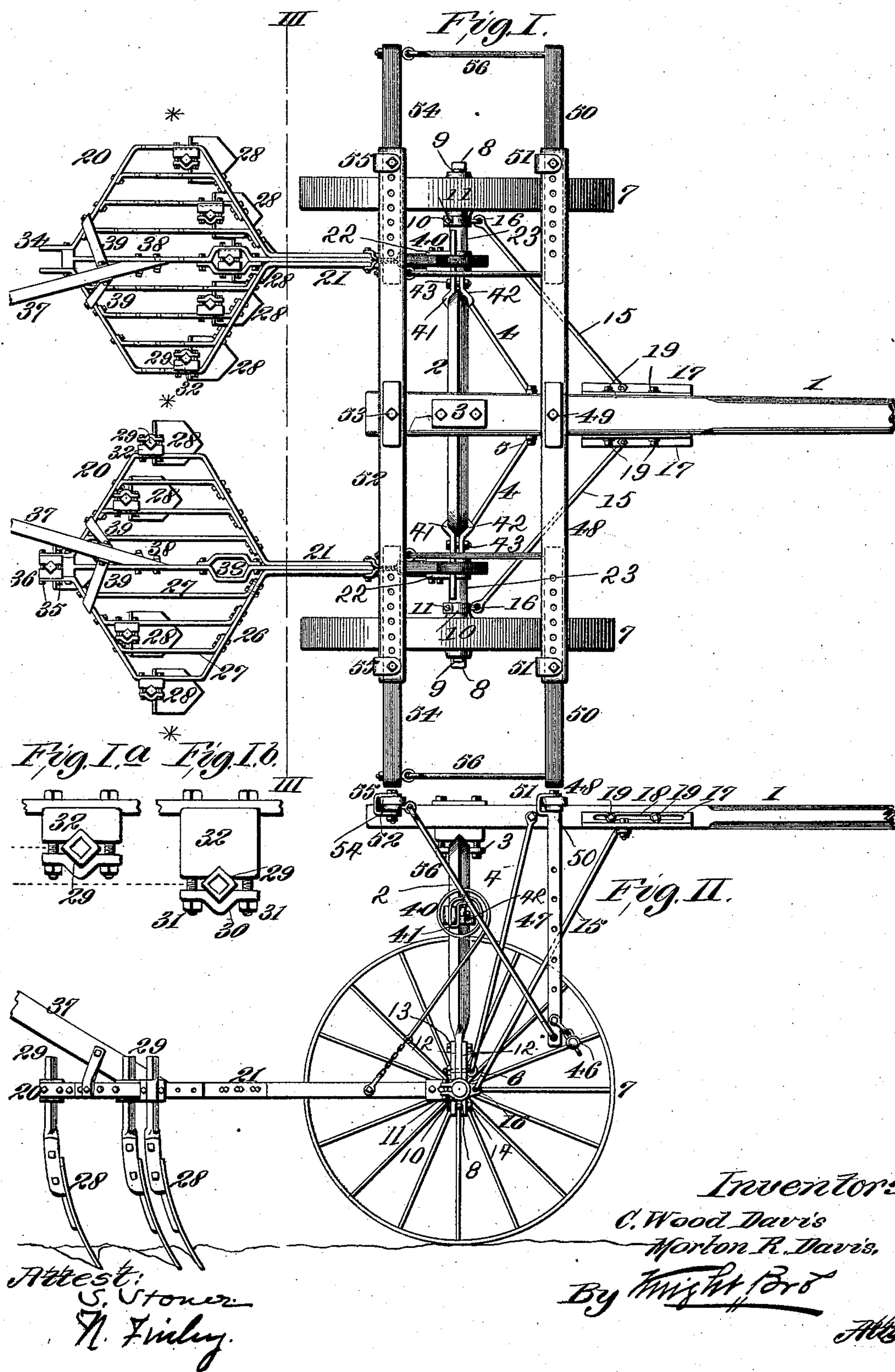


2 Sheets—Sheet 1.

No. 576,039.

Patented Jan. 26, 1897.



(No Model.)

2 Sheets—Sheet 2.

C. W. & M. R. DAVIS.
CULTIVATOR.

No. 576,039.

Patented Jan. 26, 1897.

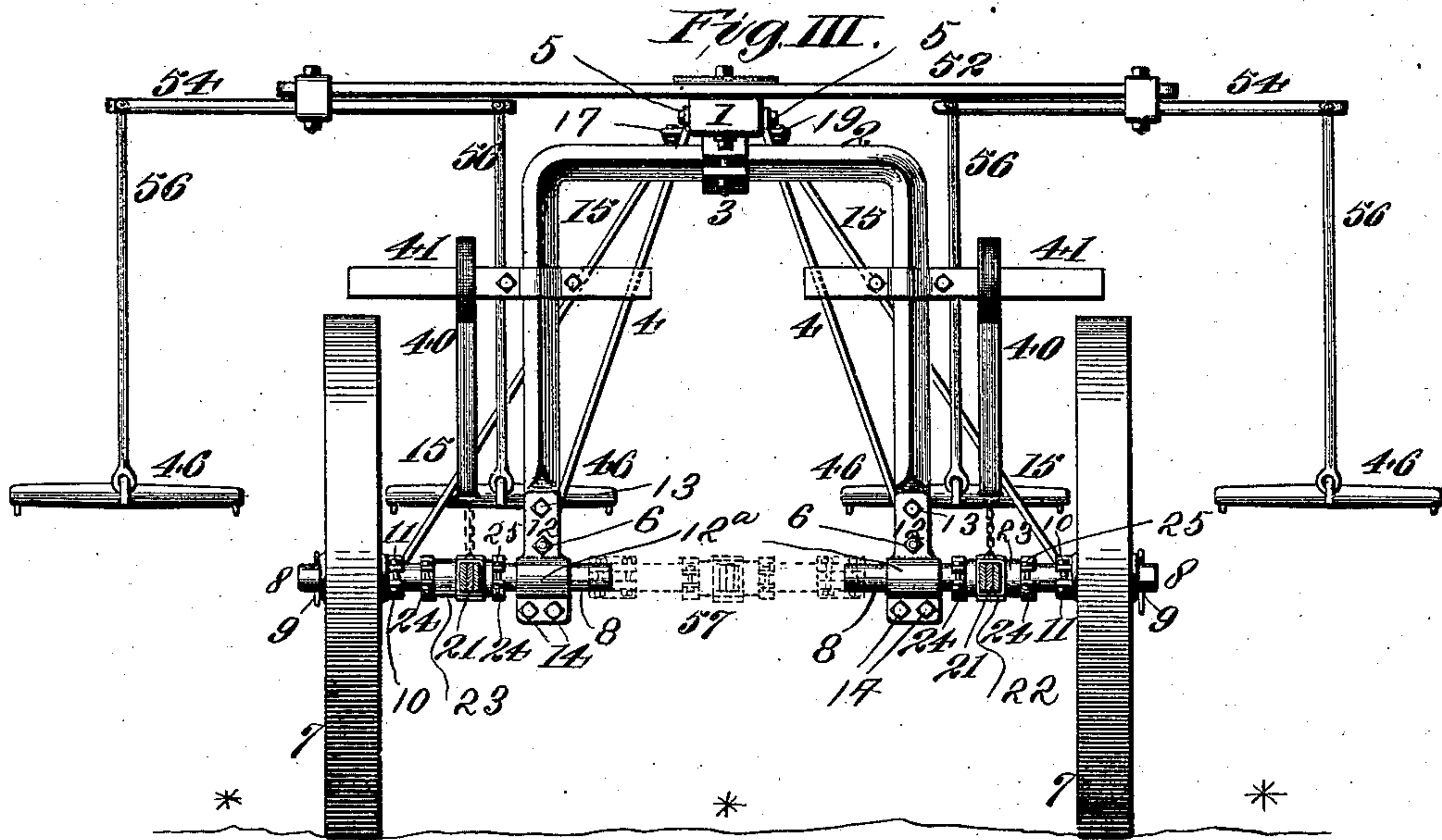


Fig. X.

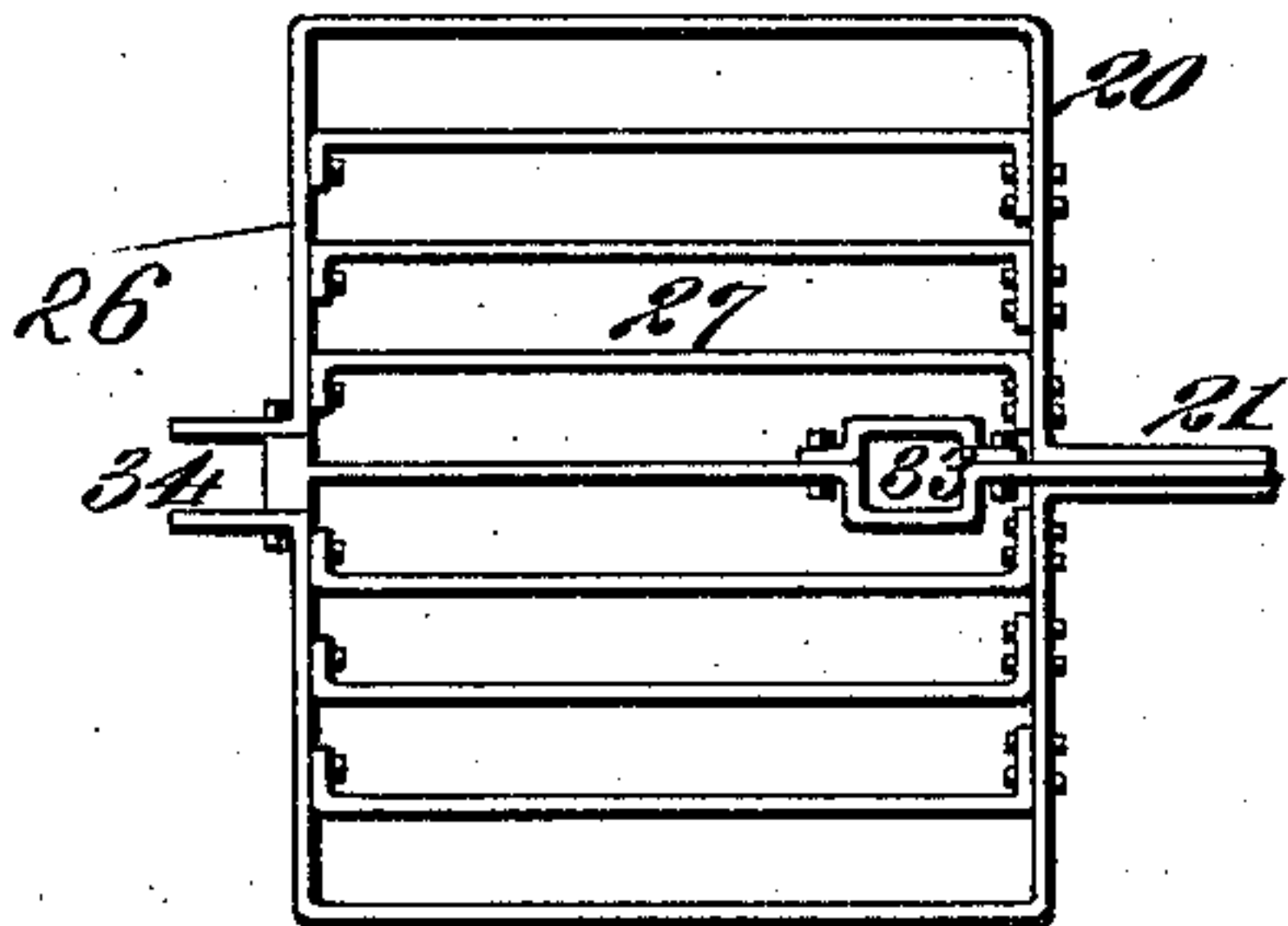


Fig. XI.

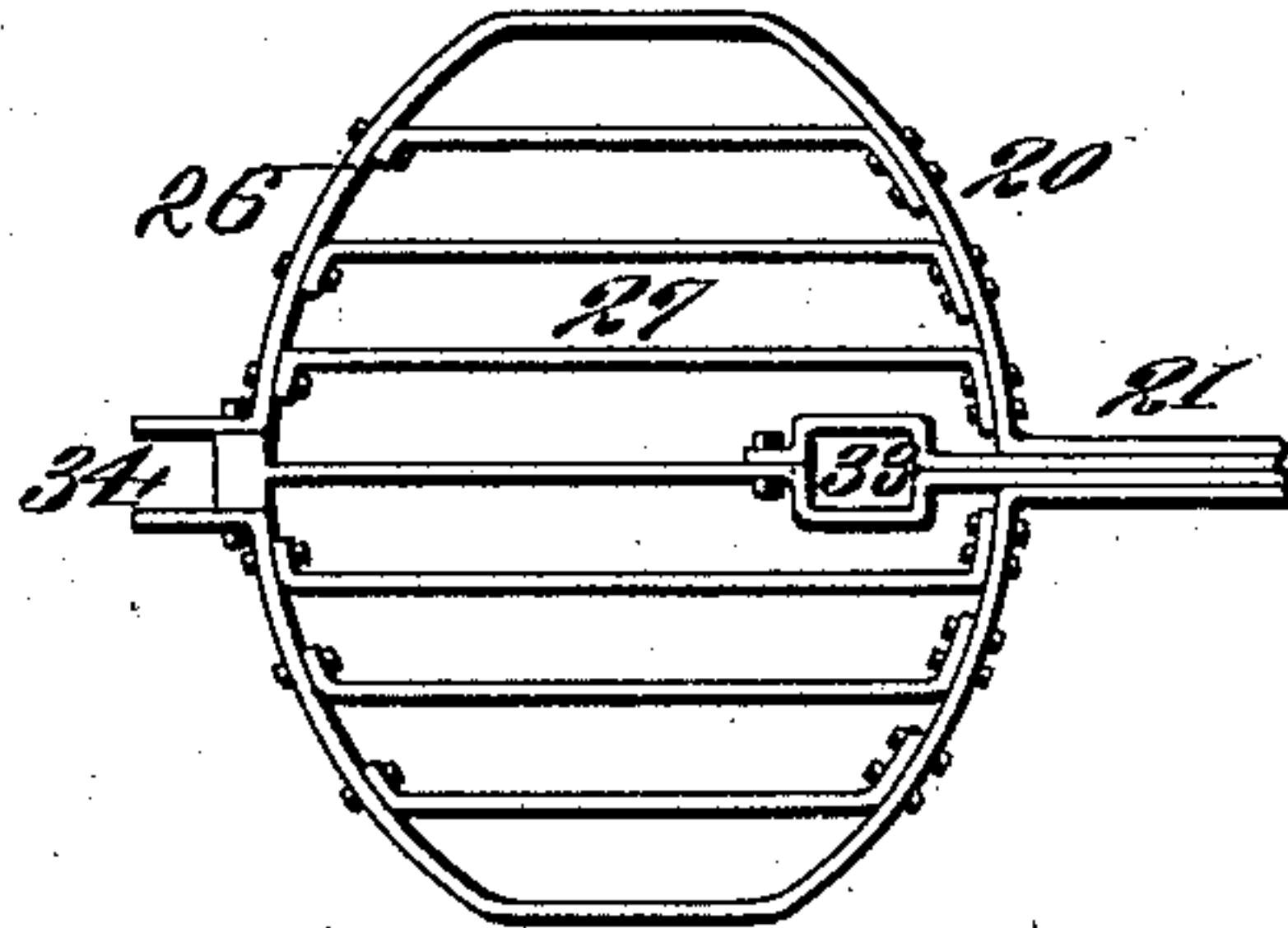


Fig. VII.

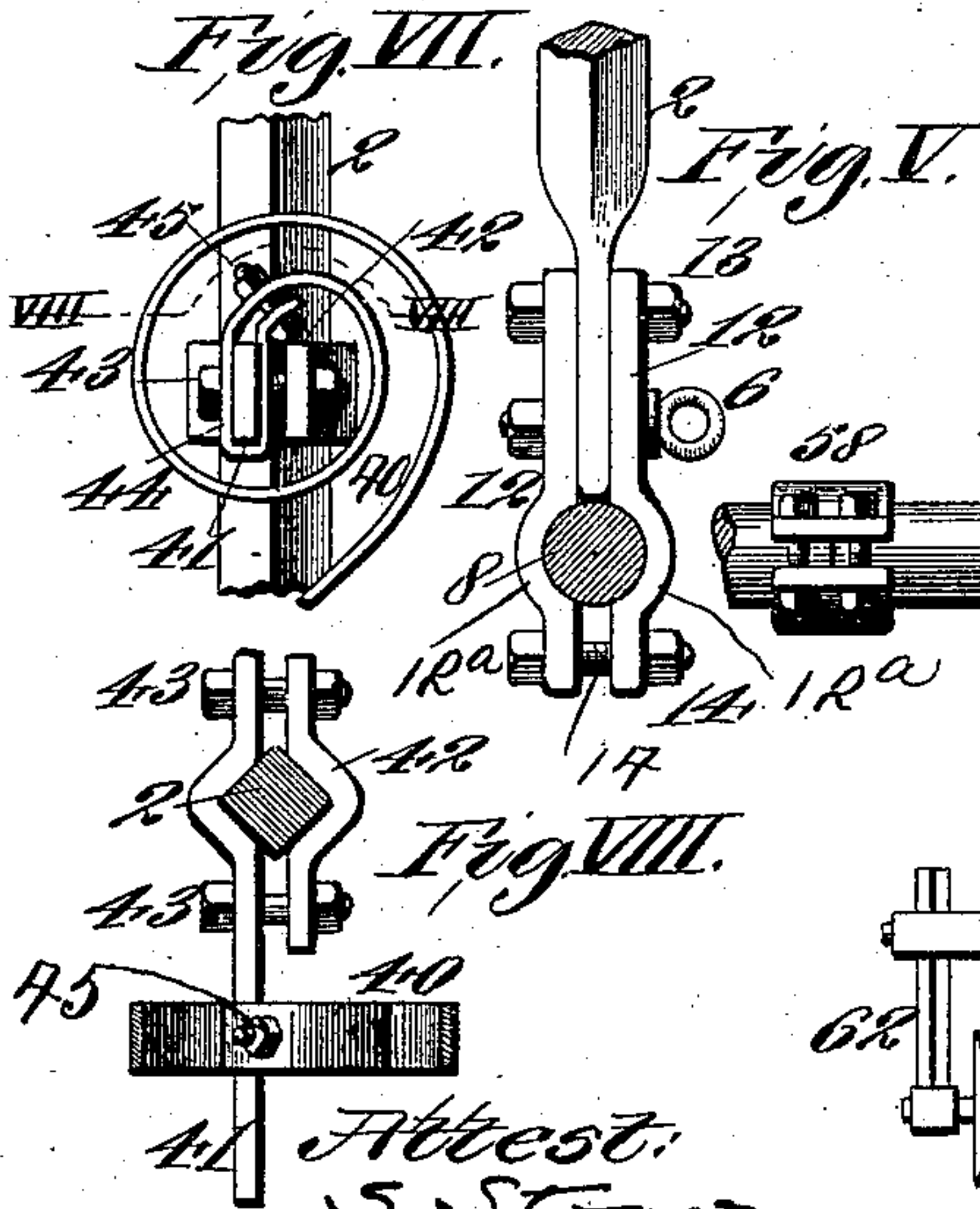


Fig. V.

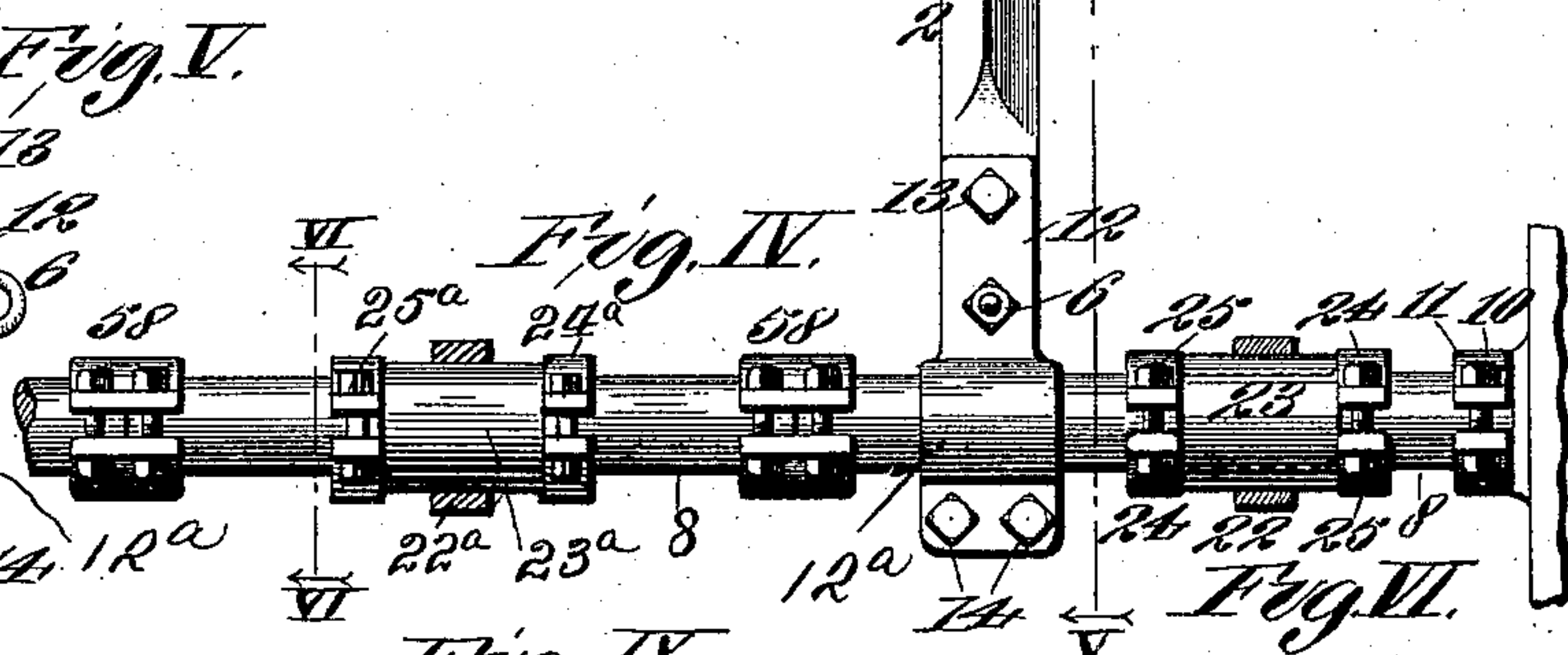


Fig. IV.

Fig. IX.

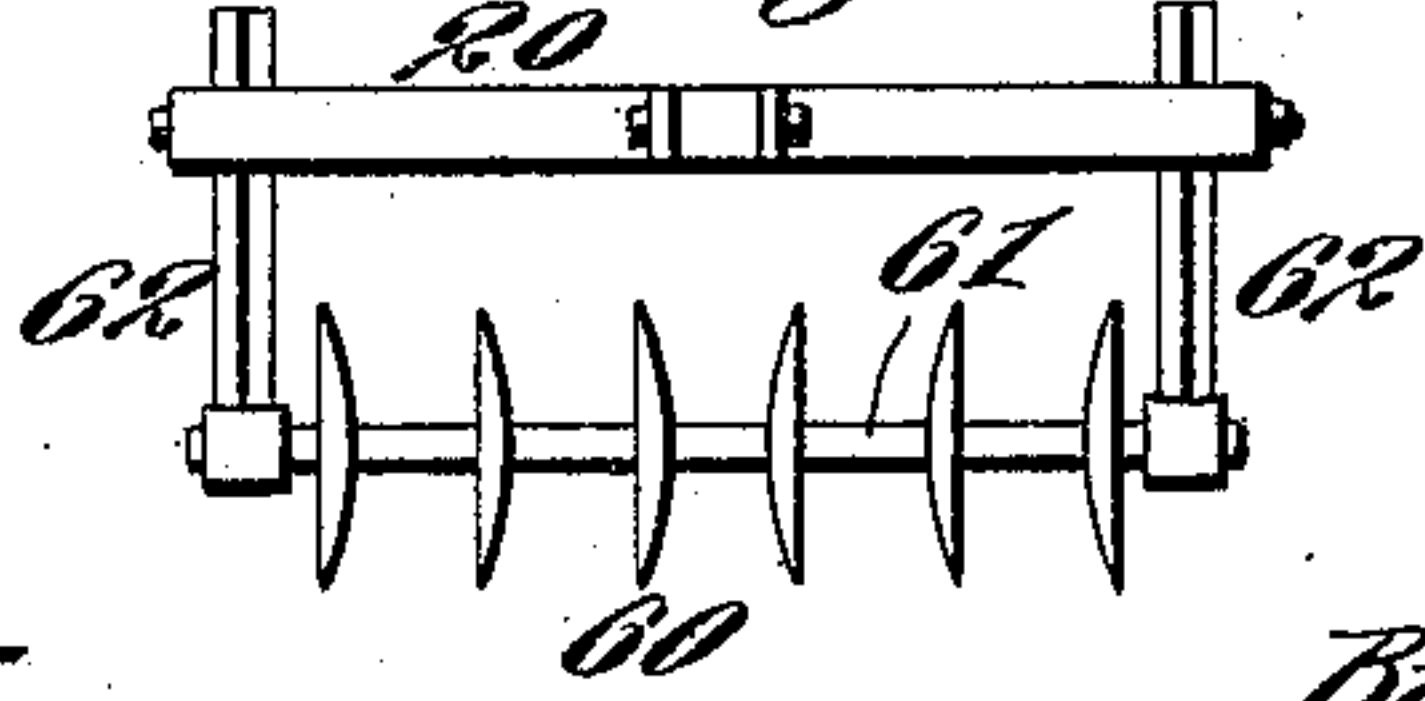
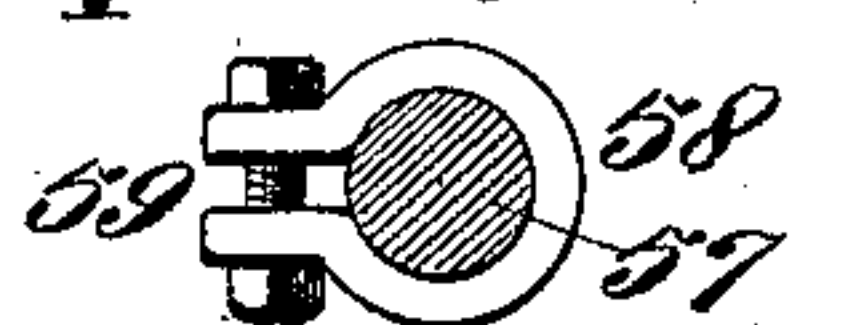


Fig. VI.



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UNITED STATES PATENT OFFICE.

CHARLES WOOD DAVIS AND MORTON R. DAVIS, OF NEAR PEOTONE,
KANSAS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 576,039, dated January 26, 1897.

Application filed October 16, 1896. Serial No. 609,161. (No model.)

To all whom it may concern:

Be it known that we, CHARLES WOOD DAVIS and MORTON R. DAVIS, citizens of the United States, residing near Peotone, Viola township, Sedgwick county, in the State of Kansas, have invented certain new and useful Improvements in Cultivators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to improvements in cultivators containing the features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of our improved machine. Figs. I^a and I^b are enlarged detail top views showing the clamp and distance-block by which the shovels are secured to the frames. Fig. II is a side view, the near wheel being omitted. Fig. III is a section taken on line III III, Fig. I. Fig. IV is a detail view showing part of the axle and part of the arch. Fig. V is a vertical section taken on line V V, Fig. IV. Fig. VI is a similar view taken on line VI VI, Fig. IV. Fig. VII is a detail side view showing the manner of connecting the counterbalance-springs to the arch. Fig. VIII is a section taken on line VIII VIII, Fig. VII. Fig. IX is a detail view illustrating the manner in which rotary disks may be employed on the machine instead of shovels. Fig. X is a top or plan view of a modified form of frame for holding the shovels. Fig. XI is a top or plan view illustrating another form of frame.

Referring to the drawings, 1 represents a draft-tongue secured to an arch 2 by means of a suitable clamp 3.

4 represents brace-rods extending from the tongue to the longer ends of the arch, these rods being secured to the tongue, on the inner side of the evener, by means of a bolt 5, and they are secured to the lower ends of the arch by means of eyebolts 6. (See Figs. I, III, and V.)

7 represents the wheels journaled on axles 8. The wheels are held from outward movement on the axles by means of linch-pins 9, and they are held from inward movement by means of split collars 10, that surround the axles, to which they are clamped by means of

bolts 11, that pass through the outturned ends of the collars, as seen in Fig. IV. The axles are secured to the arch 2 by means of clamp-plates 12, (see Fig. V,) the plates being made fast to the arch by means of the eyebolts 6 and by means of additional bolts 13. The plates are provided with swells 12^a to receive the axles, and beneath the axles the plates are provided with tightening-bolts 14. In this manner the axles are firmly secured to the arch, and by loosening the bolts 14 the axles may be shifted endwise to change the distance apart of the ground-wheels, and then by tightening the bolts the wheels will be held to their adjustment.

15 represents brace-rods extending from the collars 10 to the tongue 1, the collars being provided with perforated lugs 16 to receive the lower ends of the rods. (See Fig. II.) It is obvious that these brace-rods will have to shift their point of contact with the tongue 1 when the wheels are adjusted in or out, and to permit this we secure the upper ends of the rods to the tongue by means of plates 17. (See Figs. I and II.) These plates are provided with slots 18 to receive the bolts 19, that connect the plates to the tongue. When the wheels are to be adjusted, the nuts on the bolts 19 are loosened, permitting the plates 17 to shift automatically along the tongue, either forward or backward, depending upon whether the wheels are to be moved near together or farther apart. When the wheels have been adjusted to the desired position, the nuts on the bolts 19 are again tightened, and the braces thus rigidly made fast again to the tongue.

20 represents a pair of frames having forwardly-extending central beams 21, made fast to the axles 8 between the wheels and the arch and occupying a position to the rear of the space between the wheels and extending across the line of the wheels. These frames may be of diamond form, as shown in Fig. I, or they may be of rectangular form, as shown in Fig. X, or they may be of oval form, as shown in Fig. XI, or they may be of some other suitable shape.

The beams 21 are made fast to the axles 8 by means of clamps 22, (see Fig. IV,) that surround sleeves 23, fitting over the axles and

held in place by split collars 24 on the axles at the ends of the sleeves. These collars have outturned ends through which bolts 25 are passed, and by tightening on these bolts the collars are clamped to the axles and hold the sleeves 23 from moving longitudinally on the axles. By loosening the collars the sleeves may be shifted on the axles to change the distance apart of the frames.

Each frame is composed of a border 26 and longitudinal bars 27, bolted to the border. To the ends of the border and to the longitudinal bars are secured the shovels 28. The shovels are provided with shanks 29, preferably made hollow, (see Figs. I^a and I^b), these shanks being non-circular in cross-section. The shanks are preferably made hollow for the sake of lightness, and are made non-circular to prevent the turning of the shovels, and are set edge forward to more securely fasten them and to impart greater strength.

The shovel-shanks are secured (edge forward) to the frame by means of clamps consisting of straps 30 and bolts 31 and distance-blocks 32. The ends or sides of the border of the frame and the longitudinal bars 27 are formed with perforations to receive the bolts 31.

The distance-blocks are placed between the shovel-shanks and the ends or sides of the border, or between the shovel-shanks and the bars 27, these blocks being notched to receive the shanks. By using distance-blocks of various thicknesses the shovels may be set out or in, this being illustrated in Figs. I^a and I^b, in the former of which a thin distance-block is shown and in the latter a thick distance-block.

The shanks of the outer shovels may be clamped either to the inside of the ends or sides of the border, as shown in the upper part of Fig. I, or to the outside, as shown in the lower part of Fig. I, and the shanks of the inner shovels may be clamped to either side of the bars 27, as shown, thus providing for a wide range of adjustment in a horizontal direction, and by loosening the clamps the shovels may be adjusted vertically. The ends or sides of the border and the bars 27 are provided with numerous perforations, as shown by dotted lines in the upper part of Fig. I, so that the shovels may be adjusted forward or backward, and may be adjusted so as to make a V shape from the central shovel in each direction with the open part of the V to the rear, as shown in the upper part of Fig. I, or the shovels may be adjusted in V shape with the open part of the V presented forwardly, as shown in the lower part of Fig. I. It is evident that the shovels may be set in a straight line across the frame, if desired, and the number in use varied at will.

The central shovel by its shank is secured to the central part of the frame by forming a socket 33 in the forward part of the frame to receive the shank of this shovel when the shovels are in the position shown in the upper

part of Fig. I and by forming a socket 34 in the rear part of the frame to receive the shank of the central shovel when the shovels are arranged as shown in the lower part of Fig. I. The shank of the shovel is held in these sockets by means of bolts 25 and notched blocks 36. The arrangement of the shovels, as shown in the upper part of Fig. I, is well adapted for use where the ground is coated with weeds or stalks, which will be deflected outwardly by the arrangement of the shovels, while the arrangement shown in the lower part of Fig. I is better adapted for cultivating crops where the ground is not weedy or trashy.

From Fig. I it will be observed that our cultivator will till two complete rows at one time. The rows are indicated by stars in this figure, and it will be observed that the shovels on each frame will work the entire surface between these rows, thus accomplishing much more work and with greater ease to the workman than can be done with the ordinary cultivator and doing it more effectually, as the line of draft is in the center of each frame and there is no tendency to draw or deflect the frame out of a line that is parallel with the row of plants.

It will be observed that the shovel-carrying frames extend beyond the ground-wheels, so that while the shovels upon each frame till the entire surface of the ground between two rows of plants, yet the wheels travel between the rows and away from the plants.

37 represents handles bolted to the frames 20 at 38, the connection being strengthened by means of braces 39.

To counterbalance all or part of the weight of the frames 20 and the parts that they carry, we employ springs 40. (See Figs. I, III, VII, and VIII.) The lower ends of these springs are made fast to the beams 21 of the frames, as shown in Fig. II, and the upper ends are made fast to the vertical parts of the arch by means of arms 41, which are adjustably secured to the arch, as shown in Fig. VIII, by means of plates 42 and bolts 43. The arms extend outwardly and inwardly from the arch, as shown in Fig. III, and the inner ends of the springs are formed with loops 44 to receive the arms, (see Fig. VII,) to which they are clamped by means of bolts 45.

It will be seen that the springs can be shifted along the arms to suit the adjustment of the frames, and they can be situated on the inner ends of the arms within the arch instead of on the outer ends of the arms, as shown in Fig. III, and in cultivating narrow rows smaller frames than those shown may be coupled to the axles inside of the arch. The manner of attaching the springs to the arms holds them secured in position and provides at the same time for the easy adjustment of the springs upon the arms laterally.

We have shown our cultivator provided with four singletrees 46 to provide for the attachment of four horses. The singletrees are attached to adjustable hangers 47, depending

from an evener 48, pivoted at 49 to the tongue 1. Each end of the evener is provided with a section 50, secured thereto by means of a clevis 51, and to these sections the hangers 47 are directly secured.

52 represents an equalizing-bar pivoted to the tongue 1 at 53, and at each end of which is a section 54, secured thereto by means of a clevis 55. From each end of each section 54 there extends a rod 56, the lower ends of these rods being connected, respectively, to the lower parts of the hangers 47. The evener and equalizing-bar are both provided at each end with a series of holes, as shown in Fig. I, to receive the clevis 51 and the clevis 55, so that the sections 50 and 54 of the evener and equalizing-bar, respectively, can be shifted in or out to adjust the position of the horses at will. By this arrangement for the attachment of four animals to the machine each animal will be located between two rows of plants, while the high position of the evener and equalizing-bar provides for the tilling of high plants without injury to the plants, the central row of the plants being received by the arch of the machine, one of the side rows being received between the ground-wheel on that side and the outer singletree on that side, and the other side row being received in like manner between the ground-wheel on its side of the machine and the singletree on this side.

Our machine is well adapted for the rapid stirring and working of fallows or orchard grounds, and when so used the two frames shown in Fig. I may be supplemented by a third. In doing this the machine would be opened out or adjusted substantially to near or quite its full width, and the other frame would be attached to the machine in between these two frames. To provide for this attachment, the axles 8 (or the "divided" axle, as it may be termed) are made continuous by a central section 57. (See Fig. IV and dotted lines, Fig. III.) This section 57 is secured to the inner ends of the axles 8 by means of clamps 58, having outturned ends to receive bolts 59. (See Fig. VI.) When this section 57 is applied, the axle is a continuous one, and the additional frame referred to is made fast by any suitable means to this central part of the axle, such, for instance, as a central beam 21^a, sleeve 23^a, and collars 24^a, as shown in Figs. III and IV.

While we have shown and thus far spoken of shovels being attached to the frames 20, it is obvious that other soil-stirring tools may be used and attached to the frame in the same manner as the shovels are or by other suitable means.

In Fig. IX we have shown a number of pulverizing-disks 60, secured to a shaft 61, having standards 62 for attachment to one of the frames, these standards being received and held by the means shown in Figs. I^a and I^b for attaching the shovels.

By constructing a machine so that the full space between two rows of plants may be

cultivated by each frame the machine is capable of doing twice the work of an ordinary cultivator or corn-plow, and the wheels travel at all times on uncultivated ground.

Should it be desired to use the machine for cultivating a single row at a time, that is to say, cultivating half of the space on each side of a row of plants, or the whole of two narrow rows, it may be done by leaving off the outside shovels of each frame.

We claim as our invention—

1. A cultivator comprising an arch, ground-wheels connected to the arch by means of adjustable axles, and a pair of shovel-carrying frames secured to the axles between the wheels and which extend in the rear of and outwardly beyond the line of the wheels, substantially as set forth.

2. A cultivator comprising an arch, ground-wheels connected to the arch by means of adjustable axles, and a pair of shovel-carrying frames adjustably secured to said axles between the wheels and which extend in the rear of and outwardly beyond the line of the wheels, substantially as set forth.

3. A cultivator comprising an arch, ground-wheels connected to the arch, adjustable axles secured to said arch, and a pair of shovel-carrying frames secured to the axles, between the wheels and which extend outwardly beyond the line of the wheels, said frames each having a border and intermediate bars to which the shovels are attached, substantially as set forth.

4. A cultivator comprising an arch, ground-wheels connected to the arch by means of axles laterally adjustable on said arch, and a pair of shovel-carrying frames secured to the axles between the wheels and which extend outwardly beyond the line of the wheels, said frames consisting each of a border and intermediate bars to which the shovel-shanks are attached by means of clamps and distance-blocks, substantially as set forth.

5. In a cultivator, an arch, ground-wheels connected to the arch by means of axles, and shovel-carrying frames secured to the axles and which extend outwardly beyond the line of the wheels, said frames each having a forward and a rear socket to receive the shank of the central shovel, and each having a border and intermediate bars to which the non-circular shanks of the shovels are attached, substantially as set forth.

6. A cultivator comprising an arch, ground-wheels connected to the arch by means of axles, and a pair of shovel-carrying frames secured to the axles between the wheels, and counterbalance springs connected to the beams of the shovel-carrying frames and which are made fast to said arch by means of arms clamped to the arch and extending inwardly and outwardly therefrom, said springs having loops, or sockets which fit over the inner or outer extensions of said arms at will and tightening-bolts for said loops or sockets substantially as set forth.

7. In a cultivator, an arch, ground-wheels connected to the arch by means of axles, shovel-carrying frames secured to the axles, a draft-tongue secured to said arch, an even-
 5 and an equalizing-bar pivoted to said tongue, and each having a section pivoted to each of its ends, hangers depending from the ends of the sections of the even-
 10 and provided with means for adjustable attachment to singletrees, and rods extending from the ends of the sections of the equalizing-bar to said hangers, substantially as set forth.

8. In a cultivator, an arch, ground-wheels connected to the arch by means of axles,
 15 shovel-carrying frames secured to the axles, a draft-tongue secured to the arch, an even-
 and an equalizing-bar pivoted to said tongue, and each having an adjustable section at each of its ends, hangers depending from the
 20 ends of the sections of the even-
 and having means for the attachment of singletrees, and rods extending from the ends of the sections of the equalizing-bar to said hangers substantially as set forth.

9. In a cultivator, the combination of an arch, a draft-tongue secured to the arch, ground-wheels secured to the arch by means of axles upon which the wheels are adjustably
 30 mounted and held from inward movement by means of collars surrounding said axles, brace-rods extending from said collars to said tongue and adjustably-slotted plates to which said brace-rods are pivoted and by which said rods are connected to said tongue, sub-
 35 stantially as set forth.

10. In a cultivator, the combination of an arch, a draft-tongue secured to the arch, ground-wheels secured to the arch by means of axles upon which the wheels are adjust-
 40 ably mounted, brace-rods shiftable with the wheels and which are adjustably connected at their upper ends to said tongue, by means of slotted angle - plates having transverse flanges in which said rods are pivoted, sub-
 45 stantially as set forth.

11. In a cultivator, the combination of an arch, ground-wheels secured to the arch by axles, a pair of shovel-frames connected to said axles, a section of axle constructed for
 50 attachment and detachment between the ends of said wheel-axles, and an additional gang-

frame connected with said detachable section, substantially as set forth.

12. A cultivator comprising an arch, a tongue secured to the arch, an even-
 55 adjustable extensions, an equalizer having adjustable extensions, axles adjustable in the arch, shovel-carrying frames adjustable on the axles, and spring-supports for the shovel-carrying frames adjustable laterally and ver-
 60 tically on the arch, substantially as described.

13. A cultivator comprising an arch, an axle or a transverse bar divided for straddle-row cultivating, shovel-carrying frames at-
 65 tached to said transverse bar or axle, and a removably - secured central section 57, for making said transverse bar or axle continuous for the attachment of a shovel-carrying frame, to cover the whole space.

14. A cultivator comprising an arch, the
 70 upper transverse bars and lower axles each projecting inwardly and outwardly on the arch, shovel-carrying frames connected with the axles and counterbalancing - springs mounted on the upper bars; said bars and
 75 axles being also respectively adapted to receive the said frames and springs within the arch, as explained.

15. In a cultivator, a shovel-carrying frame formed with a shovel-socket located at one
 80 end of the middle line, substantially as explained and for the purpose set forth.

16. In a shovel-carrying frame constructed with a shovel-socket at each end of its mid-
 85 dle line and with suitable border and intermediate bars whereby a central shovel may be arranged at either front or back, and the remaining shovels spread outwardly therefrom, as herein explained and for the purpose set forth.
 90

17. In a cultivator, a shovel - carrying frame, comprising a suitable border and in-
 95 termediate bars secured to the border and adapted to have shovels attached thereto; the middle bar being formed with a socket, substantially as and for the purpose set forth.

C. WOOD DAVIS.
 MORTON R. DAVIS.

In presence of—
 CHARLES G. DAVIS,
 T. R. McCULLY.