

H. CHRISTENSEN.
DISK HARROW.
APPLICATION FILED JULY 6, 1908.

Patented Nov. 23, 1909.
2 SHEETS—SHEET 1.

940,923.

Fig. 1.

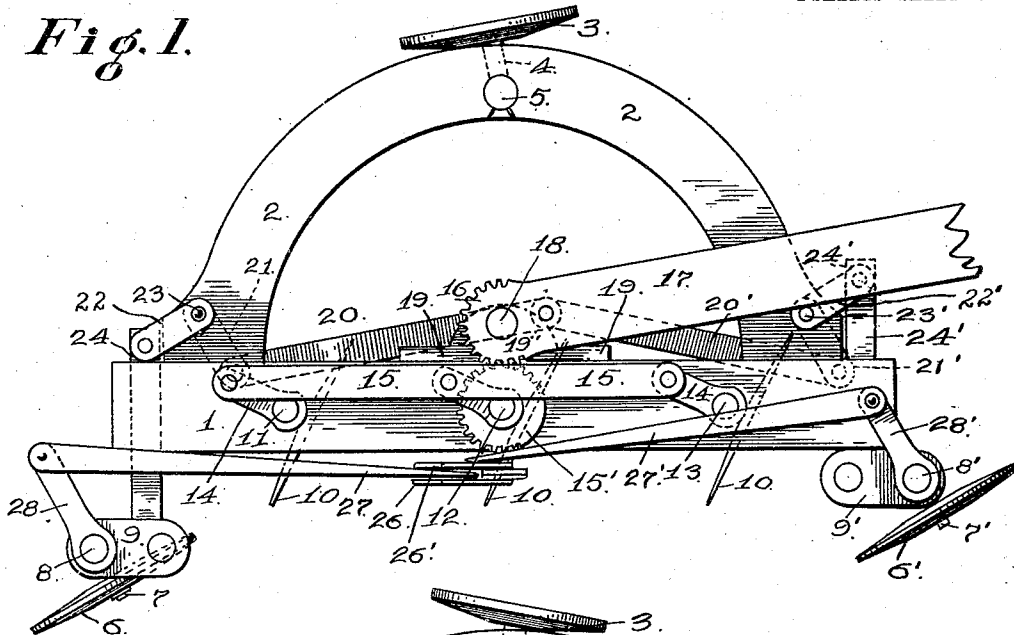
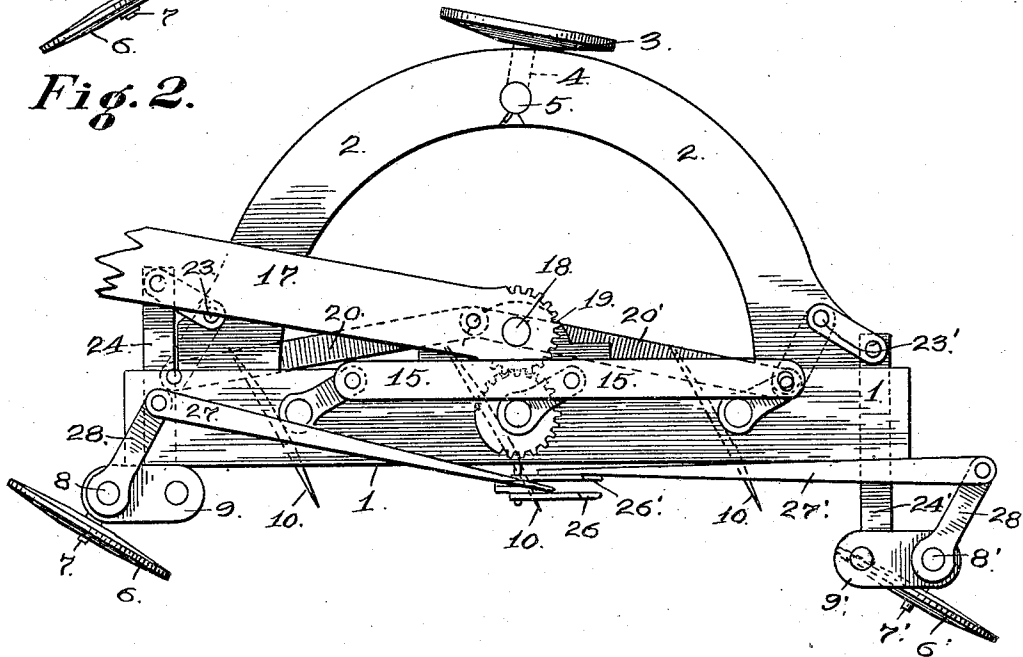


Fig. 2.



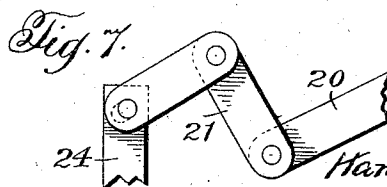
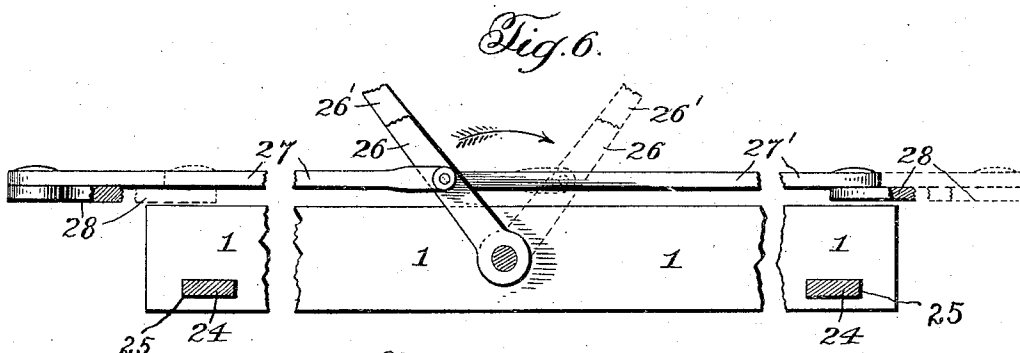
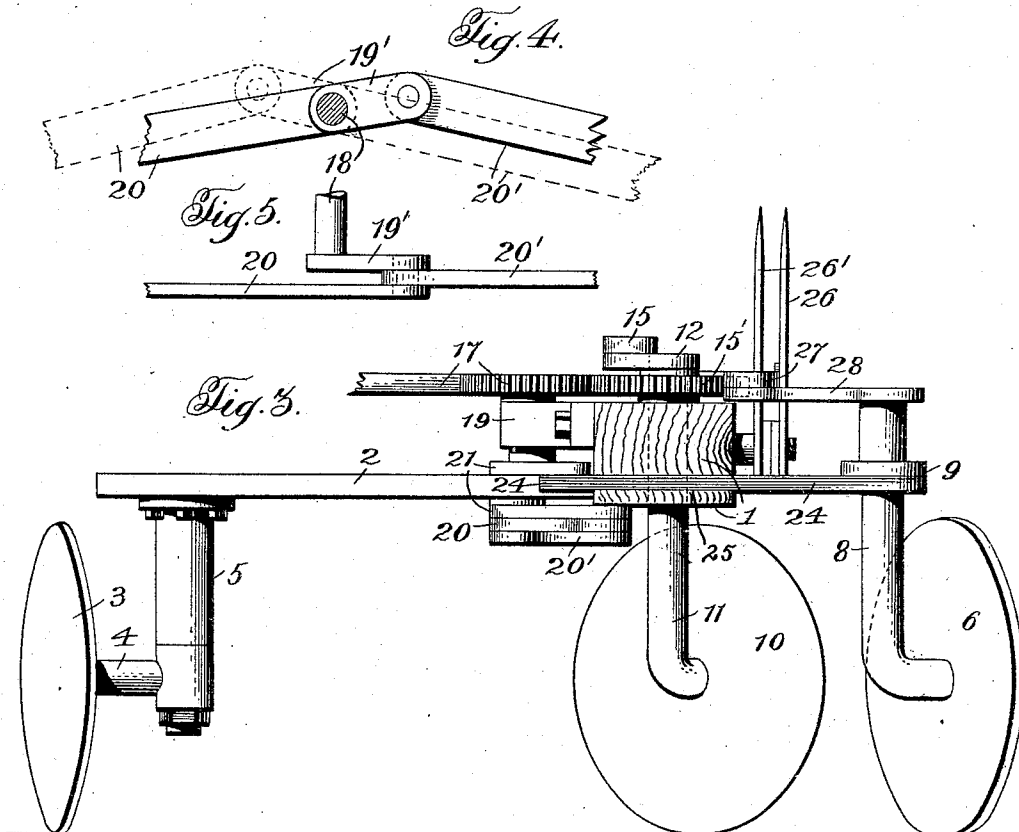
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Witnesses:

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UNITED STATES PATENT OFFICE.

HANS CHRISTENSEN, OF BYRON, CALIFORNIA.

DISK HARROW.

940,923.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed July 6, 1908. Serial No. 442,067.

To all whom it may concern:

Be it known that I, HANS CHRISTENSEN, a citizen of the United States, residing at Byron, in the county of Contra Costa and State of California, have invented certain new and useful Improvements in Disk Harrows, of which the following is a specification.

The hereinafter described invention relates to an improvement in cultivating implements known as gang disk-harrows, of the type set forth and described in my Patent No. 894,188, and the same resides in the means for throwing the gage wheels respectively inwardly and outwardly with the reversing of the draft-bar, so as to position the gage wheels with respect to the last furrow cut, and the outer furrow being cut by the rear harrow disk, of the series of disks.

To comprehend the invention, reference should be had to the accompanying sheet of drawings, wherein:—

Figure 1 is a top plan view of the gang disk-harrow. Fig. 2 is a similar view illustrating the draft-bar and the parts actuated thereby in a reverse position to that set forth in Fig. 1 of the drawings. Fig. 3 is an end elevation the beam being shown in section, Figs. 4 and 5 are detail views of the crank and links used to shift the gage wheels, Fig. 6 is a detail view of the mechanism for varying the angle of the gage wheels, and, Fig. 7 is a detail view of one of the bell cranks utilized for shifting the gage wheels.

The frame of the harrow, which may be of any suitable construction, is, in its simplest form composed of the straight carrying beam 1, and the semi-circular bar 2. The outer side of the frame is carried by a colter-wheel 3, the standard 4 of which is suitably pivoted or swiveled in a bearing 5 on the bar 2. The inner side of the frame is carried by the gage-wheels 6—6', one at each extremity of the beam 1. These wheels are mounted at an angle in the bearings 7—7', one at the base of each standard 8—8', the said standards being vertically adjustable and axially rotatable in bearings 9 9'.

The harrow-disks are designated by the numeral 10. There may be any number of these, but, for the sake of illustration, I have here shown three. The harrow disks are rotatably mounted at the lower end of the standards 11, 12, 13, which standards pass up through and are rotatably mounted

in the beam 1. To the top of each standard is secured a crank-arm 14, and all the crank-arms are connected by a link 15, whereby the standards may be turned on their axes, and all the disks 10 reversed in unison.

On the inner beam 1 is mounted for movement a gear 15', which gear is secured to and is rigid with the central standard 12, and the same is engaged by the gear-head 16 at the inner portion of the draft-bar 17. This draft-bar 17 is secured to the upper end of a vertically extended pin 18, which pin passes through a bearing 19 attached to the inner face of the beam 1. By the form of connection between the draft-bar 17 and the standard 12, the movement of the draft-bar, as swung on the harrow frame, to reverse the direction of travel, is transmitted to rotate the said standard 12, and, through its connection with the link 15, the standards 11 and 13, to change the position of the harrow-disks 10 in unison.

To the lower end of the pin 18 is secured a crank arm 19' and pivotally connected at their inner ends to said crank arm are links 20—20', the outer ends of which are pivotally connected to corresponding arms 21—21' of a pair of bell crank levers which are pivoted on the semi circular bar 2. The other arms 22—22' of the bell crank levers are pivotally connected through a pin and slot connection to the inner ends of transverse slide bars 24—24', which work within guide portions 25 formed in each end of the beam 1. The arms of the bell crank levers 21—22 and 21'—22', are positioned on opposite sides of the semi circular bar 2 and are rigidly connected to the ends of pivot pins 23—23' which pass through said bars.

The bearings 9 9', for the standards 8—8', are carried at the outer end of the slide-bars 24—24', so that as the said slide-bars are moved inwardly and outwardly respectively, with respect to the harrow frame, they will carry by their movement the gage wheels 6—6'. The purpose of this adjustment, is to position the gage wheels 6—6' with respect to the last cut furrow, and the furrow being cut by the rear disk of the harrow, one of the slide-bars 24—24' being forced outwardly, while the companion slide-bar is drawn inwardly during the movement of the draft-bar 17, to reverse the position of the harrow disks in accordance with a desired change in the direction of travel.

Mounted on the beam 1 are a plurality of

hand actuated levers 26—26', which levers are connected respectively by the rods 27—27', to the crank-arms 28—28', on the upper end of the standards 8—8'. The levers 26—26' are situated within convenient reach of the operator of the machine, and the purpose thereof is to adjust the standards 8—8' axially, during a change in the line of draft, so as to vary the angular position of the gage wheels 6—6'.

Having thus described the invention, what is claimed as new and desired to be protected by Letters Patent is:—

1. A reversible gang disk harrow comprising a frame including a carrying beam, a plurality of disks provided with standards mounted for rotation in the carrying beam, a gage wheel arranged at each end of the carrying beam to support the frame, each gage wheel being provided with a standard mounted for rotary and lateral adjustment, a reversible draft-bar, connection between the draft-bar and the standards of the harrow disks for actuating the same to simultaneously adjust the position of the harrow disks, and means actuated by the reversal of the draft-bar to simultaneously adjust the lateral position of the gage wheels relative to the frame of the harrow.

2. In a reversible gang disk harrow, a frame, a plurality of harrow disks provided with vertical standards journaled in said frame, gage-wheels supported in the ends of said frame and adjustable laterally thereof, a shiftable draft appliance, and means operable upon the shifting of the draft appliance for adjusting all of the harrow disks in unison and for shifting the gage-wheels laterally of the frame in opposite directions.

3. In a device of the character described, a frame, gage-wheels supports slidably mounted in the ends of said frame and extended transversely thereof, gage-wheels mounted in said supports, a pair of bell-crank levers fulcrumed on said frame, said levers each having one arm thereof pivotally connected to the gage-wheel supports, a re-

versible draft bar pivoted to the frame intermediate the gage-wheel supports, and links connecting said bar and the other arms of the bell crank levers.

4. In a reversible gang disk harrow comprising a frame including a straight beam, a plurality of disks provided with standards mounted for rotation in the said beam of the frame, crank-arms on said standards, a link connecting said crank-arms, a gear on one of the standards of the harrow disks, a reversible draft-bar pivoted to the frame, a gear head carried thereby for engagement with the gear of the disk standard to simultaneously operate the standards to position the disk harrows for the cutting of furrows of the travel of the harrow in either direction, gage wheels for supporting the frame, said gage wheels being provided with standards mounted for rotary and laterally adjustment, and connection between the draft-bar and the standards of the gage wheels for positioning the gage wheels laterally relative to the frame during the swinging movement of the said draft-bar.

5. In a device of the character described, a frame, a plurality of disks provided with vertical standards journaled in said frame, said standards being provided with cranks, a link connecting the crank arms of all of the disks, a draft bar pivoted to the frame and geared to one of the disk standards, a pair of gage-wheel supports slidably mounted in the ends of the frame and extended laterally in opposite directions, bell crank levers fulcrumed on the frame each having one arm thereof pivotally connected to the gage-wheel supports, and links pivotally connecting the draft bar and the other arms of said bell crank levers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HANS CHRISTENSEN.

Witnesses:

MIKKEL ANDERSON,
L. G. PLUMLEY.