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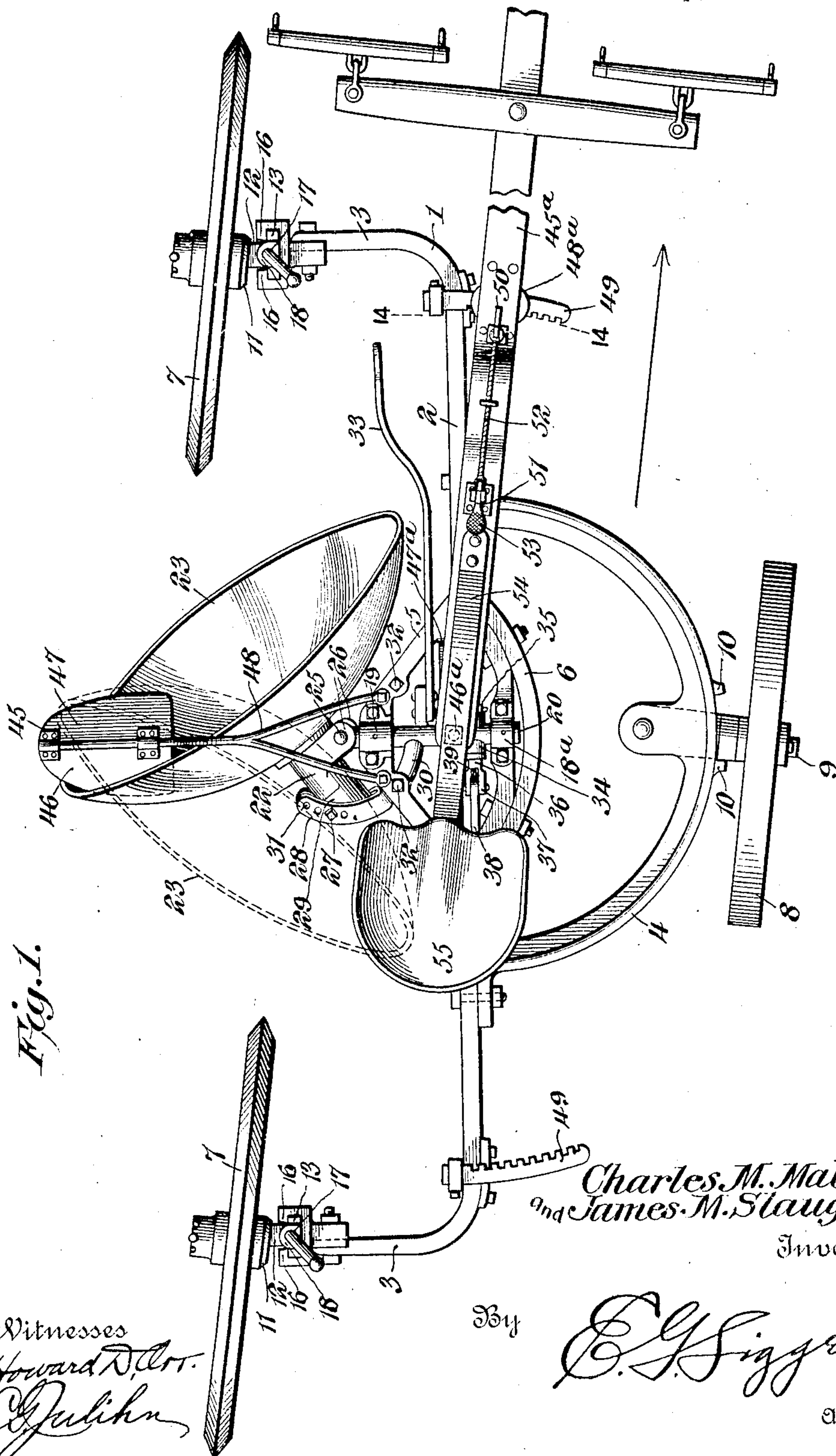
PATENTED OCT. 29, 1907.

C. M. MALLORY & J. M. SLAUGHTER.

REVERSIBLE DISK PLOW.

APPLICATION FILED MAY 29, 1906.

4 SHEETS—SHEET 1.



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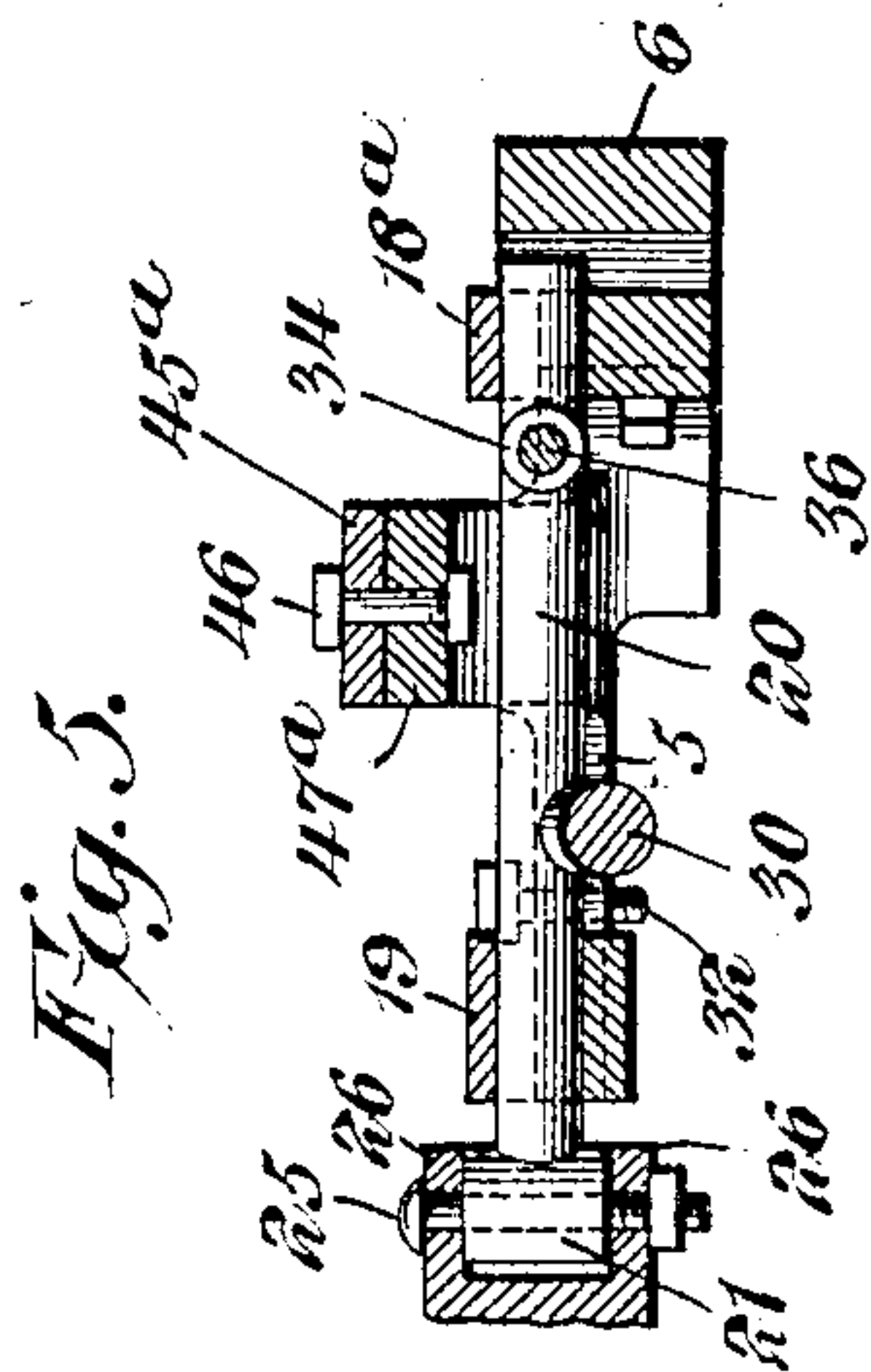
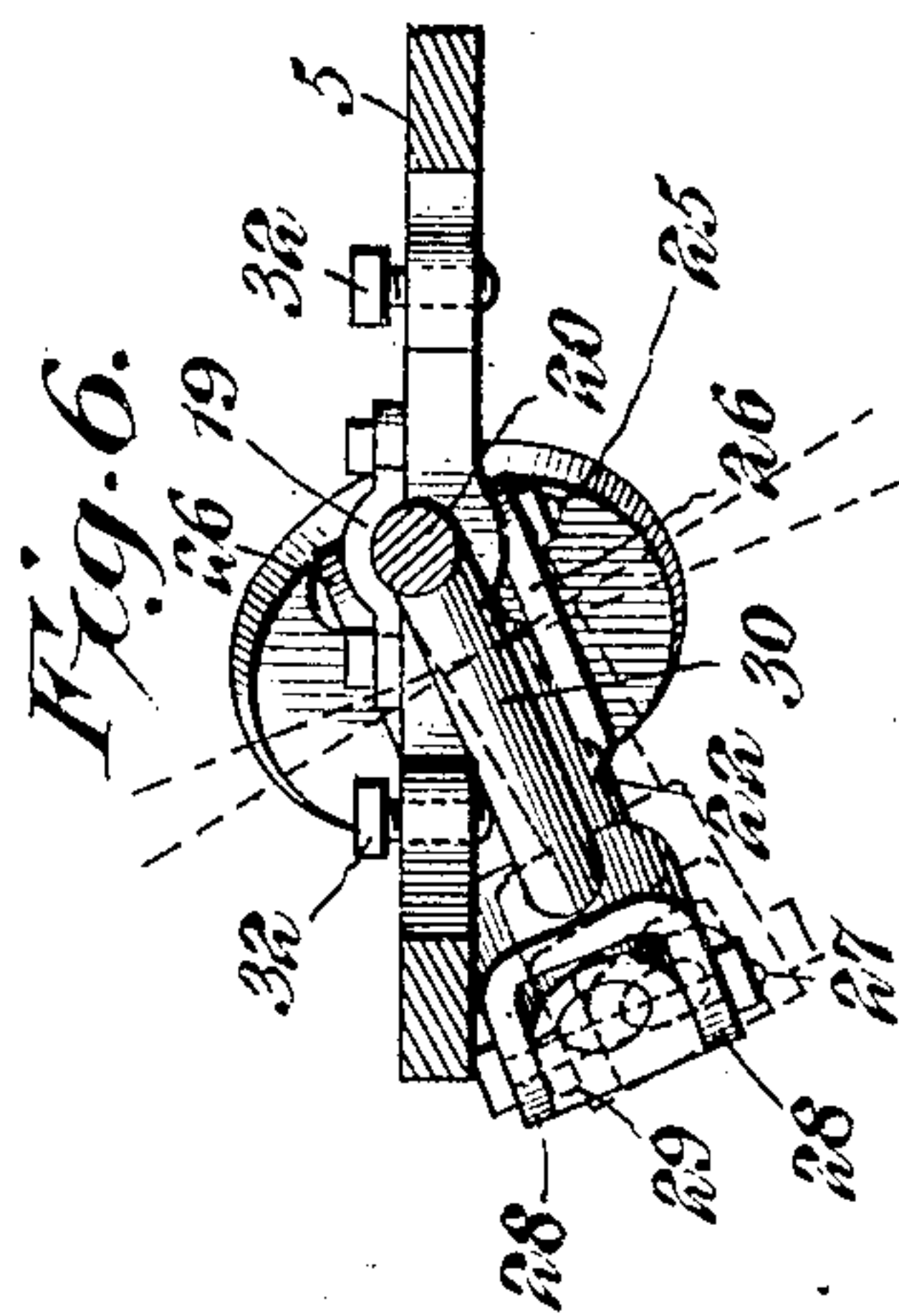
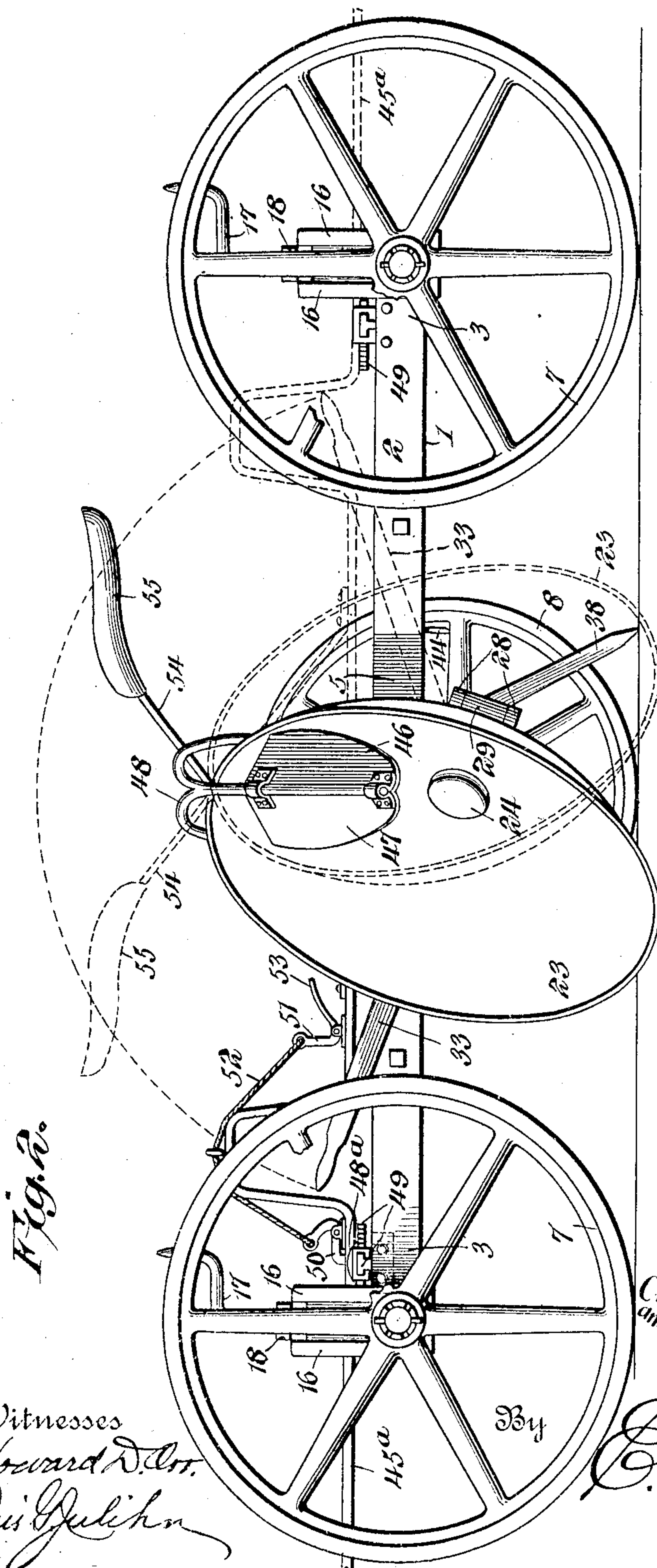
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4 SHEETS—SHEET 2.



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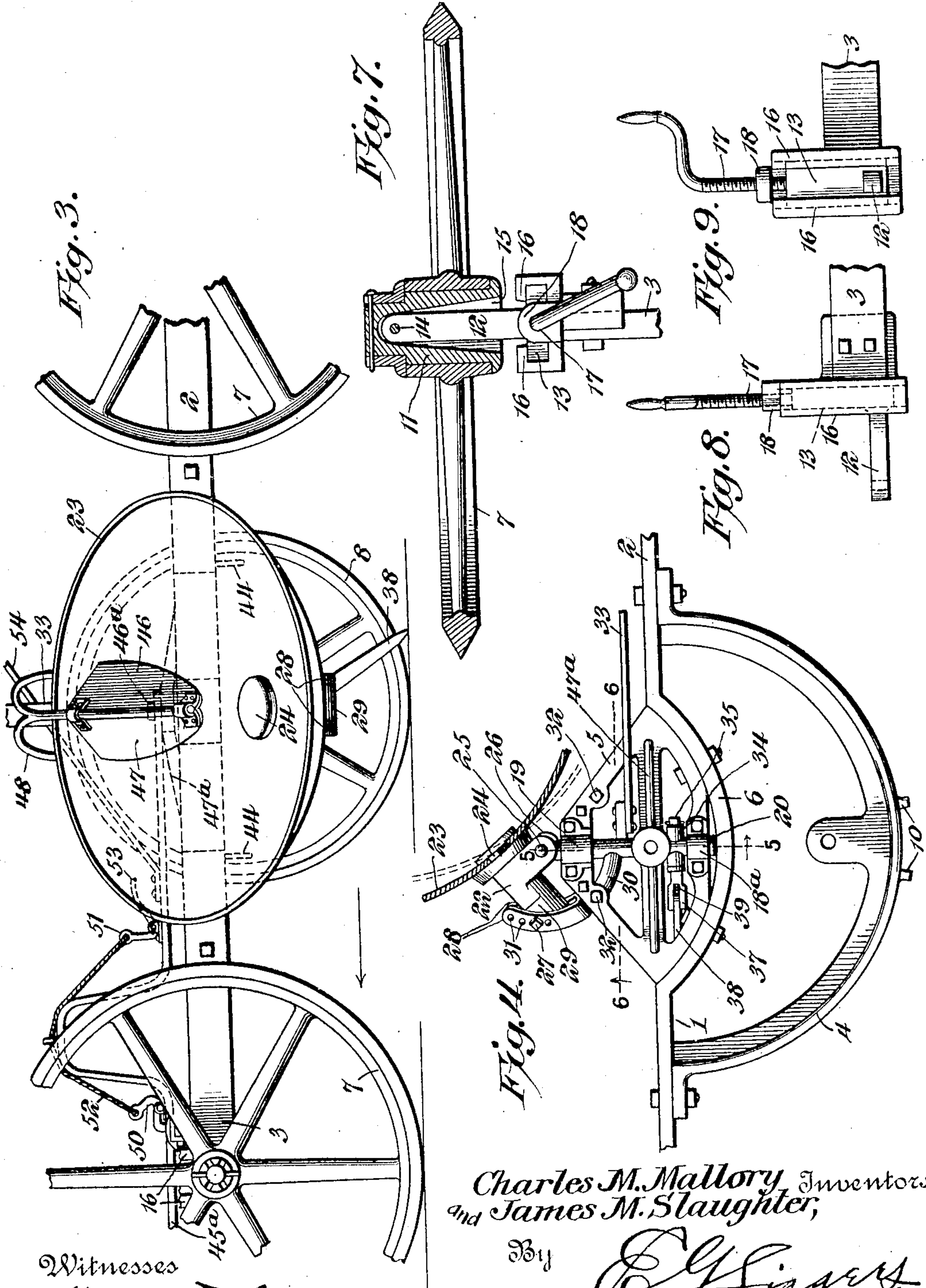
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4 SHEETS—SHEET 4.

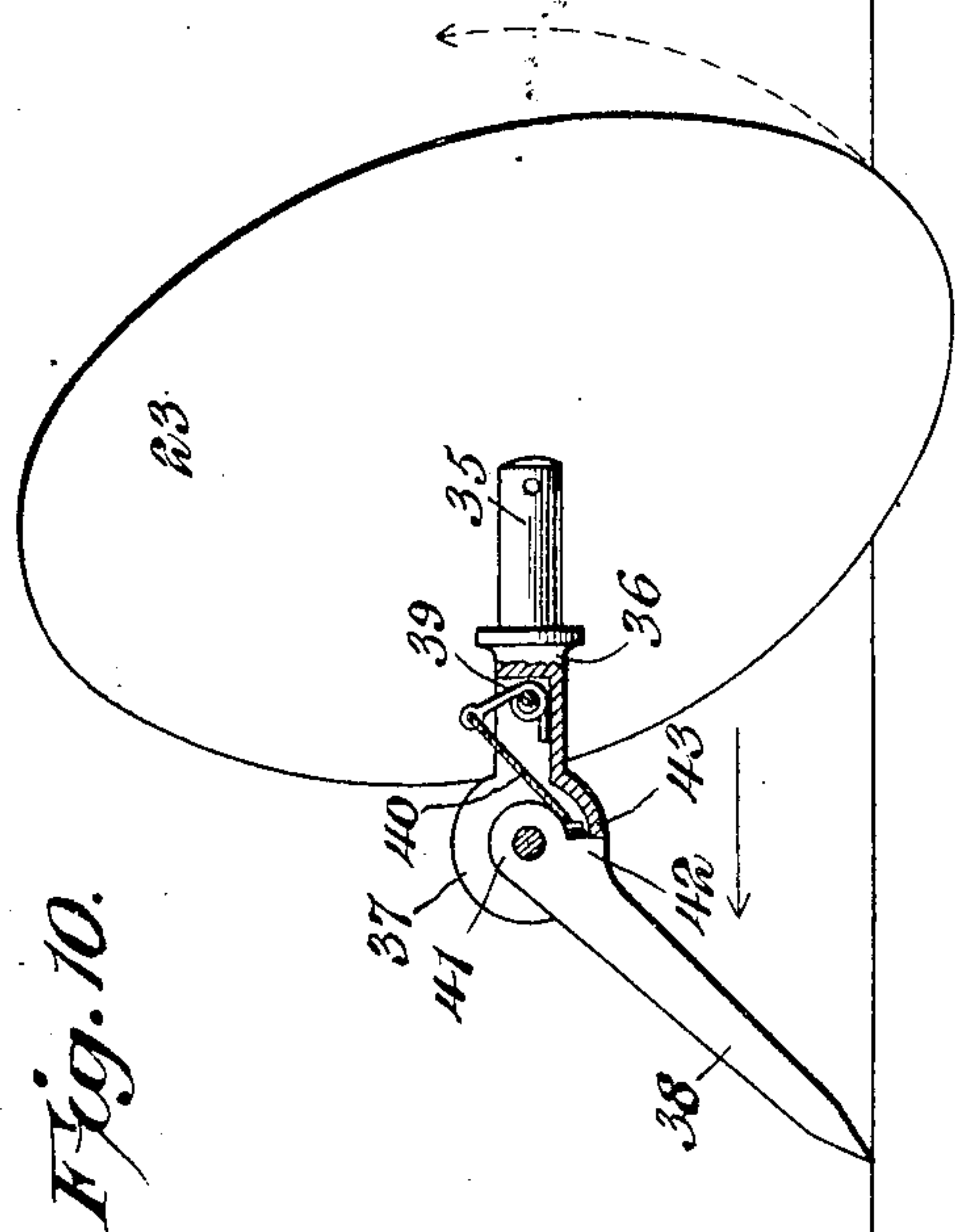
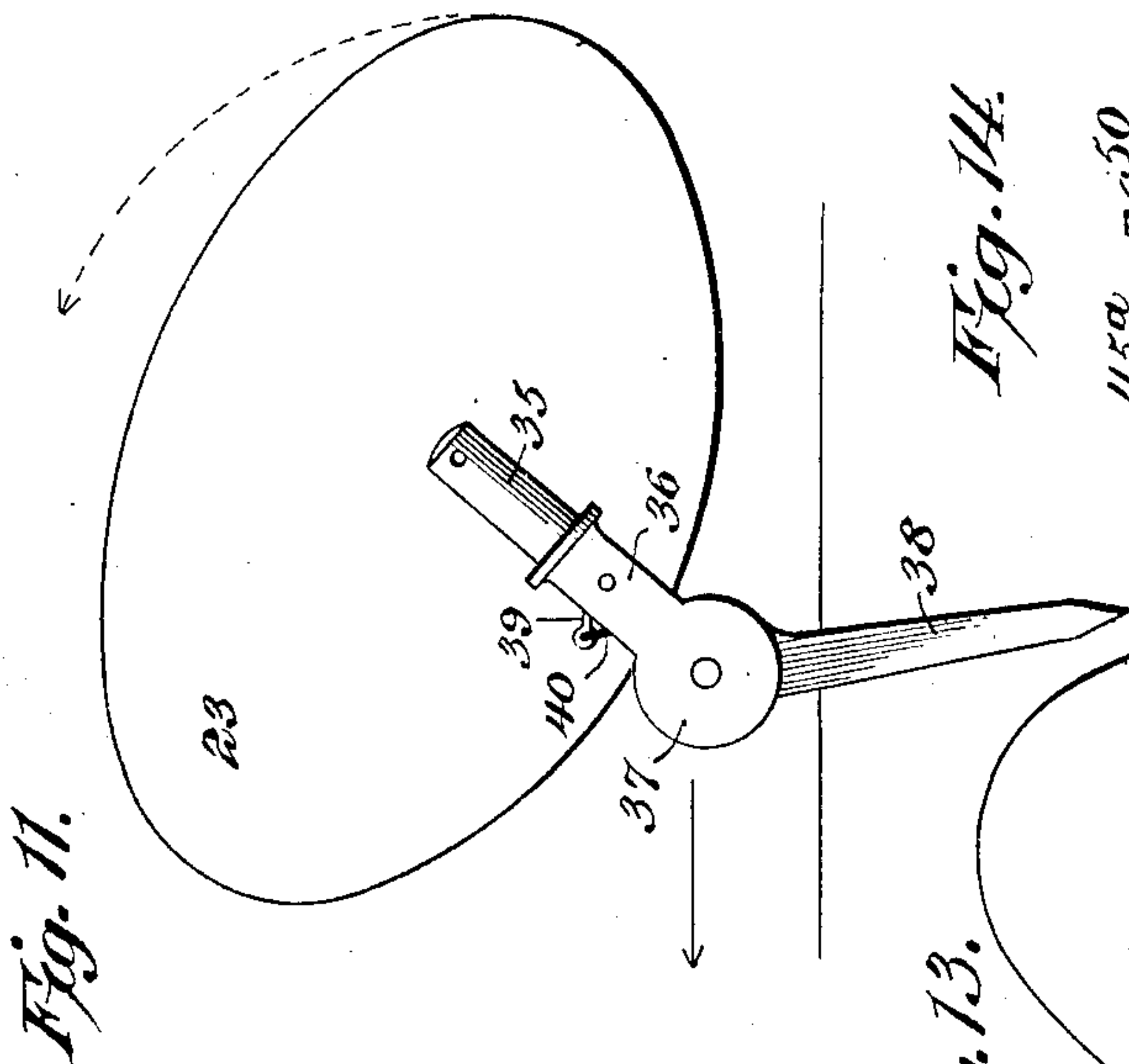
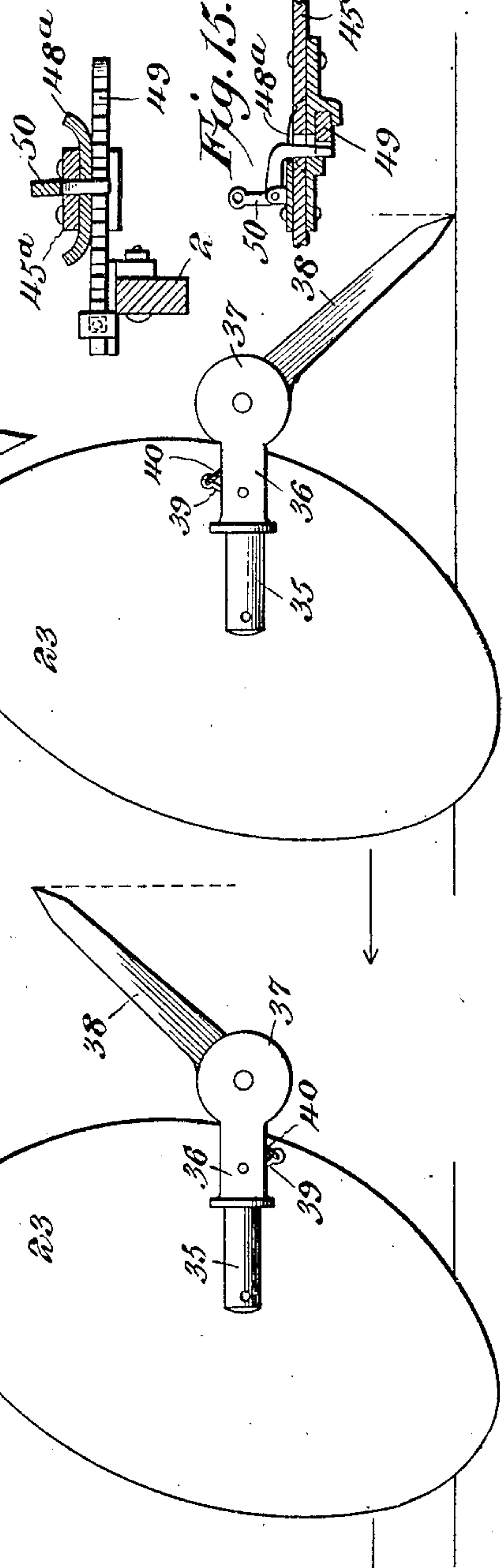


Fig. 14.

Fig. 13.

Fig. 12.



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REVERSIBLE DISK PLOW.

No. 869,499.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed May 29, 1906. Serial No. 319,318.

To all whom it may concern:

Be it known that we, CHARLES MARTIN MALLORY and JAMES MONROE SLAUGHTER, both citizens of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Reversible Disk Plow, of which the following is a specification.

This invention relates to a reversible plow, and more particularly to a disk plow of that type embodying a double ended wheeled frame and a disk reversibly mounted thereon to facilitate plowing back and forth on one side of the land without necessitating the turning of the plow as a whole. In plows of this general type it is usual to mount the disk at the lower end of a standard which is oscillated on its longitudinal axis to reverse the position of the disk. This arrangement is objectionable for a number of reasons, the most prominent of which is that in order to reverse the disk it must be twisted or turned while in the ground, or else the plow frame must first be elevated to lift the disk out of the ground before it can be reversed. Another objection is that if a large stone or other obstruction is located in the line of the furrow, it is necessary to plow around it, since it is impossible to shift the disk for the purpose of clearing the obstruction, except by the elevation of the entire plow frame and the limit of such elevation is ordinarily insufficient for this purpose.

One object of our present invention is to so mount the disk that the act of reversing the same will cause it to be withdrawn from the ground without material resistance by the earth and again presented to the ground in reversed position, thus avoiding the necessity for the elevation of the plow frame or the dragging, turning, or twisting of the disk in the ground.

Another object of the invention is to so mount the disk that when the plow has reached the end of the furrow its movement in the opposite direction will assist in reversing the disk by reason of the resistance opposed by the earth to the rear side of the lower edge of the disk.

Another object is to so mount the disk that the latter may be readily elevated to clear any obstruction encountered during the progress of the plow across the field.

A still further object is to provide in a reversible plow a wide variety of disk adjustments enabling the disk to take more or less land, as desired, to operate at various vertical angles according to the character of the soil, and to turn a furrow of any desired depth.

Subordinate to these leading objects of the invention are several others, as for instance, to provide completely automatic means for reversing the disk, an effective scraper for the disk, foot controlled means

for retaining the draw-bar adjustably in reversed positions with respect to the plow frame, and a novel form of mounting for the carrying wheels.

In addition to the objects stated, certain others subordinate thereto will appear as the following description of the preferred embodiment of the invention is developed.

In the accompanying drawings—Figure 1 is a plan view of the plow complete, the reversed position of the disk being indicated in dotted lines. Fig. 2 is a side elevation of the plow, the draw-bar, disk, and reversing lever being shown in reversed position in dotted lines. Fig. 3 is a side elevation of a portion of the plow showing the disk in its intermediate position, which position it assumes in the act of reversal or when raised to clear an obstruction. Fig. 4 is a plan view of the central portion of the plow with the draw-bar removed and a portion of the disk in section, the adjustment of the disk to take more land being indicated in dotted lines. Fig. 5 is a section on the line 5—5 of Fig. 4. Fig. 6 is a section on the line 6—6 of Fig. 4, the angular adjustment of the disk with respect to the surface of the ground being indicated in dotted lines. Fig. 7 is a detail sectional plan illustrating the mounting of one of the furrow wheels. Figs. 8 and 9 are detail elevations of the frame adjusting mechanism. Figs. 10, 11, 12 and 13 are diagrammatic views illustrating the automatic reversal of the disk, and Figs. 14 and 15 are detail sectional views of the means for connecting the draw-bar to either end of the plow frame.

Each part is indicated by the same numeral throughout the views.

The frame 1 of the plow consists of the main frame bar 2 having laterally disposed ends 3, a curved land side bar 4 bolted to the main frame bar 2, and a disk supporting frame 5 having the form of a casting detachably bolted to the bowed central portion 6 of the bar 2. The frame 1 of the plow is supported by furrow wheels 7 and a land side wheel 8, the former being located at the ends of the bar 2 and the latter being journaled on a swinging axle 9 supporting the bar 4 and limited in its movement by stops 10.

It is well understood by those skilled in the art that the frame of the plow normally stands at an angle to the line of draft, as shown in Fig. 1, while the furrow wheels follow along the furrows with their axes substantially at right angles to the line of draft. To permit this disposition of the furrow wheels, each is mounted, as indicated in Fig. 7, upon a hollow journal 11 into which is extended the horizontal arm 12 of the slide 13. The outer ends of the journal 11 and arm 12 are pivotally connected by a pintle 14 disposed vertically and therefore permitting the journal to swing

from a vertical axis to allow the wheel to stand at either of two opposite angles of approximately seven degrees with respect to the main frame bar, it being noted that the opening 15 in the journal 11 is inwardly flared to accommodate this swinging movement of the journal from the pintle 14. The slides 13 are mounted in vertically disposed guides 16 attached to the ends of the bar 2 and the vertical adjustment of the opposite ends of the frame is effected by means of adjusting screws 17 passed through threaded lugs 18 on the guides 16 and swiveled to the slides 13, the upper ends of the screws 17 having operating handles to facilitate the adjustment of the frame, as is well understood in the art. From this description of the supporting structure of the plow, it will be seen that the latter includes a light but rigid metal frame adjustably supported by a land wheel and furrow wheels which are adapted to swing to a proper angle to the plow frame as the latter advances in one direction or the other.

The detachable casting 5, which has been described as the disk supporting frame, is preferably of open construction, as shown, and is equipped with spaced inner and outer bearings 18^a and 19 in which is journaled a substantially horizontal disk supporting and reversing shaft 20 disposed substantially at right angles to the frame bar 2, see Figs. 4 and 5, and provided at its outer end with a transverse head 21. To the head 21 is pivotally connected the journal box 22 of the disk 23, the journal 24 of the disk being afforded a bearing in the box 22 in any suitable or approved manner. The pivotal connection between the shaft 20 and the box 22 is effected by a pintle 25 passed through the head 21 and through a pair of bearing ears 26 opposed to the opposite ends of the head and extended from the box 22, see Figs. 4 and 5.

The disk 23 rotates upon its own axis, as usual, and is designed to swing from the pintle 25 to permit the disk to assume various adjusted positions for the purpose of enabling it to take the required amount of land under different conditions. Normally, however, the box 22 is securely retained against swinging movement from the pintle 25 by a retaining device 27, preferably in the form of a bolt passed through the spaced arms of a guide-yoke 28 and through a guide-lug 29 formed at the rear end of the journal box 22 and interposed between the arms of the yoke, see Figs. 4 and 6. The yoke 28 is curved concentric to the pintle 25 and is formed at the end of an arm 30 extended below the frame 5 from the shaft 20, as shown in Fig. 6, and preferably though not necessarily, formed integral with said shaft.

In order to enable the journal box 22 to be retained in any one of several adjusted positions by the bolt 27, the arms of the yoke 28 are each provided with a series of bolt openings 31. In addition to the adjustment of the disk from the pintle 25, which is nearly vertical in either of the operative positions of the disk, it is also desirable to provide for the angular adjustment of the disk with respect to the horizontal plane. That is to say, it is not only desirable to adjust the disk to take more or less land, but it is also desirable to tilt the disk backward more or less so that a line drawn diametrically across the disk and intersecting the upper and lower edges of its periphery will be inclined more or less from the vertical. To accomplish this adjust-

ment, the frame 5 is provided with a pair of vertically adjustable stops 32 preferably in the form of screws passed through and below the frame and disposed to constitute stops for the arm 30 according as the disk is in one or the other of its operative positions. It will be noted that the axis of the shaft 20 substantially intersects the center of the disk and that the guide arm 30 and its yoke extend laterally from the shaft and are secured to the rear end of the journal box 22. It follows, therefore, that if the stop 32 above the arm 30 is screwed down it will depress said arm, thus rocking the shaft 20 and effecting the angular adjustment of the disk with respect to the ground, as heretofore explained. Instead, however, of adjusting the disk in the manner just described, the screw at the other side of the frame may be adjusted so that, upon the reversal of the disk, in a manner to be hereafter described, the arm 30 will be arrested in, instead of moved to, its proper position.

Coming now to what is perhaps the most important result of the novel construction described, attention is directed to the fact that the disk is carried, through the medium of its journal box 22, upon the shaft 20, which is adapted to rock upon a longitudinal axis. Therefore, the disk is adapted to swing from an axis which is horizontal, or substantially so, and is thus capable of reversal, since the axial plane of the disk is located at a more or less acute angle to the axis of the shaft 20 so that a substantially semi-rotation of the shaft will swing the disk out of the ground and over to a reversed position, as shown in dotted lines in Fig. 1. The angular disposition of the disk with respect to the frame and to the ground is the same in both positions, the only difference being that the disk will face in opposite directions.

It will be understood that when the plow reaches one end of the furrow with the parts in the positions shown in full lines in Fig. 1, the disk will be embedded some distance in the ground. Therefore, when the plow is drawn back in the opposite direction, the earth located behind the lower edge of the disk will present some resistance to the latter and thus cause it to rise out of the ground. In fact, if the backward movement of the plow is sufficiently rapid and sudden, the disk may be thrown up with sufficient force to bring the center of gravity beyond the axis of the shaft 20, in which event the disk would fall of its own weight to its reversed position. The ordinary operation of the plow, however, is insufficient to effect this character of reversal, and we therefore provide a reversing lever 33 secured in any suitable manner to the shaft 20 and adapted to be grasped by the operator for the purpose of rocking the shaft and thereby reversing the disk, this manual reversal being assisted, however, by the movement of the plow in the manner stated.

It will be readily seen from what has been said that by mounting the disk for rotation about a horizontal axis to effect its reversal, all of the objectionable characteristics of the ordinary disk mounting are eliminated, since by this novel arrangement the ground, instead of opposing resistance to the reversal of the disk and thereby necessitating preliminary elevation of the plow frame, actually aids in reversing the disk. Furthermore, the disk, instead of being immovably located in the path of any obstruction which

may be opposed to it, is capable of being readily elevated, as shown in Fig. 3, to permit it to pass over or clear the obstruction. This elevation of the disk is possible without stopping the plow, but is accomplished more easily by backing the plow so that the resistance opposed by the earth behind the plow will assist in the elevation of the latter in the manner heretofore described.

In addition to the lever 33 for manually reversing the disk, we provide mechanism which insures the automatic reversal of the disk when the plow, having reached the end of the furrow, is drawn back in the opposite direction across the field. This automatic disk reversing mechanism includes a transverse bearing sleeve 34 formed on the shaft 20 adjacent to the bearing 18^a, as shown in Fig. 4, for the reception of the cylindrical end 35 of a shaft 36 provided at its opposite end with a head 37 in which is pivotally mounted a trailing arm 38. Normally, the shaft 36 is disposed in a substantially horizontal position with the arm 38 trailing on the ground and inclined rearwardly, its lower end being pointed, as shown. The arm 38 is adapted to swing upwardly as it rises over inequalities in the ground or obstructions, but is constantly urged downwardly by a spring 39 mounted on the arm 36 and connected by a chain 40 to the hub 41 of the arm 38. The spring 39 tends to draw the arm 38 to the position shown in Fig. 10, in which position a shoulder 42 at the upper end of the arm 38, abuts against a shoulder 43 on the shaft 36, these shoulders coacting to limit the movement of the arm 38 in one direction, to-wit, the direction in which the arm is moved by the spring 39. As the arm 38 trails over the ground during the movement of the plow across the field, it will yield, as already stated, to accommodate the unevenness of the ground or to prevent derangement of the parts when opposed by obstructions. When, however, the plow reaches the end of the furrow and starts back in the opposite direction, the pointed end of the arm 38 will enter the ground and the shoulders 42 and 43 being in abutting relation, the arm 38 and the shaft 36 will constitute in effect a rigid structure or reversing arm extending downwardly and forwardly from the reversing shaft 20. As the plow continues to advance, this reversing arm will be arrested by the ground, but the shaft 20 will continue to advance with the plow. As the result of this the shaft is carried forward and at the same time rotated to automatically reverse the position of the disk, the shaft passing over the arm 38, which of course sinks deeper and deeper into the ground as it assumes a position first under the shaft 20 and then in rear of the same. Of course, after the disk passes over the center of gravity, its weight will become effective to complete the reversal and therefore the arm 38 will be carried up out of the ground in rear of the shaft 20. This would obviously present the arm 38 at an upward angle were it not for the fact that the shaft 36 is rotatable in the sleeve 34, and as a consequence, the weight of the arm 38 will cause the shaft to make a half rotation to present the arm 38 in its normal trailing position, which will render it effective to again reverse the disk when the direction of movement of the plow is again changed.

In transporting the plow from one point of use to another the disk will be elevated to the intermediate po-

sition shown in Fig. 3, and the arm 38 may be allowed to trail over the ground, or, if desired, it may be swung up and secured to the plow frame by means of a suitable retainer, as for instance, a hook 44. At this point attention may be directed to the fact that by reason of the described mounting of the disk, it is unnecessary to elevate the plow frame when it is desired to transport the plow from one field to another, since the elevation of the disk itself removes it to an inoperative position. Furthermore, by the adjustment of the stops 32, the depth of the furrow may be regulated without adjustment of the plow frame. In fact, in the use of our plow no adjustment of the frame is necessary, except such as may be desirable to enable the disk to be set at any desired angle without changing the depth of the cut or to change the depth of the cut without varying the angle of the disk.

Another feature of the present invention is the provision of a single stationary scraper 45 which coacts with the disk in either of the adjusted positions of the latter. The scraper 45 is in the form of a plate bent to produce a pair of wings 46 and 47 which alternately coact with the disk 23 and is carried by a stationary scraper support 48 bolted to the frame of the plow and carried over the edge of the disk, as shown in Fig. 3.

Another novel feature resides in the peculiar construction and arrangement of the draft appliance, whereby the draw-bar may be reversed and secured in variously adjusted positions at either end of the plow and whereby the draft will be sustained by a connection between the draw-bar and the end of the plow frame, as well as by a connection between the end of the draw-bar and the middle of the frame, as distinguished from the usual constructions wherein the draft is sustained by the connection at the middle of the frame exclusively. To this end the draw-bar 45^a is pivotally attached at its rear end, as by means of a bolt 46^a, to the middle of a bridge bar 47^a extending across the frame 5 and over the shaft 20, as shown in Figs. 1, 4 and 5. The bridge bar 47^a serves to stiffen the frame 5 and is located substantially in alinement with the main bar 2 of the plow frame. At a considerable distance from its rear end, the draw-bar 45^a is provided at its under side with a guide block 48^a designed to slide upon either of two rack bars 49 secured to the main frame bar 2 adjacent to the ends thereof and curved concentric with the bolt 46. Mounted on the upper side of the draw-bar 45^a adjacent to the guide-block 48^a is a pivoted latch 50 a portion of which extends through the draw-bar 45^a and block 48^a and engages the rack bar 49 at any desired distance from the frame bar 2. By this means the draw-bar may extend toward either end of the plow and may be secured to the plow frame in variously adjusted positions, so as to dispose the plow frame at any desired angle to the line of draft. It will also be seen that the guide-block 48 and the rack bar coöperate to form a connection between the draw-bar and the adjacent end of the plow frame so that the pull is from the end of the frame instead of from the middle thereof, as usual, thus rendering the construction far more durable and efficient than those forms of plows in which the strain is sustained exclusively by the pivotal connection between the draw-bar and the frame.

To facilitate the manipulation of the latch 50 we

provide a latch lever 51 connected to the latch by a flexible piece 52, or other suitable means, and having a treadle or foot-piece 53 disposed in convenient proximity to the foot of the driver, for whose accommodation the rear end of the draw-bar 45 is provided with a seat spring 54 supporting a driver's seat 55 in an elevated position. It should be understood, however, that the described mechanism for retaining the draw-bar in variously adjusted positions may be omitted and the bar retained in position by a fixed stop suitably secured to the plow frame.

Before concluding, attention is directed to the fact that while the reversing shaft is arranged horizontally, in the illustrated embodiment of the invention, the terms "horizontal" and "substantially horizontal", as used in the claims, are intended to define a position which is more nearly horizontal than vertical. An essentially novel characteristic of the invention is that disposition of the axis of reversal which causes the disk to be lifted incidentally to its reversal, as distinguished from the usual reversal of the disk on an axis more nearly vertical than horizontal, in plows of this type in which the frame moves back and forth across the field without turning and in which the disk is reversible to cause it to face toward either end of the frame, according to the direction in which the latter is advanced.

It should also be understood that the expression "draft means whereby the frame may be moved back and forth without turning", as employed in the claims, is designed as a broad definition of a characteristic of this type of plows in which the frame may be drawn with either end thereof in advance, and is not intended to be limited to a single draft device capable of operating in reverse positions, since it is immaterial, within the meaning of the above expression, whether the means utilized to advance the frame in opposite directions without turning is a single reversible draft device or separate draft devices located at opposite ends of the frame.

Since the operation of the various features of the plow has been incidentally explained during the description of the construction, reiteration is thought to be unnecessary. It should be distinctly understood, however, that while the described embodiment of the invention is thought at this time to be preferable, we do not limit ourselves to the structural details defined. On the contrary, we reserve the right to effect such changes, modifications, and variations of the illustrated structure as may come fairly within the scope of the protection prayed.

What I claim is:—

1. A reversible plow including a disk operative in reversed positions and reversible on a substantially horizontal axis disposed transverse to the plow.
2. A reversible disk plow including a frame, furrow wheels, a land wheel, and a disk carried by the frame between the furrow wheels and reversible on a substantially horizontal axis, to face either end of the plow and to operate in such position.
3. A disk plow including a wheel supported frame, a reversible draw-bar, and a disk supported by the frame and reversible on a substantially horizontal axis.
4. A disk plow including a wheel supported frame, a disk operative in reversed positions, and a reversing shaft supporting the disk and disposed transversely of the frame.
5. A disk plow including a wheel supported frame, a disk operative in reversed positions, a reversing shaft sup-

porting the disk and disposed transversely of the frame, and means for rotating the shaft to reverse the disk.

6. A disk plow including a wheeled frame, a disk operative in reversed positions, a reversing shaft disposed transversely of the frame and carrying the disk, and a reversing lever connected to the shaft.

7. A disk plow including a frame, a transverse reversing shaft, and a furrow opening disk having an adjustable connection with the shaft and movable thereby to reversed operative positions.

8. A disk plow including a frame, a transverse reversing shaft, a journal box adjustably connected to the shaft, and a furrow opening disk rotatably supported by the journal box.

9. A disk plow including a frame, a substantially horizontal reversing shaft disposed transversely of the frame, a journal box having pivotal connection with the reversing shaft, a disk having a spindle rotatably mounted in the journal box, and means for retaining the journal box in various adjusted positions with respect to the shaft.

10. A disk plow including a frame, a reversing shaft provided with a guide, a journal box pivoted to the reversing shaft and adjustably connected to the guide, and a disk supported by the journal box.

11. A disk plow including a frame, a substantially horizontal reversing shaft disposed transversely of the frame, a disk adjustably connected to the reversing shaft, and adjustable means for limiting the rotative movement of the reversing shaft.

12. A disk plow including a transverse reversing shaft, a furrow opening disk connected to said shaft and operative in reversed positions, and an adjustable stop cooperating with the shaft to limit the rotative movement thereof.

13. A disk plow including a reversing shaft, a disk connected to the shaft and adjustable to various angular positions with respect thereto, and adjustable stops for limiting the rotative movement of the reversing shaft for the purpose of varying the vertical inclination of the disk.

14. A disk plow including a frame, a substantially horizontal reversing shaft disposed transversely of the frame, a disk connected to the shaft and adjustable to various angular positions with respect to the line of draft and also adjustable to vary the backward tilt of the disk, and means for operating the reversing shaft to reverse the disk.

15. A disk plow including a frame, a transverse reversing shaft carried thereby and provided with a curved guide, a journal box pivotally connected to the shaft and adjustably retained by the guide, a disk rotatably supported by the journal box, means for rocking the reversing shaft to reverse the position of the disk, and a pair of adjustable stop screws carried by the frame and cooperating with the guide to limit the movement of the reversing shaft.

16. A disk plow including a frame, a rotary disk disposed at an angle to the line of draft and automatically reversible on a substantially horizontal axis from one operative position to another.

17. A disk plow including a frame, and a disk disposed at an angle to the line of draft and automatically reversible upon a substantially horizontal axis disposed transversely of the frame.

18. A disk plow including a frame, a disk, a reversible draw-bar, and means independent of the draw-bar for effecting the automatic reversal of the disk to dispose the same in either of two operative angular positions with respect to the line of draft.

19. A disk plow including a frame, a disk operative in reversed angular positions with respect to the line of draft, and means operated by the endwise movement of the frame to effect the automatic reversal of the disk.

20. A disk plow including a frame, a reversible disk operative in reversed angular positions with respect to the line of draft, and disk reversing means coacting with the ground to effect the automatic reversal of the disk as the plow advances.

21. A disk plow including a frame, a reversible disk, a reversing shaft for said disk, and reversing mechanism including an arm extended from the reversing shaft and engaging the ground.

22. A disk plow including a frame, a substantially horizontal reversing shaft, a disk connected to the shaft, and

a reversing arm extended from the shaft and disposed to engage the ground.

23. A disk plow including a frame, a substantially horizontal reversing shaft disposed transversely of the frame, a disk connected to the shaft, and automatic means for operating the reversing shaft to reverse the position of the disk.

24. A disk plow including a frame, a reversing shaft, a disk carried by the shaft, and a reversing arm connected to the reversing shaft and including pivotally connected sections one of which coacts with the ground.

25. A plow including a frame, a reversing shaft, a disk carried by the shaft, and reversing mechanism including a reversing arm rotatably mounted in the reversing shaft and having a trailing section and means limiting the relative movement of the reversing arm and its trailing section.

26. A disk plow including a frame, a reversing shaft, a disk carried by the shaft, and reversing means including an arm rotatably mounted in the reversing shaft, a trailing arm pivotally connected to the arm first named, coacting stop shoulders on said arms, and a spring yieldingly retaining the trailing arm in contact with the ground.

27. A plow frame, draft means whereby the frame may be moved back and forth without turning, a disk operative in reversed positions, and a device operative to lift the disk out of the ground and to reverse said disk.

28. A disk plow including a wheeled frame, a disk carried thereby, a reversible draw-bar pivotally connected at its rear end to the center of the frame, a guide block carried by the draw-bar, a pair of toothed racks extended from the frame and disposed to engage the guide block, and a latch carried by the guide bar to engage the racks.

29. A reversible disk plow including a wheel supported frame adapted to be drawn across the field in either direction without turning the plow, and a disk reversible upon a substantially horizontal axis and located at the same side of the frame in both positions.

30. A reversible plow including a wheel supported frame adapted to be drawn across the field in opposite directions without turning the plow, a reversible disk mounted at the same side of the frame in both positions of said disk, and disk reversing means arranged to lift the disk out of the ground in the act of reversing the same.

31. A disk plow including a frame, a disk mounted at one side of the frame and operative in reversed positions, and means for swinging the disk out of the ground on an axis disposed transversely of the frame.

32. A disk plow including a frame and a disk reversible on an axis disposed in oblique angular relation to the axis of the disk and intersecting said disk.

33. A disk plow including a rotary disk reversible on an axis intersecting the axial plane of the disk at the center of the latter.

34. A disk plow including a frame, a reversible disk, and a stationary scraper arranged to coact with the disk in either of its positions.

35. A plow adapted to move back and forth across the field without turning, including a furrow-opener operative in reversed positions as the plow is moved in opposite directions and reversible on a substantially horizontal axis disposed transverse to the line of draft, and manually operated means for reversing the opener.

36. A plow adapted to move back and forth across a field without turning, including a furrow opener operative in reversed positions as the plow is moved in opposite directions and reversible on a substantially horizontal axis disposed transverse to the line of draft, means for effecting the automatic reversal of the opener, and manually-operated opener reversing means.

37. A double ended plow including a frame disposed in the general direction of the line of draft, and a disk located at all times at the same side of the frame, and movable out of the ground to reversed operative positions in which the disk faces the opposite ends of the plow and as-

sumes opposite angular positions with respect to the line of draft.

38. A disk plow including a frame, a land wheel at one side of the frame and furrow wheels at the opposite side thereof, means whereby the plow may be drawn across a field with either end thereof in advance, and a reversible disk mounted at the same side of the frame in both positions of the disk and movable out of the ground in the act of reversal.

39. In a plow, the combination with a reversible furrow opener, of a stationary scraper comprising angularly related members one of which is arranged to coact with the furrow opener in either position of the latter.

40. In a plow, the combination with a frame, of a reversible disk, a scraper support secured to the frame and carried over the edge of the disk, and a stationary scraper carried by the support and arranged to coact with the disk in either of its positions.

41. In a plow, the combination with a concave reversible disk, of a stationary scraper located opposite the concave side of the disk and arranged to have its opposite side edges coact with the disk in the reversed positions of the latter, said side edges and scraper being curved to conform approximately to the curvature of the concave face of the disk.

42. In a plow, the combination with a reversible disk, of a stationary scraper coacting with the disk in its reversed positions and having the form of a plate bent to produce angularly related wings.

43. In a plow, the combination with a reversible disk, of a stationary scraper coacting with the disk in the reversed positions thereof and including angularly related wings having curved edges.

44. In a plow, the combination with a frame, of an arched stationary scraper support, a scraper carried at one end of said support and having angularly related wings, and a reversible disk coacting in its reversed positions with the respective wings of the scraper and having its upper edge accommodated by the arched form of the scraper support.

45. A plow frame, draft means, furrow wheels and land wheels, a furrow-opener located between the furrow wheels and operative in reversed positions as the plow advances in opposite directions, and means for automatically reversing the disk by the movement of the frame, as the latter starts back across the field to open a new furrow.

46. A plow including a support, a disk reversible to face either end of the plow and to assume either of two angular positions with respect to the line of draft, and a device operative to lift the disk out of the ground, to reverse said disk, and to present the disk to the ground in reversed position.

47. A plow including a disk, a disk support, and means for shifting the support to transport the disk endwise of the plow, said disk being shiftable to opposite sides of the support.

48. A reversible plow including a disk shiftable endwise of the plow and reversible on a horizontal axis during the shifting thereof.

49. The combination with a plow and a disk, of mechanism for shifting the disk endwise of the plow and for reversing the disk on a substantially horizontal axis during the shifting thereof.

50. A plow including a support and a disk, said disk being reversible on a substantially horizontal axis by movement endwise of the plow.

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

CHARLES MARTIN MALLORY.
JAMES MONROE SLAUGHTER.

Witnesses:

H. S. CHAMBERLAIN, Jr.,
F. T. GOEBELS.