

(No Model.)

2 Sheets—Sheet 1.

A. CORBIN, Jr.

COMBINED DISK HARROW AND SEEDER.

No. 389,548.

Patented Sept. 18, 1888.

Fig. 1

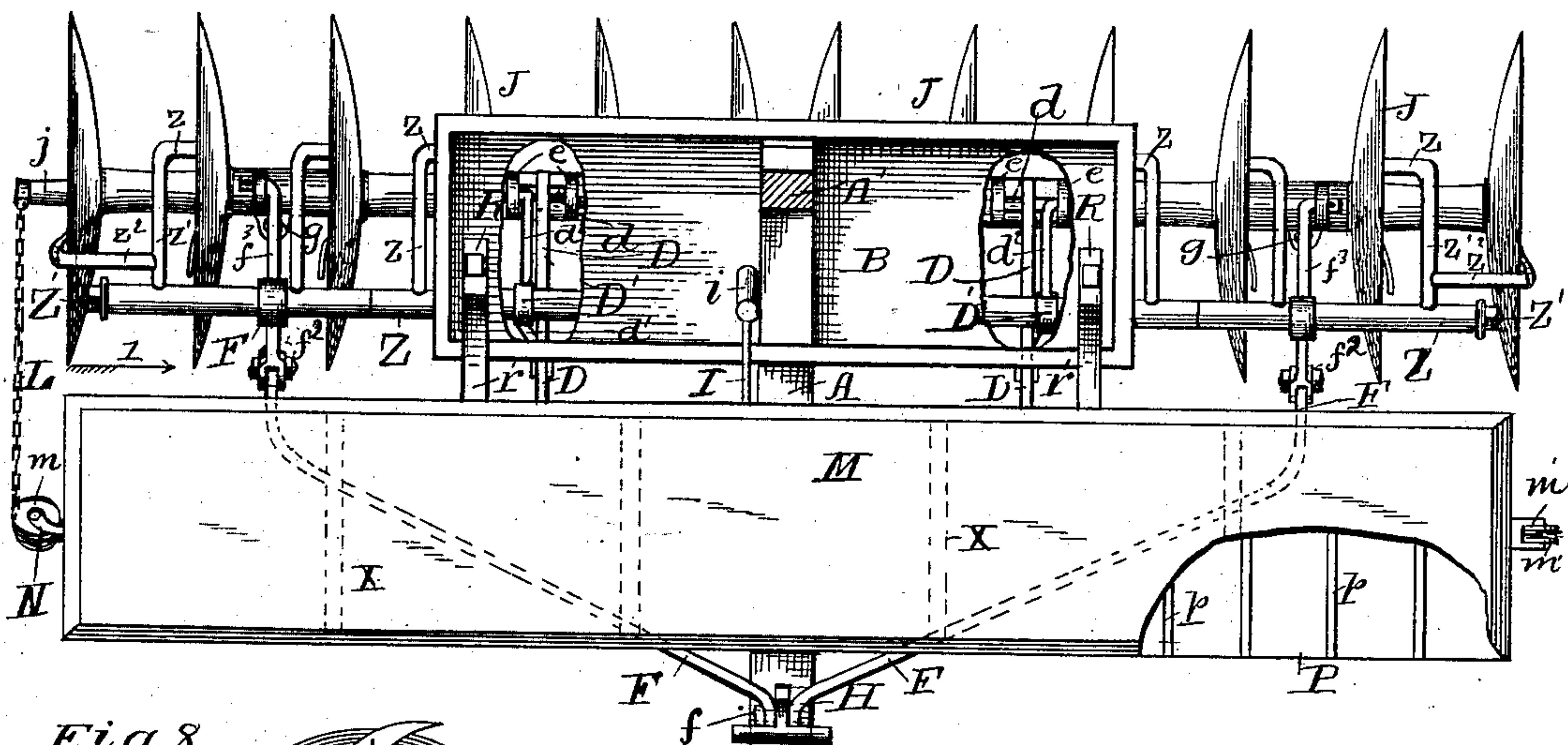


Fig. 8

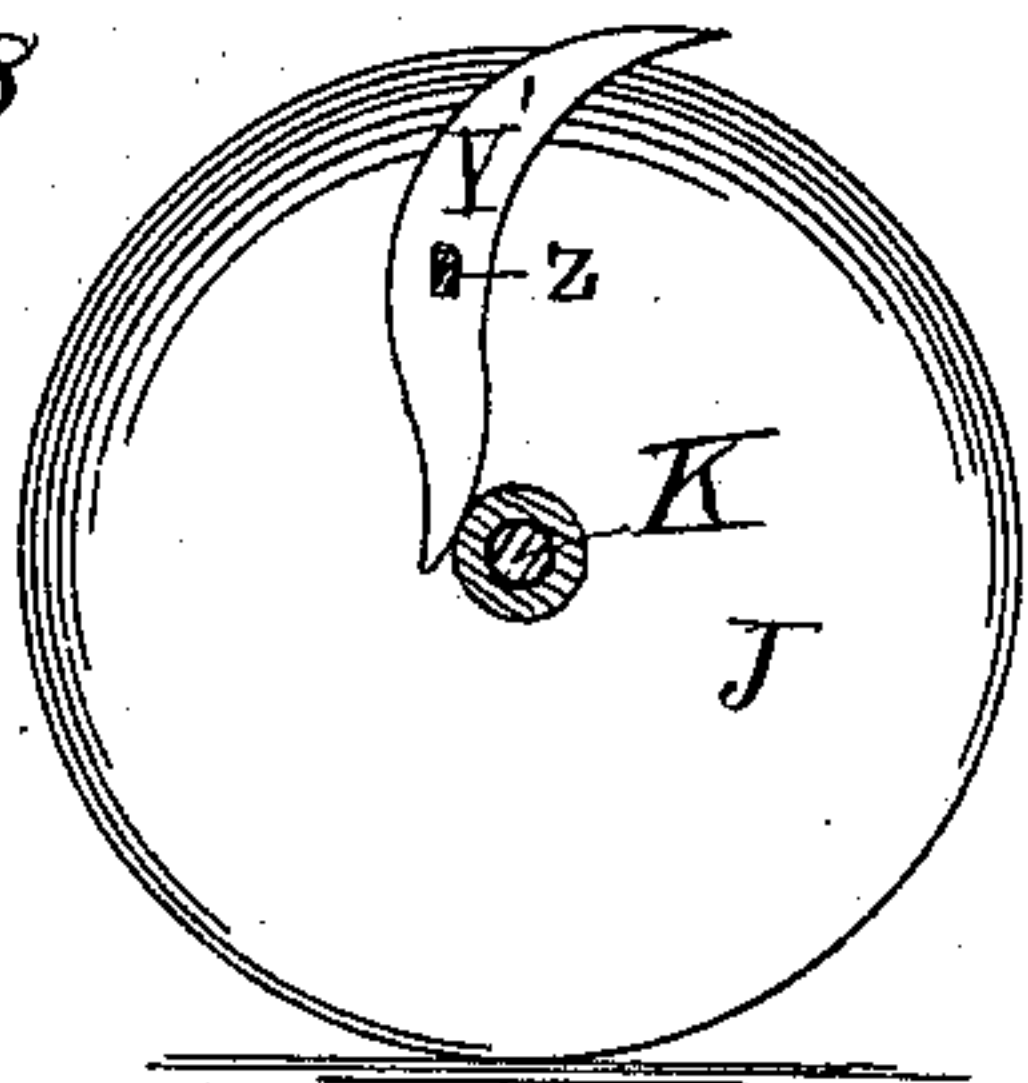
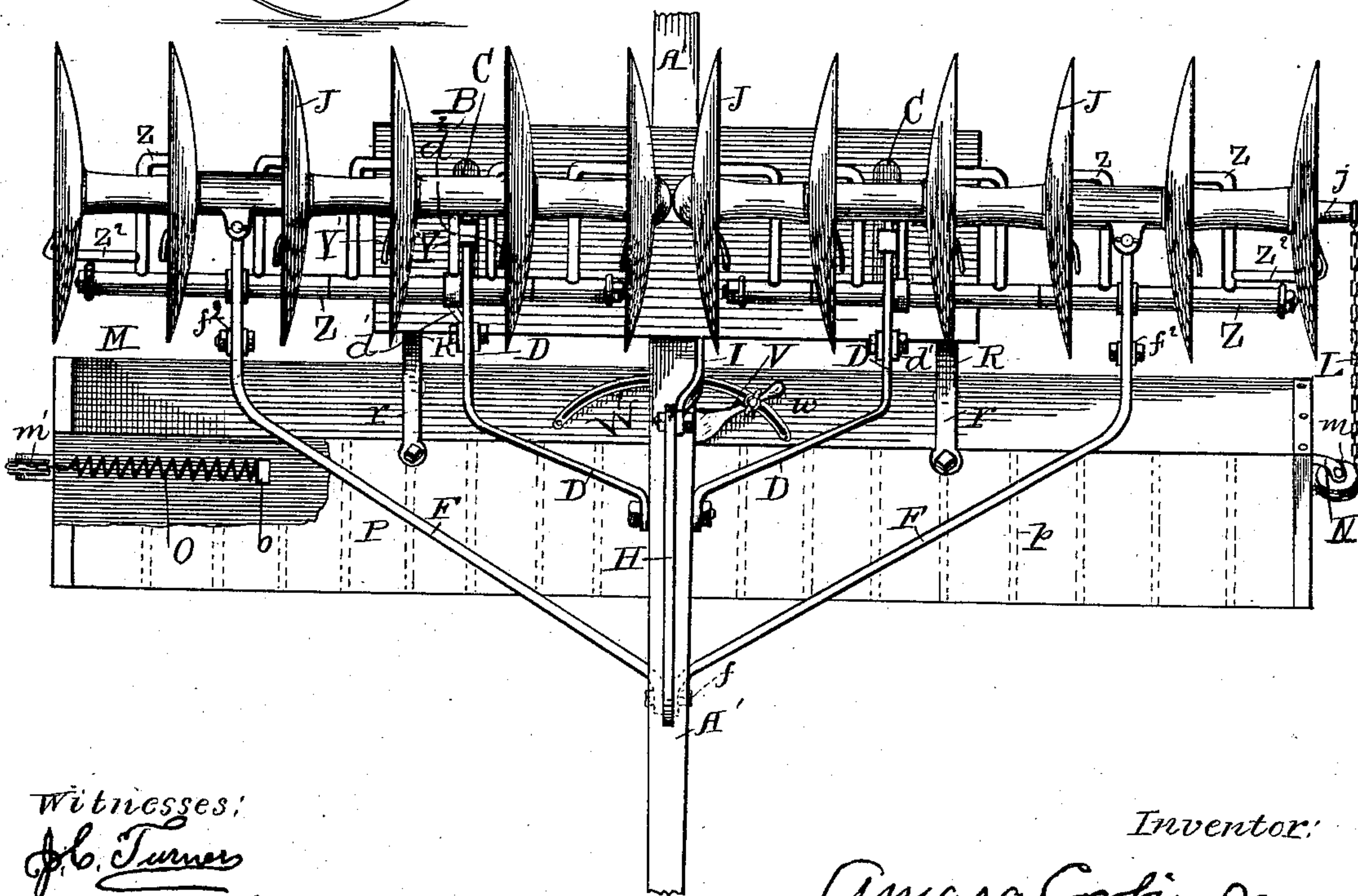


Fig. 2



Witnesses:

J. B. Turner

J. L. Doubleday

Inventor:

Amasa Corbin Jr.
by Doubleday & Bliss atty.

(No Model.)

2 Sheets—Sheet 2.

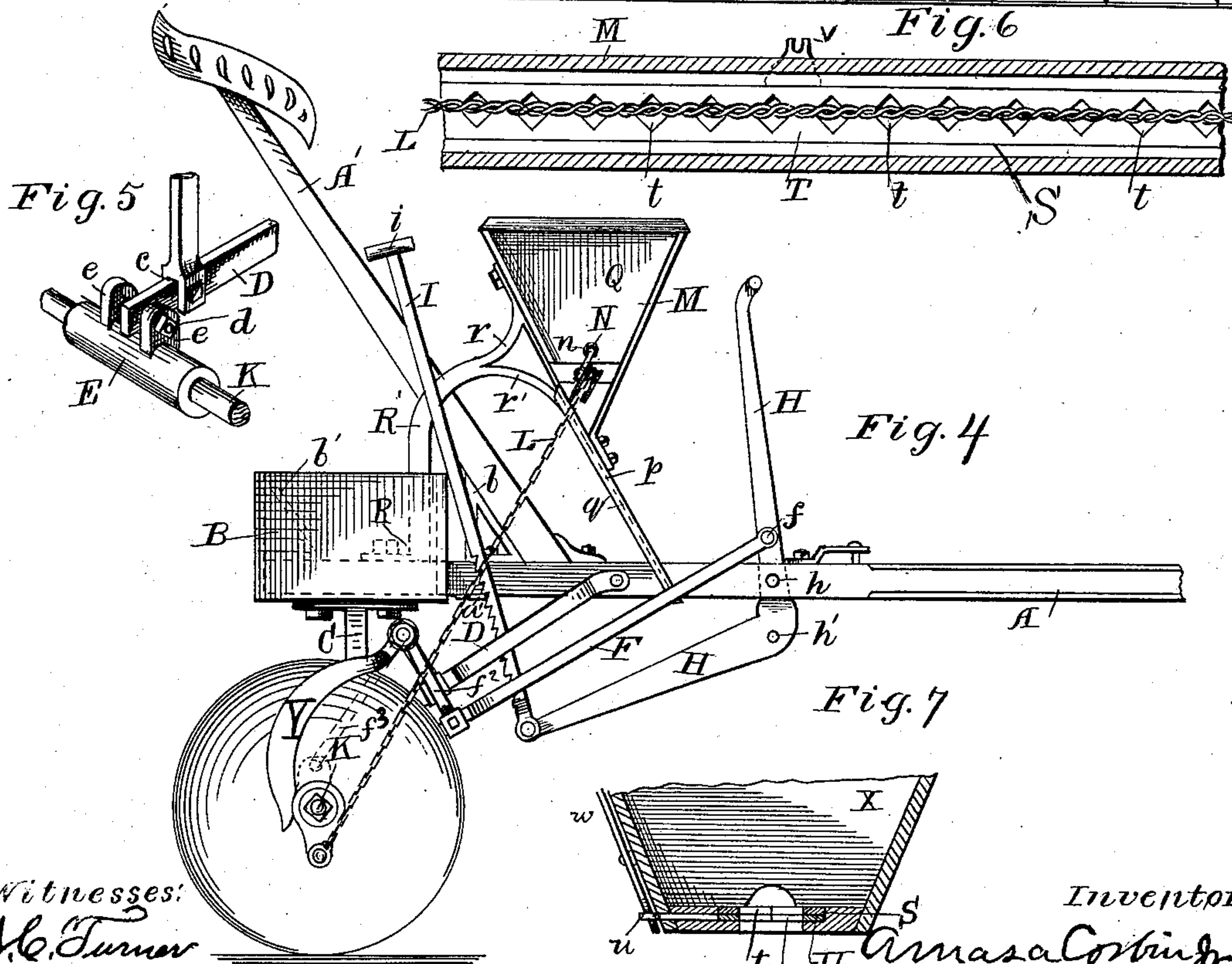
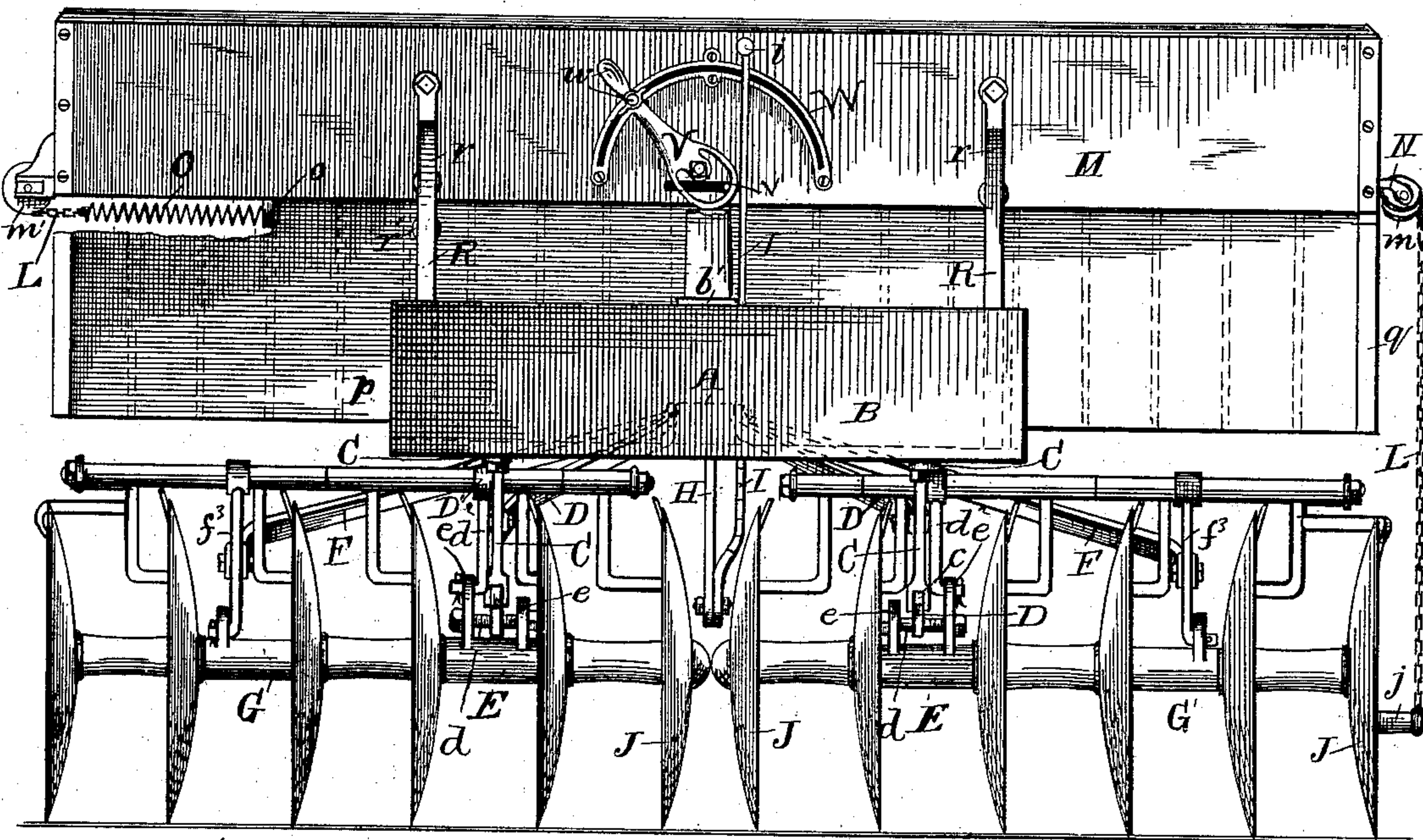
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Fig. 3



Witnesses:
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Inventor:
Amasa Corbin Jr.
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UNITED STATES PATENT OFFICE.

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

COMBINED DISK HARROW AND SEEDER.

SPECIFICATION forming part of Letters Patent No. 389,548, dated September 18, 1888.

Application filed May 4, 1887. Serial No. 237,120. (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 a Combined Disk Harrow and Seeder, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a top or plan view. Fig. 2 is a bottom view. Fig. 3 is a rear view. Fig. 4 is an end elevation looking in the direction of the arrow, Fig. 1. Figs. 5, 6, 7 are detached views.

Like letters indicate like parts in all the figures.

A is the tongue, the rear end of which passes through the weight-box B, to the front and rear side-boards of which it is firmly connected, and may be bolted to the bottom thereof, if found desirable.

A' is the seat-standard, supported at its lower front end in or upon one or the other of two brackets or angle-irons, *b b'*, bolted to the tongue, the bracket *b'* being located within the weight-box. The weight-box and tongue constitute the main frame, upon which the operative parts are mounted.

C are hangers or brackets projecting downward from the weight-box at short distances from its ends. The lower end of each of these standards engages with and is supported by an inclined link or draw-bar, D, which at its forward end is connected to the tongue, preferably by a bolt, *a*.

At the rear end of each draw-bar D there is a sleeve-coupling, *E e e*, of which the part *E* is a sleeve surrounding the gang-axle, the parts *e e* being outwardly-projecting ears or lugs adapted to receive a pin or bolt, *d*, passing through the ears and also through the rear end of the draw-bar. These parts should be sufficiently loose in their fittings to permit the desired flexibility or freedom of movement of the gang-axes, as will be hereinafter referred to.

Any convenient sort of connection may be made between the lower ends of the hangers and the draw-bars, one form of which is illustrated in the drawings, where the bracket is slotted, as at *c*, to receive the draw-bar, which

latter it surrounds loosely; or, for convenience of putting together and taking apart, the lower end of the standard may be forked to straddle the draw-bar, with a pin or key in the lower end of the forks to prevent accidental displacement.

F F are links connected at their rear ends to bearings *G g* surrounding the axle. The downwardly-bent rear end of each link passes through the ear or lug *g* of the bearing, in which it is held by a key or pin, *f*. These bearings or couplings *E e e G g* may be of any usual or approved construction, and therefore need not be described in detail.

H H' is an elbow-lever or bell-crank lever pivoted at *h* to the tongue through which it passes. The extreme upper end is formed into or provided with a foot-rest, and the links F F are pivotally connected with this lever at *f'* or *h'*, according to circumstances, as will be hereinafter explained.

I is a handle-bar, connected at its lower end to the rear lower end of the bell-crank lever, and having at its upper end a loop or spade handle, *i*, which the driver can readily grasp. One edge of this handle-bar is notched where it passes through a staple, slotted locking-plate, or other device with which it may readily engage and thus hold the bell-crank lever and the links F F in any position to which they may be adjusted.

J J are concavo-convex disks mounted upon gang-axes K K, the inner ends of which are, by preference, arranged to abut against each other or against a downwardly-projecting plate attached to the tongue or weight-box to receive the inward thrust of the gangs, as will be readily understood. When in operation, the angle of the disk-gangs relative to the line of draft can be changed by means of the bell-crank lever, the driver placing his foot upon the upwardly-projecting end H' of the lever to supplement his upward pull upon the handle-bar when required. It will be seen that by shifting the forward ends of the links F F from the point *f'* to the point *h'* the line of draft or pull upon the outer ends of the gangs will be so changed that they will tend to cut more deeply into the soil than they will when the links are in the position shown in the drawings. Therefore such adjustments of parts will

facilitate a uniform cutting-depth of all the disks under the varying conditions of soil and weight of driver under which the harrow will ordinarily be required to work.

5 I am aware that it is common to adjust the outer ends of disk-gangs to various angles relative to the line of draft, and therefore do not claim such invention, broadly; but I believe myself to be the first to combine a single
10 weight-box rigidly connected to the pole with disk-gangs connected at their inner ends to brackets or down-hangers which are stationary relatively to the pole and weight-box and bearings near the outer ends of the gangs
15 which are adjustable forward and backward relatively to the stationary inner brackets, such construction having marked advantages over the earlier ones as regards, particularly, cheapness, rigidity of draft-frame, durability,
20 and great flexibility of the gangs, which is essential in permitting them to conform to irregularities in the surface of the ground.

By reason of mounting the seat so far in rear of the pivot *h*, which connects the gang-shafting lever with the tongue, I find it very useful
25 to employ a bell-crank lever and a vertically-moving handle-bar, *I*, for shifting the angles of the gangs, and while it is common to arrange the handle-bars or levers in substantially the
30 same position relatively to the driver's seat as that occupied by my handle-bar, I know of none except mine which has an up and-down movement for actuating the horizontal arm of a bell-crank lever, which is in turn connected
35 to the gang-axes.

j is a crank-pin or wrist-pin carried by the outer end of one of the gang axes or disks.

L is a chain attached at one end to the wrist-pin, passing thence over a pulley, *m*, thence
40 through a seed-box, *M*, over a pulley, *m'*, at the opposite end of the seed-box, and connected by a spring, *O*, to a post or arm, *o*, projecting from the seed-box. The pulley *m* is mounted upon a swinging arm, *N*, the upper end of which
45 is seated in a bearing, *n*, formed for its reception in one of the end pieces or plates, *Q*, of the seed-box. Each of these end plates is provided with a downwardly and forwardly extending arm or bracket-piece, *q*, to which there is at-
50 tached a scattering-board, *P*.

R R' r r' represent a bracket (of which two or more are used) having a foot-piece at *R'* bolted to the bottom of the weight-box, the shank portion *R* being expanded into arms
55 *r r'*, fastened to the rear of the seed-box *M* and, when preferred, to the scattering-board *P*, in which latter case the arms *q q* may be dispensed with. On the other hand, when these arms *q q* are used the parts *r* may be omitted.
60 The bottom of the seed-box is grooved or rabbeted, as at *S*, (see Fig. 7,) and is provided with a series of holes, *s s*, for the delivery of the seed or grain.

T U are metal bars or strips formed with a
65 series of holes, *t u*, preferably square and at equal distances apart. These metal strips are arranged in the groove *S*, the lower one being

movable endwise relatively to the upper one, whereby the sizes of the openings through the two plates may be regulated. By prefer- 70
ence I form the holes or openings in these strips substantially square in form, with their bounding-lines at angles of about forty-five degrees to the sides of the seed-box, so that under the various adjustments the holes will be of sub- 75
stantially the same shape—that is to say, square—although of different sizes, this construction of parts being desirable to insure uniformity in distributing the grain. Of course the holes through the metal strips reg- 80
ister substantially with the holes in the bottom of the groove *S*.

V is a cam-lever pivoted to the rear wall of the seed-box in such position as to engage with the outer end of an arm, *v*, which is at- 85
tached to the lower movable strip, *U*, and projects through the seed-box. The upper end of the cam-lever traverses an arc or segment and carries a thumb screw, *w*, which engages with said segment *W*, whereby the lever and 90
movable plate may be locked in position.

I am aware that seed-distributors of various kinds have been connected with and operated by the gangs or gang-axes in combined disk harrows and seeders, and that in such ma- 95
chines reciprocating devices of various sorts have been employed within the seed-boxes; but as heretofore constructed it has been found necessary to interpose some kind of a multi- 100
plying gear or device between the gang and the reciprocating distributor in order to impart to the distributor a sufficiently rapid vibration; but it will be readily seen that in my invention each revolution of the gangs may be made to pull the chain endwise a number of 105
inches, thus causing several links to traverse each seed-opening and effect a satisfactory distribution of the seed.

In practice I propose to use a crank having a throw of, say, four or five inches, so that with 110
a chain having links of about one-half inch in length eight or ten links will travel in both directions over each of the seed-openings at every complete revolution of the gang.

In an earlier patent of mine, No. 350,914, 115
for combined land-roller and seeder I have shown a seed-box with a chain distributor, a cam-plate on the end of the roller-axle, and a vertical lever engaging at its lower end with the cam and connected at its upper end with 120
the chain, the lever vibrating always in a plane which intersects the roller-axle, the stationary lever-pivot, and the opening in the seed-box which receives the chain; but it is evident that such construction could not be 125
advantageously used upon a disk harrow, the gangs of which vibrate in both horizontal and vertical planes relatively to the seed-box, which is stationarily attached to the main frame. To provide for the varying relation- 130
ship between the gangs and the seed-box, I connect the horizontal part of the chain and the crank on the gang-axle with a piece of chain, preferably formed in one and the same

piece with the horizontal section, whereby the pull of the crank can be transferred to the chain within the seed-box without undue cramping or strain upon any of the parts, it being apparent that the part of the chain between the crank and the seed-box is arranged in a substantially vertical plane and is free to move in any direction as shall be necessary to conform to the movement of the crank in all the different positions which it may assume.

The seed falls upon the scattering-board P and is delivered to the ground broadcast and with great uniformity.

In order to insure a satisfactory sowing of the seed upon inclined surfaces where one end of the machine is higher than the other, I propose to employ a series of transverse partitions, X X, in the seed-box, notched at their lower edges to receive the chain, together with a series of transverse ribs, p p, upon the upper face of the scattering-board, as indicated in dotted lines, Fig. 3, and in full lines, Fig. 1, where the seed-box is broken away to show them.

My object in mounting the pulley m on a swinging hanger or arm is to provide for its changing its plane of rotation automatically to correspond with the change in the plane of the lower end of the chain L as it travels with the crank-arm or wrist j, and also at the various working-angles of the gangs to insure that the chain shall track properly in the groove of the pulley, and, by preference, I arrange the seat n in close proximity to the hole in the end of the seed-box through which that end of the chain passes, in order that such swinging motion of the pulley shall not cause an undue friction between the chain and the metal plate which constitutes the end of the box.

I am aware that a rope has been arranged above a series of seed openings in a hopper which traveled in a circular path about the shaft of the planter and had a continuous rotary motion imparted to it. I am also aware that chains have been arranged to travel through openings in the vertical walls of seed-hoppers to carry seed through said walls, and hence do not claim either of the above-referred-to constructions.

The handle-bar I is arranged within convenient reach of the driver while riding on the seat.

It is apparent that when the machine is traveling over inclined ground, so that one end of the seed-box is higher than the other, there is a tendency of the seed to slide into one end of the box and not deliver through the openings ss at the higher end. To obviate this difficulty, I propose to employ a suitable number of transverse partitions, X X, which will be found useful, particularly when the seed-box is nearly empty.

In order to remove from the disks any objectionable adhering material, we have arranged upon their concaved faces a series of

scrapers, which we propose to construct and support substantially as follows:

Y Y are the scrapers, crescent-shaped or otherwise circular in outline, when seen from the direction indicated by the arrow 1, Fig. 1, or in an opposite direction, and also curved when seen looking from front to rear of the machine, or vice versa, so as to conform, substantially, to the inner faces of the disks.

A serious source of annoyance with scrapers of the ordinary sort has been the accumulation thereon of grass, stubble, and other rubbish carried up by the cutting-edges of the disks. To avoid this, I propose to attach to the scrapers laterally-projecting arms, which are connected to the scrapers at some distance below their upper end—as, for instance, at z z', which represent a bent arm attached at its upper end to a sleeve Z. I prefer to mount these sleeves upon a rod, Z', having a head at one end and a screw-thread and nut at the other to keep the parts in proper relation.

D' F' are collars or bearings supported, respectively, from the draw-bars or links D F by means of standards or brackets d' d' f' f' or their equivalents, which are bolted, riveted, or otherwise firmly attached to the bars and links, the rear legs, f', of the outer brackets being connected to lugs rising from the bearings G when preferred. As shown in the drawings, the upper ends of these scrapers project a little above and forward of the adjacent edges of the disks, and are, by preference, arranged in front of the vertical planes of the gang-axes to insure that such material as passes over or off from the front ends of the scrapers shall fall in front of the gang axes. The lower ends of the scrapers, as illustrated, rest upon the gang-axes, and are thus supported against a twisting strain, thereby materially relieving the parts z at their points of contact with the scrapers. The horizontal parts z may be formed with tenons, which are thrust through slots in the scrapers and then riveted over at their outer ends to hold the scrapers in position, the sleeves and arms being made of malleable iron.

Y' Y' are scrapers suspended by an arm, z', from one of the sleeves Z, and arranged to engage with the concave face of an outer disk of the gang. This mode of supporting the outer scrapers of the series obviates the necessity for making the outer sleeves or the ends of the rods or shafts Z' project beyond the disk-gangs. I prefer to make each scraper slightly wedging in form in cross-section and arrange them with their inner faces at an angle to the disks, with their thinner edges rearward toward the advancing surface of each disk, so that as the scrapers wear they shall present sharp cutting-edges to the material which it is desired to remove. The scrapers are preferably somewhat elastic, being made of thin material, and will therefore yield by springing away from the faces of the disks at either their upper or lower ends when required. It is evi-

dent that by reason of their upper ends being curved and inclined forward material carried up by the disks will be readily discharged over the ends of the scrapers; and although I prefer to make them curved as well as inclined on their cutting edges, I do not wish to be limited thereby, because some of the advantages incident to my invention will be attained by making the scrapers either inclined or curved, so long as the scrapers are mounted upon the sleeves with their lower ends resting upon and supported by the crank-axes, the scrapers and their sleeves being free to oscillate about the rods Z'.

It is apparent that the advantages resulting from the use of the chain with such length of throw or distance of travel as will insure that a number of links shall travel backward and forward over each seed-opening will be attained through the use of other forms of agitators or distributors—such, for instance, as a ladder-like structure—if substituted for the chain and so operated from a crank on the gang-axle that a number of its cross-bars shall be moved in opposite directions over each seed-hole at each rotation of the gangs. Hence I do not wish to be limited to the precise construction and arrangement of parts shown.

In the drawings I have represented the collars D' F' as surrounding the rods or shafts Z' and fitting closely thereto, in order that the sleeves Z may abut against the collars and prevent longitudinal movement of the sleeves and bars. Thus the scrapers will be firmly held in proper relation to the disks, as will be readily understood without further explanation.

What I claim is—

1. In a wheel-harrow, the combination of the pole, the weight-box rigidly connected to the pole, the brackets projecting downwardly from the weight-box, the disk-gangs connected near their inner ends to the box, and vertically-adjustable links connecting the outer ends of the gangs to the pole, substantially as set forth.

2. In a disk harrow, the combination, with the pole, of the weight-box connected rigidly with the pole, the brackets projecting downwardly from the weight-box, and the draw-bars connected at their front ends to the pole and to the gang-axle at their rear ends and to the downwardly-projecting brackets at points intermediate of their ends, substantially as set forth.

3. In a disk harrow, the combination of the pole, the weight-box connected rigidly with

the pole, the brackets projecting downwardly from the weight-box, the disk-gangs pivotally connected to the lower ends of the brackets, and means for adjusting the outer ends of the disk-gangs and their bearings relatively to the weight-box and to the downward-projecting brackets, substantially as set forth.

4. In a disk harrow, the combination of a main frame, the disk-gangs loosely connected at their inner ends to the main frame, the bell-crank lever mounted on the main frame, and the links connecting the outer ends of the disk-gangs with the vertical arm of the bell-crank lever, substantially as set forth.

5. In a disk harrow, the combination of a main frame, the disk-gangs loosely connected at their inner ends to the main frame, the bell-crank lever mounted on the main frame, the links connecting the outer ends of the gangs with the vertical arm of the bell crank lever and adjustable upon said arm, and the handle-bar connected to the lever and arranged within reach of the driver, substantially as set forth.

6. In a combined disk harrow and seeder, the combination, with the seed-box and the gangs, of a chain having a horizontal part arranged above the seed-openings in the box and a part arranged in a substantially vertical plane outside the seed-box and connected at its lower end to the crank on the disk-gang, substantially as set forth.

7. In a combined disk harrow and seeder, the combination of the seed-box, the chain, the crank-pin carried by one of the gangs and connected with the chain, and the swinging pulley adapted to vibrate and therefore conform to the varying positions of the chain, substantially as set forth.

8. In a disk harrow, the combination, with the disks, of the scraper-rods Z', the scrapers, the bent arms z z', and the sleeve Z, the lower ends of the scrapers engaging with the gangs, substantially as set forth.

9. In a disk harrow, the combination, with the disks at the outer ends of the gang, of the scrapers Y', the arms z', and the sleeves Z, connecting the upper ends of the scrapers with the sleeves, the lower ends of the scrapers being supported upon the gang-axle, substantially as set forth.

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

AMASA CORBIN, JR.

Witnesses:

A. F. CORBIN,
HARRY ROGERS.