

No. 720,118.

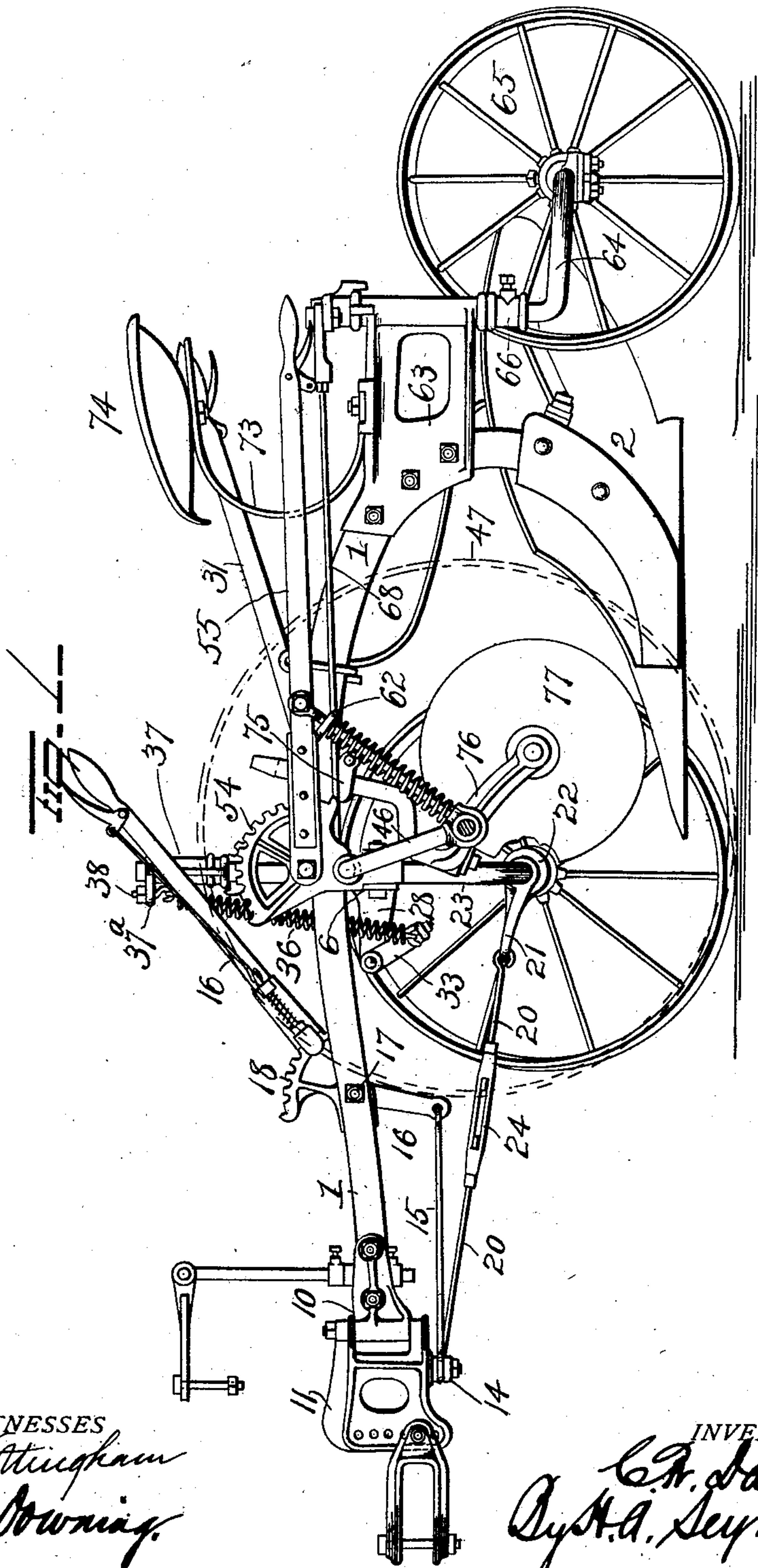
PATENTED FEB. 10, 1903.

C. R. DAVIS.  
PLOW.

APPLICATION FILED JAN. 13, 1902.

NO MODEL.

6 SHEETS—SHEET 1.



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6 SHEETS—SHEET 2.

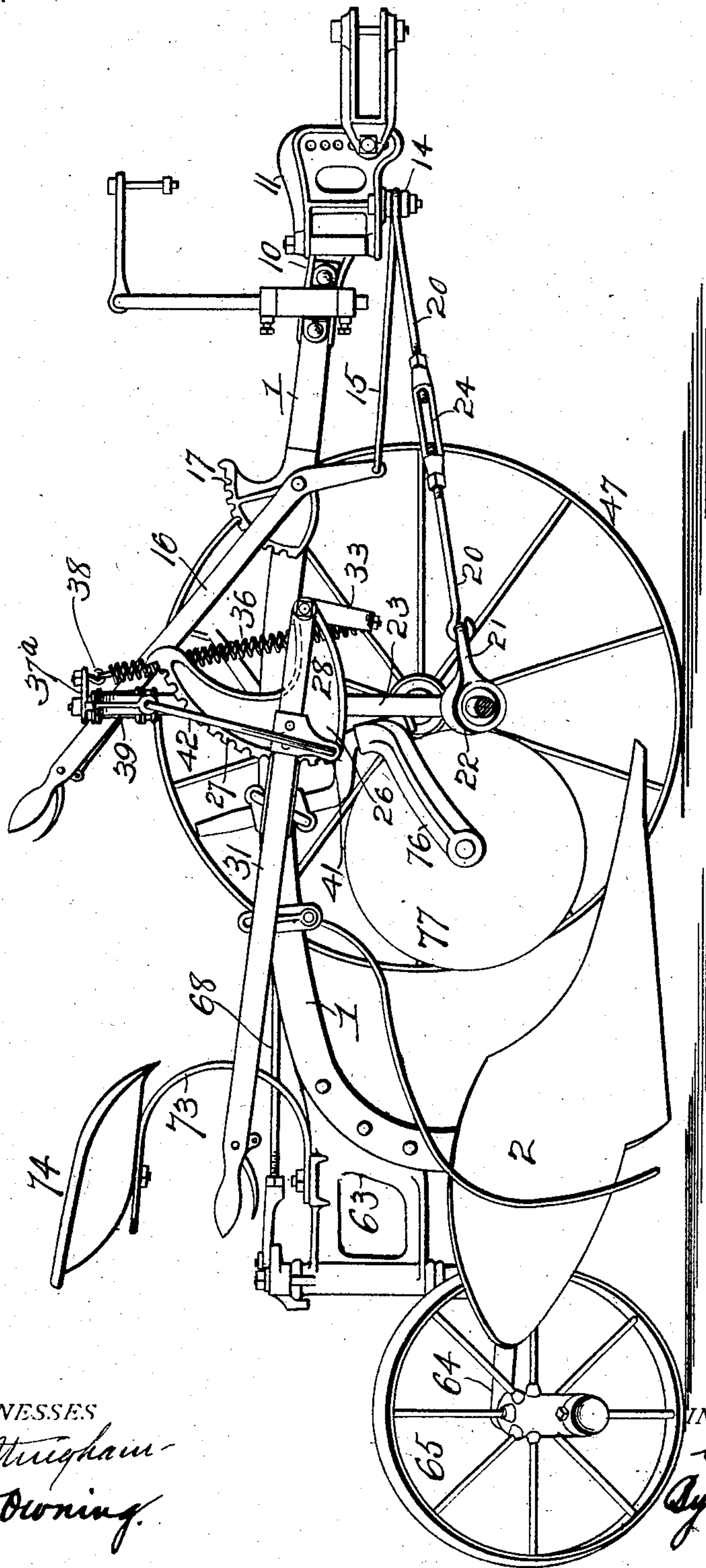


Fig. 2 -

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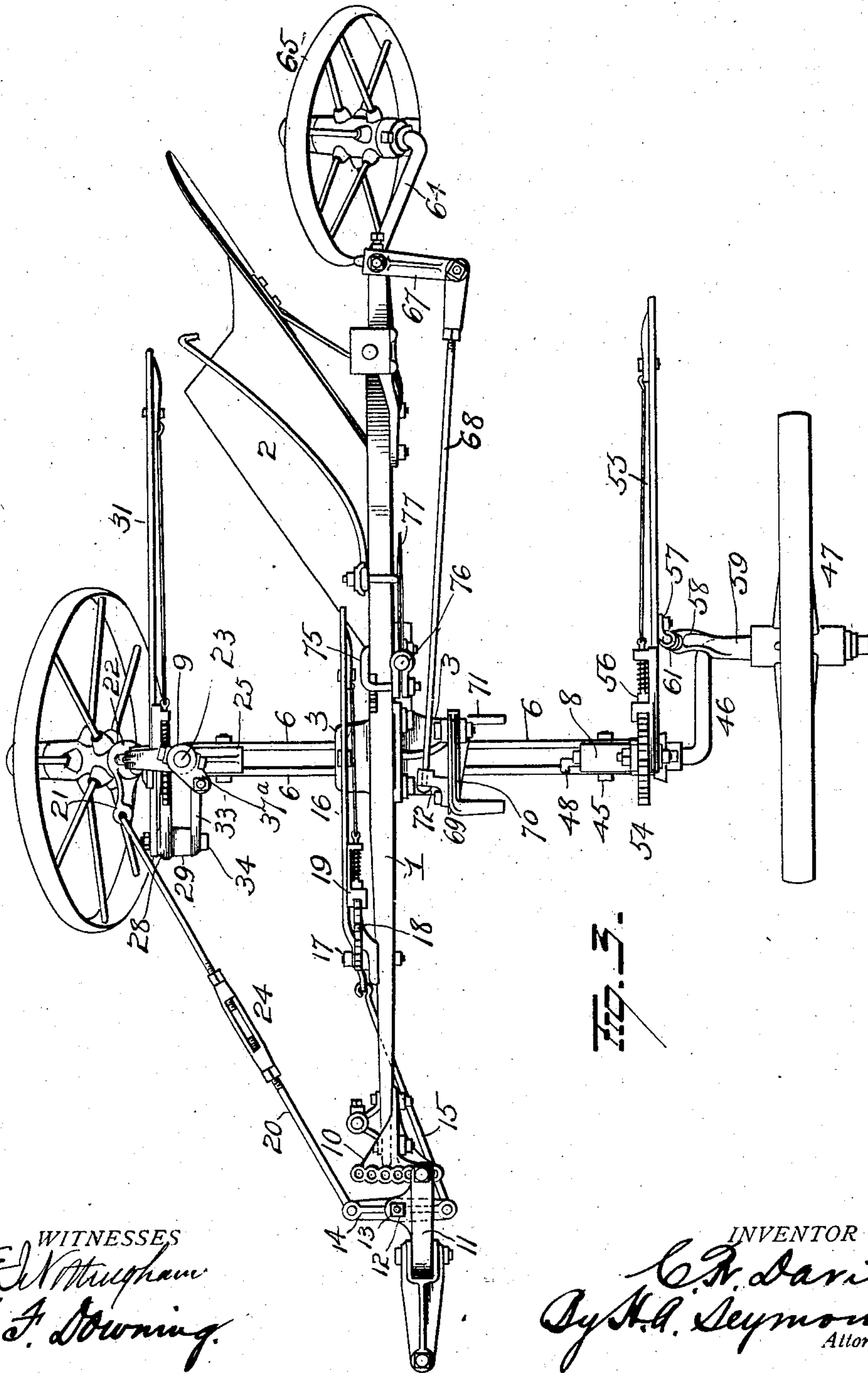
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6 SHEETS—SHEET 3.



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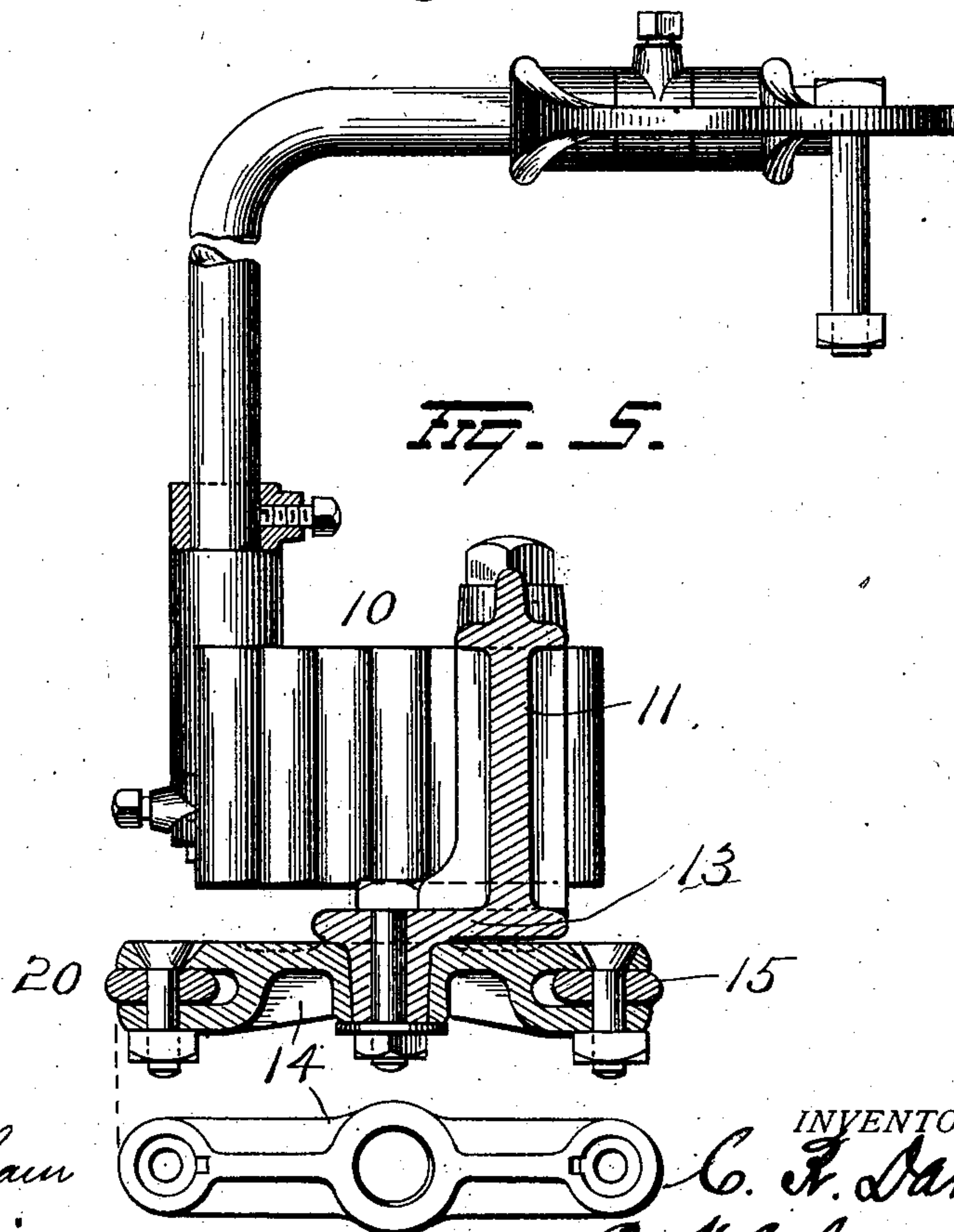
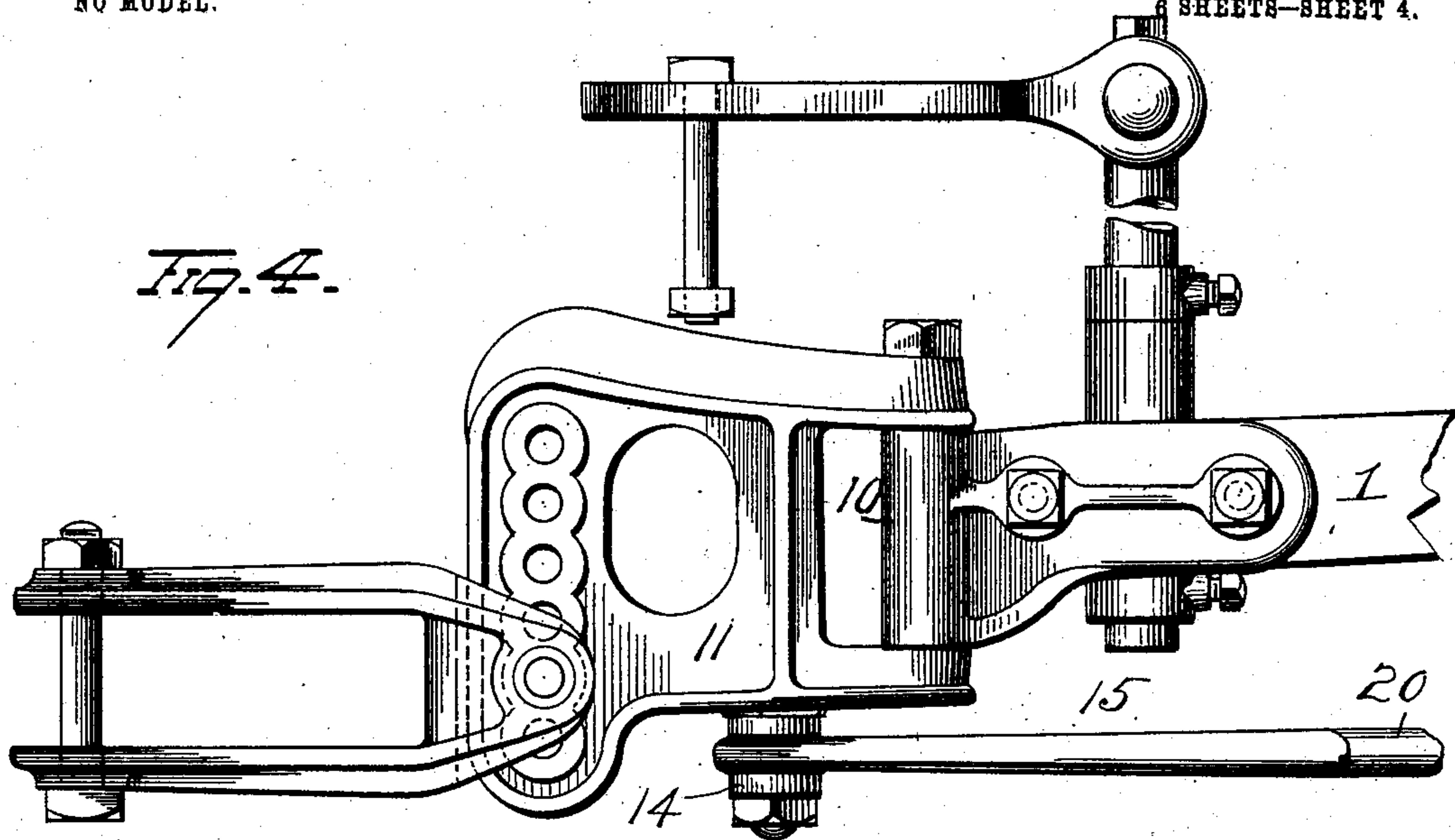
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NO MODEL.

8 SHEETS—SHEET 4.



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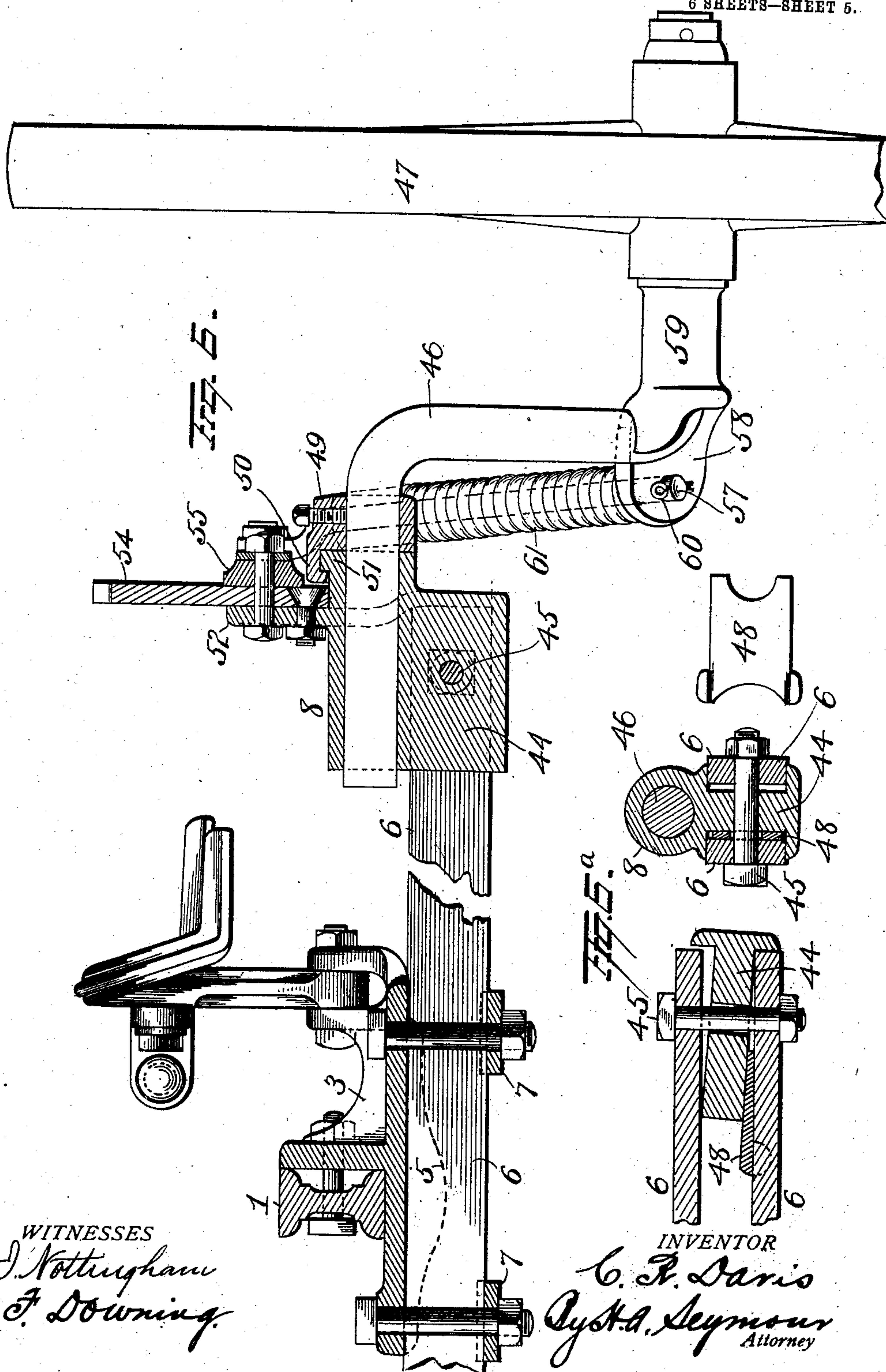
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NO MODEL.

6 SHEETS—SHEET 5.



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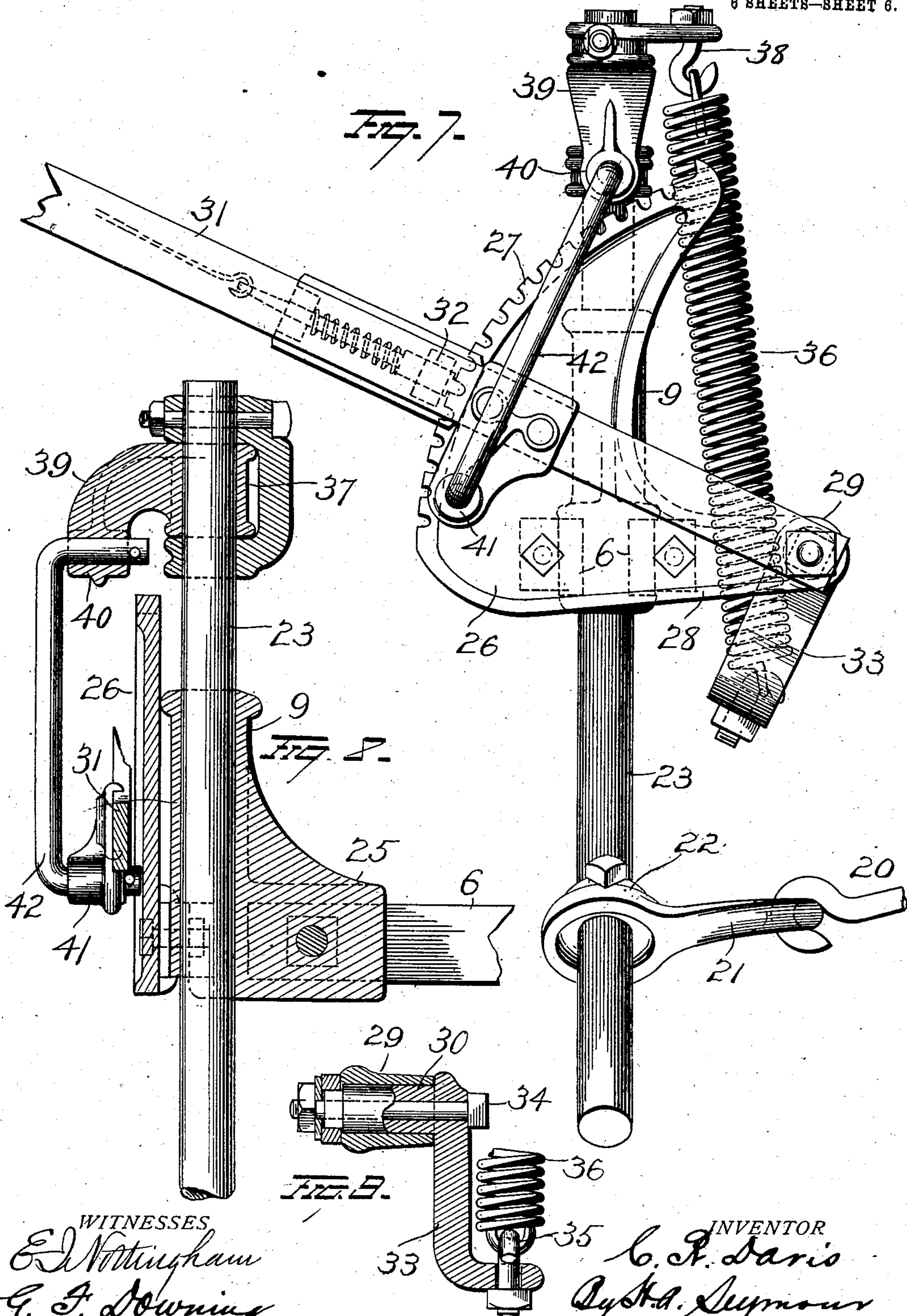
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PLOW.

APPLICATION FILED JAN. 13, 1902.

NO MODEL.

6 SHEETS—SHEET 6.





# UNITED STATES PATENT OFFICE.

CALVIN R. DAVIS, OF SOUTH BEND, INDIANA, ASSIGNOR TO OLIVER  
CHILLED PLOW WORKS, OF SOUTH BEND, INDIANA.

## PLOW.

SPECIFICATION forming part of Letters Patent No. 720,118, dated February 10, 1903.

Application filed January 13, 1902. Serial No. 89,561. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN R. DAVIS, a resident of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Plows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in plows, and more particularly to sulky-plows, an object of the invention being to provide improved means for permitting the movement of the draft-animals in turning, to swing the furrow-wheel and maintain the same in its proper position when plowing, and also provide other means for changing the angle of the furrow-wheel at the will of the operator. A further object is to provide an improved adjustable connection of the land and furrow wheels with the plow-beam.

A further object is to provide improved means for changing the position of the land-wheel.

A further object is to provide improved mounting for the lifting-spring of the plow.

A further object is to provide an improved plow of the character described which will relieve the driver of a great deal of hard labor heretofore required, but at the same time permit him to change the positions of the wheels and the furrow-opening mechanism without leaving his seat when such change is desired on account of the varying condition of the soil and the level of the ground.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of one side of the plow. Fig. 2 is a view of the opposite side. Fig. 3 is a plan view. Figs. 4 and 5 are enlarged detail views of the clevis connection. Figs. 6 and 6<sup>a</sup> are views in section, illustrating the land-wheel-axle support. Figs. 7, 8, and 9 are detail views illustrating the furrow-wheel-axle connection.

1 represents the beam of the plow, which

curves downward at its rear end to form the plow-standard, to which is secured the mold-board 2, as shown. Near the center of the beam, on opposite sides thereof, castings 3 are secured by bolts passing through the castings and beam and secured in place by nuts, and the lower face of these castings are made with a central web 5, on opposite sides of which cross-bars 6 are secured by means of clamps or plates 7, flanged at each end to engage the outer lower edges of the cross-bars and are secured to the castings 3 by means of bolts passed through the plates and up through the castings 3 and secured in position by nuts. The cross-bars 6 are disposed parallel and extend at right angles to the beam and have secured to their ends the land and furrow wheel axle boxes 8 and 9, respectively, as will be more fully hereinafter described.

At the forward end of beam 1 a casting 10 is secured and is provided with a series of vertical bearings, in any one of which a clevis 11 is mounted to swing by means of a bolt and nut, as clearly shown. The clevis 11 is provided at its lower edge with a lug or projection 12, located at an angle thereto and having a tubular boss on its outer end, on which a bar 14 is pivoted between its ends and secured by bolt 13 and is bifurcated at its respective ends. One bifurcated end of the bar 14 is pivotally connected to a rod 15, and the other end of said rod is made in the form of a hook to connect the rod to the lower end of a lever 16, pivotally secured to the beam 1 by bolt 17. This bolt 17 also serves to secure a segment 18 to the beam, and the lever 16 is provided with a spring-pressed detent 19, operated by a hand-lever at the free end of the lever 16 to release the detent from or permit its locking between any of the teeth of the segment to secure the lever at any angle desired for a purpose which will hereinafter appear. The opposite bifurcated end of bar 14 is connected to in end of a rod 20, the other end of which latter is bent forming a hook to project into an opening in the free end of an arm 21, integral with a sand-band 22, secured on the furrow-wheel axle 23 and covering the end of the furrow-wheel hub to protect the bearing



from dirt, which would otherwise enter between the hub and axle. The rod 20 is composed of two sections, connected by a turn-buckle 24 to adjust the rod lengthwise to vary the position of the furrow-wheel.

The furrow-wheel-axle bearing 9, above referred to, is made integral with a casting 25, secured between the cross-bars 6 by a bolt and nut and flanged at its upper and lower edges to overlap the bars and prevent possibility of pivotal movement, and thus always maintain the bearing 9 in an approximately vertical position and at right angles to the parallel bars.

The casting 25 is made at its outer end with diverging lugs, to which a plate 26 is secured by bolts, as shown, one end of said plate made in the form of a segment 27 and the other end comprising a forwardly-extending arm 28, having a sleeve or bearing 29 at its free end. In the bearing 29 a journal 30 is mounted to revolve and made angular at one end where it projects beyond the bearing. On one end of this journal 30 a lever 31 is secured and provided with a spring-pressed detent 32 to lock the lever to the segment 27 at any angle the lever may be disposed. On the opposite or inner end of the journal 30 an arm 33 is secured or made integral, a bolt 34 being provided and projecting through arm 33, journal 30, and lever 31 and secured by a nut to clamp all of said parts together. The free end of arm 33 is made with a curved lug or hook 35 to receive the lower end of a coiled counterbalance-spring 36, the upper end of said spring adjustably connected to a casting or bracket 37<sup>a</sup>, securing a tubular casting 37 on the upper end of the furrow-wheel axle by an eyebolt 38 to permit the ready adjustment of the tension of said spring. This casting 37 is also provided on one side with a curved arm 39, having a bearing 40 at its free end. The lever 31 is also provided on one side with an arm having a bearing 41 therein, and a rod 42 is bent at each end, forming journals secured in the respective bearings 40 and 41 to pivotally connect the parts and compel the lowering or lifting of the bearing 9 (and hence this side of the plow) when the lever is moved, as it will be seen that lever 31 will fulcrum on rod 42 and its short end will lift or lower the plate 26 and bearing 9, secured thereto. The lifting operation is assisted by spring 36, and the weight in lowering is relieved by said spring to relieve the operator, and when the plow is in the correct position the lever is locked to the segment 27 by the detent 32.

The land-wheel-axle bearing 8 forms an integral part of a casting 44, flanged at its upper and lower edges and outer end to receive the parallel bars 6, and a bolt 45 is passed through said bars and casting 44 and secured by a nut to effectually secure the casting in position between the bars. The bearing 8 is located on top of casting 44 and disposed approximately parallel with the bars, or, in

other words, is in an approximately horizontal position to receive the horizontal portion of the land-wheel crank-axle 46, which latter is bent at two points at right angles and has the land-wheel 47 mounted thereon. The bolt-hole in casting 44 is made sufficiently large to permit of slight pivotal movement of the casting on the bolt, and a metal wedge 48 is forced between one or the other side of said casting and the bar 6 to firmly hold the casting at the proper angle. This is found desirable for the following reason: In all ordinary plowing it is advisable to secure the land-wheel to run exactly parallel with the furrow; but in working four draft-animals or in hillside-work there is more or less side draft, and by providing this wedge 48 the land-wheel can be set to lead to or from the furrow, according to the distance the wedge is driven in between the bar 6 and one or the other side of the casting 44, and thereby compensate for or, in other words, relieve the side draft.

The land-wheel axle 46 is secured against longitudinal movement in bearing 8 by means of a collar 49, secured on the axle by set-screw and made with an overlapping tongue 50 to normally rest behind a flange 51 on the bearing; but said flange is cut away or notched at one point to permit the removal of the tongue when it is desired to remove the axle.

An upwardly-projecting standard 52 is located on bearing 8 and has secured thereto by bolts a segment 54, one of said bolts (the upper one) serving as a fulcrum on which a lever 55 is pivoted. This lever carries a spring-pressed detent 56 to lock the lever at any angle to the segment and has pivotally secured thereto one end of a rod 57, bent into a compound curve near its connection to lever 55, and having its lower end projecting through a hole in an arm 58 on a sleeve 59, locked to the journal portion of axle 46, and said rod is prevented from escapement from the arm by a pin 60, extending at right angles through the rod below the arm. A coiled spring 61 is located on rod 57 and bears at its respective ends against said arm 58 and a collar 62, held against the curved portion of the rod. This spring serves to elastically support this side of the plow and cushion the same against shocks to the land-wheel, as it will be seen that should the land-wheel meet an obstruction or drop into a hole the spring 61 will compensate for the changed position and relieve the plow of the excessive jars to which it would otherwise be subjected. When lever 55 is moved, it will fulcrum on the end of rod 57 and lift or lower the segment 54, bearing 8, and this end of the bars 6, the coiled spring 61 maintaining its tension in any position to which the plow may be moved, and thereby always cushion the plow.

To the standard of the plow a rearwardly-projecting caster-wheel bracket 63 is secured and is made with a vertical bearing at its rear end for the caster-wheel crank-axle 64, on



which the caster-wheel or follower-wheel 65 is mounted, and said axle has a collar 66 secured thereon by a set-screw to support the weight of the rear end of the plow. The upper end of said axle projects above the bearing and is made angular to fit within an angular opening in an arm 67, and the extreme upper end of the axle is screw-threaded for the reception of a nut to secure the arm in place.

To the outer end of arm 67 a rod 68 is pivotally connected, and the forward end of said rod is located in bracket 69, pivotally secured to one member of a bell-crank foot-lever 70, supported between parallel lugs on one casting 3 and pivoted on a bolt passing through said lugs and the foot-lever, and the other member of the lever is made with an outwardly-projecting foot-rest to receive the driver's foot when desired to operate said lever. The first-mentioned member of said lever is provided with a downwardly and rearwardly projecting arm or elbow 71, having its free end located below the bars 6 and provided with a foot-rest, and the end of rod 68 is made with a head or enlargement 72 to prevent its pulling out of the bracket. With this foot-lever mechanism when the driver forces the foot-lever forward the rod 68 and arm 67 will be pulled forward to move the caster-wheel to its working position and the forward end of rod 68 will be carried down below the pivotal point of the foot-lever 70 to lock the rod against rearward movement and securing the caster-wheel against being swung to the right. When, however, the plow is turning to the left, the wheel is free to caster as the rod slides forward in the bracket 69, and after the plow has completed its turn the caster-wheel finds its original position and is made secure in such position by the foot-lever. When the plow is to turn to the right, the driver releases the foot-lever by pressing forward on arm or elbow 71 to unlock the lever 70 and permit the free swinging of the caster in either direction.

The caster-wheel bracket 63 is made with a flat support, to which the seat-supporting spring 73 is secured, and carries a seat 74 of any desired construction.

A bracket 75 is secured to the beam 1, preferably behind the castings 3, to support a forked rod 76, in which the ordinary disk colter 77 is mounted to revolve.

The operation of my improvements is as follows: The draft of the animals on the clevis 11 holds the bar 14, and the latter through the medium of rod 20 maintains the furrow-wheel in proper position for plowing; but when the plow turns the bar 14 will throw the furrow-wheel at an angle to permit the easy turning of the plow and will compel the furrow-wheel to resume its former position when the plow again moves forward. Lever 16 can be moved by the driver to change the angle of the furrow-wheel according to the slope of the ground and condition of the soil, and, as

above explained, the angle of the land-wheel can be varied by the wedge 48 to relieve side draft. The plow may be turned in either direction at end of a furrow without the use of a plow-pole, as the draft of the team on the swinging clevis (in connection with the rods) controls the furrow-wheel perfectly in turning corners as well as when plowing a furrow. The normal line of travel of the furrow-wheel is parallel with the furrow, but may be varied by adjusting the turnbuckle 24 on the connecting-rod 20, if required, to cut an even ridge of furrow. The line of travel of the furrow-wheel may be changed in either direction, as the case may be, by raising and lowering lever 16 in connection with rods 15 and 20 and swinging bar 14, and this movement of the furrow-wheel by the lever 16 is very necessary, especially in plowing on a hillside, as a plow always has a tendency to slide down hill when wheels are set to travel parallel with the furrow, consequently causing the plow to cut too wide or too narrow a furrow, according to the direction in which the plow is running. Now by manipulating lever 16 said furrow-wheel may be made to travel in a line out of the normal sufficiently to counteract the lateral sliding tendency and cause the same to cut an even width of furrow. It frequently happens that a field is composed of both level and hill land. Now in plowing across a side hill the operator may manipulate the lever 16 to cause the furrow-wheel to travel out of the normal, as stated above, and when the level land is reached he may again move lever 16 to cause the furrow-wheel to travel in its normal line without stopping the team or leaving the seat. The land-wheel travels normally in a line parallel with the furrow, but may be set to lead to or from the furrow by inserting the wedge 48 more or less between the bar 6 and casting 44, carrying the land-wheel-axle bearing 8. By this arrangement the wheel may be set in a line of travel to counteract side draft in working four horses abreast as well as in hillside-work. The plow may be adjusted to different widths of cut by loosening the bolts and clamps or plates 7, which hold the parallel bars 6 to the casting 3, and sliding the bars in or out, which brings the furrow-wheel to or from the land. The foot trip-lever 70 is in easy range of the seat, and said lever, as above explained, is used for the purpose of locking the follower-wheel 65 in its position for following in the furrow. This lever can be locked and released when desired to turn to the right. The spring 36 is so mounted as to exert a lifting strain on the furrow-wheel to assist the lever in lifting the same or the plow, as the case may be, and taking the greatest weight from off the lever in either raising or lowering. The spring 61 at the opposite side of the plow elastically supports the weight of this side of the plow and relieves the same from sudden shocks and jars received by the land-wheel.



Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a plow, the combination with means for cutting a furrow, of a furrow-wheel mounted to travel in a furrow and adapted to be moved to change its angle relative to the furrow, a pivoted or swinging clevis on the plow adapted to move the furrow-wheel to change its angle when the clevis is swung to either side and a lever adapted to change the angle of operation of the furrow-wheel.

2. In a plow, the combination with a beam, means carried by the beam for cutting a furrow and a clevis mounted to swing at the forward end of said beam, of a furrow-wheel supported to travel in a furrow and adapted to be moved to change its angle relative to the furrow, an arm on the furrow-wheel axle, a bar pivoted between its ends on the clevis, a rod connecting one end of said bar and the arm, a lever, and a rod connecting said lever with the other end of said bar.

3. In a plow, the combination with a beam, a land and furrow wheel supporting the beam, and means connected with the beam and adapted to cut a furrow, of a clevis pivoted at the forward end of the beam, a bar pivoted between its ends to the clevis, an adjustable rod connecting one end of said bar with the furrow-wheel axle, a lever pivoted between its ends, a segment on the beam, a detent on the lever to lock with the segment, and a rod connecting the other end of said bar with one end of said lever.

4. In a plow, the combination with a beam, a revoluble furrow-wheel support, and a furrow-wheel, of a clevis pivotally connected to the beam, a bar pivoted to said clevis, and a rod connecting the pivoted bar with the revoluble furrow-wheel support.

5. In a plow, the combination with a beam, a revoluble furrow-wheel support and a furrow-wheel, of a clevis pivotally attached to the beam, an arm on the furrow-wheel support, a bar pivoted to the clevis and an adjustable rod connecting the pivoted bar with the arm on the furrow-wheel support.

6. In a sulky-plow, the combination with a beam and means thereon for cutting a furrow, of axles carrying wheels, an approximately vertical bearing for one of said axles having a rigid connection with the beam and means for raising and lowering said bearing to raise and lower the beam and parts attached thereto.

7. In a sulky-plow, the combination with a

beam and means thereon for cutting a furrow, of axles connected with said beam and carrying wheels, an approximately vertical bearing for one of said axles connected with the beam and a lever for raising or lowering said bearing on the axle, and a counterbalancing-spring connected at its respective ends with said lever and the axle in the vertical bearing.

8. In a sulky-plow, the combination with a beam, means thereon for cutting a furrow, a cross-bar secured to said beam, and a land-wheel axle connected to one end of said cross-bar and carrying a land-wheel, of an approximately vertical bearing secured to the other end of said bar, a furrow-wheel axle having a vertical part extending through said bearing and having a furrow-wheel thereon, a lever for raising and lowering said bearing on the axle and a counterbalancing-spring connected respectively with the lever and the part of the axle extending through the vertical bearing.

9. In a sulky-plow, the combination with a beam, and means carried thereby for cutting a furrow, of a cross-bar secured to the beam and carrying at one end a land-wheel, an approximately vertical bearing secured to the other end of said cross-bar, a furrow-wheel axle having an upright portion passing through said vertical bearing and having a furrow-wheel mounted thereon, a casting secured to the vertical portion of said axle above the bearing, a rod pivotally connected to said casting, an arm on the cross-bar, a lever pivotally connected to said arm and pivoted between its ends to said rod, and means for locking the lever in any position.

10. In a sulky-plow, the combination with a beam and means carried thereby for cutting a furrow, of a cross-bar secured to the beam, a land-wheel connected with one end of the bar, an approximately vertical bearing secured to the other end of the bar, a segment secured to said bearing and an arm integral with the segment and projecting in the opposite direction thereto, a casting secured to the axle above the bearing, a rod pivoted to said casting, a lever fulcrumed between its ends on said rod and carrying a detent to engage the segment, a journal in the free end of said arm secured at one end to one end of said lever, an arm secured to the other end of said journal and a spring connecting said last-mentioned arm with the casting on the axle.

11. In a sulky-plow, the combination with a beam, and means carried thereby for cutting a furrow, of a cross-bar secured to the beam, a land-wheel connected with one end of said bar, an approximately vertical bearing secured to the other end of said bar, a segment secured to the bearing and an arm integral with the segment and projecting in the opposite direction thereto, a tubular casting secured on the axle above the bearing, a rod pivoted to said casting, a lever fulcrumed between its ends on said rod and carrying a spring-pressed detent to engage the segment,



a journal in the free end of said arm secured at one end to one end of said lever, an arm secured to the other end of said journal, a coiled counterbalance-spring connected at one end to said last-mentioned arm, and an eyebolt adjustably secured to the casting and connected to the other end of said spring.

12. In a plow, the combination with a beam and means carried thereby for cutting a furrow, of a cross-bar secured to the beam, a furrow-wheel connected with one end of said bar, a bearing on the other end of said bar, a land-wheel crank-axle carrying a land-wheel and mounted to turn in said bearing to raise and lower the plow, a segment secured to the bearing, a lever pivoted at one end and carrying a spring-pressed detent to lock the lever to the segment, a sleeve on the wheel-journal of the crank-axle, and having an arm integral therewith, a rod connected to the lever between the ends of the latter and projecting at its lower end through a hole in said arm, a pin passing through said rod below the arm and a coiled spring on the rod bearing at one end against said arm and at its other end against a projection on the rod.

13. In a sulky-plow, the combination with a beam and means carried thereby for cutting a furrow, of a furrow-wheel connected with said beam, a land-wheel connected with said

beam and disposed normally to move parallel with the furrow and means for changing the angle of movement of the land-wheel.

14. In a sulky-plow, the combination with a beam and means carried thereby for cutting a furrow, of a cross-bar carried by said beam, a furrow-wheel connected with one end of said bar, an approximately horizontal bearing connected with the other end of said bar, a land-wheel axle mounted in said bearing and carrying a land-wheel and means for changing the angle of the bearing.

15. In a sulky-plow, the combination with a beam and means thereon for cutting a furrow, of a cross-bar secured to said beam, a furrow-wheel connected with one end of said bar, a bearing connected with the other end of said bar, a land-wheel axle carrying a land-wheel and mounted in said bearing, and a wedge adapted to be inserted between said bar and bearing to change the angle of the bearing.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CALVIN R. DAVIS.

Witnesses:

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A. A. FREDERICK.