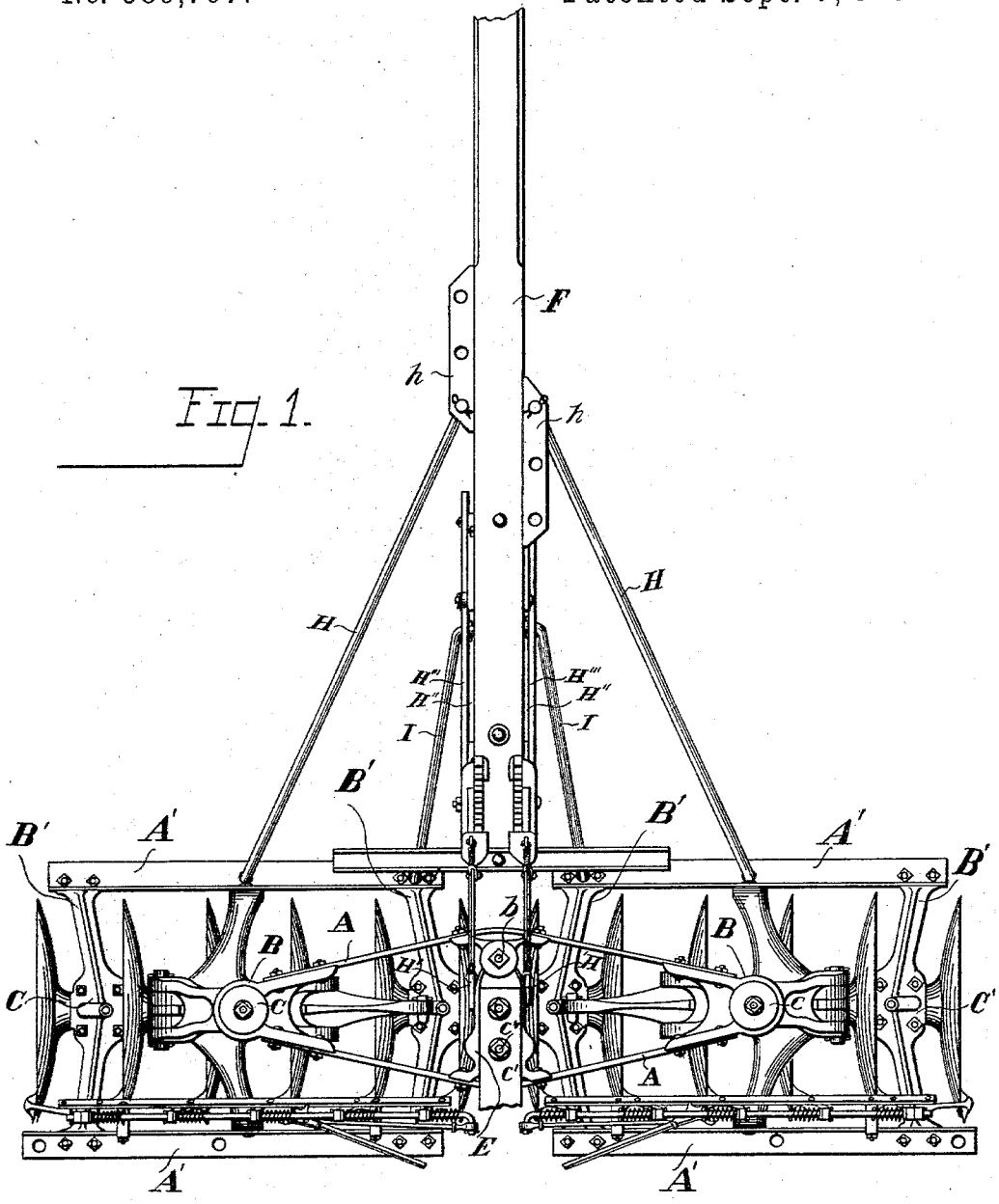
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C. S. SHARP.

DISK HARROW.

No. 589,797. Patented Sept. 7, 1897.

Fig. 1.



Witnesses:
A. B. Wilson.
W. H. Carson

Inventor:
Charles S. Sharp
by
B. J. Noyes
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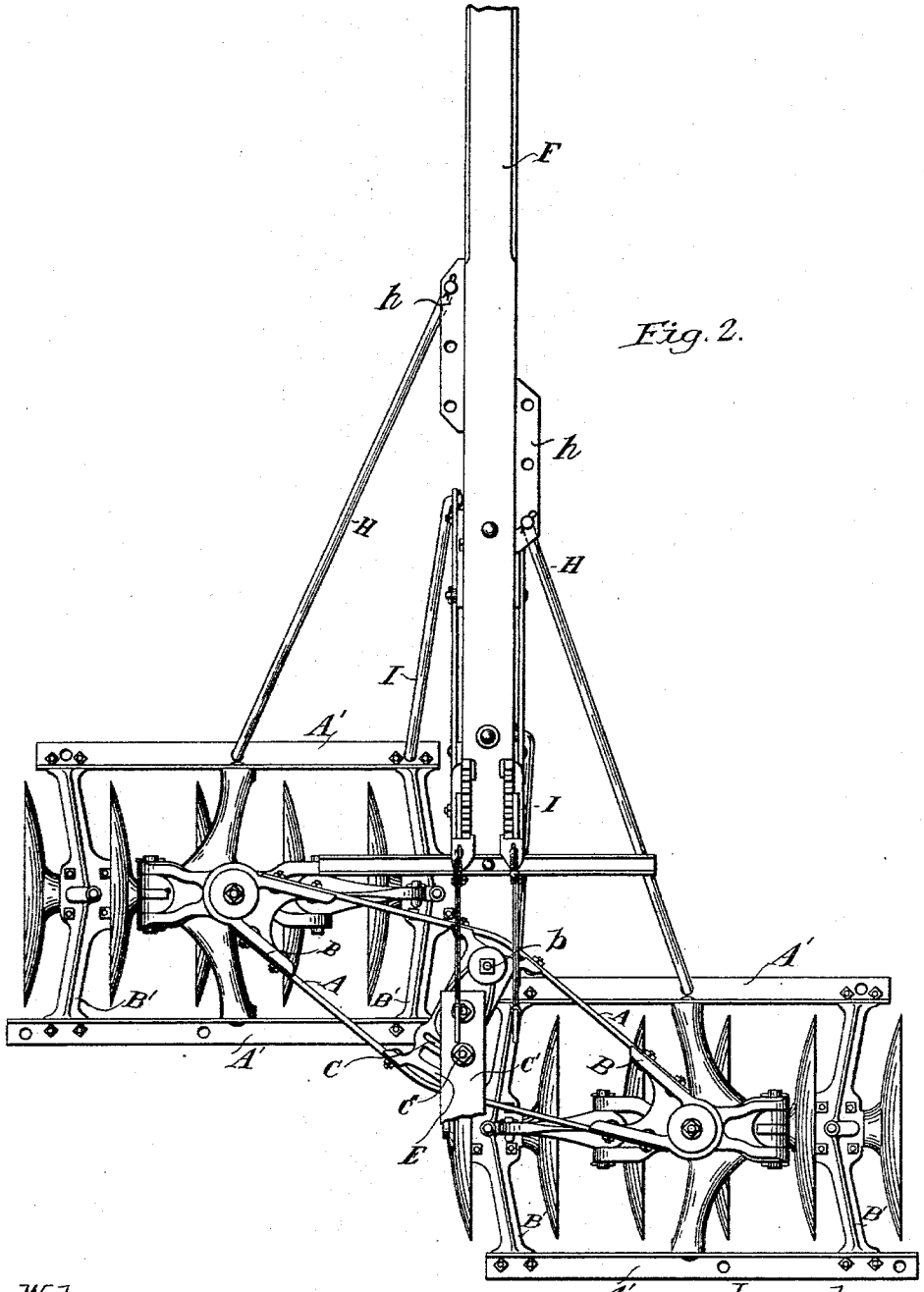
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Fig. 2.



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(No Model.)

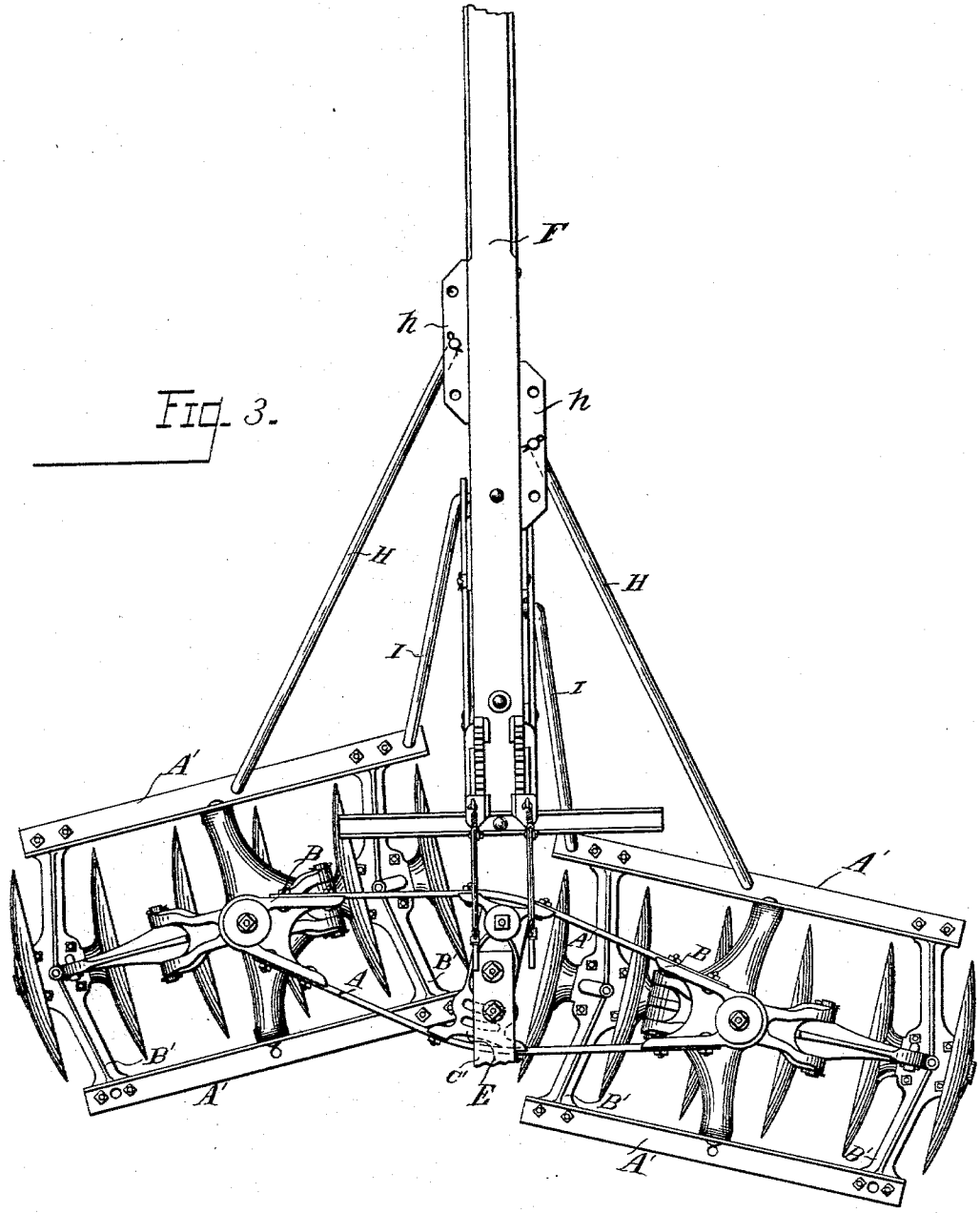
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Fig. 3.



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C. S. SHARP.

DISK HARROW.

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Fig. 4.

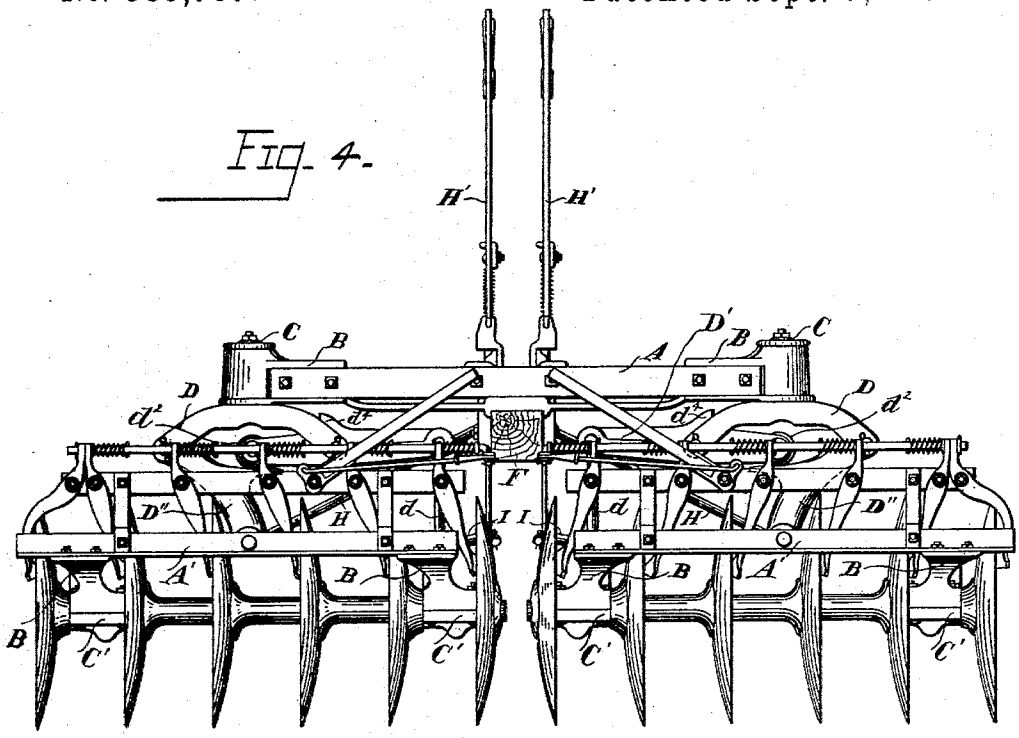
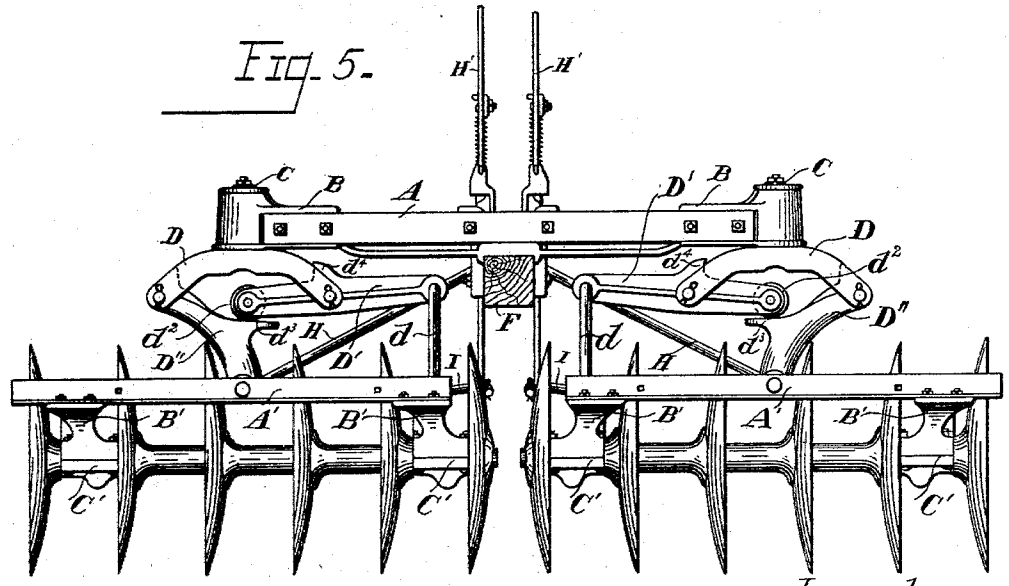


Fig. 5.



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C. S. SHARP.

DISK HARROW.

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Fig. 9.

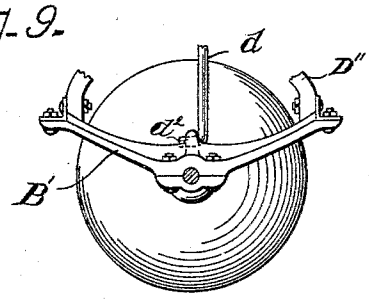


Fig. 6.

Fig. 10.

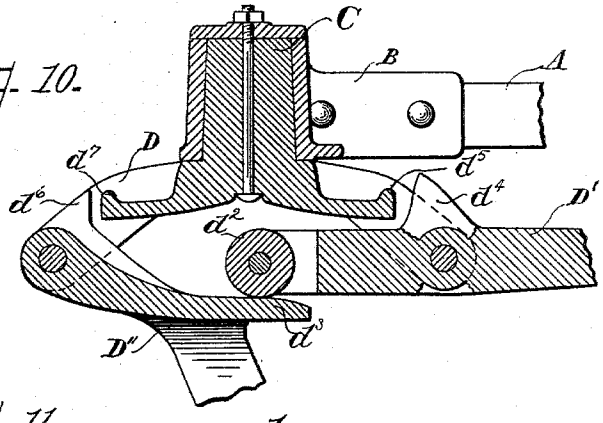
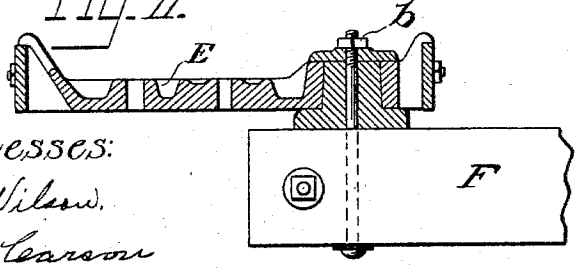


Fig. 11.



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DISK HARROW.

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Fig. 7.

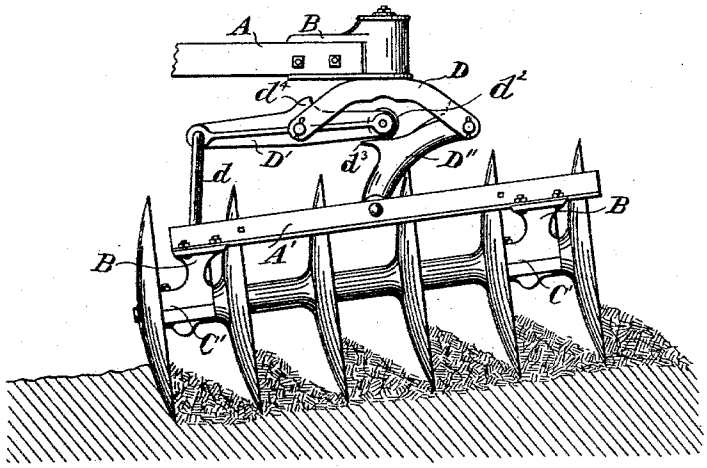
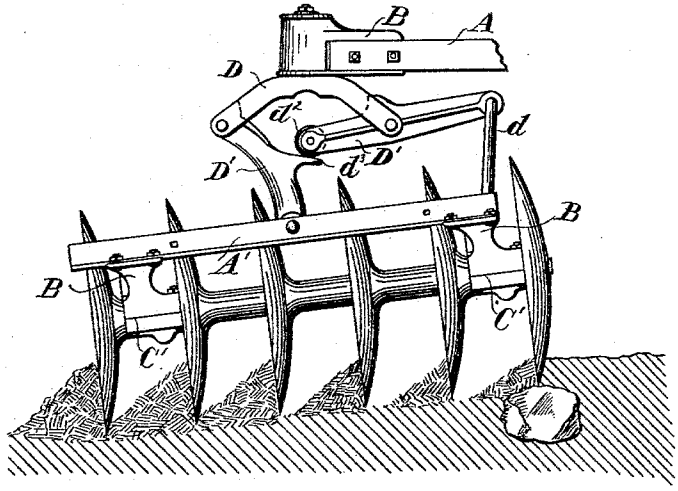


Fig. 8.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES S. SHARP, OF AUBURN, NEW YORK, ASSIGNOR TO THE D. M. OSBORNE & COMPANY, OF SAME PLACE.

DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 589,797, dated September 7, 1897.

Application filed August 26, 1896. Serial No. 603,943. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. SHARP, of Auburn, county of Cayuga, State of New York, have invented an Improvement in Disk Harrows, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has reference to disk harrows or cultivators of that class wherein the disk gangs are reversible to throw in or out, and are also adjustable relatively to each other, so that one can be placed in advance of the other, as by moving one gang forward and the other rearward, and in any position that they may be placed may be angled as desired, and will also be free to rock or tilt. In such a harrow when the disk gangs are arranged one to the rear of the other and in an outthrow position the inthrust of the rear gang has a tendency to throw the pole toward the side of said gang and this invention has for its object to obviate this trouble or tendency; and to this end it consists in pivotally connecting the pole to the main frame to which the disk gangs are pivoted at a point between but in advance of the pivots of said disk gangs.

The invention also has for its object to provide certain pressure devices for each disk gang which act upon one end thereof and tend to hold said end down, thereby in a measure tending to resist or oppose the upward movement or tilting action of the gangs, and said pressure devices being operated by the end thrust of the gangs, and they are connected with the disk-gang supports and disk gangs, so as to be readily removable with the disk gangs when reversing the position of said gangs; and to this end it consists in pivotally connecting each disk gang to a swinging yoke having a bearing portion or surface upon which rests one end of a rocking bar, the opposite end of which bar is connected with one end of the gang, and in providing a disk-gang support on the main frame for each disk gang to which said swinging yoke and rocking bar are connected.

Figure 1 shows in plan view a disk harrow embodying this invention, the disk gangs being in alinement and at right angles to the draft; Fig. 2, a similar view showing the disk gangs adjusted one to the rear of the other, but in parallelism. Fig. 3 is a similar view, the disk gangs being angled and also reversed. Fig. 4 is a rear elevation of the disk harrow shown in Fig. 1; Fig. 5, a similar view with the scrapers removed to better expose the parts. Fig. 6 is a side elevation of the disk harrow shown in Fig. 1. Figs. 7 and 8 are rear views of one of the disk gangs, tilted to accommodate inequalities of the ground, &c. Fig. 9 is a detail of the gang-shaft bearing and a portion of the gang-frame; Fig. 10, an enlarged detail showing the pivotal connection of one of the disk gangs and the pressure devices, and Fig. 11 an enlarged detail showing the pivotal connection of the pole to the main frame.

The main frame consists of two flat steel bars A A, bowed in opposite ways, as shown, and secured at their ends to blocks B B. These blocks, one at each end of the main frame, each has a vertical hole through it for the pivot C of a yoke D, which is formed with the ends of its arms bifurcated.

The gang-frame consists of two angle-iron bars A′ A′, arranged in parallelism, one at the front and the other at the rear of the disk gang, and said bars are secured at their ends to cross-pieces or brackets B′, which project from and are preferably formed integral with the bearings C′ of the gang-shaft, or they may support said bearings, and said gang-frame is loosely or pivotally connected to the lower end of a yoke D″, the oppositely-extended arms of said yoke engaging said bars A′ A′ at points substantially midway their length. The yoke D″, to which the gang-frame is thus pivotally connected, projects upwardly, and its upper end is pivotally connected to one of the bifurcated arms of the yoke D, so that it is free to swing on such pivotal connection in and out in the arc of a circle.

The gang-frame is permitted to rock or tilt by reason of its pivotal connection with the yoke D″ and is also permitted to move more or less inwardly and upwardly and the reverse by reason of the pivotal connection of said yoke D″ with the yoke D, and is also permitted to turn on a vertical axis by reason of the pivotal connection of the yoke D

with the main frame. A rocking bar or lever D′ is pivoted to the other bifurcated arm or end of the yoke D, one end of said rocking bar or lever being connected by a link *d* with an eye *d″*, formed integral with the bearings C′ at the end of the disk gang, and the other end of said rocking bar or lever bears a friction-roll d^2, which rests upon a flat bearing portion d^3, formed on the yoke D″. This rocking bar D′ and its connections with the other parts constitutes a pressure device whereby lateral movement or end thrust of the disk gang imparts a downward thrust upon one end of said gang.

Upon the rocking bar or lever D′ a lug d^4 is formed which is so disposed as to strike a stop d^5 on the yoke D, and thus limit the movement of said bar in one direction, and the yoke D″ has formed upon it a lug d^6, which is adapted to strike a stop d^7 on the yoke D, and thus limit the movement of said yoke D″ in one way.

H H are draft-rods, the rear ends of which are secured to the gang-frame A′, and the forward ends of which are secured to the plates *h* upon the pole F, and said plates *h* are perforated to allow adjustment of said draft-rods.

Hand-levers H′ of usual form are provided pivoted upon and extending below the pole F, the lower ends thereof being connected to bars H‴, which are in turn connected to pendent links H″ upon the pole, these links being parallel with the levers. Rods I connect the inner ends of the gang-frame with the bars H‴, and said bars H‴ are provided with a set of perforations permitting adjustment of said rods I. By operating said hand-levers H′ H′ the disk gangs may be angled as desired.

At or about the middle of the main frame A a casting or plate E is secured, which not only serves as an additional brace or support for said main frame, but also has a hole through it for the pivot *b* of the pole F. This pivot *b*, it will be seen, while being located substantially midway between the pivots C of the disk gangs is also located some little distance in advance of a line intersecting said pivots. By reason of so locating the pivot *b* of the pole it will be understood that when the gangs are placed one to the rear of the other and in an outthrow position, as represented in Fig. 2, the inthrust of the rear gang will not act to throw the pole toward the side of said gang. A seat is pivoted at *c′* to said plate or casting E at a central point, and back of said pivotal point and in said casting E a curved slot *c* is formed through which passes a bolt *c″*, connected with said seat. By this construction the seat can always be kept in line with the pole, and as its pivotal point *c′* is in line with the center of the vertical bearings of the yoke D the weight of the driver is evenly distributed between the two gangs.

I claim—

1. In a disk harrow, a disk gang, a support therefor pivoted to the main frame, and devices connected with said support and with the gang-frame and operated by the end thrust of said disk gang, to apply a downward pressure to the gang at one end, substantially as described.

2. In a disk harrow, a main frame, a disk-gang support thereon, a disk gang connected thereto by a device swinging on a horizontal axis parallel to the line of draft, and devices connected with said support and with the gang-frame and operated by the end thrust of said disk gang to apply a downward pressure to the gang at one end and hold it down, substantially as described.

3. In a disk harrow, a draft-frame, a yoke D″ swinging on a horizontal axis parallel to the line of draft and having a bearing portion d^3, a disk gang pivotally connected to said yoke, a rocking bar one end of which bears a friction-roll which rests upon said bearing portion, and a link connecting the other end of said bar with one end of the disk gang, substantially as described.

4. In a disk harrow, a main frame, a disk-gang support pivoted thereto and turning on a vertical axis, a yoke pivoted thereto, and movable in the arc of a circle inwardly and upwardly and having a bearing portion, a disk gang pivotally connected to said yoke, a rocking bar pivoted to the disk-gang support, one end of which bears a friction-roll which rests upon said bearing portion, and a link connecting the other end of said bar with one end of the disk gang, substantially as described.

5. In a disk harrow, a draft-frame, a yoke D turning on a vertical axis, a yoke D″ pivotally connected to one arm thereof, a disk gang connected to said yoke D″, a rocking bar connected to the other arm of said yoke D, one end of which engages said yoke D″, and a link connecting the other end of said bar to one end of the disk gang, substantially as described.

6. In a disk harrow, a draft-frame, a yoke swinging on a horizontal axis parallel to the line of draft and having a bearing portion d^3, a disk gang connected to said yoke, a rocking bar one end of which bears a friction-roll which rests upon said bearing portion, and a link connecting the other end of said bar with one end of the disk gang, and limiting-stops for said yoke and said rocking bar, substantially as described.

7. In a disk harrow, a gang-frame, consisting of front and rear bars A′, cross-pieces B′, B′, to which they are attached which are formed integral with the bearings for the disk-gang shaft, combined with a yoke pivotally connected to said front and rear bars which is connected with the main frame, the rocking bar D′, one end of which bears upon said yoke and link connecting the opposite end of said bar to the disk gang, substantially as described.

8. In a disk harrow, wherein the disks are

adapted to be located one in advance of the other, a main frame having a disk gang pivotally connected to it at each end, and a pole pivotally connected to said main frame at a point between its ends and in advance of a line passing through the pivots of the disk gangs, substantially as described.

9. In a disk harrow, a main frame having a disk gang pivotally connected to it at each end, and a pole pivotally connected to said main frame at a point between its ends and in advance of a line passing through the pivots of the disk gangs, and a seat pivoted centrally to said main frame, substantially as described.

10. In a disk harrow, a main frame comprising the bowed bars A, A, pivot-blocks at the ends thereof, and a supporting-plate at the middle, pivoted disk gangs, the pivots of which turn in said pivot-blocks, and a pole attached to said central supporting-plate, substantially as described.

11. In a disk harrow, a main frame comprising the bowed bars A, A, pivot-blocks at the ends thereof, and a supporting-plate at the middle, pivoted disk gangs, the pivots of which turn in said pivot-blocks, and a pole pivoted to said supporting-plate at a point in advance of the pivots of the gangs, substantially as described.

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

CHARLES S. SHARP.

Witnesses:
C. F. BALDWIN,
C. L. DYER.