lower end an anti-friction roller, which engages with the outer face of a cam-plate, B′, fixed to and rotating with the gang-axle.

The outer end of the zigzag rod is pivoted to or otherwise connected with the lever, so that as the gang-axle and cam-plate revolve a reciprocating motion is imparted to the zigzag rod, there being a spiral spring or other spring at *k* to hold the anti-friction roller in contact with the plate, except when the sliding bar L and upper end of the lever is moved inward to a suitable position, when the anti-friction wheel will be moved outward from contact with the cam-wheel, so that the lever and zigzag rod will remain at rest.

The sliding bar L may be locked in either position shown by a pin, *l*, passing through either of a series of holes in the bar and into a hole in the seed-box, or by some other equivalent device.

Upon the outer end of each seed-box there is a guide or steadying plate, M *m*, the lower forked end, *m*, projecting horizontally, so as to embrace and pass on each side of the lever K, to support it against the forward or backward thrust produced by the engagement of the cam with the anti-friction roller.

In Fig. 10 I have shown a modification in which the pivoted seat-support runs backward on a line substantially parallel with the tongue nearly to the line of the disks, from which point it is deflected slightly and coupled to a sleeve or bearing surrounding the axle between one of the part spherical heads and the inner disk. A short arm is pivoted to the seat-support and projects in an opposite direction, its rear end being secured to a corresponding coupling or bearing upon the other disk-gang. By means of these devices the gangs may be shifted from the position shown in full lines, Fig. 1, to that shown in dotted lines, same figure, and vice versa.

Instead of supporting the lower ends of the seed-box standards in sockets cast upon the thimbles or the bearings, their lower ends may be forked so as to straddle and rest upon the thimbles. (See Fig. 11.) In either construction I propose to maintain the seed-boxes in vertical positions or thereabouts by means of arms or braces *g*, projecting forward from the seed-boxes or standards and engaging with or fastened to the links or the foot-rest. (See Fig. 5.)

I have shown the pivoted seat-support as consisting of two bars or rods pivoted about centrally to the tongue, with their upper ends in a substantially vertical position to receive the seat, their lower ends extending from the pivot downward and rearward to the bearings or couplings upon the gang-axles, so that the greater part of the weight of the rear end of the tongue and the driver's seat is by means of these pivoted seat-supports transferred directly to the inner ends of the gang-axles, so that this weight is utilized to thrust the disks into the soil, and in a measure resist the tendency of the inner ends of the disk-gangs to rise, which in this class of harrows is sometimes found to be objectionable, because of the end-thrust produced upon the axles by the disks.

C′ is a notched holding-bar pivoted at its lower end to the tongue, its upper end projecting between the two bars of the seat-support, and in such relation thereto that the notches receive successively a small pin, *c′*, which is supported at its ends in the bars.

From the above description it will be readily understood that the angles of the disk-gangs relative to the line of draft may be readily changed from the position shown in full lines to that shown in dotted lines, Figs. 1 and 5, or to any intermediate position, and may be locked in any of these positions.

It will also be understood that the weight of the driver while riding in the seat may be utilized for shifting or assisting in shifting the gangs from the position shown in full lines into or toward that shown in dotted lines.

In Fig. 10 I have shown a modification of the pivoted seat-standard, in which a single bar is employed working in a slot in the tongue, the lower end being twisted a quarter of a turn, so that it lies in a plane at a right angle to the plane of the upper end, to which the seat is attached. This lower end, N, is bent a little to one side, and is at its extreme rear end fastened to a coupling-sleeve, which surrounds a thimble on the inner end of one of the gang-axles. The attachment of the part N to the sleeve or coupling may be made by a bolt, *n*, fastened vertically through the standard, and through two lugs, *d′*, which project forward from the sleeve, one above and one below the standard.

P is a short arm pivoted at *p* to the seat support or standard near its rear end, extending thence to a corresponding coupling or sleeve upon the other gang.

The object of the pivot *p* is to prevent undue cramping or straining of parts when the gang-axles are being adjusted from one angle

to another relative to the line of draft; or, when preferred, the rear ends of these parts N P may be bent downward, as are the rear ends of the links E E, and connected to bearings substantially like those shown at F, and by an examination of the drawings, particularly Figs. 1, 2, 6, and 9, it will be understood that the sockets *e* are flaring, being longer at their upper portions than at their lower portions, at which latter points they fit quite closely to the links.

The object in making each socket wider at top is to permit the disk-gangs to vibrate in vertical planes (to conform to the inequalities of the ground over which they are drawn) without cramping of parts, the looseness of the pivotal connections between the rear end of the combined seat-standard and links C *c c* or N P and the lugs *d d* permitting the outer end of either gang to rise and fall with a corresponding reverse movement of its inner end without producing a similar movement in the opposite gang. Such construction also permits the disk-gangs to be locked in a common horizontal plane, or with their outer ends elevated or depressed by driving wedges into these flaring sockets, one edge of each wedge engaging with an end wall of the socket, the opposite edge engaging with the vertical face of the bent-down end of the link.

It will be understood that when the anti-friction roller is engaged with the cam-wheel to vibrate the zigzag rod, the pivot which connects the upper end of the lever K with the sliding bar L serves as a fulcrum, and that when the sliding bar is moved inward, to withdraw the anti-friction roller from the cam, and thus throw the zigzag J out of action, the said rod serves as a fulcrum, its inner end resting against the inner end of the seed-box, or being otherwise supported against inward thrust produced by the tension of the spring *k*.

Of course there should be a suitable sliding plate to cover the seed-holes *j j*, or other form of cut-off, to prevent the delivery of seed when desired.

Q is an adjustable scraper-bar carrying a series of scrapers, *q q*, of such form and position relative to the bar Q that when the parts are in a position the reverse of that shown in Figs. 1 and 11 the scrapers will engage with the inner concave faces of the disks to remove adhering dirt or other substance.

R R′ *r* are carriers, of which the outer forked ends, *r*, are adapted to embrace the scraper-bars, which are confined therein by means of bolts or pins *s s*, passing through the forks and the bars or other equivalent devices. The shank or arm portions are provided at their inner ends with sleeves R′, which are mounted on the thimbles above referred to, and may be provided with oil-holes, as indicated in Fig. 1.

S are braces connecting the carriers with the standards *i i*, or with the seed-boxes, as may be preferred, to assist in supporting the scrapers and their bars, or to the bearings F or the standards *i i;* or they may be connected to and supported from the seed-boxes; or, when the seed-boxes are omitted, these scraper-bars may be arranged in front of the disks and partially supported upon the links, by which the disk-gangs are drawn over or through the ground.

As indicated in the drawings, (see Figs. 1 and 11,) the scrapers are out of contact with the disks, and are therefore inoperative; but, in case the disks become clogged by adhering earth, I propose to remove the pins *s s*, take the scraper-bars from the forked ends of the carriers R R′ *r*, and turn said bars over a half-revolution on their own axes, and then replace them in the forks in such position that the scrapers shall engage with the concave faces of the disks, after which the pins or bolts can be replaced and the scrapers held in such positions as long as may be required. Although I have shown these scraper-bars turned into a position the reverse of that in which I propose to place them when the scrapers are in contact with the disks, yet it is apparent that they need be turned only a quarter of a revolution, so that the scrapers will be in vertical planes; or the scraper-bars might have an additional series of bolt-holes, *q′*, when the scrapers could be removed from contact with the disks by a longitudinal movement of the bars until the bolts *s* would pass through the holes in the forks and the holes *q′* in the bars.

It will be understood that the carriers are stationarily attached to the disk-gangs—that is to say, they do not ordinarily have any movement relatively to the disk-gangs—whereas the scraper-bars are rotated about their axes in order to move the scrapers into or out of engagement with the disks.

I do not claim herein any inventions which pertain to the devices for distributing the seed or to operating the seed-distributers from the gang-axles, or by means of the cam-wheels on the axles, reserving the right to claim such matters in another and concurrent application, which I propose to file as a division of this case.

What I claim is—

1. In a disk-harrow, the combination of a pole, two disk-gangs, draft devices connecting the inner ends of the disk-gangs separately to the pole, draft devices connecting the outer ends of the disk-gangs separately to the pole, a pivoted seat-support connected at its lower end to the draft devices at the inner ends of the gang-axles, substantially as set forth.

2. In a disk-harrow, the combination of a pole, two independent disk-gangs having their inner ends disconnected from each other, flexible links connecting the inner ends of the disk-gangs with the pole, flexible links connecting the outer ends of the disk-gangs to the pole, and a seat-support pivoted to the pole and having its lower end connected to the inner pair of links, substantially as set forth.

3. In a disk-harrow, the combination of a pole, two-disk-gangs connected to the pole so as to be drawn forward thereby, a pivoted seat-support, and devices connecting the lower end

of the seat-support with the inner ends of the disk-gangs, substantially as set forth.

4. In a disk-harrow, the combination of a pole, disk-gangs pivotally connected to the pole, a pivoted seat-support, and devices connecting the lower end of the seat-support with the disk-gangs, whereby when the harrow is drawn forward the backward thrust upon the disk-gangs is resisted by the weight of the driver, substantially as set forth.

5. In a disk-harrow, the combination of a pole, disk-gangs pivotally connected to the pole, a seat-support, and a foot-rest for the driver, supported upon the links which connect the disk-gang with the poles, substantially as set forth.

6. In a disk-harrow, the combination of a pole, two disk-gangs, links connecting the inner ends of the disk-gangs with the pole, links connecting the outer ends of the disk-gangs with the pole, a bar arranged below the pole and supported upon the outer pair of links, and a movable stop between the pole and the bar, substantially as set forth.

7. In a disk-harrow, the combination of a pole, two disk-gangs connecting the inner ends of the disk-gangs with the pole, links connecting the outer ends of the disk-gangs with the pole, a bar arranged below the pole and supported upon the outer pair of links, and an adjustable stop between the pole and the bar, substantially as set forth.

8. In a disk-harrow, the combination of the gang-axle, the disks, and the spacing-thimbles interposed between adjacent disks, each thimble being made in two parts, separable near the center of the thimble, and provided with the inward projecting flanges *f'*, substantially as set forth.

9. In a disk-harrow, spacing-thimbles interposed between adjacent disks, each thimble being made in two parts, in combination with a bearing formed of a single piece of metal mounted upon the central portions of the thimble, substantially as set forth.

10. In a disk-harrow, the combination of a pole, two independent disk-gangs having their inner ends disconnected from each other and free to move forward and back relatively to the pole, with a support interposed between the inner ends of the gangs and connected with the pole, and adapted to receive upon its opposite sides the endwise thrust of the disk-gangs, substantially as set forth.

11. In a disk-harrow, the combination of a pole, adjustable disk-gangs pivotally connected to the pole, a pivoted seat-support connected at its lower end to the disk-gangs, and a locking mechanism connecting the pole with the seat-support to lock the inner ends of the gang against backward thrust, substantially as set forth.

12. In a disk-harrow, the combination of a pole, two disk-gangs pivotally connected with the pole, a disk or tooth arranged in rear of the inner ends of the disk-gangs and connected directly with the pole, so as to rise and fall therewith, substantially as set forth.

13. The combination, with the disk-gang, of the stationarily-attached carriers and the scrapers and scraper-bars, the latter being adapted to be rotated about its axis to different positions, substantially as set forth.

14. The combination, with the disk-gangs, of the scrapers and scraper-bars and the forked carriers, substantially as set forth.

15. The combination, with the disk-gang, of the scrapers and scraper-bars, and carriers provided with openings to permit the removal of the scraper-bars, substantially as set forth.

16. The combination, with the disk-gang, of the scrapers and scraper-bars, the laterally-projecting carriers, and braces to assist in supporting the scraper-bars, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

AMASA CORBIN, JR.

Witnesses:
H. H. DOUBLEDAY,
J. S. BARKER.