

No. 774,817.

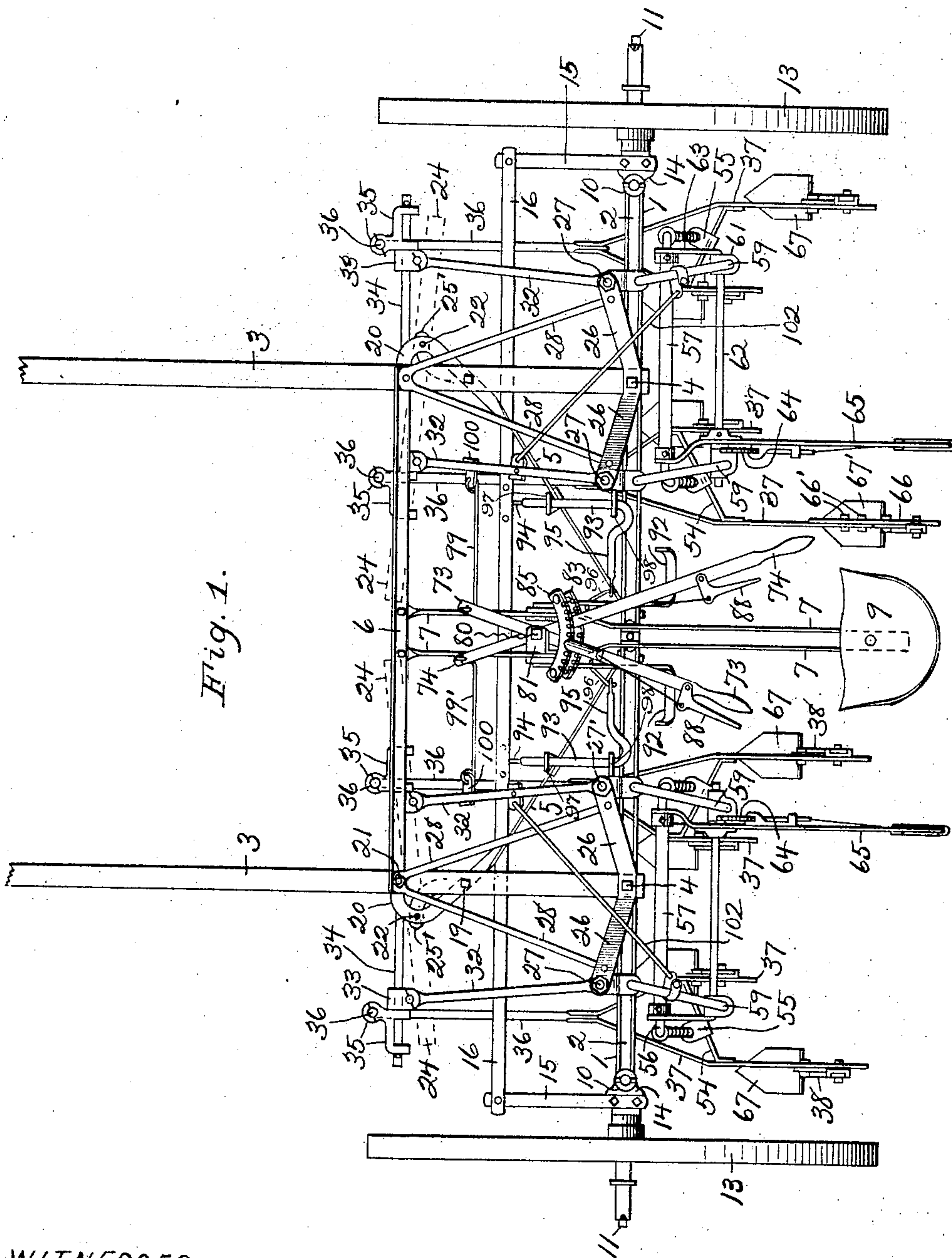
PATENTED NOV. 15, 1904.

S. E. BAILOR & F. M. ASHE.
CULTIVATOR.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

K. M. Imboden,
W. L. Lange

INVENTORS:

S. E. Bailor,
F. M. Ashe.

By Higdon & Higdon,
Attys.

No. 774,817.

PATENTED NOV. 15, 1904.

S. E. BAILOR & F. M. ASHE.
CULTIVATOR.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

4 SHEETS—SHEET 2.

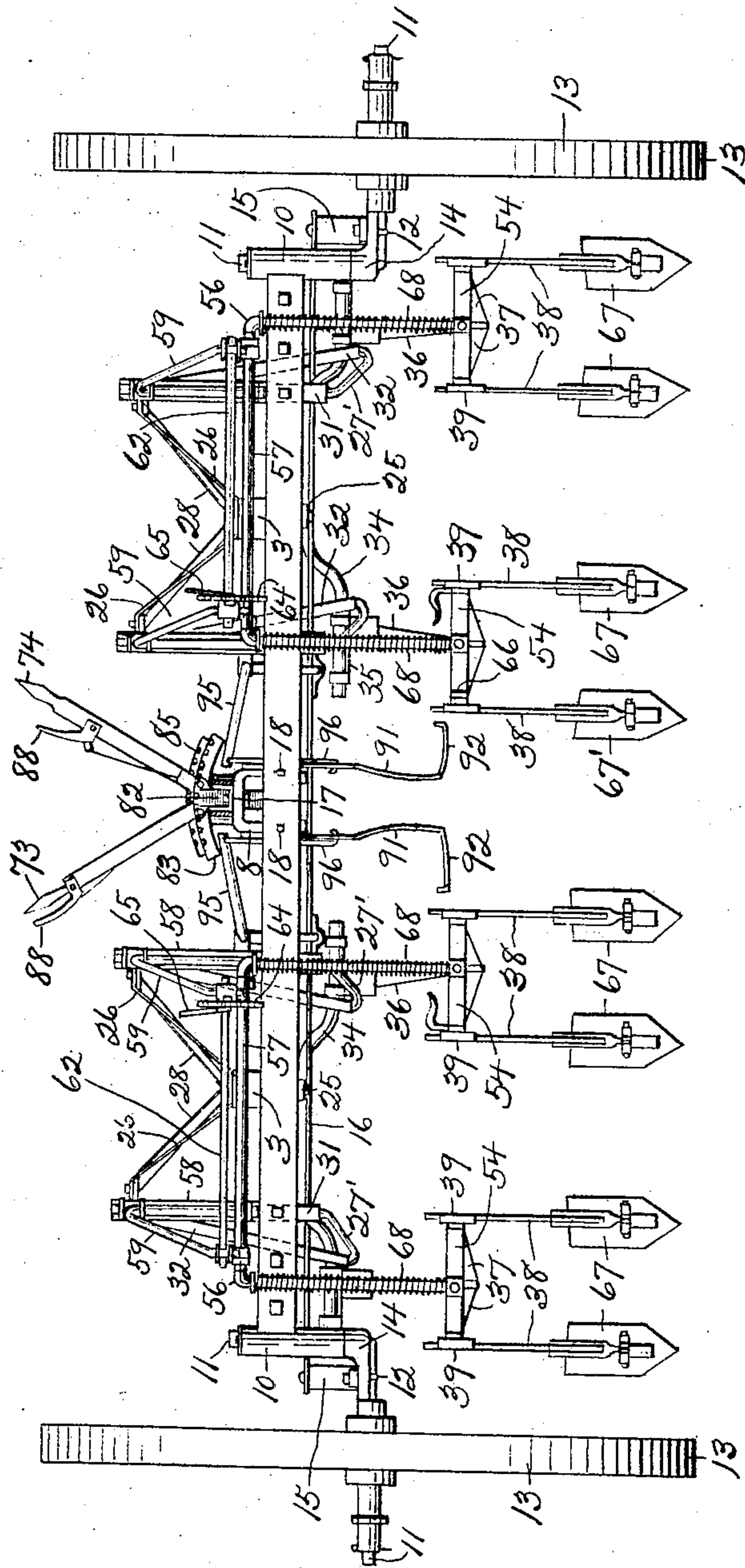


Fig. 2.

WITNESSES:

E. J. Cheesmar.

W. L. Lange

INVENTORS:

S. E. Bailor,

F. M. Ashe.

By Higdon & Higdon Attys

No. 774,817.

PATENTED NOV. 15, 1904.

S. E. BAILOR & F. M. ASHE.
CULTIVATOR.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

4 SHEETS—SHEET 3.

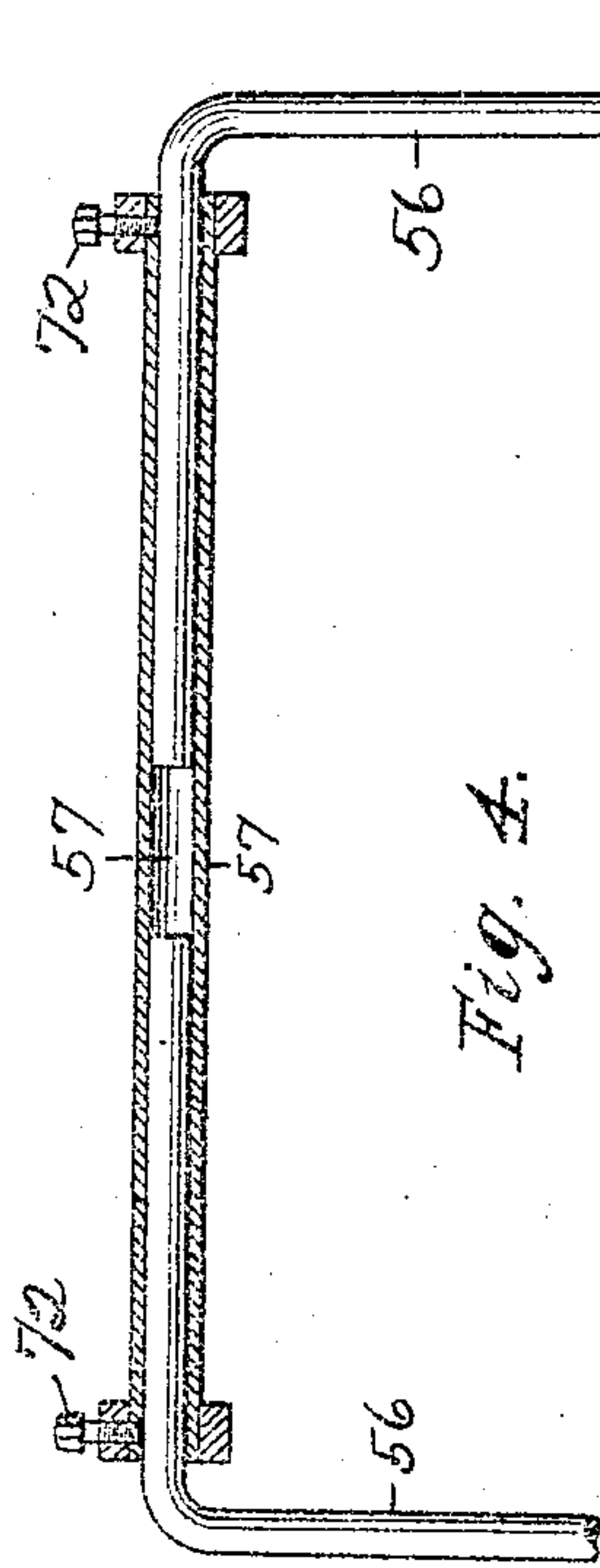


Fig. 4.

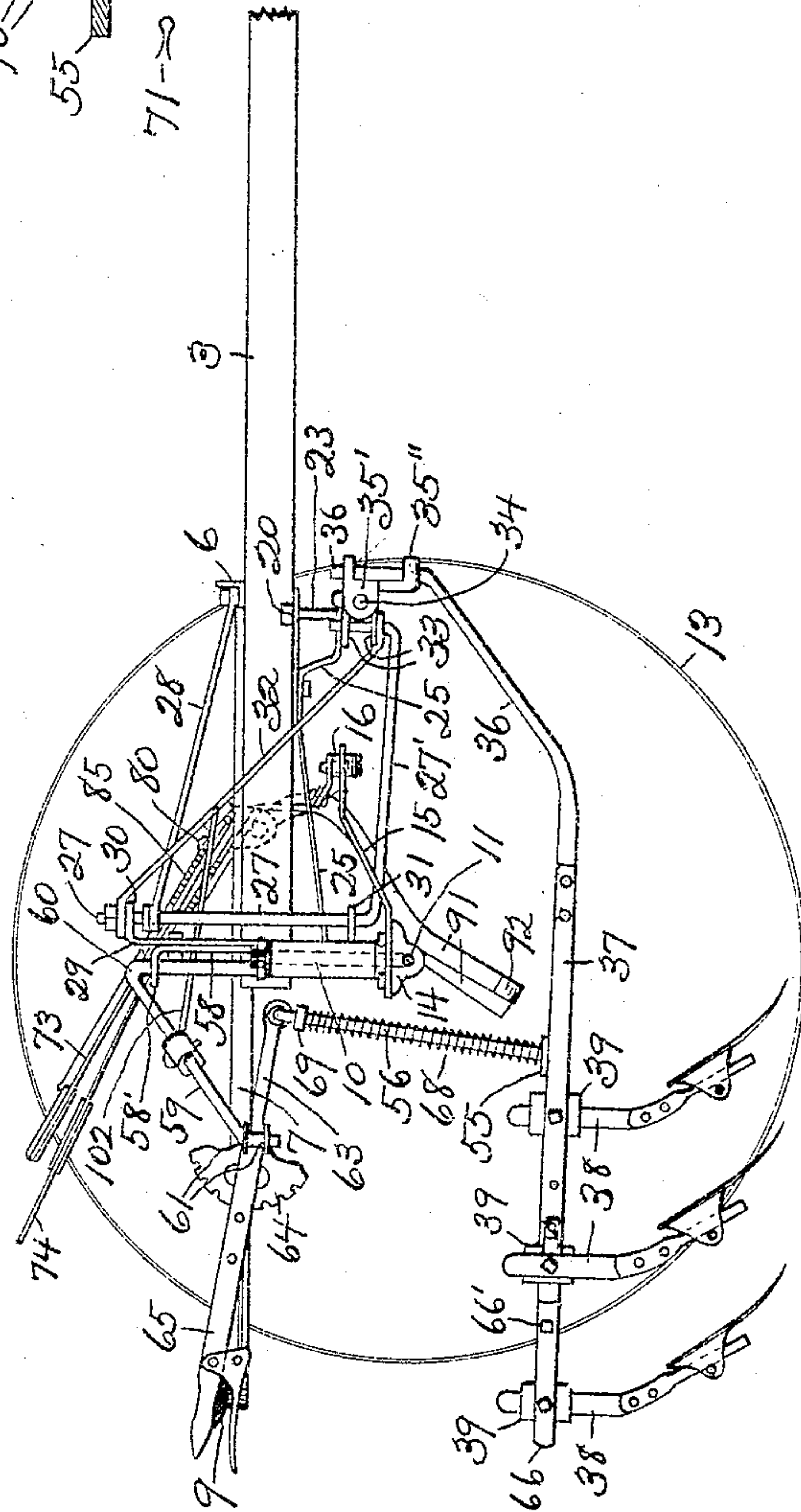


Fig. 3.

WITNESSES:

K. M. Imboden,
W. L. Lange

INVENTORS,

S. E. Bailor,

F. M. Ashe.

By Higdon & Higdon, Attys

No. 774,817.

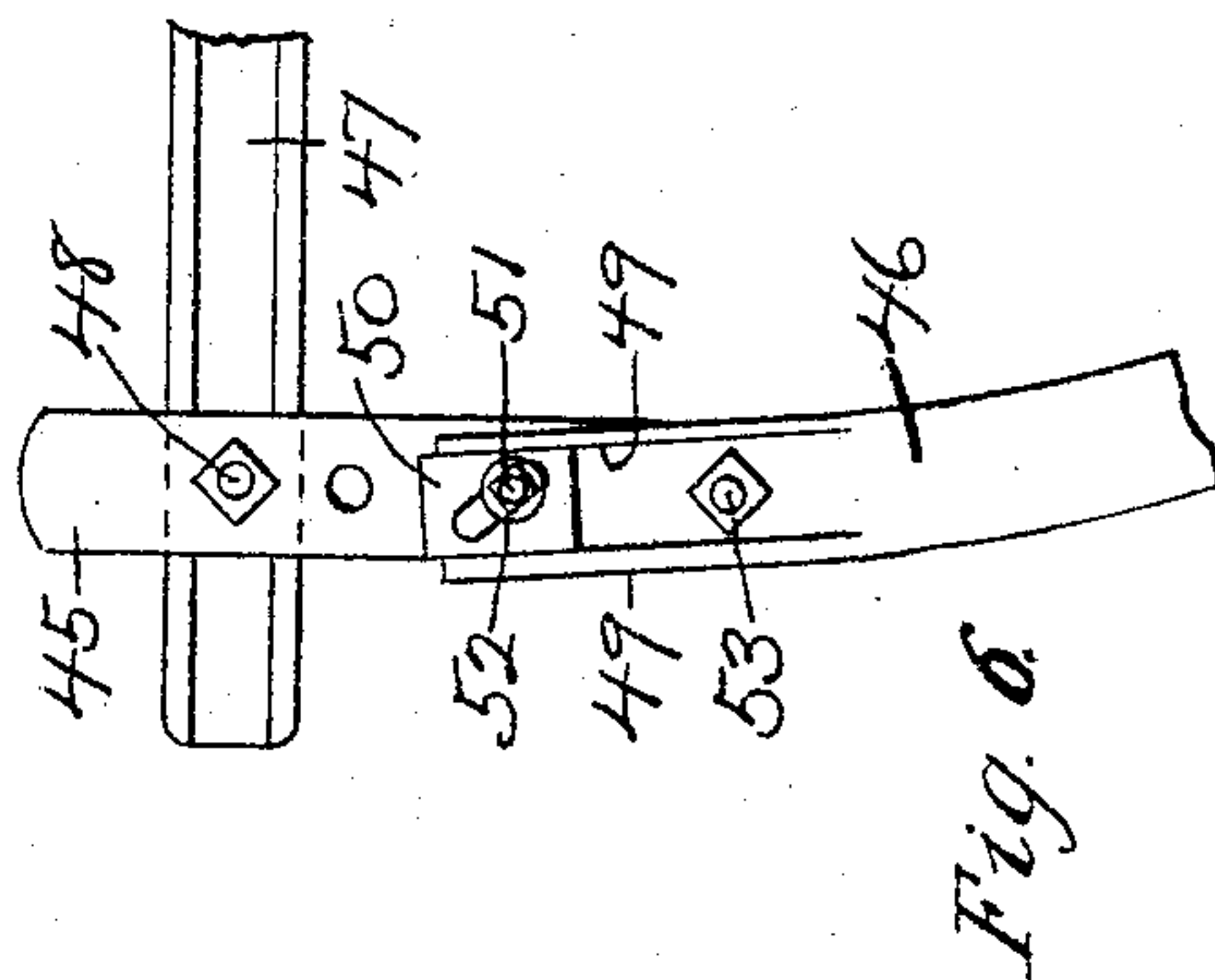
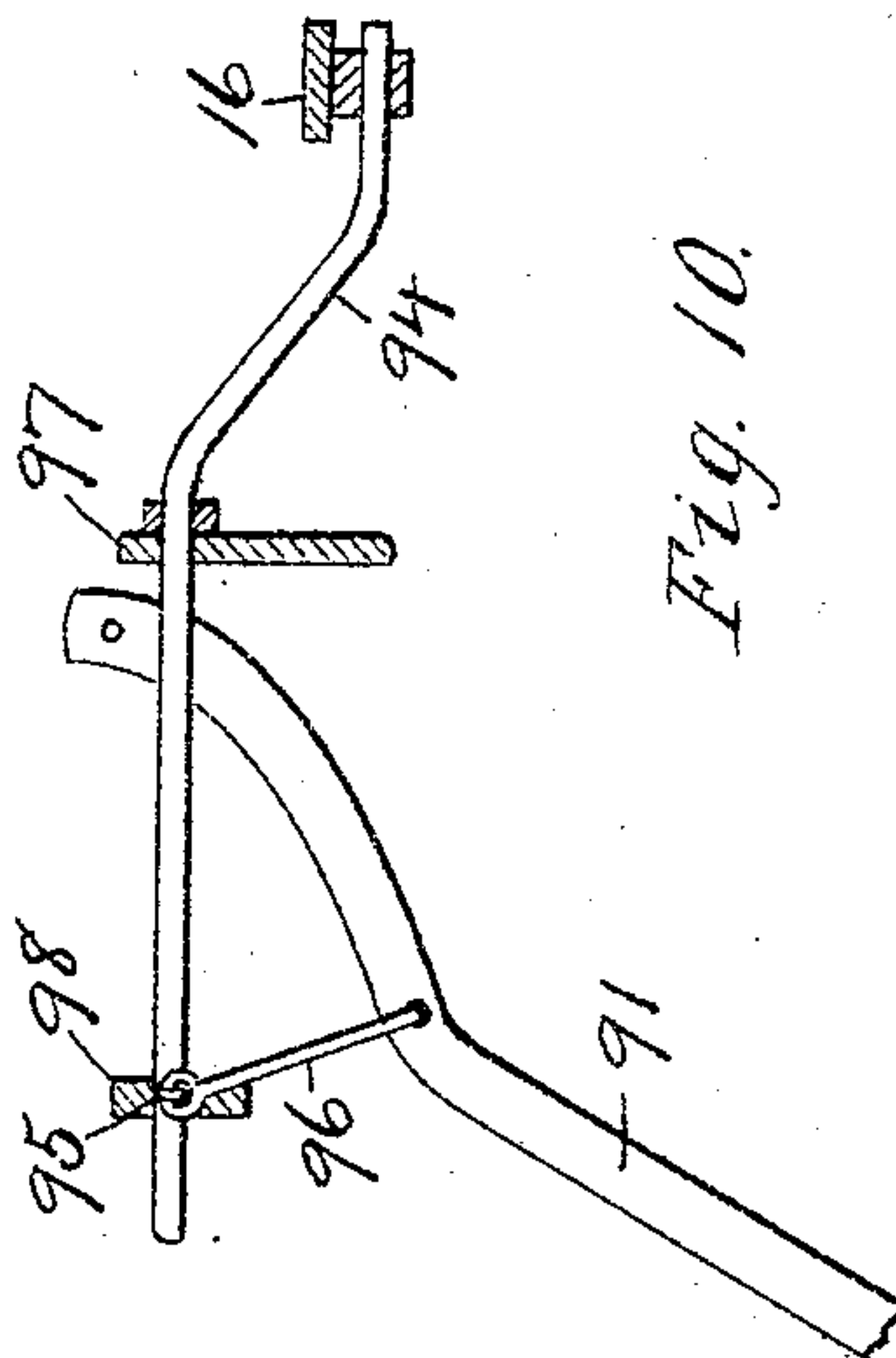
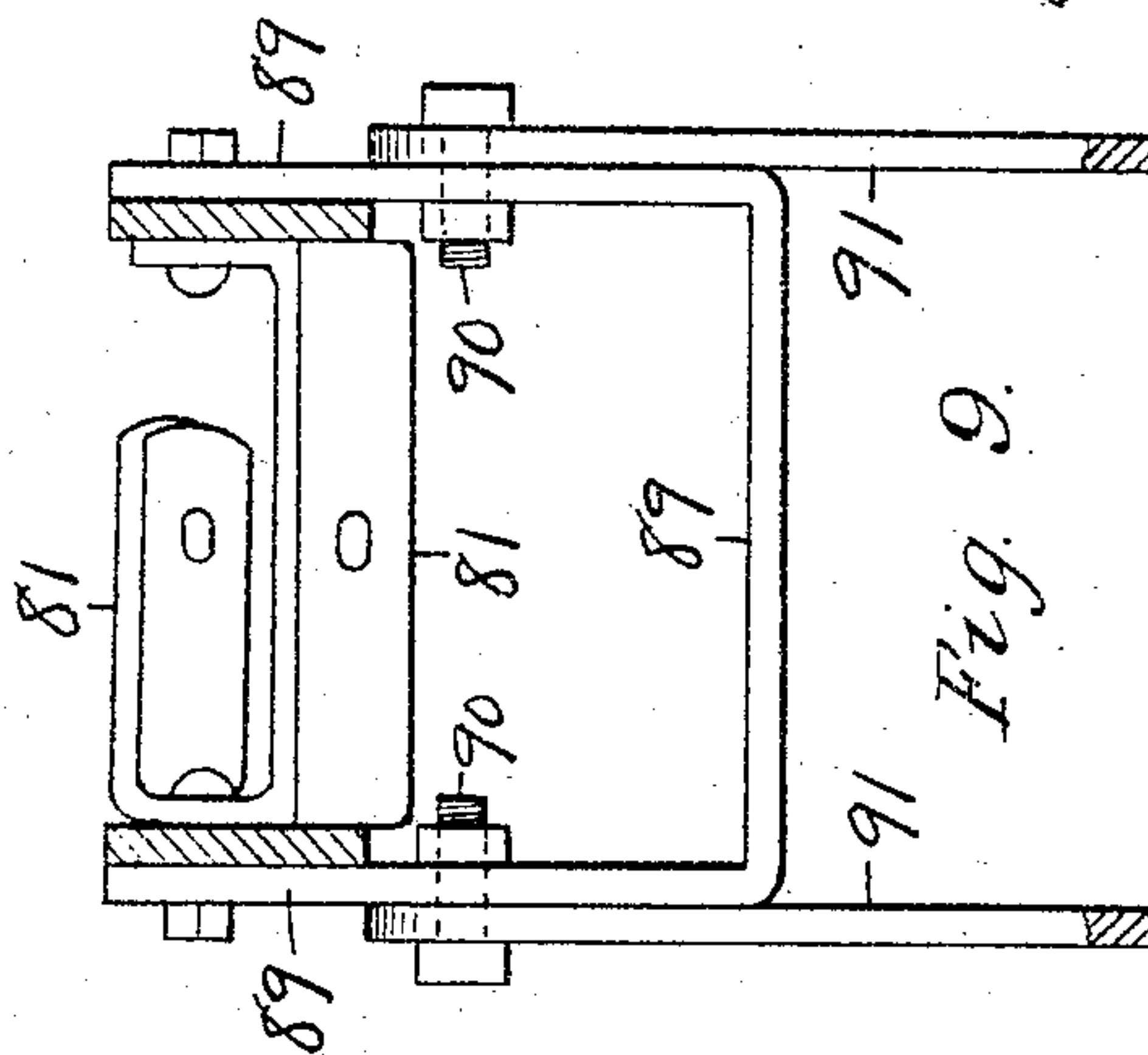
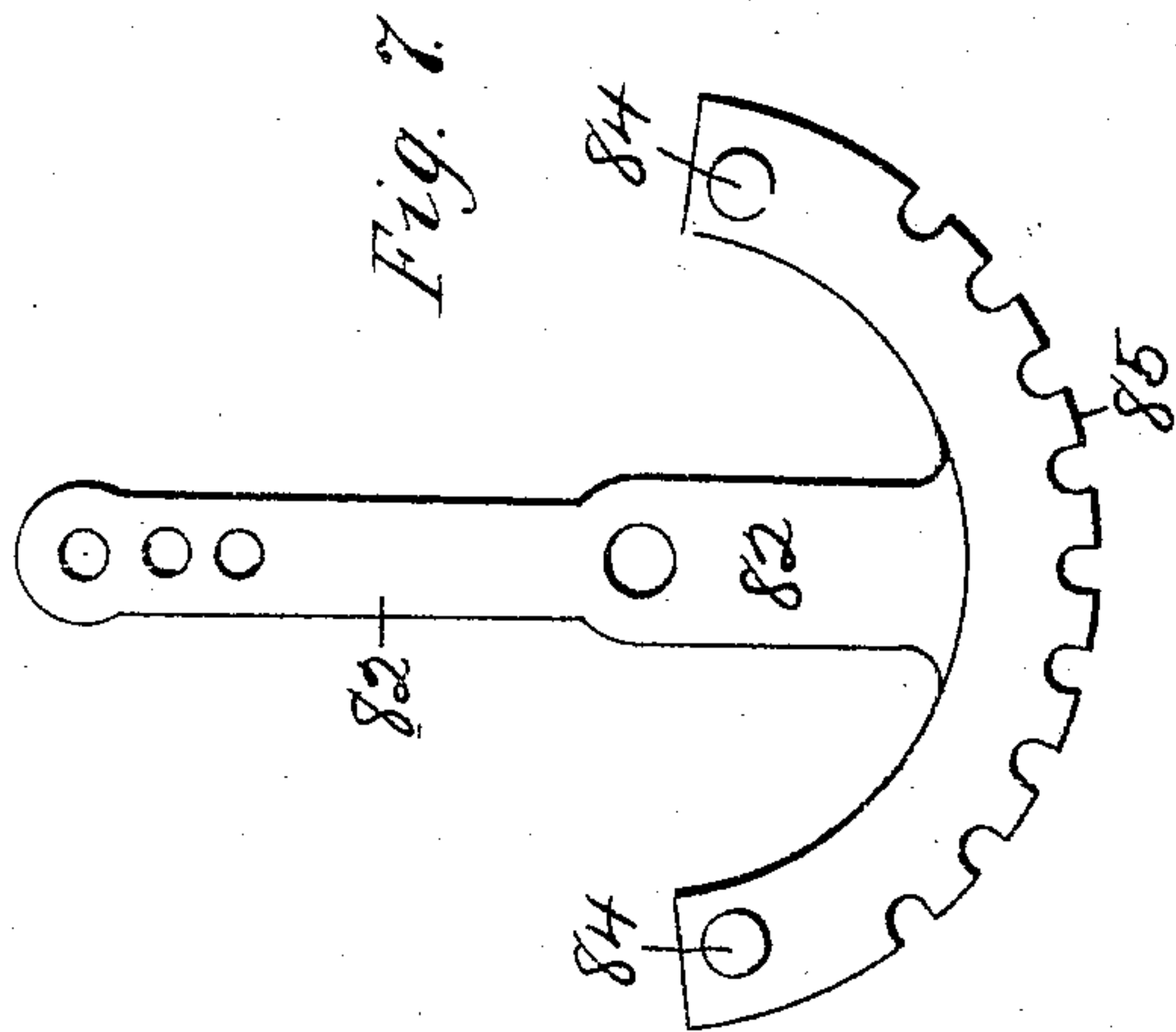
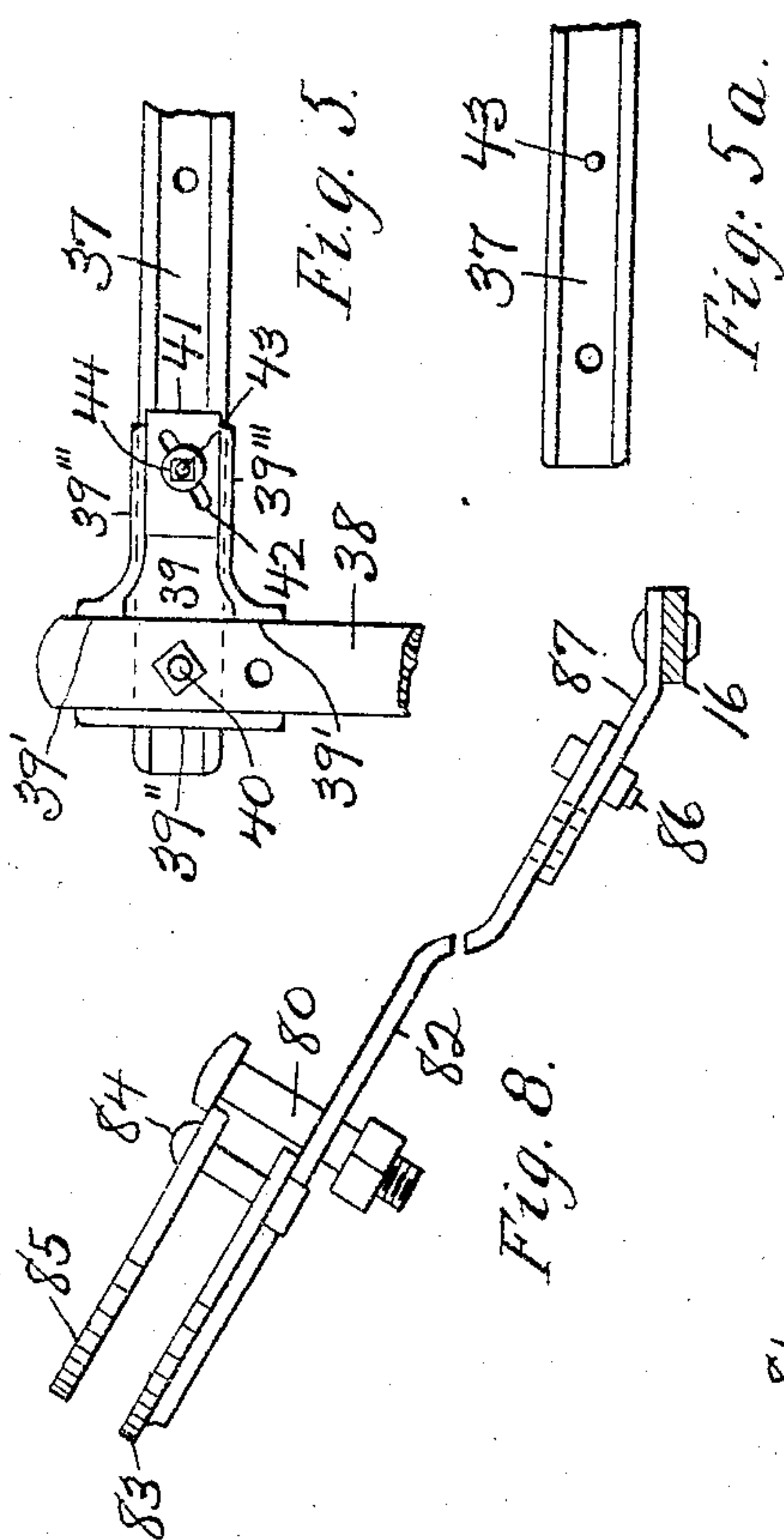
PATENTED NOV. 15, 1904.

S. E. BAILOR & F. M. ASHE.
CULTIVATOR.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

4 SHEETS—SHEET 4.



WITNESSES:

K. M. Imboden,
W. L. Langer

INVENTORS,

S. E. Bailor,
F. M. Ashe.

By Higdon & Higdon, Attys

UNITED STATES PATENT OFFICE.

SILAS E. BAILOR AND FRED M. ASHE, OF TARKIO, MISSOURI.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 774,817, dated November 15, 1904.

Application filed March 2, 1903. Serial No. 145,851. (No model.)

To all whom it may concern:

Be it known that we, SILAS E. BAILOR and FRED M. ASHE, citizens of the United States, residing at Tarkio, in the county of Atchison and State of Missouri, have invented new and useful Improvements in Cultivators, of which the following is a specification.

Our invention relates to two-row shovel-cultivators; and our invention consists in, first, providing four gangs connected together in two pairs, said pairs being movable laterally and independently of each other and each gang being vertically movable independently of the other gangs; second, novel means for moving the pairs of gangs laterally, either together in the same direction or separately and independently; third, means for causing the beams to always remain perpendicular to the axle regardless of their positions, whereby the shovels will always act upon the soil at the proper angle; fourth, novel means for preventing the middle shovels from clogging up with trash in the first plowing. Said means consists in extending one of the middle shovel-beams rearwardly, so that the shovel carried thereby is behind the other middle shovel; fifth, novel means for changing the angles of the pivot-axle-carrying wheels either simultaneously with side movement of the gangs or independently thereof; sixth, in a three-horse cultivator novel devices for attaching draft-eveners to the tongues.

Referring now to the accompanying drawings, Figure 1 is a plan view of a cultivator embodying our invention, the draft-eveners being indicated by dotted lines and the swingle-trees omitted. Fig. 2 is a rear elevation of the cultivator, the seat being omitted and the seat-bars in section. Fig. 3 is a side elevation of the cultivator, the right-hand wheel being omitted and the spokes of the left-hand wheel omitted. Fig. 4 is an enlarged detail showing one of the gang-sleeves in section and the two rods supported thereby, one of the latter being broken away. Fig. 5 is an enlarged detail view of our preferred adjusting device for changing the angles of the shovel-shanks to their beams. Fig. 5^a shows the end of the beam, the casting 39 being removed. Fig. 6 represents a modified device

for the same purpose. Fig. 7 is an enlarged detail plan of the top sector and the lever actuated thereby. Fig. 8 is an enlarged detail side elevation of the sectors, the lever actuated thereby, its fulcrum, and its connection to the sway-bar. Fig. 9 is an enlarged detail rear elevation of bracket 81, hanger 89, and the upper ends of the foot-levers, the seat-bars being sectioned. Fig. 10 is an enlarged side elevation of the left-hand foot-lever, its rock-shaft, and the connections of the latter to the sway-bar, the sway-bar and the bearings of said shaft being in section.

The frame of the cultivator consists of a double-strength axle-bar 1, connected together at their ends; two tongues 3, secured to said axle-bars by bolts 4; two braces 5, connecting the front axle-bar to the tongues 3, respectively; a transverse cross-bar 6, connecting the tongues, and two longitudinal central bars 7, the front ends of which are secured to the cross-bar 6 and also to the axle-bars by means of an inverted-U-shaped connection 8, the rear ends of said bars forming a support for the seat 9.

The details of the frame construction are as follows: Cast integral with blocks 2, respectively, are vertical sleeves 10, through which pass the upturned ends of the pivot-axes 11. Secured by U-bolts 12 to the axles 11, inside of the wheels 13, are castings 14, to which are secured two forwardly-extending arms 15, termed hereinafter the "wheel-arms." These arms are connected together pivotally by a transverse bar 16, termed hereinafter the "sway-bar." The sway-bar when moved longitudinally by means described hereinafter changes the angles of the carrying-wheels 13 by acting upon the wheel-arms 15.

The inverted-U-shaped coupling 8 has its ends bolted between the axle-bars 1, and secured to the top of said coupling is a small U-shaped connection 17, which is riveted to the respective seat-bars 7. The bolts 18, which pass through the ends of coupling 8, are utilized for securing the inner ends of braces 5 to the front cross-bar. Said braces 5 pass obliquely beneath the tongues 3, to which they are secured by bolts 19. The forward ends of said braces are bent inwardly, as shown at

20, and are again secured to the tongue by bolts 21. In the bent portions 20 are bolt-holes 22, which receive pivot-bolts 23, Fig. 3, for supporting the eveners 24. (Shown in dotted lines.) The object in pivoting the eveners outside of the tongues instead of directly to the tongues is to permit the inner arms of the eveners to be fully twice as long as their outer arms, so that the draft upon each of the three horses will be equal. The three swingle-trees are not shown. The lower ends of the pivot-bolts of the eveners 24 are held by the front ends 25' of braces 25, which extend back under the tongues, and their rear ends are secured to the axle-bars 1 by bolts 4. Secured by these bolts 4 to the rear ends of the tongues, respectively, are two V-shaped braces 26, the ends of which are bent laterally and horizontally to provide bearings for four vertical rock-shafts 27, the lower ends of which are bent and extend forwardly and are connected to the gangs in the manner hereinafter described. Secured to braces 26, near the ends thereof, are two pairs of downwardly and forwardly extending braces 28, the forward ends of which are secured to the transverse angle-bar 6 by bolts 21. These braces 28 may be integrally connected at their front ends, as shown. Directly behind said rock-shafts 27 are four standards 29, the lower ends of which are bolted to the front axle-bar. The upper and lower ends of said standards 29 are bent forwardly to form bearings 30 and 31 for said rock-shafts 27. The upper ends of said rock-shafts are connected by downwardly and forwardly extending cranes 32 to the forward ends of the forwardly-extending portions 27' of said rock-shafts. The combination of each crane 32, rock-shaft 27, and the forward extension 27' of the latter is termed hereinafter a "front" crane. The four front cranes support the forward ends of the four gangs, as presently described. Mounted on the forward upturned end of each front forward extension 27' is a clip 33. The right-hand pair of front cranes 32 support, by means of two clips 33, an arch-rod 34, by means of which the front ends of the right-hand front cranes are connected.

Mounted on the respective ends of each arch-rod 34 are two gang-couplings 35. Each of said couplings is right angular in form, having a horizontal portion and a depending portion, the horizontal portion having rearwardly-projecting eyes 35', through which arch-rod 34 passes. The depending portion of each coupling has two forwardly-projecting eyes 35''. Through each pair of coupling-eyes 35'' passes the upper end of a shovel-beam 36, it being understood that there are four gangs of shovels, and accordingly four beams. Bolted to the rear end of each beam 36 are two beams 37, and the shovel-shanks 38 are adjustably connected thereto by devices shown in detail in Fig. 5 or Fig. 6. Fig.

5 illustrates the preferred form. In this form the shank 38 instead of being secured directly to the beam 37 has a casting 39 interposed between itself and the beam, and all three of said parts are secured together by a pivot-bolt 40. The upper end of the shank is engaged by lugs 39' and a rib 39'' of casting 39, so that said casting is operatively a part of the shank. Between two ribs 39''' on said casting is a movable iron block 41, in which is a diagonal slot 42, through which projects a stud-bolt 43, secured to the beam 37. On bolt 43 is a nut 44. When this nut is loosened, the shank 38 may be turned at different angles to the beam 37 by sliding the block 41 to the right or left, the former movement to move the shovel forward, the latter movement to move it back. When nut 44 is tightened, the shank is held rigidly in the usual manner. In the modified device shown in Fig. 6 for the same purpose the upper portion of the shank is made in two pieces 45 and 46. The upper piece 45 is rigidly secured to the beam 47 by a bolt 48. The upper end of the shank proper, 46, is provided with ribs 49, between which is a slotted block 50, through which projects a stud-bolt 51, secured to the piece 45. The adjustments are effected by loosening the nut 52 and turning the shank 46 about its pivot-bolt 53.

Each pair of shovel-beams 37 is connected together by an oblique brace 54. Riveted to each brace 54 is an eye 55. Inserted in these eyes 55 are the lower ends of four depending rods 56. These rods 56 are supported by transverse sleeves or pipes 57, which are supported by two rear cranes, as follows: Bolted to the rear faces of the right-hand two standards 29 are two bearing-pieces 58, provided with rearwardly-projecting bearing-ears 58' at their upper and lower ends. Mounted in said ears or bearings 58' are two rear cranes 59. Each of said cranes is simply a round rod bent at an acute angle at 60 and extending downwardly and rearwardly. Connected to the lower ends of these rear cranes by means of clips 61 is a transverse rock-shaft 62, on the outer end of which is a forwardly-extending arm 63, which terminates in an eye which supports the outer end of the afore-said sleeve or pipe 57. Secured on the left-hand end of rock-shaft 62 is a notched sector 64, integral with which is a clip 61, to which one of the cranes 59 is connected. Rigidly secured on rock-shaft 62 alongside of sector 64 is a hand-lever 65, provided with a latch which engages said sector 64, whereby said lever 65, rock-shaft 62, sleeve 57, rods 56, and hence the two right-hand gangs, are held at different heights, according to the position of said lever. Lever 65 extends forward from rock-shaft 62 to form a support for the inner end of sleeve 57, which it does by embracing the inner left-hand rod 56, as shown in Fig. 1. When said lever is depressed, sleeve 57 is

raised through the intermediacy of rock-shaft 62 and its arm 63, and the said shovels are lifted. When said lever is raised, the shovels are lowered.

5 The construction of the right-hand two rear cranes 59 and their connections to the corresponding gangs has been described. The construction of the left-hand two rear cranes 59 and their connections to the two left-hand
10 gangs is identical with that described, as clearly shown in the drawings, and the same numerals indicate corresponding parts of both sides of the cultivator. It will be observed, however, that the inside right-hand
15 shovel-beam 37 is elongated by means of a beam extension 66, to which the shank 38 is attached, as heretofore described. By this means the inside right-hand shovel 67' is carried behind the inside left-hand shovel 67, the
20 advantage of which is that when plowing in trashy ground the said shovels will free themselves from trash, whereas if they were carried alongside each other and moved together the trash would accumulate upon them and
25 be dragged along, which would prevent the shovels from working properly. The extension 66 is used for the first plowing only. For the second plowing it is detached from the beam 37 by removing bolts 66', and the
30 shovel-shank is connected to said beam, the length of which is the same as that of the inside left-hand beam.

Surrounding each depending rod 56 is a coiled expansion-spring 68. Said springs 68
35 rest upon the eyes 55, and their upper ends are confined by collars 69. The eyes 55 being slidable upon said rods 56, the springs 68 provide yielding resistances to any upward pressure upon the shovels. In the lower portion
40 of each rod 56 are holes 70 for a cotter-pin 71, which supports the rear portion of its gang, it being directly beneath the aforesaid eye 55. By placing said pins 71 in different holes 70 the shovels may be supported at different
45 heights regardless of the position of hand-levers 65. The rods 56 being separate from each other, it will be readily understood that they may be adjusted toward or from each other by sliding their horizontally-bent
50 upper ends in the sleeves 57, which are provided with set-screws 72, by which the said rods 56 are held at the desired distances apart. Suppose, for example, that it be desired to separate the two left-hand gangs wider apart
55 than they are shown in the drawings. The rear ends of the gangs will be separated by drawing apart the rods 56. The front ends of said gangs should also be separated an equal distance by adjusting the gang-couplings 35 upon the arch-rod 34. To separate
60 the gangs as much as eight inches farther apart, the said couplings 35 may be reversed (placed end for end) upon the arch-rod.

The means for causing lateral motion of
65 the gangs, either simultaneously or separately,

and for turning the carrying-wheels will now be described. These motions are effected by two hand-levers 73 and 74, two foot-levers 75 and 76, sectors 77 and 78, connecting-rods 79, and three levers connected to the sway-bar
70 16. The hand-levers 73 and 74 are both fulcrumed on a bolt 80, which passes through a bearing 81, secured to and between the seat-supporting bars 7. (See Fig. 9 for a detail view.) Also fulcrumed on bolt 80, below said
75 levers 73 and 74, is a lever 82, the upper rear end of which is integral with or secured to the bottom of a notched sector 83, above which and rigidly secured thereto by bolts 84 is a similar sector 85. The hand-levers play be-
80 tween these two sectors. The forwardly and downwardly extending end of sector-lever 82 is pivotally connected by a bolt 86 to a bracket 87, rigidly secured to the middle of the sway-bar 16. The upper lever 73 has a latch that
85 engages the upper sector 85, and the lower lever 74 has a latch that engages the lower sector 83. These latches may be disengaged from their sectors by manipulating the releasing-handles 88 in the usual manner. 90

Riveted to the seat-supporting bars 7 just outside of the lever-bearing 81 is a U-shaped fulcrum-piece 89, in opposite sides of which are two fulcrum-bolts 90 from which depend
95 two foot-levers 91, having their lower ends bent apart, as shown at 92. Adjacent to the two foot-levers 91, respectively, are two rock-shafts 93, having, respectively, depending cranks 94 at their front ends, said cranks being pivotally connected to the sway-bar 16
100 and having, respectively, two inwardly-extending cranks 95. These last-named cranks 95 are connected to the foot-levers 91 by rods 96, so that up or down motions imparted to the foot-levers by the feet of the driver will
105 be communicated to the sway-bar 16, moving the latter to the right or the left, and thereby changing the angle of the carrying-wheels, which are mounted on pivot-axles, as already described. The front bearings 97 of the rock-
110 shafts 93 are secured to the oblique braces 5, and the rear bearings 98 of said rock-shafts are secured to the crane-standards 29. The upper hand-lever 73 at its lower end is connected by a rod 99 to the inner right-hand
115 crane 32 by means of a clip 100 secured to the latter. The other hand-lever, 74, is connected by a rod 99' to the inner left-hand crane 32 by means of a clip 100 secured to the latter. A rod 102 connects said inner front crane 32
120 to the outer rear crane 59, said rod being connected to clips, as shown, and on the right-hand side of the plow a rod 103 connects the inner front crane 32 to the outer rear crane
125 59, said rod being connected to clips, as shown. Said rods 102 and 103 are connected at such points of the front and rear cranes that when the front cranes 32 are moved laterally the rear cranes 59 connected thereto will be moved laterally the same distance by means of rods 102 130

and 103. The effect of this equal movement of the front and rear of each gang is that the shovels will preserve the same angle relatively to the frame of the cultivator regardless of the lateral adjustment of the gangs. This is a great advantage over any other cultivator of which we are aware.

The operation of the hand-levers 73 and 74 is as follows: To move all four gangs together in the same direction, (either to right or left,) turn the longer lever 74 without releasing its latch. This will also change the angle of the carrying-wheels to correspond with the movement of the gangs. To move the right-hand pair of gangs only, turn the shorter lever 74, releasing its latch. To move the left-hand pair of gangs only, turn the longer lever 74, releasing its latch. To change the angle of the carrying-wheels with the feet, depress one of the foot-levers 91, according to the direction in which the wheels are to be turned. The two pairs of gangs may be drawn so closely together that the inner shovels would touch if one of said shovels were not set behind the other, as already described. The sectors 83 and 85 being rigidly secured together, it follows that when either lever 73 and 74 is turned without unlatching it will turn the other lever, and thereby swing both pairs of gangs simultaneously.

While we have only shown and described shovels for stirring the earth, we wish it understood that disk or colters will practically answer for the same purpose, and we reserve the right to utilize either in place of shovels, if desired.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cultivator, a forwardly-extending front crane, a rearwardly-extending rear crane, and a gang supported by said cranes, substantially as described.

2. In a cultivator, two front cranes, two rear cranes, a rod connecting the front cranes, a shaft connecting the rear cranes, two gangs

supported by said front and rear cranes, a rod 102 connecting one of the front cranes to one of the rear cranes, and means for moving said front and rear cranes laterally, substantially as described.

3. In a two-row cultivator, four front cranes, four rear cranes, rods connecting the front cranes in pairs, shafts connecting the rear cranes in pairs, four gangs supported by said front and rear cranes, rods 102 connecting two of the front cranes with two of the rear cranes and two levers, one of said levers being connected to one of the right-hand front cranes and the other lever being connected to one of the left-hand front cranes, substantially as described.

4. In a two-row cultivator, two sectors spaced apart and rigidly secured together, two levers passing between said sectors, latches engaging the respective sectors, and a fulcrum-bolt passing through both of said levers and through a portion of the lower sector, whereby either of said levers may be turned by turning the other lever, substantially as described.

5. In a cultivator, a pair of shovel-beams 37, a brace 54 connecting said beams, an eye 55 secured to said brace, a depending rod passing through said eye, the upper portion of said rod being bent horizontally, the lower portion of said rod having holes therein, a pin passing through one of said holes, below said eye, a collar fixed on said rod, an expansion-spring coiled around said rod between said collar and said eye, a transverse sleeve inclosing the horizontal portion of said rod and means for raising or lowering said rod, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

SILAS E. BAILOR.
FRED M. ASHE.

Witnesses:

JNO. P. STEVENSON,
W. S. WOOD.