

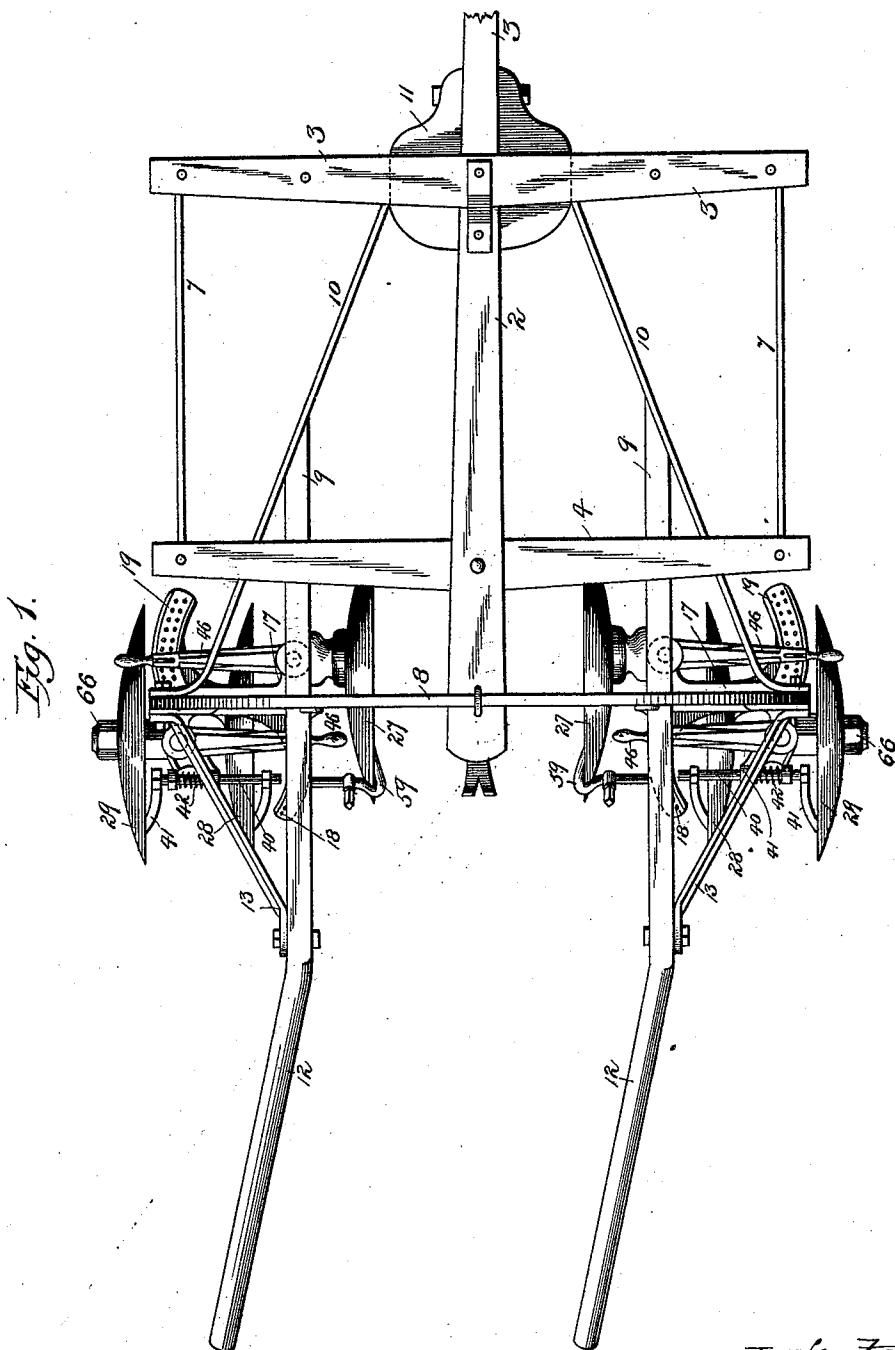
(No Model.)

6 Sheets—Sheet 1.

J. F. PACKER.
CULTIVATOR.

No. 498,294.

Patented May 30, 1893.



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J. M. P. Packer

Inventor

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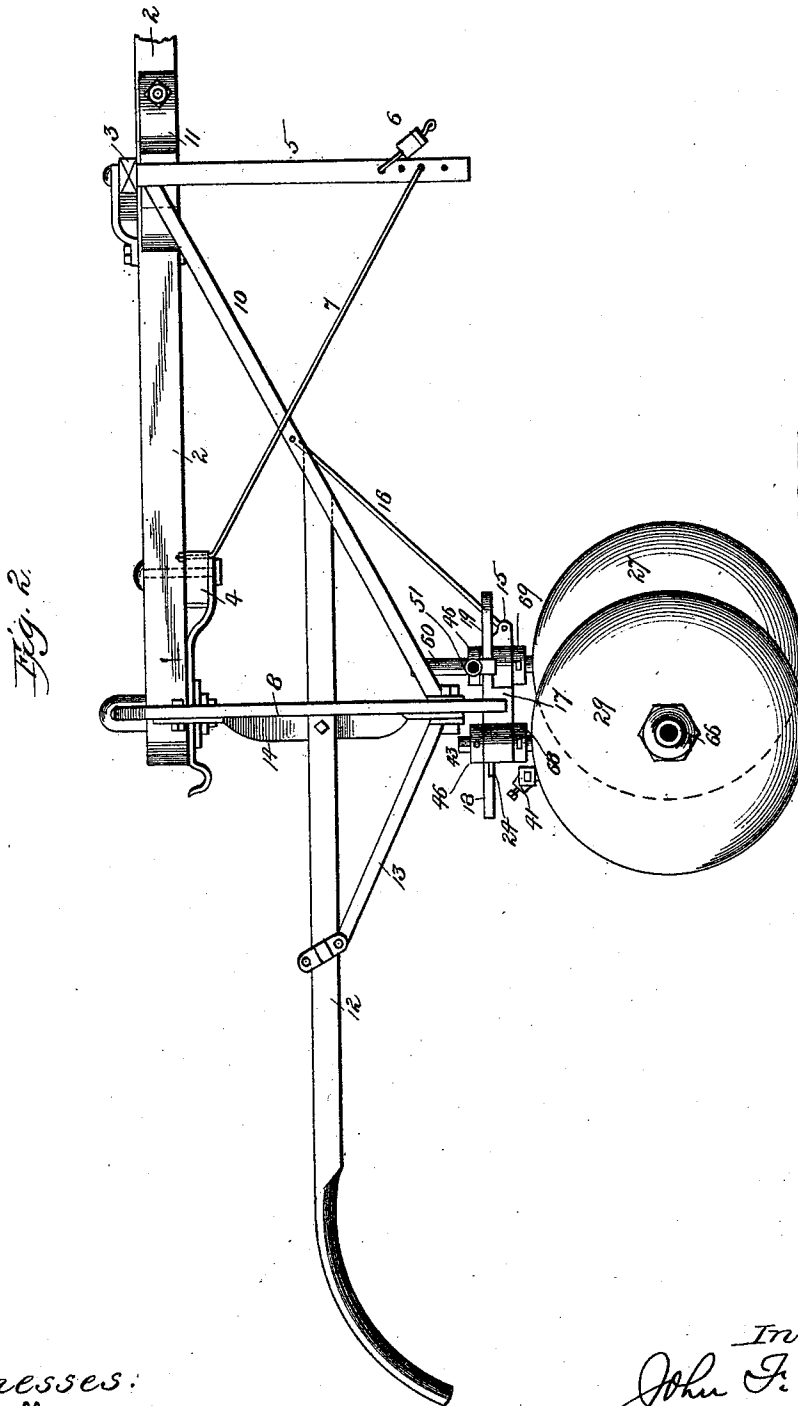
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6 Sheets—Sheet 2.

J. F. PACKER.
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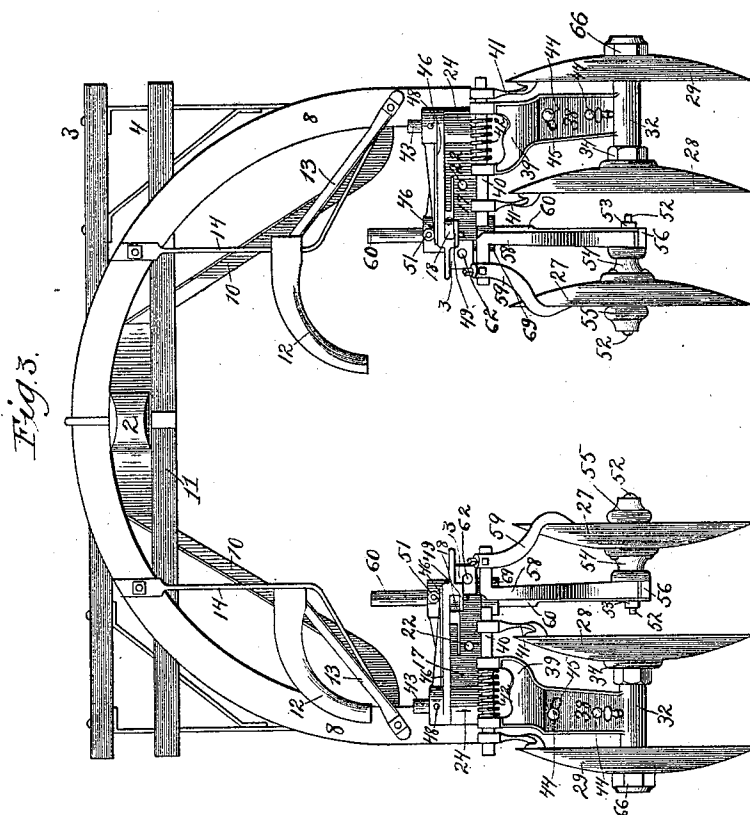
(No Model.)

6 Sheets—Sheet 3.

J. F. PACKER.
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No. 498,294.

Patented May 30, 1893.



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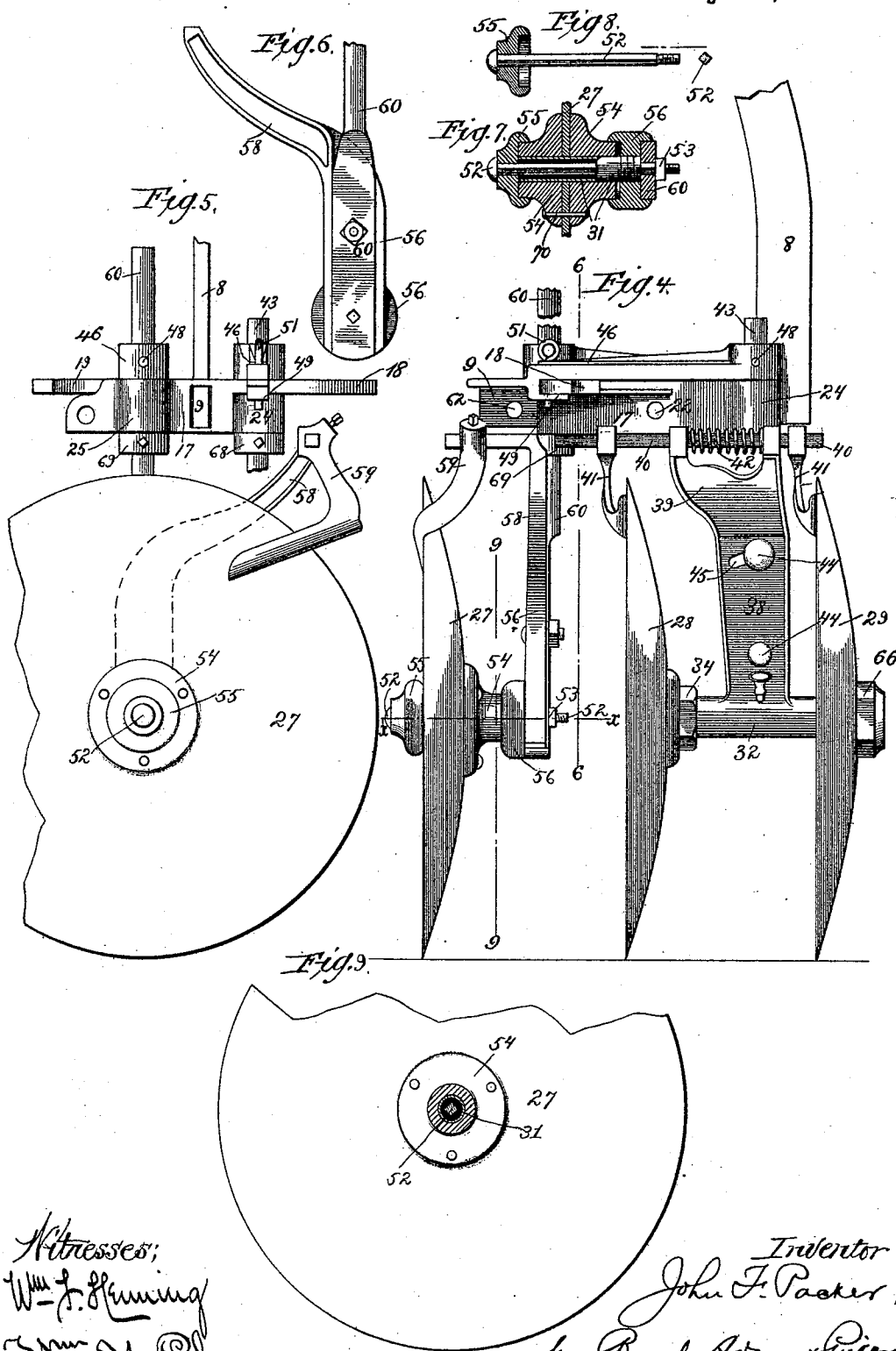
(No Model.)

6 Sheets—Sheet 4.

J. F. PACKER.
CULTIVATOR.

No. 498,294.

Patented May 30, 1893.



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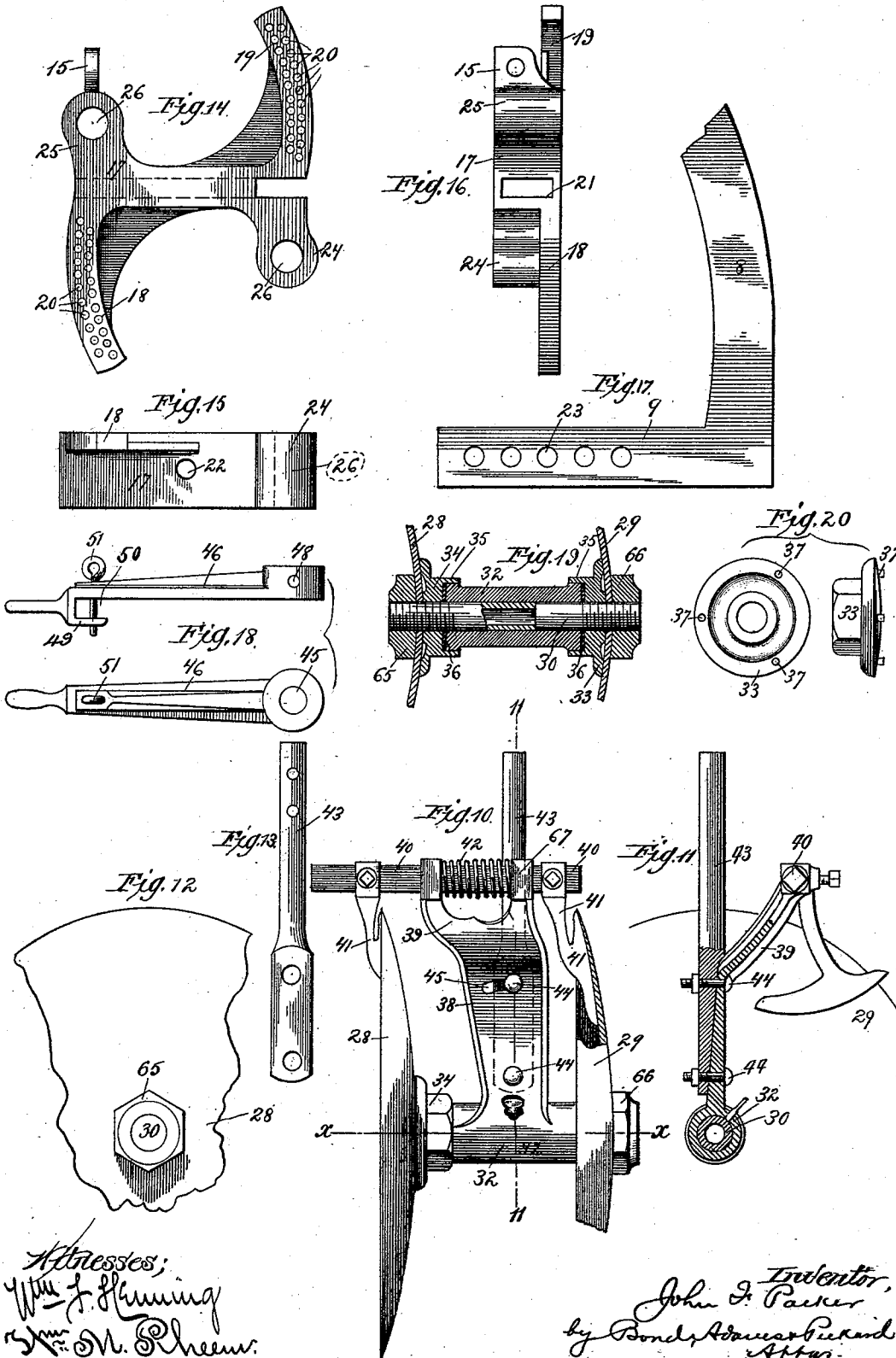
(No Model.)

6 Sheets—Sheet 5.

J. F. PACKER.
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No. 498,294.

Patented May 30, 1893.



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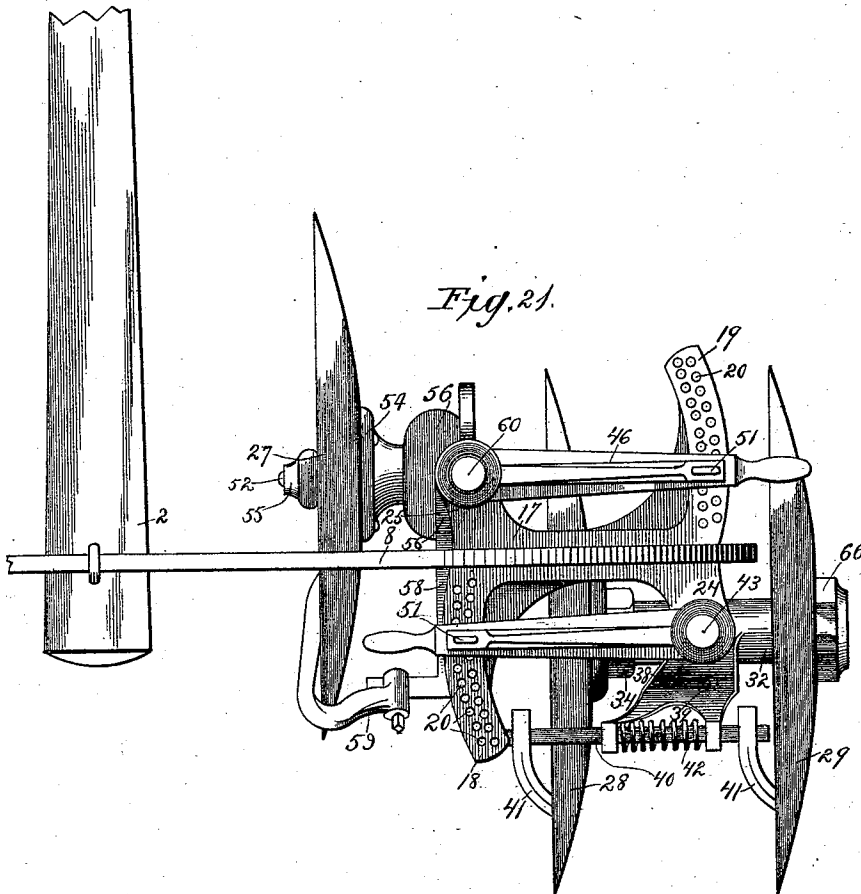
(No Model.)

6 Sheets—Sheet 6.

J. F. PACKER.
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Patented May 30, 1893.



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UNITED STATES PATENT OFFICE.

JOHN F. PACKER, OF LA GRANGE, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 498,294, dated May 30, 1893.

Application filed January 18, 1892. Serial No. 418,527. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. PACKER, a citizen of the United States, residing at La Grange, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cultivators, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is an enlarged detail, being a rear elevation of one of the gangs of disks. Fig. 5 is an enlarged detail, being a side elevation of one of the inner disks. Fig. 6 is an end view of the standard which supports the inner disk, being a view on line 6—6 of Fig. 4, looking to the left. Fig. 7 is a central vertical section on line $x-x$ of Fig. 4. Fig. 8 is a detail, being a view of one of the sand bands shown in Fig. 7, with the bolt which passes through it; showing also a cross section of the bolt. Fig. 9 is a detail view of the other side of the inner disk from that shown in Fig. 5. Fig. 10 is an enlarged detail, being an end elevation of the two outer disks of one of the gangs, and the standard which supports them. Fig. 11 is a vertical cross section on line 11—11 of Fig. 10, looking to the right. Fig. 12 is a detail, being a partial front elevation of one of the disks. Fig. 13 is a detail view of the shaft which supports the standard upon which are mounted the outer disks. Fig. 14 is a top or plan view of one of the main supporting brackets. Fig. 15 is a rear elevation of the same. Fig. 16 is an end view of Fig. 14, looking to the right. Fig. 17 is a plan view of the lower portion of one side of the cultivator arch. Fig. 18 is a side elevation of one of the adjusting levers, and also a top view of the same. Fig. 19 is a vertical section on line $x-x$ of Fig. 10. Fig. 20 is a side view of one of the sand bands, upon the shaft upon which the outer disks are mounted, and also a plan view of the same; and Fig. 21 is a top or plan view of one of the gangs.

My invention relates to disk cultivators.

One of the objects of my invention is to provide a disk cultivator the disks of which will be vertically adjustable, so that the relative depth of cut of the different disks may be regulated as desired.

Another object of my invention is to pro-

vide a cultivator in which the inner disks may be adjusted to the line of motion independently of the outer disks, so that in cultivating young plants the amount of dirt thrown by the cultivator can be accurately regulated, so as not to cover up or disturb the plants, without necessitating a similar adjusting of the outer disks.

A third object of my invention is to provide a disk cultivator in which the angle of the disks to the line of motion may be accurately adjusted.

In cultivators as heretofore constructed, the matter of adjustment has been one to be determined largely by guess work, and it has been very difficult to adjust the two gangs of disks at equal angles to the line of motion of the cultivator. The operation of such cultivators has thereby been rendered much more difficult and unsatisfactory.

Another object of my invention is to improve generally the construction and operation of cultivators of this class.

I accomplish these objects as hereinafter specified and as illustrated in the drawings.

That which I regard as new will be pointed out in the claims.

In the drawings,—1 indicates the frame of the cultivator, which is composed of a tongue or pole 2, and double trees 3 and 4 mounted thereupon. The double tree 4 is placed a short distance in the rear of the double tree 3, as best shown in Fig. 1, and is preferably on the under side of the pole.

5, indicates straps, one of which depends from each end of the double tree 3, and is adapted to carry a single tree 6, as best shown in Fig. 3.

7, indicates rods, one of which extends from each end of the double tree 4 to the lower end of the strap 5 on the same side of the pole 2, as best shown in Fig. 1. By this construction the draft is equalized and another advantage is attained in that the double-trees arranged and connected as described permit the hitch to be low enough to take the draft off the necks of the team, thereby making the operation of the machine much easier.

8, indicates a cultivator arch, which is secured at its upper end to the pole 2, and extends downward, preferably in the form of a semicircle, as best shown in Fig. 4. The

lower ends of the arch 8 are provided with inward projections or supports 9, as best shown in Fig. 4. By constructing the arch 8 with the inward projecting portions or supports 9, the disk-carrying brackets may be moved much closer together without narrowing the arch, than in constructions heretofore used.

10, indicates brace rods, which extend from a block 11, mounted in the front portion of the frame 1, backward and outward to the lower ends of the arch 8, to which they are rigidly connected by rivets or bolts.

12, indicates the handles of the cultivator, which at their forward ends are secured to the braces 10, and at their rear ends are bent outward at an angle, as shown in Fig. 1.

13, 14, indicate braces for securing the handles in position.

17, indicates one of the brackets from which are supported the disks. One of these brackets is secured upon each inward projection 9 of the arch 8, as will be hereinafter described. Each bracket 17 is about of the shape shown in Figs. 14, 15 and 16, having two segmental portions 18 and 19 at diagonally opposite portions, as best shown in Fig. 14. The segments 18 and 19 are each provided with a number of adjusting holes 20 for adjusting the angle of the disks, as will be hereinafter described.

15, indicates an ear formed on the inner portion of each bracket 17, to each of which ears is connected a brace rod 16, as best shown in Fig. 2. The upper ends of the brace rods 16 are secured to the braces 10, and the rods 16 serve to brace the brackets 17 and inward projections 9.

Extending transversely of each bracket 17 on its central line, is a slot 21, which is adapted to receive the inward projection 9 of the arch 8, as best shown in Fig. 4.

22 indicates a hole, extending longitudinally of the bracket 17 and across the slot 21, which hole may be located at any desired point.

23, indicates a number of holes which are made in each of the extensions 9 of the arch 8, as best shown in Fig. 17. The hole 22 in the bracket 17 is so placed that it may be made to register with one of the holes 23 in one of the extensions 9, by moving the bracket upon such extension. The bracket may be secured in position by passing a bolt or pin through the hole 22 and one of the holes 23, and its position on said extension may be readily adjusted.

24, 25, indicate bosses which are formed at suitable points on each bracket 17, as best shown at Fig. 14, and are provided with holes or bearings 26, adapted to receive the shanks which support the disks. The bearings 26 are so located that they will be at the center of circles of which the segments 18 and 19 are arcs.

Each cultivator gang consists of three disks, 27, 28, and 29, two of which, 28 and 29, are mounted upon a single shaft 30, as best shown in Fig. 19. The other disk, 27, is

mounted upon a shaft 31, as best shown in Fig. 7. The shaft 30 is journaled in a sleeve 32, which serves both to act as a bearing for the shaft and to hold the disks 28 and 29 at a uniform distance apart.

33, 34, indicate sand bands, having convex and concave surfaces, respectively, which sand bands are adapted to screw upon the ends of the shaft 30, the shaft being screw threaded for that purpose. The sand bands 33 and 34 are each provided with an annular flange 35, adapted to receive the adjacent end of the sleeve 32, as best shown in Fig. 19, and when screwed tightly in place the sand bands are adapted to fit closely to the ends of the sleeve 32. Between each end of the sleeve 32 and the adjacent sand band, is provided a leather washer 36, which washers serve as bearings for the ends of the sleeve 32, and act to take the wear.

37, indicates lugs, formed upon the faces of the sand bands 33 and 34, which lugs are adapted to fit into holes in the disks 28 and 29 to prevent the rotation of the disks independently of the sand bands and shaft 30.

65, and 66, indicate nuts, convex and concave respectively, which screw upon the ends of the shaft 30 to bind the disks 28 and 29 to the sand bands 34 and 33, as best shown in Fig. 19.

38, indicates a standard, which is rigidly secured to the bearing 32, as best shown in Fig. 11. If desired, it may be formed integral therewith. The standard 38 is bent outward near its upper end, to form an arm 39, which serves to support a scraper bar 40, as best shown in Figs. 10 and 11.

41, indicates scrapers, which are movably mounted upon the bar 40 and bear against the inner faces of the disks 28 and 29, in such manner as to form an obtuse angle with the periphery of the disks, as best shown in Fig. 11. By this construction, the dirt is discharged toward the center of the disk, which is desirable. The upper end of the arm 39 is cut away on the inside, as best shown in Fig. 10, or otherwise so shaped as to permit of the admission of a spring 42 between the ends of the arm 39, in which is supported the scraper bar 40, as best shown in Fig. 10. The spring 42 is coiled around the bar 40 and bears against a pin 67 and one of the arms 39, whereby its tension operates to hold the scrapers in contact with the inner faces of the disks.

43, indicates a shank, which at its upper end is circular in cross section, and at its lower end is preferably flattened, and is secured to the forward side of the standard 38, as best shown in Fig. 11. Two bolts, 44, are preferably provided for securing the shank 43 to the standard 38, and the standard is provided with a segmental slot 45 for the upper bolt. By this construction, the vertical angle of the disks to the shank 43 may be adjusted. If more than two bolts are used, a corresponding number of segmental slots is of course pro-

vided. The upper end of the shank 43 is fitted into the bearing 26 in the boss 24 of the bracket 17, as best shown in Fig. 21, and is free to rotate therein. By rotating the shank 43 in its bearing, the angle of the disks 28 and 29 to the line of motion of the cultivator will be adjusted.

46, indicates a lever, which is provided with a hole 47 at its outer end, adapted to fit over the upper end of the shank 43. A key 48 is provided, which passes through a hole in the lever 46 and through a similar hole in the shank 43, to secure the lever upon the shank. A number of holes is provided at different points in the shank 43, so that different adjustments may be made. The lever 46 is of such length that it will extend to the outer edge of the segment 18, and is provided with a lug 49, whereby a recess 50 is formed, adapted to receive the edge of the segment 18. By this construction, the lever is held closely upon the segment as it is moved thereupon.

51, indicates a pin which passes through a suitable hole in the lever 46, and is adapted to enter one of the holes 20 in the bracket 17, to lock the lever at any desired point. By this means the angle of the disks 28 and 29 to the line of motion of the cultivator may be very accurately adjusted. The holes 20 in corresponding segments of the brackets at opposite sides of the arch 8 are at similar distances from each other, so that by counting the holes the angle of adjustment of the disks 28 and 29 of the two gangs may be made to be exactly the same. By this means, the disks at both sides of the cultivator may be made to lie at equal angles to the line of motion of the cultivator, and the action of the cultivator thereby rendered much more easy.

68, indicates a collar adapted to fit upon the shank 43, which is adjustably secured thereupon immediately below the bracket 17, and serves to prevent the weight of the cultivator frame from forcing the bracket down to the lower portion of the shank. The disk 27 is secured upon its shaft 31 by means of a bolt 52, which passes through the center of the shaft 31, which is tubular, and is secured in place by means of a nut 53, which screws upon the other end of said bolt, as best shown in Fig. 7. Plates 54 serve to hold the disk 27 in position, which plates are tightly bound together by bolts 70 which pass through the plates and the intermediate disk 27.

55, indicates a sand band mounted on one end of the bolt 52, and provided with an annular flange adapted to receive the adjacent portion of one of the plates 54, as best shown in Figs. 7 and 8.

56, indicates a standard, which carries the shaft 31, the lower end of which standard is adapted to receive the adjacent portion of the other plate 54, and to serve as a sand band. Between the inner portion of the standard 56 and the adjacent plate 54, is provided a leather washer 57, to take the wear caused

by the rotation of the disk 27 and plates 54, substantially as hereinbefore described with regard to the mounting of the disks 28 and 29. The standard 56 is provided with a rearward projecting arm 58, which carries a scraper 59, arranged substantially in the same manner as the scrapers 41.

60, indicates a shank, which is rigidly connected at its lower end to the standard 56, and at its upper end is circular in cross section, to adapt it to fit into the bearing 26 in the boss 25, as best shown in Fig. 21. By rotating the shank 60 in its bearing, the angle of the disk 27 to the line of motion of the cultivator may be adjusted as desired. A lever 46 is rigidly secured to the upper end of the shank 60, in a manner substantially similar to that described for the lever 46 in connection with the shank 43. The lever which is connected to the upper end of the shank 60 moves upon the segment 19. The disk 27 may, by this construction, be adjusted at any desired angle to the line of motion of the cultivator, and its adjustment is entirely independent of that of the disks 28 and 29. All of the disks are also vertically adjustable, as it is evident that the shanks 43 and 60 may be moved upward to any desired point in their respective bearings, and they are rigidly secured by securing the levers 46 upon them.

69, indicates a collar, which is secured upon the shank 60 below the bracket 17, the purpose of which is the same as that of the collar 68.

The cultivator herein described is more particularly adapted for use in cultivating corn, although it is well adapted for use in cultivating other crops. In the cultivation of corn, the office of the outer disks 28 and 29 is to cultivate the ground between the rows, while the inner disks 27 operate to cultivate the ground close to the crop. The two outer disks, in the construction shown, may be set at an angle to stir the soil and throw it more or less toward or from the crop, while the independent adjustment of the inner disks permits of their being set close to the corn at any desired depth, and at an angle which, while it stirs the soil and thoroughly cuts the weeds, will not throw dirt enough to cover the young plants, nor go deep enough to disturb the tender roots.

The various adjustments which are provided for in the construction described, also will adapt my improved cultivator for use in the cultivation of crops of all kinds.

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

1. In a disk cultivator, the combination with a supporting frame, of disk gangs carried thereby, each of said gangs having an independent vertically adjustable inner disk carried by a standard which is provided with a cylindrical spindle vertically movable and axially rotatable in the supporting frame to different positions, for raising and lowering and angularly adjusting the inner disk de-

vices adjustable on the spindle for supporting the latter after its vertical adjustment, and means for holding the spindle against axial rotation substantially as described.

5 2. In a disk cultivator, the combination with a supporting frame, of disk gangs arranged at opposite sides of the supporting frame, each gang having inner and outer disks carried by independent standards each of
10 which is provided with a cylindrical spindle vertically movable and axially rotatable in the supporting frame to different positions, devices adjustable vertically on the spindles for supporting the latter after their vertical
15 adjustment, and means for engaging the adjustable devices to hold the spindle against axial rotation substantially as described.

3. In a disk cultivator, the combination with a supporting frame, of disk gangs arranged at opposite sides of the frame, each gang having an independent vertically adjustable inner disk carried by a standard which is provided with a spindle axially rotatable in the supporting frame and vertically
20 adjustable therein to different positions, a lever adjustably secured on the spindle for axially turning the latter and also supporting it after its vertical adjustment, and locking devices for holding the lever and thereby
25 preventing axial rotation of the spindle substantially as described.

4. In a disk cultivator, the combination with a supporting frame, of disk gangs carried thereby, each gang having an independent vertically adjustable inner disk carried
35 by a standard which is provided with a spindle axially rotatable in the supporting frame and movable vertically therein to different positions, a lever having a collar adjustably
40 secured on the spindle for axially turning the latter and also supporting it after its vertical adjustment, and a locking segment with which the lever engages for varying the angle of the disk relatively to the line of draft, substantially as described.

5. In a disk cultivator, the combination with a supporting frame, of disk gangs arranged at opposite sides thereof, each gang having inner and outer disks carried by independent standards which are provided with
50 spindles axially rotatable in the supporting frame and vertically movable therein to different positions, and levers adjustably secured on the spindles for axially turning the latter and also supporting them after their
55 vertical adjustment, substantially as described.

6. In a disk cultivator, the combination with a supporting frame, of disk gangs at opposite sides thereof, each gang having inner and outer disks carried by independent standards which are provided with spindles axially rotatable in the supporting frame and vertically adjustable to different positions, levers
60 having collars adjustably secured on the spindles for axially turning the latter and also supporting them after their vertical adjustment, and a pair of locking segments with
65 which said levers engage for the purpose of varying the angle of the disks relatively to the line of draft, substantially as described.

7. In a disk cultivator, the combination of the arched frame 8, having at its ends the inward projecting horizontal supports 9, the disk supporting brackets 17 adjustable along
75 the horizontal supports, the standards 38 and 56 having the spindles 43 and 60 axially rotatable in the brackets and vertically adjustable therein to different positions, the levers
80 46 having collars adjustably secured on the spindles for axially turning the latter and also supporting them after their vertical adjustment, and a pair of locking segments 18 and 19 extending in reverse directions and
85 with which the levers respectively engage for varying the angle of the disks relatively to the line of draft, substantially as described.

8. In a disk cultivator, the combination of the arched frame 8 having at its ends the inward projecting horizontal supports 9, with
90 the disk gangs supported by the inward projecting horizontal supports, each of said gangs having inner and outer disks carried by independent standards axially rotatable and vertically adjustable to different positions, and
95 levers adjustably secured on the spindles for axially turning the latter and also supporting them after their vertical adjustment, substantially as described.

9. In a disk cultivator, the combination of the arched frame 8 having at its ends the inward projecting horizontal supports 9, with
100 disk gangs suspended from said horizontal supports, each of said gangs having inner and outer disks vertically adjustable independent of each other, substantially as described.

10. In a disk cultivator, the combination with a supporting frame, of an arch 8, brackets 17 carried by said arch and each having
110 a bar 26 and a segment 18, disks having standards 38 and 56 provided with spindles 43 and 60 rotatable and vertically adjustable in the brackets, and collars 68 having levers 46 and adjustable to different heights on the spindles for supporting the latter after their vertical
115 adjustment, substantially as described.

11. In a disk cultivator, the combination with a supporting frame, an arch 8, having inward extensions 9, of brackets 17 mounted on
120 said extensions, each of said brackets having segments 18 and 19, and bosses 24 and 25, having bearings 26, shanks mounted in said bearings, and disks carried by said shanks, substantially as described.

12. In a disk cultivator, the combination of a supporting frame, and an arch 8 at the rear end thereof, said arch having inward extensions 9, having holes 23, brackets 17 mounted
130 upon said extensions 9, and adjustable thereupon, each of said brackets having segments 18 and 19, adjusting holes 20, bosses 24 and 25, and bearings 26, a shank 43 carried in each of said brackets 17, disks 28 and 29 carried by each of said shanks, a shank 60 carried by each

of said brackets 17, a disk 27 carried by each of said shanks 60, collars 68 and 69, and levers 46 for rotating said shanks 43 and 60, substantially as described.

5 13. In a disk cultivator, the combination of an arch 8 having rigid projecting supports 9 extending inwardly toward each other, with rotary disks having supporting brackets suspended from said rigid projecting supports, substantially as described.

10 14. In a disk cultivator, the combination of an arch 8 having rigid projecting supports 9 extending inwardly toward each other, with rotary disks having their supporting brackets
15 suspended from and adjustable to and from

each other on said rigid projecting supports, substantially as described.

15. The combination with a tongue 2, double trees 3 and 4 mounted thereupon, straps 5, and rods 7 connecting the double tree 4 20 and the straps 5, substantially as described.

16. The combination with a tongue 2, double trees 3 and 4, straps 5, and rods 7 connecting the double tree 4 and the straps 5, of an arch 8, having inward extending portions 9, 25 and brace rods 10, substantially as described.

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