

No. 619,560.

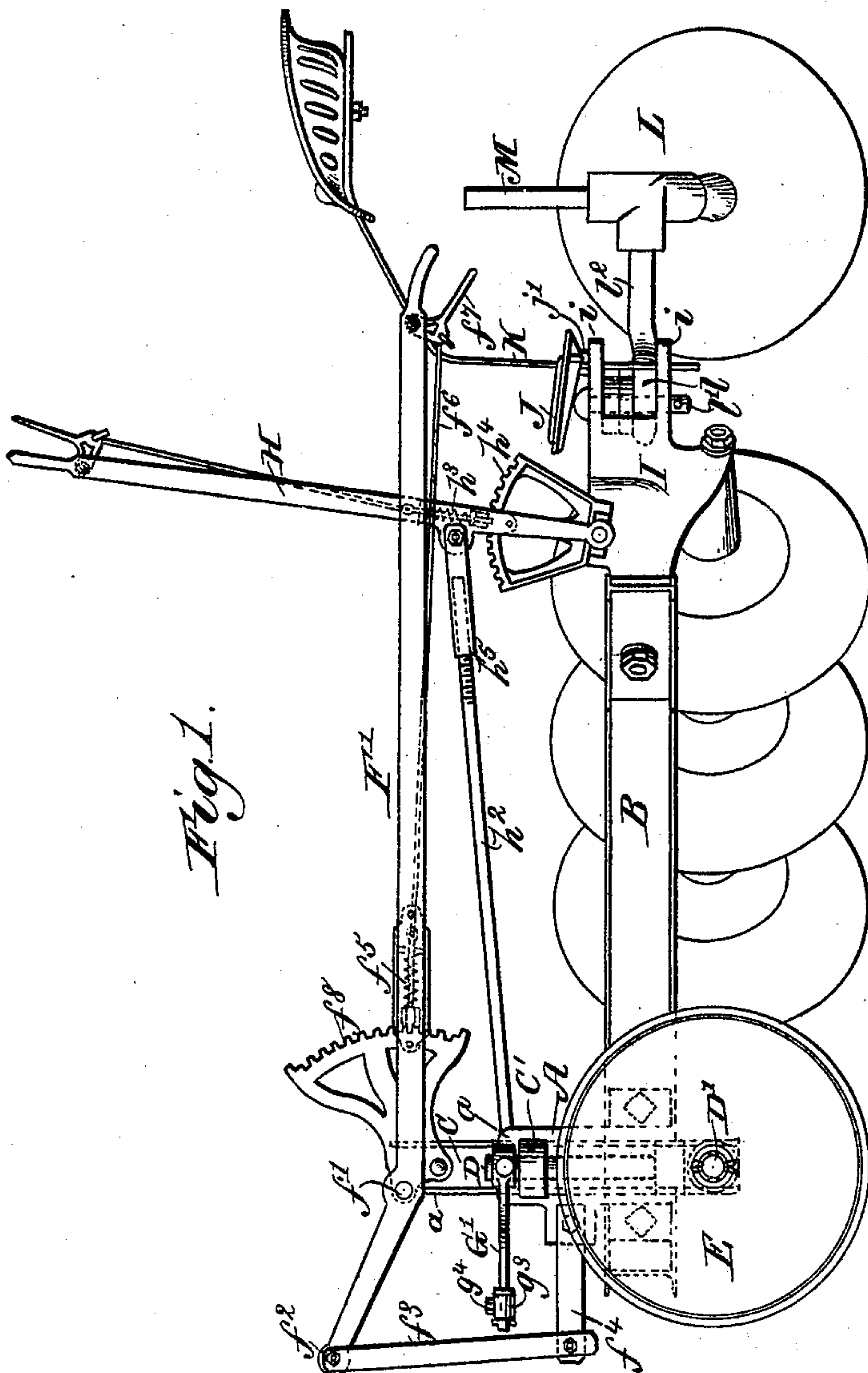
Patented Feb. 14, 1899.

J. B. GARDE.  
ROTARY DISK PLOW.

(Application filed Feb. 1, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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J. B. Kueper

Inventor.  
James B. Garde.  
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Att'y.

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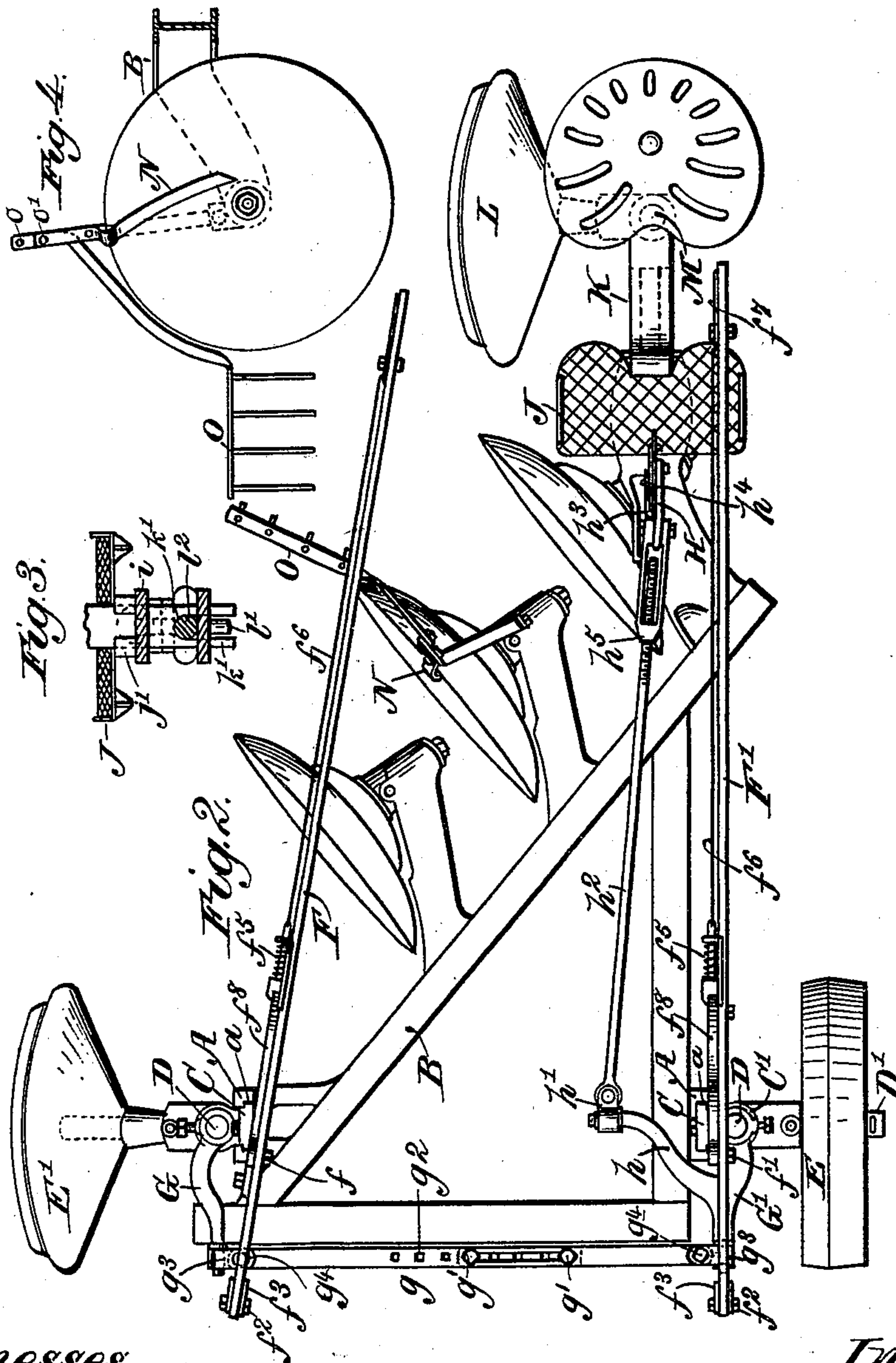
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# UNITED STATES PATENT OFFICE.

JAMES BARNICOTT GARDE, OF MELBOURNE, VICTORIA, ASSIGNOR TO  
WALTER CHAMBERLAIN PEACOCK, OF SAME PLACE.

## ROTARY-DISK PLOW.

SPECIFICATION forming part of Letters Patent No. 619,560, dated February 14, 1899.

Application filed February 1, 1898. Serial No. 668,756. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES BARNICOTT GARDE, plow-maker and salesman, a subject of the Queen of Great Britain, residing at 159 Sydney road, Royal Park, Melbourne, in the British Colony of Victoria, have invented Improvements in Rotary-Disk Plows, (for which I have obtained Letters Patent in Victoria, dated December 14, 1897, No. 14,835; in Queensland, dated December 17, 1897, No. 4,233; in New South Wales, dated December 16, 1897, No. 8,056; in South Australia, dated December 16, 1897, No. 5,213; in Tasmania, dated December 16, 1897, No. 2,075; in New Zealand, dated December 23, 1897, No. 10,247; in West Australia, dated February 22, 1898, No. 1,958; in Great Britain, dated January 17, 1898, No. 1,316; in Canada, dated January 25, 1898, No. 80,405; in Belgium, dated January 24, 1898, No. 103,883, and in Germany, dated January 20, 1898, No. 33,423,) of which the following is a specification.

This invention relates to what are known as rotary-disk plows; and its main object is to provide simple and reliable contrivances which will enable plows of this kind to be conveniently steered at the headlands as well as while in work, in addition to enabling the depth of their cut to be regulated to requirements.

According to this invention the land-wheel and the front furrow-wheel of rotary-disk plows are carried on blocks arranged to slide vertically in guide brackets or standards bolted or otherwise attached to the main frame, and these vertically-sliding blocks are pivotally connected each to a lever fulcrumed at its forward end to a link projecting upwardly from the main frame or other rigid support, and said adjusting-levers are arranged to work alongside a quadrant-rack and are each fitted with a catch or pawl which can be drawn out of engagement with the teeth of said quadrant-rack when it is desired to operate the levers in order to adjust the depth of the cut. At other times these catches or pawls serve to retain said levers in position for maintaining any particular depth of cut required.

In order that the plow may be conveniently

steered, the vertical portions of the bent spindles upon which the land-wheel and the front furrow-wheel, respectively, are mounted are each fitted with a projecting arm, the outer ends of which are connected together by an extensible tie-bar, while one or other of said arms is also connected by an extensible rod to a steering-lever, also fitted with a pawl engaging with the teeth of a quadrant-rack located in a convenient position in front of the driver's seat. The seat-support and the spindle of the back furrow-wheel are locked together in a very simple and inexpensive yet convenient manner.

Having now generally described the nature of this invention, I will proceed to explain it more particularly with the aid of the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 a plan, of a rotary-disk plow fitted with my improvements, while Fig. 3 is a detail illustrating the method of connecting the seat-support and back furrow-wheel spindle to the frame of the plow. Fig. 4 is a front elevation of one of the rotary disks with its supporting-bracket, illustrating the application thereto of a scraper for removing any dirt which happens to cling to it and a rake for leveling the surface of the ground and breaking up any clods turned over by the plow.

The same letters of reference indicate the same parts throughout.

A represents a vertical cast-iron bracket, which is bolted or otherwise secured to each of the side bars B of the main frame of the plow. Each of these brackets is constructed with undercut guides, as indicated at *a*, to receive a vertically-sliding block C, provided with lugs C', through which the vertical portion D of the spindles D', carrying the land-wheel E and the front furrow-wheel E', passes. Two levers F F' are pivotally connected, as indicated at *f f'*, one to each of the vertically-sliding blocks C C, and said levers are fulcrumed at their forward ends, as indicated at *f<sup>2</sup>*, preferably upon the upper ends of the links *f<sup>3</sup>*, whose lower ends are pivoted upon an arm *f<sup>4</sup>*, projecting from each bracket A. It will be obvious that by this means either of the blocks C carrying the land-wheel and



the front furrow-wheel can be raised or lowered, as required, and thus the depth of cut of the plow can be regulated to a nicety.

In order to retain the levers  $F F'$  in position to maintain any predetermined depth of cut, they are fitted with spring or other retaining catches or pawls  $f^5$ , connected by rods  $f^6$  to small hand-levers  $f^7$  on the rear ends of the levers  $F F'$ , and said spring catches or pawls are arranged to engage with the teeth of a pair of quadrant-racks  $f^8$ , attached to or forming part of vertically-sliding blocks C.

In order that the plow may be steered, forwardly-projecting arms  $G G'$  are rigidly secured upon the vertical portions D of the land and front furrow-wheel spindles  $D'$ , respectively, and the ends of said arms are connected together by an extensible divided rod or tie-bar  $g$ , as shown in Fig. 2, whose length can be varied by means of bolts  $g'$  and holes  $g^2$ , provided for that purpose in one or other of the lengths of said divided rod. This construction enables the steering-wheels  $E E'$ —i. e., the land-wheel and the front furrow-wheel—to be set back into different positions upon the triangular frame to alter the balance of the plow whenever so required, as will be well understood.

In order to allow the land and front furrow-wheels  $E E'$  to be raised and lowered relatively to each other and to provide for the varying directions of the steering-arms  $G G'$ , the tie-bar  $g$  is provided at each end with a double joint composed of the horizontal pivot portion  $g^3$  and the vertical pivot portion  $g^4$ , which horizontal and vertical pivots practically constitute a universal joint, the pivot  $g^3$  permitting vertical variation and the pivot  $g^4$  permitting horizontal variation, as will be obvious. One of the steering-arms, preferably that attached to the land-wheel spindle, is constructed, as shown in Fig. 2, with a second projecting arm  $h$ , the end of which is connected by another double or universal joint  $h'$   $h'$  and an extensible connecting-rod  $h^2$  to a steering-lever H, which is fulcrumed upon the bracket I, carrying the foot-board J and seat-support K. This steering-lever is fitted with a hand-operated catch or pawl  $h^3$ , engaging with the teeth of a quadrant-rack  $h^4$ , mounted rigidly upon the bracket I. The connecting-rod  $h^2$  is made extensible, as illustrated at  $h^5$ , in order that its length may be varied to enable the catch or pawl  $h^3$  of the steering-lever to engage with one of the teeth of the quadrant  $h^4$  when the steering-wheels are in a straight line with the travel of the plow. It will be obvious that this steering-gear can be applied to the front furrow-wheel in the same way, as shown, in connection with the land-wheel and that either said front furrow-wheel or said land-wheel can be steered singly instead of both being operated simultaneously.

The spindle of the back furrow-wheel L is bent at right angles, as illustrated in Fig. 2, and its forward end is formed with an eye, as

indicated at  $l$ , through which a bolt  $l'$  is passed through lugs  $i$  on the bracket I. The seat-support K is bifurcated at its lower end, as indicated at  $l'$  in Fig. 3, and is passed through the lugs  $i$  of the bracket I, so that its lower bifurcated end fits over the front end of the spindle  $l^2$  of the back furrow-wheel L behind the eye  $l$ , thus locking said spindle in position in a simple yet effective manner.

The foot-board J rests by preference upon the lug  $i$  and is formed with lugs  $j'$ , engaging the seat-support K, whereby it is held in position without the aid of bolts or other expensive contrivances, while the upward projection M on the back furrow-wheel spindle is to enable weights to be placed upon it, if found necessary, for the purpose of holding the plow down when operating on hard ground.

If preferred, scrapers N may be attached to the brackets or supports carrying the rotary disks, as illustrated in Figs. 2 and 4, and a rake O may also be connected to the same support and be fitted with either curved or straight teeth, so that it will level the ground turned over by the disk and break the clods of earth, thus in many instances obviating the necessity for harrowing the land in order to prepare it for the seed. This rake must be vertically adjustable to suit the depth of the cut of the plowing. This adjustment may be made by providing a plurality of bolt-holes  $o$  in the bracket, to which the rake O is attached, so that the bolt  $o'$ , connecting the rake to said bracket, may be placed in any one of said holes, as shown in Figs. 2 and 4.

It will be obvious that, if preferred, the quadrant-racks  $f^8$  might be secured to the brackets A instead of to the vertically-sliding blocks C, in which case the contour of their toothed edges would have to be made to suit the travel of those parts of the levers  $F F'$  carrying the catches or pawls  $f^5$ . Again, another modification would consist in pivoting the front ends of the levers  $F F'$  to fixed fulcrums or supports instead of to the links  $f^3$  and then fixing the quadrant-racks  $f^8$  either to the brackets A or to the frame B or to some other suitable supports, their toothed edges being shaped to the arcs of circles struck from said fixed fulcrums, while the levers would be formed with slots to receive the bolts shown at  $f^9$  projecting from the vertically-sliding blocks C.

It will be evident to those skilled in the use of plows that the improvements above described will greatly facilitate the handling of rotary-disk plows, it being evident that the frame of the plow can be adjusted vertically upon either the land-wheel or the front furrow-wheel, as may be required, for the purposes of adjusting the depth of cut without interfering with the steering of said wheels. In addition to this both of said wheels being coupled together and steered simultaneously without interfering with the vertical adjustment of the plow is another decided advan-



tage which will readily commend itself to experts.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A rotary-disk plow comprising a framing, a land-wheel and furrow-wheel upon spindles supported upon blocks arranged to slide vertically in guide-brackets secured to the framing, steering devices consisting of levers rigidly connected at one end to vertical swiveled portions of the wheel-spindles, a steering-lever connected to the end of an arm upon one of the levers on the vertical part of a spindle and a tie-bar having a double or universal joint at each end to connect the ends of the said levers, substantially as described.

2. In a rotary-disk plow, the combination with a main framing of a land-wheel and a furrow-wheel each mounted upon a spindle having a vertical portion swiveled upon a block which is vertically adjustable in guide-brackets upon the frame, a lever for raising and lowering each block, levers rigidly connected at one end to the vertical portions of the spindles, a tie-rod having double or universal joints at its ends which are connected to the other ends of said levers, and a steering-lever connected to an arm upon one of the levers upon the vertical parts of the spindles, substantially as described.

3. In a rotary-disk plow, the combination with a main framing having guide-brackets, of blocks vertically adjustable therein, spindles for the land-wheel and furrow-wheel each having a vertical portion swiveled upon one of said blocks, levers having one end rigidly connected to one of the vertical spindle portions, and an extensible tie-rod having double or universal joints at its ends which are connected to the other ends of the levers on the vertical portions of the spindles, substantially as described.

4. In a rotary-disk plow, the combination with a main framing having vertical guide-brackets, of spindles for the land-wheel and furrow-wheel, said spindles having vertical portions swiveled upon blocks which are adjustable in the guide-brackets, levers having one end rigidly connected to the vertical portions of said spindles, a tie-rod having double or universal joints at its extremities which are connected to the other ends of said levers, and a steering-lever fulcrumed on a bracket

upon the main frame and having a pawl to engage a toothed quadrant mounted on said bracket, the steering-lever being connected by a rod to an arm on one of the levers on the spindles, substantially as described.

5. In a rotary-disk plow, the combination with a main frame of a land-wheel and a furrow-wheel, each mounted on a spindle having a vertical portion, blocks vertically adjustable in guide-brackets on the framing and having swivel-bearings for vertical portions of the wheel-spindles, an extensible tie-rod having double or universal joints at its ends, levers having one end rigidly mounted on the vertical portions of the spindles and their other ends connected by the tie-rod, a steering-lever fulcrumed on a bracket on the frame and having a pawl to engage a toothed quadrant on said bracket, and a connecting-rod having one end pivotally connected to said steering-lever and provided at the other end with a double or universal joint which is connected to a rigid arm on one of the levers on the spindles, substantially as described.

6. In a rotary-disk plow, the combination with levers mounted upon the supports of the land-wheel and furrow-wheel, of a tie-bar connecting the ends of said levers and having double or universal joints at its extremities, substantially as described.

7. In a rotary-disk plow the bifurcated-ended seat-support in combination with the bent spindle of the back furrow-wheel said bifurcated end fitting over said spindle behind an eye in the forward end thereof substantially as and for the purposes herein described and explained and as illustrated in the accompanying drawings.

8. In a rotary-disk plow, the combination with the supports for the land-wheel and furrow-wheel, of levers having rigid connection at one end with said supports, and an extensible tie-rod having double or universal joints at its extremities to connect the ends of said levers, substantially as described.

9. In a rotary-disk plow, the combination with the supports for the land-wheel and furrow-wheel, of an extensible tie-bar to connect the ends of steering arms or levers mounted on said supports, the ends of said tie-bar being provided with double or universal joints, substantially as described.

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Witnesses:

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