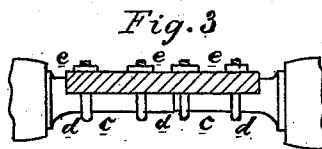
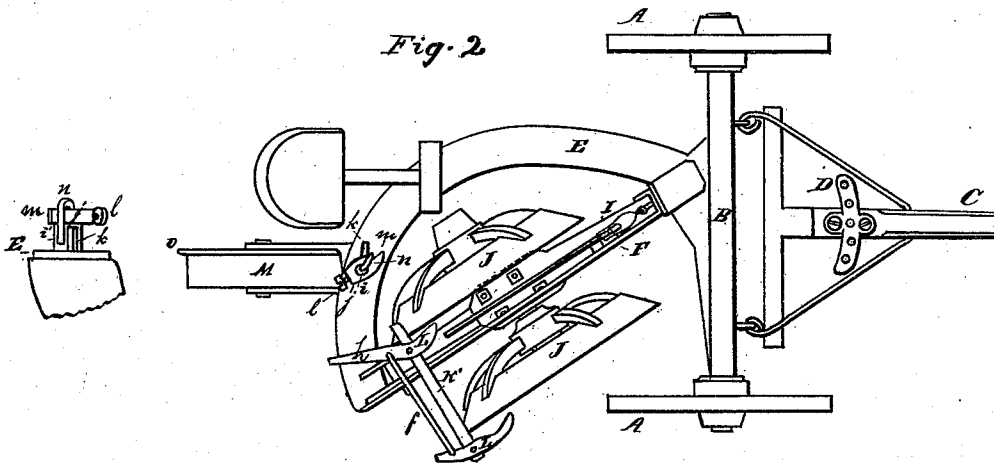
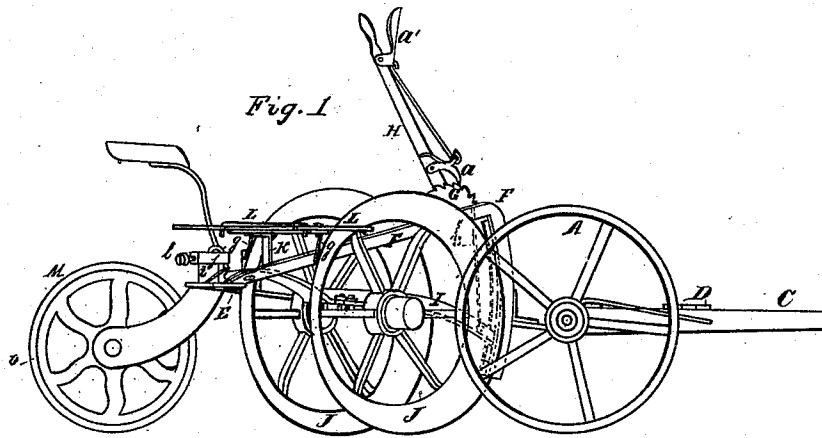


J. K. UNDERWOOD.  
ROTARY PLOW.

No. 177,668.

Patented May 23, 1876.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN K. UNDERWOOD, OF SAUK CENTRE, MINNESOTA.

## IMPROVEMENT IN ROTARY PLOWS.

Specification forming part of Letters Patent No. **177,668**, dated May 23, 1876; application filed March 13, 1876.

*To all whom it may concern:*

Be it known that I, JOHN K. UNDERWOOD, of Sauk Centre, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Rotary Gang-Plows; and I do hereby declare that the following is a full, clear, and exact description of the same, which will enable others skilled in the art to which my invention appertains to make and use the said improvements, reference being had to the accompanying drawing, forming a part hereof, and in which—

Figure 1 is a side elevation of a rotary gang-plow provided with my improvements; Fig. 2, a top or plan view thereof; and Fig. 3, a cross-section of the plow-beam.

Like letters of reference indicate like parts.

My invention relates to that class of rotary gang-plows shown and described in Letters Patent of the United States No. 169,499, dated November 2, 1875, and issued to me for the improvements therein set forth. My object is to further improve the construction and operation of plows of this class; and to that end my invention consists of the several novel features hereinafter set forth.

In the drawing, A A represent the draft-wheel, and B is their axle. C is the draft-tongue, which is so connected to the axle B as to be prevented from being moved laterally, but is capable of swinging vertically on its hinge. D is a perforated plate, rigidly attached to the tongue C, to admit of the lateral adjustment of the evener, which may be connected to this plate by means of a bolt passing through one of the holes or perforations in the plate. E is a bent arm, rigidly attached to the axle B, and extending rearward, as shown. F is a connecting beam or brace, extending from the forward to the rear end of the arm E, and there attached to the latter. The front end of the part F lies vertically in the arc of a circle, and is recessed, as represented in Fig. 1. G is a ratchet disk or plate, attached to the part F, and H is a pivoted lever carrying a yielding stop-pawl, *a*, arranged to engage the teeth of the ratchet. This engagement may be prevented by means of the bent piece *a'*, pivoted to the lever, and connected to the pawl. The forward end of the lever is made, preferably, in the form of a

pulley, and *b* is a cord or chain attached thereto. I is the plow-beam, the rear end of which is pivoted to the rear end of the arm E. The forward end of the plow-beam enters the recess of the beam F, and is supported by means of the cord or chain *b*. J J are dish-shaped or flaring wheels turning on separate axles *c c*, attached to the plow-beam, preferably by means of the loops *d d* and nuts *e e*, so that the wheels J J may be adjustable with relation to each other and the beam I, it being understood that the loops *d d* are long enough to admit of this adjustment. K is a standard or post near the rear part of the wheels J J, and K' is a horizontal arm supported by the said post. L L are scrapers pivoted to the arm K', and connected to each other by means of the rod or connecting-piece *f*, which is pivoted to them. These scrapers are constructed and arranged to scrape away the soil clinging to the concave faces of the wheels J J, and *g g* are scrapers arranged to scrape the edges or convex faces of the wheels. One of the scrapers L L is extended into a handle, as shown at *h*, so that they may be readily adjusted with relation to the wheels. M is a caster-wheel, the hanger or bearing of which is pivoted to the rear part of the arm E by means of a stud or pin, *i*, passing through the tubular bearing *i'*. *j* is a collar on the upper end of the pin *i*, and *k* is a stop on the arm E. The collar *j* is rigidly attached to the pin *i*, preferably by means of the set-screw *l*, so as to be easily removable, and is also shouldered, as shown at *m*. *n* is a bent piece entering the top of the pin *i*, and passing downward in front of or along the vertical face of the shoulder *m*, as shown, and the piece *n* and stop *k* are arranged for contact with each other, when the wheel M is set in the line of draft. When the piece *n* is withdrawn, the shoulder *m* may be turned over the stop *k*. This wheel is flanged on one edge, as shown at *o*. N is the driver's seat, and N' is a yielding foot-rest.

It will be observed, by referring to the drawing, that the wheels J J are set in vertical planes, intersecting the planes occupied by the draft-wheels. The concave faces of the wheels J J are parallel to each other. It will also be perceived that the forward end of the

beam F acts as a guide to the plow-beam, and prevents the forward end of the latter from being moved laterally. This end of the plow-beam may also be either raised or lowered by means of the lever H, so as to make the wheels J J run either deep or shallow, or to render them inoperative. These wheels cut into the soil as they are rotated, and lift it a little way, when the soil falls from them, thus leaving a furrow similar to that made by the ordinary plow. If any of the soil clings to the wheels, it will be scraped off by the scrapers. The tendency of the wheels J J is to throw the rear part of the implement around in the direction of the flange *o*, but this flange, by sinking into the ground, overcomes this tendency, it being remembered that the wheel M may be held in its proper position by means of the locking device already described. The evener, by being laterally adjustable in the plate D, also aids in overcoming this tendency of the wheels J J.

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

1. In combination, in a rotary gang-plow, the

bent horizontal arm E, rigidly attached at its forward end to the truck, the diagonal brace F attached to the rear part of the arm E and to the forward part of the implement, the bent vertical part of the said brace forming the plow-beam guards or keepers, and the pivoted and diagonally-arranged plow-beam, having its free end arranged in the said keepers, substantially as and for the purposes specified.

2. The combination of the bent arm E, pivoted plow-beam I, beam-guide F, lever H, ratchet G, pawl *a*, piece *a'*, connecting-cord *b*, and dish-shaped plow-wheels J J, set diagonally to the line of draft, all arranged substantially as described, in a rotary gang-plow, for the purposes set forth.

3. The combination of the plow-beam I, having a broad or flat central part, the separate axles *c c*, elongated loops *d d*, nuts *ee*, and wheels J J, journaled adjustably on the single beam, all substantially as and for the purposes specified.

JOHN K. UNDERWOOD.

Witnesses:

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