

H. S. AUSTIN.

SCRAPER FOR REVERSIBLE DISK PLOWS.

APPLICATION FILED MAR. 9, 1908. RENEWED NOV. 8, 1909.

943,372.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 1.

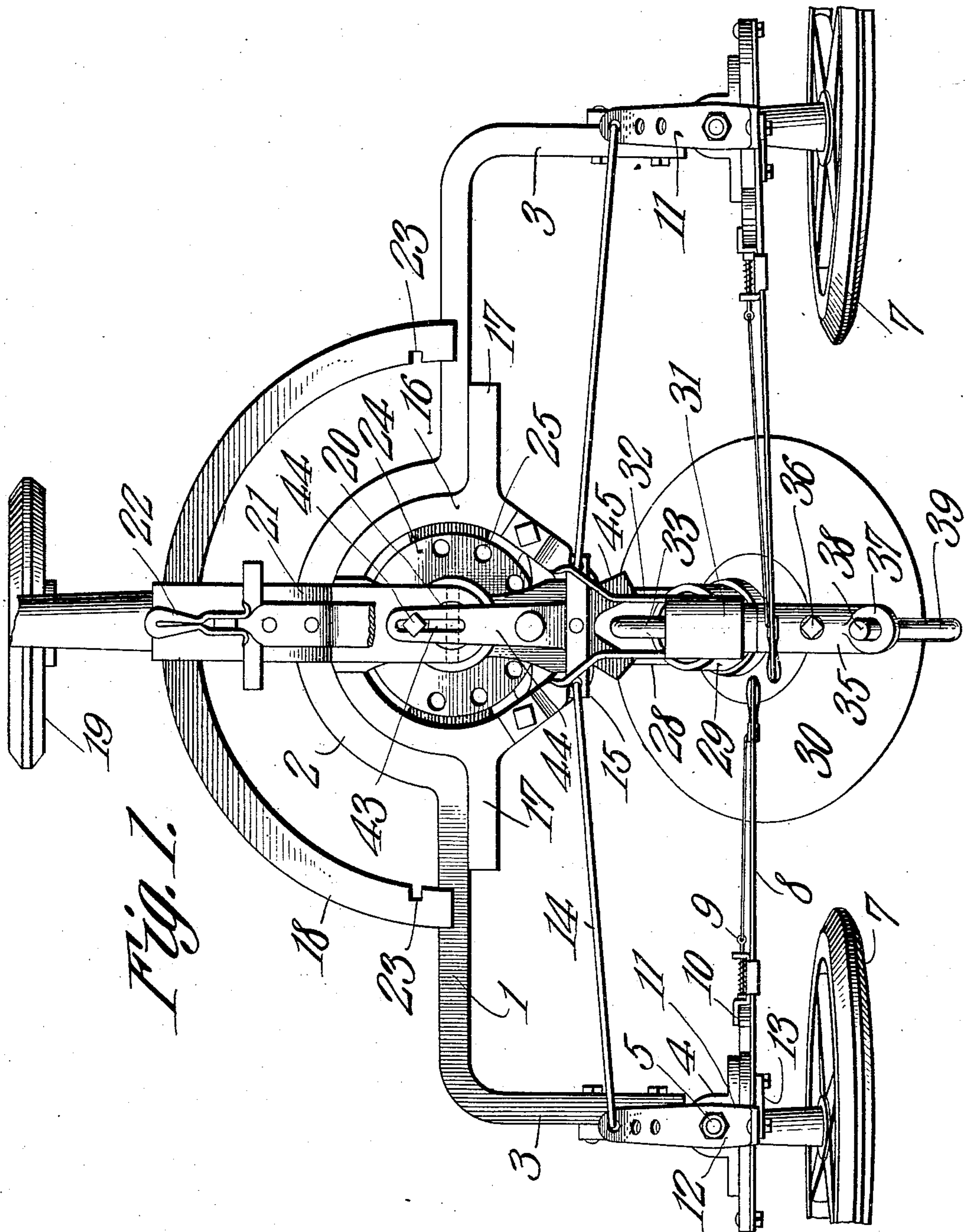


Fig. 1.

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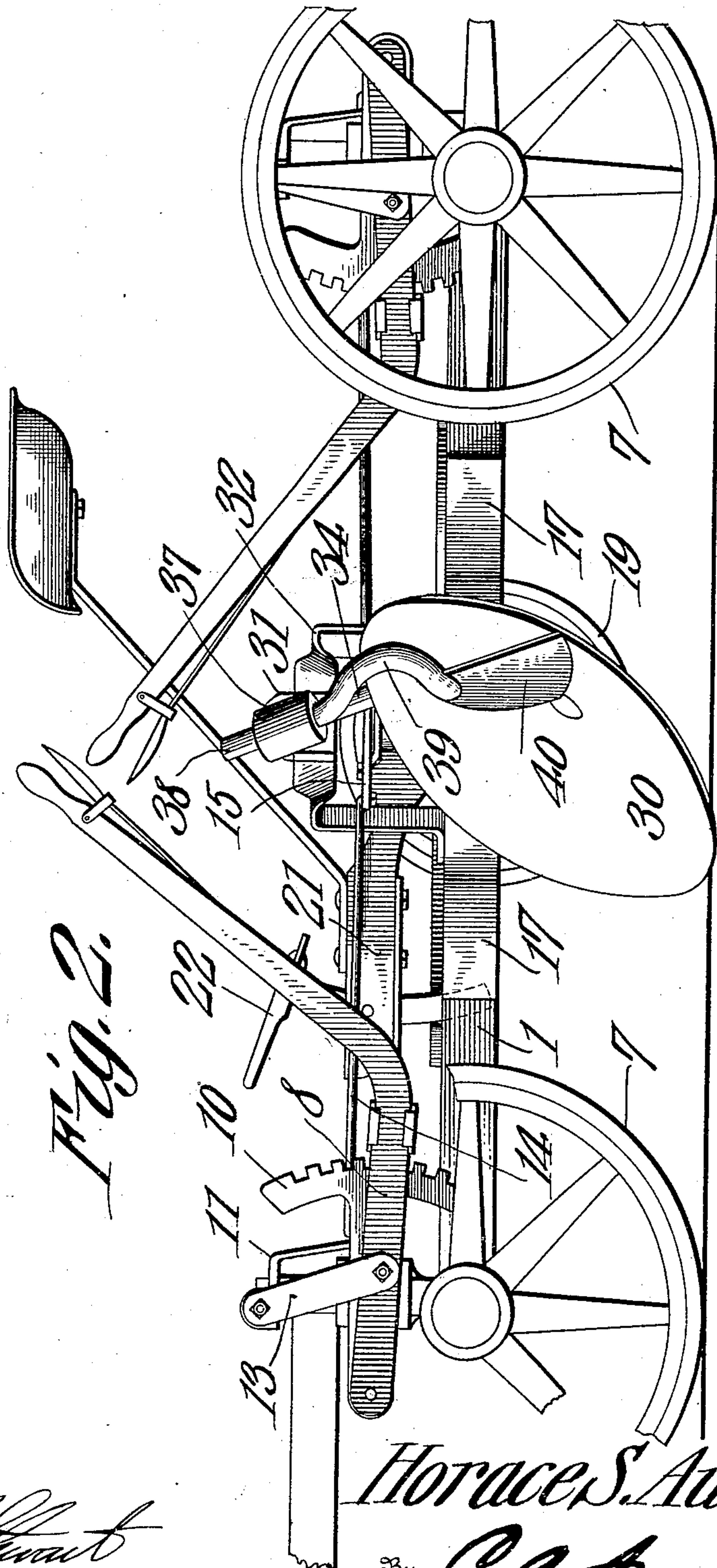


Fig. 2.

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Fig. 3.

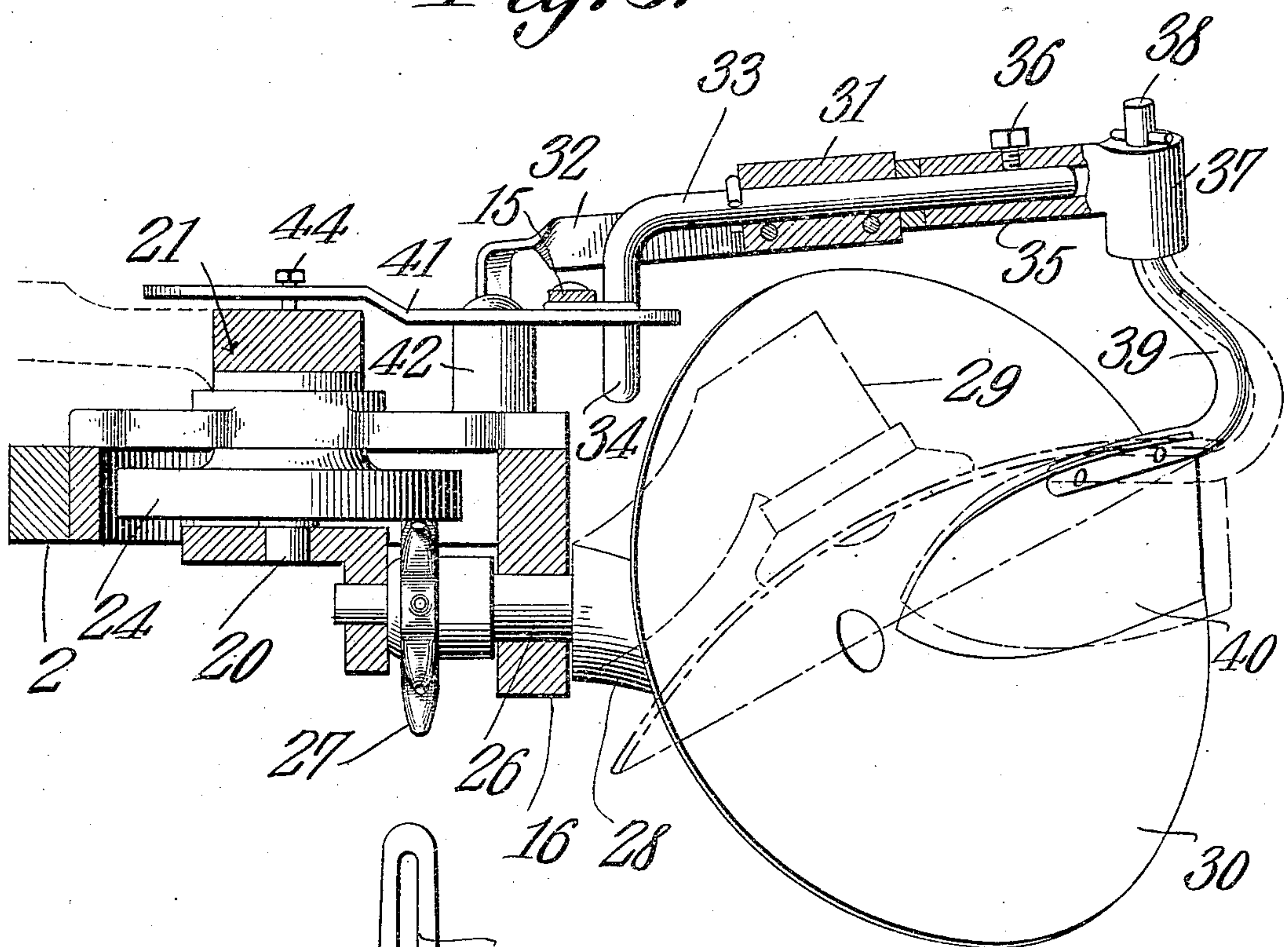
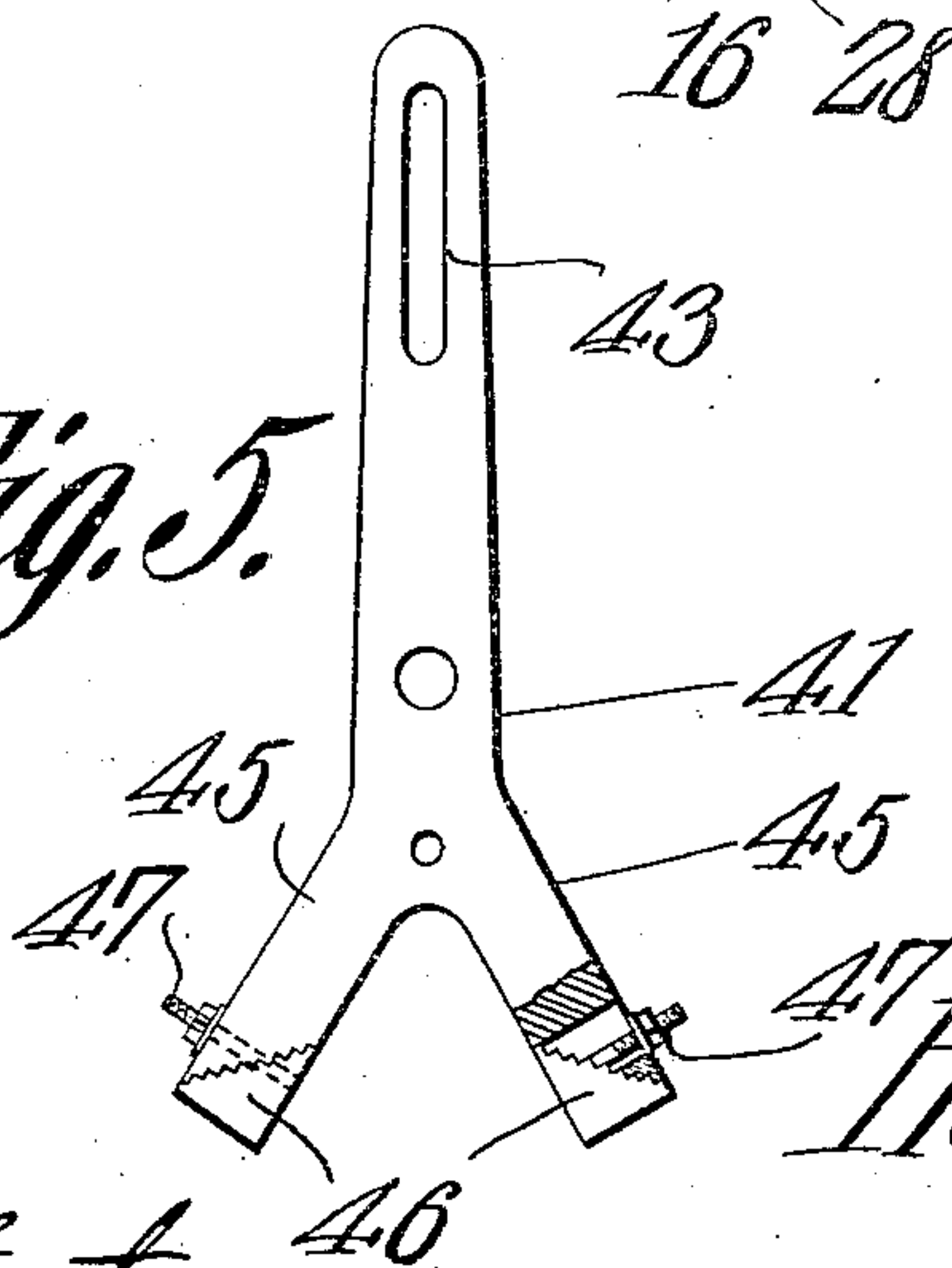


Fig. 5.



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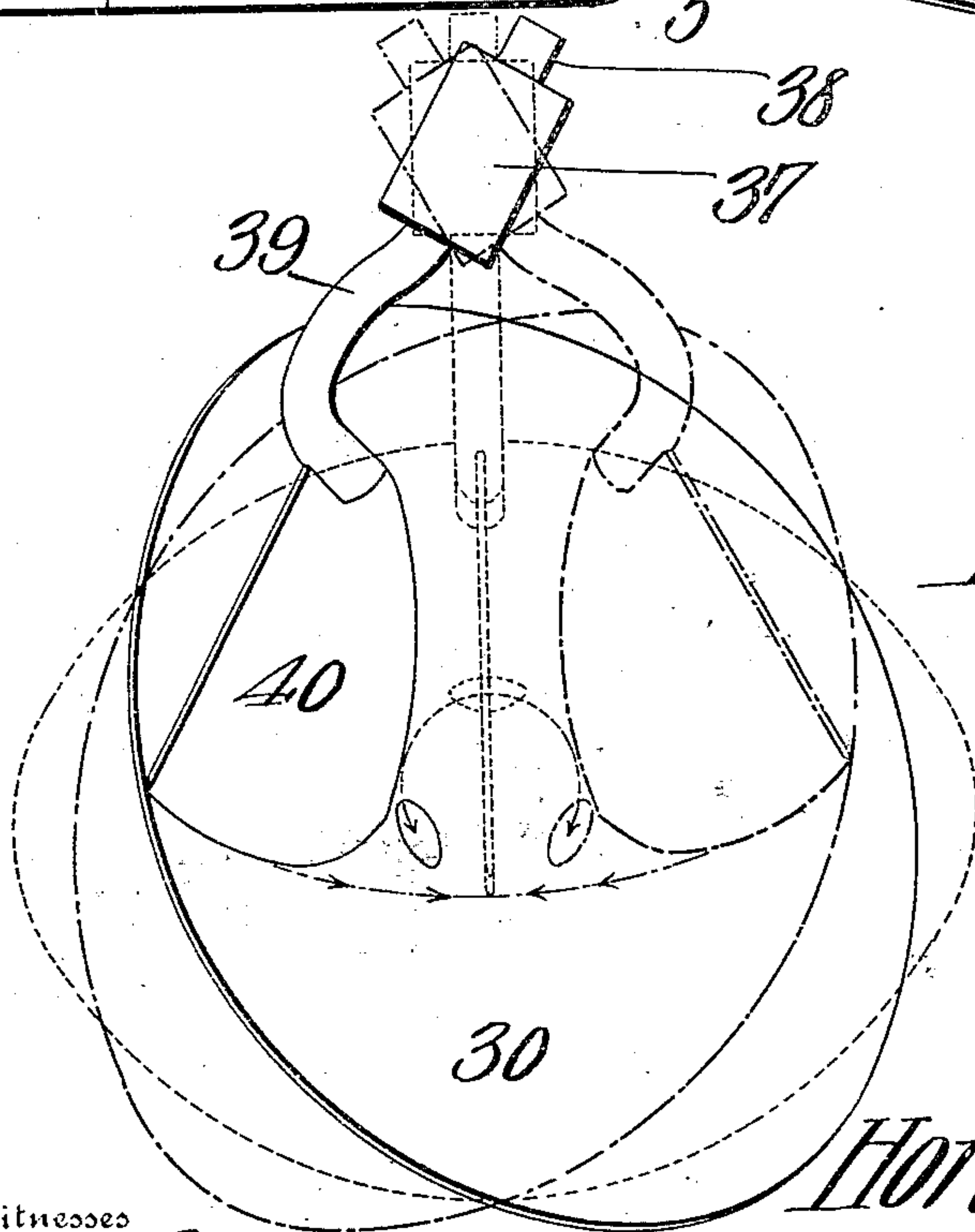
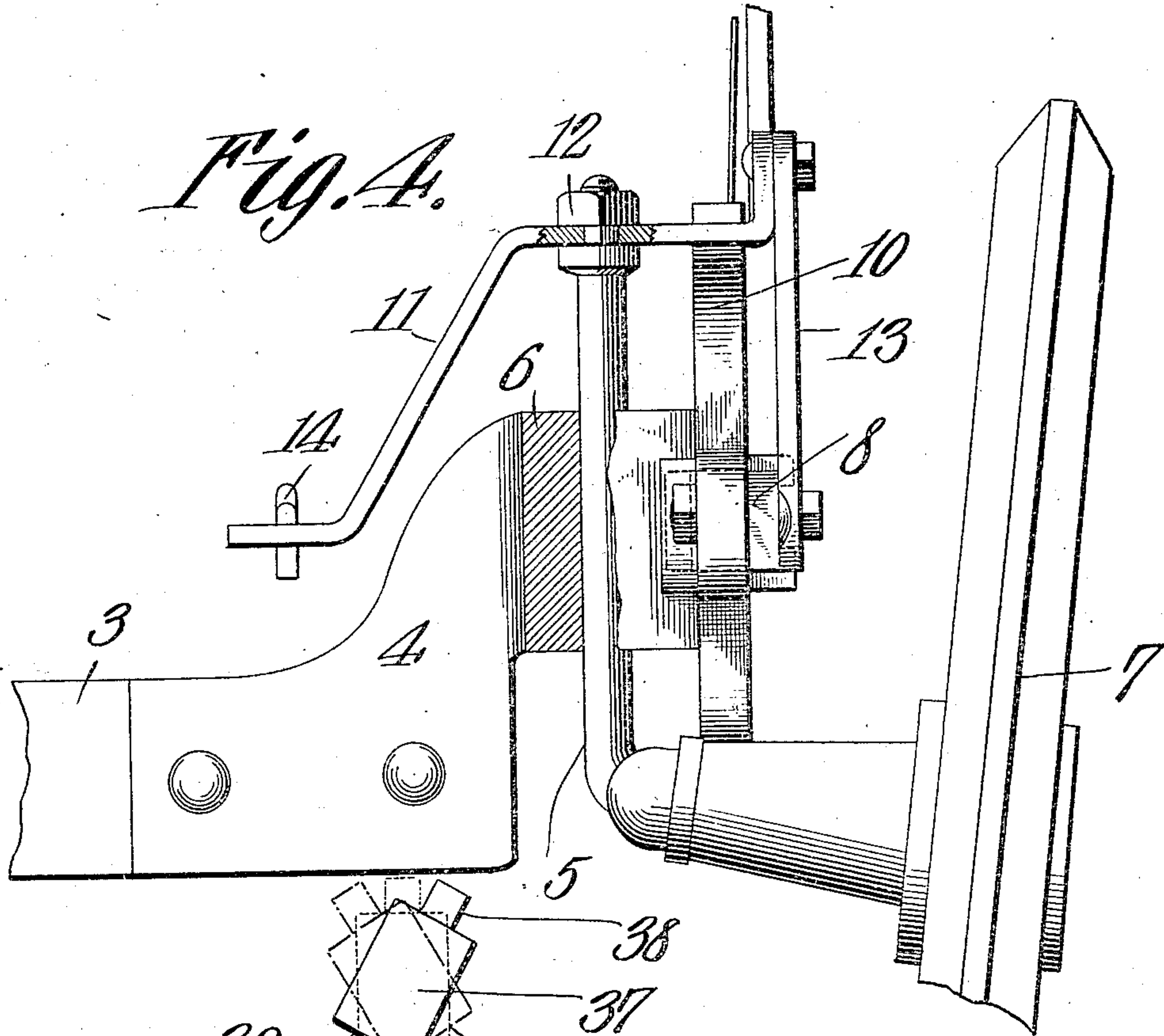
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4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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SCRAPER FOR REVERSIBLE-DISK PLOWS.

943,372.

Specification of Letters Patent.

Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, HORACE S. AUSTIN, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Scraper for Reversible-Disk Plows, of which the following is a specification.

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

The object of the invention is to provide a scraper of special construction and having a peculiar movement to engage the work facing surface of a reversible disk when in its work facing positions whereby the said disk may be permitted to turn over and above the ground during the act of reversal instead of being compelled to turn under as has heretofore been generally required. Thus it will be seen that in the present invention the movement of the scraper with relation to the disk is of practically as much importance as the construction of the scraper for the reason that the peculiar movement of the scraper permits of an advantageous movement on the part of the disk during the act of reversal.

In the drawing the scraper is shown applied to a reversible disk plow, but the essence of the present invention resides in the scraper and does not pertain to the plow structure.

Inasmuch as others have produced in combination a reversible plowing member and a movable scraper cooperating therewith, and means for effecting an initial reversing movement of the plowing member, and afterward the movement of the scraper, the subject matter of this invention is directed to the peculiar arrangement of the scraper, and its peculiar relation to the reversible plowing member during the act of reversal.

In the accompanying drawings: Figure 1 is a top plan view of a reversible disk plow having the scraper applied thereto. Fig. 2 is a side elevation of the plow with parts broken away and showing the scraper applied thereto. Fig. 3 is a transverse section of the intermediate portion of the plow showing the relative positions of the scraper and disk. Fig. 4 is an elevation partly in section of the running gear of one of the furrow wheels of the plow. Fig. 5 is a detailed plan view of a lever used upon the

plow for actuating the scraper, and Fig. 6 is a diagrammatic view illustrating the various relative positions of the scraper and disk during the act of reversal of the latter, this view also illustrates the movement of the scraper during the act of reversal of the disk.

As above intimated the scraper which is the subject of the present invention is adapted to be used in combination with disk plows of the reversible type and is especially adapted to be used upon such plows in which the disk turns over and above the surface of the ground during the act of reversal. Such a plow consists of a beam 1 having the arcuate intermediate portion 2 and the angularly disposed end portion 3. The brackets 4 are mounted at the extremities of the end portions 3 and the spindle shanks 5 are slidably journaled in the vertically disposed bearings 6 provided at the ends of the said brackets 4. The furrow wheels 7 are journaled upon the spindles carried at the lower ends of the shanks 5. The lever mechanisms 8 are fulcrumed to the outer portions of the brackets 4 and are provided with pawls 9 which are adapted to engage the gear segments 10 also mounted upon the brackets 4. The arms 11 are held in fixed relation upon the upper ends of the shanks 5 by means of the jam or clamp nuts 12 and the outer ends of said arms are connected by means of the links 13 with the levers 8. By this arrangement it will be observed that means is provided for raising and lowering the end portions 3 of the beam 1 with relation to the furrow wheels 7. The outer ends of the rods 14 are adjustably and pivotally connected with the inner ends of the arms 11 and the inner ends of the rods 14 are pivotally connected with a bar 15 which in turn is pivotally mounted upon the working end portion of a lever as will be hereinafter explained.

The substantially circular saddle 16 is mounted upon the beam 1 and has a portion which snugly fits within the arcuate portion 2 thereof and is provided at opposite sides with the lugs 17 which fit against the side of the beam 1 adjacent the end of the arcuate portion 2 thereof. The arcuate bracket 18 is attached at its ends to the beam 1 and is concentric with the arcuate portion 2 thereof. The ground wheel 19 supports the outer portion of the bracket 18. The vertically disposed shaft 20 is journaled for ro-

tation in the saddle 16 and the draft tongue 21 is fixed at its end to the said shaft 20. The said tongue 21 is provided with a pivoted foot latch 22 which is adapted to engage either one of the notches 23 located at the opposite end portions of the bracket 18.

The disk 24 is fixed with relation to the shaft 20 and is provided with the concentrically arranged orifices 25. The shaft 26 is journaled for rotation in the saddle 16 and is provided with a spur wheel 27 which meshes with the orifices 25 in the disk 24. The shaft 26 is disposed at a right angle to the shaft 20. At a point beyond the outer end of the journal bearing in the saddle 16 which receives the journaled portion of the shaft 26, the said shaft is disposed laterally as at 28 at an acute angle to the axis of the journaled portion of the said shaft. The portion 28 of the said shaft merges into the disk journal box 29 which is also disposed at an acute angle to the axis of the journaled portion of the shaft 26 and to the axis of the portion 28 of the said shaft. The disk 30 is journaled for rotation upon the box 29.

From the foregoing description of the parts of the plow it is obvious that when the tongue 21 is swung around horizontally from one end of the plow to the other end of the plow that the disk 30 is reversed in its work facing positions and that through the shafts 20 and 26 and the intermeshing members 24 and 27 that during the act of reversing the disk 30 turns over instead of under as is usually the case.

The mechanism of the scraper as used in connection with the above described plow consists of a journal bearing 31 which is supported at the outer ends of the arms 32 which in turn are mounted at their inner ends upon the saddle 16. The center of the bearing in the journal 31 occupies the same vertical plane as the center of the bearing in the saddle 16 which receives the journaled portion of the shaft 26. The shaft 33 is journaled in the bearing 31 and is provided with a depending portion 34.

The sleeve 35 is adjustably mounted upon the outer portion of the shaft 33 and is held in fixed position with relation thereto by the set screw 36. The outer end of the sleeve 35 is provided with a bearing box 37 in which is journaled the upper end of the arm 38. The journaled portion of the arm 38 is disposed at substantially a right angle to the shaft 33. At a point below the bearing box 37 the arm 38 is outwardly bowed as at 39 and then extends in toward the middle of the disk 30. The scraper 40 is mounted upon the lower end portion of the arm 38 and is substantially of cuneiform configuration in side elevation. The lever 41 is mounted upon the post 42 which in turn is erected upon the saddle 16. Said lever is

provided at its power end with an elongated slot 43 which receives a pin 44 mounted upon the tongue 21 eccentric to the shaft 20. It is upon this lever that the bar 15 (previously described) is pivotally mounted. The lever 41 is provided at its working end with the spaced branches 45 which lie upon opposite sides of the depending portion 34 of the shaft 33. The extremities of the branches 45 are provided with adjustable stops 46 which may be adjusted upon the said branches 45 and fixed in adjusted positions thereon by means of the bolts 47 which hold the said stops in place upon the said branches. The object in providing the adjustable stops 46 upon the branches 45 is to regulate the extent of movement which is transmitted from the lever 41 and the scraper shaft for the purpose of compensating for wear upon the part of the scraper.

As the tongue 21 swings around during the act of reversing the disk, as above described, the lever 41 is swung upon its fulcrum by the pin 44 located in the slot 43 and when the branches 45 or stops 46 engage the side of the portion 34 of the shaft 33 the said shaft is partially rotated and the scraper arm 38 and scraper 40 are swung in an arc. By reason of the fact that the branches 45 or stops 46 are spaced from the sides of the depending portion 34 of the shaft 33 the said shaft is not rotated with the initial movement of the lever 41 and the initial movement of the scraper 40 is due to the movement of the disk 30 which swings the scraper 40 into a substantially vertical position during the act of reversal. When however the disk is assuming its reversed position one of the branches 45 or a stop 46 engages the portion 34 of the shaft 33 and positively swings the scraper 40 into position against the face of the disk 30 in its reversed position. Thus should the scraper become worn at its disk engaging edge the stops 46 may be adjusted to increase or diminish the extent of movement of the scraper so that it may at all times properly bear against the face of the disk. At the same time that the disk 30 is reversed in its work facing positions the rods 14 are moved longitudinally which in turn swing the arms 11 so that the furrow wheels 7 are swung into different planes. This is necessary in order that the furrow wheel which is behind the disk shall follow in the furrow opened by the disk while the furrow wheel which is in advance of the disk will move in the furrow next adjacent to that which the disk is opening.

By reason of the fact that the scraper 40 moves about the axis of the shaft 33 in following the disk in its act of reversal the said scraper describes an approximately vertical arc and when in position against the disk is held at an angle or inclination to a vertical

line. Thus the said scraper is held in an advantageous position to keep the disk free of soil and by reason of its arcuate movement the parts may be compactly assembled and located in low positions notwithstanding the fact that the disk turns over above the surface of the ground during the act of reversal.

During the act of the reversing of the disk 30 it will be seen that the scraper 40 moves in two arcs, one of which is approximately vertical and is struck from the axis of the shaft 33 as a center, while the other arc is approximately horizontal and is struck from the axis of the arm 38 as a center. These two arcs are coequal in length. It will also be seen that by providing the lever 41 with the adjustable blocks 46 that the extent of the arcuate movement of the scraper 40 may be adjusted without changing or altering the path of movement of the said scraper. By reason of the fact that the work facing surface of the disk 30 is in contact with the upper edge of the scraper 40 during the act of reversal, the parts are more compactly assembled and the disk 30 is retained against rotation upon its own axis during the said act of reversal.

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

1. In combination with a reversible disk, a reversible scraper mounted for synclinal and pivotal movement during the act of reversal.

2. In combination with a reversible disk, a reversible scraper mounted for simultaneous synclinal and pivotal movement during the act of reversal.

3. In combination with a reversible disk, a reversible scraper mounted for movement to engage the disk in its work facing positions and means for adjusting the extent of movement of the scraper without changing its path of movement.

4. In combination with a reversible disk, a reversible scraper having a single scraping edge which moves in an approximately vertical arc to engage the disk in its work facing positions.

5. In combination with a reversible disk, a reversible scraper mounted for movement in a synclinal arc to engage the disk in its work facing positions.

6. In combination with a reversible disk, a reversible scraper mounted for movement in a synclinal path to engage the disk in its work facing positions.

7. In combination with a reversible disk, a reversible scraper mounted for movement to engage the disk in its work facing positions and having an upper edge which engages the face of the disk during the act of reversal.

8. In combination with a reversible disk,

a reversible scraper mounted for movement in an arc to engage the disk in its work facing positions and having an upper edge which engages the face of the disk during the act of reversal.

9. In combination with a reversible disk, a reversible scraper mounted for movement in an approximately vertical arc to engage the disk in its work facing positions and having an upper edge which engages the face of the disk during the act of reversal.

10. In combination with a reversible disk, a reversible scraper mounted for movement in a synclinal arc to engage the disk in its work facing positions, and having an upper edge which engages the face of the disk during the act of reversal.

11. In combination with a reversible disk, a reversible scraper mounted for movement in a synclinal path to engage the disk in its work facing positions, and having an upper edge which engages the face of the disk during the act of reversal.

12. In combination with a reversible disk, a journaled shaft having its axis lying transversely over the disk, an arm journaled to the shaft and a scraper attached to the arm and adapted to engage the disk in its work facing positions.

13. In combination with a reversible disk, a journaled shaft having its axis lying transversely over the disk, an arm journaled to the shaft for axial movement at an approximate right angle thereto, and a scraper attached to the arm and adapted to engage the disk in its work facing positions.

14. In combination with a reversible disk, a shaft journaled for rotation in the same vertical plane as the axis upon which the disk turns in reversing, and lying transversely over the disk, an arm journaled to said shaft and a scraper carried by the arm and adapted to engage the disk in its work facing positions.

15. In combination with a reversible disk, a swinging draft means operatively connected with the same, a frame supporting the disk and said draft means, furrow wheels supporting the frame, a shaft journaled over the disk and having a depending end, a lever fulcrumed upon the frame and having a bifurcation which receives the depending end of said shaft, a bar pivoted to the lever and being operatively connected with the furrow wheels for swinging the same into different planes, said lever being operatively connected with the draft means, and a scraper carried by the shaft to engage the disk in its work facing positions.

16. In a plow a disk mounted for movement in an anticlinal path in the act of reversal, and a scraper mounted for movement in a synclinal path during the act of reversal of the disk and adapted to engage the disk when in its work facing positions.

17. In a plow a disk mounted for movement in an anticlinal path in the act of reversal, and a scraper mounted for movement in an underlying synclinal path during the act of reversal of the disk and adapted to engage the disk when in its work facing positions.

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

HORACE S. AUSTIN.

Witnesses:

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WM. J. NEALE.