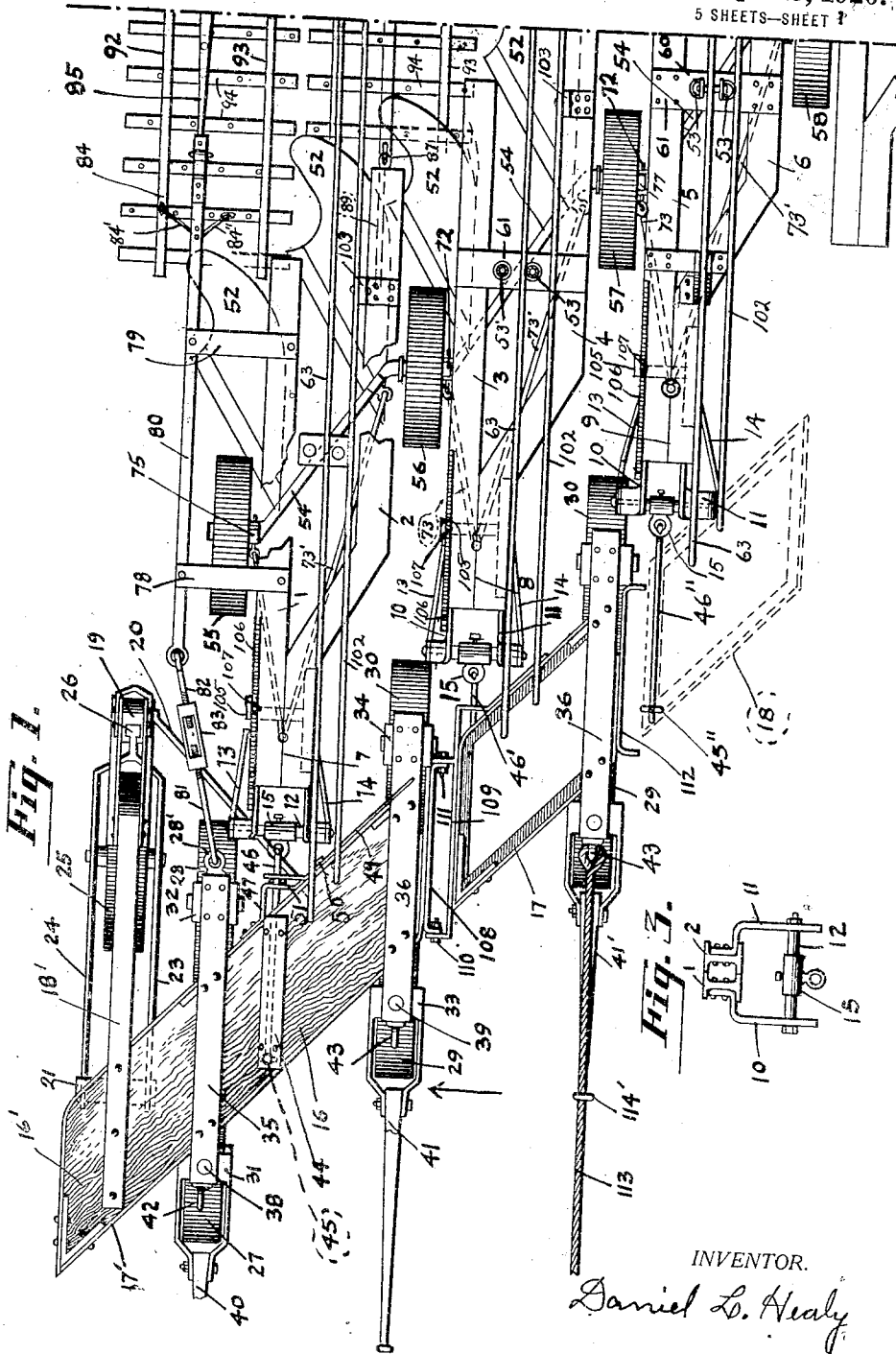


D. L. HEALY.
 PLOWING AND SEEDING APPARATUS.
 APPLICATION FILED OCT. 31, 1918.

1,336,902.

Patented Apr. 13, 1920.

5 SHEETS—SHEET 1



1,336,902.

5 SHEETS—SHEET 2.



Fig. 5.

Fig. 6.

BY *Daniel L. Healy*

ATTORNEYS.

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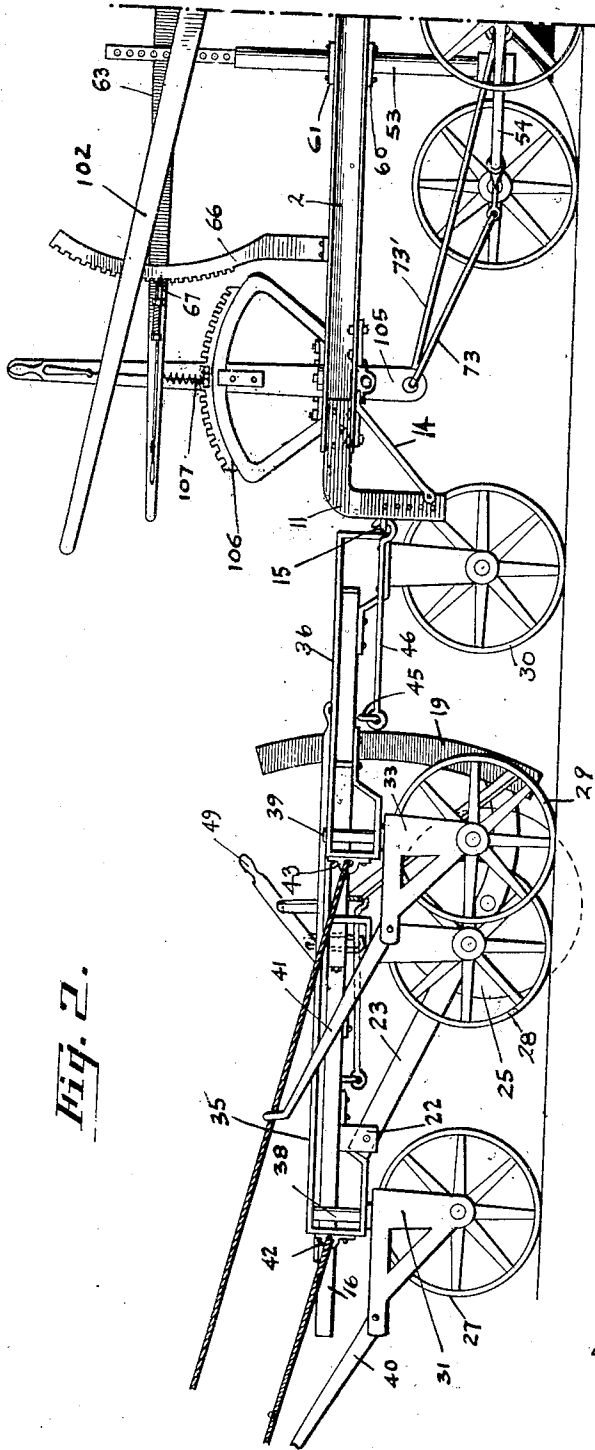


Fig. 2.

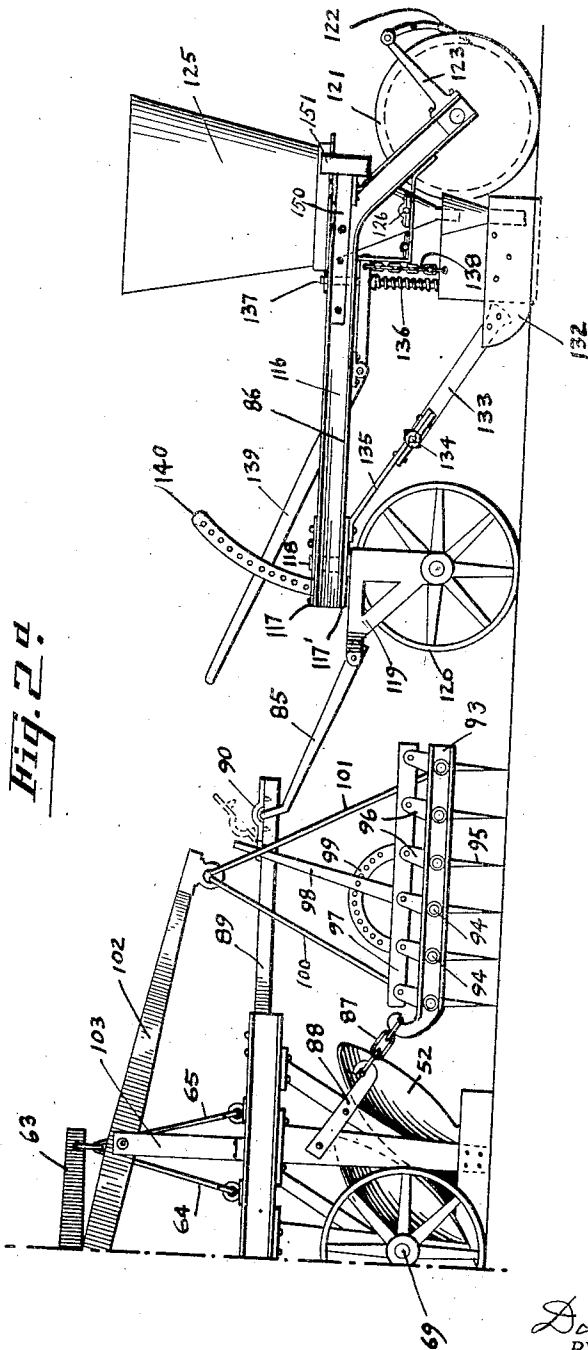
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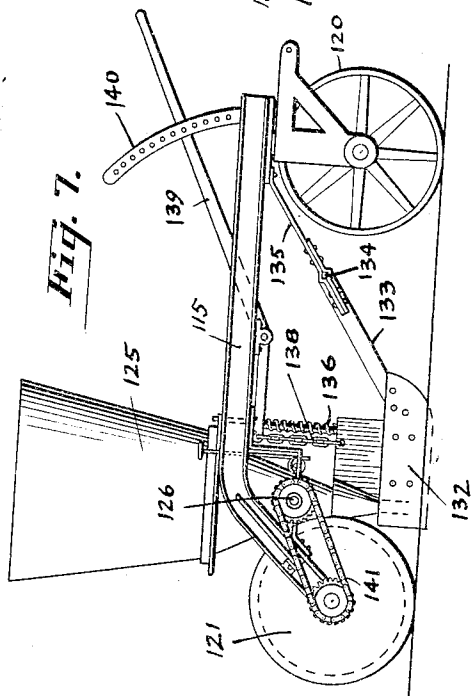
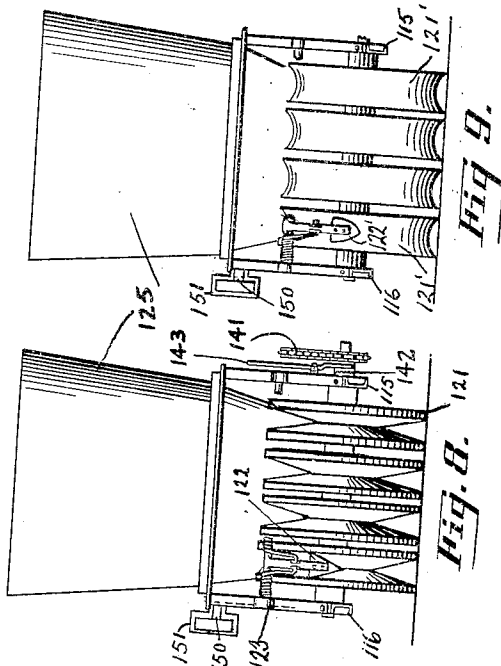
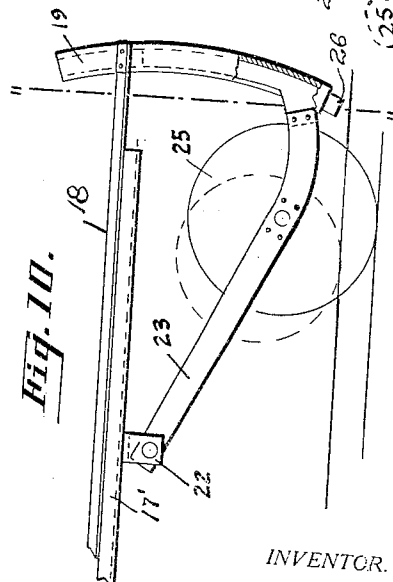
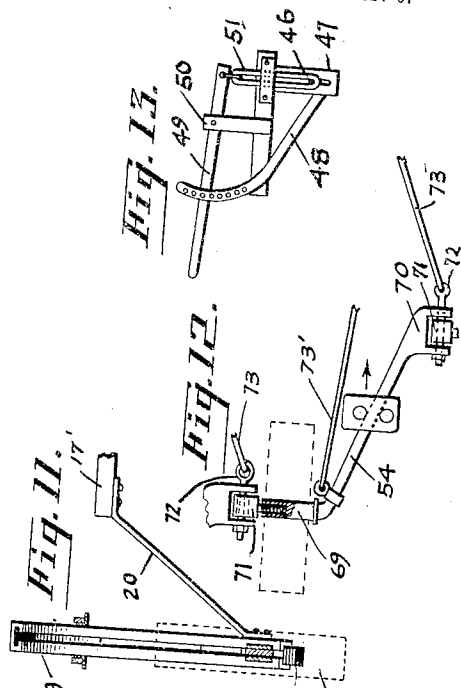
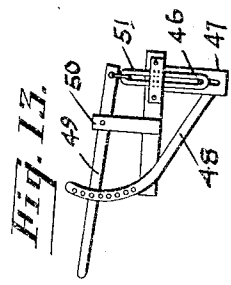
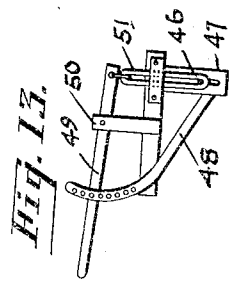
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 5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

DANIEL L. HEALY, OF SAN FRANCISCO, CALIFORNIA.

PLOWING AND SEEDING APPARATUS.

1,336,902.

Specification of Letters Patent.

Patented Apr. 13, 1920.

Application filed October 31, 1918. Serial No. 260,478.

To all whom it may concern:

Be it known that I, DANIEL L. HEALY, a citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Plowing and Seeding Apparatus, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a combined plow, harrow and seeder, an object of which is to plow, harrow and seed uneven ground in a single operation without danger of breaking the apparatus when plowing over uneven ground or over knolls, hog wallows, or both sides of a levee at the same time.

Another object of the invention is to so flexibly couple the plows, harrows and seeders together as to permit the entire apparatus to pass over uneven land, and to permit it to turn comparatively short corners without danger of one plow, harrow or drill overrunning another or taking short cuts.

Another object of the invention is to provide a furrow wheel which will serve to assist in holding the plow in the proper position with respect to the "land", but which is capable of rising up enough to run on the "land" should it be necessary in turning, or other operations, without interfering with the operation of the entire set of apparatus.

Another object of the invention is to so flexibly connect the plows, harrows and seeders as to permit the apparatus to pass over ditches, levees, and hummock land without disorganizing the complete apparatus and without causing one plow, harrow or seeder to interfere with the next adjacent plow, harrow or seeder.

Another object of the invention is to provide an apparatus of the character described which is capable of having additional plows, harrows and seeders added at will; or capable of being reduced to the minimum of two plows, one harrow and one drill if so desired, the apparatus being assembled in units transversely with the line of travel of the plows.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 is a plan view of the front portion of the apparatus,

Fig. 1^a is a plan view of the rear portion of the apparatus and is an extension of Fig. 1 the two figures joining along the dotted lines,

Fig. 2 is a side elevation of one section of the plows and draw bar looking in the direction of the arrow on Fig. 1,

Fig. 2^a is a side elevation of the rear portion of one set of plows, the harrow, and the seeder looking in the direction of the arrows on Figs. 1 and 1^a,

Fig. 3 is a front view of the end of one of the plow beams showing the manner of hitching thereon,

Fig. 4 is a plan view of a portion of one of the seeder feed wheels,

Fig. 5 is a side elevation of one of the feed wheel guards,

Fig. 6 is an end elevation of one of the feed wheels,

Fig. 7 is a side elevation of one of the seeders,

Fig. 8 is a rear elevation of one of the seeders,

Fig. 9 is a rear elevation of one of the seeders showing a modified form of the seed rollers,

Fig. 10 is a side elevation of a portion of one of the plows showing the frame for the furrow wheel,

Fig. 11 is a view at right angles to Fig. 10 showing the furrow wheel guide and brace, and

Fig. 12 is a plan view of one of the plow axles,

Fig. 13 is a view in elevation of the lever and link for adjusting the height of one of the plow drag links.

In the present invention, the number of plows used depends simply upon the power available; but in the present instance, three sets of plows are shown in which the plow beams are indicated at 1 to 3 inclusive and said beams are joined together at their front ends as indicated at 7 to 9 inclusive, the

even numbered beams having two bends to bring the front portions thereof parallel with and into contact with the odd numbered beams. Each pair of beams has a pair of depending brackets 10 and 11 at their front ends which brackets are connected by means of the rod 12 and braced by means of the rods 13 and 14 which extend from the lower end of the brackets 10 and 11 to the beams 1 to 6 inclusive, there being two of said rods for each pair of brackets and beams.

The rod 12 carries a ring 15 for the purpose of connecting it with the drag link, and the position of the rod 12 with respect to the brackets 10 and 11 determines to a certain extent the depth of the furrow to be produced, since if the rod 12 is placed in the lower holes of the brackets 10 and 11 the tendency will be to lift the plow frame and reduce the depth of the cut; while if placed in the upper holes of the brackets 10 and 11, the tendency will be to lower the plow frame and thereby increase the depth of the furrow.

In the front of the plows, there are the draw bars 16, 17 and 18, the latter being only indicated for purposes of illustration. The draw bar 16 is longer than the others and consists of a quadrilateral frame 17' surrounding the wood center 16'. This draw bar is provided with a rearwardly projecting arm 18' which carries a slotted segment bar 19, said segment bar being suitably braced to the draw bar by means of a bar 20 extending from the lower end thereof to the draw bar. Below the draw bar there is a plate 21 having depending lugs which lugs provide a pivot for the bars 23 and 24. Said bars are also pivotally connected with the furrow wheel 25 and have a slide 26 at their rear ends, which slide is freely movable in the segment bar 19. The edge of the furrow wheel is provided with means whereby the plow will be caused to travel in the proper path with respect to the furrow that has been already produced.

The draw bar is supported by means of the two wheels 27 and 28 at one end, and by means of the two wheels 29 and 30 at the other end. These wheels are connected with frames 31 to 34 inclusive, which wheels are in turn pivotally connected with the frames 35 and 36 which extend over the top of the draw bar and which are bent underneath the same at both front and rear. The wheels 27 and 29 are of the type known as caster wheels revoluble on vertical stub shafts 38 and 39 which are journaled in the front ends of the frames 35, 36, and the direction of these caster wheels is determined by poles 40 and 41. These poles are connected with the cables for drawing the

apparatus as will be later explained. The apparatus is pulled by means of the eye bolts 42 and 43 on the front ends of the plates 35 and 36. The draw bar has a reinforcing plate 44 immediately in front of the first plow, below which there is an eye bolt 45 to which the first plow is connected by means of the rod 46. Said rod extends through a depending slotted guide bracket 47, the latter having a side brace 48 which also acts as the stop for the adjustment of the lever 49 which lever is supported by a post 50 and operates to raise or lower a long link 51. Through this link the rod 46 passes, whereby the height at which the plow will be pulled may be determined. The rod 46 is connected with the ring on the slide 15. Each plow beam carries a mold board 52 supported in a well known manner from the beam. The several beams are further connected by means of slidable posts 53, 53' with axles 54, which axles extend at a sharp inclination to the line of travel of the plows; but which have portions extending at right angles to the line of travel of the plows which carry wheels 55 to 58 inclusive. In the present case, there are three of the axles and four of the supporting wheels illustrated.

The posts 53 and 53' are connected at their lower ends with the axles 54 and they slide through two plates 60 and 61 on the top and bottom of the two beams of each pair of plows. These posts have flattened portions at their upper ends with a plurality of openings whereby they may be connected with the lever 63. Which lever is connected at one end to a pair of links 64, 65 at the rear of the plow frame, and is adjusted at the other end by raising and lowering said lever. The given adjustment is determined by the segment rack 66 at the front of each plow frame and by the catch 67 carried by the lever itself.

The axles 54 are duplicates of each other and have a portion 69 at one end to serve as the bearing for the wheels, and they have a yoke 70 at the other end for the purpose of connecting with the next adjacent axle. A threaded connecting pin 71 is used for the purpose of connecting the several axles together; see Fig. 12. When the pin 71 is placed in position, an eye bolt 72 is passed through the yoke and pin 70 and 71, and a rod 73 is then connected with said eye bolt for the purpose of holding the wheel in proper position with respect to the frame of the plow. However, the first axle of the series has a rigid bearing in place of the yoke as shown at 75, while the others are pivoted on the pins 72. The first plow of the set has two horizontal arms 78 and 79 which are connected by means of a bar 80 and which bar is con-

connected by means of the two rods 81 and 82 and turn buckle 83 with the ring 28'. The rod 80 is connected to a harrow frame 84 by means of links 84', 84'' and it is also 5 connected to the steering pole 85 of the seeder. The remaining harrows of the set are connected by means of chains 87 with the hooks 88 depending from the plow frames. The remaining seeders are connected with poles 89 which extend rearwardly from the plow frames. A movable clevis 90 at the ends of the poles is used for detaching the seeders from the ends of the poles at will.

15 The harrows each comprise a pair of bars 92 and 93 and a plurality of bars 94, extending at right angles to the first mentioned bars and pivotally mounted therein; the bars each having a plurality of teeth 95 each of which is also provided with an upwardly extending arm 96. Each of the arms 96 is pivotally connected with a horizontally extending bar 97 and a lever 98 rigidly connected with one of the bars 94 enables the 20 operator to adjust the position of the teeth 95.

A stop segment 99 enables the operator to place said teeth in any desired adjustment. The harrows are also connected to two rods 100 and 101, which rods are in turn connected to the rear ends of a lever 102 pivotally mounted on a post 103 at the rear of the plow frame. The object of this lever is to enable the harrow to be occasionally lifted off the ground should it become choked with 35 weeds or rubbish.

Each individual plow axle 54 is connected with two rods 73 and 73', which rods are in turn connected with a lever 105 pivotally mounted on the plow frame and held in a given adjustment by means of a segment rack 106, the catch 107 holding the lever in any desired position. The object of this is to take up the slack in the rods 73 and 73' with any change in adjustment of the slidable post 53. 45

In Fig. 1 there are shown three substantially complete plows and the beginning of an additional plow frame. Each of said plows is substantially the same as its adjacent plow; but since the machine must be so constructed as to be able to travel over rough and uneven ground, the draw bar is jointed in the front of each plow. At the end of the draw bar 16, there is a plate 108 with horizontally extending lugs, which plate is pivotally connected to an oppositely placed plate 109 having corresponding lugs. These plates are secured together by means of bolts 110 and 111. The frame 17 is rigidly connected to the plate 109 and below the frame 60 there is an eye bolt substantially the same as that shown in Fig. 2 connected with one of the draw bar bolts 46', which is connected to the second plow in precisely the same

manner as the bolt 46 is connected with the 65 first plow. At the other end of the frame 17, there is a plate 112 with two horizontally extending lugs in order to connect it with the next adjacent draw bar which is shown in the dotted lines only. This draw bar is 70 in turn by means of an eye bolt 45'' connected with a rod 46'' extending to the third plow of the series. The draw bar construction would thus be duplicated for each set of plows used. 75

The frame 17 has one of the plates 36 connected therewith and it has a caster wheel 29 and fixed wheel 30 the same as the draw bar 16. The plate 36 has a cable 113 connected therewith and the caster wheel is turned in 80 a desired direction by means of the pole 41' which is connected with the cable by means of the ring 114'. The seeders each consist of two bars 115 and 116 joined together by means of the plates 117 and 117' at their 85 front ends. These plates form the bearings of a stub shaft 118 of the bracket 119 which is supported by the caster wheel 120.

The frames 115 and 116 extend a short distance horizontally and are then inclined 90 downwardly to form bearings at their rear ends for the seed covering rolls 121. Said rolls are of any suitable type. In this instance, the rolls are a plurality of disks, and they may be provided with scrapers 122 for 95 cleaning purposes. The scrapers are mounted on the arms 123 and 124 at the rear of the frames forming the seeders. The seeder frames each support the seed hoppers 125 in the bottom of each of which is a shaft 126 100 carrying the seed depositing mechanisms 127 and upon which the adjusting shields 128 are movable. There are four of these seed depositing rolls for each hopper. The quantity of seed deposited is determined by shifting the rolls 127 by means of the arms 129. 105 The arms are moved longitudinally with respect to the shaft 126 by means of a threaded rod 130 and as they move, they carry rolls 127 in one direction or the other as may be 110 desired.

Each seeder has four shoes 132 connected by means of a link 133 with the horizontally extending rod 134 which is supported below the seeder frame by means of the yoke 135. 115 The shoes are held in the ground by means of a stiff spiral spring 136 on a rod 137 except when it is desired to travel without having the rolls touch the ground. In such event, they may be lifted by means of the 120 chains 138 which are connected by means of a lever 139 pivoted on the frame of the seeders and held in a given adjustment by means of the stop rack 140.

Each harrow and each seeder is a duplicate of the other harrow and seeder and hence it is unnecessary to describe more than one. The seed delivering apparatus is re- 125

tated by means of the chain 141 which is connected with the shaft on which the seed covering rollers are mounted, and this chain may be operated or not, at will, by the engagement or disengagement of the clutch 142. This clutch is operated by means of the lever 143.

In operation, the several plows are able to move in different planes with respect to each other by reason first, of the jointed draw bar and second, by reason of their jointed axles. The plows drag after them the harrows and seeders and the seeders are prevented from interfering one with another by reason of the fact that the depending rear portion of the frames 116 and a yoke 151 on a bar 150 connecting the adjacent seeders permit a certain amount of side and vertical movement without disturbing the several seeders. The depending frame ends also prevent the next adjacent seeder from encroaching upon it by bearing against its frame 115 whenever a turn is to be made. It is therefore possible to turn the entire apparatus on a very short radius as well as pass over very rough ground without disorganizing the different sets of machinery.

In Fig. 9, the numeral 125 indicates the hopper for the seed and 115, 116, the side frames. The side frames are connected with a plurality of concave face rollers 121' which take the place of the rollers 121 and which also have scrapers 122' to keep the rollers clean.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is as follows, express reservation being made of permissible modifications:

1. A plowing and seeding apparatus comprising a jointed draw bar, wheels supporting said draw bar, a plurality of independent wheeled plows connected with the different members of the draw bar, jointed axles connecting the plow supporting wheels and independent harrows and seeders connected with and pulled by the several plow frames.

2. In a plowing and seeding apparatus, a jointed draw bar, a plurality of plows one connected to each member of the draw bar, connection between the plows to hold them in a given transverse position, and a plurality of harrows and seeders independently connected to the several plows, each seeder having means so positioned as to prevent the adjacent seeder from interfering with it on turns.

3. In a plowing and seeding apparatus, a jointed draw bar, wheels for the support of said draw bar, a plurality of plows independently connected to the several members of the draw bar, wheels supporting said plows, a jointed axle connecting the several wheels to determine the position of one

plow with respect to another, and a plurality of harrows and seeders independently connected to the several plows.

4. In a plowing and seeding apparatus, the combination of a jointed draw bar, wheels supporting the same, a series of plows independently connected to the several members of the draw bar, wheels for the support of said plows, and jointed axles connecting the plow wheels to determine the position of one plow with respect to the next adjacent plow.

5. In a plowing and seeding apparatus, the combination of a jointed draw bar, wheels for the support of said draw bar, a plurality of plows independently connected to the several members of the draw bar, wheels for the support of the plows, and a plurality of jointed axles connecting said wheels and extending at an acute angle to the line of travel of the plows.

6. A plowing and seeding apparatus comprising a jointed draw bar, a plurality of plows independently connected to the several draw bar members, wheels for the support of the plows, jointed axles connecting said wheels to determine the position of one plow with respect to the next adjoining plow, and a plurality of harrows and seeders individually connected with the several plows, the arrangement of the harrows and seeders being such as to place one harrow and one seeder slightly in advance of the next adjacent harrow and seeder.

7. In a plowing and seeding apparatus, the combination of a jointed draw bar, wheels for the support of the same, a plurality of plows individually connected to the draw bar members, wheels for the support of the plows, jointed axles connecting the wheels, a plurality of harrows connected with the plows, and a plurality of seeders individually connected with the several plows, each seeder having a depending beam adapted to prevent the next adjacent seeder from interfering with its operation.

8. In a plowing and seeding apparatus, the combination of a jointed draw bar, a plurality of plows individually connected with the members of the draw bar, a plurality of wheels for the support of the plows, means to raise and lower the plows with respect to the wheels, and an adjacent draft link connecting the plows and wheels to hold the plows and wheels in a fixed relation.

9. In a plowing and seeding apparatus, the combination of a draw bar, a plurality of plows individually connected with the draw bar members, wheels for the support of the plows, jointed axles connecting the wheels to determine the position of one plow with respect to another, harrows connected to the several plows and means car-

ried by the plows for lifting the harrows off the ground individually.

10. In a plowing and seeding apparatus, the combination of a jointed draw bar, a plurality of plows individually connected with the members of the draw bar, wheels for the support of the plows, jointed axles connected with the plows, means carried by the plows to lift the harrows off the ground,

and a plurality of seeders connected to the plows individually, each seeder being so positioned and having means to prevent the next adjacent seeder from interfering with it in turning.

In testimony whereof I have hereunto set my hand this 21st day of October, A. D. 1918.

D. L. HEALY.