

(No Model.)

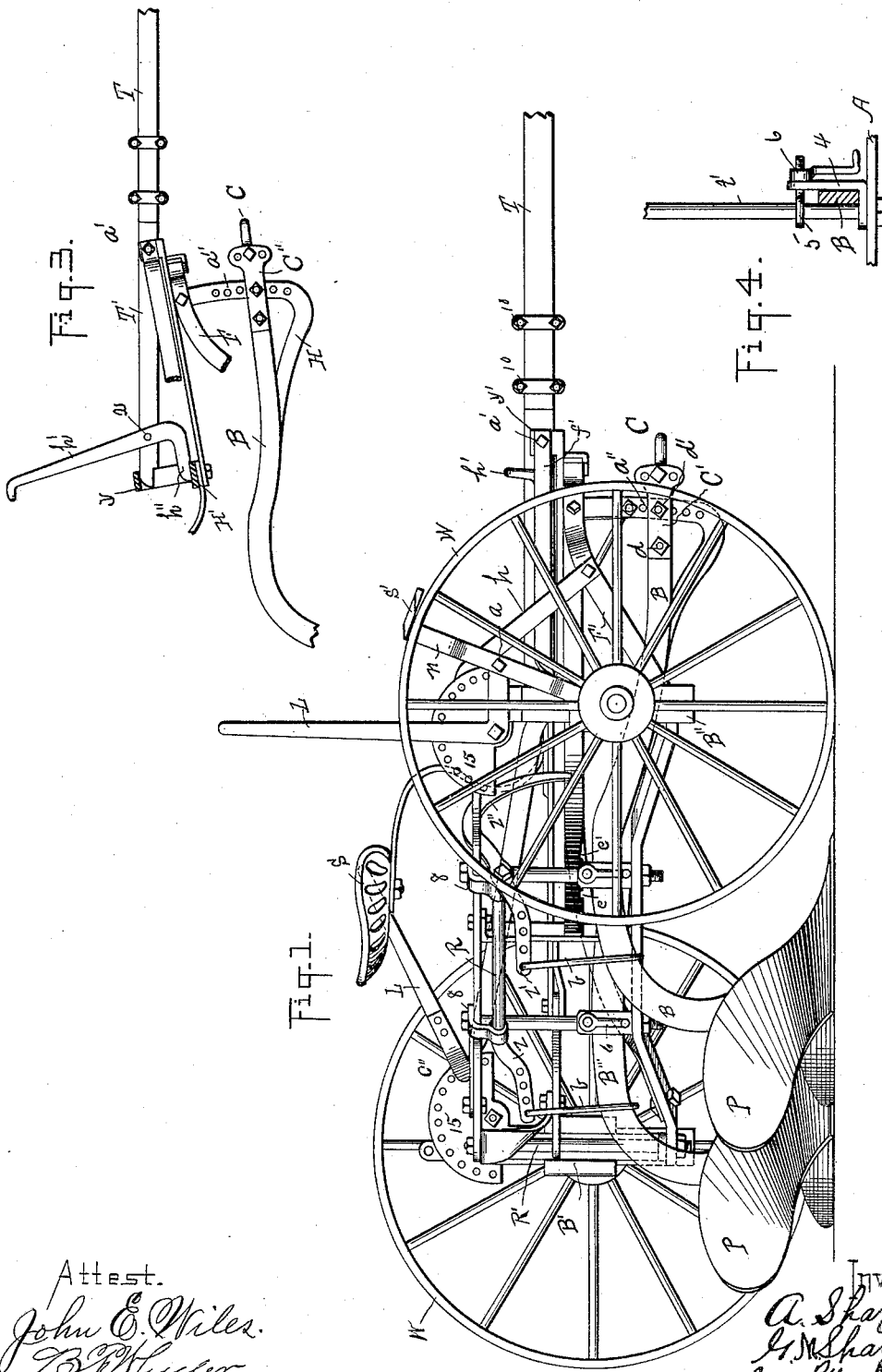
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GANG PLOW.

No. 383,496.

Patented May 29, 1888.



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(No Model.)

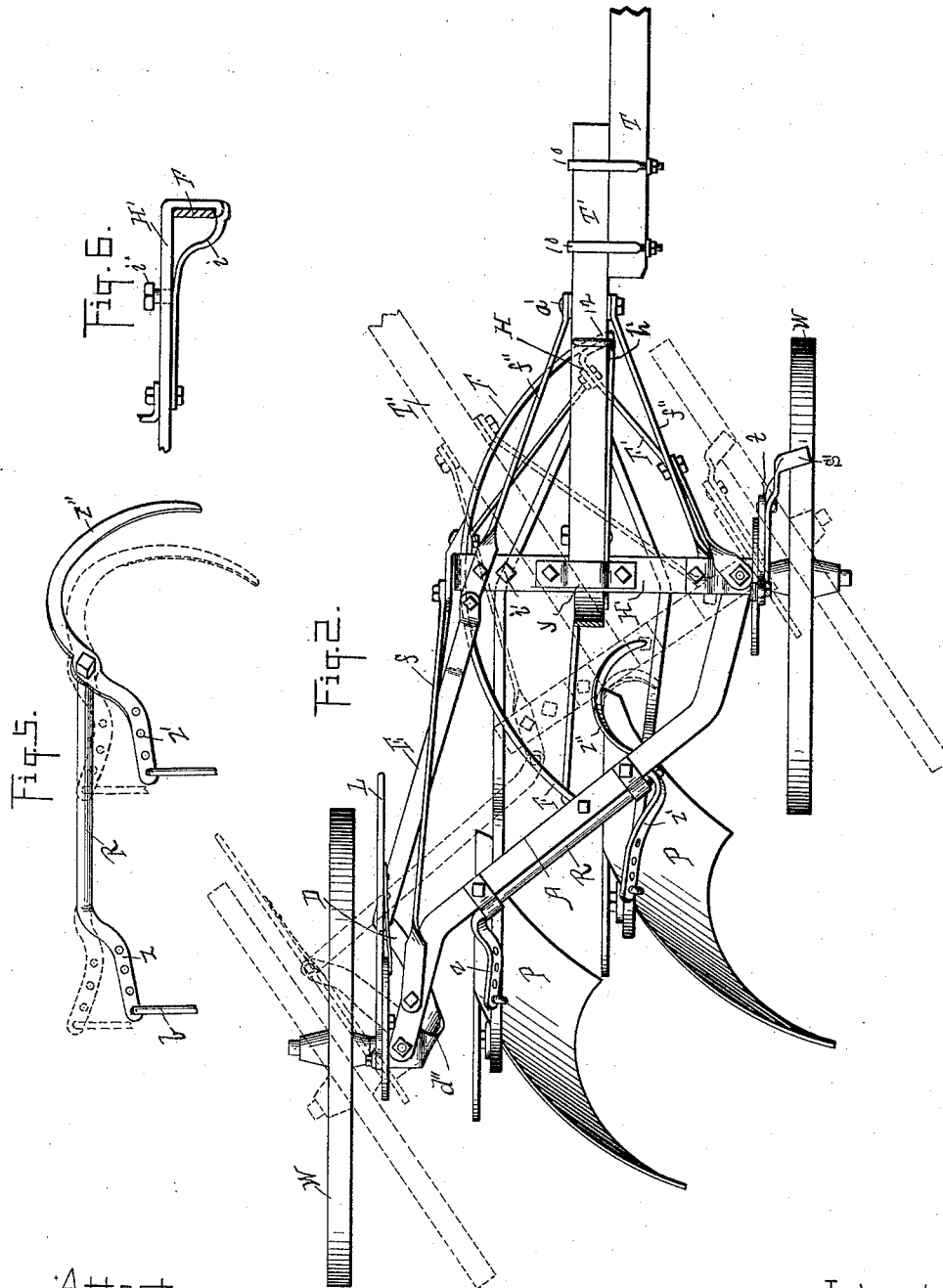
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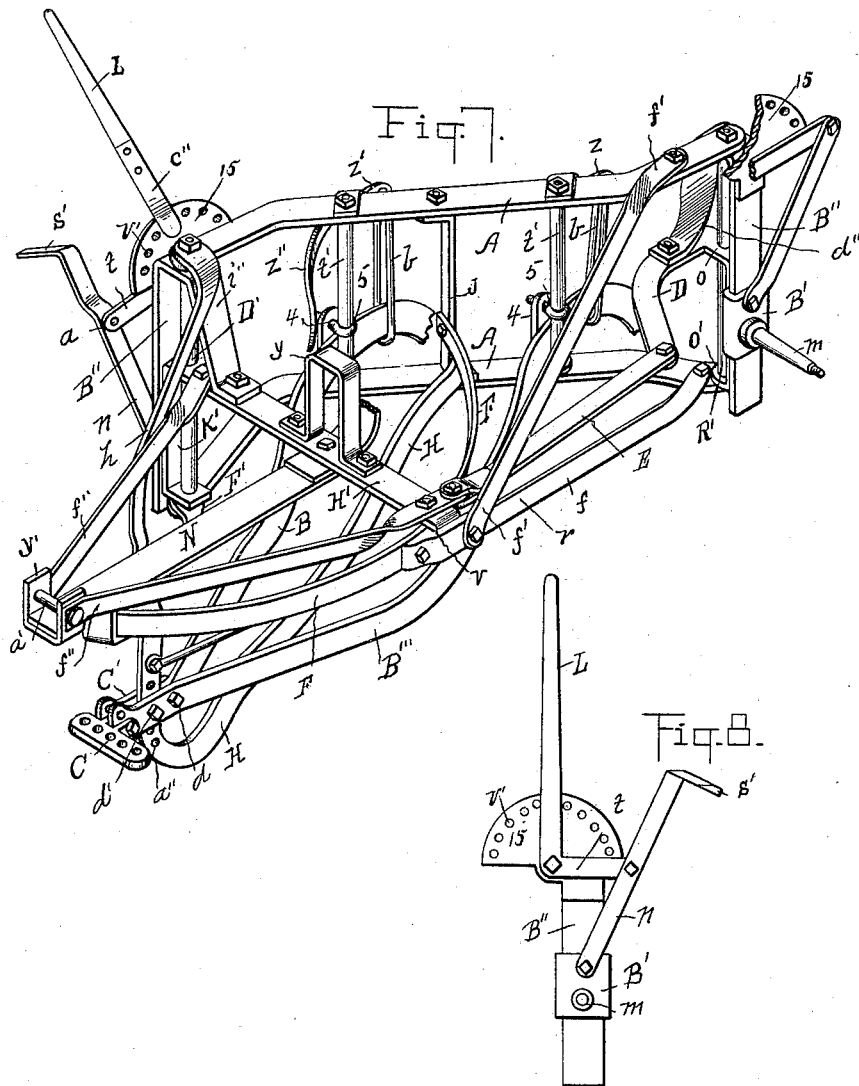
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# UNITED STATES PATENT OFFICE.

ABRAHAM SHAFFER AND GEORGE M. SHAFFER, OF CASSOPOLIS, MICHIGAN.

## GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 383,496, dated May 29, 1888.

Application filed November 28, 1887. Serial No. 256,358. (No model.)

### *To all whom it may concern:*

Be it known that we, ABRAHAM SHAFFER and GEORGE M. SHAFFER, citizens 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 we 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 the running-gear of gang-plows, which consists in the combination and organization of elements, as hereinafter fully set forth, and indicated particularly in the claims.

The object of our invention is to construct a gang-plov having a running-gear formed entirely of band metal or steel and so coupled to the tongue and transporting-wheels that the wheels may be automatically turned by the movement of said tongue and the plows raised slightly; also, to attach the tongue to the running-gear or frame-work so as to allow said frame-work to be tilted, whereby the forward end of said frame-work will be elevated, throwing the points of the plows upward, as will be hereinafter fully set forth, and also in providing the advance wheel with a cleaner or scraper for removing the soil from the periphery of said wheel, said scraper being so attached to the wheel-support that it maintains its uniform distance over the wheel when raising or lowering the running-gear on its wheels; also, in the manner of coupling the plow-beams to the reach of the frame-work, all of which will be hereinafter set forth.

With reference to the drawings forming a part of this specification, Figure 1 is a side elevation. Fig. 2 is a top plan showing by dotted lines the shifting of the parts, as in turning about. Figs. 3, 4, 5, and 6 are details. Fig. 7 is an enlarged perspective of the frame-work, having wheels, plows, and tongue removed. Fig. 8 is a front view of the wheel-cleaner and connecting parts.

The axle consists of the oblique bars A, having central brace, J, and tie-rods t.

W represents the transporting-wheels, which

are mounted on axle-arms m, attached to sliding heads B', mounted on the end supports, B', of the axle. Said sliding heads are operated by means of the lever L and coupling-bars. The said mentioned parts are in common use, and will therefore require no further mention.

F is a circle-iron. One end is attached to the axle-brace J. At a point below the tongue T', as shown by dotted lines in Fig. 2, the circle-iron is doubled upon itself, forming the nose 12. The opposite end extends downward and is attached to the rod D', forming the brace F'. (See Fig. 1.)

To the forward end of the axle is attached an upright bar, B'', having the downwardly-extending brace i''. Said brace is bolted to the upper face of the swinging arm H', having the vertical branch K', which parts are pivotally coupled to the rod D', as shown in Fig. 7. The bar B'' is made fast to the branch K'. The sliding box B', carrying the axle-arm m, is coupled to and slides on the bar B''. (See Fig. 8.)

To the arm t of the lever L is attached the coupling-rod n, its lower end being coupled to the box B'. Its upper end carries the scraper or blade S', which extends over the advance wheel W, forming a cleaner. (See Figs. 1, 2, and 8.)

Attached to the center of the swinging arm H', and at right angles, is the tongue-supporting plate N, its outer end having a yoke, Y', which receives the body of the short tongue T' and the outer ends of the braces f'' by means of the bolt a'. On said bolt the tongue rocks, as will be hereinafter explained. The parts of the tongue are united by means of the yokes 10. The rear ends of the braces f'' are attached to the swinging arm H'.

Y' is a yoke mounted on the swinging arm, which receives the rear end of the short tongue T', (see Figs. 1 and 2,) and allows the rear end of the tongue to rise when tilting the machine to raise the points of the plows out of the ground, which is accomplished by raising the lever h', having the foot h'', bearing on the swinging arm H', as shown in Fig. 3. Said lever is pivoted to the side of the tongue at 2, and swings forward, lying at the side of the tongue when in its normal position, as shown in Figs. 1 and 2.

H is the reach, having its rear end attached to the lower plate, A, of the axle-frame. The front end is curved upward and secured to the arm F' of the circle-iron. (See dotted lines in Fig. 2.) The vertical portion is provided with a series of holes, *a''*, (see Fig. 7,) to allow the plow-beams B B''' to be adjustably attached by means of the bolt *d'*, which passes through the plow-beam B''' and coupling-plate C', which plate at the rear end is secured to the forward end of the plow-beam B by means of the bolt *d*, passing through both plow-beams, as shown in Figs. 1 and 7. The beam B is by this arrangement attached to the long beam B''' of the rear plow. Between the front end of the plow-beam B''' and the coupling-plate C' is attached the clevis head C, by which the machine is drawn. The plow-beams are vertically adjusted on the reach H to regulate the line of draft and pitch of plow-points.

E is a bar having its front end coupled to the outer end of the swinging head H' by means of the bolt *r*. Its rear end is pivoted to the outer end of the arm D, which arm is formed integral with and at right angles to the swinging plate R', which plate is provided with holes O O' through its horizontal parts, and turns on the axle-rod R'' as the team turns the tongue to the dotted position shown in Fig. 1, whereby the transporting-wheels W are caused to be turned at nearly right angles to the axle-frame A, as in turning about at the end of the furrow.

The rear end plate, B'', has formed integral with it the curved brace *d''*, having one end attached to the arm D. Said plate B'' is made fast to the turning plate R and carries a sliding head, B', with axle-stub *m*, as shown in Fig. 7. The bar *f* is provided at its front end with a shoulder or offset at V, at which point said bar is attached to the circle-iron F. The shoulder V forms a stop for the downwardly-curved outer end of the swinging head H', which limits the forward movement of the swinging head or arm. The lower end of the brace *f''* is bolted to the bar *f*, and its rear upper end to the upper plate, A, of the axle-frame, forming a support for the circle-iron F.

To the rear of the axle-frame is journaled in boxes 8 a rock-shaft, R, having the rearwardly-extending arm Z. To the opposite end of said rock-shaft is firmly attached the forwardly-projecting curved tripping or tilting arm Z'', having the rearward extension, Z'. The members Z Z' are provided with a series of holes, which receive the loop-rods *b b*, which encircle the plow-beams B B'''. (See Figs. 1, 2, and 5.) The curved member Z'' is forced downward and backward by its coming in contact with the backward movement of the swinging head H' when turning the team and machine about to the dotted position shown in Fig. 2. As the arm Z'' is depressed, the shaft R rocks, throwing the arms Z Z' upward, thereby raising the plows out of the soil, which is desirable in turning the machine about, all of which is accomplished by the swinging of the

tongue. The wheels W, it will be observed, swing simultaneously with the raising of the plows P.

The plow-beams are coupled to the rods *t'* of the axle-frame by means of the L-shaped plates 4, which slide on said rods as the plows are raised.

To prevent the plows from rising while working in hard soil, we lock the plow-beams to the rods *t'* by tightening the crank-nuts 6, threaded onto the screw-eyes 5, through which the rods *t'* pass. (See Fig. 4.) The rear under face of the circle-iron F is provided with a locking-notch, *e*, and a stop-notch, *e'*. (See Fig. 1.)

To the under face of the swinging head H', near the outer end, is attached a spring-catch, *i*. Its free end travels on the under face of the circle-iron F. A stud, *i'*, attached to said spring, passes up through the swinging head H'. As the machine is swung to the dotted position of Fig. 2, the spring *i* strikes the notch *e'*, which limits the backward movement of the swinging head, but will allow the parts to swing back to the normal position of Fig. 1 as the machine advances.

To lock the machine, so as to cause the tongue to stand at right angles to the axle-frame, as in moving the machine from place to place, the spring *i* is depressed by means of the stud *i'*, so as to allow said spring to be carried back and to enter the rear notch, *e*, of the circle-iron, when the machine will be locked in said position, and cannot be unlocked without depressing said spring, which may be accomplished by the foot of the operator. (See Figs. 1 and 6.)

The levers L, for raising and lowering the frame-work on the wheels, are pivoted to the disks 15, having a series of holes, V'. The back face of each lever carries a pin, (not shown,) which engages with the holes V' of the disks, and are held in such holes by means of the springs *c''*, attached to the back face of each lever. (See Figs. 1 and 7.) The pins are released from said holes by forcing outward on the upper ends of said levers. The lower end of each spring presses against the back face of the disks, as shown in Fig. 1.

It will be observed that the foregoing makes a light and durable machine—one that can be handled with ease—the main movements of the machine being accomplished by the action of the team, the plows being easily handled and rapidly turned about.

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

1. In combination with the axle, the transporting-wheels, the swinging arm or head H', pivoted at one end to the forward end of the axle, the tongue attached thereto, the bar E, coupled to the swinging head and to the arm D of the rear axle-plate, R', and the circle-iron F, having its ends secured to the axle, as and for the purposes specified.

2. In combination with the wheels, the ob-

lique axle, the mechanism for raising and lowering said axle on said wheels, the swinging head pivoted at one end to the forward end of the axle, the circle-iron supporting the outer end of said swinging head, the bar E, coupling the swinging head to the arm D of the rear plate, R', and the tongue pivoted to the yoke Y', having the braces f'', as and for the purposes specified.

3. In combination with the transporting-wheels, the oblique axle, the circle-iron F, the swinging frame, the tongue mounted thereon, the reach H, and the plows adjustably coupled to said reach, as and for the purposes specified.

4. In combination with the oblique axle, the transporting-wheels, and the circle-iron F, the swinging head H', mounted thereon and having braces connected thereto supporting the tongue, said tongue having a pivoted connection to said braces, the curved lever h',

pivoted to said tongue, the reach H, and the plows coupled to said reach, as and for the purposes specified.

5. In combination with the axle-frame, the transporting-wheels, the swinging frame consisting of the parts H' N f'' f'', the tongue, the bar E, the arm D, the plows coupled to the reach H, the rock-shaft R, having the arm Z, the curved arm Z'', having the extension Z' made fast to said rock-shaft, and the loop-rods b, coupled to the plow-beams, the whole combined and operated as and for the purposes specified.

In testimony whereof we affix our signatures in presence of two witnesses.

ABRAHAM SHAFFER. [L. S.]

GEORGE M. SHAFFER. [L. S.]

Witnesses:

A. J. MOODY,

HENRY MANUEL.