

No. 788,233.

PATENTED APR. 25, 1905.

S. L. ALLEN.
CULTIVATOR.

APPLICATION FILED JULY 5, 1901.

5 SHEETS—SHEET 1.

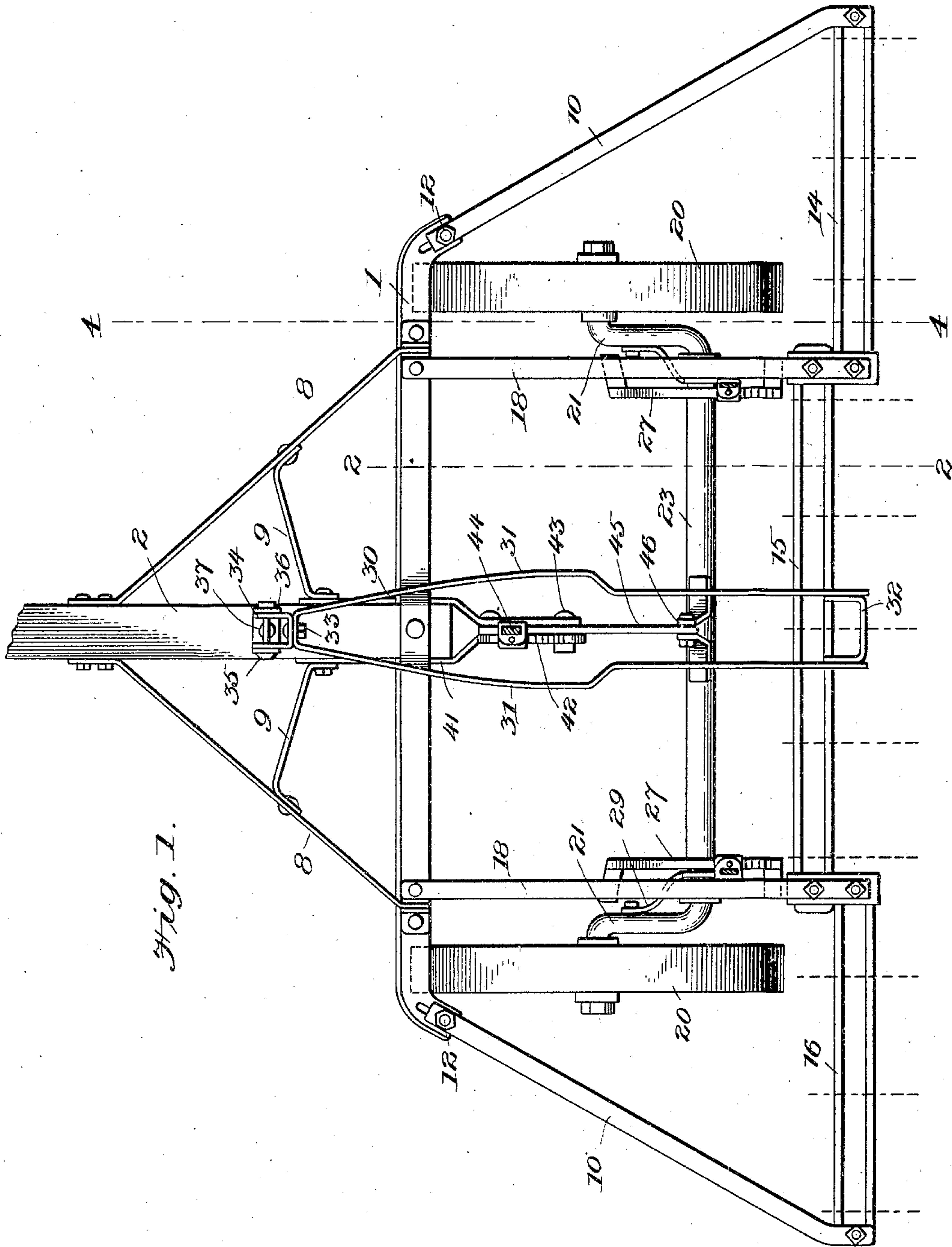


Fig. 1.

Witnesses.

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Inventor,

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by *Horace Pettit*
his Attorney.

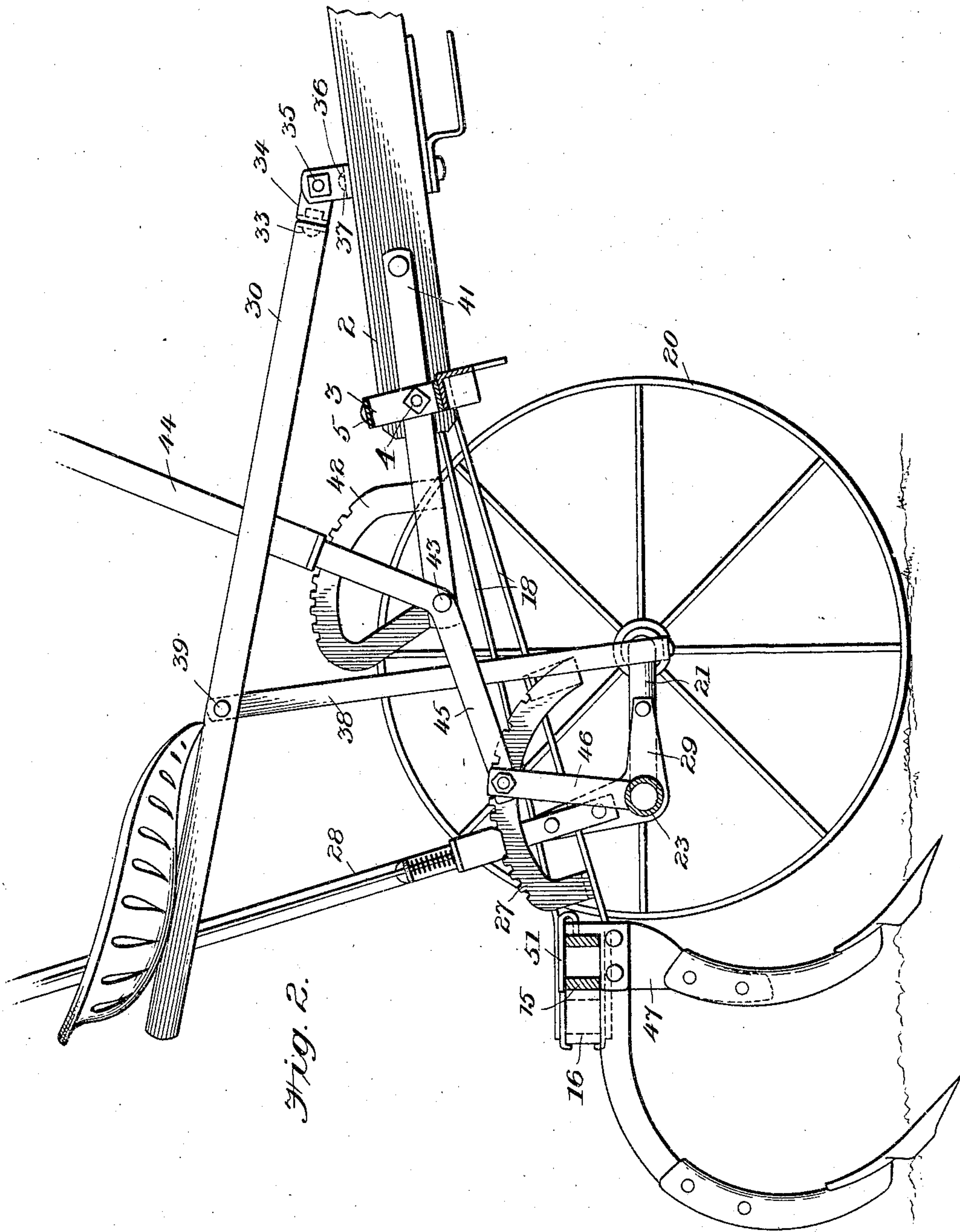
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5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

Fig. 3.

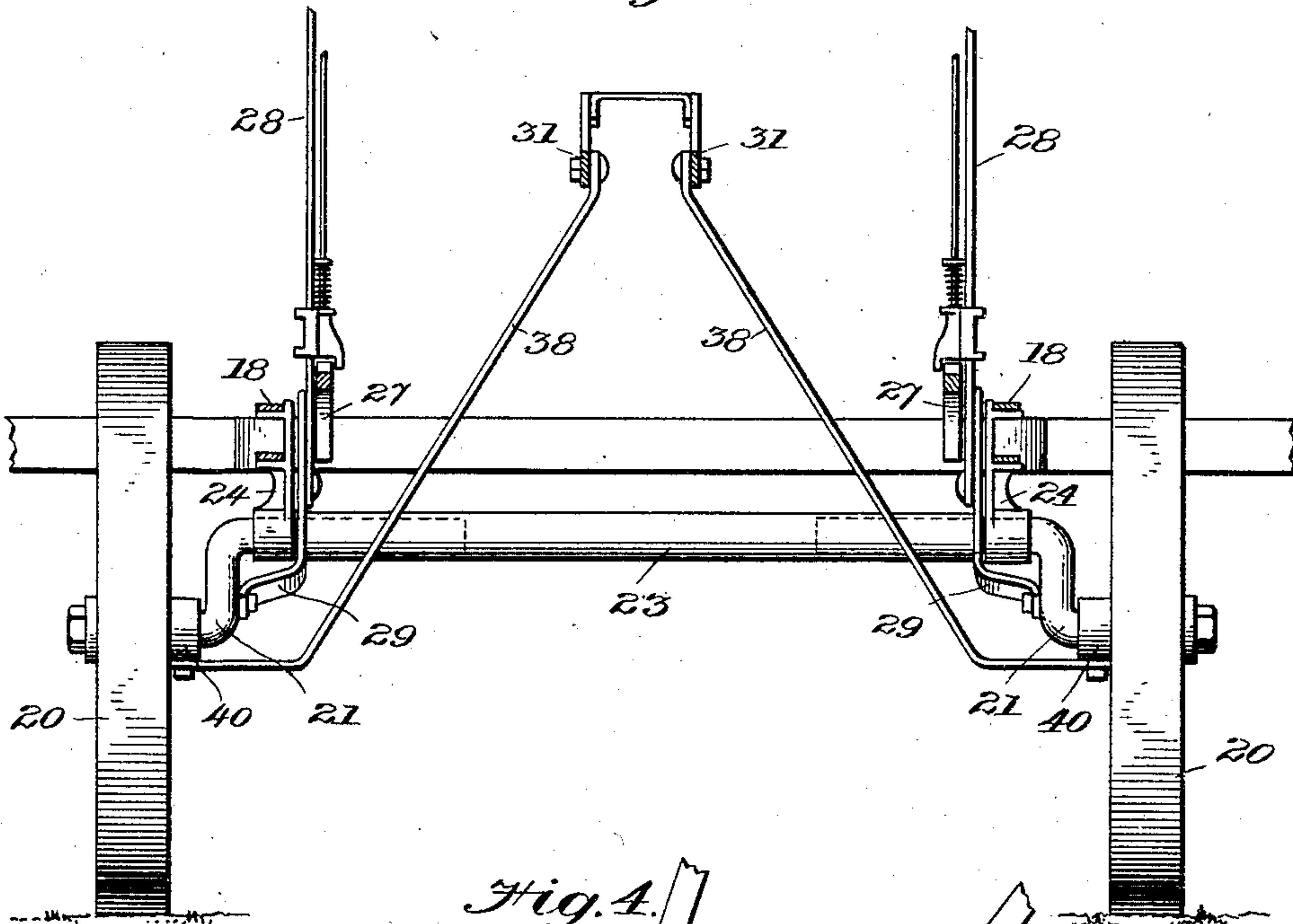
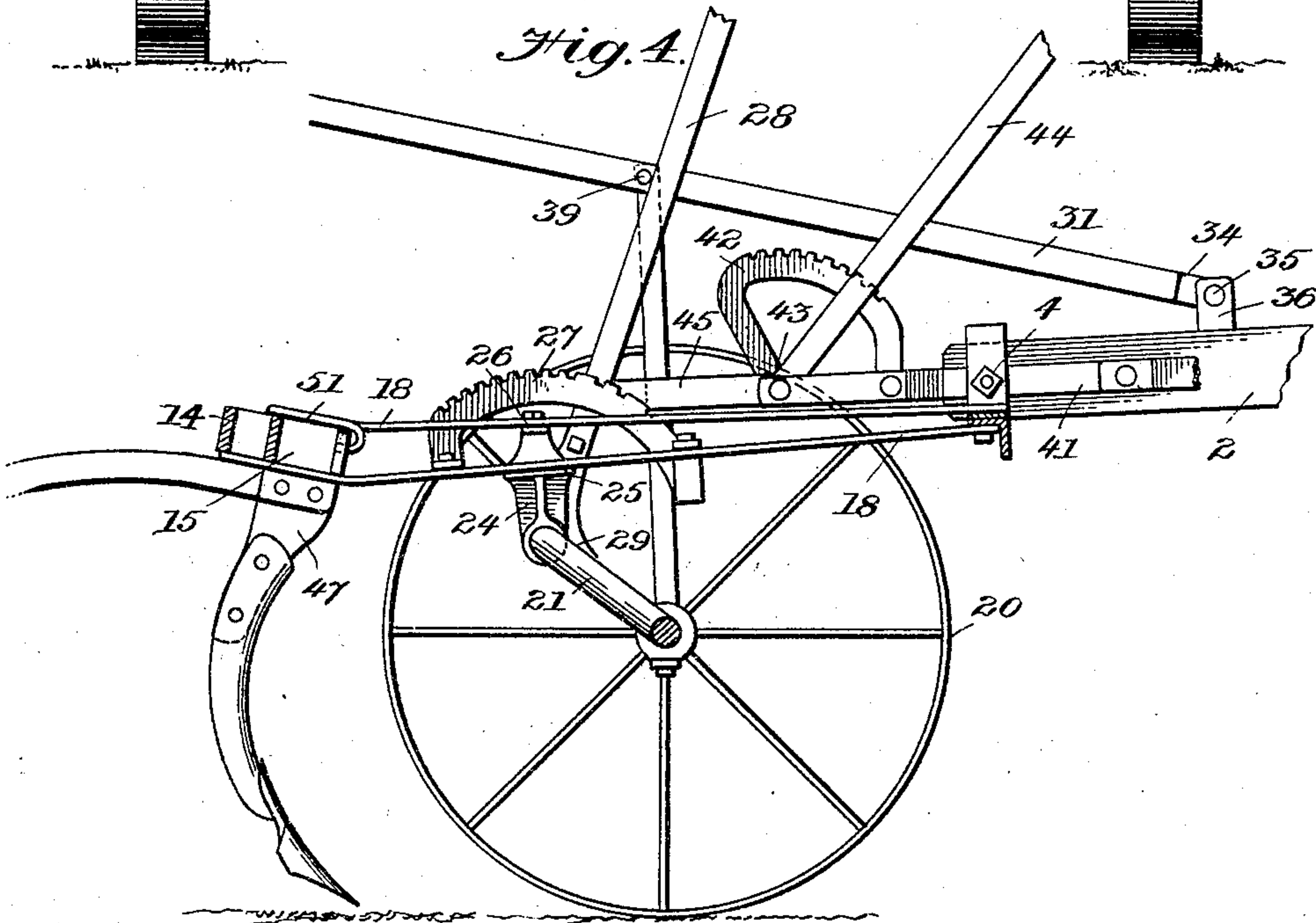


Fig. 4.



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6 SHEETS—SHEET 4.

Fig. 5.

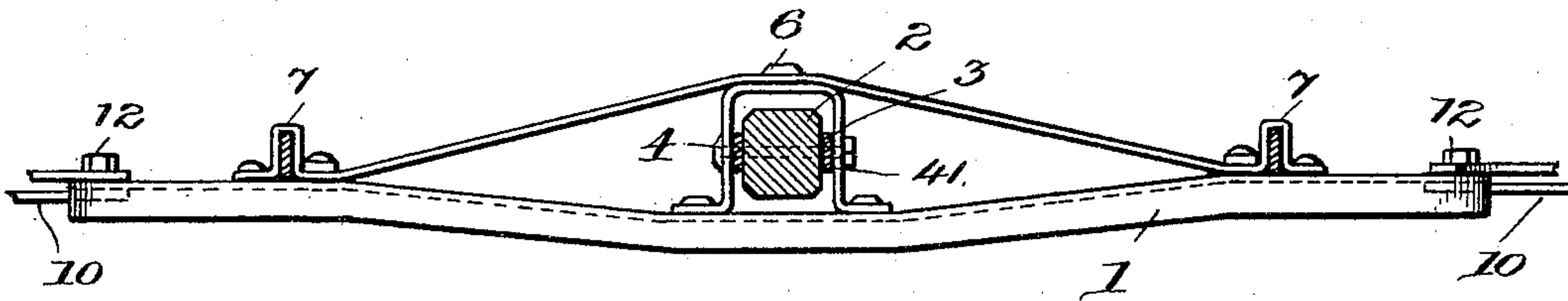


Fig. 6.

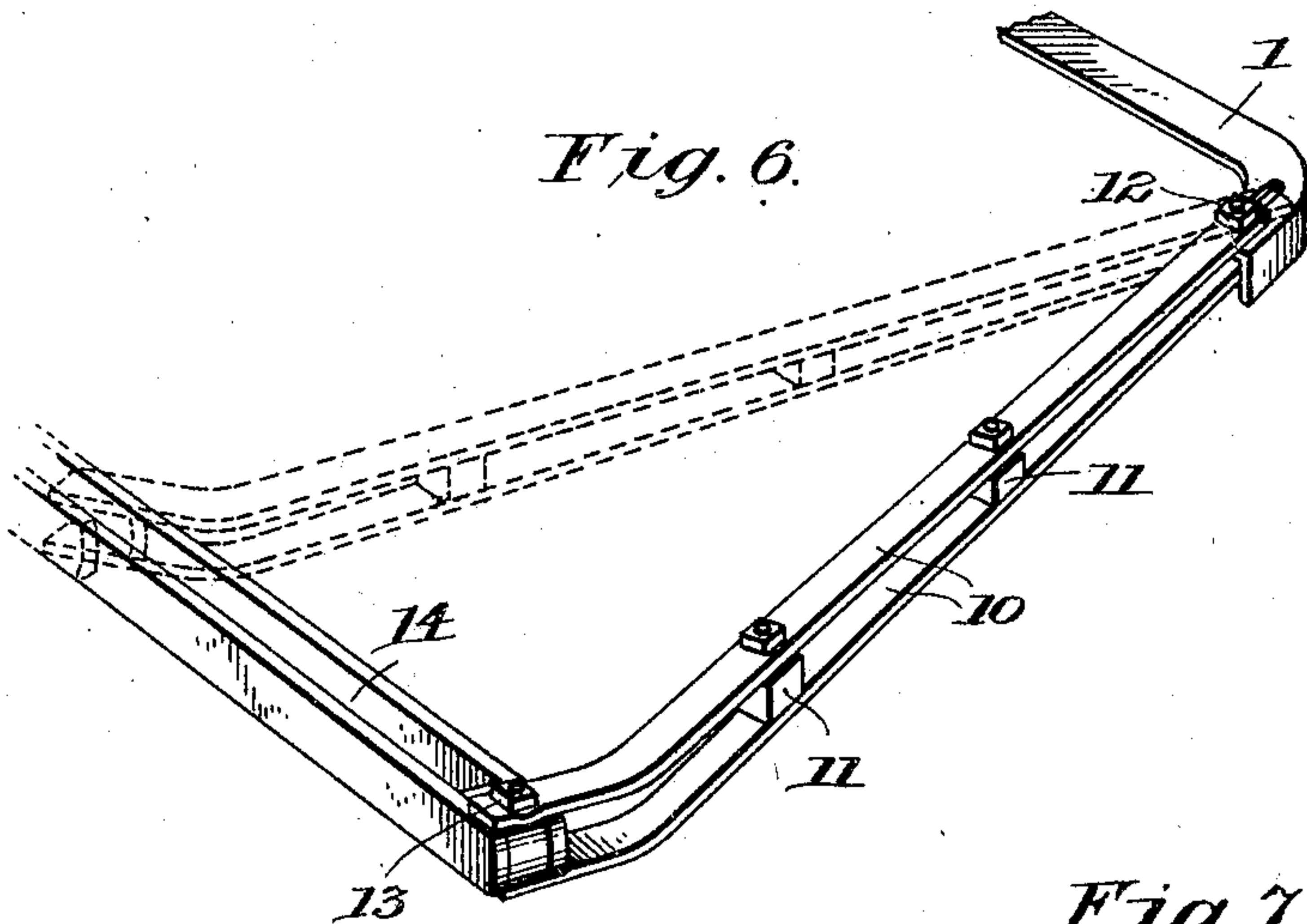
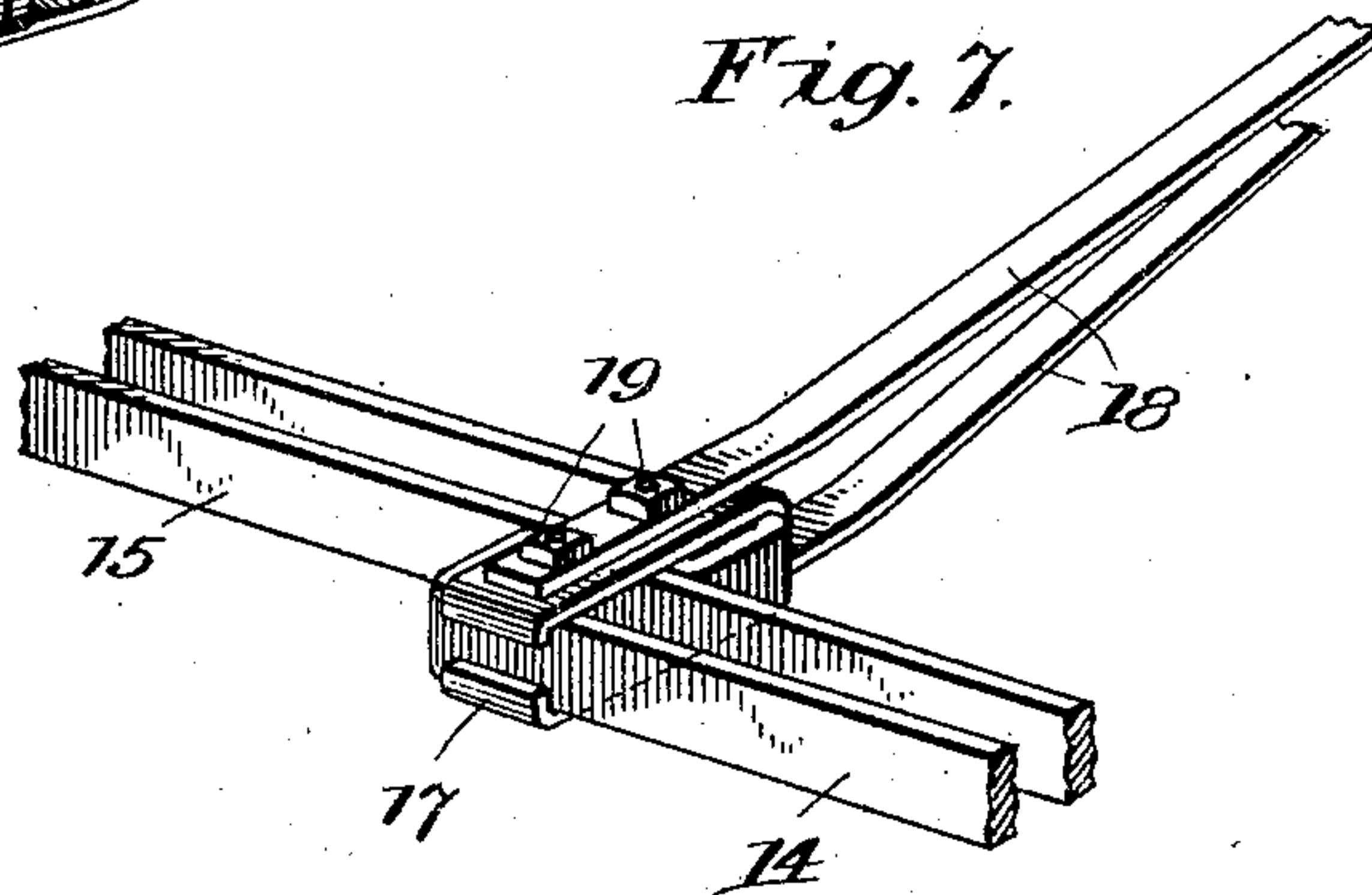


Fig. 7.



Witnesses:

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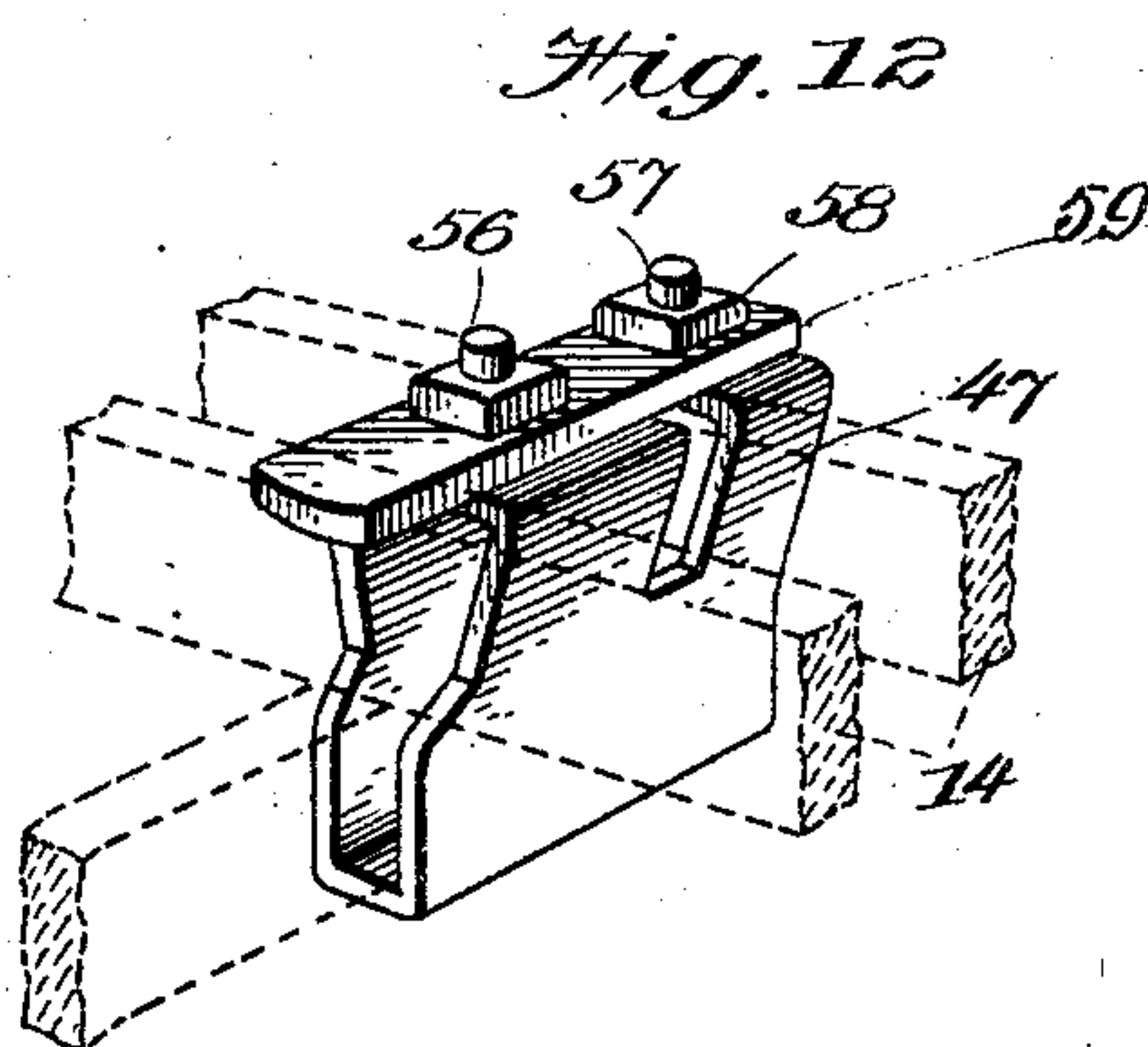
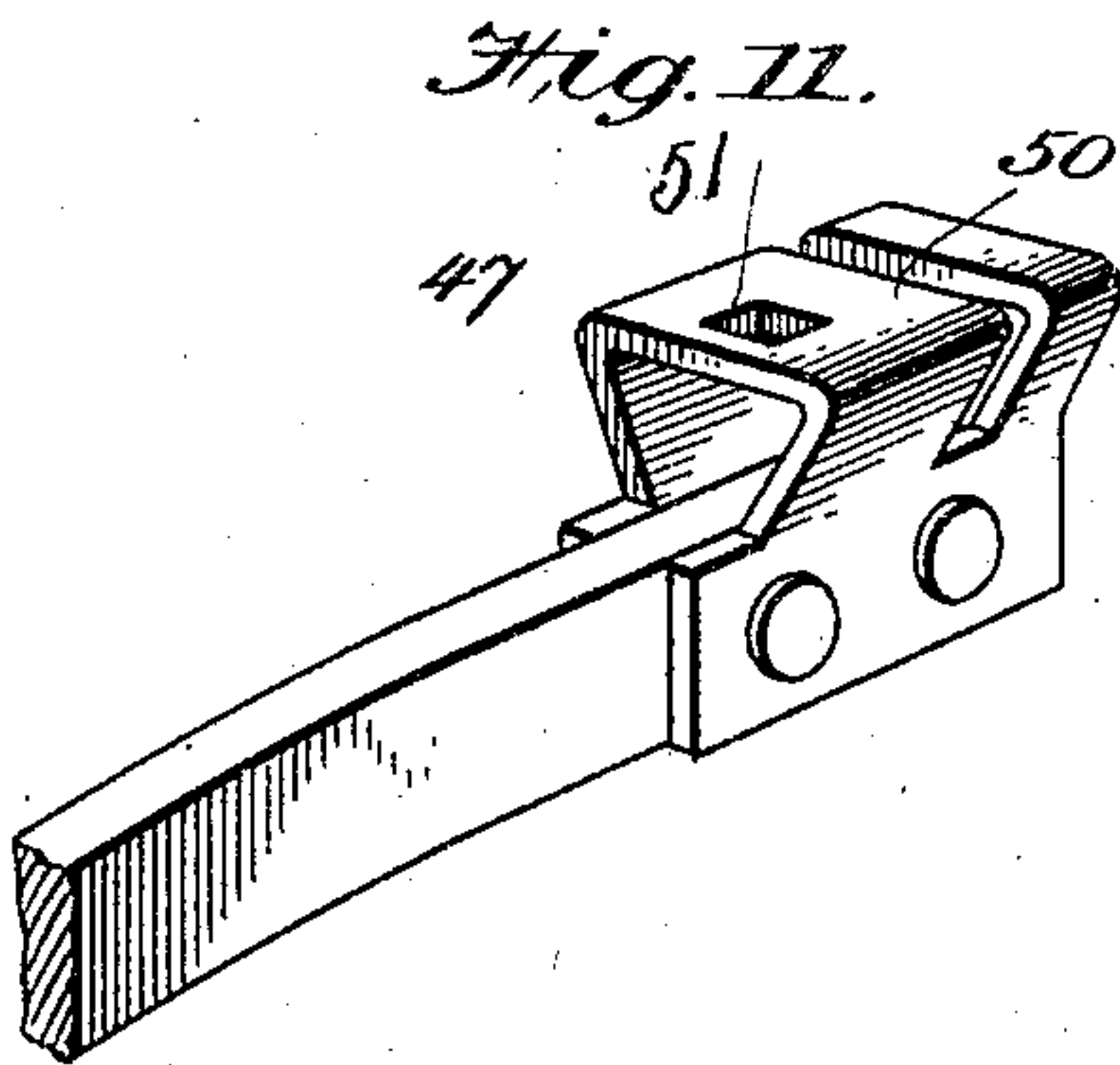
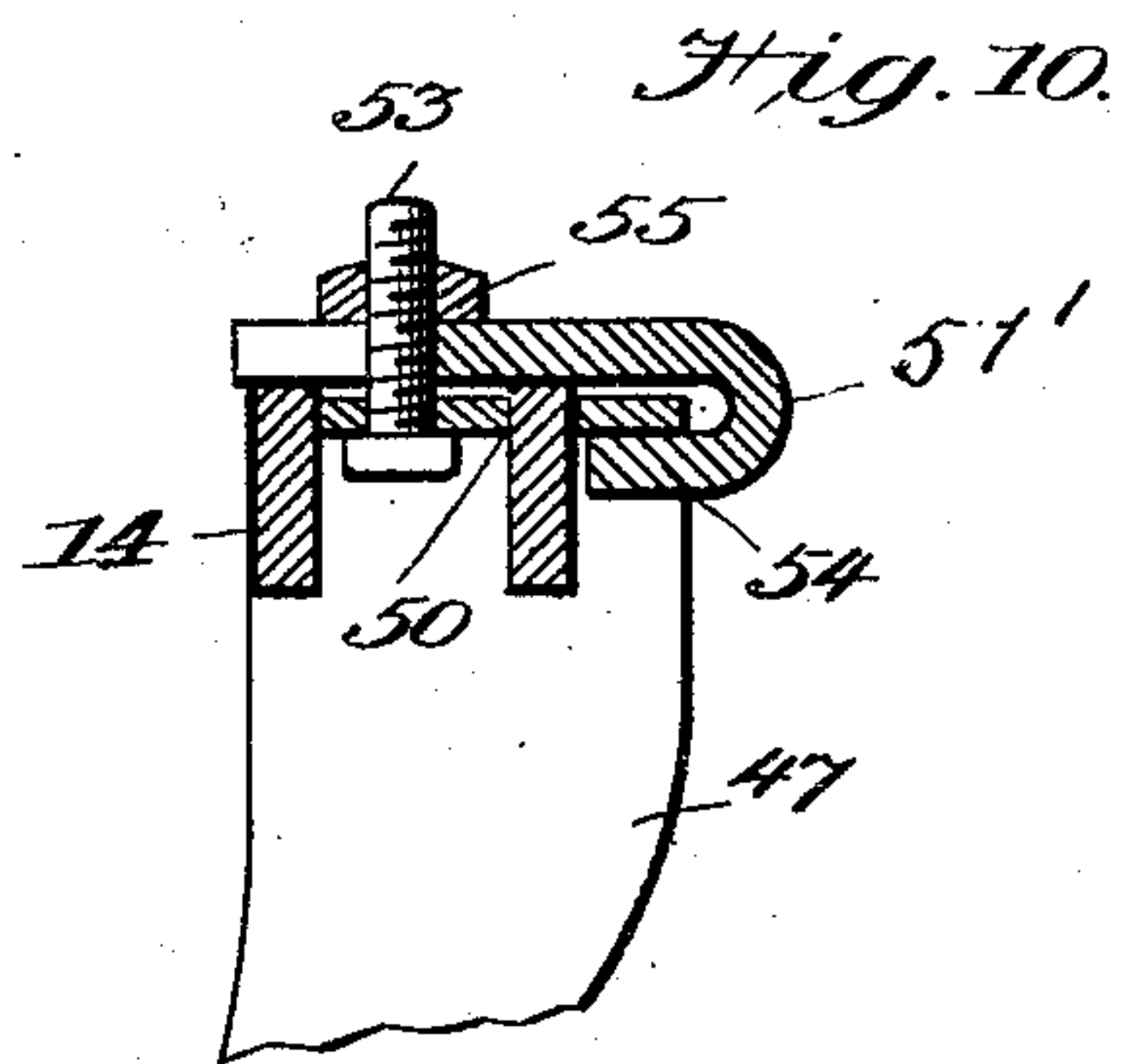
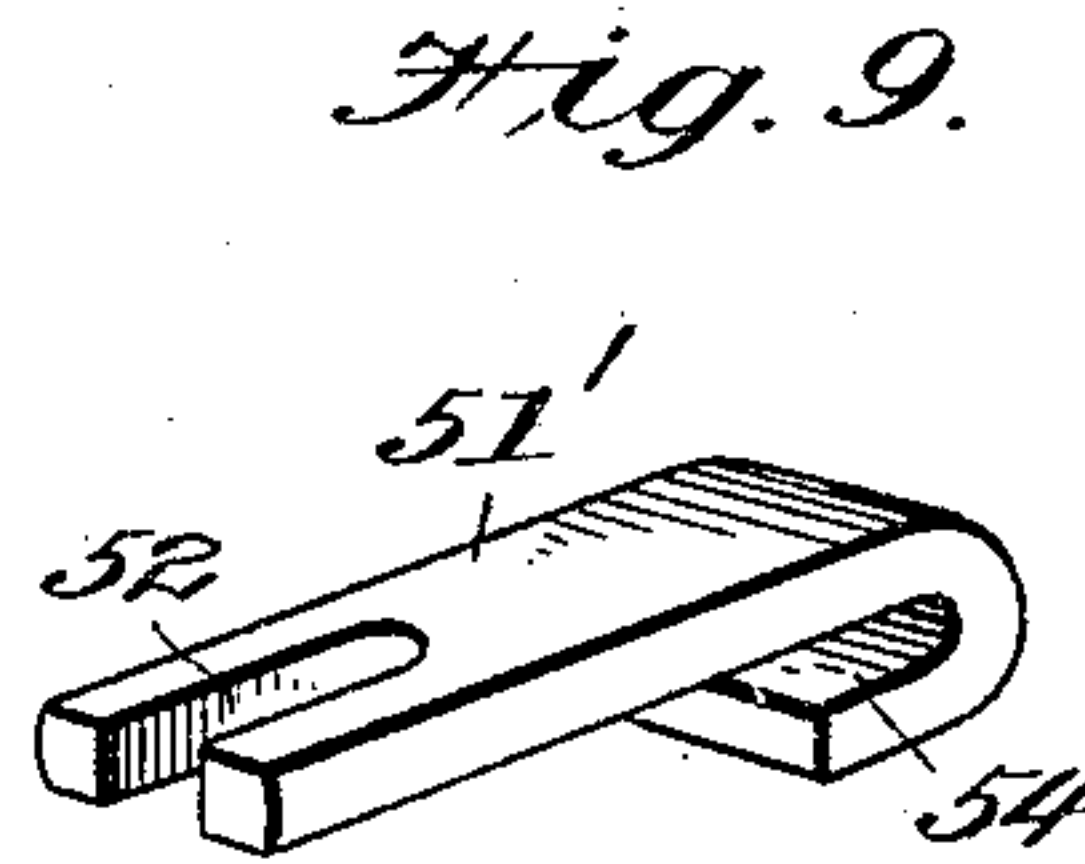
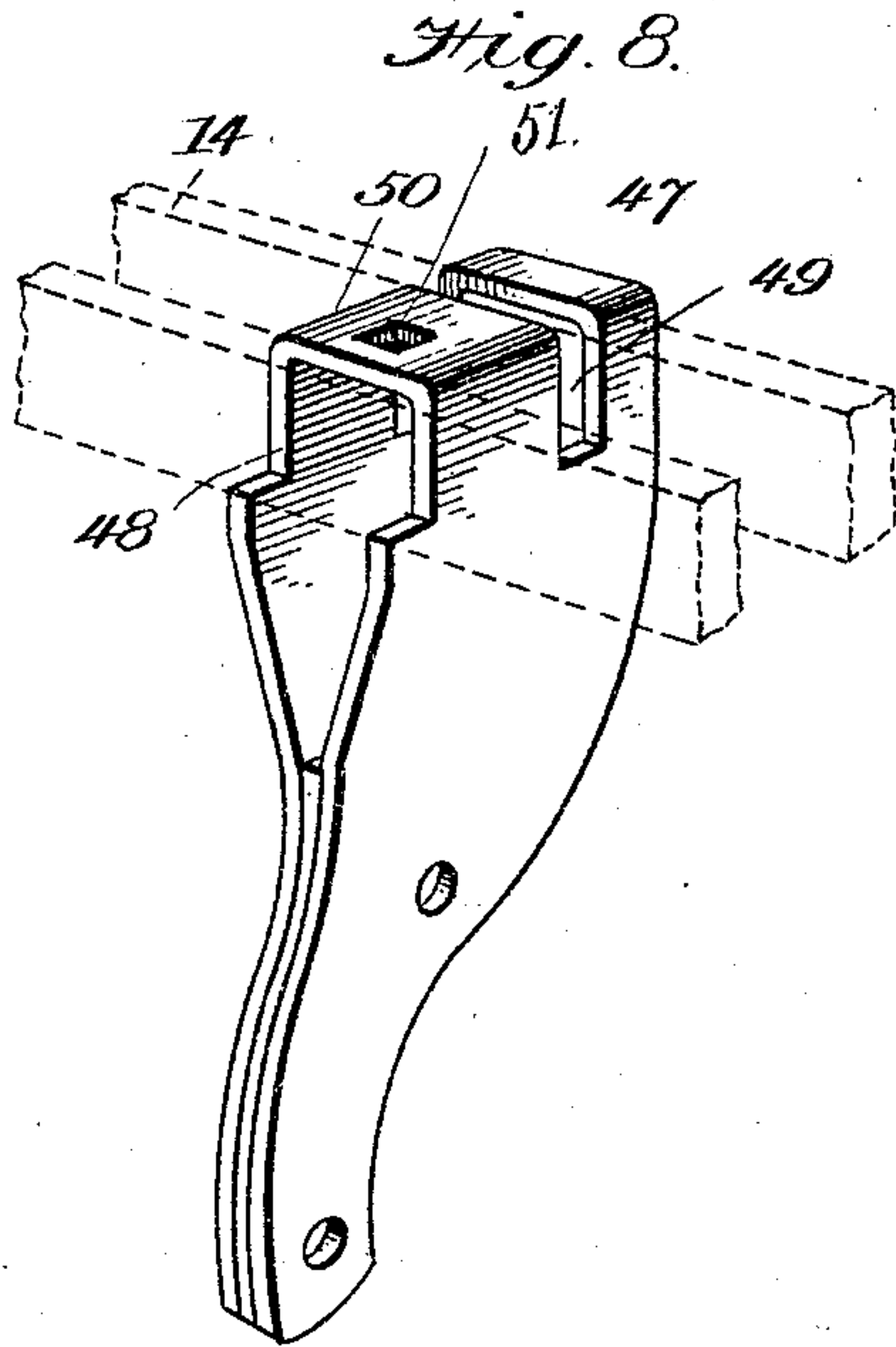
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UNITED STATES PATENT OFFICE.

SAMUEL L. ALLEN, OF MOORESTOWN, NEW JERSEY.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 788,233, dated April 25, 1905.

Application filed July 5, 1901. Serial No. 67,135.

To all whom it may concern:

Be it known that I, SAMUEL L. ALLEN, a citizen of the United States, and a resident of Moorestown, State of New Jersey, 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.

This invention relates to certain improvements in cultivators, and particularly to that class known as "riding-cultivators," by which a number of rows are worked at one time.

The main object of this invention is to generally improve and simplify the construction of machines of this character and to increase their efficiency and utility in various ways, such as hereinafter fully set forth.

The various other objects, uses, and advantages will be readily apparent by reference to the description and accompanying drawings, which form part of this specification.

Referring to the said drawings, Figure 1 is a plan view of a machine constructed in accordance with my invention, the cultivating-tools being removed from the tool-carrying frame. Fig. 2 is a sectional elevation taken about on the line 2 2 of Fig. 1. Fig. 3 is a front view, partly in section, illustrating the seat-supporting frame. Fig. 4 is a sectional elevation taken about on the line 4 4 of Fig. 1. Fig. 5 is a front elevation of the forward portion of the supporting-frame. Fig. 6 is a detail perspective view of the movable side rails of the supporting-frame, illustrating the manner in which they may be adjusted to change the width of the machine. Fig. 7 is a detail perspective view of portions of the tool-carrying frames, showing the manner in which they are supported by the main frame of the machine. Fig. 8 is an enlarged detail perspective view of one of the tool-carrying standards, showing the manner in which they are clamped to the tool-carrying frame. Fig. 9 is a detail perspective of the clamp which secures the tool-standard to the carrying-frame. Fig. 10 is a detail section showing the manner in which the clamp secures and holds the tool-standard to the tool-carrying frame. Fig. 11 is a detail perspective illustrating a

slightly-modified construction of the box to which the clamp is secured. Fig. 12 shows another modification of this box, also a modified form of clamping-plate.

In carrying out my invention I provide a supporting-frame comprising a front bar 1, rear bar 15, and connecting-bars 18. The front bar 1 is preferably made of angle-steel, which passes under the tongue 2, as most clearly illustrated in Fig. 5 of the drawings. This bar 1 has secured to its central portion a U-shaped strap 3, which passes over the tongue and is pivoted thereto by means of the horizontally-disposed pivot-bolt 4, this forming the fulcrum upon which the supporting-frame moves during the raising and lowering of the said frame, as will be hereinafter described. A flat steel bar 5 is secured at each end to the top of the bar 1, the said bar passing over the U-shaped strap 3 and being secured at its center to said strap by means of the bolt 6. Adjacent to each end of the bar 5 are formed the loops 7, into which are secured the ends of the brace-bars 8, the other ends of which are bolted to the sides of the tongue 2, as illustrated in Fig. 1 of the drawings. The supplemental bars 9 are provided for further bracing the tongue, being secured by suitable bolts at one end to the tongue and at their other ends to the brace-bars 8.

The side frames of the machine comprise the flat steel bars 10, spaced apart by means of suitable blocks 11 and having their forward ends secured to the front bar 1 by means of suitable bolts 12. This bolt 12 passes through an elongated slot provided in the bar 1, as illustrated in Fig. 6 of the drawings, and is for the purpose of allowing the said side bars to be moved inwardly when it is desired to change the width of the machine. The other ends of the side bars 10 are secured, by means of the bolt 13, to the tool-carrying bars 14, one of said bars resting on top of the tool-carrying frame and the other resting on the bottom, as illustrated in the drawings.

The tool-carrying bar comprises three sections 14, 15, and 16, each section being composed of two parallel bars closed at each end by a spacing-block, or they may be made of

a single bar of steel bent at their ends and welded together at their meeting ends, if it should be desired. The side sections 14 and 16 are secured to the intermediate section 15 by means of a strap 17 and the frame-bars 18, one of which bears against the upper side of the strap and the other against the lower side, and these parts are bolted together by means of the bolts 19. The forward ends of the twin frame-bars are secured to the front bar 1, as illustrated in Fig. 1 of the drawings.

The supporting-wheels 20 of the machine are mounted on the crank-axes 21, the inner ends of each crank passing into a tubular pipe 23, which forms the middle section of the axle. On the upper horizontal portion of each of the cranks 21 is loosely mounted a casting 24, having a bore formed in its lower portion which the crank fits into, and the upper portion of said casting has formed thereon two brackets 25 and 26, which support the two frame bars 18, the said bars being bolted to the said brackets, as illustrated in Fig. 4 of the drawings. These frame-bars 18 are located on each side of the machine a short distance inside of each of the supporting-wheels 20. It is obvious that the castings 24 may be carried on the ends of the tubular portion 23 with the same result, it only being necessary that the intermediate portion of the axle be pivoted in relation to said castings 24.

Secured to the lower member of each of the frame-bars 18 is a segmental rack 27, the said rack being engaged by the usual spring-pawl carried by the operating-levers 28. On the upper horizontal member of the crank-shaft 21 is mounted an angular plate 29, having an aperture through which the crank-shaft passes and having its lower arm bent outwardly and bolted to the perpendicular section of the crank 21, as illustrated in Figs. 2, 3, and 4. The upper arm of this plate 29 has secured thereto the lower end of the operating-lever 28, so that as the said operating-lever is moved rearwardly the crank 21 is thrown downwardly and the rear portion of the frame carried with it, the said frame swinging, on the pivot 4, before described, this operation causing the tool-carrying frame to be lowered, and consequently causing the teeth to enter the ground the desired depth. Upon moving the operating-lever 28 forwardly the crank 21 is lifted and serves to raise the tool-carrying frame to the desired height, where it can be locked by means of the spring-pawl and segmental rack heretofore described. A rack and operating-lever, such as 28, is provided on each side of the machine adjacent to each of the frame-bars 18, as clearly illustrated in Figs. 1 and 3 of the drawings, so that if it is desired to raise only one side of the machine one of the operating-levers can be used for accomplishing this purpose independently of the other.

The seat-supporting frame 30 comprises the two bars 31, bent to about the form shown in

Fig. 1 of the drawings and spaced apart, as illustrated, so as not to interfere with the central lever mechanism, which has not as yet been described, but which moves laterally when one side of the machine is raised independently of the other. This frame 30 is preferably made of a single bar of metal bent to the desired shape and closed at its ends by means of a transverse bar 32. The forward end of the frame 30 is pivoted at 33 to a U-shaped clip 34, the ears of the said clip 34 being pivoted at 35 to a clip 36, which is in turn pivoted, by means of a bolt 37, to the tongue 2, thus forming a universal joint. The object of this construction is to allow of the raising of one side of the machine, which throws the frame on an angle without tilting the seat-carrying frame and seat, this frame always remaining straight no matter what may be the position of the main frame of the machine. The pivoted frame 30 is supported by means of the inclined bars 38, which are secured to the bars 31 at 39 and have their lower ends bent at an angle and secured to a collar 40, which is loosely mounted on the crank-axle 21 directly inside of the hub, as clearly illustrated in Fig. 3 of the drawings, thus throwing the weight of the driver on the supporting-wheels and preventing him from having to raise his own weight.

On each side of the tongue 2 are bolted the bars 41, which are bent inwardly at the end of the tongue and run rearwardly some distance beyond the said tongue, as illustrated in Figs. 1 and 2. Between these two bars 41 is secured a segmental rack 42, and pivoted at 43 is an operating-lever 44, having the usual spring-actuated pawl, which is adapted to engage the notches of the rack for the purpose of locking the lever in a fixed position. The lower portion of the lever 44 beyond its pivot 43 is bent at an angle forming an arm 45, the free end of which is pivoted to the bracket-arms 46, carried by the intermediate portion 23 of the axle. The object of this lever is to even up the forward and rear rows of teeth, so that they will both enter the ground the same depth when the frame has been thrown down by the action of the side levers 28. This lever 44 when operated also serves to regulate the height of the tongue and will regulate or even up the teeth whether the tongue is carried low or high by the team.

The lever 44 when moved forward throws the tongue slightly forward and also lowers the same a short distance. This movement tilts the rear end of the machine-frame upwardly, thereby raising the rear tooth and evening it up with the forward tooth, so that the depth of cut of each row of teeth will be the same. During transportation it is desired to raise the teeth some distance above the ground, and this is done by means of the side levers 28, which are moved forwardly, thus raising the rear end of the machine-frame,

and by operating the lever 44 in a forward direction the rear end is raised, so that both side levers and central lever serve to raise the frame and teeth from the ground.

5 The seat-supporting bars 38 are secured at their lower ends to the collars 40, which are loosely secured on the crank-axles below the fulcrum of the side levers, so that the weight of the rider is supported directly by the
10 wheels of the machine and is not lifted when the side levers are operated in a forward direction to raise the tool-carrying frame. When the soil is very hard, some difficulty is experienced in forcing the cultivator-blades
15 into the same, and in this event the side levers are thrown back to the limit and locked in this position, which action raises the wheel from the ground, thereby throwing the whole weight of the machine on the teeth, which
20 forces them into the ground, and as the machine moves forward the wheels will come in contact with the ground again after the teeth have penetrated the same to the proper depth.

It is very often desirable to raise one side
25 of the machine independently of the other, which throws the tool-carrying frames at an angle. The construction and arrangement of the seat-frame 30 and its universal-joint connection to the tongue permits this frame to
30 remain in its normal position at all times no matter what may be the angle of the tool-carrying frame. Sufficient space is left between the tool-seat-supporting bars 31 to allow the segment 42 and lever 44 to have sufficient
35 play laterally when either end of the frame is inclined.

When it is desired to lessen the width of the machine, the bolt which passes through the slot 12 and secures the side bars 10 to the
40 front frame-bar 1 is loosened up and the bolts 19, which secure the frame-bars 18 to the tool-frames 14, 15, and 16, are also loosened up and the two end sections 14 and 16 can then be moved inwardly until the side bars 10
45 are in a plane with the draft-line of the machine, as illustrated in detail in Fig. 6 of the drawings. The bolts 19 are then tightened up and the teeth-standards adjusted accordingly on their carrying-frames.

50 The upper ends of the tool-standards are provided with boxes 47, made of sheet-steel struck into the desired shape. These boxes are provided on one end with an angular shoulder 48, of a size sufficient to fit the cross-
55 section of the tool-bars 14, 15, and 16. A slot 49 is located in front of the shoulder 48 a distance therefrom equal to the distance between the two members of the tool-carrying frame, and the slot 49 is of a width sufficient
60 to admit one of the said bars 14, 15, or 16. When these boxes are placed in position on the tool-carrying frame, the middle section 50 will fit snugly between the two bars, as illustrated in dotted lines in Fig. 8 and in cross-
65 section in Fig. 10 of the drawings. A bolt-

hole 51 is provided in the section 50 of the box. A clamping-plate 51', such as shown in Fig. 9 of the drawings, is provided having a slotted end 52, through which the clamping-bolt 53 passes. The other end of the plate 70 51' is turned over at 54 and when in position embraces the under side of the top plate of the box.

In placing the standard on the tool-carrying frame the box 47, carried or formed on 75 the upper end of the said standard, is placed between the parallel bars 14 in the manner above described, and the clamping-plate 51' is then placed in position, the slot 52 embracing the bolt 53 and the turned-over end 54 ex- 80 tending under the top of the box, as before described. By tightening up the nut 55 the standard is drawn up until the lower edges of the shoulder 48 and the slot 49 bind against the under side of the frame-bars 14. When 85 it is desired to remove the tool-standard, it is simply necessary to loosen up the nut 55 and then withdraw the clamping-plate 51' from engagement with the bolt 53, when the standard will then drop from between the two rails 14, 90 the bolt 53 and nut 55 remaining in the box 47.

In Fig. 11 the box 47 is shown as being formed of a separate piece and riveted to the tool-standard, this being the form used on rear-teeth standards. In Fig. 12 I have shown 95 a modified form of box and clamping-plate. In this construction the box is made in a single piece closed at its bottom and having its free ends bent and overlapping each other to form the top. The clamping-plate 59 shown 100 in connection with this modification comprises a flat steel plate having provided therein two bolt-holes, and the box is also provided with two holes which register with those in the plate 59. The bolts 56 57 pass through these 105 openings, and the parts are clamped together by means of the nuts 58. When this construction is used, the box 47 can remain on the tool-carrying frame and the standard is simply slipped in the lower portion of the 110 box under the parallel bars 14, after which the nuts 58 are tightened up, thus securely binding the standard against the lower edges of the bars 14.

From the foregoing description it will be 115 readily seen that I have provided a machine which is strong and durable and one which can be easily adjusted to change the width of the machine, so as to work a large amount of ground at one time by simply loosening up a 120 few bolts and sliding the adjustable table-frames 14 and 16 inwardly. I have also provided a machine the tool-carrying frame of which can be readily raised on one side independently of the other side, which is espe- 125 cially advantageous in orchard-cultivating when it is desired to lessen the depth of penetration of the teeth when working close to trees, so that the roots may not be damaged. The construction and arrangement of 130

the seat-carrying frame is such as to keep the seat in a straight position, no matter which side of the tool-carrying frame may be elevated. This seat-frame is also so arranged and constructed as to throw the weight of the rider directly on the supporting-wheels of the machine, so that in raising the tool-frame the weight of the operator does not have to be lifted.

Various slight changes in the details of construction might be made without departing from the spirit and scope of my invention. Hence I do not desire to be limited to the exact construction shown and described.

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

1. In a cultivator, the combination with a main tool-carrying frame having a rear transverse tool-carrying bar, of laterally-extending tool-carrying frames having rear tool-carrying bars forming extensions of, and adjustably clamped to, the main tool-carrying bar.

2. In a cultivator, the combination with a substantially rectangular main tool-carrying frame having a rear transverse tool-carrying bar, of laterally-extending tool-carrying frames adjustably connected at their forward ends to said main frame and having rear tool-carrying bars forming extensions of and adjustably clamped to, the main tool-carrying bar.

3. In a cultivator, the combination with a substantially rectangular tool-carrying frame having a rear transverse tool-carrying bar, of laterally-extending triangular tool-carrying frames adjustably connected at their forward ends to said main frame and having rear tool-carrying bars forming extensions of, and adjustably clamped to, the main tool-carrying bar.

4. In a cultivator, the combination of a main supporting-frame, a tool-support comprising a central section secured to the main frame, end sections clamped to the central section adjacent to the ends thereof adapted to be adjusted laterally for changing the width of the machine, side bars pivoted to the outer ends of the movable sections of the tool-carrying bar and having their other ends pivoted in slotted openings formed on the forward portion of the frame of the machine, for the purpose described.

5. The combination of a main tool-frame, of a tool-support comprising three sections, each section being composed of twin bars closed at their ends, means for clamping the said bars to the main frame of the machine, and means to permit of sliding the end sections of said tool-support inwardly for changing the width of the machine.

6. In a cultivator, the combination with a main frame, of a tool-support comprising an intermediate section composed of horizontally-disposed twin bars, side sections com-

posed of twin bars, a clamp at each end of the intermediate section adapted to embrace the inner ends of the side sections, means for securing the said clamp to the supporting-frame, side bars pivoted at one end to the outer ends of the side sections of the tool-carrying frame and having their other ends pivoted in a slotted opening formed in the front bar of the main frame.

7. In a cultivator, the combination with the wheels, independently-pivoted crank-axes for each wheel, a main axle connecting said crank-axes, a tool-frame carried by said main axle and a seat having supports connected with the bearing portions of said crank-axes.

8. In a cultivator, the combination with the supporting-wheels, of a crank-axle for each wheel, a tubular section into which the upper portions of each crank are telescoped, a main tool-frame fixed above said tubular section, a seat supported from the bearing portions of said crank-axle, and mechanism connected with each crank-axle whereby they may be turned to raise or lower one side of the frame independently of the other and independently of the seat.

9. In a cultivator, the combination with the supporting-wheels, of a crank-axle for each wheel, a tubular axle into which the inner ends of each crank-axle are telescoped, a tool-frame pivoted at its forward end to the tongue of the machine, and fixed in relation to said tubular axle, a ratchet-lever mounted on each crank-axle, and a lever mechanism connected with said frame and said tubular axle for raising and lowering the former.

10. In a cultivator, the combination of a supporting-frame, a centrally-disposed tongue to which the forward end of the tool-frame is pivoted, the supporting-wheels, a crank-axle for each of said supporting-wheels, a main axle to which the upper ends of the crank-axes are pivoted, means for connecting said main axle with the tool-frame, crank-plates loosely mounted on the crank-axes having their lower ends rigidly secured to the intermediate section of the cranks, an operating-lever secured to the upper arm of the crank-plate and a rack and pawl adapted to hold the operating-lever in a fixed position.

11. In a cultivator, the combination of a main supporting-frame, a tongue to which the forward portion of said supporting-frame is pivoted, independently-pivoted crank-axes on which the supporting-wheels of the machine are mounted, an operating-lever having its fulcrum in brackets carried by the tongue, a bracket carried by the intermediate section of the axle, a connection between this bracket and the operating-lever, a segmental rack adapted to be engaged by a spring-pawl carried by the said operating-lever, and means for turning said crank-axes independently of said operating-lever.

12. The combination of a tool-frame having

its forward end pivoted to the tongue-bar of the machine, supporting-wheels, crank-axles for each supporting-wheel, a main axle, connecting each of said crank-axles, connections
5 between the supporting-frame and the main axle, mechanism for raising and lowering each side of the machine independently of the other, a seat-supporting frame, carried by the bearing portions of the crank-axles and pivoted
10 connections between the said seat-supporting frame and the tongue, for allowing the seat to maintain its normal position when the main supporting-frame of the machine is inclined laterally.

13. The combination with the main tool-frame, supporting-wheels therefor, an independently-pivoted crank-axle for each wheel, connections between the main axle and the supporting-frame, means for lifting each side
20 of the machine independent of the other, a seat-frame connected by a universal joint to the tongue, and supporting-bars for said seat-frame connected to the crank-axles adjacent the wheel-bearings.

14. The combination of a tool-frame, supporting-wheels therefor, crank-axles for each supporting-wheel, an intermediate tubular section connecting the two crank-axles so that each can be turned independently of the other,
30 a connection adjacent the inner portions of the crank-axles, for supporting the main tool-frame, means for raising each side of the supporting-frame independently of the other, a seat-supporting frame secured to the tongue
35 of the machine by a universal joint, loose collars carried by the crank-axles adjacent to the wheel-hubs, and supporting-bars pivoted to the under side of said collars at one end and at the other ends to the seat-carrying frame.

15. In a cultivator, the combination with the supporting-wheels, of crank-axles for each wheel, an intermediate tubular axle into which each opposing end of the crank-axles fits, a main supporting-frame, a connection between
45 said frame and points adjacent the ends of intermediate axle, mechanism for turning each crank-axle to raise or lower each side of the main frame, a tongue to which the forward portion of the main frame is pivoted, a seat-supporting frame, supporting-bars for said
50 frame having their lower ends pivoted to a loose collar carried by the wheel-axles, and a universal-joint connection between the forward end of the seat-frame and the tongue.

16. In an agricultural implement, a frame comprising a horizontally-disposed front bar, a tongue having the front bar pivoted to the

sides thereof, a tool-carrying frame consisting of an intermediate section and two side sections overlapping the rear of the intermediate
60 section, boxes embracing the ends of the intermediate section and the inner ends of the side sections, frame-bars connected to the front frame-bar and to the boxes, and movable side bars connected to the ends of the
65 side sections of the tool-frame and to the front frame-bar, for the purpose described.

17. In an agricultural implement, a frame comprising a horizontally-disposed frame-bar, a centrally-disposed tongue, having the front
70 bar pivoted to the side thereof, a tool-frame consisting of a central section and two side sections in a plane therewith having their inner ends overlapping the ends of the central section, boxes embracing the inner section
75 and the side sections, transversely-arranged twin supporting-bars secured to the top and bottom of the boxes and to the front frame-bar, and movable twin side bars pivoted to the front frame-bar and to the outer ends of
80 the side sections of the side tool-frame, whereby the said sections can be removed inwardly to change the width of the machine.

18. The combination of a frame comprising a front frame-bar arranged transversely below the tongue, a rear tool-support, side bars and intermediate bars connecting the tool-support and the front frame-bar, a centrally-disposed tongue, a pivoted connection between
85 the sides of said tongue and the front frame-bar, a main axle having two offset wheel-bearings, a seat-frame having its forward end connected to the tongue by a universal joint, and supporting-bars connected to the intermediate section of the seat-frame and to loose boxes
90 carried by offset portions of the axle of the machine.

19. A seat-frame for agricultural implements comprising a pair of rearwardly-inclined bars connected at their ends, a universal joint at the forward end of said frame,
100 adapted to connect the same with the tongue of the machine, transverse obliquely-disposed supporting-bars, secured at their upper ends to the seat-frame bars and at their lower ends
105 adjacent the bearing ends of the axle of the machine.

In witness whereof I have hereunto set my hand this 25th day of April, A. D. 1901.

SAMUEL L. ALLEN.

Witnesses:

CHARLES H. SPECKMAN,
JNO. T. CROSS.