

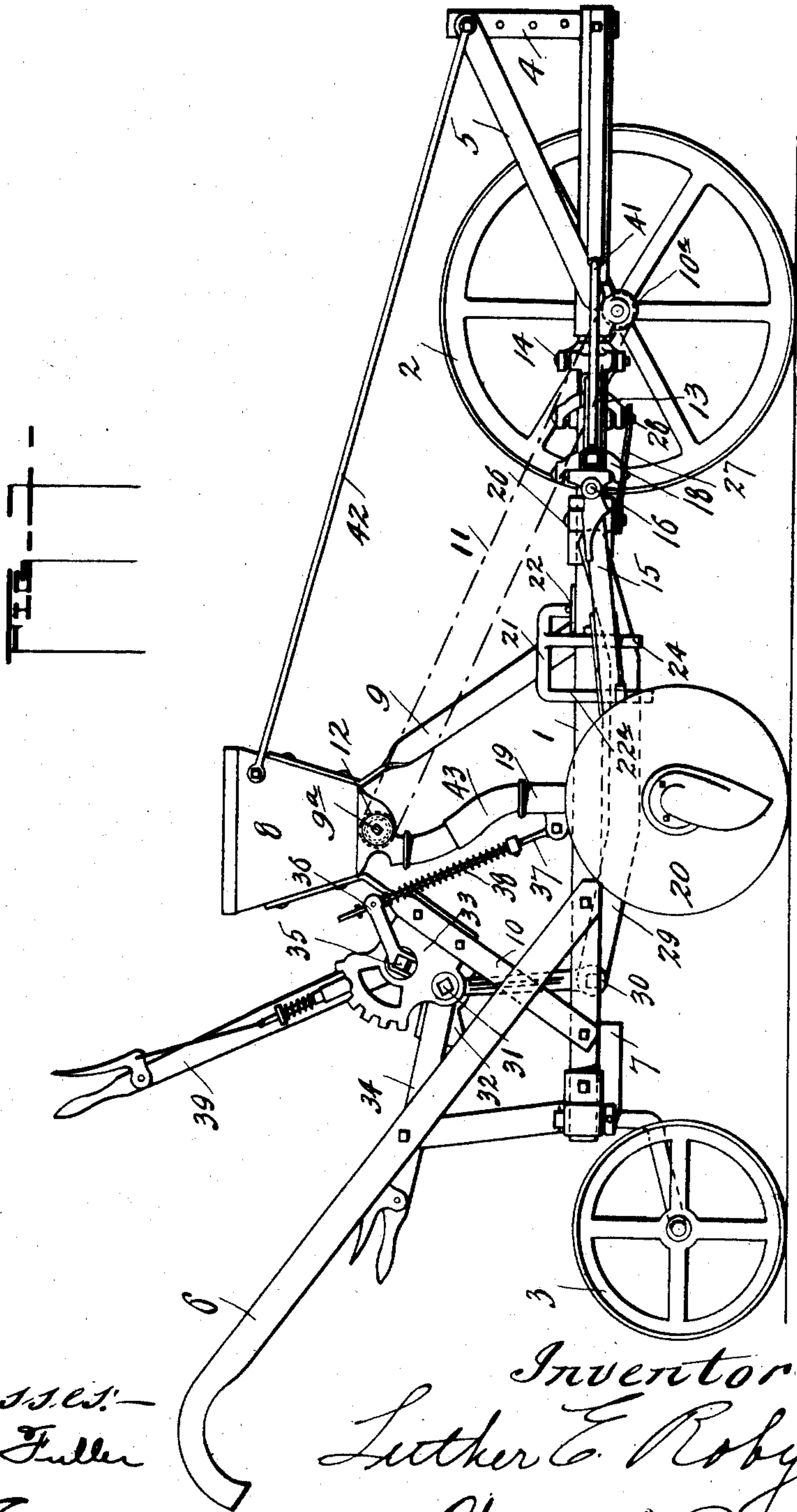
No. 864,561.

PATENTED AUG. 27, 1907.

L. E. ROBY.
SEED DRILL.

APPLICATION FILED MAR. 4, 1904.

3 SHEETS—SHEET 1.



Witnesses:
Luvin L. Fuller
C. E. Stone

Inventor
Luther E. Roby.
Chas. LaPorte
Att'y.

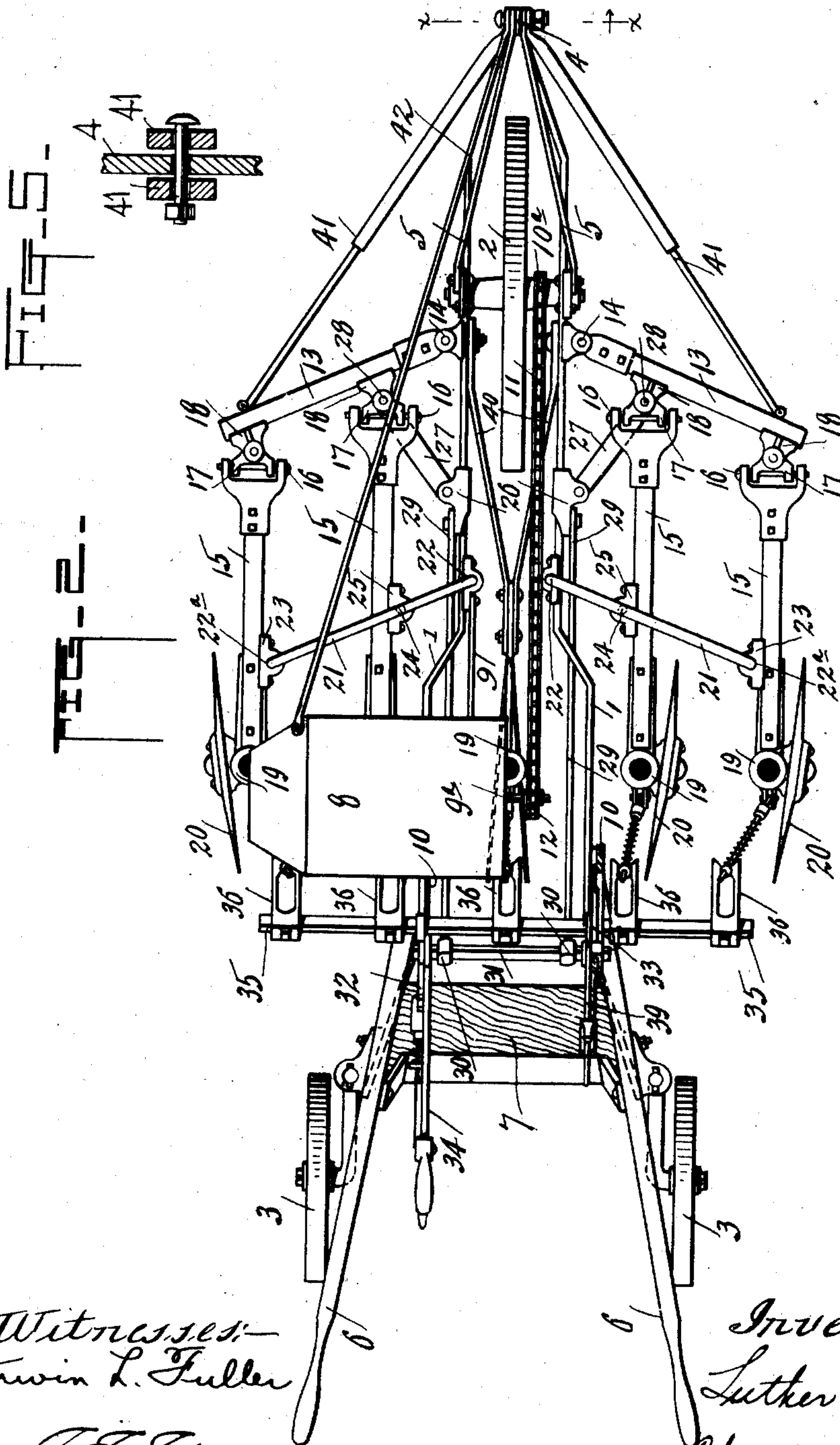
No. 864,561.

PATENTED AUG. 27, 1907.

L. E. ROBY.
SEED DRILL.

APPLICATION FILED MAR. 4, 1904.

3 SHEETS—SHEET 2.



Witnesses:
Irwin L. Fuller
E. Stone

Inventor
Luther E. Roby
By Chas. LaPorte
Atty.

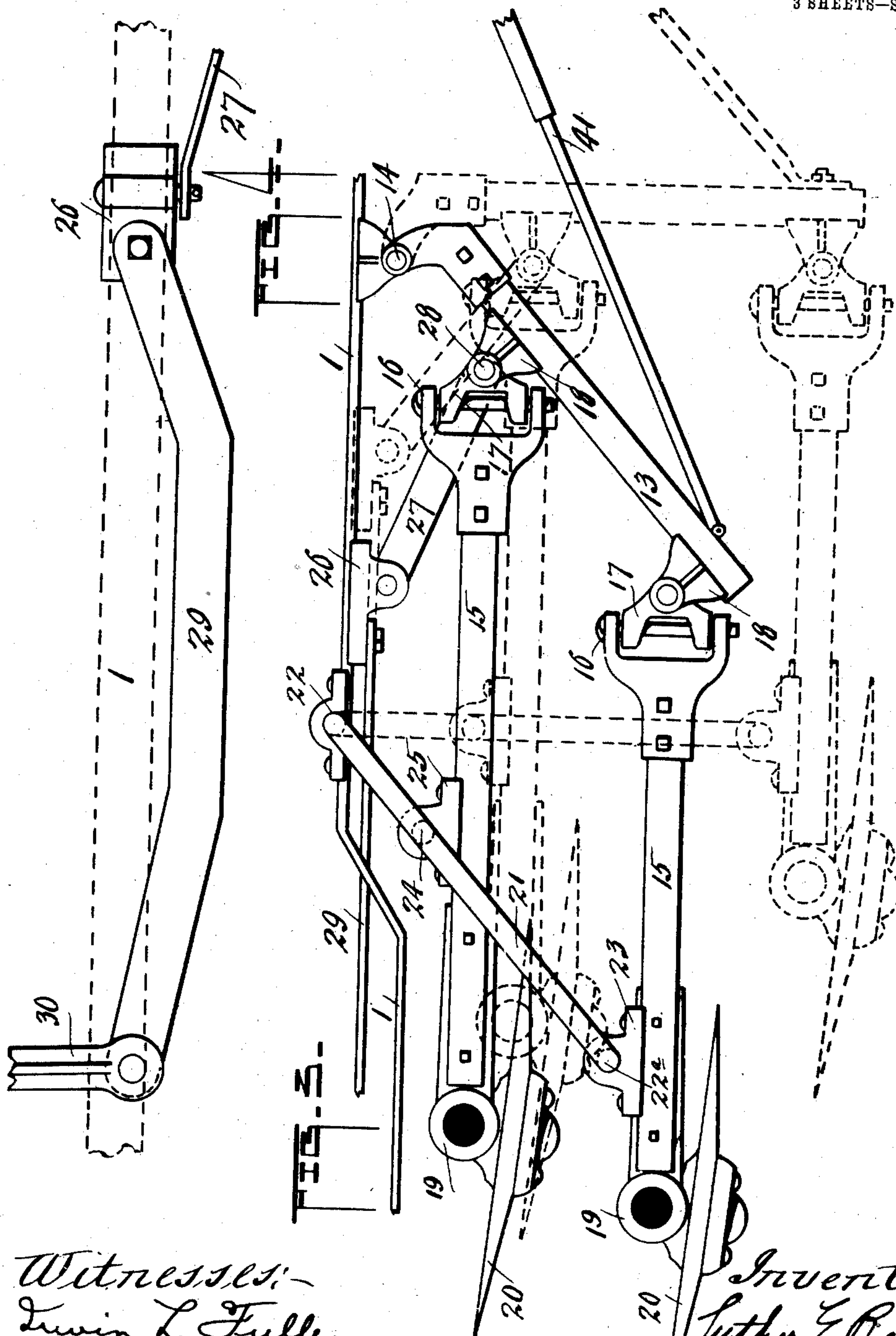
No. 864,561.

PATENTED AUG. 27, 1907.

L. E. ROBY.
SEED DRILL.

APPLICATION FILED MAR. 4, 1904.

3 SHEETS—SHEET 3.



Witnesses:
Erwin L. Fuller
C. E. Stone

Inventor:
Luther E. Roby
Chas. W. Carter
Atty.

UNITED STATES PATENT OFFICE.

LUTHER E. ROBY, OF PEORIA, ILLINOIS.

SEED-DRILL.

No. 864,561.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed March 4, 1904. Serial No. 196,615.

To all whom it may concern:

Be it known that I, LUTHER E. ROBY, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Seed-Drills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

10 This invention has reference to drills, and relates particularly to that type of machine known as five-disk drills.

One of the objects of the invention, is to swivel the outer ends of the draw-bars carrying the disks, to a swingable rod or bar.

A further object is to connect the draw-bars carrying the disks, in series; and to provide mechanism in operative connection with the draw-bars, for shifting all the draw-bars in the series simultaneously.

20 A further object is to connect the draw-bars in series, in such a manner that in whatever position they are moved, they will always remain parallel with each other; the connecting devices being so arranged that the draw-bars are free to have an independent vertical movement.

A further object of the invention is a supporting frame to which is pivotally attached a pair of bars; to said bars are attached a series of draw-bars, which have a swivel connection with the bar to permit the draw-bars to have both a vertical as well as a horizontal movement; equalizing devices for retaining the draw-bars parallel with each other and with the supporting frame, and a rock shaft and connections between the rock-shaft and first mentioned bar, when actuated adapted to swing the draw-bars.

35 The invention relates further, to means for raising the disks out of the ground; to means for applying a yielding pressure upon said disks, and to various details of improvement more particularly set out in the following specification, and illustrated in the accompanying drawings, in which:—

Figure 1 represents a side elevation of a five-disk drill with my improvements embodied thereon; Fig. 2 is a plan view of the drill seen in Fig. 1, and having the seed-box cut away to disclose certain features beneath; Fig. 3 shows in plan and somewhat enlarged, a series of draw-bars, the manner of holding them parallel with each other, their swivel connection with the pivoted and swingable bar. That part in full lines indicating the disks moved inwardly and the dotted lines showing that the disks have been moved outwardly, and Fig. 4 is a view in elevation, showing the reach connecting the bar to which the draw-bars are swiveled, and the rock-shaft, whereby when the rock-shaft is actuated, move-

ment will be imparted to the draw-bars. Fig. 5 is a sectional detail on the line $x-x$ of Fig. 2.

Like numerals of reference indicate corresponding parts throughout the several figures.

1 indicates corresponding longitudinal frame parts, their forward ends supported upon the front ground wheel 2, and their rear ends upon the rear carrying or truck wheels 3. Connected to the extreme front ends of the frame parts 1 is a bar or reach 4 extending up a suitable distance and adapted to support or have attached thereto a swingle-tree (not shown) or other coupling. The bar 4 is braced by the bars 5 which extend back and are connected to the frames 1 as shown in the drawings. Extending upwardly and rearwardly from the frame parts 1 are shown the handles 6, and connecting the rear end of the frames 1, is a platform 7 upon which an operator may stand, when it is desired to lend additional weight to force the disks to be described, into the ground.

8 indicates a seed-box supported transversely above the frames 1, and disks to be described, and is supported upon the front braces 9 and the rear braces 10, all of which are secured at their lower ends to the frames 1, as seen in Fig. 1. In this seed box is carried a shaft 9^a operatively connected with suitable seed wheels or other feeding devices, adapted to convey grain or seed to conductors which lead to the disks to be described. The shaft 9^a is driven from the front ground wheel 3, by means of a sprocket wheel 10^a, and a chain 11 connecting the sprocket 10^a with a sprocket 12 on the seed shaft 9.

Referring now to the disks and their supports and the means for moving them sidewise to contract the space between the disks or to widen the same; 13 denotes bars or other suitable frames which have a pivotal connection at 14 with plates attached to the frame parts 1. There are a pair of the bars 13 and they are designed to extend laterally from the frames 1 and having a pivotal connection with said bars 13 are a pair of draw-bars 15. The draw-bars 15 have a pivotal connection at 16 with castings or plates 17 to adapt the draw-bars to have a vertical swinging movement, while the castings or plates 17 have a swivel connection with castings or plates 18 attached to the bars 13. The rear ends of the draw-bars 15, support tubular castings 19 forming seed spouts and journaled to the castings 19, in a suitable manner are disk furrow openers 20. The style of the casting 19 and the disk furrow openers 20, is not material, nor the particular manner of conveying seed to the ground through such castings 20, as any other form of furrow opener designed to be used on a drill may be used with as good results. Adapted to retain the draw-bars 15 in proper alignment at all times and at equal distances apart is an

equalizing rod 21, having a pivotal connection at 22 with the frame parts 1; their outer ends have the depending extensions 22^a, passing loosely through boxings 23 attached to the outside draw-bars, and 24
5 denote extensions of the rods 21 intermediate their ends which pass loosely through boxings 25 attached to the inner draw-bars, see Fig. 2. The rods 21 are fixed relative to vertical movement but are capable of being swung on their pivots 22, and being swung
10 cause to be swung the draw-bars 15 to contract or widen the space between the disks.

The means for shifting the draw-bars will now be described: On the frame parts 1 are slidably carried castings or plates 26. Having a pivotal connection
15 with such castings are bars 27, which at their opposite ends have a pivotal connection at 28 with the castings or plates 18 of the inner draw-bars 15. Extending rearwardly from and having connections with the plates 26 are shown reaches 29, which at their rear ends
20 are pivotally connected to the lower ends of certain levers 30, and the levers 30 are attached to a rock-shaft 31, which is journaled in brackets 32 and 33 supported on the rear braces 10, which support the seed box as described. The bracket 32 is provided with a toothed
25 segment, and 34 is a lever operatively connected with the shaft 31 and has a rod and pawl engagement with the toothed segment of the bracket 32; whereby when the lever 34 is moved, its position may be locked. Thus it will be seen, that, if it is desired to swing the
30 disks outwardly to widen the space between them the lever 34 is moved so as to cause the reaches 29 to be moved forwardly, imparting a corresponding movement to the castings or plates 26. Such movement, through the bars 27 will swing the bars 13, carrying
35 with them the draw-bars 15 to which are attached the disks, as has been described. The rods 21 will in turn swing on their pivots to accommodate themselves to the movement of the draw-bars, for keeping them in proper alinement and at equal distance apart. To
40 reverse the movement of the draw-bars, for contracting the space between the disks the operation of the lever 34 is reversed which will impart a movement to the draw-bars just the reverse to that above described. Both of such movements being clearly seen in Fig. 3,
45 of the drawings, and may be accomplished by the operator from the rear of the machine and while it is in motion.

The connection of the draw-bars, with the bars 13, as has been described is such, that they will not only
50 swing laterally, but are capable of having vertical movement imparted to them. This may be done by the use of certain mechanical devices, or they may adjust themselves vertically to permit the disks to follow all kinds of ground and accommodate them-
55 selves to any unevenness. The extensions 22^a and 24 of the rods 21, retain the proper alinement of the draw-bars, but passing loosely through the boxings 23 and 25 on the draw-bars, the boxings can move up and down on the extensions, and independent of each
60 other, so that the vertical movement of one is not entirely dependent upon the vertical movement of the other. However, as has been suggested means have been provided for raising the disks out of the ground and for applying a yielding pressure upon said disks.
65 This mechanism comprises a rocking shaft 35 jour-

naled in the brackets 32 and 33, in manner similar to the shaft 31. On said shaft is carried a series of arms 36. 37 denote rods having a pivotal connection at their lower ends with the castings 19, their upper ends having a swivel connection with the outer free ends
70 of the arms 36 and encircling said rods 37 are seen coil springs 38. To raise the entire series of disks, which may be accomplished through the connections described with the shaft 35, a lever 39 is operatively
75 connected with the shaft 35 having a rod and pawl connection with a toothed segment of the bracket 33, so that when the lever 39 is pushed down, the connections between the shaft 35 and disks will raise the latter. To raise the lever 39, will impart a yielding
80 pressure upon the disks in the ground, all of which it is believed is apparent.

The center disk or furrow opener may be a single disk, or a double disk furrow opener as seen in Fig. 2, having similar connection with the shaft 35 as the other
85 disks of the series, but it is intended to be fixed against lateral motion. The casting supporting the disks being connected by the braces 40 with the frame parts 1 as shown.

I am aware that several attempts have been made to adjust the width of a five-disk-drill. One of which
90 was to provide a spring arm in a suitable manner attached to the draw-bars so that when the machine was traveling in a narrow row the corn stalks engaging with the spring arms would force the furrow openers inwardly or in other words, to contract the travel of
95 the outside furrow openers, and when the machine emerged from the narrow row, the spring arms would cause the furrow openers to separate. Another attempt was to connect the draw-bars with oscillatory arms, swinging on a common pivot with which mech-
100 anism was connected for the purpose of oscillating said arms to widen or narrow the path of travel of the furrow openers. But I am not aware that any one has ever attempted to narrow or widen the path of travel of the
105 furrow openers in a disk-drill while at the same time retain the draw-bars which support the disks always parallel with each other and with the supporting frame; the arrangement being such that the cutting
110 edges of the disks, no matter in what position, the draw-bars are adjusted, will always enter the ground at approximately the same angle, as to change the angle of the disk with the adjustment of the draw-bars
is to destroy the usefulness of the machine and make it practically impossible for the disks to enter the soil. In the arrangement which I have shown, in addition
115 to the angle of the disks remaining always the same, each disk will follow all kinds of ground and adjust itself independently, while remaining parallel with each other.

Serving as a guide for the bars 13, also as a brace for
120 the outer ends of such bars, is shown the telescoping rods 41, one end attached to the bars 13 and the other secured in a suitable manner to the outer end of the frame parts 1 which will permit of the telescoping of
125 such rods and allow the end of the rod attached to the bars 13 to change its angle to accommodate itself to the movement of the bars 13. They also serve the purpose of a fender on each side of the forward part of the machine for keeping all trash and weeds from the
130 disks. There are also provided the additional braces

42 between the upper end of the bar 4 and the opposite ends of the seed box.

The rear carrying wheels are swiveled to the frame parts substantially in manner shown on the drawings, so that the machine need not be raised in turning.

43 denote telescoping grain or seed conductors leading from the seeding devices within the hopper to the seed tubes 19 communicating with the disks, all of which is believed to be understood.

10 Is it obvious that various changes may be made in the general construction of the machine; that the manner of supporting the draw-bars may be modified and that the equalizing device may be changed to conform to various other changes in the machine, and 15 applicant does not wish to be confined to the details of construction as specifically set out in the above specification, but to embody all that may come within the spirit and scope of invention herein.

20 Having thus fully described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

1. In a seed drill, a supporting frame, a supplemental frame pivoted to the supporting frame, draw-bars pivoted to said supplemental frame and supporting furrow openers, 25 means for shifting and locking the position of the supplemental frame, and an extensible rod connection between the supplemental and supporting frames.

2. In a seed drill, the combination of a supporting frame, a pair of arms pivoted to said frame, a shaft and 30 means connecting said shaft with the pivoted arms, a pair of draw-bars pivotally connected with the pivoted arms, means for raising or lowering said draw-bars, means permitting said draw-bars to independently adjust themselves vertically and be retained in perfect alinement with each

other, and an extensible connection between the outer 35 free ends of the pivoted arms and the supporting frame, substantially as specified.

3. In a seed drill, the combination with a frame, of the bar 13 pivoted to said frame, a pair of draw-bars supported by said bar 13 to have vertical and lateral movement, the plate 26 slidable on the frame, shaft, means for 40 actuating said shaft, a lever attached to said shaft, a reach connected to the lever and slidable plate, connections between the slidable plate and bar 13 and an extensible bar attached one end to the bar 13 and its opposite 45 end attached to the outer end of the frame, substantially as specified.

4. In a seed drill, the combination with a portable frame, of the bar 13 pivoted to said frame, a pair of draw-bars supported by said bar 13 to have vertical and lateral 50 movement, an equalizing bar pivoted to the frame and having a pivotal connection with the draw-bars, the plate 26 slidable on the frame, a shaft, means for actuating said shaft, a lever attached to said shaft, a reach connected to the lever and slidable plate, connections between the 55 slidable plate and bar 13 and an extensible bar attached one end to the bar 13 and to the outer end of the portable frame, substantially as specified.

5. In a seed drill, the combination of a support pivoted at one end to adapt it to have a horizontal swinging movement, draw-bars supporting furrow openers and pivoted 60 to said support, an equalizing device for connecting said draw-bars in series for retaining them parallel with each other at all times, and means for oscillating said support and thereby the draw-bars, and means for raising or depressing the said draw-bars. 65

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

LUTHER E. ROBY.

Witnesses:

IRWIN L. FULLER,
CHAS. N. LA PORTE.