

(No Model.)

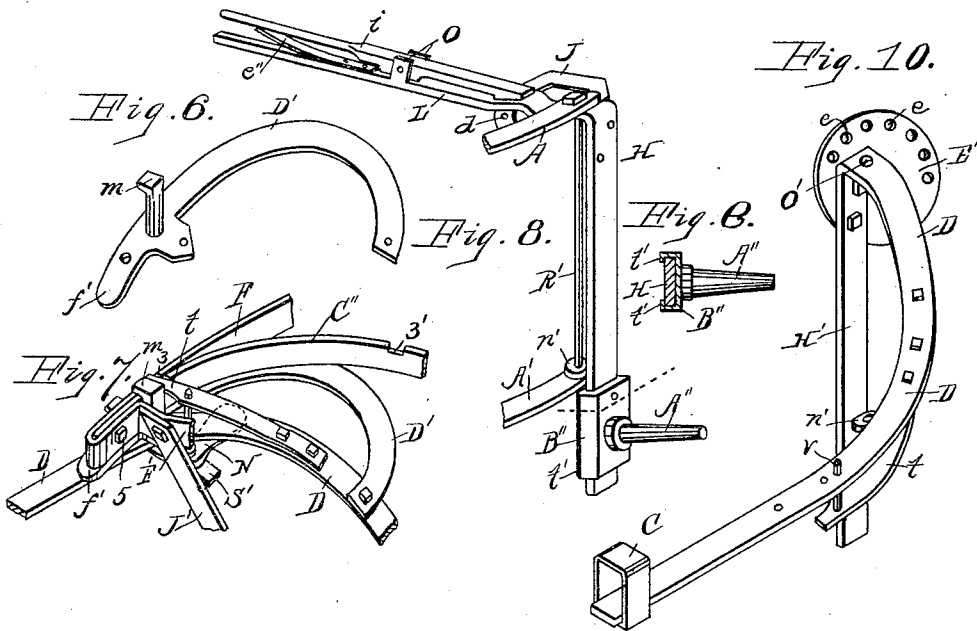
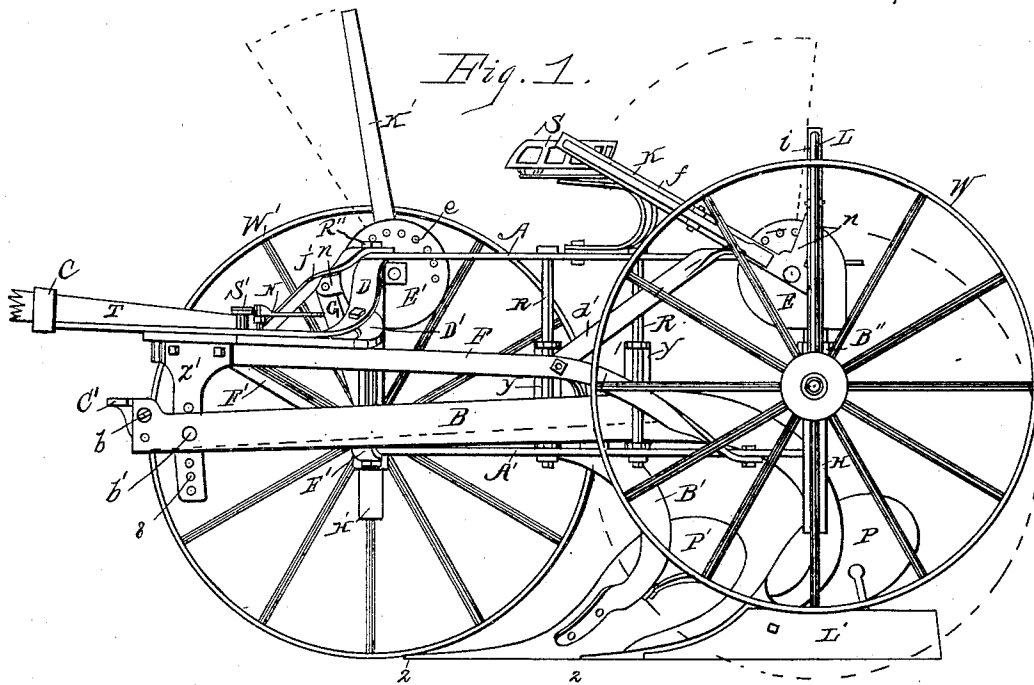
2 Sheets—Sheet 1.

A. SHAFFER.

GANG PLOW.

No. 353,469.

Patented Nov. 30, 1886.



ATTEST.  
*C. W. Russell*  
*R. W. Wheeler*

INVENTOR.  
*Abraham Shaffer*  
 By  
*Roscoe B. Wheeler*  
*att'y*

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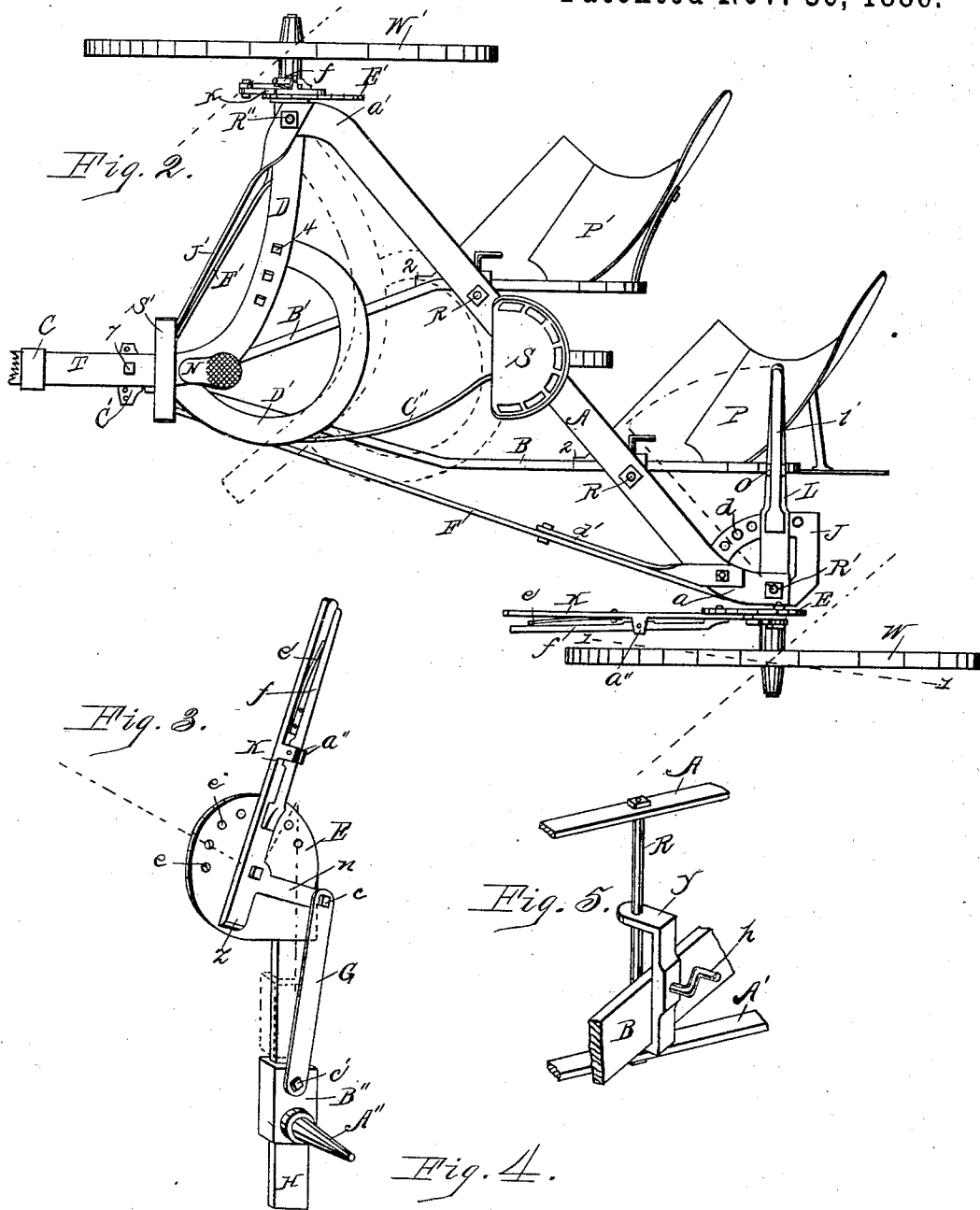
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*att.*

# UNITED STATES PATENT OFFICE.

ABRAHAM SHAFFER, OF CASSOPOLIS, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO F. GOODWIN, OF SAME PLACE.

## GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 353,469, dated November 30, 1886.

Application filed September 7, 1886. Serial No. 212,884. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM SHAFFER, a citizen of the United States, residing at Cassopolis, in the county of Cass and State of Michigan, have invented certain new and useful Improvements in Gang-Plows; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in Gang-Plows; and it consists in the combination and organization of elements, as hereinafter fully set forth, and pointed out in the claims, being also designed as an improvement upon Letters Patent No. 299,022, issued to me on May 20, 1884.

The object of my invention is to simplify and make strong the operating parts, providing the frame of the plow with ample means of adjustment to regulate the depth of plowing and to facilitate the working of the machine, and to provide the frame of the plow with means to enable the operator's rapidly turning it about, also the locating of the points of the plows in advance of the axle of the machine supporting them, whereby the downward suction of the plows is brought directly upon the axle and wheels.

In the drawings forming a part of this specification, Figure 1 is a side elevation of my invention, in which dotted lines indicate change of position. Fig. 2 is a top view of same, in which dotted lines indicate location of parts, as in turning about. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are enlarged details, as will be fully explained.

The axle consists of two transverse bars, A A', united by central bolts, R R. The forward ends of said bars are bent forward, as shown at a'. (See Fig. 2.) The rear ends are bent rearward, as shown at a, the object of which will be hereinafter explained.

I attach pivotally to the rear end of the axle-frame the vertical arm H, (having the lever L formed integral therewith,) by means of the bolt or rod R', which passes through the bars

A A' of the axle and the horizontal portion of the arm H, and through an ear, n', attached firmly to said arm, as clearly shown in Fig. 8.

J is a circle-iron made fast to the bar A, and is provided with a series of holes, d, which are located below the lever L, and i is a locking-lever pivoted at O to the lever L. Its lower end carries a pin, which engages with the holes d of the circle-iron J, the lever i being held in a locked position by means of the spring e".

B" is a sliding head, which has a vertical movement on the arm H, and carries with it the axle-arm A". Upon said arm I mount the rear wheel, W. The rear edges of the sliding head are provided with the lips or ledges t t', which project over the back face of the arm H, thus acting as guides. By this arrangement the rear wheel, W, may be turned from its set position with the line of travel, as shown in Figs. 1 and 2, to the dotted position shown in Fig. 2, that being the desired position when turning the machine about at the end of the furrow.

E is a disk, which I bolt to the upper end of the arm H, and e are holes in said disk. I pivotally attach to the center of the disk the elbow-lever K. (See Fig. 3.) The nose Z of the lever has a bearing upon the face of the disk. Said lever is provided with a locking-lever, f, being pivoted at a", and held in position by the spring e'. The lower end of the lever carries a pin which projects through the lever K, engaging with the holes e of the disk. I pivot to the arm n of the lever the operating-bar G. The lower end of said bar is pivoted at e' to the sliding head B". By this arrangement, the swinging back and forward of the lever K, the wheel W is raised and lowered from the normal to the dotted position shown in Fig. 1, whereby the depth of the cutting of the plows is partially regulated, and the plows may be elevated from the soil by throwing the levers K' K to the dotted position shown in Fig. 1.

The lever K' is provided with a locking-lever, the same as the lever K, and is pivotally mounted on the disk E' in the same manner. The arm H' is formed integral with the tongue-supporting bar D. The arm H' is pivotally attached to the forward end of the oblique

axle A A' by means of the rod R'', which passes through the parts of the axle, the hole O' of the bar D, and the lug n' on the arm H'. The free end of the bar D is provided with a loop, 5 C, through which the tongue T passes, and by swinging the tongue across the line of travel the forward wheel, W', is caused to turn in a direction crossing the line of travel, as in turning a corner. (See dotted position of Fig. 2.) The tongue-supporting arm D from the 10 pivoted point O' is bent from the arm H' at right angles, thence forward sufficiently to bring the tongue on a line midway and in advance of the plows P P'.

15 To support the forward ends of the plow-beams and the tongue-arm, I employ the horizontal frame F F'. The rear end of said frame is bent downward and bolted or firmly attached to the arm A' of the axle, and d' is a 20 brace joining the frame with the bar A of the axle. The part F' of the frame, from a point under the tongue, is bent downward, its end being attached to the forward end of the part A' of the axle, the part F' being bent at right 25 angles to the part F. (See Fig. 2.) J' is a brace leading from the forward end of the bar A of the axle down to and under the tongue, being firmly attached to the part F' of the frame. (See Figs. 1, 2, and 7.) The part F 30 of the frame is bent over the free end of the circle-iron C'', being bolted thereto at 5. The rear end of the circle-iron is bent downward and firmly attached to the part A' of the axle, near the center. The circle-iron on its under 35 face has two notches or depressions, 3 3'. Bolted to the under side of the arm D is a spring or locking bar, t, which as the tongue is swung around engages with said notches, thereby limiting the swinging of the tongue. 40 (See Fig. 7, which represents the parts as inverted.)

Anchored to the end of the spring t is a rod, v, which passes through the bar D, carrying a foot-depressing arm, N, whereby the operator throws the spring t out of the notches of the circle-iron C'', when the tongue may be swung, turning the wheel W' and the machine, as desired.

To make a short turn and to back up when 50 the tongue is swung around at right angles to the axle, as shown by dotted lines of Fig. 2, the lever L should be turned to the dotted position shown in said figure, when the wheel W and wheel W' will stand at right angles to 55 the axle A A'. When the team advances, the tongue swings around to the normal position of Figs. 1 and 2, when the wheel W should be turned back to the normal position shown in said figures. When plowing; the wheel W 60 travels at an elevation on the unplowed soil. The wheel W' travels in the furrow.

D' is a circular friction-plate, one end of which is bolted to the under face of the bar D at 5, the other end to said bar at 7. Depending from said plate is an L-shaped stud. Its 65 head m projects under the circle-iron C'', and

as the tongue is swung around the head m travels against the under face of the circle-iron, acting as a sliding lock.

Bolted to the frame F is a depending draft-arm, Z', having a series of holes, 8. Said arm 7c is located between the plow-beams B B' at the forward ends, which are adjustably attached to the draft-arm by means of a bolt, b', which passes through a hole in the plow-beam and 75 one of the holes in the arm Z'. The pitch of the plow-points 2 2 is obtained by raising or lowering the plow-beams on the arm Z'.

The plow-beams are fulcrumed in the yokes Y Y. Said yokes are pivotally mounted on 80 the bolts or rods R R, between the bars A A' of the axles. Passing through each yoke is a hand or set screw, h, which, when tightened, presses the plow-beams against the rods R R, whereby the plows P P' are prevented from 85 rising. (See Figs. 1 and 5.)

When cultivating or plowing stony or rooty soil, it is desirable to allow the plows to rise, as in passing over an obstruction. This is accomplished by simply loosening the screws 90 h. I attach the clevis C', by means of the bolt b, between the forward free ends of the plow-beams. (See Figs. 1, 2, and 4.) S is the operator's seat, which is located on the center of the machine over the plows, and S' is a 95 foot-support.

It will be observed that the axle of the machine crosses the line of travel diagonally. By this arrangement one of the supporting or transverse wheels travels in advance of the 100 other, whereby the plows are steadily moved along. It will also be observed that the plow P' travels in advance of the plow P; that the beam B of the latter is the longer; that both plow-beams are attached together at the front 105 on a common center, and are moved or adjusted vertically there alike, and in order to give the points 2 2 of the plows a like pitch or adjustment I curve the ends of the bars A A' of the axle backward at a and forward at a', as 110 clearly shown in Fig. 2. By this arrangement the plow P is advanced, enabling me to make the beam B shorter and give the points 2 2 of the plows the same relative position in advance of the axle-frame, as clearly shown in 115 Fig. 2.

The rear plow is provided with a landside, L', and to relieve said landside from side pressure the lever L should be thrown back from the position of Fig. 2, when the wheel W will 120 travel on an angle to the line of travel of plows, said position being indicated by dotted line 1 1 of Fig. 2. This position of the wheel will cause the machine to travel or crowd from the land, thus relieving the side pressure upon 125 the landside.

When desirous to raise the plows out of the soil, the axle is elevated by throwing the lever K' forward and the lever K rearward, and in plowing where no furrow has been formed for 130 the wheel W' to travel in, said wheel should be elevated from the position of Fig. 1 to the

position of the wheel W in said figure, when both plows will enter the soil.

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

1. In a gang-plow, the combination of the axle arranged obliquely to the line of travel, having the bent end portions, the series of plows the beams of which are fulcrumed on said axle, the transporting-wheels, the axle made vertically adjustable on said wheels, and mechanism for turning independently said wheels on said axle, substantially as specified.

2. In a gang-plow, and in combination, the axle arranged obliquely to the line of travel, the transporting-wheels mounted on said axle, and mechanism for raising and lowering said axle on the transporting-wheels, the horizontal frame having the depending arm Z', and the plow-beam adjustably attached to said arm and fulcrumed on the axle, the points of the plows standing on an oblique line and in advance of the axle, as and for the purposes specified.

3. In a device for the purposes set forth, the combination of the axle arranged diagonally to the line of travel, the supporting-wheels mounted adjustably thereon, the horizontal frame F F', formed integral, its ends being attached to the lower bar of the axle, the braces joining said frame to the upper bar of said axle, the circular track joining said frame and the axle, the curved bar D, pivotally attached to the axle, the tongue mounted thereon, and the circular rub-iron attached to the bar D, and having the depending arm with head m,

adapted to engage with and slide over the under face of the circle-iron, as and for the purposes specified.

4. In combination with the bars of the axle, the vertical bar H, having the ear *n'* and lever L formed integral therewith, the circle-iron J, attached to the upper bar of the axle, the mechanism for locking said lever to the circle-iron, the rod R', passing through the lever L, the bars of the axle, and ear *n'* of the arm H, substantially as specified.

5. In combination with the bars of the axle, the lever L, having the vertical arm H formed integral therewith and pivotally mounted on the rod R' of the axle, the sliding head carrying the axle-arm mounted on the arm H, the disk E, the elbow-lever pivoted to said disk, mechanism for locking said lever, and the bar G, having one end pivoted to the elbow-lever, the other to the sliding head, as and for the purposes specified.

6. In combination with the axle, the vertical arm H', having the curved bar D, formed integral therewith and pivoted to the axle, the rub-iron D', carrying the lug with head *m*, adapted to engage with the circle-iron, the horizontal frame F F', and the braces joining said frame to the axle, substantially as specified.

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

ABRAHAM SHAFFER.

Witnesses:

B. F. WHEELER,  
C. W. RUSSELL.