No. 801,168. PATENTED OCT. 3, 1905.

S. V. WEEKS.

PLOW.

APPLICATION FILED JUNE 26, 1903.

3 SHEETS—SHEET 1

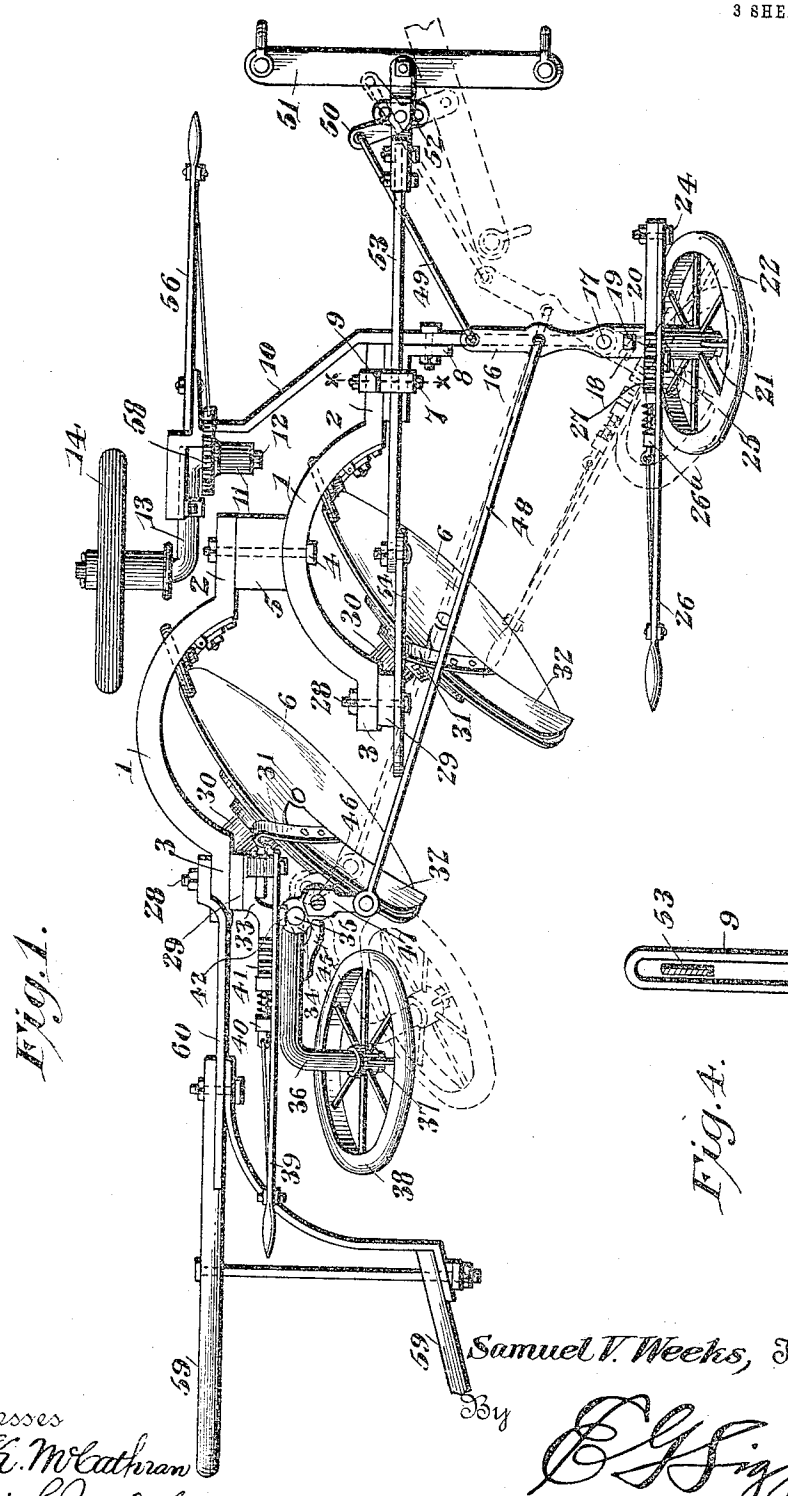


Fig. 1.

Fig. 4.

Witnesses
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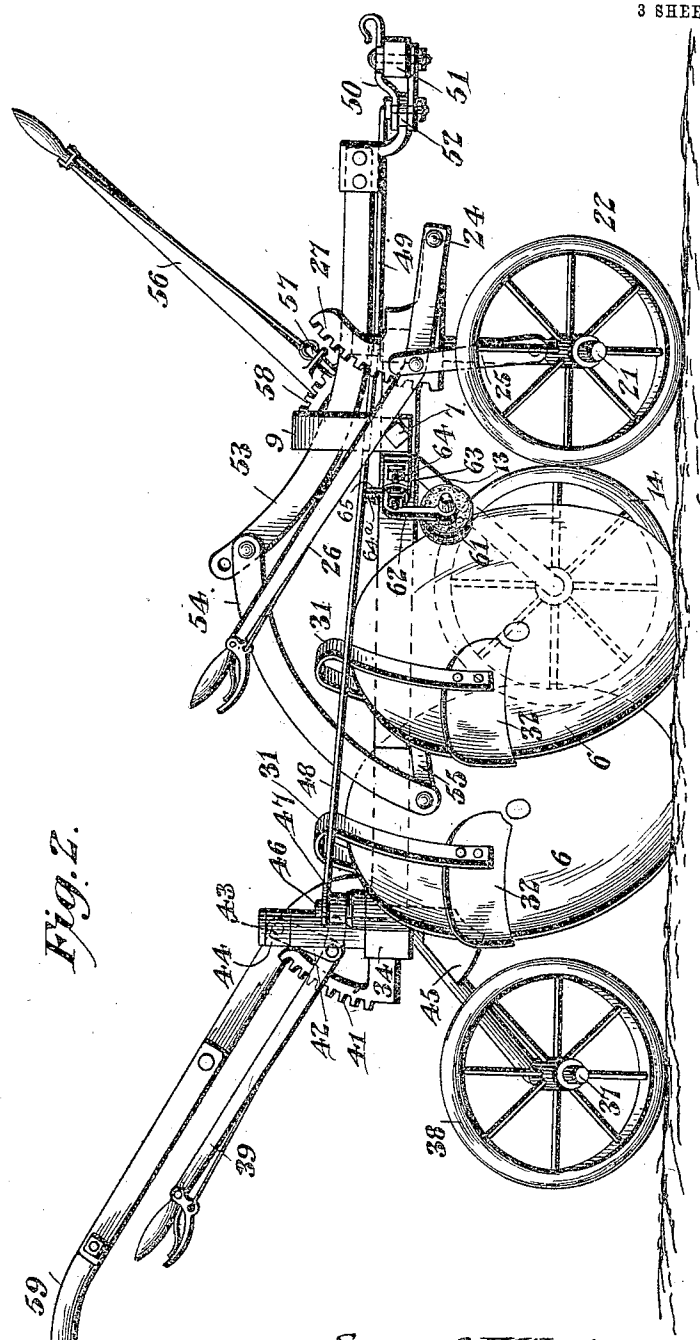


Fig. 2.

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3 SHEETS—SHEET 3.

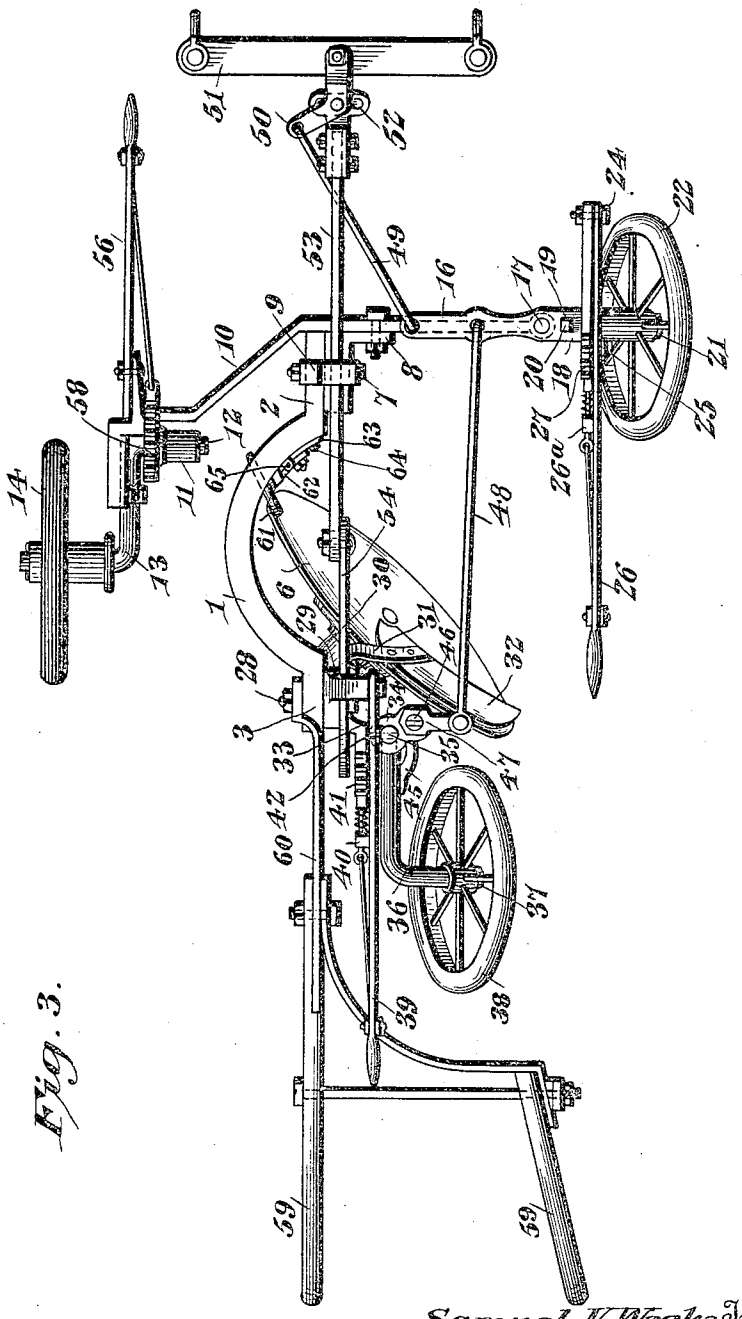


Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL V. WEEKS, OF CHATTANOOGA, TENNESSEE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE VOLUNTEER DISC PLOW COMPANY, OF CHATTANOOGA, TENNESSEE.

PLOW.

No. 801,168. Specification of Letters Patent. Patented Oct. 3, 1905.

Application filed June 26, 1903. Serial No. 163,265.

To all whom it may concern:

Be it known that I, SAMUEL V. WEEKS, a citizen of the United States, residing at No. 405 West Sixth street, Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Plow, of which the following is a specification.

This invention relates to certain improvements in plows, and has for its primary object to produce an implement of this character which may be readily converted for use as a single plow or as a gang-plow embodying any desired number of units.

To the accomplishment of this object the invention resides in the provision of a series, gang, or chain of interchangeable beams or elements of duplicate construction and each supporting or designed to support a disk or its equivalent.

A further object of the invention is to facilitate the turning of sharp or square corners by effecting the proper relative adjustment of the front and rear furrow-wheels when the line of draft is changed, this end being attained in the present construction by establishing an operative connection between the shiftable wheel-supports and the draft appliance.

A still further object of the invention is to provide means whereby a pull upon the draft appliance will exert a downward pressure upon the frame of the plow to insure a proper depth of cut.

Subordinate objects will appear during the succeeding description of those forms of the invention which for the purpose of this disclosure are illustrated in the accompanying drawings and embraced within the scope of the appended claims.

In the said drawings, Figure 1 is a plan view of my implement organized for use as a gang-plow and showing certain positions of the parts in dotted lines. Fig. 2 is a side elevation thereof. Fig 3 is a plan view of the implement organized for use as a single plow. Fig. 4 is a detail view on the line *x x* of Fig. 1.

Like numerals are employed to designate corresponding parts throughout the views.

When organized for use as a gang-plow, as shown in Figs. 1 and 2 of the drawings, the implement includes a plurality of interchangeable frame-beams or disk-carrying elements 1 of identical construction. These beams may be of any desired form, but are preferably curved and formed with front and rear extensions 2 and 3. The front extension 2 of each beam, except the first of the series, is connected to the middle of the beam preceding or next in advance by suitable means—as, for instance, a single bolt 4, passed through the beams and through an intermediate spacing-block 5, which insures the proper separation of the disks 6, supported by the beams at or adjacent to their rear ends, as will hereinafter more fully appear.

To the front extension 2 of the foremost beam 1 is secured by any suitable means—as, for instance, a bolt 7—a bracket 8, the bolt 7 preferably serving also as retaining means for a guide-yoke 9, the purpose of which will presently appear. To the bracket 8 thus secured to the beam 1 is fixed in any suitable manner a transverse frame-bar 10, which at the landside of the plow is deflected rearwardly and provided with a journal-box 11 for the journal 12 of the land-wheel crank-axle 13, upon whose spindle the land-wheel 14 is mounted in the usual manner. At the furrow-side extremity of the frame-bar 10 is swiveled an arm 16, normally disposed transversely of the plow and carrying at its outer end beyond its axis 17 a bearing-bracket 18, provided with a squared socket 19 for the slidable mounting of the vertically-disposed square standard 20 of the front furrow-wheel axle 21. Upon the axle-spindle, which, as usual, is slightly inclined from the horizontal, is mounted the front furrow-wheel 22, the vertical adjustment of which relative to the frame of the plow is provided for by the slidable mounting of the standard 20 in the bracket 19. Any suitable means for effecting this adjustment may be provided; but a preferable embodiment of such means includes a lever 26, fulcrumed, as indicated at 24, upon an extension of the bracket 19 and connected, as by a link 25, with the standard 20, the retention of the lever in its adjusted positions being insured by a spring-latch 26^a, associated with the lever and engaging a toothed segment 27, carried by the bracket.

Against one side face of the rear extension 3 of each beam or element 1 is secured, by means of a bolt 28, a drop-bracket 29, carry-

ing at its lower end a bearing-sleeve 30, disposed at an angle across the line of draft and designed for the reception of a disk spindle, the construction and arrangement of the bearing-sleeve, spindle, and disk being ordinary, and therefore requiring no further description. The bolts 28, which connect the beams and the disk-carrying brackets 29, also serve as retaining means for scraper-supporting yokes 31, each of which is bent over the edge of a disk and carries a scraper 32, by means of which the disk is cleared. In addition to the functions recited the bolt 28, passing through the rear end of the last beam or element of the series or gang, serves also to retain what may be termed the "rear" furrow-wheel bracket 33, in which is formed a vertical journal-box 34 for the journal 35 of the crank-axle 36, upon the spindle 37 of which the rear furrow-wheel 38 is mounted. The rotatable mounting of the journal 35 permits the axle 36 to swing laterally for the purpose of properly positioning the rear furrow-wheel with respect to the line of draft, it being observed in this connection that the several supporting devices of the plow are swiveled, since each of the several crank-axles is capable of a swinging movement designed to adjust the supporting devices with relation to the frame. In addition to its lateral swinging movement the crank-axle 36 of the rear furrow-wheel, like the axle of the front furrow-wheel, is designed to be adjusted vertically relative to the frame. The journal 35 is therefore extended above the box 34 and is suitably connected to an adjusting-lever 39, fulcrumed upon the wheel-bracket 33 and provided with a spring-latch 40, engaging a toothed segment 41, carried by the bracket. The particular character of connection between the lever 39 and the journal 35 is not material; but this connection preferably includes a link 42, connected at one end to the lever 39 and at its opposite end to a stud 43, projecting laterally from a ring 44, swiveled on the journal to permit independent rotary movement of the latter.

It has been premised that one of the objects of the present invention subordinate to the production of a readily-convertible plow is to provide means whereby a coöperative relation will be established between the draft appliance and the furrow-wheels to the end that said wheels will be properly positioned to facilitate the turning of the plow when the line of draft is changed. To this end I associate with the crank-axle 36 an adjustable stop in the form of a swinging arm 45, extending, as shown in Fig. 2, from the lower end of a short rock-shaft 46, disposed vertically and having a bearing in the bracket 33 adjacent to the journal-box 34 of the crank-axle. At its upper end the shaft 46 is provided with a crank-arm 47, connected, as by a connecting-rod 48, with the arm 16, the connection with the latter being effected at the side of the fulcrum 17 opposite to the mounting of the front furrow-wheel 22. The inner end of the arm 16 is in turn connected by a link 49 with a bell-crank lever 50, connected at its opposite end to the draft appliance—as, for instance, the swingletree 51. The bell-crank lever 50 is adjustably fulcrumed upon a clevis 52, carried at the front end of what may be termed the "draw-bar" 53, disposed longitudinally of the plow and guided by the yoke 9. The rear end of the draw-bar 53 is deflected upwardly, as shown in Fig. 2, and is adjustably connected to the upper end of a frame-depressing bar 54, extended below the rear end of the front beam 1 and connected thereto, as by a link 55. This arrangement of the draw-bar and the frame-depressing bar constitutes a simple appliance for converting the pull exerted by the draft-animal into a downward pressure upon the rear end of a beam or disk-carrying element, it being observed that the pull upon the front end of the draw-bar will cause the upwardly-curved portion of said bar to engage the upper end of the yoke 9, which acts as a fulcrum for the bar. Therefore the pull on the bar tends to depress its rear end and to thus depress the frame through the intermediate connection to insure such penetration of the ground as is necessary to secure the proper cut or depth of furrow. It will also appear that when the line of draft is changed—as, for instance, in making a turn to the right—the bell-crank lever will be swung to the position indicated in dotted lines in Fig. 1, the connection between said lever and the arm 16 swinging the front furrow-wheel to the position indicated in dotted lines and withdrawing the stop-arm 45 from engagement with the crank-axle 36 to permit the rear furrow-wheel 38 to assume a position substantially at right angles to the front furrow-wheel 22. With the wheels thus disposed it is clear that a sharp or square corner may be turned and one of the objects of the invention thus attained.

If with the parts in the positions indicated in full lines in Fig. 1 a turn is made to the left, the front furrow-wheel will obviously be turned to an angular position the reverse of that shown in dotted lines in Fig. 1, and as the inner end of the arm 16 moves rearwardly the crank-arm 47 will be swung in a similar direction, and the arm 45, which normally constitutes a stop element, will then become an actuator, serving to positively swing the crank-axle 36 to dispose the rear furrow-wheel at a reverse angle. In this event the plow will turn toward the land with the land-wheel 14 as an axis, and the front and rear furrow-wheels will be positioned to follow around in arcuate paths without material side draft, thus permitting in this direction, as in

the other, a sharp turn without excessive strain on either the implement or the draft-animal.

The vertical adjustment of the land-wheel 14 with respect to the frame of the plow is effected by a lever 56, arranged to swing the axle 13 vertically, and provided with a spring-latch 57, engaging a toothed segment 58 at one end of the journal-box 11.

If it is desired to employ the implement as a walking-plow, handles 59 may be secured to a bracket 60, connected to the extension 3 of the rearmost beam, as by the bolt 28, as shown in Fig. 1, or, if desired, the implement may be used as a riding-plow by attaching a seat to the beam in lieu of the handles.

In Fig. 3 I have shown the implement converted for use as a single plow, the change having been effected by detaching the rear beam and by securing the wheel-bracket 33 and its complementary parts, together with the handle-bracket 60, to the rear end of the front beam. This conversion is thus seen to be accomplished without the introduction of any new or additional elements except, perhaps, a shorter connecting-rod 48. With equal facility the number of units of the plow may be increased by detaching the handle-bracket 60 and the wheel-bracket 33 from the second beam and by reattaching these elements to another beam secured to the second beam as the latter is secured to the first or foremost beam.

It is thought that from the foregoing the construction, operation, and many advantages of my plow will be clearly comprehended; but while the illustrated embodiments of the invention are thought at this time to be preferable I do not limit myself to the structural details defined, as, on the contrary, I reserve the right to effect such changes, modifications, and variations of the illustrated structure as may fall fairly within the scope of the protection prayed.

What I claim is—

1. A plow, comprising a beam, front and rear furrow-wheels and a land-wheel, vertically-swiveled front and rear supports for the furrow-wheels, a swinging stop-arm disposed to limit the movement of the rear-wheel support in one direction and to positively move said support in the opposite direction, and means for operating said arm from the front furrow-wheel support.

2. A plow, comprising a beam, a transverse frame-bar at the front end thereof and rigid therewith, land and furrow wheels at the opposite ends of said bar, a draft appliance, a swinging arm mounted on the frame-bar, said arm having connection, at one side of its pivot, with the draft appliance, and having a bearing-bracket at the opposite side of its pivot, a crank-axle having a vertical portion slidably received by the bearing-bracket, and a lever for adjusting the crank-axle vertically.

3. A plow, comprising a beam, front and rear furrow-wheels, a land-wheel, swinging supports for the furrow-wheels, a swinging stop member associated with and arranged to limit the movement of one of said supports, means operatively connecting said stop member with the other swinging support for actuation by the latter, a draw-bar, and a draft appliance having operative connection with the draw-bar and with the last-named swinging support, respectively.

4. A plow, including a beam composed of a plurality of duplicate disk-carrying elements, each of said elements having alined ends, and an intermediate laterally-deflected portion, the front end of one element having connection with the laterally-deflected portion of another element.

5. A plow, including a beam composed of a series of duplicate elements each having alined ends and a laterally-deflected intermediate portion, a drop-bracket carried by the rear end of each element, and a disk carried by each drop-bracket and disposed opposite the laterally-deflected portion of the adjacent element.

6. A plow, comprising a beam, front and rear furrow-wheels, and a land-wheel, vertically-swiveled supports for the furrow-wheels, a swinging stop device and actuator for the rear furrow-wheel support, and means for operating said device from the front furrow-wheel support.

7. A plow, comprising a beam, front and rear furrow-wheels, and a land-wheel, vertically-swiveled supports for the furrow-wheels, a swinging stop device and actuator for the rear furrow-wheel, a draft appliance connected to the front-wheel support to swing the same in opposite directions in making a turn to the right or left, and a connecting device between the front-wheel support and the combined stop device and actuator, whereby the latter will be normally retained in position to act as a stop for the rear-wheel support, and will be moved in opposite directions when the front-wheel support is shifted in making opposite turns.

8. A plow, comprising a beam, a transverse frame-bar rigidly secured at the front end thereof, a swinging arm mounted on said bar, a vertically-adjustable wheeled support mounted in said arm at one side of its axis, a draft appliance connected to the arm at the opposite side of its axis, other wheeled supports located at the opposite end of the transverse frame-bar and at the rear end of the beam respectively, a stop for the rear-wheel support, and a connection whereby the swinging of the arm carrying the front wheeled support will shift the stop.

9. A plow, comprising a beam, front and rear furrow-wheels and a land-wheel, swiveled crank-axles for the furrow-wheels, a swinging stop-arm disposed to limit the move-

ment of the rear crank-axle in one direction and to positively move said axle in the opposite direction, a draft appliance, and means for operating the swinging stop-arm from said appliance.

10. A plow comprising a frame structure including a beam, front and rear furrow-wheels and a land-wheel supporting the frame structure, a draft appliance, a horizontally-swinging arm mounted on the frame structure and connected at one side of its axis with the draft appliance, a front furrow-wheel axle connected to the swinging arm at the opposite side of its axis, a swiveled crank-axle for the rear furrow-wheel, a movable stop coöperating with said crank-axle, and means for operating the stop from the swinging arm.

11. A plow comprising a frame structure including a beam, front and rear furrow-wheels and a land-wheel supporting the frame structure, a horizontally-swinging arm mounted on the frame structure, a front-furrow-wheel axle vertically adjustable in said arm at one side of the axis thereof, a draft appliance connected to said arm at the opposite side of its axis, whereby the arm will be swung to shift the position of the front furrow-wheel when the line of draft is changed in making a turn, a swiveled crank-axle for the rear furrow-wheel, a swinging stop disposed to engage said crank-axle to limit the movement thereof in one direction, and an operating connection between the swinging arm and the swinging stop, whereby said stop will be moved when the arm is swung to shift the position of the front furrow-wheel.

12. A plow comprising a frame structure including a beam, front and rear furrow-wheels, and a land-wheel supporting the frame structure, a horizontally-swinging arm mounted on the frame structure, a front-furrow-wheel axle connected to the arm at the outer side of its pivot, a bell-crank lever having link connection with the arm at the other side of the pivot thereof, a draft appliance connected to the bell-crank lever to shift the same when the line of draft is changed, a swiveled crank-axle for the rear furrow-wheel, and a swinging stop disposed to engage said crank-axle and connected to the swinging arm for operation thereby.

13. In a convertible plow, separate interchangeable furrow-opener-supporting beams having spaced overlapping portions detachably secured together to permit conversion from a gang-plow into a single plow and vice versa, and a spacing-block interposed between the overlapping portions of the beams.

14. In a convertible plow, separate interchangeable furrow-opener-supporting beams having overlapping portions, a spacing-block interposed between the beams, and connecting means engaging the beams and the spacing-block to detachably connect the beams in a manner to permit conversion from a gang-plow into a single plow and vice versa.

15. In a convertible plow, separate interchangeable furrow-opener-supporting beams, the front end of one beam being disposed opposite an intermediate portion of a beam in advance thereof, a spacing-block interposed between the beams, and a bolt passed through the front end of one beam and an intermediate portion of another beam and through the interposed spacing-block, whereby the plow may be converted from a gang-plow into a single plow and vice versa.

16. In a plow, a frame comprising separate interchangeable furrow-opener-supporting beams detachably secured together and separated by an interposed spacing-block, and supporting-wheels, all of which are capable of attachment both to one of such beams alone or to the frame including a plurality of such beams, permitting conversion from a gang to a single plow and vice versa.

17. In a plow, a frame comprising separate interchangeable furrow-opener-supporting beams, an interposed spacing-block, means detachably connecting the beams and block together, and supporting-wheels, all of which are capable of attachment both to one of such beams alone or to the frame including a plurality of such beams, permitting conversion from a gang to a single plow and vice versa.

18. In a plow, a frame comprising separate interchangeable furrow-opener-supporting beams, the front end of one beam being disposed opposite the middle portion of the beam in advance thereof, a spacing-block intermediate of the beams, a bolt passed through the front end of one beam, the middle portion of the adjacent beam and the interposed block, to detachably secure the beams and block together, and supporting-wheels therefor, all of which are capable of attachment both to one of such beams alone or to the frame including a plurality of such beams, permitting conversion from a gang to a single plow and vice versa.

19. In a plow, a transverse frame structure, supporting-wheels therefor, a plurality of separate interchangeable furrow-opener-supporting beams detachably secured together, means for detachably connecting the front end of either of said beams to the transverse frame structure, and an additional wheel adapted for connection to any beam, whereby conversion from a gang to a single plow or vice versa is permitted.

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

SAMUEL V. WEEKS.

Witnesses:
A. W. Gaines,
Chas. W. Rankin.