

Oct. 25, 1949.

W. R. SMITH

2,485,932

REVERSIBLE DISK FLOW

Filed March 25, 1946

2 Sheets-Sheet 1

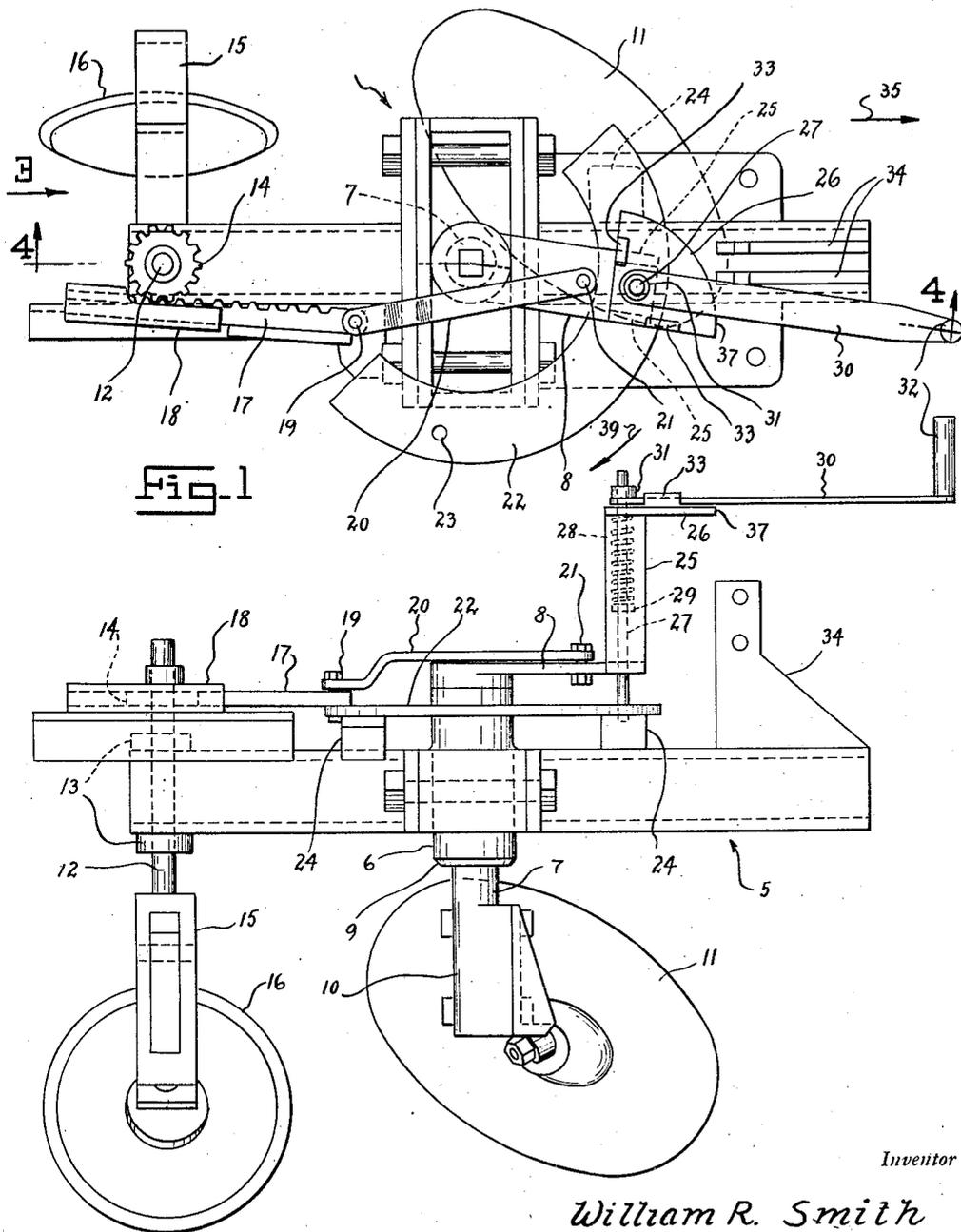


Fig-1

Fig-2

Inventor

William R. Smith

By *Clarence A. O'Brien*  
*and Harvey B. Jacobson*  
Attorneys

Oct. 25, 1949.

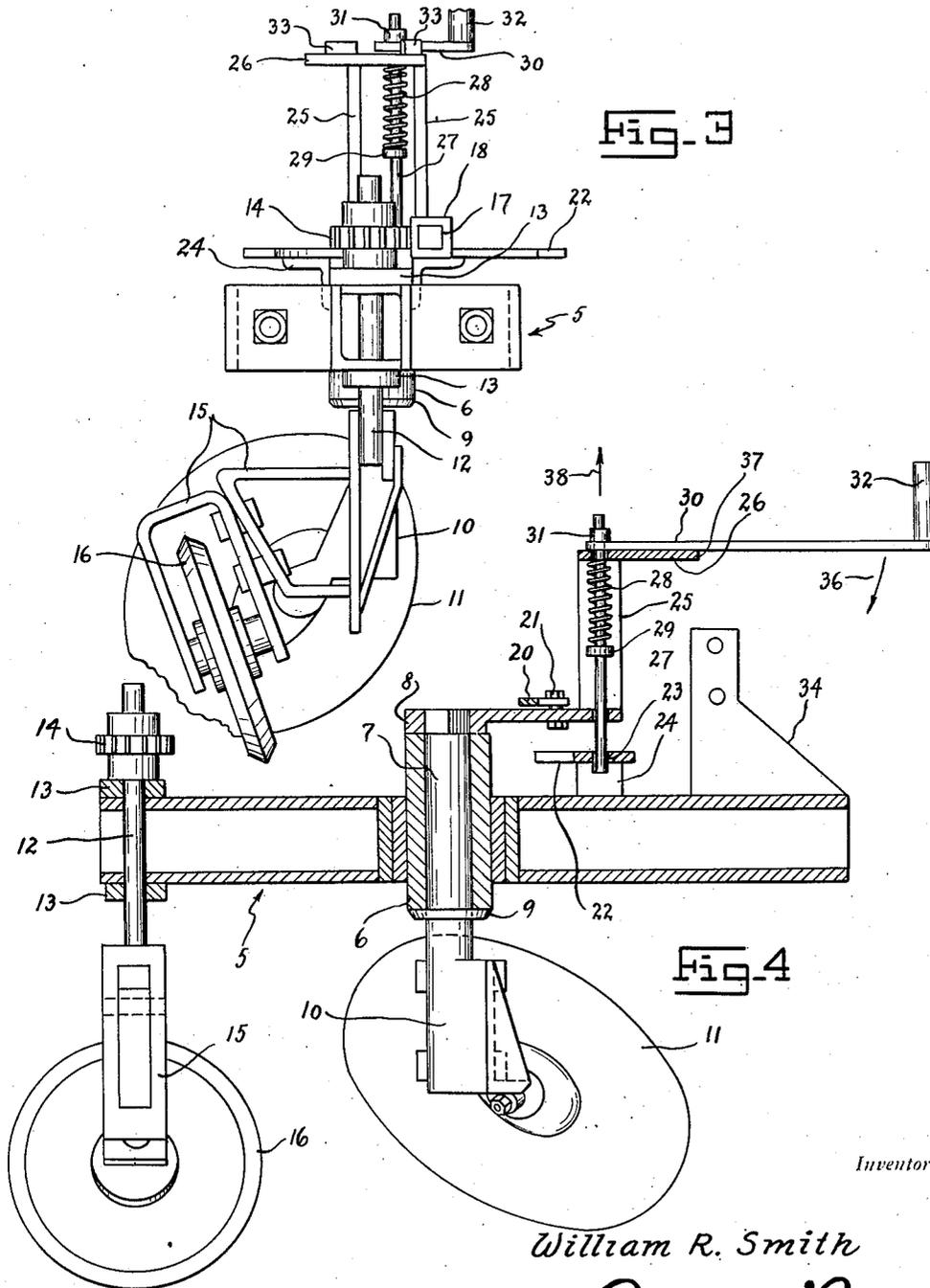
W. R. SMITH

2,485,932

REVERSIBLE DISK PLOW

Filed March 25, 1946

2 Sheets-Sheet 2



Inventor

William R. Smith

By *Clarence W. O'Brien*  
*and Harvey E. Jacobson*  
Attorneys

# UNITED STATES PATENT OFFICE

2,485,932

## REVERSIBLE DISK PLOW

William R. Smith, Carlsbad, N. Mex.

Application March 25, 1946, Serial No. 657,045

2 Claims. (Cl. 97—32)

1

This invention relates to new and useful improvements and structural refinements in reversible disc plows, and the principal object of the invention is to provide a device of the character herein described, in which the plow discs may be readily and conveniently reversed at the end of each row, in order that the plowed earth may be thrown in the same direction notwithstanding the directional movement of the plow.

A further object of the invention is to provide a plow which, by virtue of its operation as above set forth, will cultivate a larger portion of a given area of land, than has heretofore been possible with plows of conventional design. The formation of ditches, or so-called "water furrows" is eliminated and the present necessity of plowing around a field and producing a "sink" in the center thereof, is also avoided.

Another object of the invention is to provide a plow in which the reversing of the discs is accomplished by means of a single lever, conveniently manipulated from the driver's seat of a tractor, or the like, by which the plow is drawn.

An additional object of the invention is to provide a plow which is of simple construction and which cannot easily become damaged.

With the above more important objects in view, and such other objects as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of the invention.

Figure 2 is a side elevation thereof.

Figure 3 is a rear end view, taken in the direction of the arrow 3 in Figure 1, and

Figure 4 is a cross-sectional view, taken approximately in the plane of the line 4—4 in Figure 1.

Like characters of reference are used to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the invention consists of a frame designated generally by the reference character 5, the same assuming the form substantially as shown and being constructed from structural angles, plates, and other suitable material.

The frame 5 is provided medially of its length with a bushing 6 and a vertical shaft 7 is rotatably journaled in this bushing, as will be clearly apparent from the accompanying drawings.

The upper end of the shaft 7 is square in cross-section and is pressed into a crank 8 and a suitable collar 9 is positioned on the shaft, whereby the

2

latter is prevented from sliding longitudinally in the bushing 6.

A bracket 10 is secured to the lower end of the shaft 7 and a plow disc attachment, such as may assume the form of one or more of the rotatable, vertically off-set discs 11, is in turn connected to the bracket, as is best shown in Figures 2 and 4.

A king-pin 12, provided with suitable stop collars 13, is rotatably journaled in the rear end of the framework 5. The upper end of this king-pin carries a pinion 14, while its lower end is provided with a carrier 15. A vertically off-set cutter wheel 16 is rotatably journaled in this carrier, the same being disposed on one side of the frame 5, as is best shown in Figures 1 and 3.

A rack strip 17 is slidably positioned in a guide channel 18 attached to the frame, this rack strip engaging the aforementioned pinion 14 and being pivotally connected at one end thereof as at 19 to a pitman 20. The remaining end of this pitman is pivoted as at 21 to the aforementioned crank 8.

A segment 22, formed with a plurality of indexing apertures 23, is secured to the frame 5 by suitable brackets 24, the purpose of this segment being hereinafter more fully described.

An upright extension consisting of a pair of spaced side bars 25 is provided at the outer end of the crank 8, and a quadrant 26 is secured to the upper ends of the bars 25, to provide a bearing for the upper end of a slidable indexing pin 27. The lower end of this pin extends through the crank 8 and normally engages one of the apertures 23, under the action of a compression spring 28. The latter is positioned on the pin 27 between a collar 29 and the underside of the quadrant 26, and one end of a lever 30 is positioned on the upper end of the pin 27, adjacent to a stop collar 31. A portion of the lever 30 rests upon the quadrant 26 and the remaining end of the lever is provided with a handle 32.

It should be understood that the end of the lever 30 associated with the pin 27 is formed with a suitable aperture whereby it may freely and rotatably engage the pin, as will be hereinafter described. The quadrant 26 is formed with a pair of upstanding lugs 33, to limit the movement of the lever on the pin.

The frame 5 is provided at the forward end thereof with suitable brackets 34, whereby the plow as a whole may be conveniently attached to a tractor or to some other suitable source of motive power.

Having thus described the constructional de-

tails of the invention, its method of operation will now be presented.

Assuming the invention to be in the position illustrated in Figure 1 and traveling in the direction of the arrow 35, the plow discs may be readily reversed at the end of the row by simply pushing the handle 32 downwardly, as shown at 36 in Figure 4. During this action, the edge 37 of the quadrant 26 will function as a fulcrum for the lever 30 and the engagement of the latter with the collar 31 will raise the pin 27 upwardly in the direction of the arrow 38.

The lower end of the pin 27 will thus be disengaged from the aperture 23 and the lever 30, together with the associated extension 25 and the crank 8, may now be rotated as a whole, along the segment 22 in the direction 39. It will be noted that this rotation "en masse" is facilitated by the lever 30 engaging the adjacent of the lugs 33. The crank 8 may thus be rotated through approximately 90° on the segment 22, whereupon, by releasing the handle 32, the spring 28 will engage the lower end of the pin 27 with another of the apertures 23.

The rotation of the crank 8 is accompanied by a corresponding rotation of the shaft 7 and the disc 11 will thus be brought into a reverse position (at 90° with respect to that illustrated) on the opposite side of the frame 5.

The movement of the crank 8 will be transmitted by the pitman 20 to a sliding movement of the rack strip 17, this in turn, resulting in a rotation of the king-pin 12. Accordingly, the position of the wheel 16 will be reversed simultaneously with the reversal of the discs 11 and the mechanical arrangement of the various components involved is such that the pin 12 is rotated through 180° for a 90° rotation of the shaft 7.

It will be noted that when the plow is in its reversed position, the lever 30 will extend approximately at right angles to the longitudinal axis of the frame 5. While in this position, the handle 32 could not be readily reached from the driver's seat of the tractor and the lever 30 is therefore rotated about the pin 27 against the remaining of the lugs 33. The lever may thus be directed toward the driver in readiness for the next reversing operation. It should be also noted that notwithstanding the position of the lever 30, the quadrant 26 will always be in readiness to provide a fulcrum therefor, as has been already set forth.

It is believed that the advantages resulting from the use of the invention will be clearly understood from the foregoing disclosure and accordingly, further description thereof at this point is considered unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted

to without departing from the spirit and scope of the invention as claimed.

What I claim as my invention is:

1. A reversible disc plow comprising in combination, a frame adapted for connection to a source of motive power, a vertical shaft and a vertical king-pin rotatably journaled in said frame, a bracket at the lower end of said shaft, a carrier at the lower end of said king-pin, a vertically off-set plow disc rotatably mounted on said bracket, a vertically off-set cutter wheel rotatably journaled in said carrier, a crank secured to the upper end of said shaft, a pinion mounted on the upper end of said king-pin, a rack strip slidable on said frame and in engagement with said pinion, a pitman connecting said crank to said rack strip, a segment secured to said frame concentrically with said shaft, an upright extension at the free end of said crank, a spring controlled indexing pin slidably positioned in said extension, said segment being formed with a plurality of indexing apertures, the lower end of said pin normally extending through said crank and engaging one of said apertures, a quadrant secured to the upper end of said extension, a lever connected at one end thereof to the upper end of said pin, a portion of said lever resting on said quadrant, and a handle at the remaining end of said lever, the edge of said quadrant acting as a fulcrum for said lever upon the depression of said handle, and said lever disengaging said pin from said aperture.

2. A reversible disc plow comprising in combination, an elongated frame adapted for connection to a source of motive power, a vertical shaft and a vertical king pin rotatably journaled in said frame, a bracket at the lower end of said shaft, a carrier at the lower end of said king pin, a vertically offset plow disc rotatably mounted on said bracket, a vertically offset cutter wheel rotatably journaled in said carrier, a crank secured to the upper end of said shaft, a pinion mounted at the upper end of said king pin, a rack strip slidable on said frame and in engagement with said pinion, a pitman connecting said crank to said rack strip, a segment secured to said frame concentrically with said shaft, an upright extension at the free end of said crank, and an indexing pin slidably positioned in said extension, said segment being formed with a plurality of indexing apertures, and said pin extending through said crank and being engageable with said apertures.

WILLIAM R. SMITH.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
651,522	Blain et al. _____	June 12, 1900
1,127,179	Brown _____	Feb. 2, 1915
1,134,149	Mowry _____	Apr. 6, 1915