(No Model.)

4 Sheets—Sheet 1.

H. H. SATER.

PLOW.

No. 550,197. Patented Nov. 19, 1895.

Fig. 1.

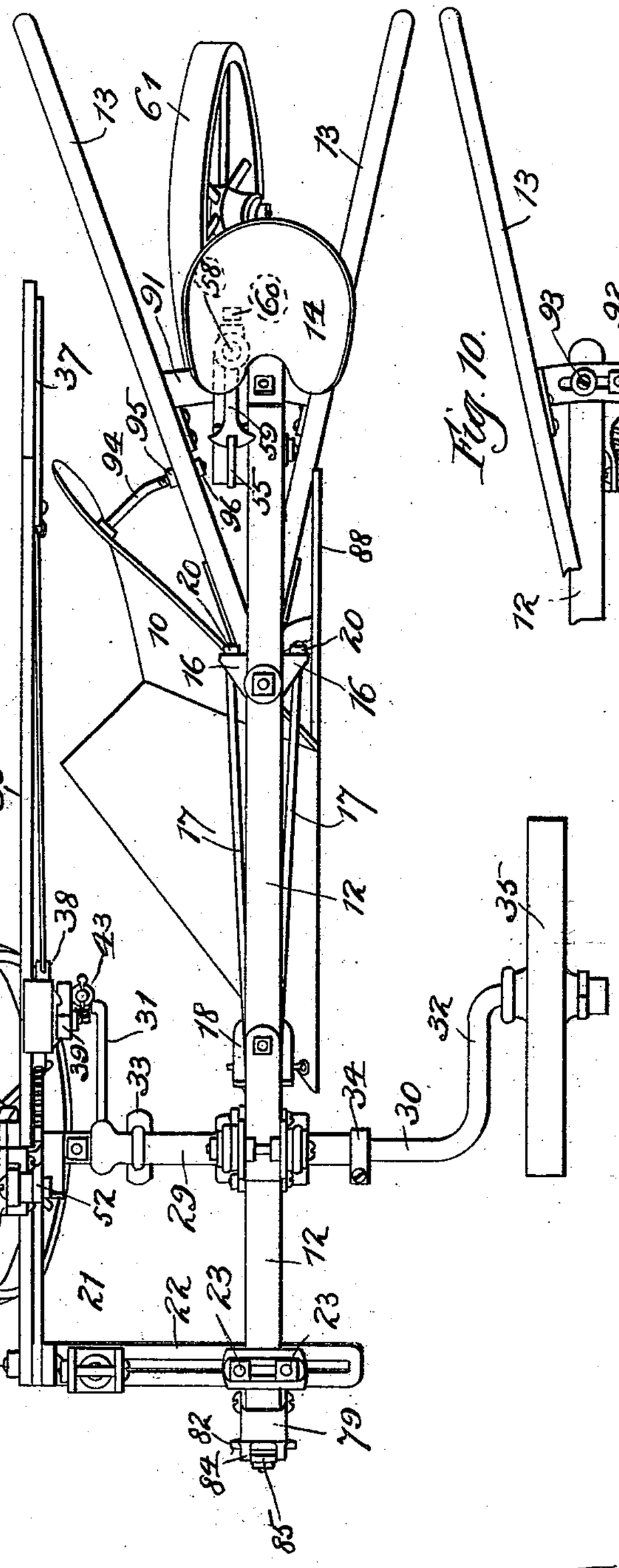
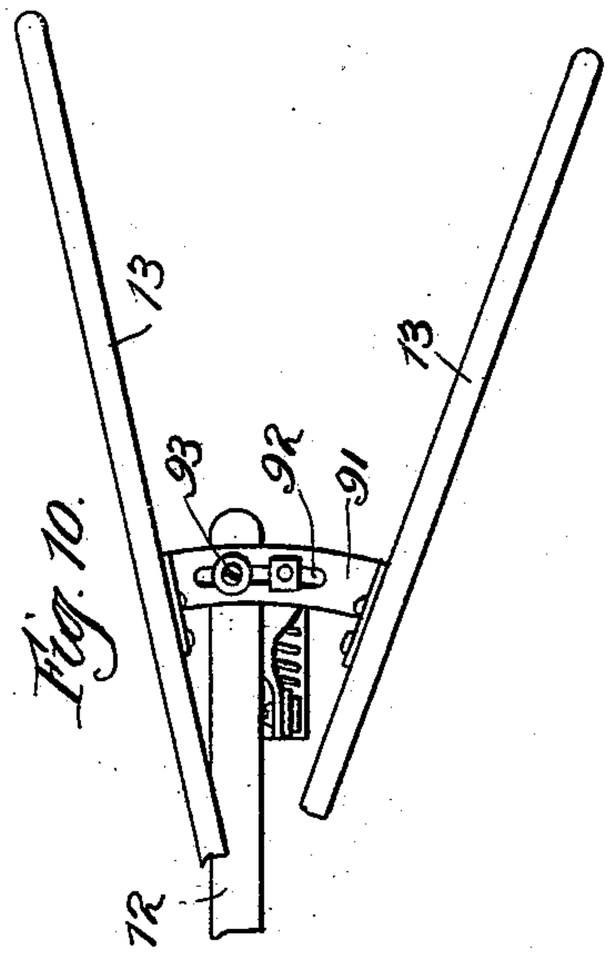


Fig. 10.



Witnesses
Wm. F. Fleming
Julia M. Bristol

Inventor
Hans H. Sater
by Bond Roberts Pickard & Jackson.
Attys.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.)

4 Sheets—Sheet 2.

H. H. SATER.

PLOW.

No. 550,197. Patented Nov. 19, 1895.

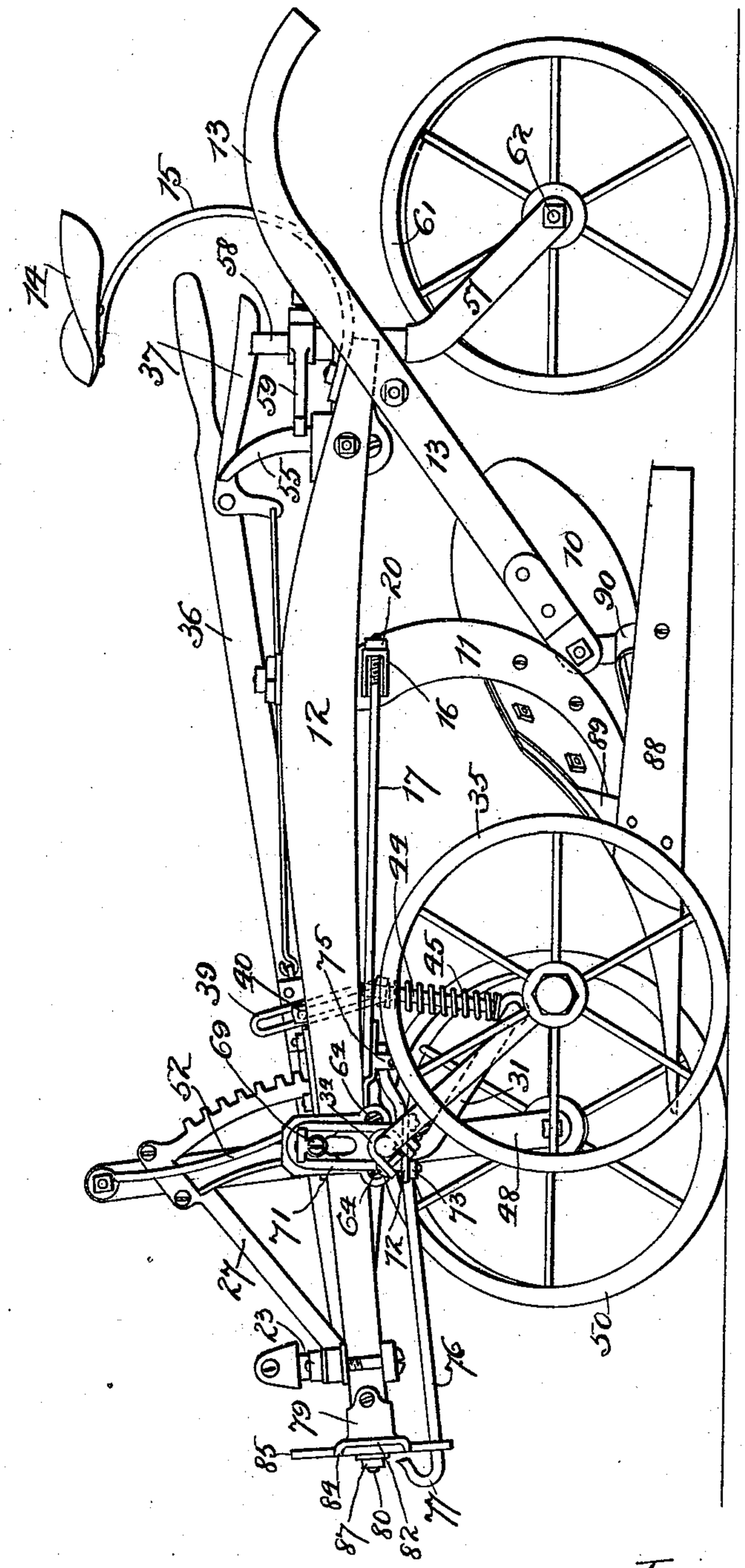


Fig. 2.

Witnesses
Wm. F. Fleming
Julia M. Bristol.

Inventor
Hans H. Sater,
by Bond & Thomas Pickard & Jackson.
Attys

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

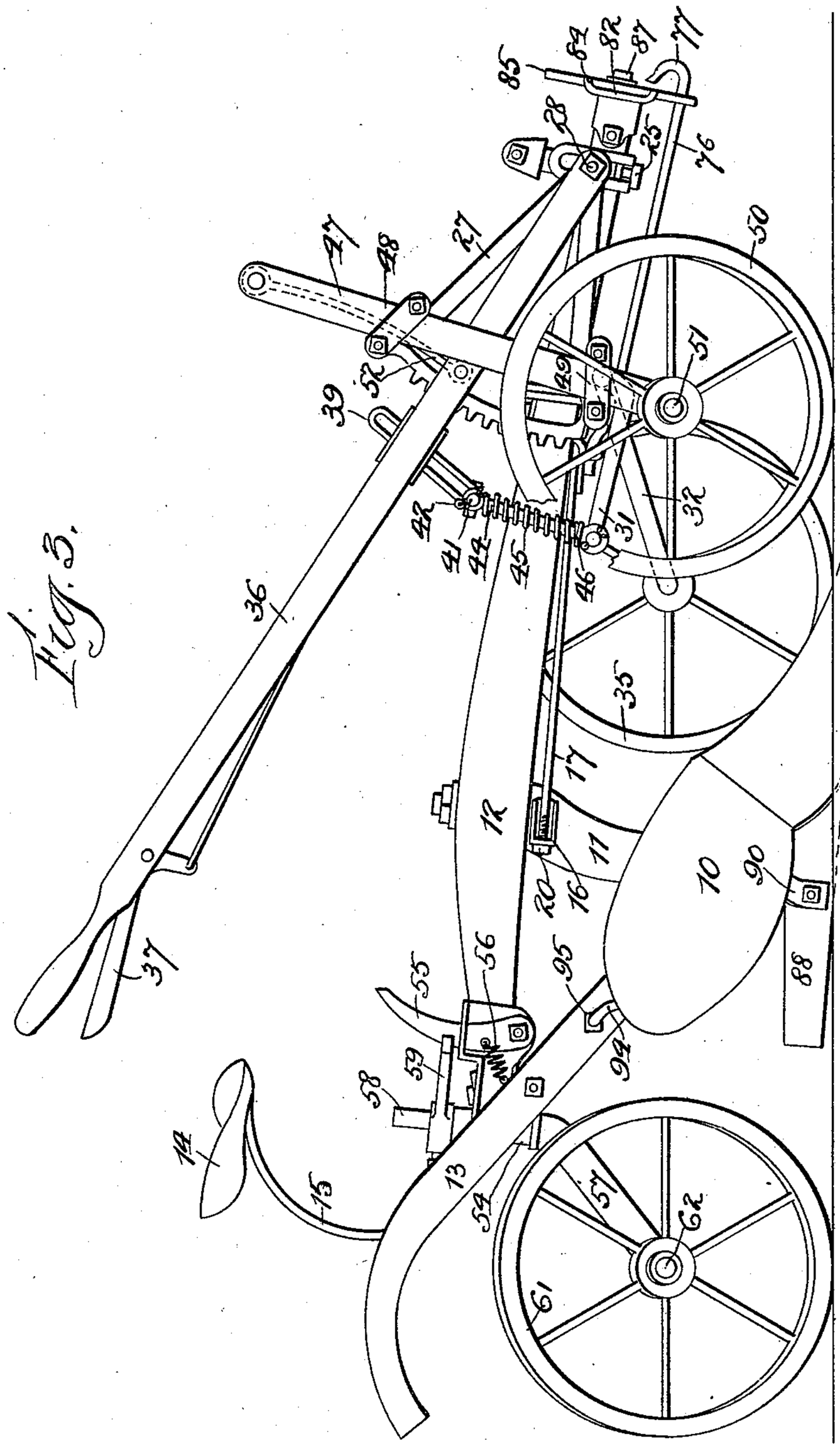
(No Model.) 4 Sheets—Sheet 3.

H. H. SATER.

PLOW.

No. 550,197. Patented Nov. 19, 1895.

Fig. 3.



Witnesses
Wm. F. Fleming
Julia M. Bristol.

By

Inventor
Hans H. Sater
Bond Adams Richards & Jackson.
Attys.

ANDREW B. GRAHAM. PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 4 Sheets—Sheet 4.

H. H. SATER.

PLOW.

No. 550,197. Patented Nov. 19, 1895.

Fig 4

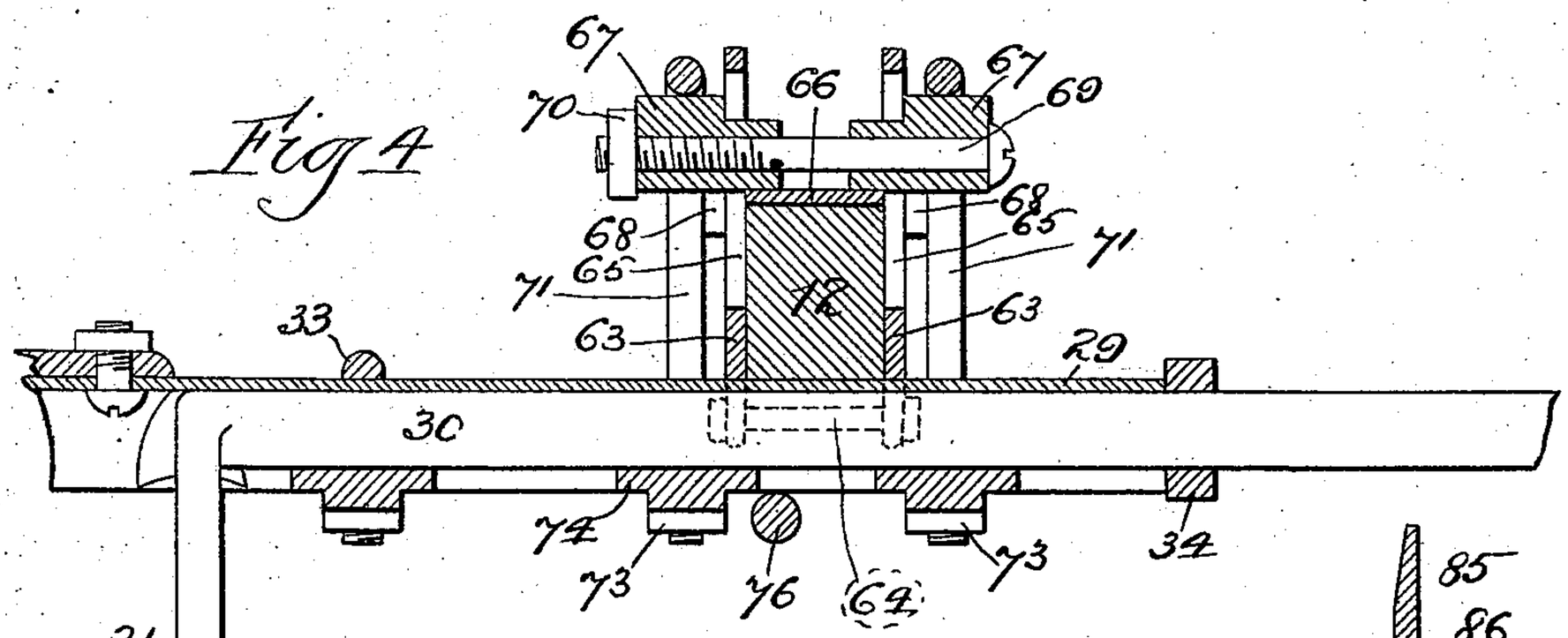


Fig 9

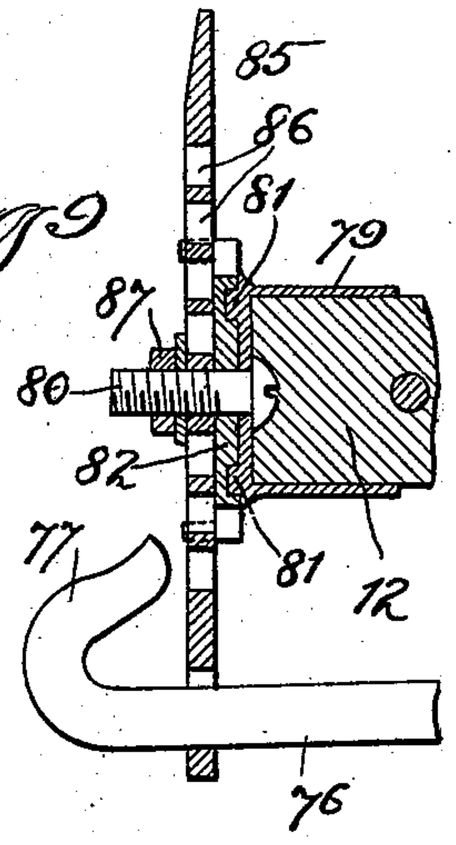


Fig 5

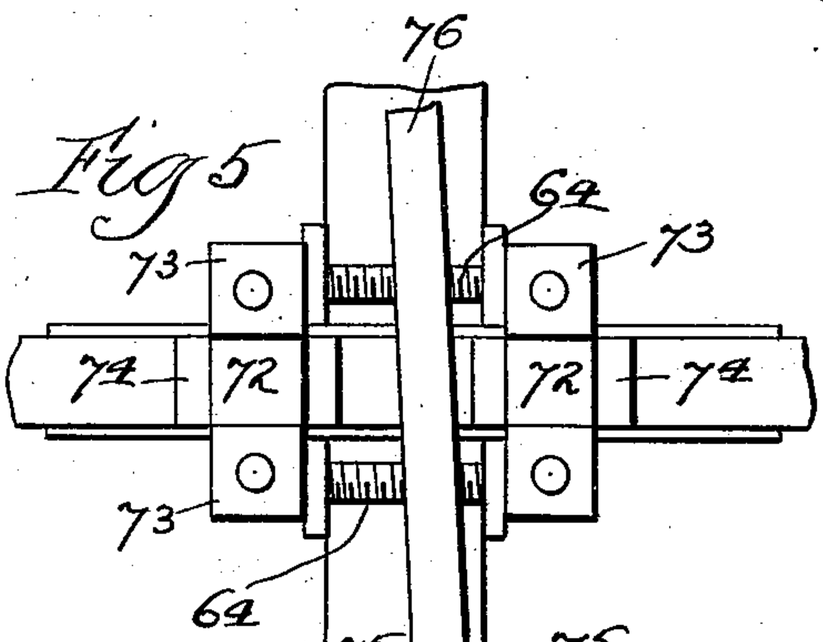


Fig. 7.

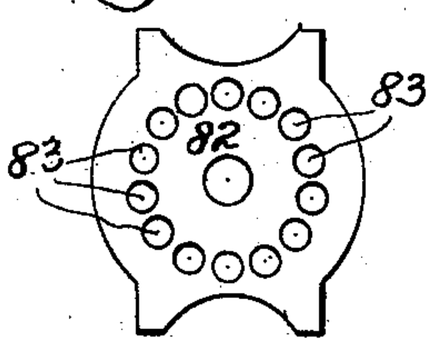


Fig. 8.

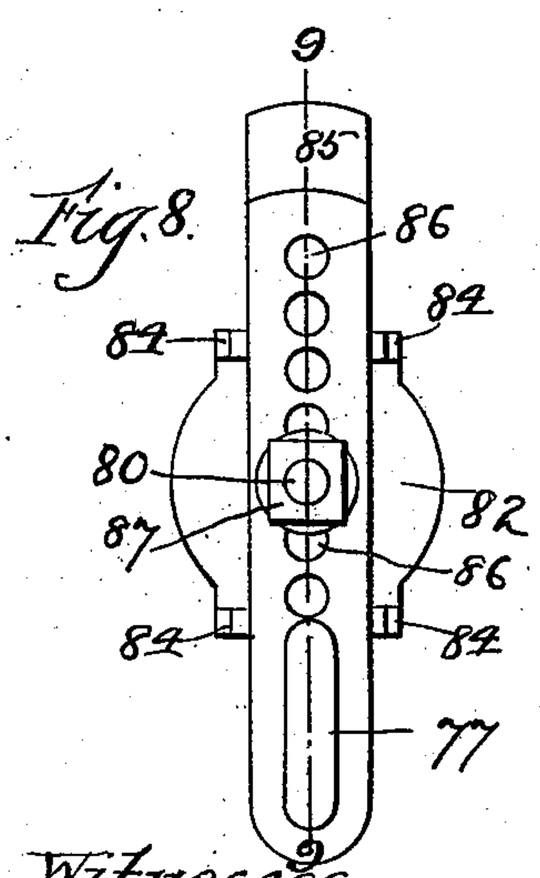
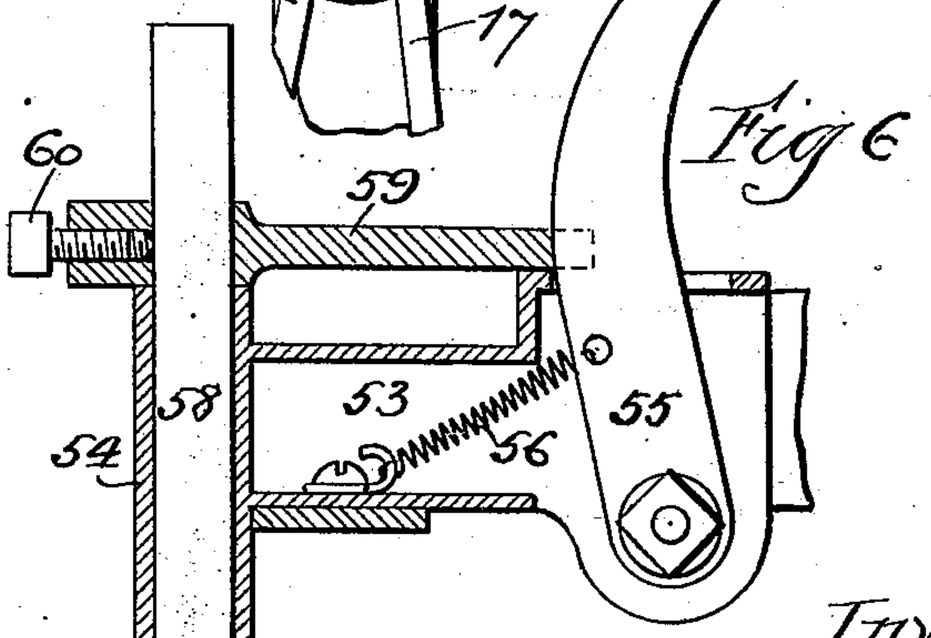


Fig 6



Witnesses
Wm. L. Fleming.
Julia M. Bristol.

Inventor
Hains H. Sater
By Bond, Adams, Pickard & Jackson.
Attys.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

UNITED STATES PATENT OFFICE.

HANS H. SATER, OF MADISON, WISCONSIN.

PLOW.

SPECIFICATION forming part of Letters Patent No. 550,197, dated November 19, 1895.

Application filed February 18, 1895. Serial No. 538,843. (No model.)

To all whom it may concern:

Be it known that I, HANS H. SATER, a citizen of the United States, residing in Madison, Dane county, Wisconsin, have invented certain new and useful Improvements in Plows, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view. Fig. 2 is a side elevation of the landside of the plow. Fig. 3 is a side elevation of the furrow-side of the plow. Fig. 4 is an enlarged detail, being a view of a portion of the crank-axle of the forward frame with its supporting devices partially in vertical cross-section. Fig. 5 is an enlarged detail, being a view from below of the inner end of the hook-rod forming a portion of the clevis, showing its method of attachment to the plow. Fig. 6 is an enlarged detail, being a view, partially in vertical longitudinal section, of the plate secured to the rear of the plow-beam in which the rear wheel is mounted. Fig. 7 is an enlarged detail, being a rear view of the adjusting-plate forming part of the clevis. Fig. 8 is an enlarged detail, being a front view of the adjusting devices of the clevis. Fig. 9 is an enlarged detail, being a vertical longitudinal section through line 9 9 of Fig. 8. Fig. 10 is a detail showing the way in which the handles are secured to the plow-beam.

My invention relates to plows, and one of its objects is to provide a new and improved front frame, which may be secured to any plow in order that the same may be used as a riding-plow, if desired, and may be readily removed therefrom when it is desired to reconvert the plow back to a walking-plow.

It has for a further object to provide a new and improved front frame for a plow, by means of which the depth of the cut of the plow may be regulated and adjusted.

It has for a further object the providing of a new and improved method of mounting the rear wheel upon the plow, so that the same may be readily removable in case it is desired to use the plow as a two-wheeled instead of a three-wheeled plow or as a walking instead of a riding plow.

It has for a further object to provide new and improved mechanism by which the plow is raised from or lowered into the ground.

It has for a further object to provide new and improved mechanism forming the clevis for the plow.

It has for a further object to provide an improved carriage for the front end of the plow, which may be adjusted laterally of the draft.

It has for a further object the providing of improved brace-rods connected to the plow-beam in order to brace the same against side and up-and-down motion and capable of being adjusted to the proper tension.

It has for a further object to provide improved means for securing the handles in place, whereby they may be laterally adjusted.

It has for a further object the providing of a new and improved form of clamp, by means of which the front frame may be clamped upon the plow-beam.

It has for a further object the providing of a new and improved adjustable clevis and draft-rod attachment and also the providing of certain specific improvements in the devices employed.

I accomplish all the objects of my invention as hereinafter specified and as illustrated in the drawings.

That which I regard as new will be set forth in the claims.

In the drawings, 10 indicates the plowshare and moldboard, supported by a standard 11, connected to the plow-beam 12.

13 indicates the handles of the plow.

14 indicates a seat, which is mounted upon a suitable support 15, which is bolted or otherwise removably mounted upon the back end of the plow-beam 12.

16 indicates brackets, which are riveted or otherwise secured to the standard 11 upon each side thereof and project laterally therefrom.

17 indicates a brace-rod, which is bent into a V shape, the front end being secured to the under side of the plow-beam by means of a plate 18, (hereinafter described,) which is secured to the under side of the plow-beam and through which a rivet or bolt 19 passes, thus securing the front end of the brace 17 to the plow-beam. The rear ends of the V-shaped brace 17 are screw-threaded and pass through suitable openings in the brackets 16 and are provided with nuts 20 upon their ends, by

means of which the tension upon the brace 17 may be adjusted.

21 indicates the forward carriage, which is provided at its forward end with a slotted bracket 22. The slotted bracket 22 is secured to the forward end of the plow-beam 12 by means of a clamp 23, which embraces the beam and which may be adjusted in any portion of such slotted bracket, so as to adjust the same laterally to the line of draft of the plow. This clamp may readily be removed when the plow is to be converted from a riding into a walking plow.

27 indicates a segmental rack, which is connected at its forward end to the slotted bracket 22 by means of a bolt 28.

29 indicates a channel-iron, of wrought-iron or any other suitable material, which is riveted, bolted, or otherwise rigidly secured to the inner side of the segmental rack 27. The channel-iron 29 is fitted upon and forms a bearing for a bent axle 30, as best shown in Fig. 4. The bent axle 30 is in the form of a rock-shaft, being provided with two arms 31 32, and is mounted in the channel-iron 29, so as to rock therein, being secured therein by suitable clips 33 34. The clip 33 surrounds the channel-iron, while the clip 34 is secured to the bent axle 30 at the land-end of the channel-iron, so as to prevent the lateral movement of the bent axle 30 therein.

35 indicates a land-wheel, which is mounted upon the arm 32 of the bent axle 30.

36 indicates a lever, which is pivoted at its forward end by means of the bolt 28 to the slotted bracket 22, hereinabove referred to, and is provided with the usual bell-crank lever 37 and spring-actuated dog 38, adapted to engage with the segmental rack 27.

39 indicates a slotted bar, which is adjustably secured to the inner side of the lever 36 by means of a nut and bolt 40. (See Fig. 2.)

41 indicates a pin, which is rotatably mounted in the lower end of the slotted bar 39 and is secured therein by a spring-pin 42. The other end of said pin is provided with a head 43, (see Fig. 1,) which is perforated to receive the upper end of a rod 44. The rod 44 passes at its upper end through the head 43 of the pin 41 and at its lower end is pivoted to the arm 31 of the bent axle 30.

45 indicates a spiral spring, which encircles the rod 44 and bears at its upper end against the under side of the head 43 of the pin 41 and at its lower end against a suitable washer 46 upon the lower end of the rod 44.

As the hand-lever 36 is moved upward or downward the crank-axle 30 is rocked and thereby by means of the arm 32 and the wheel 35 the land-wheel is raised or lowered.

47 indicates an upright, which is slidingly mounted in guides 48 49, which are carried by the segmental rack 27.

50 indicates a furrow-wheel, which is journaled upon a stud-axle, 51 mounted upon the lower end of the upright 47.

52 indicates a pitman, which is pivotally connected at its upper end to the upper end of the upright 47 and at its lower end with the hand-lever 36. It is evident that as the hand-lever 36 is raised or lowered the bar 47 will rise and fall with it, sliding in the guides 48 49 and carrying up or down the furrow-wheel 50.

It will be seen from the above description of the operation that the movement of the lever, rotating the bent axle and thus raising or lowering the land-wheel and at the same time raising or lowering the bar 47 and with it the furrow-wheel, operates to raise or lower the plowshare, the share being raised, when lifted, point first.

The object of the connection between the lever 36 and the arm 31 of the crank-shaft 30, as above described, by means of the slotted bar 39, pin 41, rod 44, and spiral spring 45, is that when the plowshare strikes an obstruction in the ground the connecting parts will yield slightly through the spring 45 and prevent breakage of the parts. The spring 45, of course, will be of sufficient tension to prevent its yielding too readily.

By means of the slotted bar 40 the connection between the hand-lever 36 and the arm 31 may be adjusted in any required position.

53 (see Fig. 6) indicates a casting, which is secured to the rear end of the plow-beam 12 and is provided at its rear end with a sleeve 54.

55 indicates a latch, which is pivotally mounted upon the casting 53. 56 indicates a spiral spring connecting said latch 55 with said casting, its tension being adjusted so as to draw said latch backward.

57 indicates a standard, which is provided at its upper end with a cylindrical pin 58, which may either be formed integral with said standard 57 or in any way secured thereto. The pin 58 is journaled in the sleeve 54.

59 indicates an arm, which is secured to the pin 58 by means of a set-screw 60. The arm 59 is notched in front so as to engage with the latch 55 and is beveled off at each side of said notch, as best shown in Fig. 1, so that when said arm 59 is out of position and is swung into place the beveled sides engaging with the latch 55 will force it back until it comes opposite the notch, when the spring 56 will throw said latch into the notch and thus lock the parts in position.

61 indicates a rear wheel, which is journaled upon a stud-axle 62, mounted upon the lower end of the standard 57. It will be seen that the rear wheel 61 may be readily removed by loosening the set-screw 60, removing the arm 59, and pulling the pin 58 out of the sleeve 54. The front frame is clamped to the plow-beam by means of a clamp, which is best shown in Figs. 4 and 5, Fig. 4 showing the clamp in vertical cross-section and Fig. 5 showing it from below.

63 indicates plates, which are placed upon each side of the plow-beam 12, resting above the channel-iron 29. The plates 63 have their bottoms recessed so that they may rest upon

and embrace the channel-iron 29, projecting below the plow-beam 12 upon each side of said channel-iron, as shown in Fig. 5 and by dotted lines in Fig. 4.

64 indicates bolts, which pass through the plates 63 below the beam 12 upon each side of the channel-iron 29, holding the plates 63 together below said beam. The upper portions of said plates are provided with slots 65, as best shown in Figs. 2 and 4.

66 indicates a plate which rests upon the plow-beam 12 between the plates 63.

67 indicates plugs, the inner ends of which are adapted to pass between the slots 65 of the plates 63, and are provided with a head or shoulder 68 on the outside adapted to bear against the sides of the plates 63 upon each side of the slots 65. The plugs 67 are bored longitudinally in order to permit the passage through them of a bolt 69, which is provided with a nut 70. By means of the plugs 67, bolt 69, and nut 70 the plates 63 are secured together above the plow-beam 12.

71 indicates U-shaped hangers, which are hung upon the plugs 67 and pass below and embrace the channel-iron 29. The hangers 71 are screw-threaded at their lower ends.

72 indicates plates, which extend across the channel-iron 29 from below and are provided with suitable openings through which the lower screw-threaded ends of the hangers 71 pass. They are held in position against the lower side of the trough 29 by bolts 73, which are screwed upon the screw-threaded lower ends of said hangers.

The plates 72 are provided with projections 74, which extend into the lower portion of the channel-iron 29, running longitudinally therewith, and are suitably rounded in their upper surfaces to form a bearing for the crank-axle 30. It will be seen that by the use of this clamp the plow-beam may be readily removed from the front frame when it is desired to do so.

18 represents a plate, which is bolted or in any other appropriate manner secured to the under side of the plow-beam 12, as best shown in Fig. 5.

75 indicates downward-projecting ears, which are preferably formed integral with the plate 18, but which may be secured thereto in any appropriate manner.

76 indicates a draft-rod, the front end of which is provided with a hook 77, and the rear end of which is slotted so as to permit the passage through it of the ears 75 as best shown in Fig. 5. The rear end is held in position by a pin 78, which passes through the ears 75 below the end of the rod 76.

79 indicates a cap, which is bolted or otherwise secured to the forward end of the plow-beam. The front end of the cap is perforated to receive a bolt 80, the head of which is countersunk into the end of the plow-beam, as best shown in Fig. 9. The front surface of the cap 79 is provided with two or more projections 81, adapted to engage with depressions in the adjusting-plate, hereinafter described.

82 indicates an adjusting-plate, which is placed upon the front end of the plow-beam, as best shown in Fig. 9. It is provided with a number of depressions 83 upon its rear surface, as best shown in Fig. 7, which are adapted to engage with the projections 81 upon the cap 79. The front surface of the adjusting-plate 82 is provided with four forwardly-projecting lugs 84, which form a guide within which rests a clevis-plate, hereinafter described.

85 (see Figs. 8 and 9) indicates a clevis-plate, which is adapted to rest loosely between the lugs 84 in front of the adjusting-plate 82, and is provided with a number of openings 86, through which the bolt 80 may pass. The lower end of the clevis-plate 85 is provided with an opening through which the forward end of the rod 76 passes, as best shown in Fig. 9.

The plate 82 being placed against the cap 79 and the clevis-plate 85 upon the adjusting-plate 82 between the lugs 84, the parts are all held in position by a nut 87. It is obvious that by loosening the nut the adjusting-plate may be turned in any required position and thus the clevis-plate 85 fixed at any required angle and held in the desired position, when the nut 87 is screwed home by the engagement of the projection 81 with the depressions 83 in the back of the adjusting-plate 82. It is also evident that the position of the hook 77 upon the draft-rod 76 may be adjusted by raising or lowering the clevis-plate 85, adjusting the same by means of the several holes 86 in the plate 85. The rear end of the rod 76 may be adjusted as desired by removing the pin 78 and placing it upon one or the other of the downward-projecting ears 75, when the pin 78 is again placed in position, securing the rear end of the draft-rod 76 in the desired place.

In describing the casting 53 and plate 18 I have spoken of them as applied to a wooden plow-beam, in which case they would have to be formed of a suitable metal and secured upon said beam. It is obvious, however, that instead of a wooden plow-beam a beam of iron or steel may be used, in which case either of such parts may be made integral with said beam. In case the beam is made of steel or iron the cap 79 may be dispensed with and the projections 81 be formed integral with the front end of the beam, the bolt 80 being fixed in the front end of the beam in any appropriate manner.

88 indicates the landside of the plow, the forward end of which is curved, as shown in Fig. 2, the rear portion of the share being correspondingly curved, so that the parts will fit smoothly together. The landside 88 is secured to braces 89 90, connected to the mold-board and standard 11, as shown in Fig. 2. The object of this construction is to provide for adjusting the landside to compensate for

the wearing away of the lower edge thereof and thereby cause it to throw the point of the plow downward properly. This adjustment of the landside may be made by removing the screws or bolts which hold it in position, when the landside may be adjusted and secured in its new position.

As shown in Figs. 1 and 10, the handles 13 are connected by a plate 91, which is provided with a slot 92, through which passes a bolt 93, secured to the rear end of the plow-beam. By loosening the bolt 93 the handles may be shifted laterally. The handles 13 are loosely connected at the forward ends to permit of such lateral movement. The handles 13 are braced by means of a brace 94, one end of which is secured to the moldboard 10, the other end being adjustably secured to one of the handles by means of nuts 95 96, as shown in Fig. 1. When the handles are to be adjusted laterally, it is necessary to loosen the nuts 95 96.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of laterally projecting brackets connected with said standard, and braces connected to said brackets and to said beam for bracing said standard, substantially as described.

2. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of brackets 16 projecting at opposite sides of said standard, and braces 17 connected to said brackets and to the plow beam, substantially as and for the purpose specified.

3. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of laterally projecting brackets connected with said standard, braces connected to said brackets and to said beam for bracing said standard, and means for adjusting the tension of said braces, substantially as described.

4. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of brackets 16 projecting at opposite sides of said standard, a plate 18, braces 17 connected to said brackets and to the plow beam, said braces being connected to said plate, and a draft rod also connected at its rear end to said plate, substantially as described.

5. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of brackets 16 projecting at opposite sides of said standard, a plate 18, braces 17 connected to said brackets and to the plow beam, said braces being connected to said plate, a draft rod also connected at its rear end to said plate, and means for adjusting the forward end of said draft rod, substantially as described.

6. In a plow, the combination with a beam, a standard, and a furrow opener carried by said standard, of brackets 16 projecting at opposite sides of said standard, a plate 18, braces 17 connected to said brackets and to the plow beam, said braces being connected to said plate, a draft rod also connected at its rear end to said plate, and means for laterally adjusting the rear end of said draft rod, substantially as described.

7. In a plow, the combination with the beam, and furrow opening devices, of a plate 18, a series of lugs 75 arranged transversely thereof, and a draft rod 76 adapted to be connected to said lugs, substantially as described.

8. In a plow, the combination with the beam, and furrow opening devices, of a draft rod 76 secured at its rear end to said beam, and means for adjusting the rear end of said draft rod laterally, substantially as described.

9. In a plow, the combination with a cap or plate 79 having projections upon its face, of a plate 82 adapted to fit against said cap and to receive said projections, and a clevis plate secured to said plate 82, substantially as described.

10. The combination with a cap or plate 79 having projections upon its face, of a plate 82 adapted to fit against said cap and to receive said projections, and a clevis plate secured to said plate 82 and vertically adjustable thereupon, substantially as described.

11. The combination with a cap 79, a plate 82 pivotally connected to said cap, and means for locking said plate and cap in different adjustments, of a vertically adjustable clevis plate secured to said plate 82, substantially as described.

12. The combination with a beam, an arched front frame, and wheels connected thereto, of a lever for rocking said frame and for simultaneously moving it vertically, substantially as described.

13. The combination with a beam, and a front frame connected to said beam and having two arms, of a wheel mounted on one of said arms, a support for the opposite side of said frame, a lever for vertically moving said frame, and a device connecting said lever to one of the arms of said frame so that when the lever is operated said frame will be rocked, substantially as described.

14. The combination with a beam, and a front frame connected to said beam and having two arms, of a wheel mounted on one of said arms, a support for the opposite side of said frame, a lever for vertically moving said frame, and a device adjustably connecting said lever with one of the arms of said frame, substantially as described.

15. The combination with a beam, and a front frame connected to said beam and having two arms, of a wheel mounted on one of said arms, a support for the opposite side of said frame, a lever for vertically moving said frame, and devices yieldingly connecting said lever to one of the arms of said frame, substantially as and for the purpose specified.

16. The combination with a beam, and a

vertically arranged bar at one side of said beam and connected thereto, of a lever fulcrumed upon said bar, the forward end of said lever being connected to the forward end of the beam, and means whereby said lever may be locked at different positions, substantially as described.

17. The combination with a beam, and a transverse bar at the forward end thereof and connected thereto, of a lever connected to said transverse bar, a vertically arranged bar, a link connecting said lever to said bar and acting as a fulcrum for said lever, and a wheeled frame for supporting the forward portion of the beam, substantially as described.

18. In a plow, the combination with a beam, of a channel iron, an arched frame fitted in said channel iron and rotatable therein, a wheel mounted upon said frame, devices for supporting the opposite end of said frame, and a clamp for clamping said channel iron to said plow beam, substantially as described.

19. The combination with a front frame, and a plow beam, of slotted plates 63, a transverse bolt 69, plugs 67, and hangers 71, substantially as described.

20. In a plow, the combination with a beam, and a furrow opener, of a removable front frame carrying the front wheels, and a removable rear wheel, substantially as described.

HANS H. SATER.

Witnesses:
M. C. CLARKE,
H. C. GEIGER.