H. G. KLAUS, DEC'D.
O. KLAUS, ADMINISTRATOR.
PLOW.
APPLICATION FILED JULY 3, 1908.

994,321.

Patented June 6, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

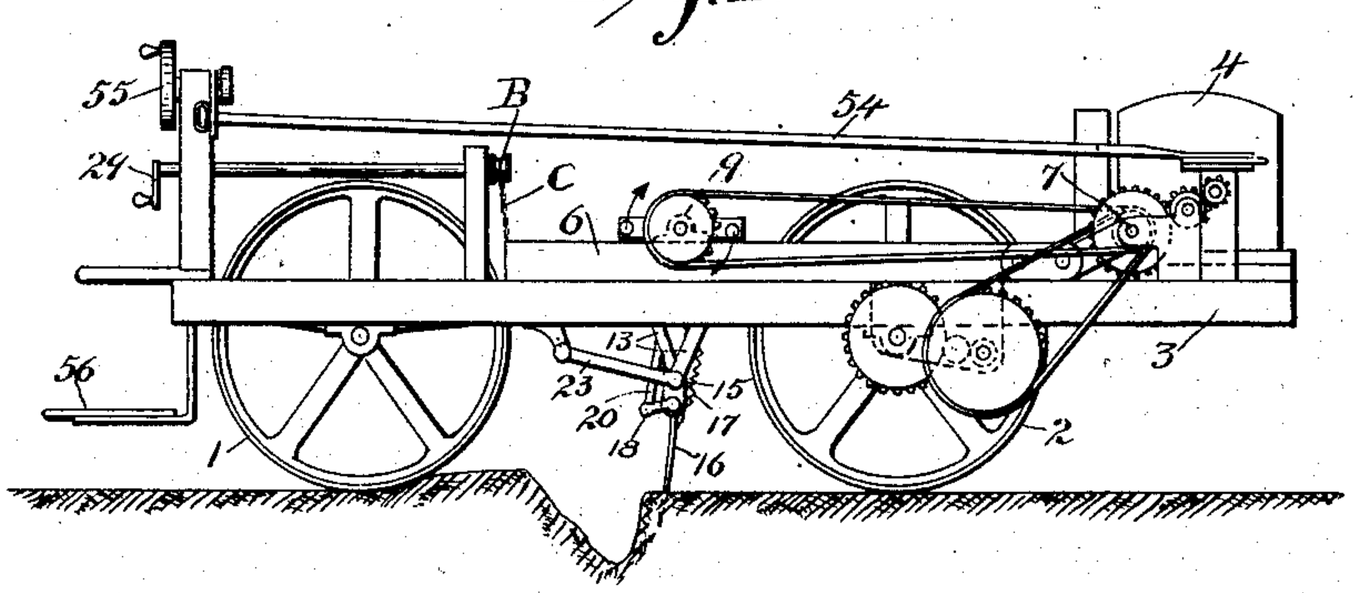
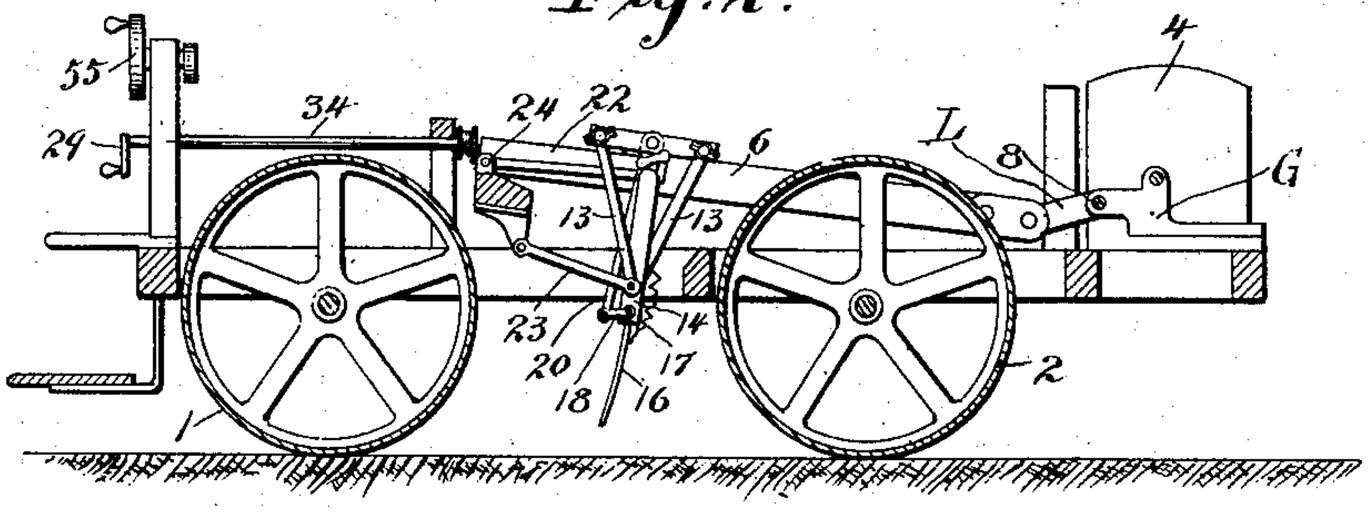


Fig. 2.



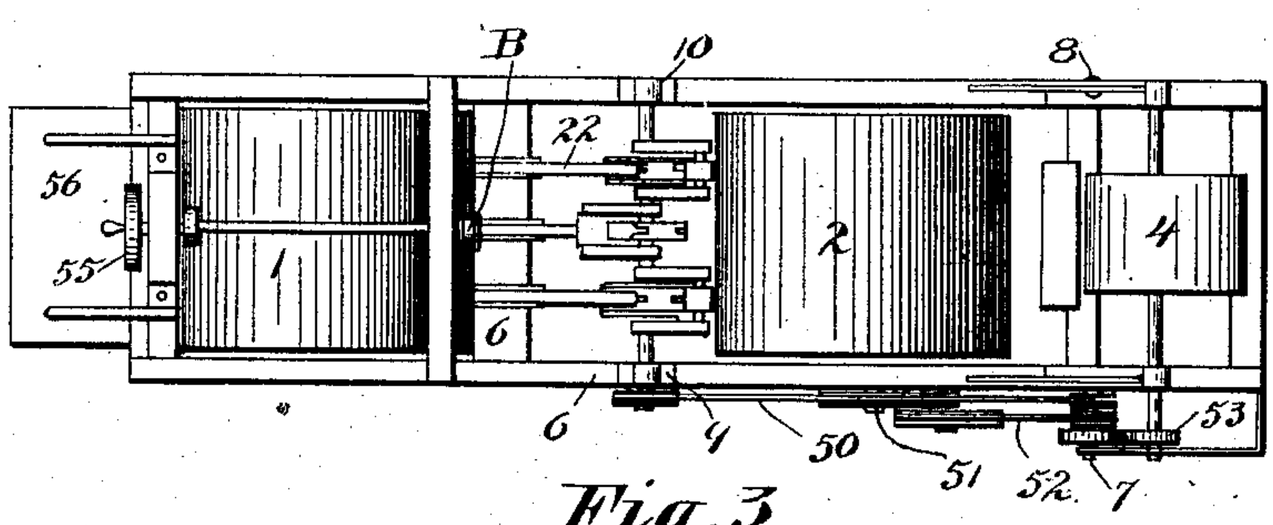


Fig. 3

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Edw S. Dabois

Inventor:
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2 SHEETS—SHEET 2.

Fig. 7.

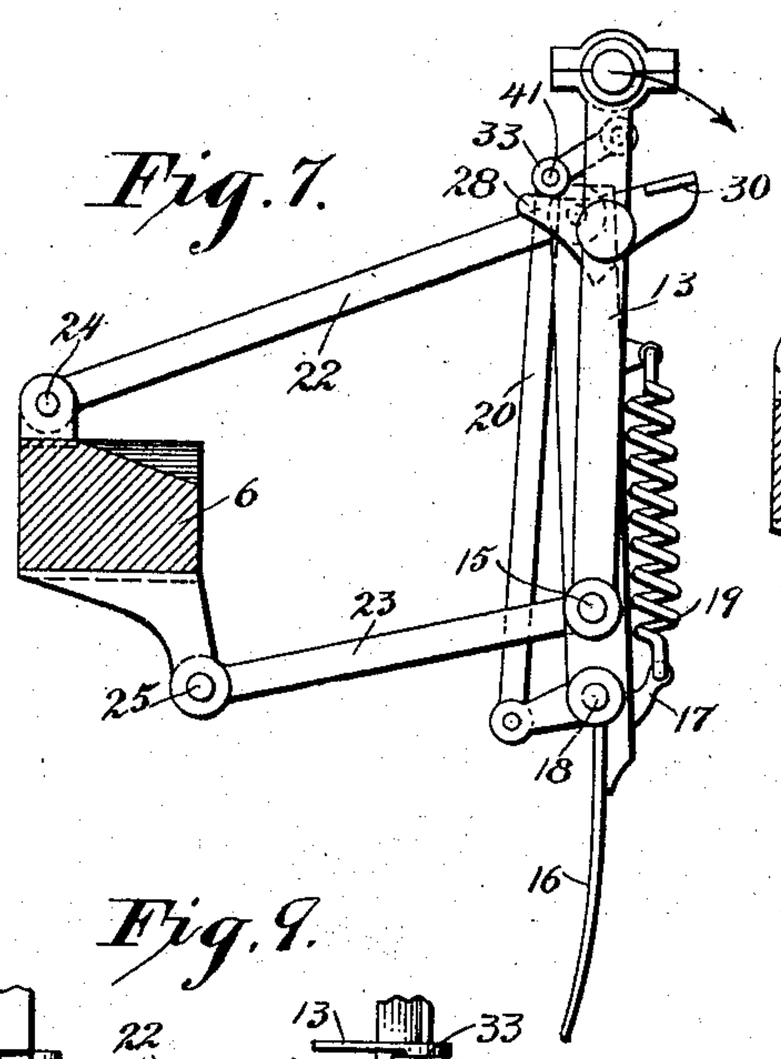


Fig. 5.

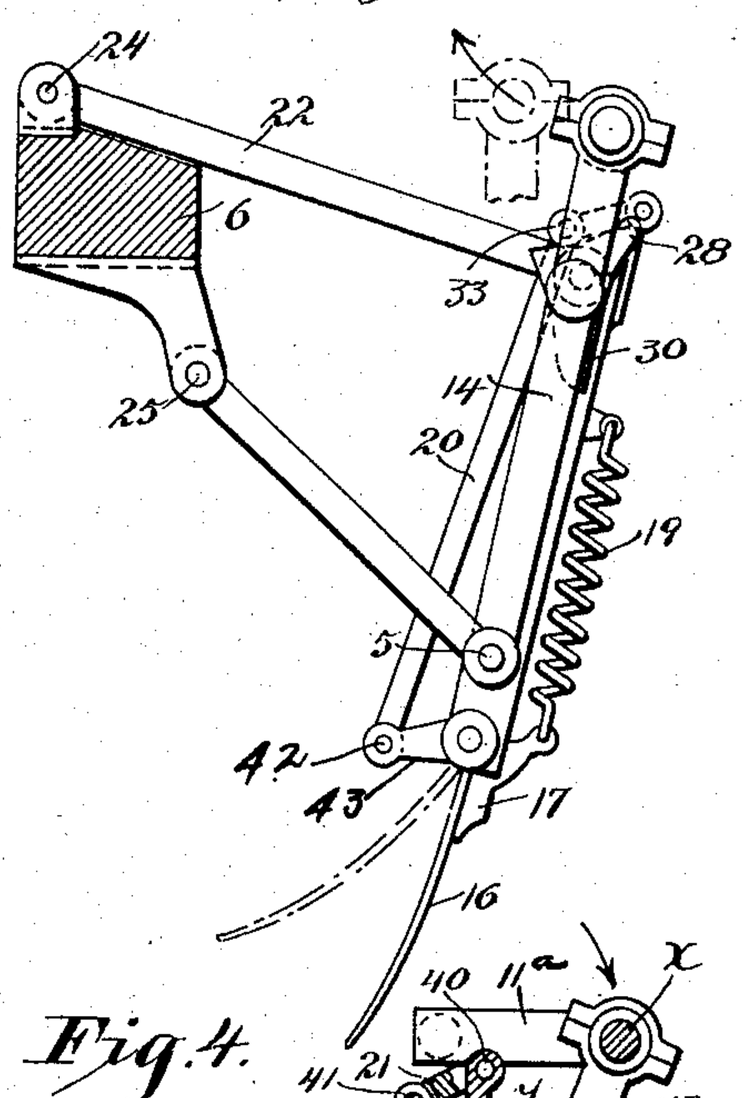


Fig. 9.

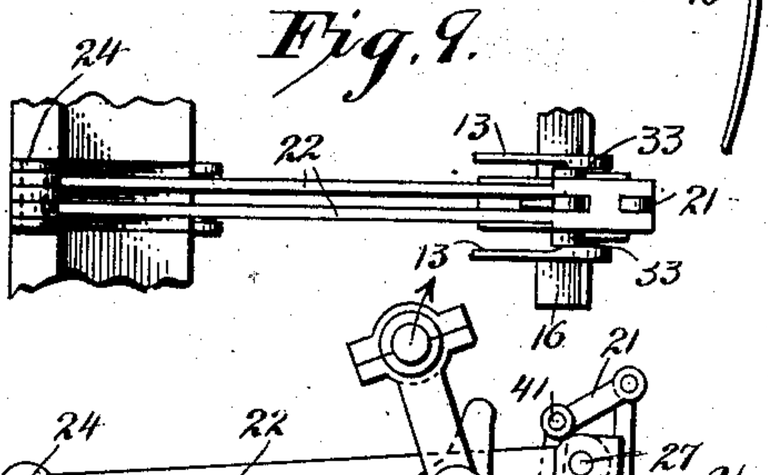


Fig. 4.

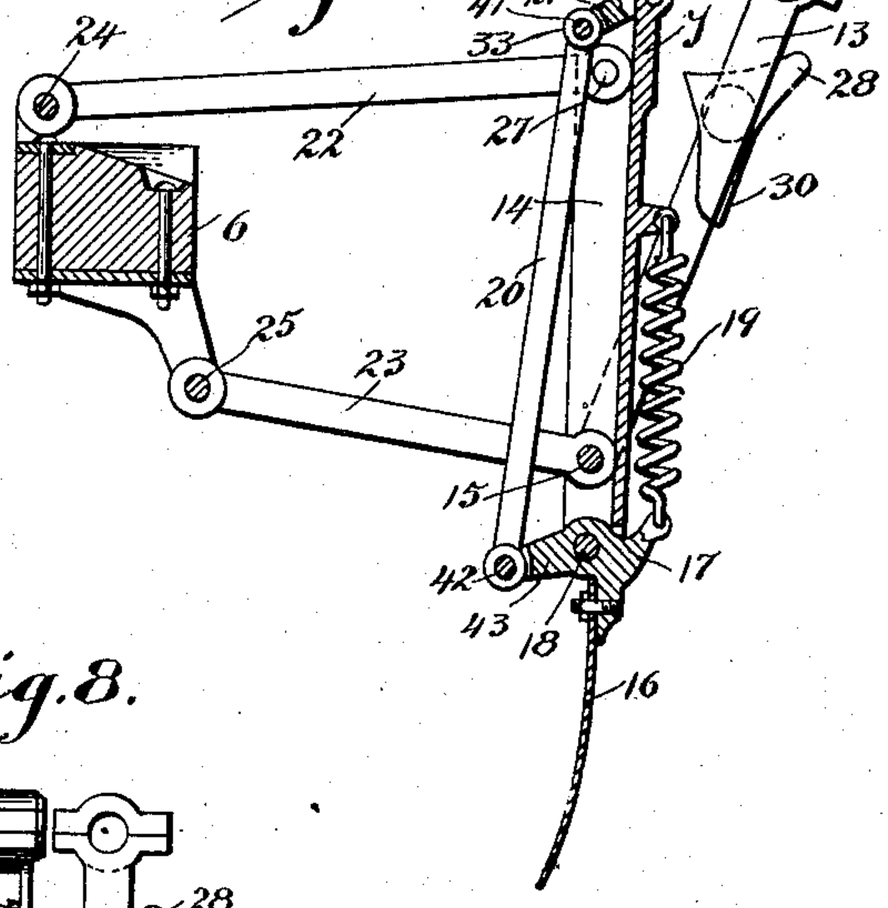


Fig. 6.

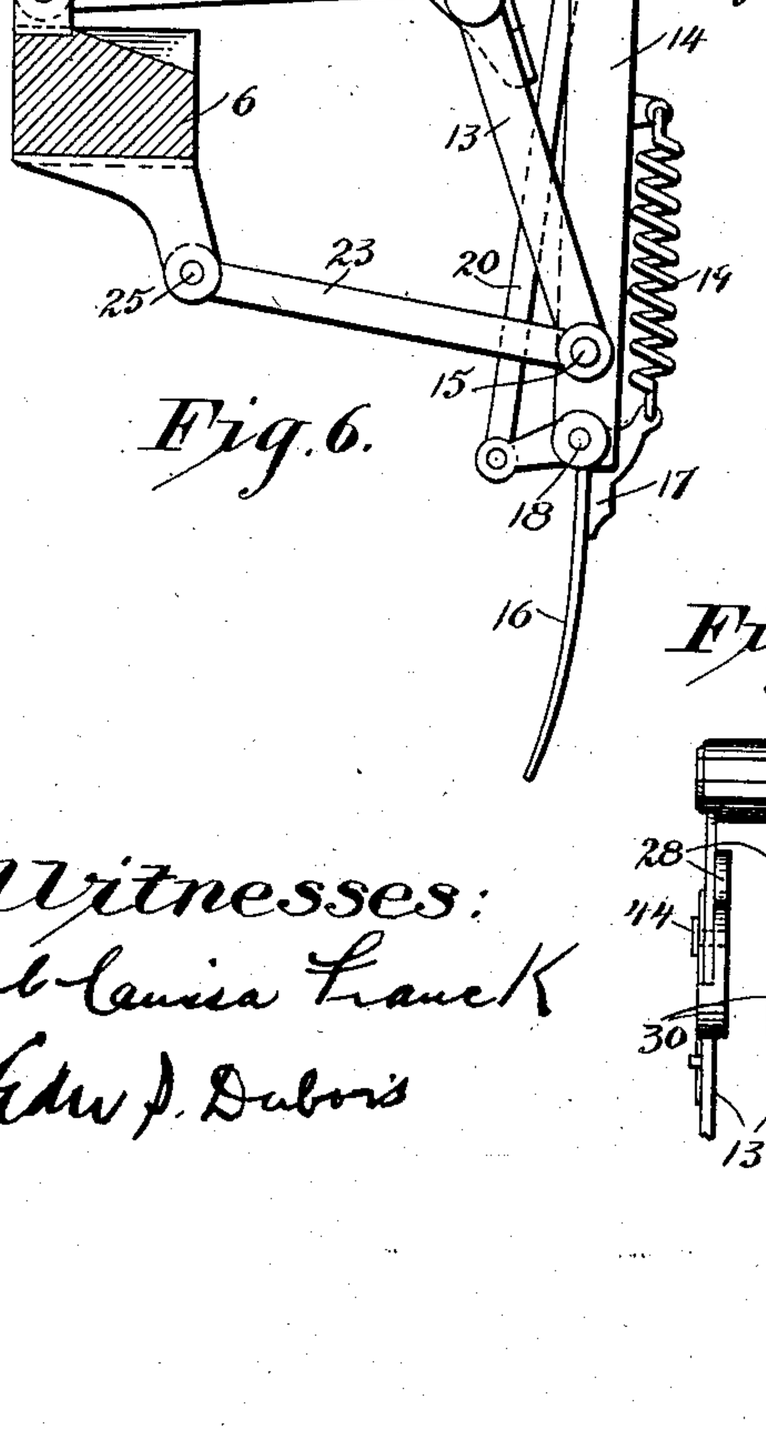
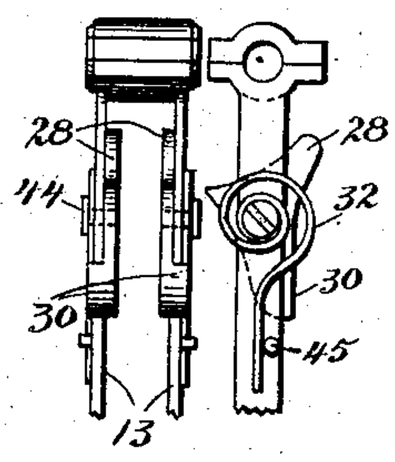


Fig. 8.



Witnesses:

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UNITED STATES PATENT OFFICE.

HEINRICH GOTTLIEB KLAUS, OF ZURICH, SWITZERLAND; OTTO KLAUS ADMINISTRATOR OF SAID HEINRICH GOTTLIEB KLAUS, DECEASED.

PLOW.

994,321. Specification of Letters Patent. **Patented June 6, 1911.**

Application filed July 3, 1908. Serial No. 441,746.

To all whom it may concern:

Be it known that I, HEINRICH GOTTLIEB KLAUS, a citizen of the Swiss Confederation, residing at Zurich, Switzerland, have invented certain new and useful Improvements in Plows, of which the following is a specification.

My invention relates to improvements in motor plows of a character wherein spades are forced into the earth to a predetermined depth and are actuated to dig up and turn over earth clods.

The object of the invention is to improve the detailed structure of plows of this character, and the invention comprises the novel features and combination hereinafter fully described, illustrated and claimed.

In the accompanying drawing wherein an embodiment of the invention is illustrated Figure 1 is a side elevational view of a plow provided with my invention; Fig. 2 is a longitudinal sectional view thereof; Fig. 3 is a plan view; Figs. 4 to 9 are detail views of the spading members and appurtenant parts.

Referring to the drawings by reference characters, 1 and 2 indicate a pair of wheels or rollers revolubly mounted in the main frame 3 of the machine. The frame 3 also serves to support a motor 4 of any suitable type which is designed to actuate the spades hereinafter described, and which motor may also be employed to advance the plow. Supported from the frame 3 is a frame 6, which for convenience of description will be termed the spade supporting frame. Secured to the forward end of the frame 6 is a cable or chain C, which is also attached to and may be wound upon a boss B, formed at one end of a spindle 34 operable through the medium of a crank handle 29. At its rear end the frame 6 is provided with a pair of links L which are pivotally secured to shafts 7 and 8 bearing in brackets G near the rear end of the main frame 3. It will be understood that by operating the crank handle 29 the spade supporting frame may be vertically displaced to clear the spades entirely of the ground or to determine the depth to which they shall penetrate the earth.

At approximately its middle portion the frame 6 is provided with bearings 9 and 10 adapted to receive a crank shaft 11^a having a plurality of crank pins X, upon each of which is pivotally hung a pair of crank arms 13, the latter being alternately depressed and elevated during revolution of the crank shaft 11^a. Pivoted between each pair of arms 13 on a pin 15 is a bar 14 which for convenience of description will be termed the spade supporting bar. Passing through the lower portion of each bar 14 is a pivot pin 18 upon which is mounted the spade securing member 17 designed to hold the spade 16. The member 17 and the spade secured thereto are normally retained in a position alined with the bar 14 by means of a retractile spring 19 extending from the bar 14 to the member 17. Projecting upwardly from each bar 14 is a bracket *y* in which is pivotally mounted on a pin 40 a link 21, the latter having at its end opposite that which is mounted on the pin 40 a pivot pin 41 upon which is pivotally hung a pair of arms 20 their opposite ends being pivoted at 42 to a projecting arm 43 of the spade securing member 17. Each link 21 is also provided upon each of its lateral faces with a roller 33 for a purpose to be presently described. Pivoted to the inner face of each crank arm 13 is a substantially triangular shaped cam 28 under the influence of a coiled spring 32 one end of which is fast on the pivot pin 44 of the cam and the other end of which is held by a stop 45. Each cam 28 has an extension 30 formed thereon which overlies the edge of the arm 13, the construction being such that the cam can only revolve in one direction, *i. e.* forward. Pivoted to the frame 6 at 24 and 25 is a pair of substantially horizontal arms 22 and 23, pivoted to the bar 14 at 27 and 15, respectively, the purpose of these arms being to impart to the bars 14 a substantially rectilineal motion diagonally to the direction of motion of the plow.

The crank shaft 11^a is driven from the motor 4 by means of any suitable gearing, such as chain and sprocket wheel gearing, designated generally as 50 in Fig. 3 of the drawing, and the motor 4 may also be utilized to furnish the motive power for the plow by securing upon the shaft of the wheel 2 a sprocket wheel 51 and passing over the same a chain 52 which also passes over a similar sprocket wheel 53 driven from the shaft of the motor 4.

54 indicates a steering rod operable from

the crank handle 55 within reach of the operator who may stand upon the platform 56.

The operation of the invention is as follows:—As the crank shaft revolves the crank arms 13 operate to alternately depress and elevate bars 14 with the spades 16 depending therefrom. When the bar 14 is in its lowermost position the nose of the cam 28 will strike one of the rollers 33 causing the spade 16 to move in the arc of a circle. When the spade is out of the earth and the cam clear of the roller the spring 19 will draw the spade back into its initial position.

Having thus described my invention, what I claim is:—

1. In a motor plow, the combination with a crank shaft, of crank arms driven thereby, spades designed to be reciprocated by said crank arms, and a revoluble cam upon the inner face of each crank arm, said cams being adapted to move the spades in the arc of a circle when they have reached their deepest point of penetration in the earth.

2. In a motor plow, the combination with a crank shaft, of a frame and spades supported from the frame, crank arms driven from the crank shaft and designed to reciprocate the spades, means for holding the spades normally in a position at right angles to the earth, and cams pivoted upon the inner face of the crank arms, said cams being designed to move the spades in the arc of a circle when said spades have reached their deepest point of penetration in the earth.

3. In a motor plow, the combination with a spade supporting frame, of a crank shaft journaled therein, crank arms operable from said crank shaft, a spade supporting bar arranged between each pair of crank arms, and a revoluble cam upon the inner face of each crank arm for moving the spades in the arc of a circle when said spades have reached their deepest point of penetration in the earth.

4. In a motor plow, the combination with a spade supporting frame, of a crank shaft journaled in the frame, a plurality of crank arms operable from the crank shaft, a spade supporting bar arranged between each pair of crank arms, a spade holder and spade pivoted on one end of each spade supporting bar, means for normally holding the spade in alinement with the spade supporting bar, and revoluble cams upon the crank arms for moving the spades in the arc of a circle when said spades have reached their deepest point of penetration in the earth.

5. In a motor plow, the combination with a spade supporting frame, of a crank shaft journaled therein, a plurality of crank arms operable from the crank shaft, a spade supporting bar designed to be alternately depressed and elevated by the crank arms and arranged therebetween, a spade pivoted at the lower end of each spade supporting bar, a spring for normally holding the spade in substantial alinement with the spade supporting arm, and cams upon the inner faces of the crank arms designed to move the spades in the arc of a circle against the tension of the spring.

6. In a motor plow, the combination with a spade supporting frame, of a crank shaft journaled therein, a plurality of crank arms arranged in pairs operable from said crank shaft, a spade supporting bar pivoted to the frame between each pair of crank arms, said spade supporting bar being reciprocable by the crank arms, a spade pivoted at the lower end of each spade supporting bar, a bracket projecting upwardly from each spade supporting bar, a pair of arms pivoted to said bracket and pivotally connected with the spade, and means carried by the crank arms for contacting with said pair of arms to move the spades in the arc of a circle.

7. In a motor plow, the combination with a spade supporting frame, of a crank shaft journaled therein, a plurality of crank bars arranged in pairs operable from said crank shaft, a spade supporting bar between each pair of crank arms and reciprocable thereby, a pair of horizontal arms pivotally connected to the frame and to the spade supporting bars, a spade pivoted to the lower end of each spade supporting bar, a spring for normally holding the spade in substantial alinement with its supporting bar, a second pair of vertical arms, a pair of rollers carried by said pair of vertical arms, and cams carried by the crank arms and designed to contact with the rollers to move said pair of arms and thereby move the spades in the arc of a circle.

In testimony whereof I have affixed my signature in presence of two witnesses.

HEINRICH GOTTLIEB KLAUS.

Witnesses:
AUGUSTIN SCHENKER,
A. LIEBERKNECHT.