W. G. DANIELSEN.

PLOW.

APPLICATION FILED MAR. 27, 1911.

1,014,379.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

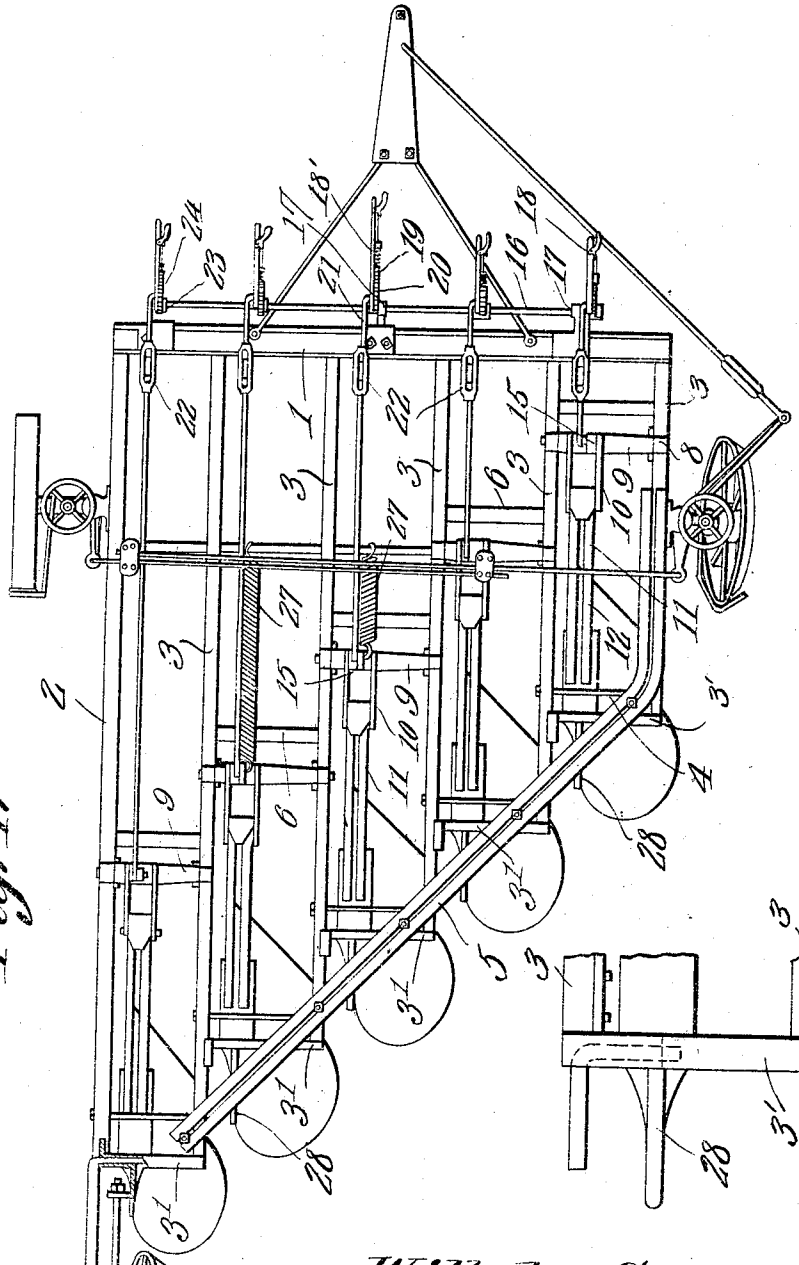

Fig. 1.

Fig. 6.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

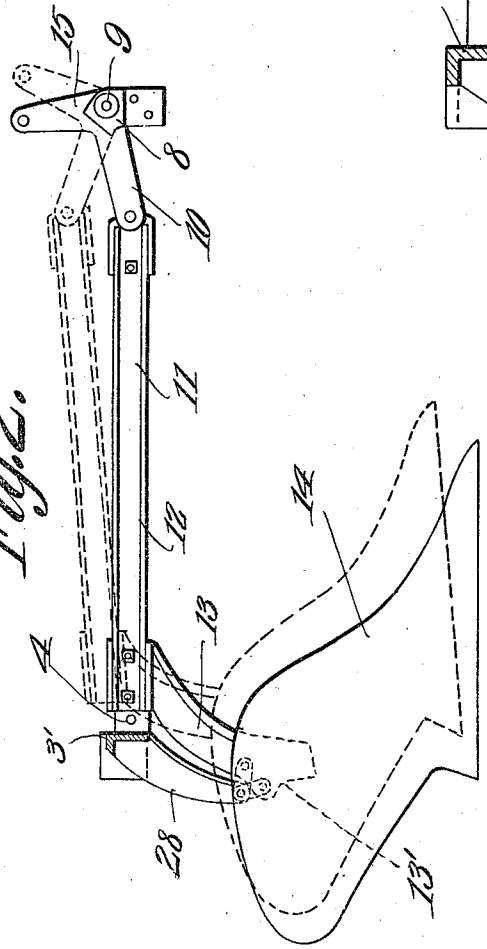

Fig. 3.

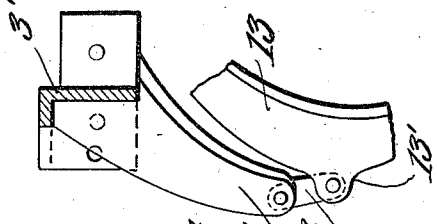

Fig. 4.

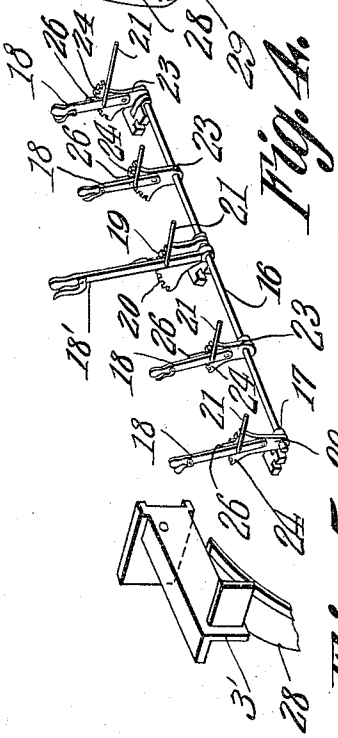

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

WILHELM G. DANIELSEN, OF INDEPENDENCE, MISSOURI.

PLOW.

1,014,379. Specification of Letters Patent. Patented Jan. 9, 1912.

Original application filed December 22, 1910, Serial No. 598,832. Divided and this application filed March 27, 1911. Serial No. 617,106.

To all whom it may concern:

Be it known that I, WILHELM G. DANIELSEN, a citizen of the United States, residing at Independence, in the county of Jackson and State of Missouri, have invented a new and useful Plow, of which the following is a specification.

This invention has relation to plows and consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The subject matter of the present invention is divided from my earlier application filed in the Patent Office December 22, 1910, Serial No. 598,832.

The plow is especially adapted to be used in connection with traction engines and propelling means and the object of the invention is to provide novel and substantial means for connecting the individual plow beams with the plow frame in such manner that when the beams are released from being held in downwardly inclined position at their forward ends, the plow shares carried by the beams will assist materially in moving the beams in an upward direction.

A further object of the invention is to provide means for connecting the beams with the plow frame whereby the said beams may be raised or lowered individually and also may be raised in unison if desired.

In the accompanying drawings,—Figure 1 is a top plan view of the plow. Fig. 2 is a side elevation of one of the plow beams showing adjacent parts in section; Fig. 3 is a side elevation of an arm used upon the plow frame showing connecting parts. Fig. 4 is a perspective view of a lever mechanism used upon the plow. Fig. 5 is a perspective view of the upper portion of the arm shown in Fig. 3. Fig. 6 is a top plan view of one of the said arms.

The plow includes a forward cross beam 1 and a land side beam 2 which is secured at its forward end to the said cross beam and lies at a right angle to the same. Beams 3 are secured at their forward ends to the cross beam 1 and lie parallel with the land side beam 2. The beams 3 increase gradually in length from the furrow side of the frame of the plow toward the land side thereof. The frame bars 3′ are disposed between the beams 3, as clearly shown in Figs. 1 and 6. A bolt 4 passes transversely through the rear end portion of each of the beams 3 and the intermediate portion of the next adjacent beam 3 and serves as means for holding the rear portions of said beams 3 in proper relation to each other and for clamping the bars 3′ in place. A bar 5 is obliquely disposed above the rear end portions of the beams 3 and is secured to each of the said beams and serves as means for bracing the same in proper relation to each other.

The frame of which the beams hereinbefore described form component parts constitutes the supporting structure for the plow beams to be explained hereinafter and the frame beams are preferably made from channel iron. The intermediate portions of the beams 3 are held apart by spacing bars 6 and as few or as many of the said bars may be employed in the frame structure as may be deemed necessary.

Bearings 8 are located upon the intermediate portions of the beams 3 and shafts 9 are journaled in said bearings. Spaced arms 10 are fixed to the intermediate portions of the shaft 9 and the forward ends of plow beams 11 and pivotally connected with the said spaced arms 10. The plow beams 11 are made up of binary members 12 which are bolted or otherwise connected together in any desired manner. Standards 13 are carried at the rear ends of the plow beams 11 and furrow openers 14 (of any desired pattern) are attached to the lower ends of the standards 13.

The standards 13 are provided at their rear edges with projecting lugs 13′. Each shaft 9 is also provided with an upstanding arm 15, the arm 15 being located between arms 10 attached to the same shaft. The shaft 16, which is journaled in the bearings 17, forward and transversely of the frame to the cross beam 1, is provided to permit the plow shares 14 and their beams to be adjusted individually and operated simultaneously. Each of the arms 15 of the shafts 9, is operatively connected with the one of the outer levers 18, here shown as four in number, and a central lever 18′, whereby the shafts 9, may be operated through the medium of the shaft 16. The central or main operating lever 18′, has its lower end fast to the shaft 16, and is the main operating lever, the toothed segment 20 being fastened to the frame adjacent the lever 18′, said shaft 16 being ro-

tatably mounted in said segment 20 so that the spring pawl 19 carried by the lever 18′, will hold the lever 18′ in relative adjusted position to the segment 20. Made fast to the shaft 16 upon opposite sides of the lever 18′ and at equi-distant points, are the toothed segments 23, whose toothed portions 24 are disposed to be engaged by the spring pawls 26 mounted for individual operation upon the hand levers 18, each one of which is pivoted at its lower end to its respective segment 23, whereby the said levers 18 may be individually adjusted to assume any desired angle and thereby affect through the rods 21, the respective plow beams and share 14, as each rod 21, connects its individual beam 18 to its respective lever 15 of the shaft 9. A similar rod 21 also connects the lever 18′ to its respective lever 15 of the shaft 9. By this construction it is seen that each lever 18 and 18′, is individually adjustable to regulate the angle of its respective plow share 14, and that by the movement manually of the central lever 18′, the shaft 16 is rocked operating simultaneously all of the levers 18 and 18′, to operate all of the rods 21 and the plow shares through their beams. By this means it will be seen that the plow shares are individually adjusted to regulate their furrow cut, and that by means of the main lever 18′, all of the shafts may be moved into and out of earth engaging position simultaneously.

One or more traction springs 27 may be provided, the rear ends of said springs being connected with the upper ends of arms 15 and the forward ends of the said springs are connected with the spacing bars 6. The said springs 27 are designed to assist in swinging the plow beams 11 in an upward direction as will be fully explained hereinafter. The frame bars 3′ are provided with arms 28 which extend downwardly and are rearwardly curved at their lower portions as illustrated in Fig. 3 of the drawing. Links 29 are pivotally connected at one end with the lower end portions of the arms 28 and at their other ends with the perforated lugs 13′ of the plow standards 13.

Inasmuch as the lever 18′ is fixed to the shaft 17 when the said lever 18′ is swung, and the said shaft 16 is turned all of the levers 25 will turn about the axis of the shaft 16 for the reason that the said levers 25 are fulcrumed to arms 24 which in turn are fixed to the shaft 16. Thus when it is desired to raise all of the plow beams 11 the lever 18′ is swung in a forward direction and through the connecting rods 21 the arms 15 are swung about the axes of the shafts 9 and the arms 10 are swung in an upright direction whereby the forward ends of the plow beams are elevated. As the forward ends of the beams 11 are swung upwardly as above described, the standards 13 are turned so that their lower ends are upwardly disposed and the forward pointed ends of the furrow openers 14 are thereby upwardly diposed. As the plow continues to move in a forward direction, the said furrow openers will work up through the soil and the intermediate portions of the standards 13 will swing upon the links 29 as pivots until the ends of the said links which are connected with the said standards 13 are swung about those ends of the said links which are pivotally connected with the arms 28. Thus the rear ends of the plow beams 11 are simultaneously elevated at the time the forward ends thereof are raised. This operation occurs throughout the entire series of furrow openers when the lever 18′ is swung in a forward direction and when the said lever 18′ is swung in a rearwardly direction, the reverse operation takes place and the said furrow openers 14 are lowered.

During the forward movement of the lever 18′ the tension of the traction spring 27 comes into play and assists in swinging the arms 15 about the axis of the shafts 9 thereby relieving the operator of much of the weight of the several parts of the plow. When it is desired to raise any one of the furrow openers 14 other than the intermediate furrow opener of the series (which intermediate furrow opener is operatively connected with the said lever 18′) the lever 25 which is operatively connected with the furrow opener 14 desired to be raised is swung, and the same operation prevails in connection with the furrow opener desired to be raised as that described in connection with the intermediate furrow opener or the one operatively connected with the lever 18′. The frame of the plow as heretofore described is mounted upon supporting wheels of any usual or desired pattern. It will thus be seen that the levers 18 and 25 may be operated to adjust and actuate their individual plow shares 14 and that the same may be adjusted by means of their pawl and segment mechanism, whereby the entire shaft 16 may be operated through the medium of the lever 18′ to simultaneously operate all of the plow shares 14.

Having described the invention what I claim as new and desire to secure by Letters Patent is:—

1. The combination with a frame, of a series of plows operably connected thereto abreast and in staggered relation, each of said plows being pivoted to the frame and capable of tilting movement, a beam to each plow extending forwardly, a series of bell crank levers having their respective horizontal arms pivotally connected to the extreme free end of and beyond the free ends of the plow beams, individual means for adjusting the movement of the respective bell crank levers and their respective plow

beams, and means for operating all of said bell crank levers and their respective beams in unison.

2. The combination with a harp-shaped frame having its longest side the land side and its forward side the side at right angles thereto, of a series of plows arranged in inclined relation below and in line with the rear side of the main frame and extending abreast of the rear of the main frame, each of said plows being individually pivoted to the main frame, a beam to each plow extending forwardly in the frame, a bell crank lever to each plow journaled in the frame and having one arm pivoted to the forward end of its respective plow beam, a transverse shaft journaled at the forward end of the main frame, a series of levers individually and adjustably connected thereto, a rod connected to each lever and its respective bell crank lever, and means for locking said levers to said shaft, whereby all plow beams may be moved in unison.

3. The combination with a harp-shaped frame having its longest side the land side and its forward side the side at right angles thereto, of a series of plows arranged in inclined relation below and in line with the rear side of the main frame and extending abreast of the rear of the main frame, each of said plows being individually pivoted to the main frame, a beam to each plow extending forwardly in the frame, a bell crank lever to each plow journaled in the frame and having one arm pivoted to the forward end of its respective plow beam, a transverse shaft journaled at the forward end of the main frame, a series of levers individually and adjustably connected thereto, an adjustable rod connected to each lever and its respective bell crank lever, and individual means for locking said levers to said shaft, whereby all plow beams may be moved in unison.

4. A plow comprising a frame, a series of shafts journaled upon the frame, a furrow opener operatively connected with each shaft, a transversely disposed shaft journaled upon the frame, arms fixed to the last mentioned shaft, levers journaled to said arms, means for fixing said levers with relation to said arms, and means operatively connecting said levers with the shafts to which the furrow openers are connected.

5. A plow comprising a frame, a series of shafts journaled thereon, furrow openers connected with said shafts, a transversely disposed shaft journaled upon the frame, a lever fixed to said shaft and operatively connected with one of the shafts to which a furrow opener is connected, arms fixed to said transverse shaft, levers fulcrumed to said arms, means for securing the last mentioned levers with relation to said arms, and means operatively connecting the last mentioned levers with the shafts to which the furrow openers are connected.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILHELM G. DANIELSEN.

Witnesses:
J. M. REDD, Jr.,
ALLEN C. SOUTHERN.