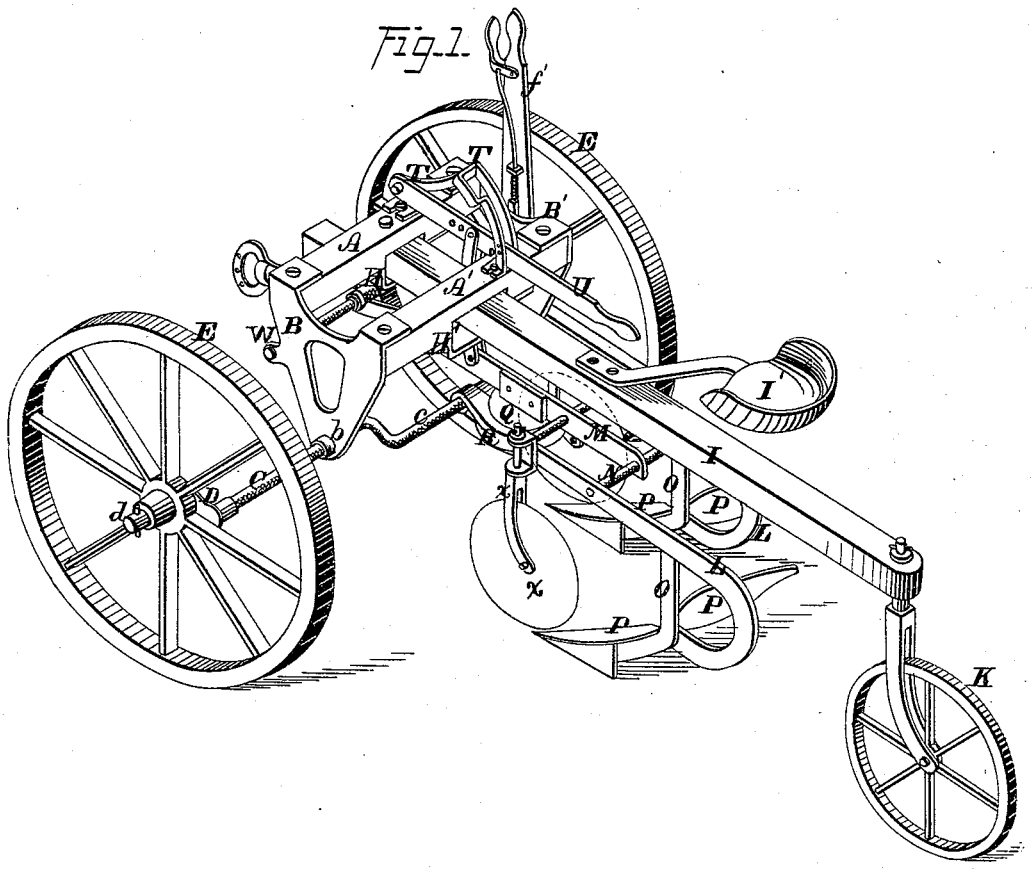
5 Sheets--Sheet 1.

E. A. BEERS.

GANG PLOW.

No. 181,901. Patented Sept. 5, 1876.

Fig. 1.



WITNESSES:

Jas. R. Hutchinson

John R. Young

INVENTOR.

E. A. Beers, by

Prindle and Ly, his Attys

5 Sheets—Sheet 2.

E. A. BEERS.

GANG PLOW.

No. 181,901. Patented Sept. 5, 1876.

Fig. 2.

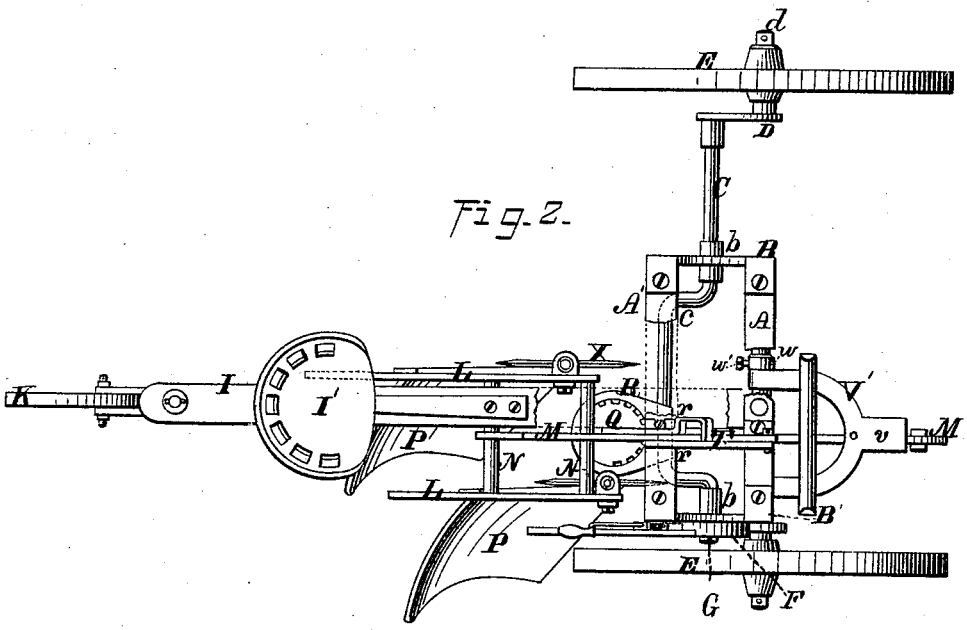
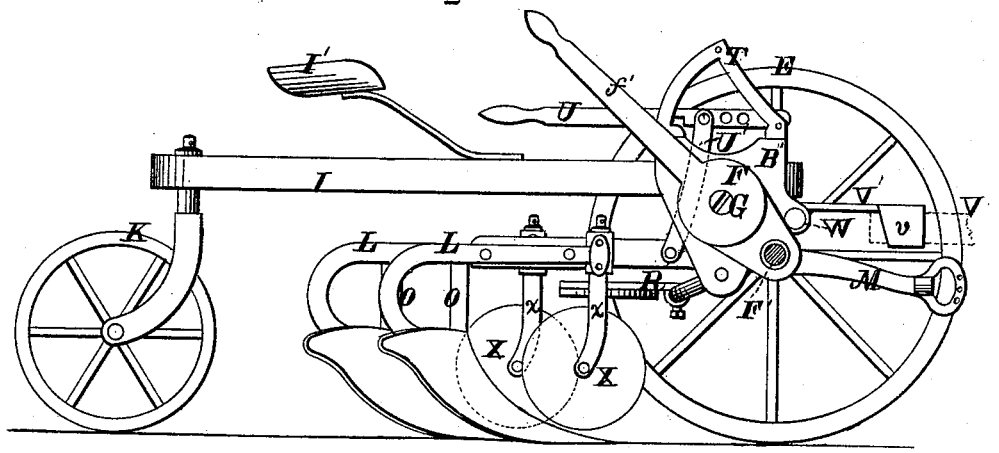


Fig. 3.



WITNESSES:

Jas. E. Hutchinson.

John R. Young.

INVENTOR.

E. A. Beers, by

Pindle and Lay his attys

5 Sheets—Sheet 3.

E. A. BEERS.

GANG PLOW.

No. 181,901. Patented Sept. 5, 1876.

Fig. 4.

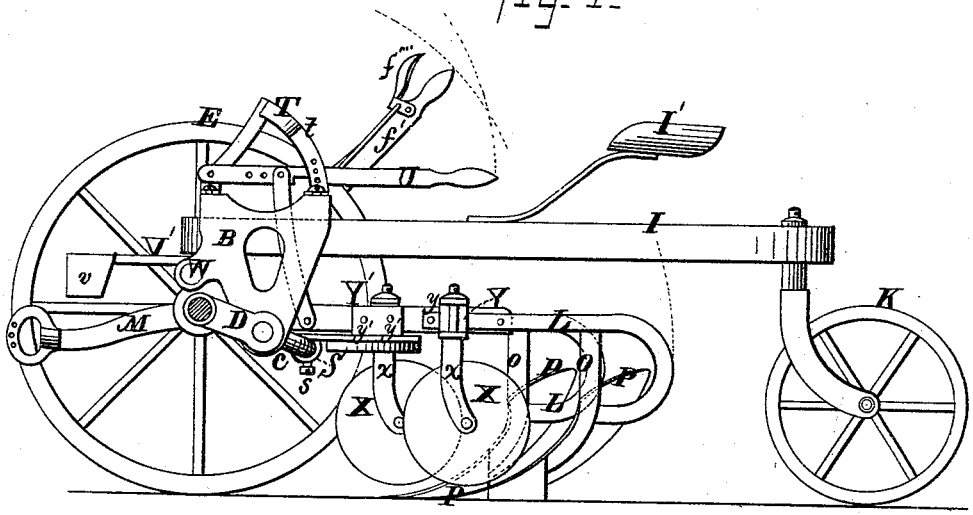
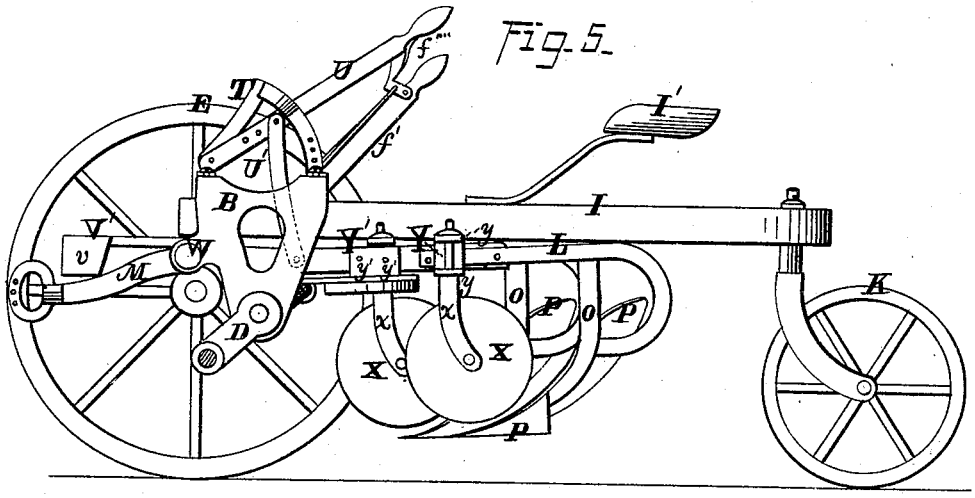


Fig. 5.



WITNESSES.

Jas. B. Hutchinson

John R. Young

INVENTOR.

E. A. Beers, by

Brindle and Lay his attys

5 Sheets—Sheet 4.

E. A. BEERS.

GANG PLOW.

No. 181,901. Patented Sept. 5, 1876.

Fig. 8.

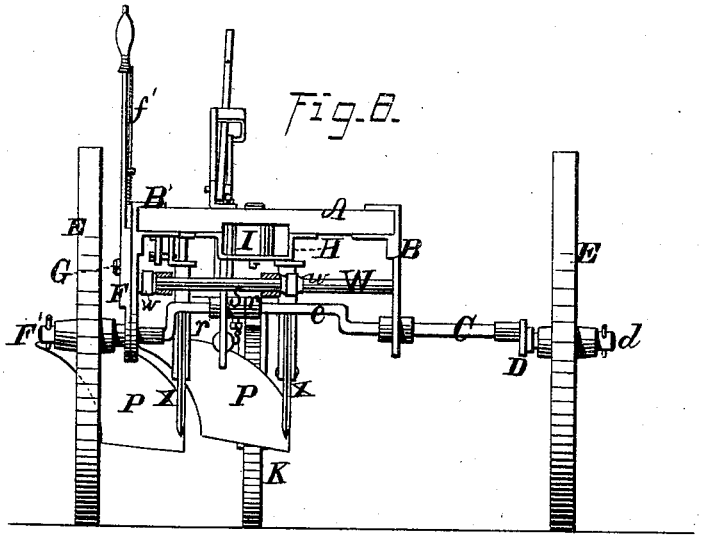
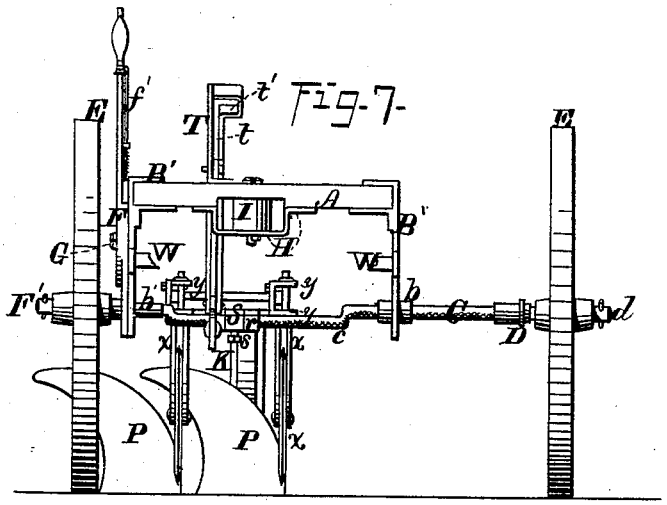


Fig. 7.



WITNESSES:

Jas. E. Hutchinson.

John R. Young

INVENTOR.

E. A. Beers, by

Prindle and Ley his Attys

5 Sheets—Sheet 5.

E. A. BEERS.

GANG PLOW.

No. 181,901. Patented Sept. 5, 1876.

Fig. 8.

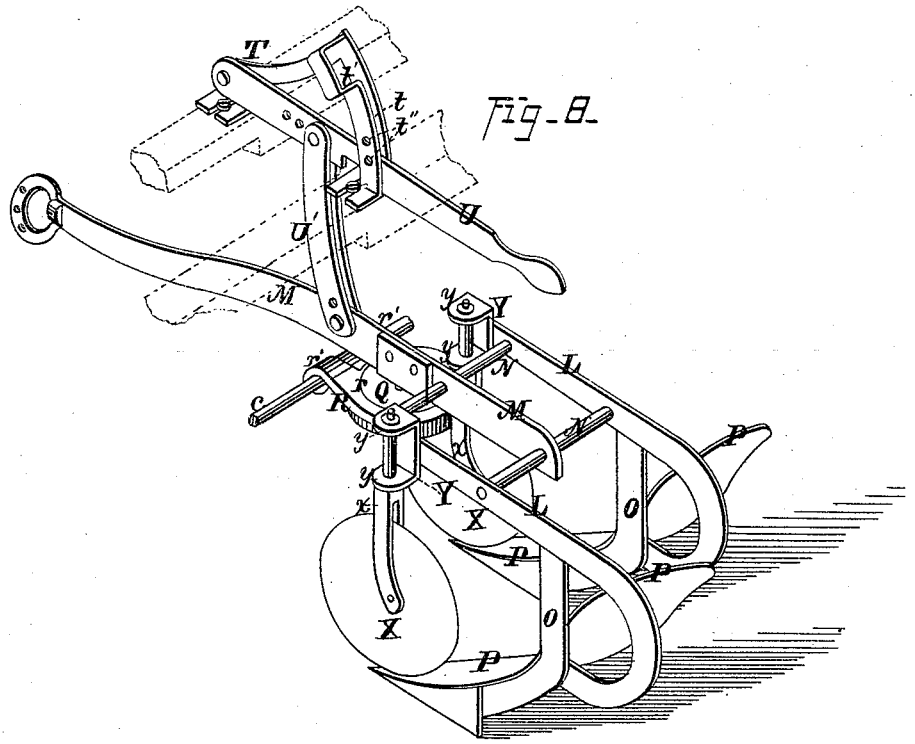
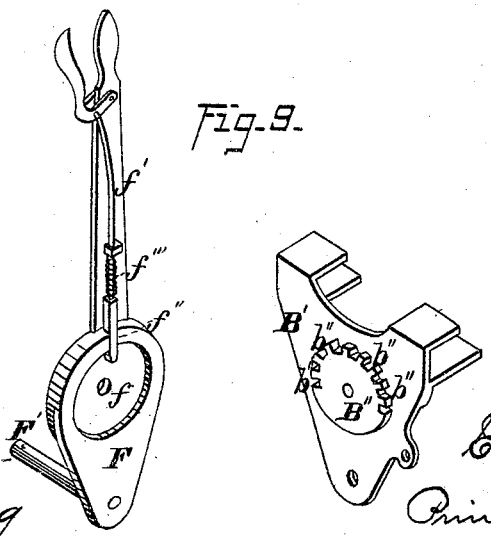


Fig. 9.



WITNESSES:

Jas. C. Hutchinson.

John R. Young

INVENTOR.

E. A. Beers, by

Prindle and Lay his Attys

UNITED STATES PATENT OFFICE.

EDWIN A. BEERS, OF DE KALB CENTRE, ILLINOIS.

IMPROVEMENT IN GANG-PLOWS.

Specification forming part of Letters Patent No. **181,901**, dated September 5, 1876; application filed June 2, 1876.

To all whom it may concern:

Be it known that I, EDWIN A. BEERS, of De Kalb Centre, in the county of De Kalb, and in the State of Illinois, have invented certain new and useful Improvements in Gang-Plows; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective of my plow arranged for use. Fig. 2 is a plan view of the upper side of the same. Figs. 3, 4, and 5 are elevations of opposite sides of said plow. Figs. 6 and 7 are front elevations of the same, and show, respectively, the positions of parts when the plows are raised or lowered. Fig. 8 is a perspective view of the plow-beams, their attachments, and the devices employed for raising and lowering the same; and Fig. 9 is a like view of the pivotal eccentric bearing for the grooved wheel upon the furrow side of the plow.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to increase the efficiency of gang-plows, and to render the same more easy of adjustment; to which end it consists, principally, in the means employed for connecting the pole to or with the frame, and for rendering it adjustable laterally upon the same, substantially as and for the purpose hereinafter specified. It consists, further, in the peculiar construction of the axle and its combination with the main frame and right-hand ground-wheel, substantially as and for the purpose hereinafter shown. It consists, further, in the combination of the axle, main frame, and plow-frame, substantially as and for the purpose hereinafter set forth. It consists, further, in the construction of the plow-frame, substantially as and for the purpose hereinafter shown and described. It consists, further, in the means employed for raising to and securing in an elevated position the plow-frame and plows, substantially as and for the purpose hereinafter specified. It consists, finally, in a caster-beam, pivoted at its front end to the main frame forward of the axle, supported at its rear end, in rear of the plows, by a caster-wheel, and having at such end independent lateral motion, substantially as and for the purpose hereinafter shown.

In the annexed drawings, A and A′ represent two bars, which have each a length substantially equal to the breadth of two furrows, and are connected together in parallel lines by means of two metal plates, B and B′, one of which plates extends between and embraces the corresponding ends of said bars. Within the lower end of each plate B is formed a bearing, *b*, for the reception of an axle-tree, C, which axle-tree terminates within and is swiveled within the right-hand bearing, and, projecting through the left-hand bearing to the desired distance, is provided upon its outer end with a radial arm, D, that is provided upon its outer end with an axle-arm, *d*, for the reception of a ground-wheel, E. Between said bearings *b* and *b′* said axle-tree C is bent, so as to form a crank, *c*, which has a radial line opposite to that of said arm D, the object of which will be hereinafter described. Upon the outer face of the right-hand plate B′, midway between its upper and lower ends, is formed a circular boss, B″, which is provided around the upper portion of its periphery with notches *b″* and *b″*, and receives a plate, F, that upon its inner face is provided with a recess, *f*, which corresponds to and incloses the outer face and periphery of said boss B″. The plate F is pivoted upon the boss B″ by means of a bolt, G, which passes inward through their radial centers, and at one end is provided with a horizontally outward-extending axle-arm, F′, that receives a second ground-wheel, E. From the end of said plate opposite to said axle-arm a bar, *f′*, extends radially outward, and serves as a handle for moving said plate around its axial center. A longitudinally-sliding bolt, *f″*, is arranged within suitable guides upon the inner face of the lever *f′*, with its inner end in engagement with one of the notches *b″*, and is held in such engagement by means of a spring, *f‴*, except when intentionally withdrawn, for which purpose the angular hand-lever *f⁗* is pivoted to the outer end of said bolt, and to said lever *f′*, in such manner as to cause the latter to be withdrawn whenever said lever *f′* is grasped by the hand of the operator.

Within a suitable strap, H, that is secured upon the lower side at the longitudinal center of the front bar A, is pivoted one end of a beam, I, which from thence extends rearward to a point considerably in rear of the position to be occupied by the rear plow, and at its rear end is supported by and upon a caster-wheel, K, that is pivoted within said beam. A second but longer strap, H′, is secured upon the rear bar A′, and furnishes a guide for and within which said beam moves laterally. The plow-frame is composed of two plow-beams, L and L, which are arranged in parallel lines, and a draft-beam, M, that is placed midway between said beams, the whole being secured in relative position by means of two cross-bars, N and N, that pass transversely through the same. The plow-beams L and L extend rearward, downward, and forward in a curve, and to the rear portion of each is secured a standard, O, which supports a plow, P, of ordinary construction. The upper end of said standard is attached to the horizontal portion of said beam, while its central portion is secured to the forward-curving end of the same, by which means said standard receives a firm support, and is enabled to sustain any strain that could ordinarily be thrown upon it. Secured to or upon the draft-beam M, at a point immediately in front of the forward ends of the plow-beams L and L, is a disk, Q, which occupies a horizontal plane, and fits within a corresponding recess, *r*, that is provided in a plate, R, which, at its front end, is hinged or journaled upon the crank portion *c* of the axle-tree C. A bolt passing vertically through said disk and plate, at the radial center of the former, connects said parts together, and forms a pivotal center, upon and around which said disk may rotate.

The plate R has two bearings, *r′* and *r′*, upon the crank *c*, and between said bearings is placed a collar, S, which loosely fills the space and surrounds said crank, and is secured in position thereon by means of a set-screw, *s*. By loosening said set-screw said plate and collar may be moved laterally in either direction for the purpose of changing the lateral position of the plows, after which the tightening of said screw will lock said parts in place.

In order that the vertical position of the plows may be changed for the purpose of regulating their depth within, or of removing them from contact with, the ground, the following-described mechanism is employed: A quadrant, T, is secured to or upon the bars A and A′, and has pivoted upon its front lower corner one end of a lever, U, which from thence extends rearward, and is connected with the draft-beam M by means of a bar, U′, that extends between and is pivoted to said parts. The rear end of said lever is within convenient reach of the driver's hand, (his seat I′ being secured upon the caster-beam I,) so that said driver may readily raise or depress the plows by manipulating said lever. The quadrant T is provided with a radial slot, *t*, within which the lever U is contained, and at its upper end said slot is enlarged laterally, so as to form at one side a shoulder, *t′*, with which said lever may be caused to engage when raised to its highest point, and thereby become locked in place. A number of pin-holes, *t″*, passing horizontally through the lower rear portion of said quadrant, enables said lever to be locked in a depressed position by means of a pin passed through said holes above said lever.

It will be seen that, as the plows are raised or lowered, the axle-tree is partially rotated, and the left-hand wheel is moved beneath or away from beneath the latter, so as thereby to correspondingly raise or lower the corresponding side of the machine, while the necessary elevation or depression of the right-hand side of said machine is effected by the independent manipulation of the bearing for its wheel.

The entire draft of the machine is thrown upon the draft-beam M, which is provided at its forward end with the necessary means for the attachment of horses, while the course of said machine is controlled by pole V, which, at its rear end, is pivoted to or upon a round bar, W, that is secured within, and extends between, the plates B and B′.

Connection between the pole V and bar W is effected by means of a U-shaped plate, V′, which, at its center, is provided with a socket, *v*, for the reception of said pole, and at its ends is journaled or pivoted upon said bar. A collar, *w*, provided with a set-screw, *w′*, placed upon the bar W at each side of the plate V′, limits the lateral movement of said plate.

To change the line of draft, it is only necessary that the collars *w* and *w* should be loosened and the pole moved to the desired position, after which, by securing said collars as before, said pole will be held in place.

A rolling colter is placed in front of each plow, and is secured in position by the following-described means: The colter X is journaled within a spindle, *x*, which latter, at its upper end, is in turn journaled within two horizontal arms, *y* and *y*, that project outward from a vertical plate, Y, the axis of said colter being horizontal, while the axis of said spindle is vertical. The plate Y is secured upon the side of one of the plow-beams L by means of a plate, Y′, that is placed upon the opposite side of the latter, and two screws, *y′* and *y′*, which pass horizontally through said plates above and below said beam, the effect produced by turning said screws in a forward direction being to draw said plates together, and cause them to firmly clasp said beam.

It will be seen that the means employed for attaching the colters to or upon the plow-beams enables them to be easily and quickly placed in or removed from position, or to be adjusted forward or rearward, as occasion may require.

The spindles *x* and *x* are each curved slightly rearward at their lower ends, so as to enable

them to operate as casters, and cause the colters to follow the course of the machine when turning.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. In combination with the bar W, the pole V, provided at its rear end with the forked plate V′, which is pivoted upon said bar, and the adjustable collars *w* and *w* placed around the latter, and bearing against the forked ends of said plate, substantially as and for the purpose specified.

2. In combination with the main frames, the axle-tree C, provided with the crank portion *c*, journaled within the plates B and B′, and having secured upon one end a radial arm, D, that contains the axle-arm *d* of the ground-wheel E, substantially as and for the purpose shown.

3. The axle-tree C *c*, the arm D *d*, the main frame A, A′, B, and B′, and the plow-frame L, L, M, N, N, Q, and R, constructed and combined in the manner and for the purpose set forth.

4. The plow-frame, consisting of the beams L, L, and M, cross-bars N and N, disk Q, plate R, and pivotal bolt, all combined to operate substantially as and for the purpose shown and described.

5. In combination with the plow-frame, hinged to or upon the double-crank axle-tree *c*, the quadrant T, having the radial slot *t* and shoulder *t′*, the lever U, and the bar U′, substantially as and for the purpose specified.

6. In combination with the main frame, the caster-beam I, pivoted at its front end to said frame, forward of the axle, supported at its rear end, in rear of the plows, by a caster-wheel, K, and having at such end independent lateral motion, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of April, 1876.

EDWIN A. BEERS.

Witnesses:

WINFIELD DIVINE,

OSCAR JONES.