

No. 628,745.

Patented July 11, 1899.

D. S. BLUE.
CULTIVATOR.

(Application filed Jan. 8, 1898.)

(No Model.)

4 Sheets—Sheet 1.

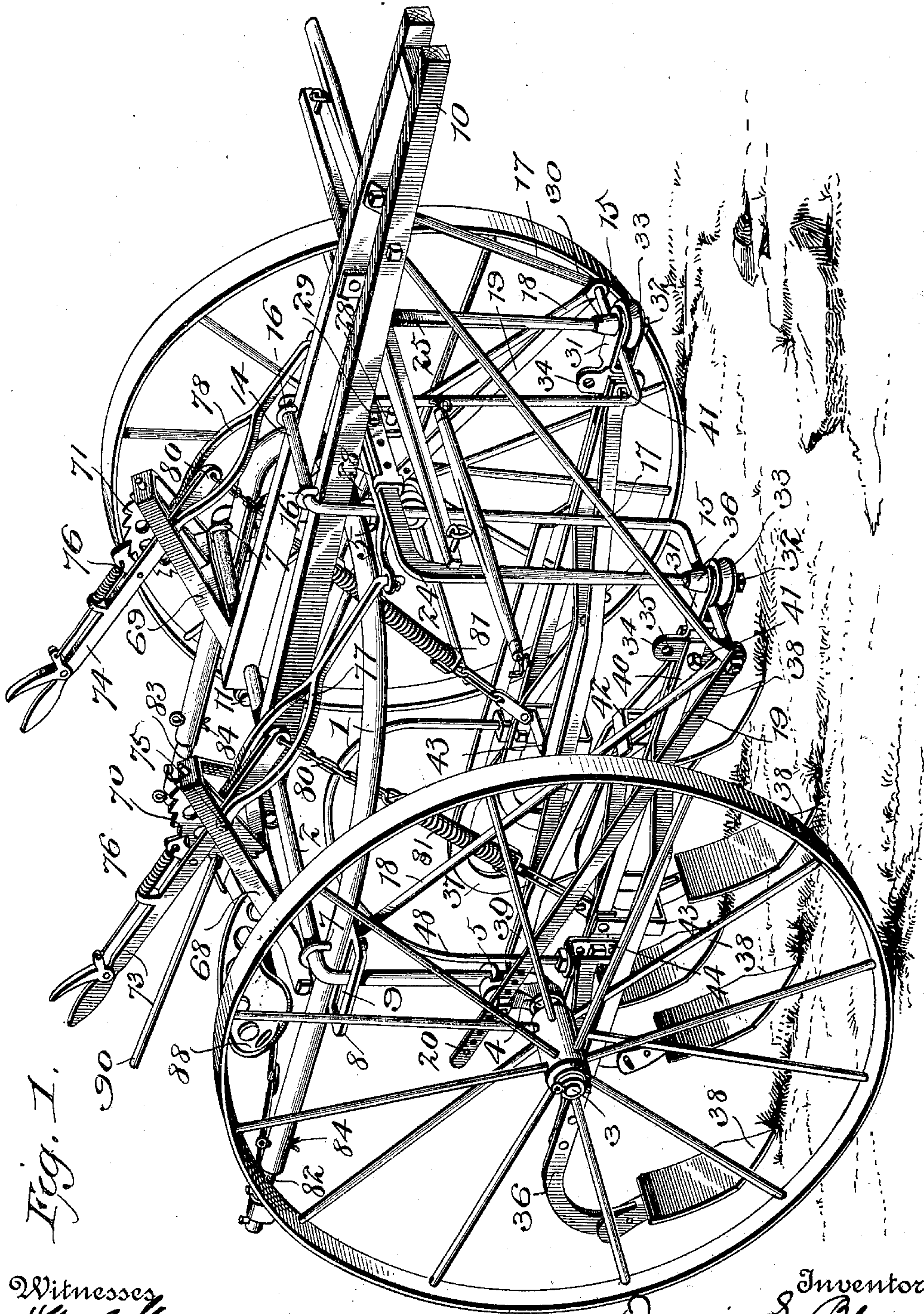


Fig. 1.

Witnesses
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per Rhoads & Sons
Attorney

No. 628,745.

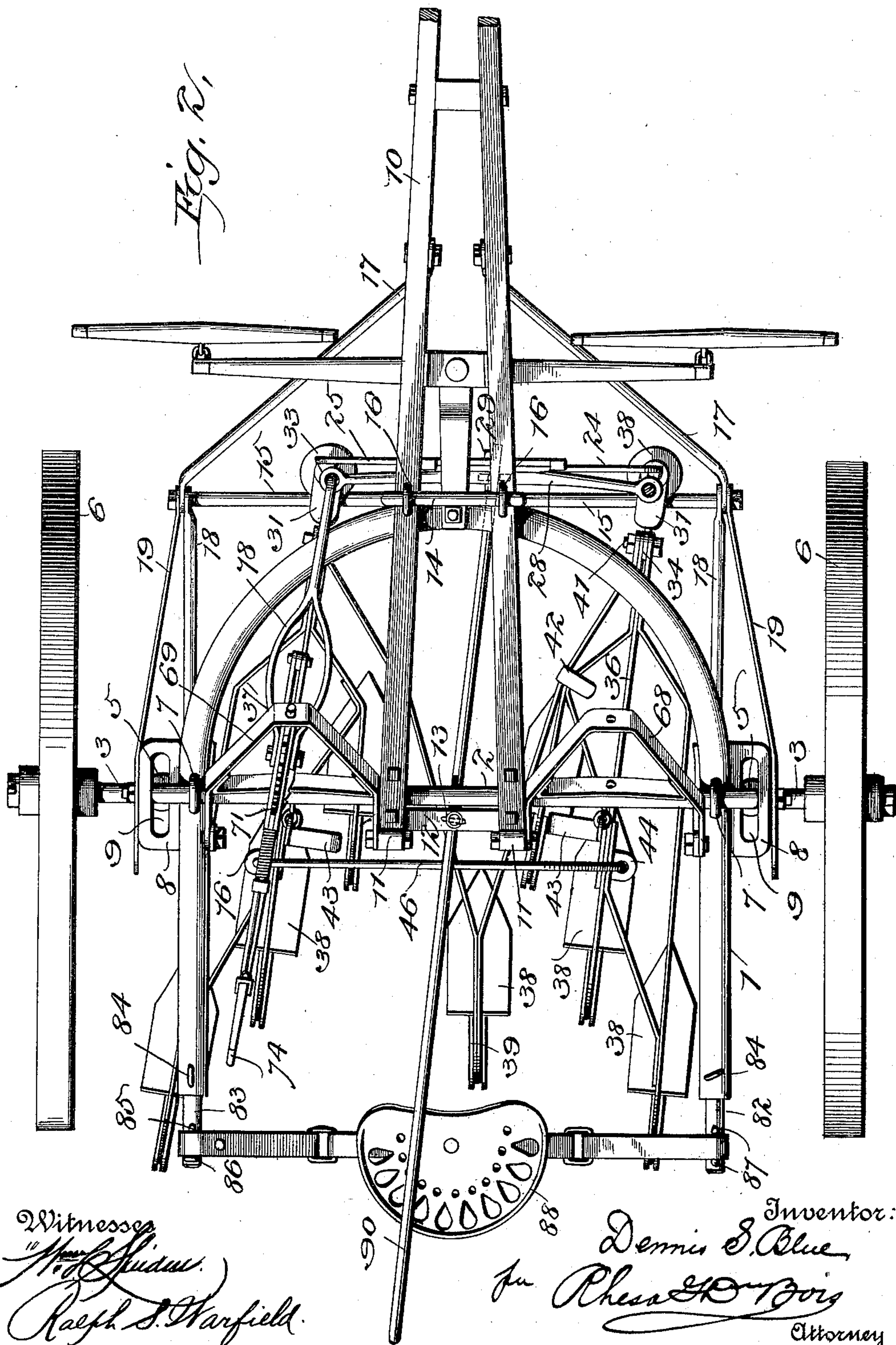
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Fig. 3.

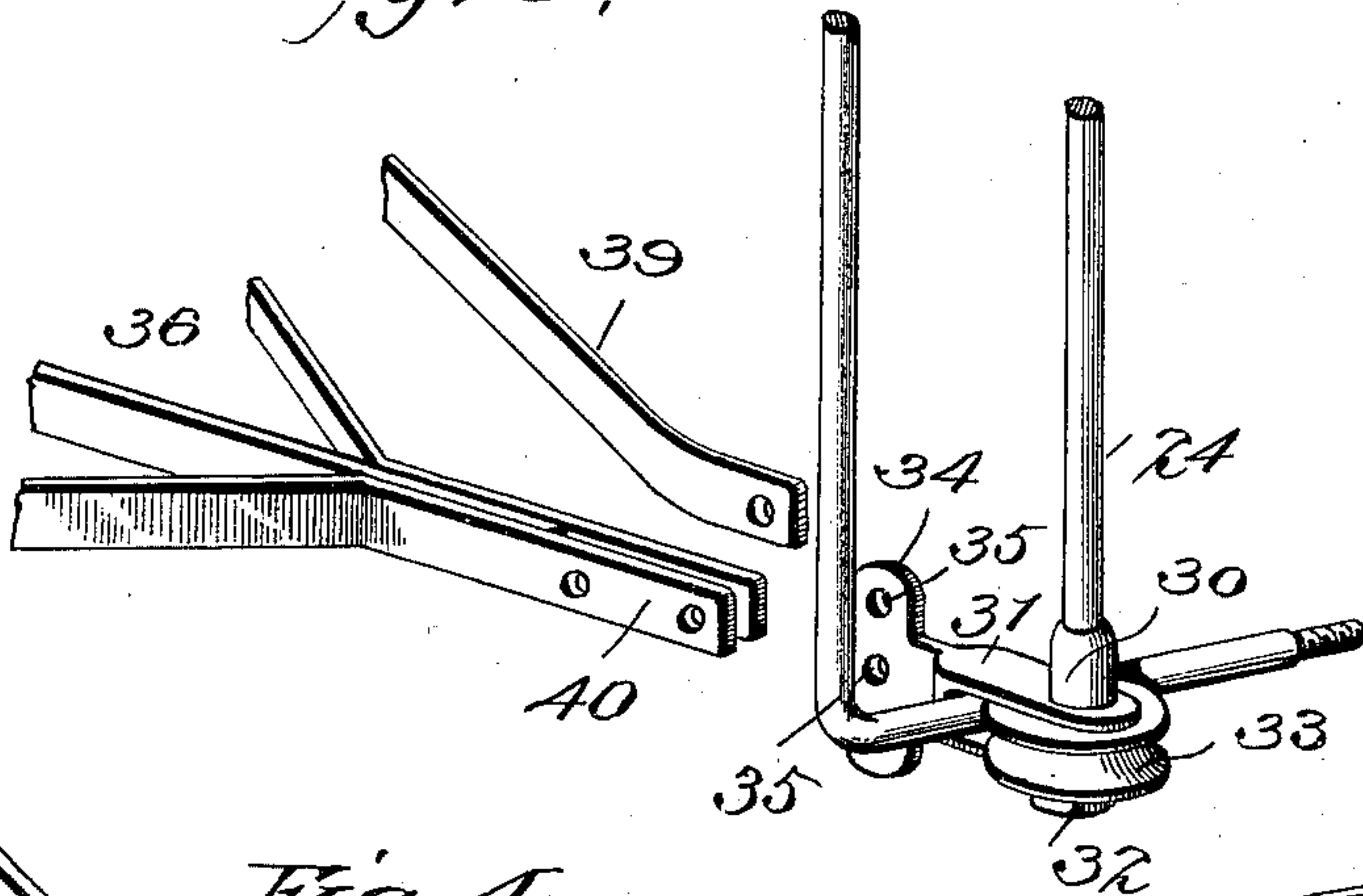


Fig. 4.

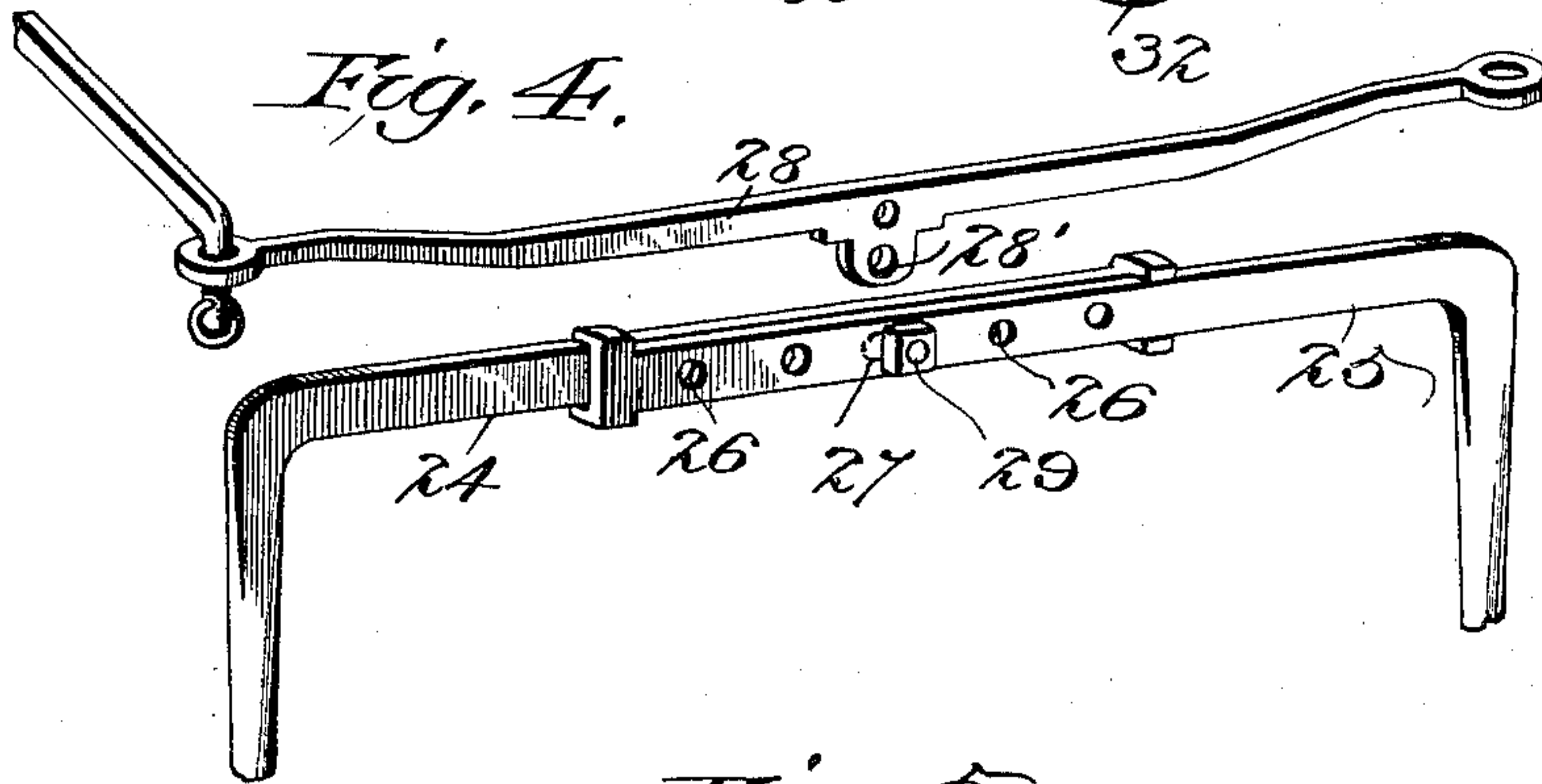


Fig. 5.

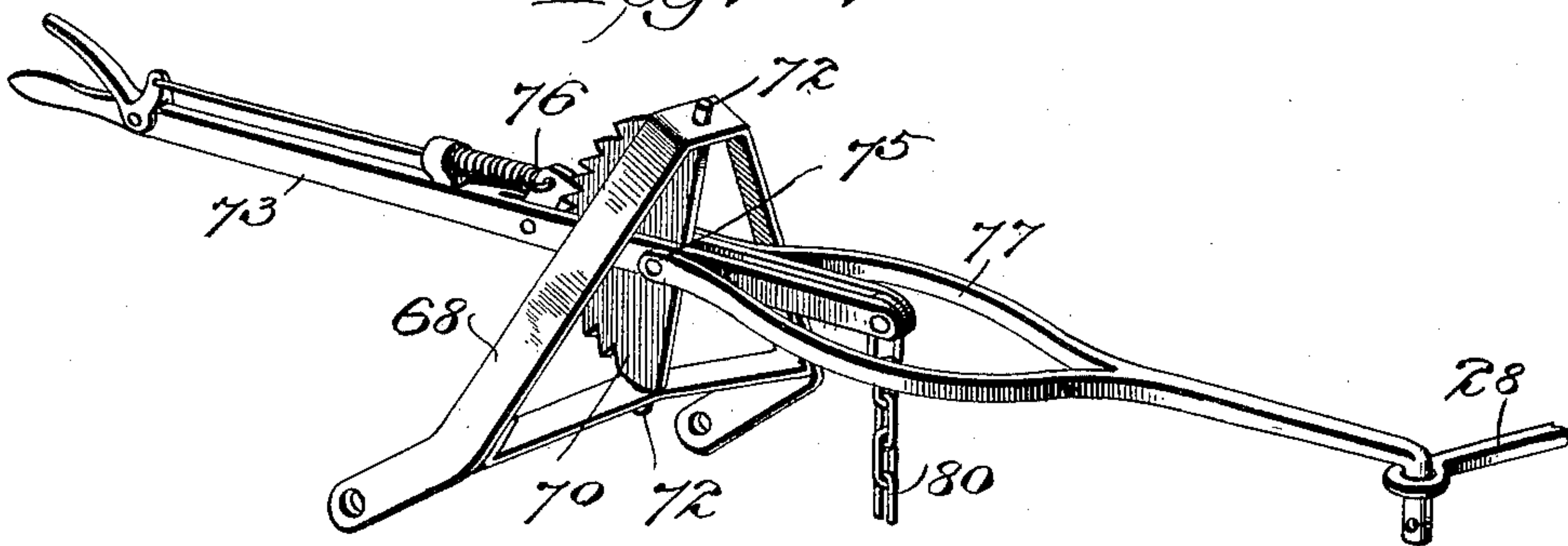
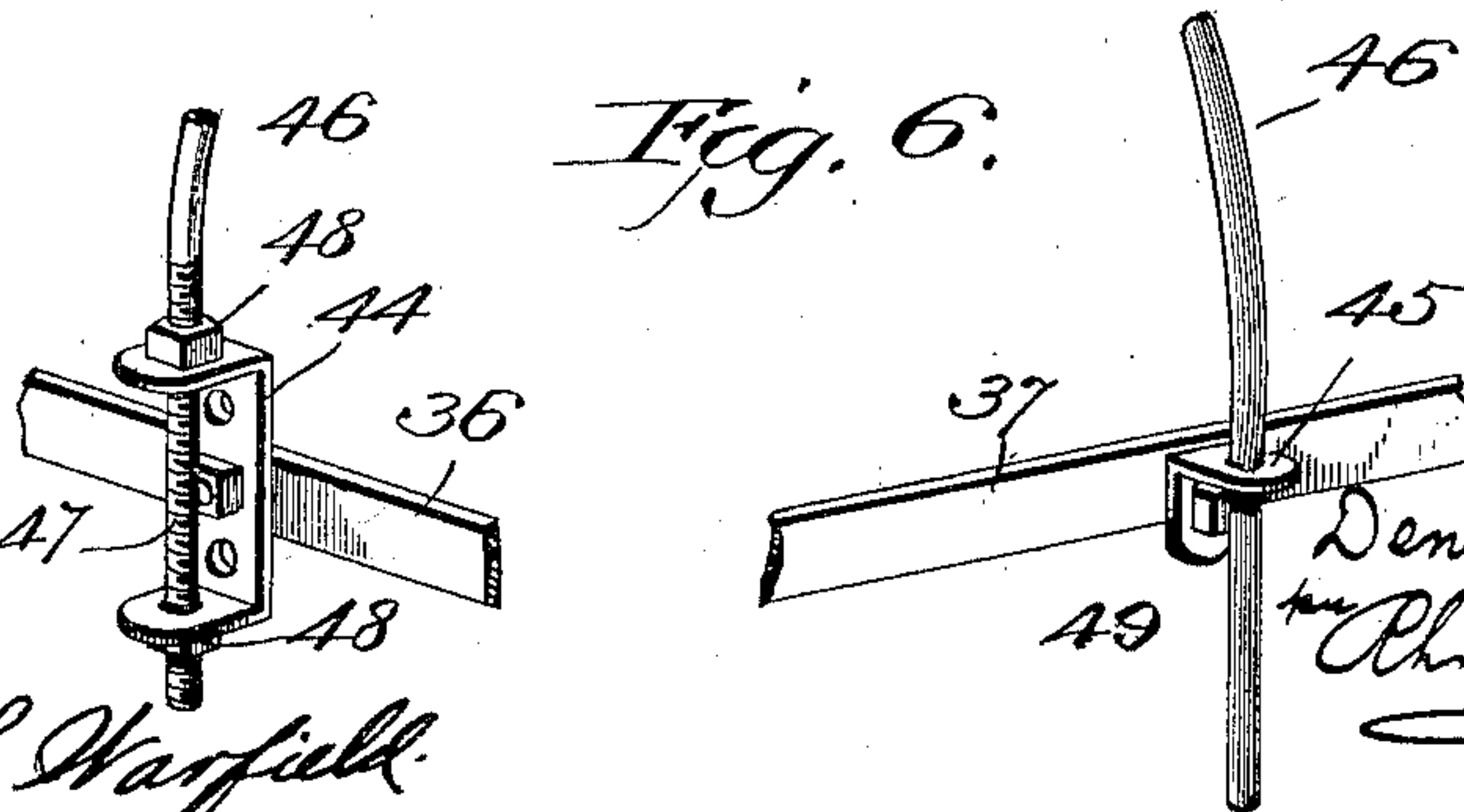


Fig. 6.



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4 Sheets—Sheet 4.

Fig. 7.

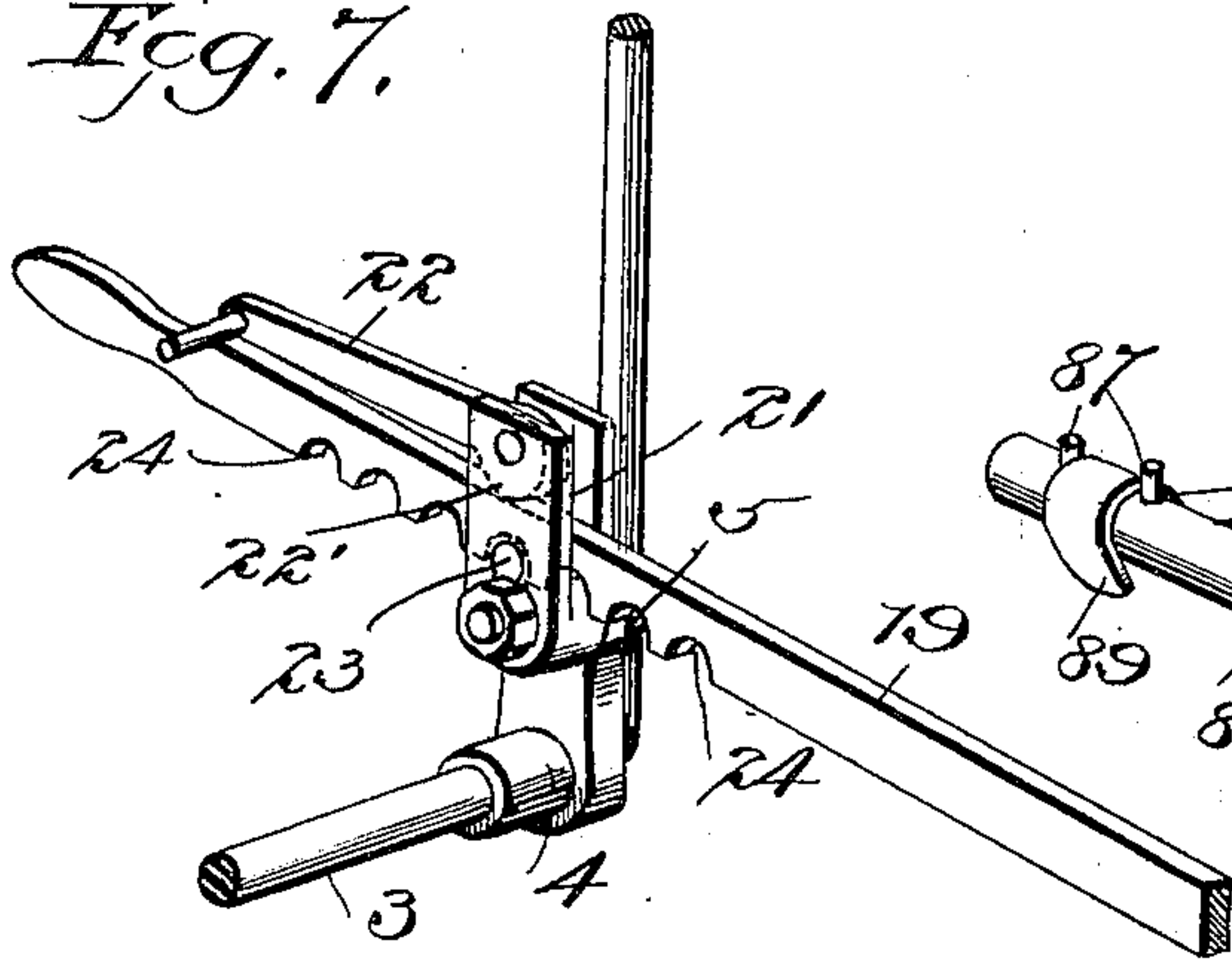


Fig. 8.

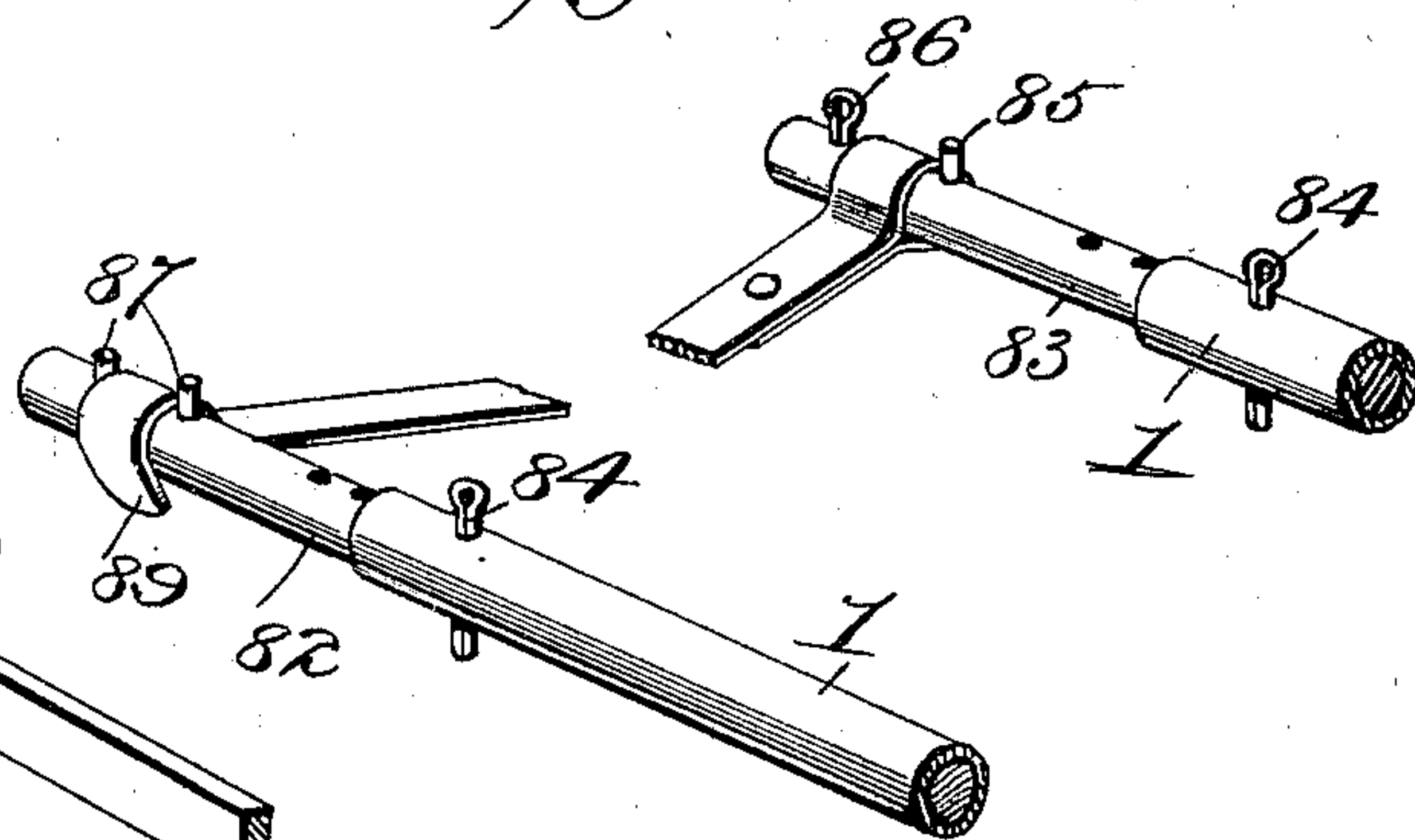


Fig. 9.

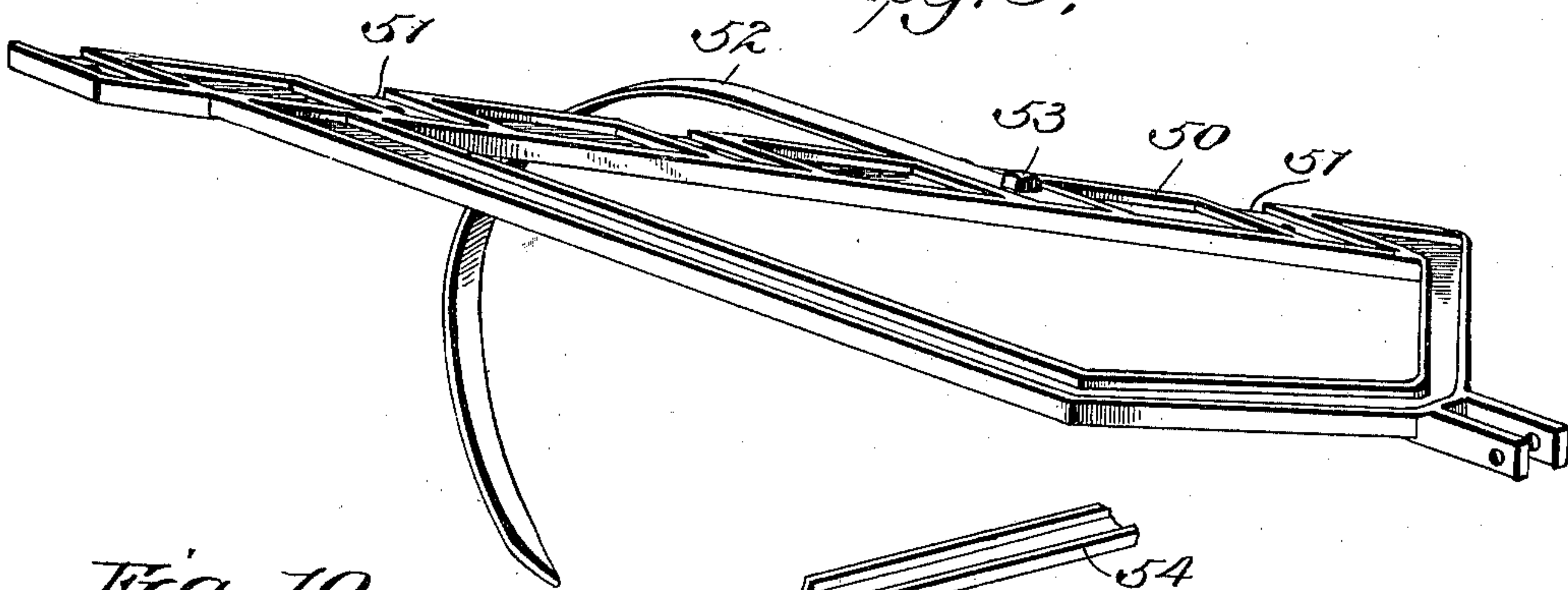


Fig. 10.

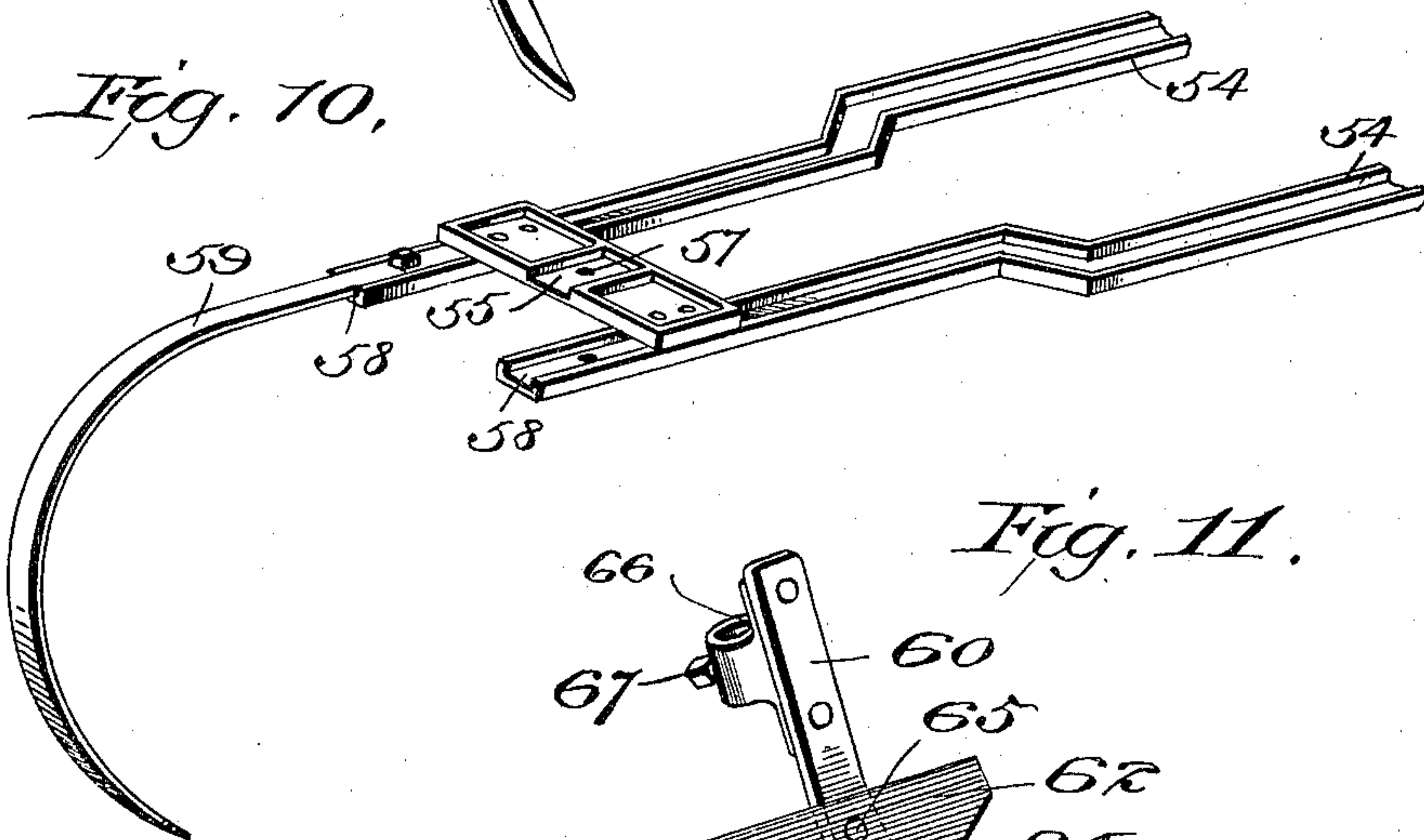
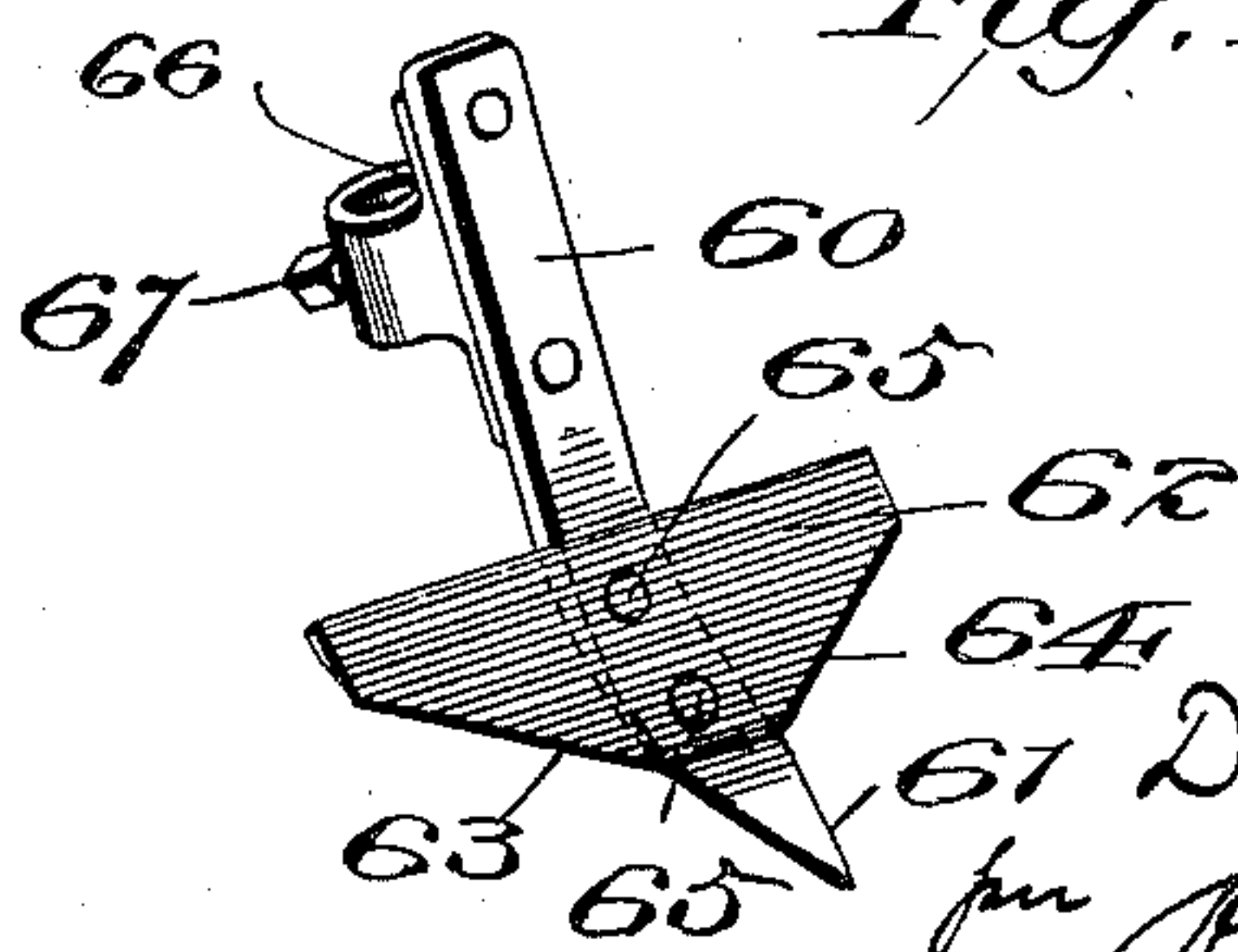


Fig. 11.



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UNITED STATES PATENT OFFICE.

DENNIS S. BLUE, OF FREMONT, OHIO.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 628,745, dated July 11, 1899.

Application filed January 8, 1898. Serial No. 666,085. (No model.)

To all whom it may concern:

Be it known that I, DENNIS S. BLUE, a citizen of the United States, residing at Fremont, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Cultivators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My object is to improve upon the cultivators shown and described in United States Letters Patent No. 356,094, issued January 18, 1887, and No. 382,945, issued May 15, 1888, both granted to one Halter and myself jointly, and provide a cultivator which will be adapted to perform its functions in a highly-superior manner.

The invention consists of a cultivator comprising certain improved features and novel combinations of parts appearing more fully hereinafter.

In the accompanying drawings, Figure 1 is a front perspective view of the cultivator; Fig. 2, a plan view showing the shovel-gangs inclined and the shifting rod in position; Fig. 3, a detail view of the connections between the shifting frame and one of the shovel-gangs; Fig. 4, a detail view showing the adjustable parts of the shifting frame; Fig. 5, a detail view of one of the shifting levers and parts coacting therewith; Fig. 6, detail views of the connections between the connecting arch or frame and the shovel-gangs; Fig. 7, a detail view of a modified adjustable connection for the brace which connects the auxiliary frame to the main axle; Fig. 8, a detail view of the detachable connection between the main frame and the seat-support; Fig. 9, a detail perspective view of a spring-tooth gang adapted for use in connection with the cultivator; Fig. 10, a similar view as Fig. 9, showing a center spring-tooth gang; and Fig. 11 is a detail view of an improved shovel.

The main frame 1 consists of a single U-shaped tubular piece having its legs pointed rearwardly. A main axle 2 bridges the main frame, and the depending portions thereof have spindles 3, which are incased by boxes

4, connected to the depending portions by eyebolts 5, and these boxes are mounted in traction-wheels 6. The axle is connected to the legs of the main frame by staples 7 passing through the frame and in which the axle can be turned when desirable. Clamp-plates 8, fitting against the under portions of the main frame and secured thereto by the staples 7, have slotted guides 9, through which the depending portions of the axle pass. These guides, while preventing spreading of the depending portions of the axle when a heavy driver is operating the machine, permit a limited front or rear movement of the depending portions of the axle when it is necessary to balance the machine. A draft-tongue 10 rests on the front portion of the main frame and has its rear end connected to the axle by boxes 11, which are themselves connected by a cross-piece 12, having a depending eye 13. An auxiliary frame 14, having horizontal guide-rods 15 located below the tongue, straddles the latter and is connected thereto by staples 16, which also connect the tongue to the front portion of the main frame. Divergent braces 17 connect the tongue to the ends of the respective guide-rods 15. The auxiliary frame is braced from the other side by braces 18, which are fastened by the staples 7. Adjusting-braces 19, connected to the ends of guide-rods 15, have perforations 20 in their upper portions, which are adapted to receive the shanks of the eyebolt 5. Provision is thus made for rearward or forward adjustment of the depending portions of the axle, so that the machine can be balanced according to the weight of the driver.

In Fig. 7 I have shown a modified adjustable connection which can be employed in place of that just described. The box 4 and eyebolt 5 are employed as before, and a plate 21 is also used, it being secured by the eyebolt. The numeral 22 represents a locking-lever, which is pivoted between the plate 21 and the upper extension of the box, it being provided with a locking projection 22', and below this lever is a locking stud or pin 23. The upper end of the adjusting-brace 19 has notches 24 instead of perforations and is received between the stud 23 and locking projection 22'. When the lever is swung down in one direction, its locking projection en-

gages the adjusting-rod and causes one notch thereof to receive the stud or pin and when moved in the opposite direction releases said adjusting-rod.

5 At the front of the machine is a shifting frame of inverted-U shape composed of the sections 24 and 25, having overlapping portions, one of which has a plurality of openings 26 and the other a single opening 27. A
10 connecting-rod 28 is secured to the overlapping sections by a single bolt 29, which passes through opening 27 and one opening of the series 26, and this connecting-rod is operatively connected to improved shifting levers,
15 as will be described later on. Means are thus provided for adjusting the size of the shifting frame to suit the requirements of the occasion. The connecting-rod has an eye 28'. The lower ends of the legs of the shifting
20 frame have shoulders 30, which are located adjacent to the guide-rods of the auxiliary frame.

The numerals 31 designate clevises, which loosely straddle the guide-rods aforesaid and
25 through which the legs of the shifting frame pass, the upper halves of the clevises bearing against the shoulders 30, while nuts 32 abut against the lower members of said clevises. Grooved rollers 33 are journaled on the legs
30 of the shifting frame between the members of the respective clevises and are adapted to travel on the guide-rods of the auxiliary frame. Each clevis has a vertical link 34, provided with a series of perforations 35. The
35 side shovel-gangs 36 and 37 have broad shovels 38, which are disposed in oblique arrangement, as usual. There is a center shovel-frame 39, having a single shovel 38', used for general cultivating. The side gangs have bi-
40 furcated portions 40, which straddle the links of the clevises, and bolts 41 pass loosely through these bifurcated portions and the perforations in the links and also the divergent ends of the center frame. Provision is
45 thus made for any desired adjustment. This center frame has a stirrup 42, which embraces side gang 36, so that it will be adapted to rise and fall with this gang only. Both of the side gangs have the usual stirrups 43 for the
50 driver's feet. A U-shaped member 44 is connected to the gang 36, and a perforated member 45 is secured to gang 37.

A connecting arch or frame 46 is employed for holding the gangs at the proper distance
55 apart, and it has a threaded end 47, which passes through member 44 and is secured by upper and lower nuts 48, while the other end 49 passes loosely through member 45. This connection, while maintaining the shovel-
60 gangs at a proper distance apart, permits independent up-and-down movement thereof.

Fig. 9 discloses a spring-tooth gang adapted to be substituted for the side gangs heretofore described. The frame has an inclined
65 portion 50, provided with integral open boxes or holders 51, which receive the upper ends of the spring-teeth 52, the latter being se-

cured by bolts 53. The gang has the bifurcated portion at its front end, so that it can be pivotally attached to the link of the clevis. 70

In Fig. 10 there is shown a center spring-tooth gang, the frame of which has divergent portions 54 adapted to be secured to the links of the clevises, the same as the center gang heretofore described, and provided with a
75 cross-piece having an integral box or holder 55, which receives a spring-tooth to be bolted thereto at 57. The side portions of the frame have boxes 58, which hold spring-teeth 59, connected thereto by bolts. 80

In Fig. 11 I have shown an improved shovel adapted for use in connection with my cultivator in shallow cultivating. The numeral
60 designates a standard which is curved at its lower end and terminates in a point 61. 85 The curved blade 62 is of triangular form, having sharp inclined or converging lower edges 63 and 64, and it is sunk flush in the face of the curved portion of the standard, two bolts 65 detachably connecting it thereto. 90
At the back of the upper portion of the standard is a loop 66 and set-screw 67, the former being adapted to receive the foot of the cultivator and the latter to secure the loop
95 thereto. The point of the standard draws in the ground and the blade runs shallow underneath the surface, cutting weeds, &c., in a shearing manner, which is highly satisfactory, as clogging and choking are prevented. On
100 opposite sides of the tongue are upwardly-extending forwardly-inclined yokes 68 and 69, substantially A-shaped, their legs being connected to the clamp-plates 8 and boxes 11. Toothed segments 70 and 71 are employed,
105 which have trunnions 72 journaled in the apex and cross-piece of the yokes. There are duplicate shifting levers 73 and 74, which are bifurcated and straddle the respective segments, being pivoted thereto on bolts 75, so
110 that they can be moved up or down and yet turn laterally with the segments. Spring-actuated retractable locking mechanism 76 is employed on each lever for securing the same to the teeth of the segment. Split or spread
115 shifting rods 77 and 78 are pivotally connected to the ends of the connecting-rods 28 and 79 and are pivoted to the segments on the bolts 75. Chains 80 and spring-tension devices 81 connect the forward ends of the shifting levers to the shovel-gangs, said chains
120 passing freely through the spread portions of the said levers. Telescopic sections 82 and 83 are fitted into the open tubular legs of the main frame, being secured thereto by spring-cotters 84, adapted to be passed through any
125 of the openings which are made in the said telescopic sections. The section 83 has a stud 85 and a spring-cotter 86, while section 82 has two studs 87. The seat 88 and springs and links are the same as previously employed, 130
with the exception that a hook 89 is employed in the place of a permanent connection, and this hook fits over the section 82 between the studs 87 thereof. With this arrangement the

driver can readily detach the hook, so that he can walk in between the legs of the main frame, and after replacing the hook easily get into the seat.

5 It is frequently desirable to operate the shovel-gangs when walking along back of the machine, and I therefore provide a detachable shifting rod or handle 90, which has a reduced end adapted to fit into eye 28' after
10 the said rod has been passed through eye 13. The operator walking along behind the machine can conveniently grasp the rear end of this rod and guide the shovel-gangs from side to side, as desirable. The driver by moving
15 either segment-lever laterally turns the segment to which it is connected and actuates the shifting rods, which cause the shifting frame to be moved laterally, thereby inclining the shovel-gangs, the grooved rollers running on
20 the guide-rods and diminishing the friction at these points. The shovels can therefore be guided in and out around the plants with great ease. If the operator is walking, the detachable shifting handle is employed. If
25 it is desired to raise or lower one of the shovel-gangs independently of the other, the shifting lever for that gang can be raised or lowered, as the case may be, the sliding connection of the connecting-arch permitting this
30 movement. The spring-tension devices compensate for inequalities in the ground and keep the shovel-gangs yieldingly at work. As heretofore described, the main axle can be adjusted so that proper balancing of the machine may be had. Adjustment of the shifting
35 frame, as well as of various other parts of the machine, can be had without difficulty, so that the cultivator will be adapted to perform its offices in the most satisfactory manner.

40 Many slight changes can be resorted to in constructing the invention, and I do not therefore limit myself to the precise construction herein described, but consider myself entitled to all such changes as come within the scope
45 and spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

50 1. In a cultivator, the combination with a main frame, of an auxiliary frame having horizontal guide-rods at its lower end, braces connecting the auxiliary frame to the main frame, a main axle having depending portions and adjusting-braces connecting the
55 guide-rods of the auxiliary frame adjustably with the main axle.

2. In a cultivator, the combination with an auxiliary frame having guide-rods, of a shifting frame having legs provided with collars,
60 clevises straddling the guide-rods and through which the legs aforesaid pass, one member of the clevises abutting on the collars, nuts for retaining the other members of the clevises, grooved pulleys journaled on the legs and located between the members of the clevises
65 and bearing on the guide-rods, cultivator-gangs pivoted to the clevises so as to be ca-

pable of up-and-down movement, means for raising and lowering the gangs, and means for moving the shifting frame, whereby the
70 gangs can be simultaneously shifted laterally, substantially as described.

3. In a cultivator, the combination with a main frame, of an auxiliary frame having horizontal guide-rods at its lower end, braces
75 connecting the auxiliary frame to the main frame, a main axle having depending portions, adjusting-braces connecting the guide-rods of the auxiliary frame adjustably with the main axle and cultivator-gangs having
80 sliding pivotal connection with the horizontal guide-rods.

4. In a cultivator, the combination with a shifting frame, composed of two sections having overlapping portions, one of which has a
85 plurality of openings, and the other a single opening, of a connecting-rod, a bolt passing through the connecting-rod and the openings aforesaid, cultivator-gangs having a compound pivotal connection with the sections of
90 the shifting frame, and shifting mechanism operatively connected to the connecting-rod, substantially as described.

5. In a cultivator, the combination with a shifting frame, of cultivator-gangs pivotally
95 connected thereto so as to be capable of vertical movement, and independent shifting devices operatively connected to the respective gangs and adapted for raising and lowering them, and also operatively connected
100 to the shifting frame so that the latter can be moved laterally by either of them.

6. In a cultivator, the combination with a shifting frame adapted for lateral movement, of cultivator-gangs pivoted thereto so as to be
105 capable of vertical movement, pivoted members, shifting levers pivoted to said members, operative connections between the levers and the respective gangs whereby either gang may be raised or lowered independently of the
110 other, and operative connections between the shifting frame and the pivoted members, whereby movement of the latter causes a lateral movement of the gangs, substantially as described.
115

7. In a cultivator, the combination with a shifting frame adapted for lateral movement, of cultivator-gangs pivotally connected thereto, pivoted toothed segments adapted to swing
120 laterally, shifting levers pivoted to said segments and having retractable locking mechanism to engage the teeth thereof, connections between said levers and the respective gangs, and shifting rods pivoted to the segments and the shifting frame, substantially as described.
125

8. In a cultivator, the combination with a main frame, of an auxiliary frame having horizontal guide-rods at its lower end, braces
130 connecting the auxiliary frame to the main frame, a main axle having depending portions, adjusting-braces connecting the guide-rods of the auxiliary frame adjustably with the main axle and cultivator-gangs having sliding pivotal connection with the horizontal

guide-rods, the forward ends of said cultivator-gangs adjustably connected together.

9. In a cultivator, the combination with a main frame, of an auxiliary frame having horizontal guide-rods at its lower end, braces connecting the auxiliary frame to the main frame, a main axle having depending portions, adjusting-braces connecting the guide-rods of the auxiliary frame adjustably with the main axle and cultivator-gangs having sliding pivotal connection with the horizontal guide-rods, the forward ends of said cultivator-gangs adjustably connected together, and a connecting arch or frame for holding the rear ends of the cultivator-gangs apart and admitting of independent vertical movement with respect to each other.

10. In a cultivator, the combination with a main frame and axle having pivotal connection therewith, the axle having depending portions, of an auxiliary frame terminating at the lower end in horizontal guide-rods, braces extending from the guide-rods to the main frame, adjusting-braces connecting the horizontal guide-rods with the axle, cultivator-gangs having sliding pivotal connection with said horizontal guide-rods, means for holding said gangs apart at their forward and rear ends respectively and admitting of independent vertical movement at their rear ends and hand-levers for raising and lowering said gangs, and for swinging them laterally.

11. In a cultivator, the combination with a main frame, an axle having pivotal connection therewith, the axle having depending portions, of an auxiliary frame terminating at the lower end in horizontal guide-rods, braces extending from the guide-rods to the main frame, adjusting-braces connecting the horizontal guide-rods with the axle, cultivator-gangs having sliding pivotal connection with said horizontal guide-rods, means for holding said gangs apart at their forward and rear ends respectively and admitting of independent vertical movement at their rear ends, and hand-levers having vertical and horizontal pivotal connection with the main frame and connected with the cultivator-gangs for raising and lowering said gangs and for swinging them laterally.

12. The combination with a main frame, an axle having depending portions, wheels in which the axle bears and an auxiliary frame connected with the main frame and provided at its lower ends with horizontal guide-rods to the main frame, adjusting-braces connecting the horizontal guide-rods to the depending braces of the axle, of cultivator-gangs connected together at their forward and rear ends and having sliding pivotal connection with the horizontal guide-rods, and levers having vertical and horizontal pivotal connection with the main frame, and spring-tension devices connecting these levers with the cultivator-gangs.

13. In a cultivator, the combination with a main frame, of clamp-plates fitted against the said frame and provided with slotted extensions, staples passing through the main frame and the clamp-plates, an axle loosely fitted in the staples and provided with depending portions that lie in the slotted extensions, traction-wheels in which the depending ends of the axle are mounted and braces for the axle.

14. In a cultivator, a shovel comprising a standard having a curved and pointed lower end, a blade sunk flush in the end of the standard whose upper portion is of considerably greater width than said standard and which has lower sharpened edges converging toward the point of the standard, and a loop and fastener for connecting the standard to the foot of the cultivator.

15. In a cultivator, the combination with sideshovel-gangs adapted for independent up-and-down movement, and means for raising and lowering said gangs independently, of a pivoted center shovel-carrying frame also adapted for up-and-down movement and provided with a device adapted to engage one of the gangs so that said frame will move with the gang to which it is attached, substantially as described.

In witness whereof I affix my signature in presence of two witnesses.

DENNIS S. BLUE.

Witnesses:

DAN BUNNELL,
SAUL SLAME.