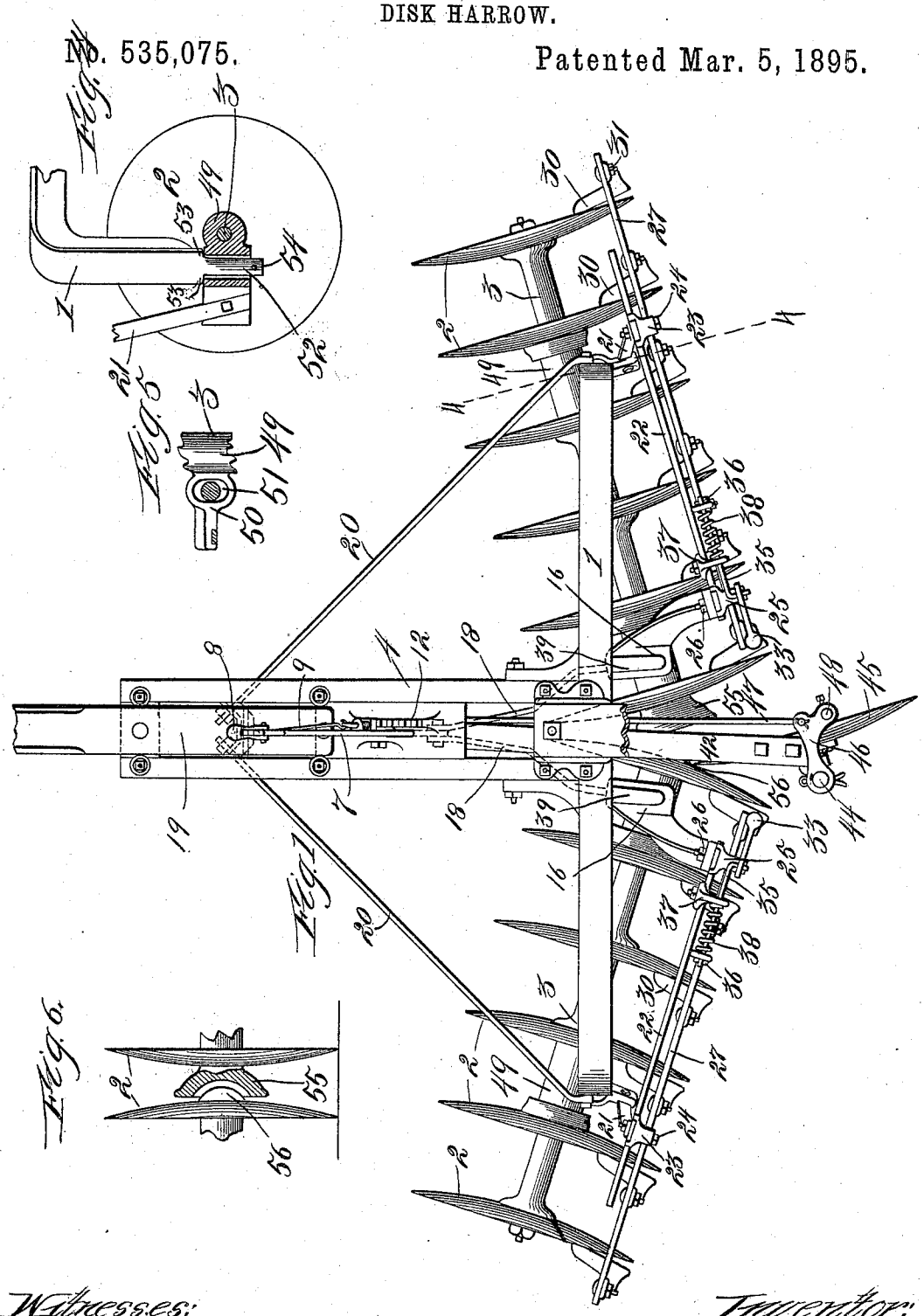
(No Model.) 3 Sheets—Sheet 1.

W. H. PARLIN.

DISK HARROW.

No. 535,075. Patented Mar. 5, 1895.



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(No Model.)

3 Sheets—Sheet 2.

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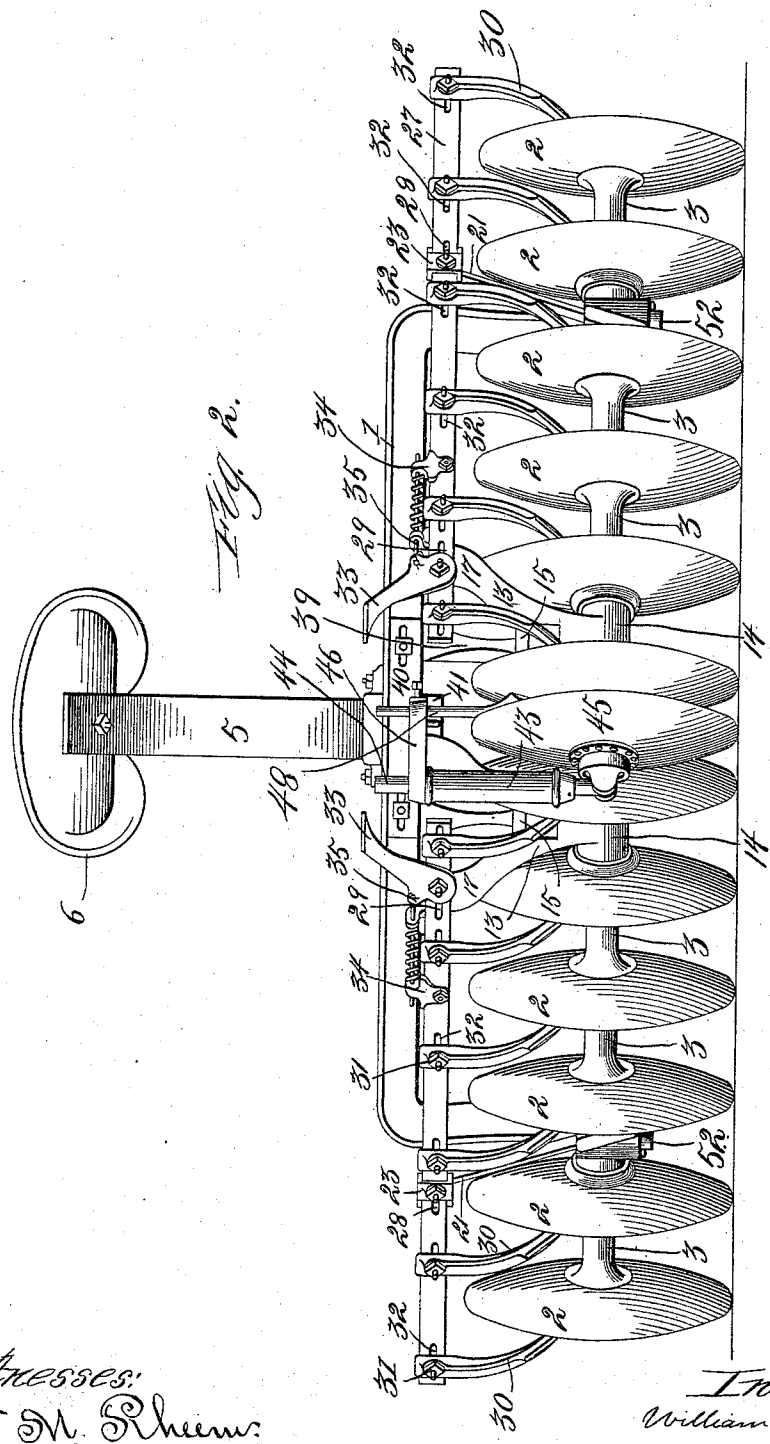

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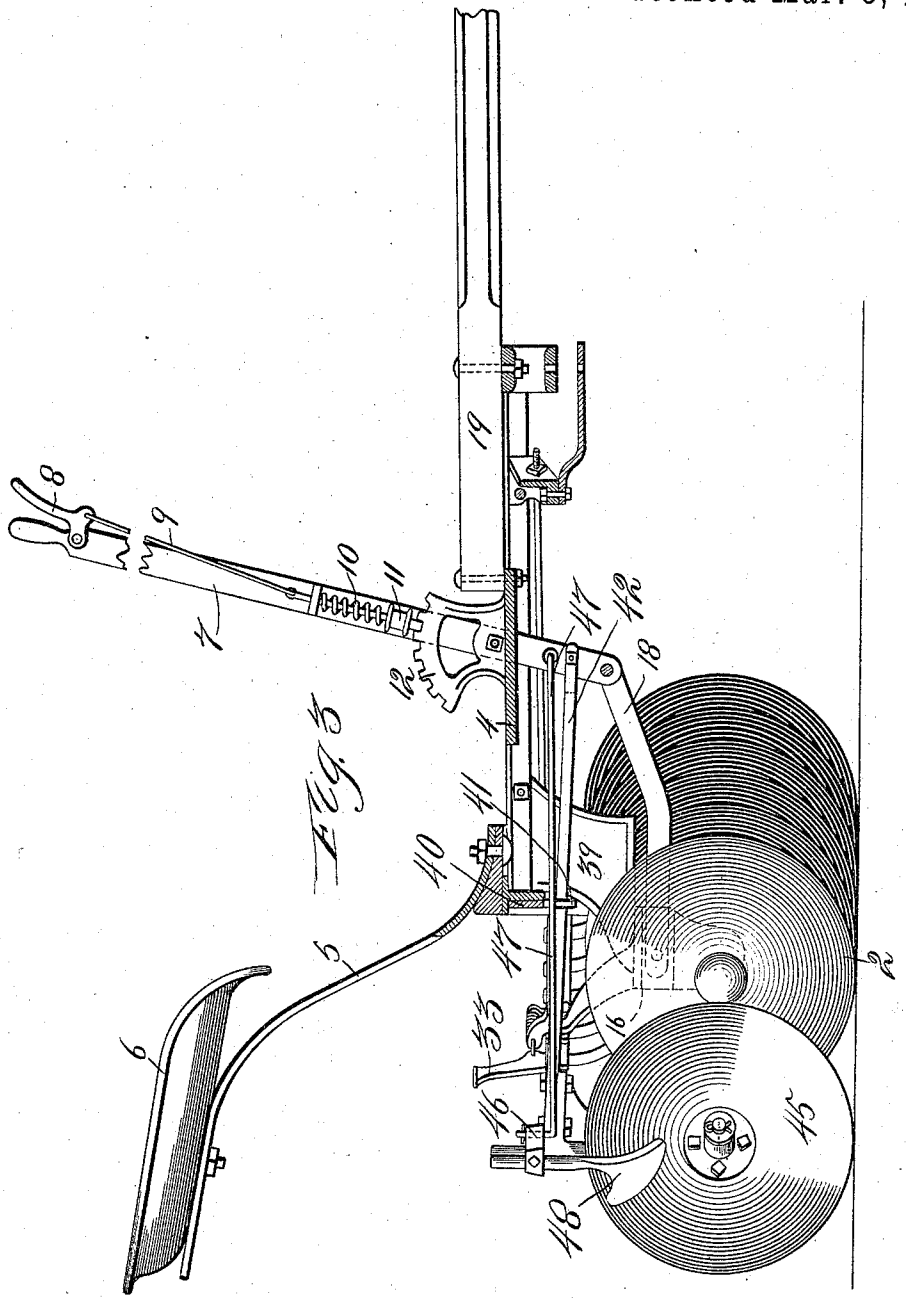

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UNITED STATES PATENT OFFICE.

WILLIAM H. PARLIN, OF CANTON, ILLINOIS, ASSIGNOR TO THE PARLIN & ORENDORFF COMPANY, OF ILLINOIS.

DISK-HARROW.

SPECIFICATION forming part of Letters Patent No. 535,075, dated March 5, 1895.

Application filed April 29, 1893. Serial No. 472,438. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PARLIN, a citizen of the United States, residing at Canton, Fulton county, Illinois, have invented certain new and useful Improvements in Disk Harrows, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view of the harrow. Fig. 2 is a rear view of the same. Fig. 3 is a side elevation, partly in section, with one-half of the arch and one gang of disks removed. Fig. 4 is a detail, being a cross section on line 4—4 of Fig. 1. Fig. 5 is a detail, being a top or plan view of the devices by which the disk gangs are pivoted to the arch; and Fig. 6 is a detail, being a rear elevation of the inner disk of each gang, showing the devices by which the two gangs bear upon one another, partially in section.

My invention relates to disk harrows, and it has for its objects to provide a harrow in which the disks mounted in two gangs are carried by a single continuous arch or frame, and in general to improve the construction of disk harrows whereby they are made more compact and more easily managed and operated. It has for a further object to provide a new and improved method of attaching and adjusting the center disk in the disk harrow, which is used for cutting out the ground in the center between the two gangs. I attain these objects as hereinafter specified and as illustrated in the drawings.

That which I regard as new will be set forth in the claims.

In the drawings,—1 represents an arch of steel or other suitable metal. The arch is composed of a single piece of angle iron or metal substantially right angular in cross section, and the end portions are bent downward at right angles and formed integral with pendent cylindrical stems 52 forming journals, whereby a very simple, durable, efficient and economical arch, for the purpose in hand, is obtained.

2 represents the disks, which are rotatably mounted in two gangs upon axles 3. The axles 3 are pivoted at suitable points between two of the disks to the lower ends of the arch 1, in such a way as to permit motion on such pivots in a horizontal plane, so that the angles of the disks with relation to each other may be adjusted and the gangs fixed at the desired angle.

The method in which I pivot the arch to the disk gangs is as follows: 49 (see Figs. 4 and 5) indicates sleeves, through which the axles 3 of the disk gangs pass. Each sleeve 49 is provided with a rearwardly extending portion 50. The rearwardly extending portion 50 is provided with an opening 51 to receive one of the cylindrical stems or journals 52 of the arch 1. The lower portions of the arch are provided with shoulders 53 to rest upon the upper surfaces of the rearwardly extending portions 50. The pendent cylindrical stems or journals 52 are provided with pins 54 to bear against the under surfaces of the portions 50. By this construction the disk gangs are rotatable in a horizontal plane about the lower ends of the arch, and at the same time sufficient play is allowed between the parts to provide for the passage of the harrow over irregularities in the ground.

In order that the opposing gangs of disks may bear upon one another at their inner ends in such a way as to permit of their adjustment at the desired angle to one another, and also to permit of such vertical play as may be necessary, I have provided the devices which are best shown in Fig. 6.

55 indicates a cup, which is secured to and mounted upon the inside disk of one of the gangs at its inner surface and concentric with said disk.

56 indicates a boss or bumper, having a rounded surface. The boss or bumper 56 is secured to the inner disk of the other gang at its center and concentric with said disk, and is adapted to rest loosely within the cup 55. As the disk gangs are moved the boss or bumper 56 plays within the cup 55, bearing against the inner surface of said cup.

4 indicates a stub tongue, which is bolted or otherwise rigidly secured to the front of the arch 1 at its central portion.

5 indicates a seat bar which is secured above the center of the arch in any suitable way, and carries at its upper end a seat 6.

7 indicates a lever, which is pivoted at a suitable point between its upper and lower

ends to the stub tongue 4. The lower end of the lever 7 projects downward through a suitable slot in the stub tongue 4.

8 indicates a bell-crank hand lever, 9 a connecting rod, 10 a spring, and 11 a dog, all of which are mounted in the usual manner upon the lever 7.

12 indicates a toothed arch of the usual form, mounted upon the stub-tongue 4 so that the lever 7 may be locked in the desired position.

13 indicates castings, the lower ends of which are provided with sleeves 14 through which the axles of the gangs pass and within which the axles turn. The castings 13 are preferably mounted upon the axles of the disk gangs between the last pair of disks in each gang.

Each casting 13 is provided above the sleeve 14 with a shoulder 15, having an upper plane bearing surface 16. (See Fig. 1.) Each casting 13 is also provided with an upwardly extending arm 17, the object of which will be hereinafter described.

39 indicates castings, which are secured to and project downwardly from the stub-tongue 4. The lower surface of said castings 39 is plane, and is so adjusted as to rest upon and bear against the upper plane surface 16 of the castings 13, so that said castings 39 may slide upon the upper surface of said shoulders 15 as the gangs of disks are adjusted.

18 indicates bent arms, the forward ends of which are pivotally connected with the lower end of the lever 7, and the rear ends of which are pivotally connected with the castings 13.

As the lever 7 is moved forward or backward, the gangs of disks are rotated on their pivotal connection with the lower end of the arch 1 in a horizontal plane, and the angle of the gangs with reference to one another is thereby adjusted, the lever being locked in place at the desired position by the locking devices above described.

19 indicates a tongue which is bolted or secured in any appropriate manner to the forward end of the stub-tongue 4.

20 indicates braces, the forward ends of which are secured to the stub-tongue 4, and the rear ends to the arch 1.

21 indicates supports, the lower ends of which are secured to the journals in which the lower ends of the arch 1 are pivoted. The supports 21 extend upward from said journals.

22 indicates bars, which are secured to the top of the supports 21 and to the top of the arms 17 of the castings 13.

23 indicates clips which are secured to the bars 22 at the same point at which the upper ends of the supports 21 are secured to said bars 22, by means of bolts 24 passing through said clips and through the upper ends of said supports.

25 indicates clips, which are secured to the inner ends of said bars 22 by bolts 26 which pass through said clips, said bars 22 and the upper ends of the arms 17 of the castings 13. The clips 23—25 are slotted so as to slidingly support bars 27.

27 indicates bars which are slidingly mounted in said clips 23—25, and are provided with slots 28 through which the bolts 24 pass, and with slots 29 through which the bolts 26 pass.

30 indicates scrapers, which are secured to the bars 27 by bolts 31 which pass through slots 32 in said bars 27. The scrapers 30 are bolted in the slots 32 in order that their distance from the disks 2 may be regulated and adjusted.

33 indicates foot levers, which are pivoted at their lower ends on the bolts 26.

34 indicates lugs, which are secured to the sliding bars 27 at a suitable distance outside of said foot levers 33.

35 indicates connecting rods, the inner ends of which are pivotally secured to the foot levers 33 above the pivotal point of said levers and the outer ends of which pass through said lugs 34, and are provided with pins 36 which pass through them outside of said lugs 34 so as to bear against said lugs.

37 indicates lugs which are secured to said bars 22 at a suitable point between said foot levers 33 and said lugs 34, and project upward from said bars 22 and backward over said sliding bars 27, and are provided with openings through which said connecting rods 35 pass.

38 indicates springs, which are located between the lugs 34—37 and bear against them in such a way as to force them apart when they are brought together by the action of the foot levers 33. When the foot levers 33 are depressed the sliding bars 27 are moved inward, carrying the scrapers 30 toward the inner surfaces of the disks, whereby the disks are cleaned from dirt. When the pressure is released from the levers 33 the springs 38 operate to force the sliding bars 27 outward again into their former position.

40 indicates a plate, which is bolted or otherwise secured to the arch 1 upon its rear side, and at or near the center. The plate 40 is provided at its center with a downwardly projecting portion 41, provided with a slot through which a bar 42 passes and within which said bar 42 may slide easily forward and backward.

42 indicates a sliding bar, the forward end of which is pivotally connected with the lower end of the lever 7 at a point between the pivotal point of said lever 7 and the point at which the bars 18 are connected to said lever. Said bar 42 passes backward under said arch 1, and through the slot in the portion 41 of said plate 40, by which said bar 42 is supported. Said bar 42 extends a suitable distance behind the disk gangs of the machine. 43 indicates a sleeve, which is secured to the rear end of said sliding bar 42. 44 indicates a cylindrical rod, which passes through and is rotatably mounted in said sleeve 43. 45 indicates a disk of the usual form, which is mounted upon the lower end of the cylindri-

cal rod 44 below said sleeve 43. Said disk 45 is so mounted as to rotate upon a horizontal axis.

46 indicates a lever, one end of which is keyed to the upper end of the cylindrical rod 44.

47 indicates a rod, the rear end of which is pivotally connected with the outer or free end of the lever 46, and the forward end of which is pivotally connected with the lower end of the lever 7 at a point between the point at which the sliding bar 42 is pivoted and the pivotal point of said lever 7. As the upper end of the lever 7 is moved backward the lower end of said lever is of course carried forward, drawing with it the sliding bar 42 and thus moving the central disk 45 nearer to the arch of the machine. At the same time, inasmuch as said rod 47 is pivoted to the lower end of said lever 7 between the point at which said bar 42 is pivoted to said lever and the pivotal point of said lever, the rod 47 is also carried forward, but not so far as the bar 42 is carried forward. This causes the lever 46 to be moved backward relatively to the end of the sliding bar 42, thus rotating the cylindrical rod 44 and causing the disk 45 to assume a position in a vertical plane more nearly parallel to the sliding bar 42. If the lever 7 is moved forward far enough the vertical plane of the disk 45 will be in the direction of the draft of the machine. If the upper end of the lever 7 is thrown forward the opposite result ensues, and the disk 45 will be set at an angle with the draft of the machine, which increases as the lever is thrown farther forward.

The movements of the central disk 45, backward and forward in the line of draft in unison with the backward and forward movements of the inner ends of the disk gangs, are important, in that vertical movements of the pole or tongue do not affect the correct action of the machine. It is desirable to keep all the disks as nearly in line as practicable, and this is effected by moving the central disk backward and forward as before described. If the central disk should remain back when the disk gangs are moved forward, the rising motion of the pole or tongue would create excessive pressure on the central disk, or if the pole or tongue be lowered the central disk would be raised from the ground. This is avoided by moving the central disk backward and forward as the disk gangs are moved backward and forward. It is also important that the central disk cover sufficient ground, or make a broad cut when the inner ends of the disk gangs are separated or moved away from each other, and this is accomplished by the angular adjustment of the central disk relatively to the line of draft. This angular adjustment of the central disk causes it to make a broad or narrow cut as the inner ends of the disk gangs are moved away from or toward each other. By my invention as the inner ends, or inner disks of the disk gangs approach each other the central disk will assume a more acute angle to the line of draft; and, on the contrary, when the inner ends or inner disks of the disk gangs separate or move away from each other, the central disk will be turned to a greater angle to the line of draft, so as to cover more ground or make a broader cut.

48 indicates a scraper, which is secured to the outer or free end of the lever 46 in such a way that the scraping blade may bear against the inner surface of the disk 45 as the same rotates. The object of all the scrapers is of course to free the disks from dirt while the machine is in operation.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a disk-harrow, the combination of two opposing gangs of disks adjustable at varying angles relative to each other, a disk centrally arranged behind said gangs, a support mounted independent of the gangs, carrying said central disk and adjustable back and forth for adjusting the central disk forward or backward in the line of draft, and mechanism for adjusting said disk-carrying support in the line of draft, substantially as described.

2. In a disk-harrow, the combination with an arch, and two opposing gangs of disks adjustable at varying angles relative to one another, of a disk centrally arranged behind said gangs, a support mounted on a part of the arch independent of the gangs of disks and carrying said central disk, and lever mechanism for shifting said central disk carrying support forward or backward in the line of draft, substantially as described.

3. In a disk-harrow, the combination with an arch, and two opposing gangs of disks adjustable at varying angles relative to one another, of a disk centrally arranged behind said gangs, a support mounted on a part of the arch independent of the gangs of disks and carrying said central disk, lever connections between the lever and the gangs of disks, and other connections between said lever and the support which carries the central disk for adjusting said central disk-carrying support forward or backward in the line of draft, substantially as described.

4. In a disk harrow, the combination with two opposing gangs of disks adjustable at varying angles relative to each other, of an independently supported disk centrally mounted behind said gangs and movable back and forth in substantially a straight line, and mechanism for adjusting said central disk rectilinearly in the line of draft, substantially as described.

5. In a disk-harrow, the combination with two opposing gangs of disks adjustable at a varying angle with one another, of a disk centrally mounted behind said gangs adjustable backward and forward in substantially a straight line and adjustable at varying angles to the disks in said gangs, means for ad-

justing said disk longitudinally to the line of draft, and means for adjusting said disk at varying angles with the disks in said gangs, substantially as described.

6. In a disk harrow, the combination with two opposing gangs of disks adjustable at varying angles relative to one another, of a central disk located on a line between the gangs of disks and supported independent of said gangs, mechanism for adjusting the central disk and its support back and forth in substantially a straight line, and mechanism for adjusting the angle of the central disk so that it will make a broader or narrower cut as the inner ends of the gangs of disks are moved away from or toward each other, substantially as described.

7. In a disk harrow, the combination with two opposing gangs of disks adjustable at varying angles relative to each other, of a support mounted independent of the gangs of disks and movable back and forth substantially in a right line, a central disk mounted on said support behind said gangs of disks and movable with the support longitudinally to the line of draft, means for adjusting the disk and its support longitudinally to the line of draft, and lever mechanism for adjusting said disk at varying angles with said line of draft so that it will make a broader or narrower cut as the inner ends of the gangs are moved away from or toward each other, substantially as described.

8. In a disk harrow, the combination with two opposing gangs of disks adjustable at a varying angle with one another, of a central disk independently mounted behind said gangs, adjustable longitudinally to the line of draft and adjustable at varying angles with said line of draft, means for adjusting said disk longitudinally to the line of draft, and means for adjusting said disk at varying angles with said line of draft, substantially as described.

9. The combination with two opposing gangs of disks adjustable at varying angles relative to each other, of a central disk located between the gangs of disks and supported independent of said gangs, and means for automatically angularly adjusting said central disk so that it will lie at a greater angle to the line of draft when the inner disks separate and will lie at a more acute angle to the line of draft when said inner disks approach each other, substantially as described.

10. In a disk harrow, the combination with an arch, and two opposing gangs of disks mounted respectively upon each end of said arch and rotatable in a horizontal plane, of a disk centrally arranged behind said gangs, a support mounted on a part of said arch independent of the gangs of disks and carrying said central disk, and means for shifting said central disk-carrying support back and forth for adjusting the central disk forward or backward in the line of draft, substantially as described.

11. In a disk harrow, the combination with an arch, and two opposing gangs of disks mounted respectively upon each end of said arch and rotatable in a horizontal plane on the ends of said arch as pivots, of a sliding bar centrally mounted on said arch and adjustable longitudinally, a disk mounted upon the rear end of said sliding bar behind said gangs of disks and rotatable in a horizontal plane, mechanism for moving said bar longitudinally, and mechanism whereby said disk is adjusted at varying angles with the line of the draft as said bar is adjusted longitudinally, substantially as described.

12. In a disk harrow, the combination with an arch 1, of disks 2 rotatably mounted in two opposing gangs upon axles 3, supports 49 journaled upon said axles and provided with openings 51 adapted to pivotally support the lower ends of said arch 1, a lever 7 pivotally mounted in front of said arch, castings 13 journaled upon said axles 3 toward the inner end of said gangs and provided with shoulders 15 having plane bearing surfaces 16, shoulders 39 mounted upon said arch and adapted to bear upon said plane surfaces 16, and connecting rods 18 pivotally secured to the lower end of said lever 7 and to said castings 13, substantially as described.

13. In a disk harrow, the combination with an arch 1, and two opposing gangs of disks pivotally mounted upon each end of said arch respectively, of a lever 7 pivotally mounted in front of said arch, a bar 42 slidingly mounted in said arch and pivotally connected at its forward end with said lever 7, a sleeve 43 mounted upon the rear end of said bar 42, a cylindrical pin 44 journaled in said sleeve 43, a disk 45 mounted upon the lower end of said cylindrical pin 44, a lever 46 secured to the upper end of said cylindrical pin 44, and a connecting rod 47 pivotally connected at its rear end with the free end of said lever 46, and at its forward end pivotally connected with the lower end of said lever at a point between the pivotal point of said sliding bar 42 and the pivotal point of said lever 7, substantially as described.

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