

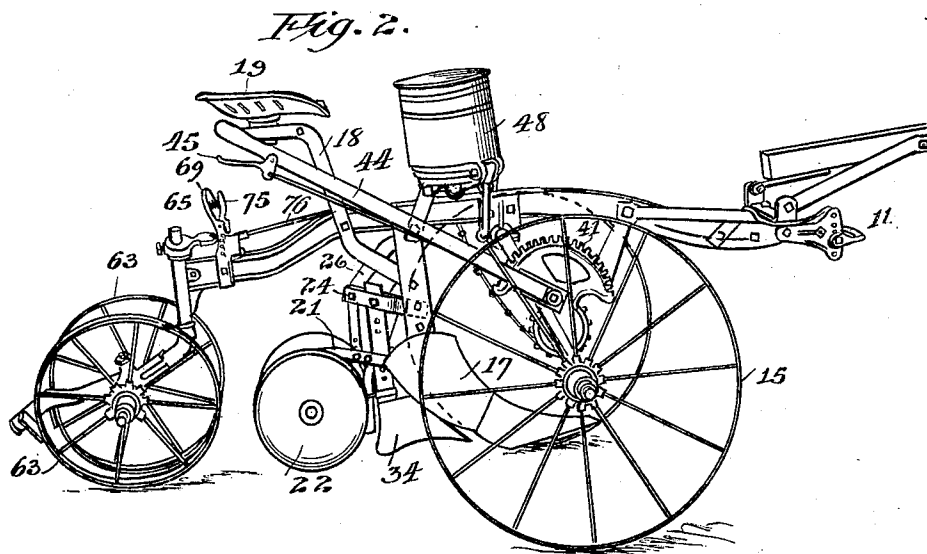
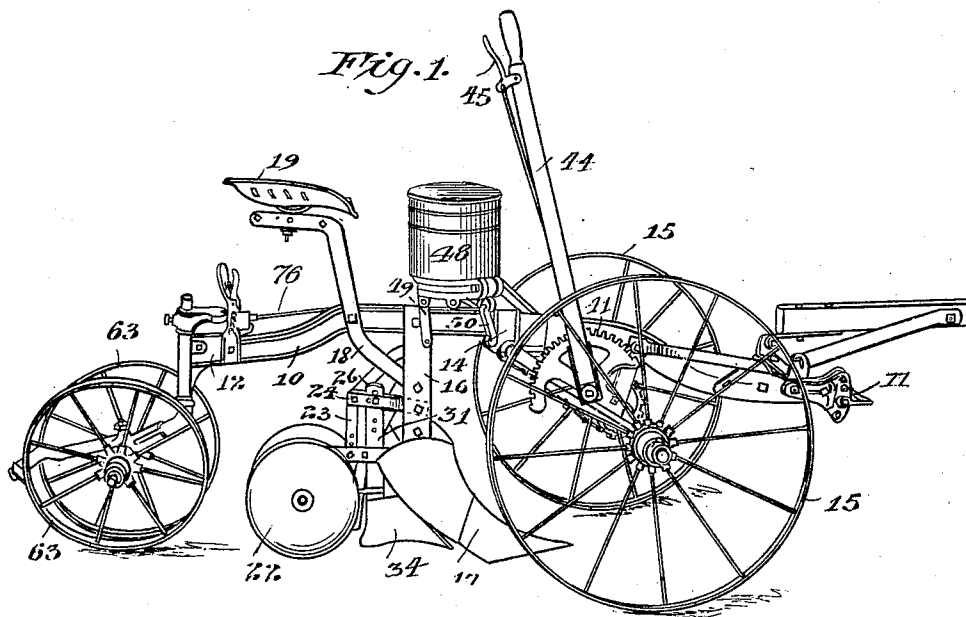
LISTER.

APPLICATION FILED JAN. 16, 1908.

977,576.

Patented Dec. 6, 1910.

3 SHEETS--SHEET 1.



Witnesses,
J. D. Mann,
Walter M. Fuller

Inventor,
Ira A. Weaver
By Offield Towle & Luthian
Attys.

I. A. WEAVER.

LISTER.

APPLICATION FILED JAN. 16, 1908.

977,576.

Patented Dec. 6, 1910.

3 SHEETS—SHEET 2.

Fig. 3.

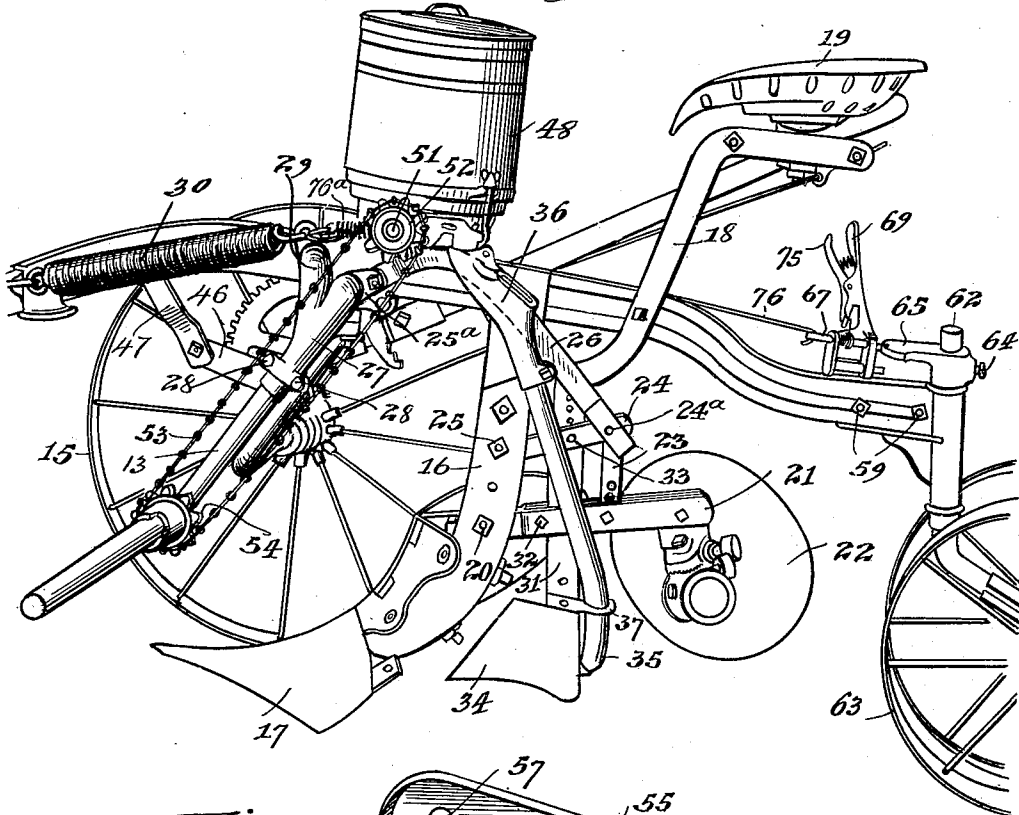


Fig. 4.

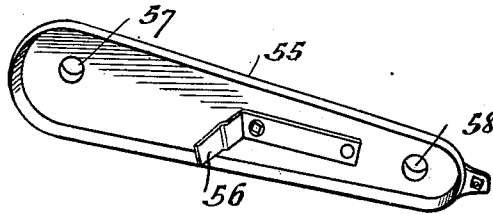
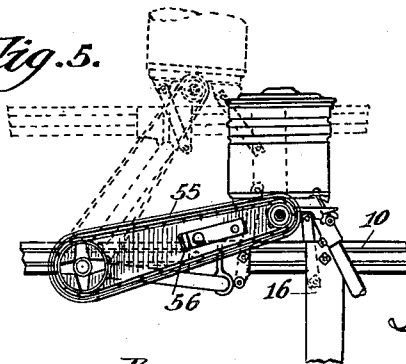


Fig. 5.



Witnesses,
J. Mann,
Walter M. Fuller

Inventor,
Ira A. Weaver

By *Offield Towle & Linticum*
Attys.

I. A. WEAVER.

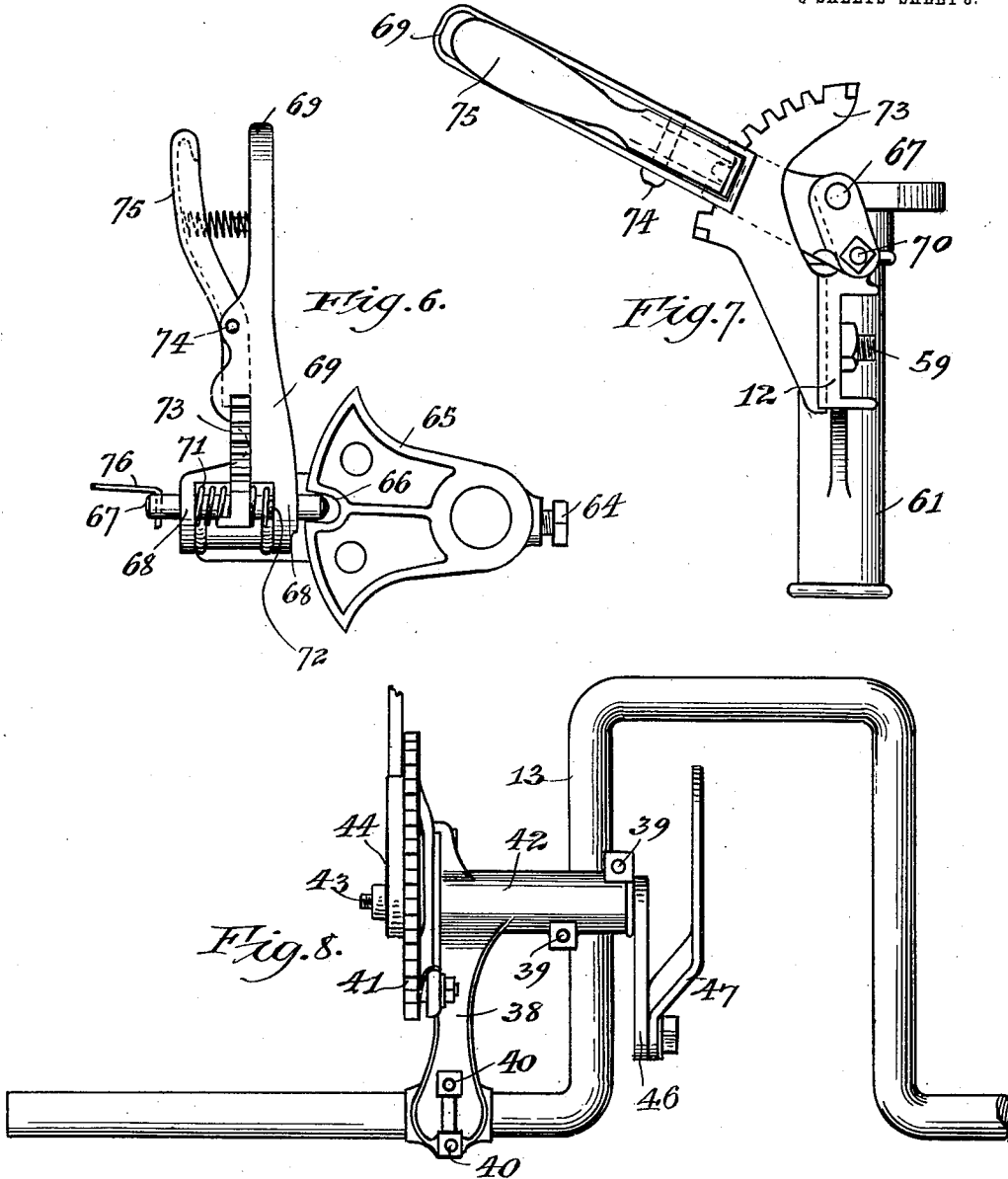
LISTER.

APPLICATION FILED JAN. 16, 1908.

977,576.

Patented Dec. 6, 1910.

3 SHEETS-SHEET 3.



Witnesses,
J. M. Mann
Walter M. Fuller

Inventor,
Ira A. Weaver
By Offield Towle & Luthin
Attys.

UNITED STATES PATENT OFFICE.

IRA A. WEAVER, OF SPRINGFIELD, ILLINOIS, ASSIGNOR TO RACINE-SATTLEY COMPANY, OF SPRINGFIELD, ILLINOIS, A CORPORATION OF ILLINOIS.

LISTER.

977,576.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed January 16, 1908. Serial No. 411,119.

To all whom it may concern:

Be it known that I, IRA A. WEAVER, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Listers, of which the following is a specification.

My invention relates to listers or planters, and aims to accomplish a number of desirable objects or results, among which may be mentioned; first, a construction in which the plow or burster is held particularly rigidly and firmly, and, to secure this object, my improved lister has a rigid and preferably integral beam extending from the clevis or hitch to the rear wheels, the plow or breaker being fastened to the lower end of a standard securely and rigidly bolted or riveted to the beam and braced by means of the seat-bars; second, to secure a perfect suction regardless of how deep or shallow the operator is listing; third, to obtain a structure in which the pitch or angle of the plow remains the same with relation to the rear wheels for any depth; fourth, to provide means whereby the subsoiler or furrow-opener and covering shovels or disks will be raised at the same time and approximately the same amount as the plow; fifth, to provide for independent adjustments of the subsoiler or furrow-openers, coverers, and seed-spout; sixth, to adjustably secure the seed-tube in a casting near the seed-box and arrange it so that it may slide loosely through a support on the subsoiler standard or bar whereby it may be adjusted up and down without affecting the other adjustments; seventh, to maintain substantially the same relative positions of the plow, subsoiler, and coverers regardless of the depth of plowing; eighth, to supply a strong, easily-operated, and effective lifting mechanism for the beam and associated parts; ninth, to equip the lister or planter with a simple driving mechanism for the seed-box and make the construction such that the distance between the sprocket wheel on the axle or wheel and that on the seed-shaft shall be constant, whereby adjustment or variation of the position of the parts will not change the tension on the driving sprocket chain; tenth, to avoid the use of double chains and counterdrives; eleventh, to provide a device of this character in

which the beam takes its depth immediately and does not depend entirely upon the suction for accomplishing this result; twelfth, to supply means for giving to the rear wheels any desired lead sidewise when listing on a hillside; and thirteenth, to employ an automatically-acting means to release the rear wheels and permit them to caster when the plow or burster is raised for turning.

Other advantages of my improved construction lie in the structural features and combinations of the various parts which are fully described below and illustrated on the accompanying drawing, forming a part of this specification, and whereon I have shown a preferred and desirable embodiment of my invention, like reference characters referring to the same parts throughout the various views.

On the drawing—Figure 1 is a perspective view of my improved lister, with the plow or burster and associated parts in lowered position; Fig. 2 is a similar view with the parts raised; Fig. 3 is a perspective view of the same machine on a larger scale, with certain parts omitted to more clearly illustrate the details of construction; Fig. 4 is a perspective view of the sprocket chain casing; Fig. 5 is a view illustrating the different positions assumable by the seed-box and its operating mechanism; Fig. 6 is a plan view of my improved adjusting means for giving to the rear wheel or wheels any desired sidewise lead; Fig. 7 is an end elevation of the same device; and Fig. 8 is a front elevation of the bent or arched axle and the lifting mechanism attached thereto.

My improved lister or planter has a rigid, integral beam 10 extending the full length of the machine from the hitch or clevis 11 to the rear wheel standard or bracket 12. The forward portion of the beam 10 is supported on a bent or arched axle 13, a bearing 14 for which is suitably mounted on the beam. As is usual in constructions of this kind, the forward carrying wheels are mounted to rotate on the opposite outwardly-extended ends of the bail or axle.

Rigidly fastened to the beam 10 near its center by means of bolts or rivets is a depending standard or foot 16, to the lower end of which the plow or breaker 17 is secured in any approved manner. The standard 16 consists of two plates or bars fastened

to opposite sides of the beam 10 and spaced apart. These plates constituting the standard are braced by the upward and rearwardly-extending seat-bars 18 on the top ends of which a seat 19 is mounted. Pivoted between the bars or plates 16 at 20 and extending rearwardly is an arm or lever 21 consisting of two bars or plates slightly spaced apart, as is clearly indicated in Fig. 3. To the rearward end of this arm or lever are attached the covering disks 22 which could, of course, be replaced if desired by the ordinary covering shovels. Arm 21 is adjustably connected to a link 23 which connects the lower arm or lever 21 to an upper arm or lever 24 by means of a pivot 24^a, the lever 24 being pivoted to or fulcrumed on the standard 16 at 25. The arm or lever 24 in turn is connected to an arm 25^a on the bail or bent axle 13 by means of a curved link 26 pivoted to the two arms 24 and 25^a being connected to the former by a pivot 24^a. As is clearly shown in Fig. 3, the arm 25^a forms part of a two-armed casting 27 fastened to the axle 13 by means of bolts 28, the other arm 29 of the casting being connected to the forward part of the machine by a spring 30 which assists the operator in lifting the plow and other parts of the mechanism. The upper ends of both arms 25^a and 29 extend above the bearing 14 of the axle so that, as the latter is swung rearwardly to elevate the beam and plow, the ends of the arms will travel forwardly. An upright bar or support 31 passes between the parallel plates of the lever 21, being held from transverse movement by bolts 32, and at its upper end is pinned at 33 to the arm or lever 24, a plurality of holes being provided so that the depth of the bar below the arm may be readily adjusted. At its lower end this bar or support carries a furrow-opener or subsoiler 34. The seed spout 35 is adjustably connected at its upper end to a casting 36 through which the seeds pass, its lower end being held by a clamp or ring 37 vertically adjustable on the bar or support 31 by a pin which may be passed through the ring 37 and any one of a plurality of holes in the support.

From the construction described it will be apparent that the positions of the coverers, furrow-opener, and seed-spout may be adjusted without in any way affecting the adjustment of the others, and it will also be obvious that as the arched axle or bail is swung, by a mechanism described hereinafter, to lift the beam and plow, the subsoiler, tube, and coverers will also be lifted because of the connection 26. If some such mechanism as this were not provided for lifting the subsoiler, tube, and coverers they would not be elevated to the same extent that the plow is, owing to the fact that they

are somewhat nearer the rear wheels about which the machine turns during the raising or lifting of the plow.

The lifting mechanism includes a casting 38 (Fig. 8) bolted to the bail or arched axle at 39 and 40. This casting 38 has a notched segment 41 rigid therewith and also has a bearing 42 for the accommodation of a short shaft 43, to one end of which is fastened a comparatively long operating arm or handle 44 equipped with a grip handle 45 connected to a dog at its lower end, which is adapted to enter any one of the notches of segment 41. A crank arm 46 is fixed to the other end of the shaft 43 and is connected to the beam 10 by a link 47. It will be apparent, therefore, that by unlocking and moving the handle 44 the forward end of the machine may be elevated or lowered, as desired, through the swinging of the bail or axle 13 which moves the forward carrying wheels 15 toward or from the rear wheels. It should be noticed also that arm 44, shaft 43, and crank arm 46 constitute a lever of which the shaft is the fulcrum.

The seed-box 48 and its associated mechanism, which may be of the usual and ordinary construction, are not mounted directly on the beam 10 but are supported by a pair of links or bails 49 and 50 of substantially the same length, whereby to give to the seed-box and its actuating mechanism a parallel motion movement.

As is indicated in Fig. 3, the seed-shaft 51 has mounted thereon or fixed thereto a sprocket wheel 52 connected by means of a sprocket chain 53 with a similar wheel 54 loose on the axle and adapted to be connected to one of the carrying wheels so as to be rotated therewith and transmit the movement of the wheel through the chain and sprocket wheels to the seed-feeding mechanism. In order to do away with a plurality of chains and any counterdrives, and at the same time maintain a constant distance between the sprocket wheels 52 and 53, I have provided the parallel motion mounting mentioned above, and in addition it is necessary to connect the seed-shaft 51 and the axle by some rigid means such as a bar or chain-guard or cover to keep this distance between the sprocket-wheels constant. In the present instance, as shown in Fig. 5, I have employed a sprocket chain guard or cover 55 illustrated in perspective in Fig. 4 which is shown as having fastened to one face thereof an outstanding foot-rest 56. This guard or cover is apertured at 57 and 58 to receive the axle and seed-shaft, respectively, and this cover alone may be used to keep the shafts the proper distance apart, or any other suitable means may be employed to accomplish the same result.

In Fig. 5 I have illustrated, by full and

dotted lines, a variety of positions assumable by the parts illustrated as the beam and plow are elevated or lowered by the lifting mechanism described above. Since the seed-box and its associated parts have the parallel motion mounting on the beam they always maintain a proper substantially-horizontal position of the parts at all elevations of the plow and beam.

It is desirable in machines of this character to provide some means for giving a side lead or inclination to the rear wheel or wheels, to make the amount of lead given adjustable so as to overcome the tendency of the machine to run down hill when working on a hillside, and to regulate the lead to agree with steepness of the hillside. Fastened to the rear end of the beam 10 by means of bolts 59 is the rear axle standard 12 having an upright or vertical bearing 61 adapted to receive the upper portion of a rearwardly-bent shaft 62, which at its lower end is supported by the axle or axles of the rear wheels 63. To the top end of the vertical portion of this shaft 62 is fixed by means of a set-screw 64 a locking member 65 having a single notch 66 adapted to receive a locking-pin or bar 67 slidably mounted in the bearings 68 of a lever 69 fulcrumed on the bracket 60 at the point 70. This locking-pin 67 is normally pressed into the notch 66 by a spring 71 surrounding the pin and abutting at one end against the bearing 68 and at the other end against a cotter-pin 72 passed through the sliding locking-pin. The bolts 59 also rigidly secure to the bracket or standard 60 a notched segment rack 73 which lies adjacent to the lever 69 constituting an adjusting handle. Pivoted at 74 on the handle 69 I provide another spring-actuated handle 75 which at its lower end cooperates with the notches of the segment 73 to maintain or lock the handle 69 in adjusted position. Obviously, as the handle 60 is shifted and carries with it the locking-pin 67, one end of which is in the notch 66, the shaft 62 is shifted more or less to one side or the other, giving a lateral or side-wise lead to the rear wheels. In order that these rear wheels may be automatically released so as to be free to turn in the bearing 61 to permit the rear wheels to freely caster when the plow is lifted for turning, I connect the end of the pin 67 by means of a wire 76 and spring 76^a with the arm 29 fastened to the axle or bail. It will be apparent, therefore, that as this axle or bail is swung rearwardly to lift the beam, the arm 29 travels forwardly and through the wire 76 and spring 76^a pulls the locking-pin 67 so as to free it from the notch 66 of the locking member 65.

The various objects of my invention set forth above, and others which will be apparent to those skilled in the art, are pro-

vided for in the improved form of lister shown and described. The great advantage of this device is, however, that with a construction of the simplest kind, the plow is held with great rigidity, and is therefore enabled to perform its work more satisfactorily than in those listers having no single rigid beam of the kind and associated with the other parts of the machine as is the beam of my device.

Although I have described, with some degree of particularity, my improved construction illustrated on the drawings, it is to be understood that my invention is not limited and restricted to the precise structural details of the parts shown and described, but that these may be varied within wide limits without departure from my invention.

I claim:

1. In a lister, the combination of a bent axle, carrying wheels on said axle, a rigid beam mounted on said axle, one or more wheels supporting the rear end of said beam, a plow rigidly fastened to said beam, means to swing said axle to elevate or lower said plow, a seed-dropping mechanism, covering means mounted on said beam, and means to elevate and lower said covering means an amount approximately equal to that of the plow and simultaneously with the adjustment of the plow, substantially as described.

2. In a lister, the combination of a bent axle, carrying wheels on said axle, a rigid beam mounted on said axle, one or more wheels supporting the rear end of said beam, a plow rigidly fastened to said beam, means to swing said axle to elevate or lower said plow, a seed-dropping mechanism, a sub-soiler or furrow-opener connected to said beam, covering means mounted on said beam, and means to elevate or lower said sub-soiler or furrow-opener and said covering means an amount approximately equal to that of the plow and simultaneously with the adjustment of the plow, substantially as described.

3. In a lister, the combination of a bent axle, carrying wheels on said axle, one or more rear wheels, a rigid beam supported by said carrying and rear wheels and extended from the front of the machine to said rear wheel or wheels, a standard rigidly fastened to said beam, a plow rigidly fastened to said standard, means to swing or shift said axle to elevate or lower said plow, an arm hinged on said standard, a coverer supported by said arm, and means connecting said arm to said axle whereby said coverer will be raised and lowered simultaneously with the similar movement of the plow, substantially as described.

4. In a lister, the combination of a bent axle, carrying wheels on said axle, one or more rear wheels, a rigid beam supported by

said carrying and rear wheels and extending from the front of the machine to said rear wheel or wheels, a bearing on said beam accommodating the cranked or off-set portion
 5 of said axle, an arm fixed to said axle and extending above said bearing, a standard rigidly fastened to said beam, a plow rigidly secured to said standard, means to swing or shift said axle to elevate or lower said plow,
 10 a lever fulcrumed on said standard, a coverer supported by said lever, and means connecting said lever with the arm of said axle whereby to raise and lower said coverer simultaneously with the similar movement of
 15 the plow, substantially as described.

5. In a lister, the combination of a bent axle, carrying wheels on said axle, one or more rear wheels, a rigid beam supported by said carrying and rear wheels and extending
 20 from the front of the machine to said rear wheel or wheels, a bearing on said beam accommodating the cranked or off-set portion of said axle, an arm rigid with said axle and extending above said bearing, a standard
 25 rigidly fastened to said beam, a plow rigidly secured to said standard, means to swing or shift said axle to elevate or lower said plow, a lever fulcrumed on said standard, a subsoiler or furrow-opener supported by said
 30 lever, a link connecting said lever with the arm of said bent axle whereby said subsoiler or furrow-opener is raised or lowered simultaneously with a similar movement of the plow, and a seed-dropping mechanism sub-
 35 stantially as described.

6. In a lister, the combination of a bent axle, carrying wheels on said axle, one or more rear wheels, a rigid beam supported by said carrying and rear wheels and extending
 40 from the front of the machine to said rear wheel or wheels, a standard rigidly fastened to said beam, a plow rigidly secured to said standard, means to shift or swing said axle to elevate or lower
 45 said plow, a lever fulcrumed on said standard, a coverer supported by said lever, a second lever fulcrumed on said standard, a subsoiler or furrow-opener supported by said second lever, means connecting the two
 50 levers with said axle whereby as the plow is raised and lowered a corresponding movement of the subsoiler and coverer will also take place, and a seed-dropping mechanism substantially as described.

7. In a lister, the combination of a bent axle, carrying wheels for said axle, one or more rear wheels, a rigid beam supported by said carrying and rear wheels and extending
 55 from the front of the machine to said rear wheel or wheels, a bearing on said beam accommodating the cranked or offset portion of said axle, an arm rigid with said axle and extending above said bearing, a
 60 standard rigidly fastened to said beam, a

plow rigidly secured to said standard, means
 65 to swing or shift said axle to elevate or lower said plow, a lever fulcrumed on said standard, a coverer supported by said lever, a second lever fulcrumed on said standard, a subsoiler or furrow-opener supported by
 70 said second lever, and means connecting said two levers to said arm of said bent axle whereby to raise and lower said subsoiler and coverer simultaneously with a similar movement of said plow, substantially as de-
 75 scribed.

8. In a lister, the combination of a bent axle, carrying wheels on said axle, one or more rear wheels, a rigid beam supported by said carrying and rear wheels and ex-
 80 tending from the front of the machine to said rear wheel or wheels, a bearing on said beam accommodating the cranked or offset portion of said axle, an arm rigid with said axle extending above said bearing, a stand-
 85 ard rigidly fastened to said beam, a plow rigidly secured to said standard, means to swing said axle to elevate or lower said plow, a lever fulcrumed on said standard, a subsoiler or furrow-opener supported by
 90 and having an adjustable connection with said lever, a second lever fulcrumed on said standard, a coverer supported by said second lever, a link connecting said two levers and having an adjustable connection with
 95 one of them, and a link connecting one of said levers with the arm of said axle whereby a raising or lowering of the plow is accompanied by a corresponding movement of the subsoiler or furrow-opener and coverer,
 100 substantially as described.

9. In a lister, the combination of a bent axle, carrying wheels on said axle, a beam supported on said axle, means to shift the
 105 position of the axle to raise or lower said beam, a seed-box and its shaft hinged to said beam, a sprocket wheel on said seed-shaft, a sprocket wheel on said axle and rotatable with one of said carrying wheels,
 110 a sprocket chain coöperating with said sprocket wheels, and means to maintain a constant distance between said sprocket wheels, substantially as described.

10. In a lister, the combination of a bent axle, carrying wheels on said axle, a beam
 115 supported on said axle, means to shift the position of said axle to raise or lower said beam, a seed-box and its shaft, a parallel-motion mounting for said box and shaft on said beam, a sprocket wheel on said seed-
 120 shaft, a sprocket wheel on said axle and rotatable with one of said carrying wheels, a sprocket chain coöperating with said sprocket wheels, and means to maintain a constant distance between said sprocket
 125 wheels, substantially as described.

11. In a lister, the combination of a bent axle, carrying wheels on said axle, a beam

supported on said axle, means to shift the position of said axle to raise or lower the beam, a seed-box hinged to said beam, a telescoping seed-spout or tube connected
5 with said seed-box, and an adjustable support for the lower portion of said telescoping spout or tube whereby the latter may be adjusted to throw the corn on the hard ground or up in the loose soil, substantially as described.

IRA A. WEAVER.

Witnesses:

M. A. McCUTCHEN,

H. G. Cox.