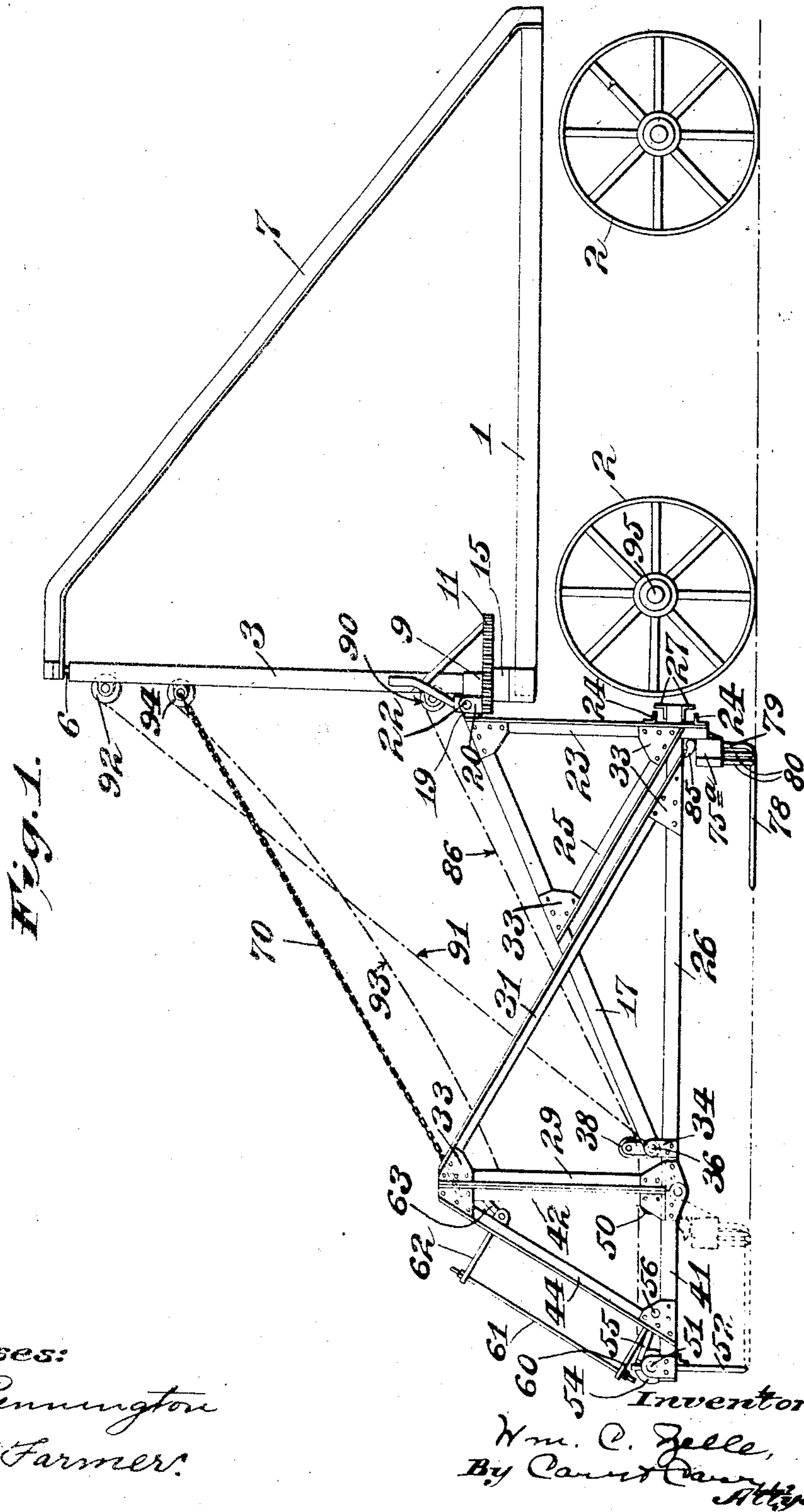


954,492.

W. C. ZELLE.
PORTABLE LOADING MACHINE.
APPLICATION FILED NOV. 27, 1908.

Patented Apr. 12, 1910.
11 SHEETS—SHEET 1.



Witnesses:
G. A. Pennington
Edgar T. Farmer.

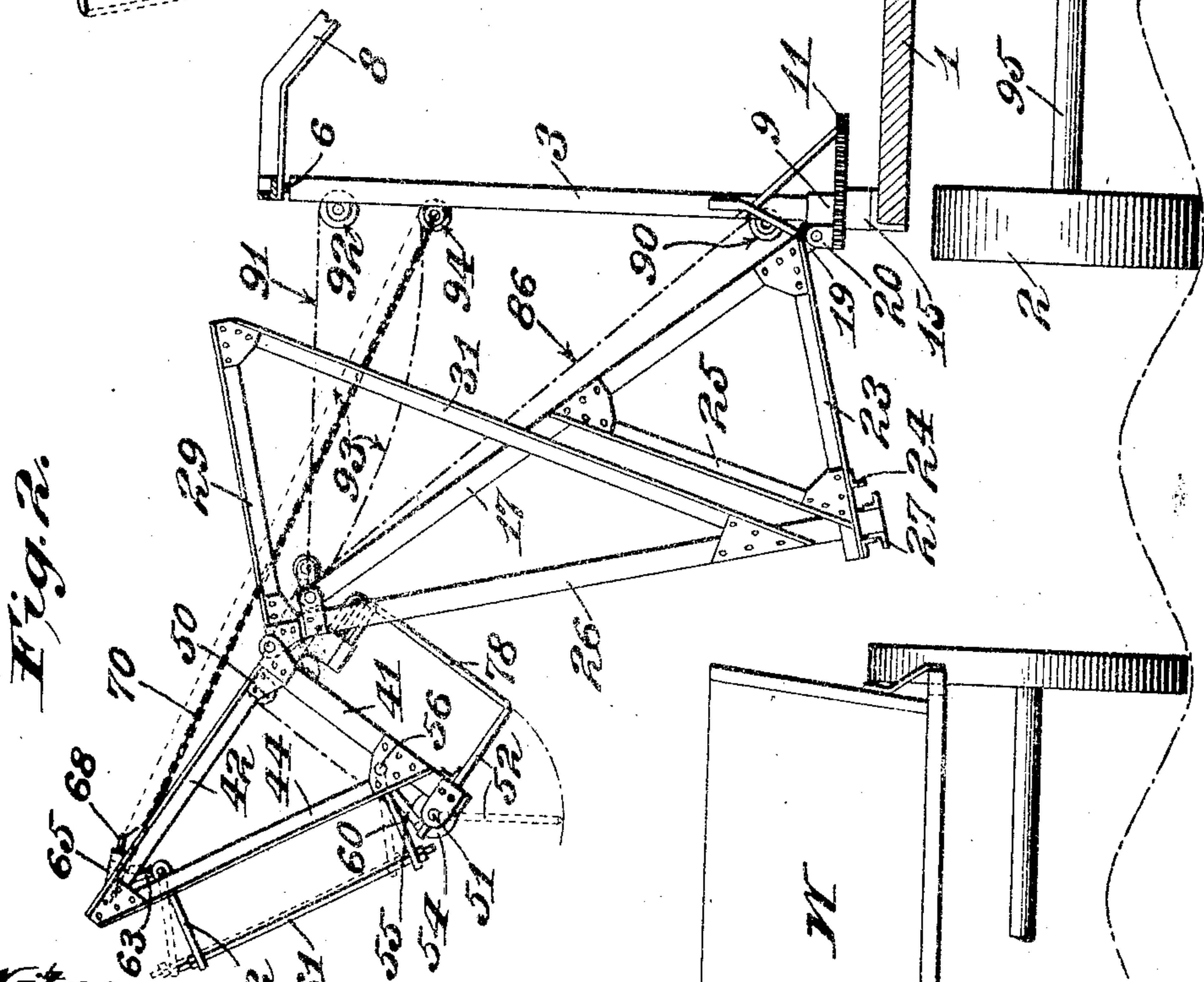
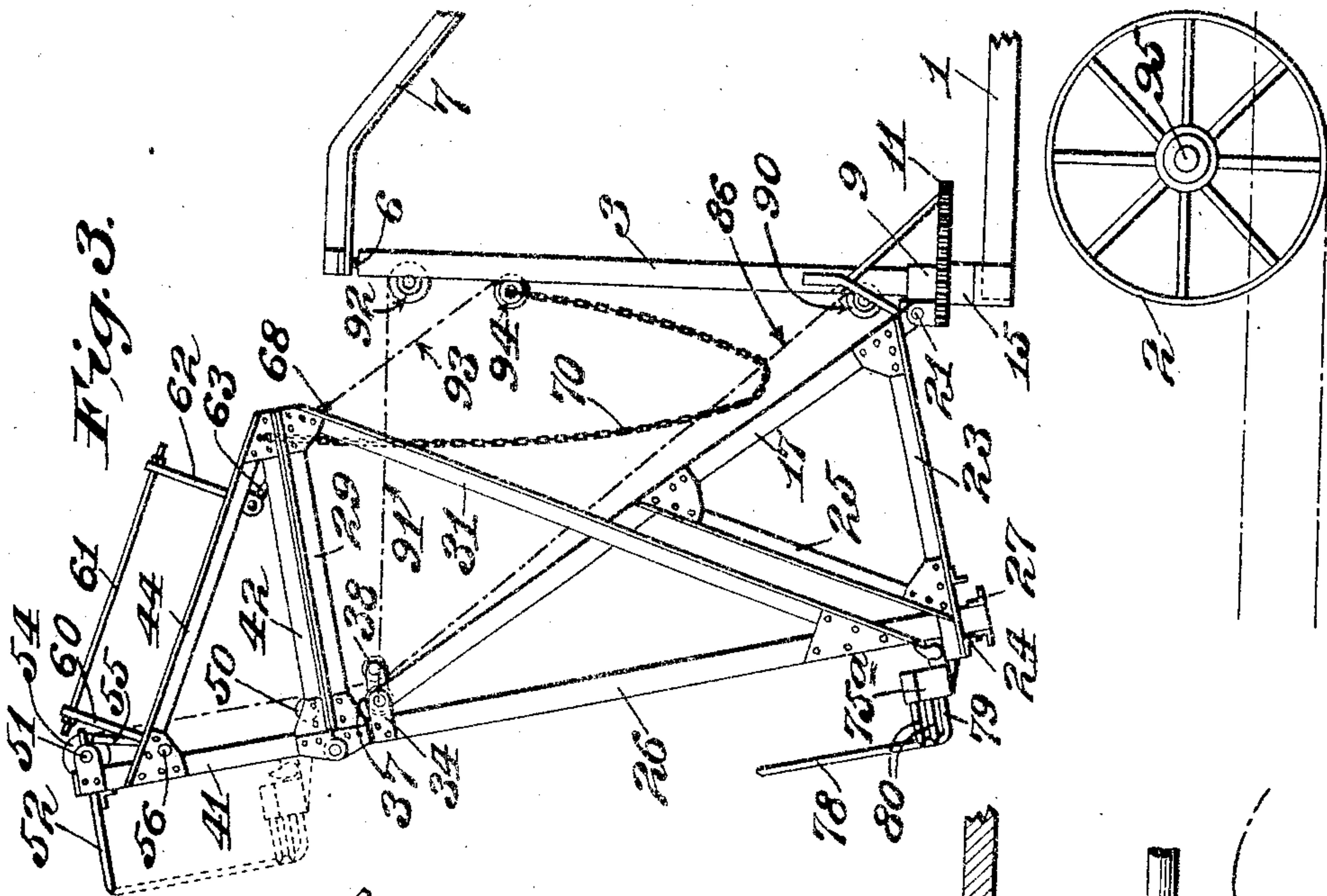
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11 SHEETS—SHEET 2.



Witnesses:
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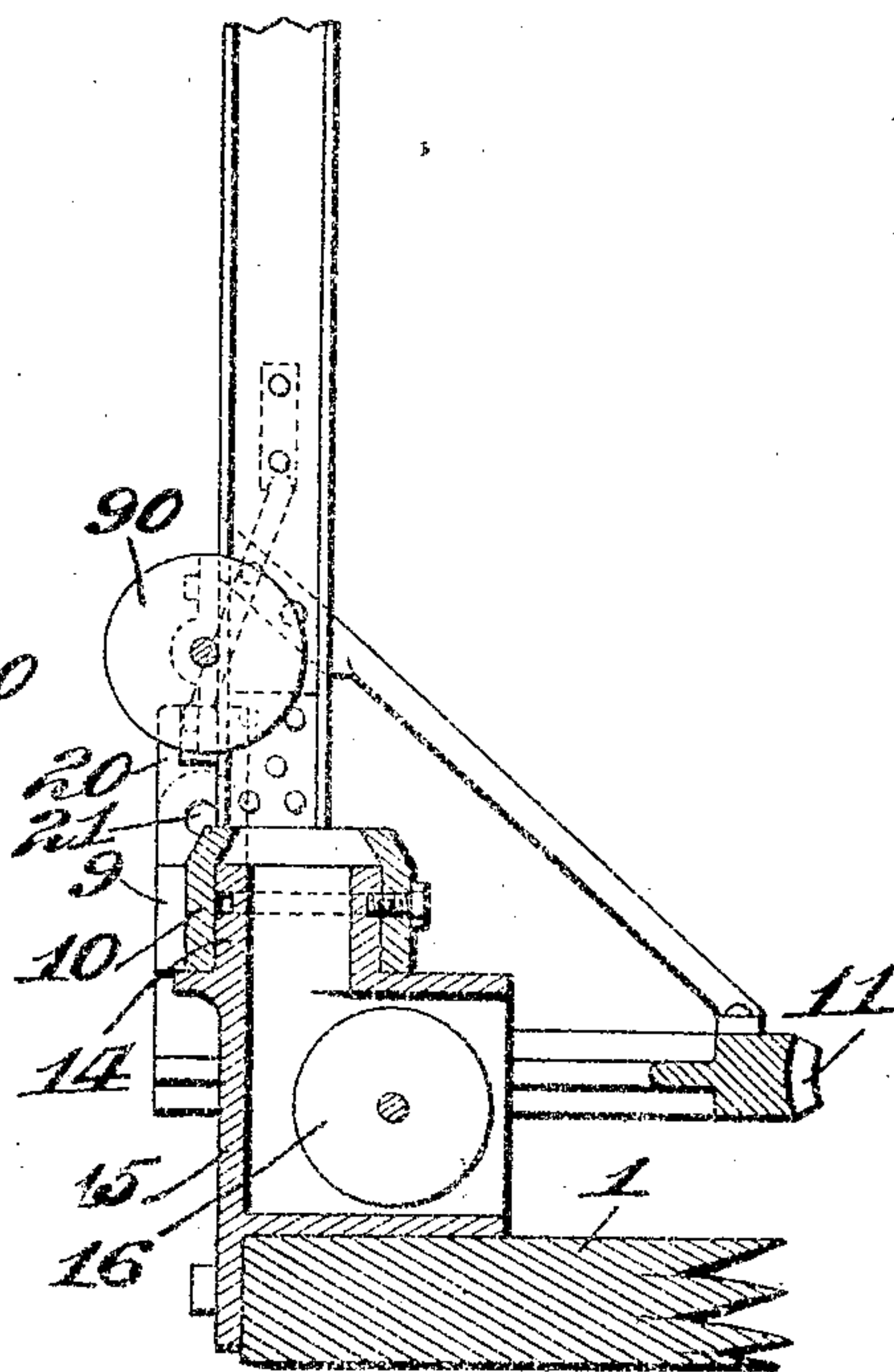
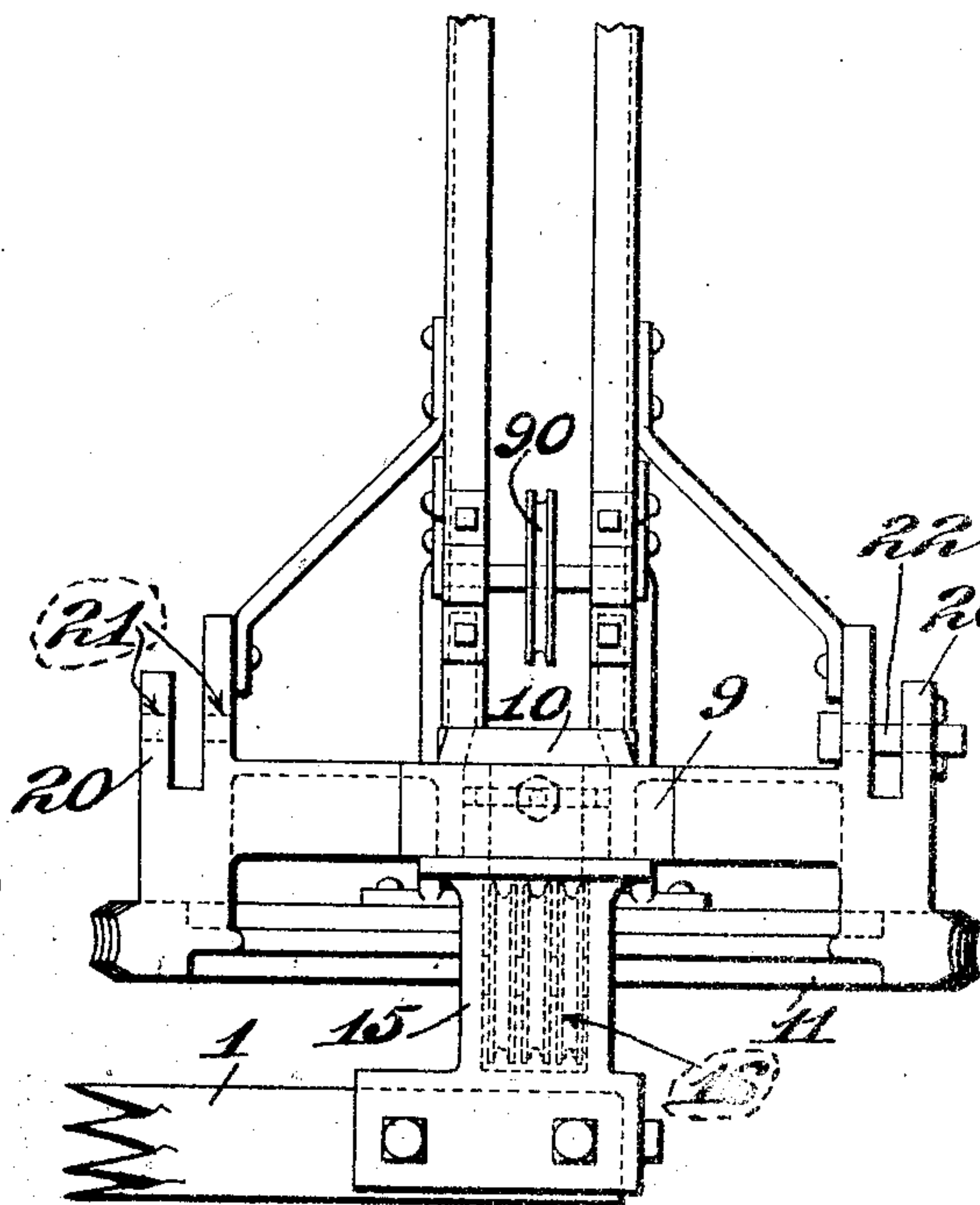
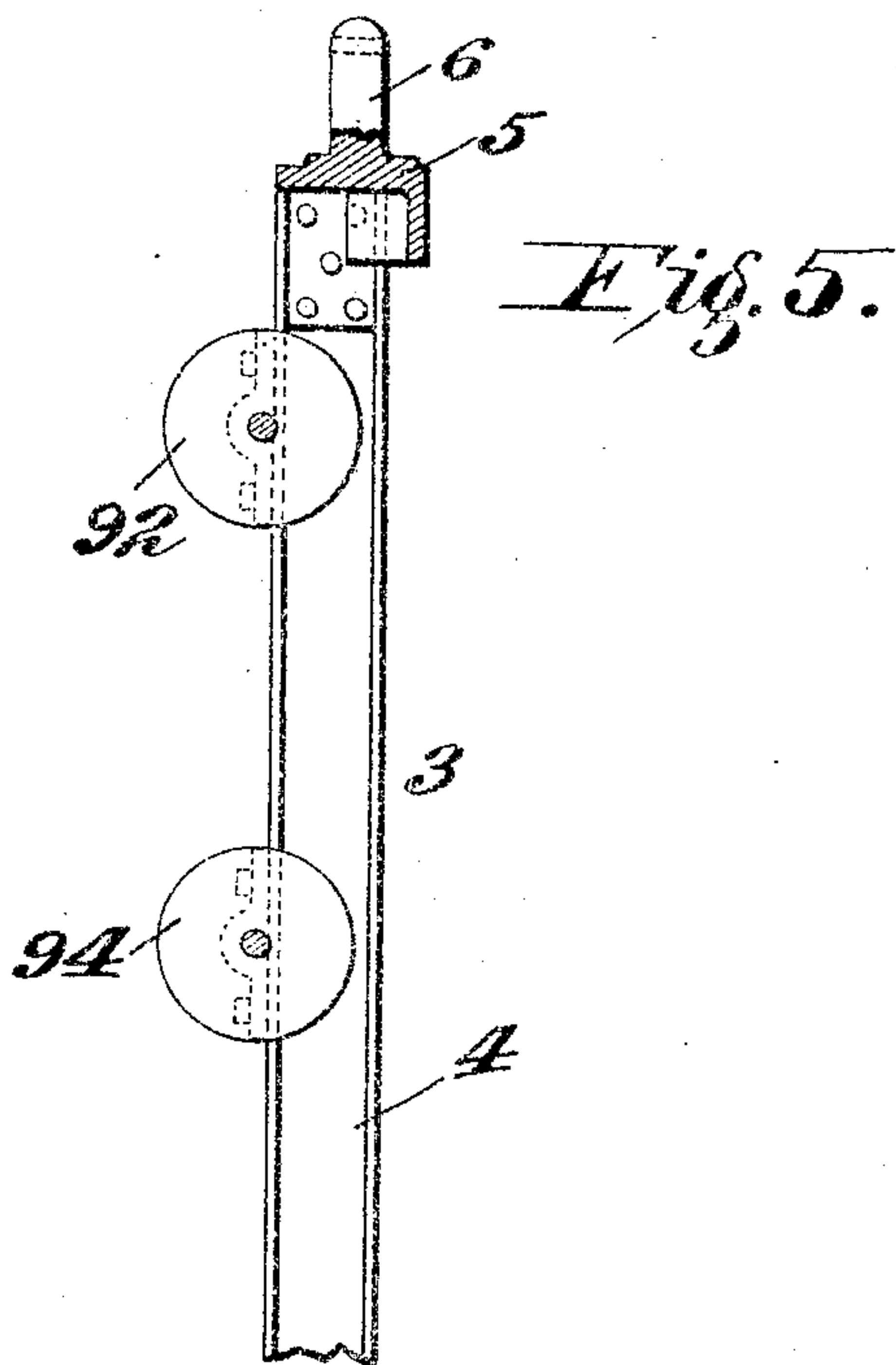
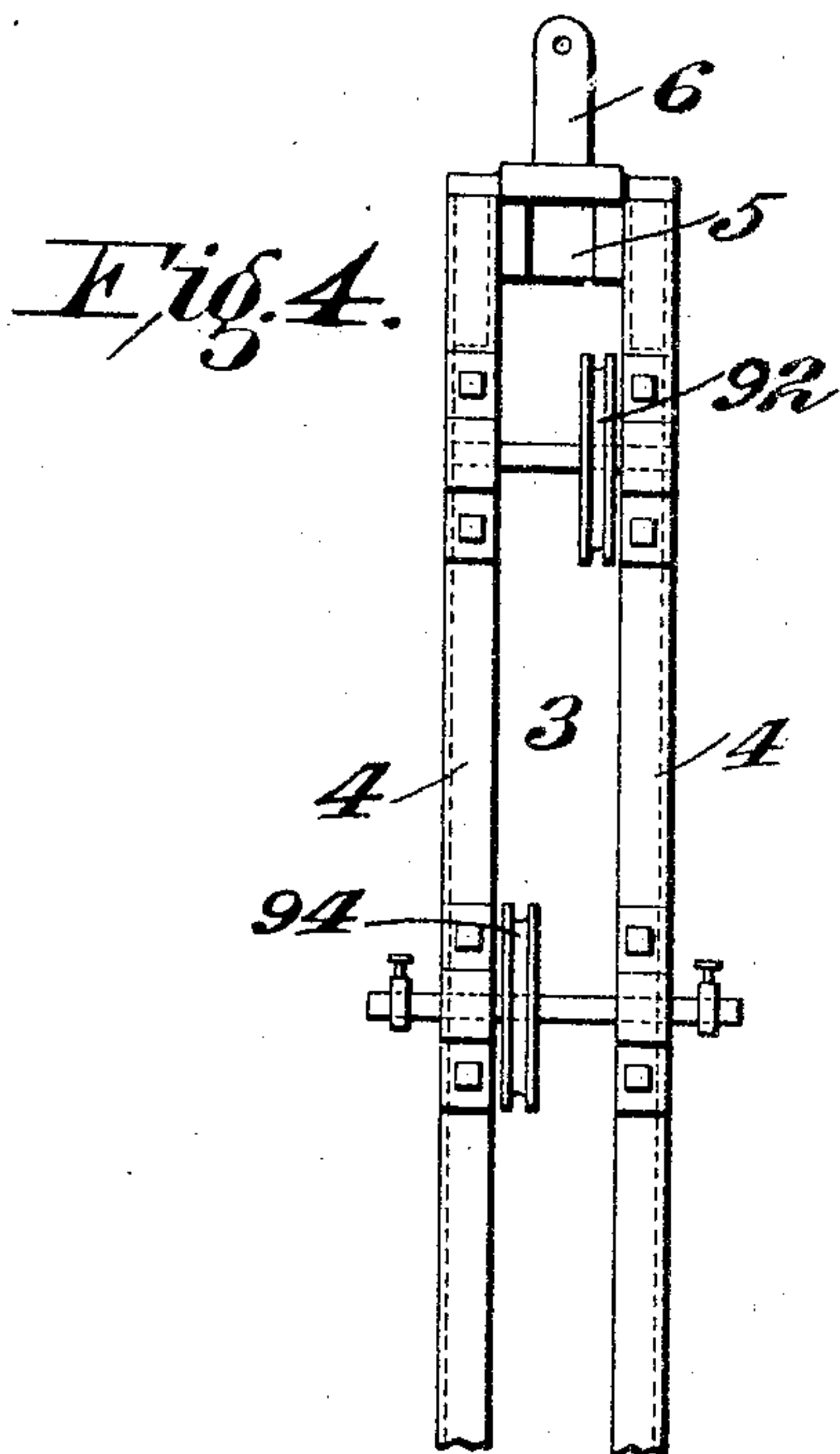
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954,492.

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APPLICATION FILED NOV. 27, 1908.

Patented Apr. 12, 1910.

11 SHEETS—SHEET 3.



Witnesses:

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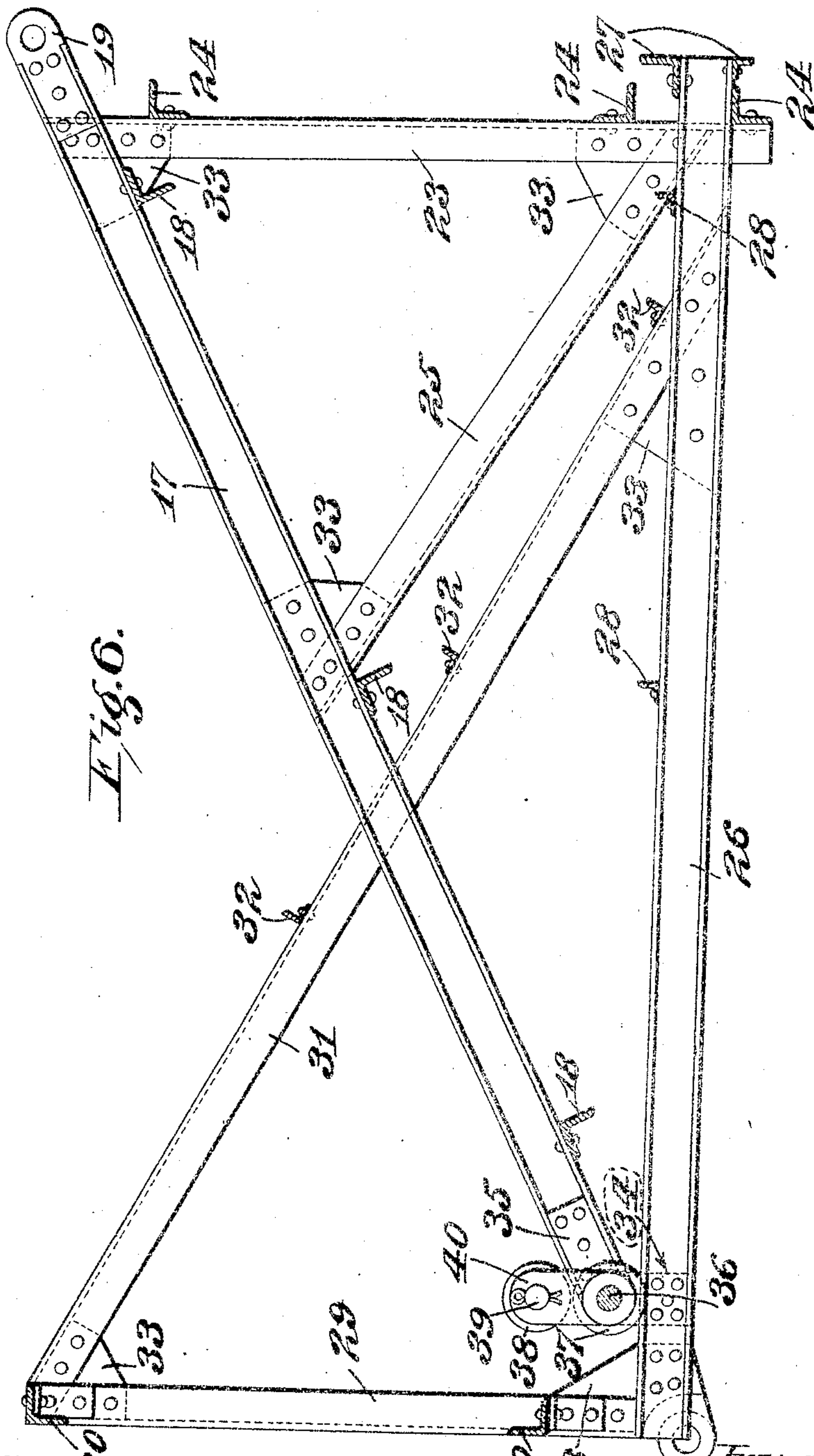
Wm. C. Zelle,
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Patented Apr. 12, 1910.

11 SHEETS—SHEET 4



Witnesses:
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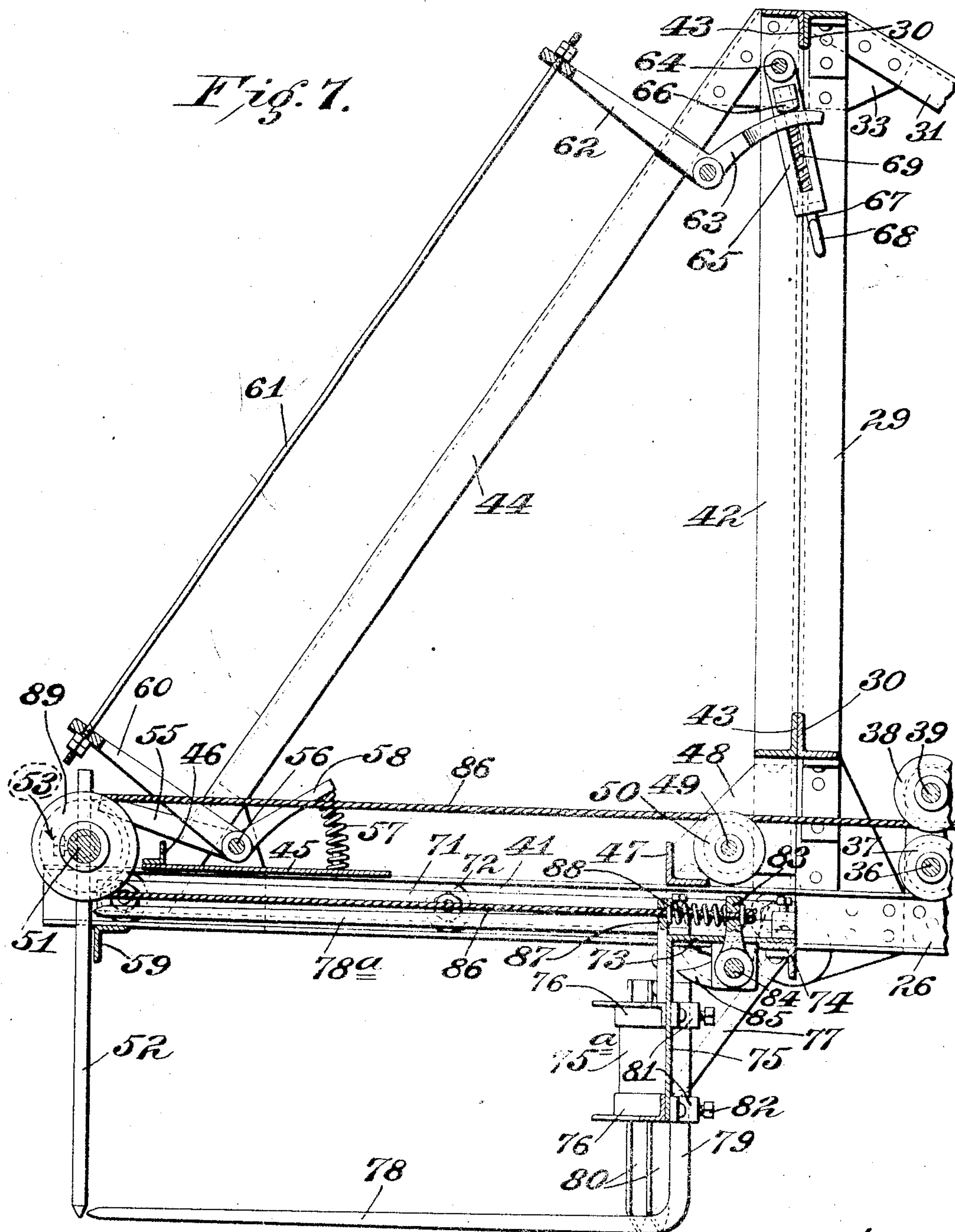
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APPLICATION FILED NOV. 27, 1908.

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11 SHEETS—SHEET 5.



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11 SHEETS—SHEET 6.

Fig. 8.

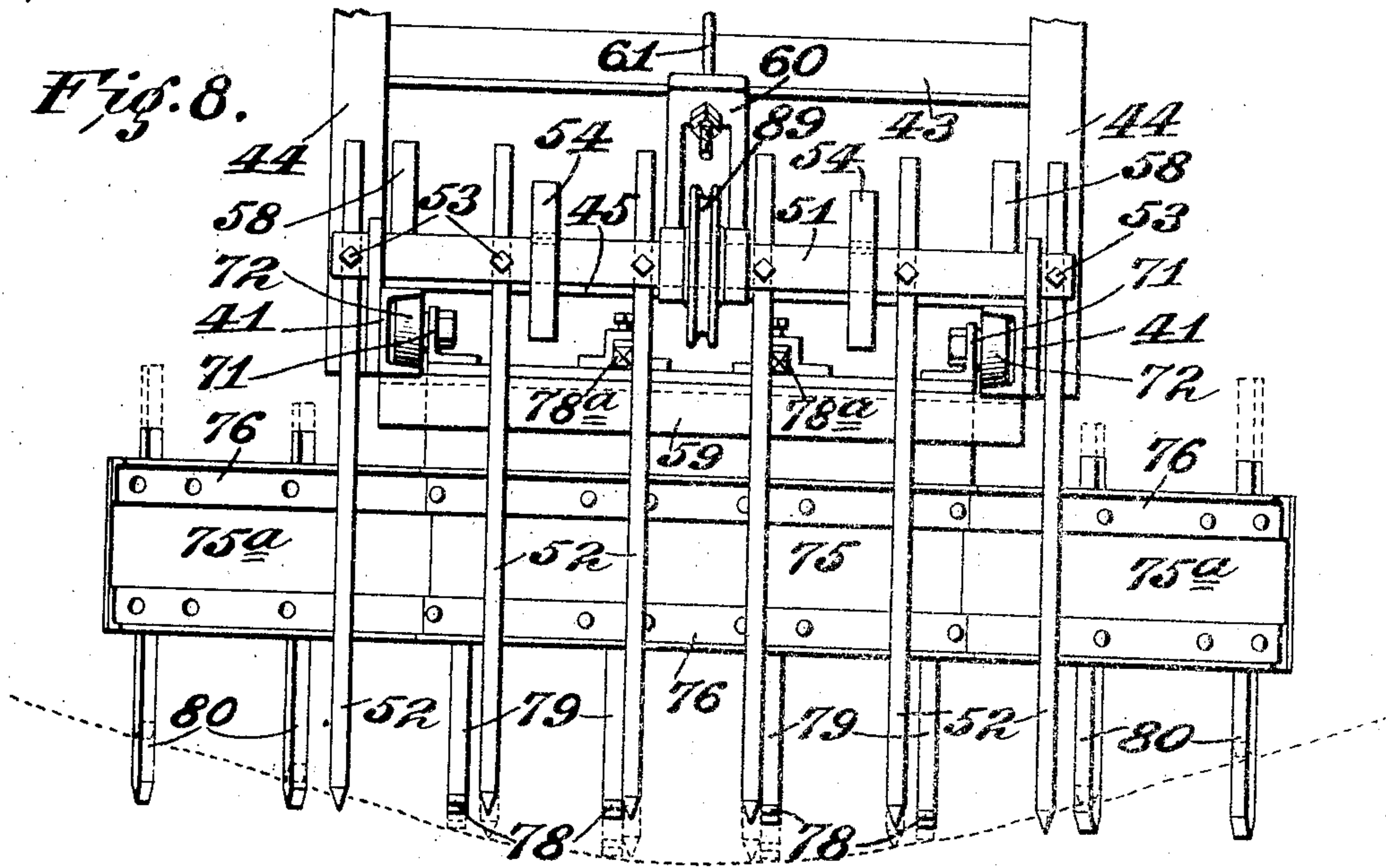
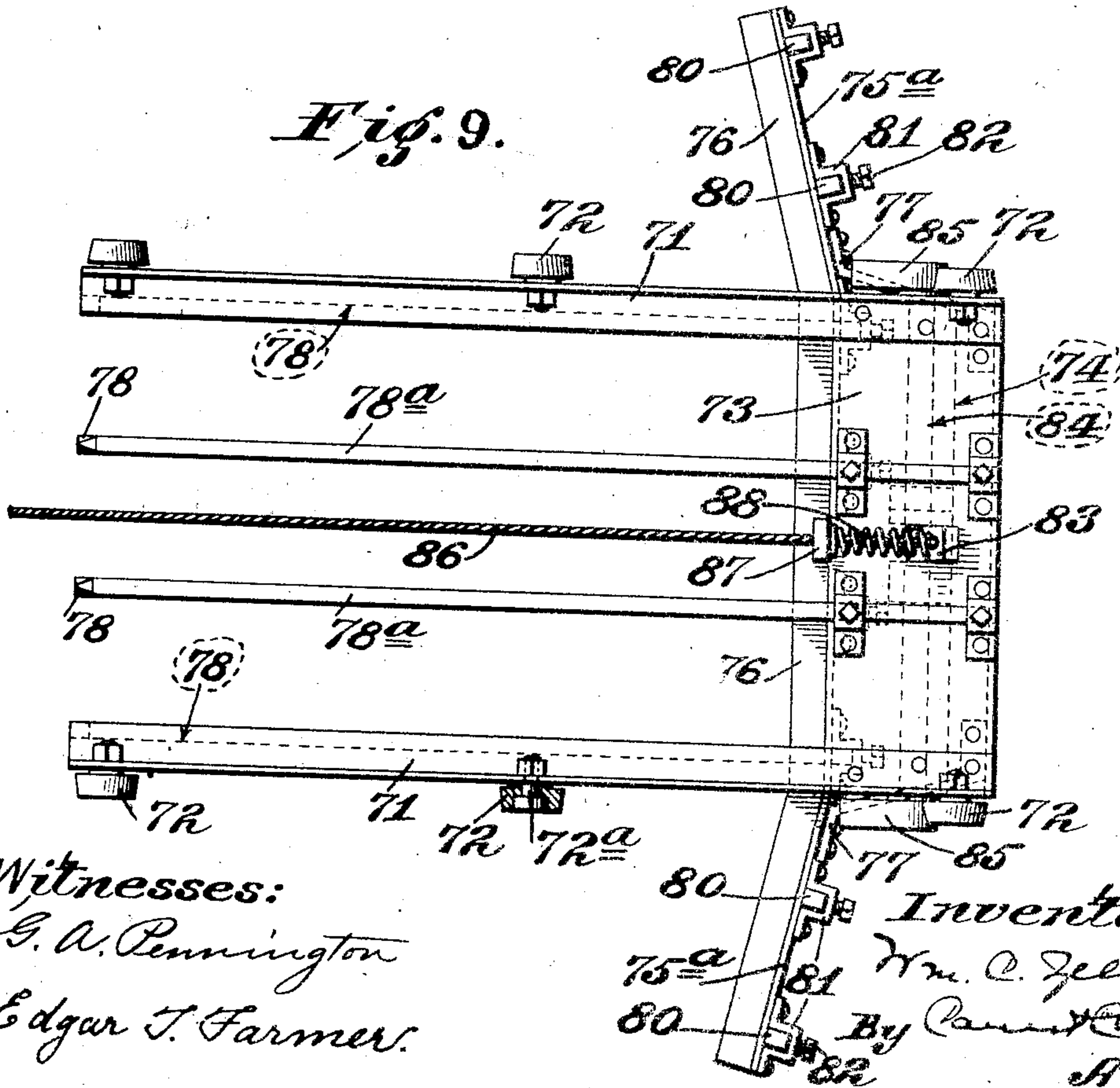


Fig. 9.



Witnesses:

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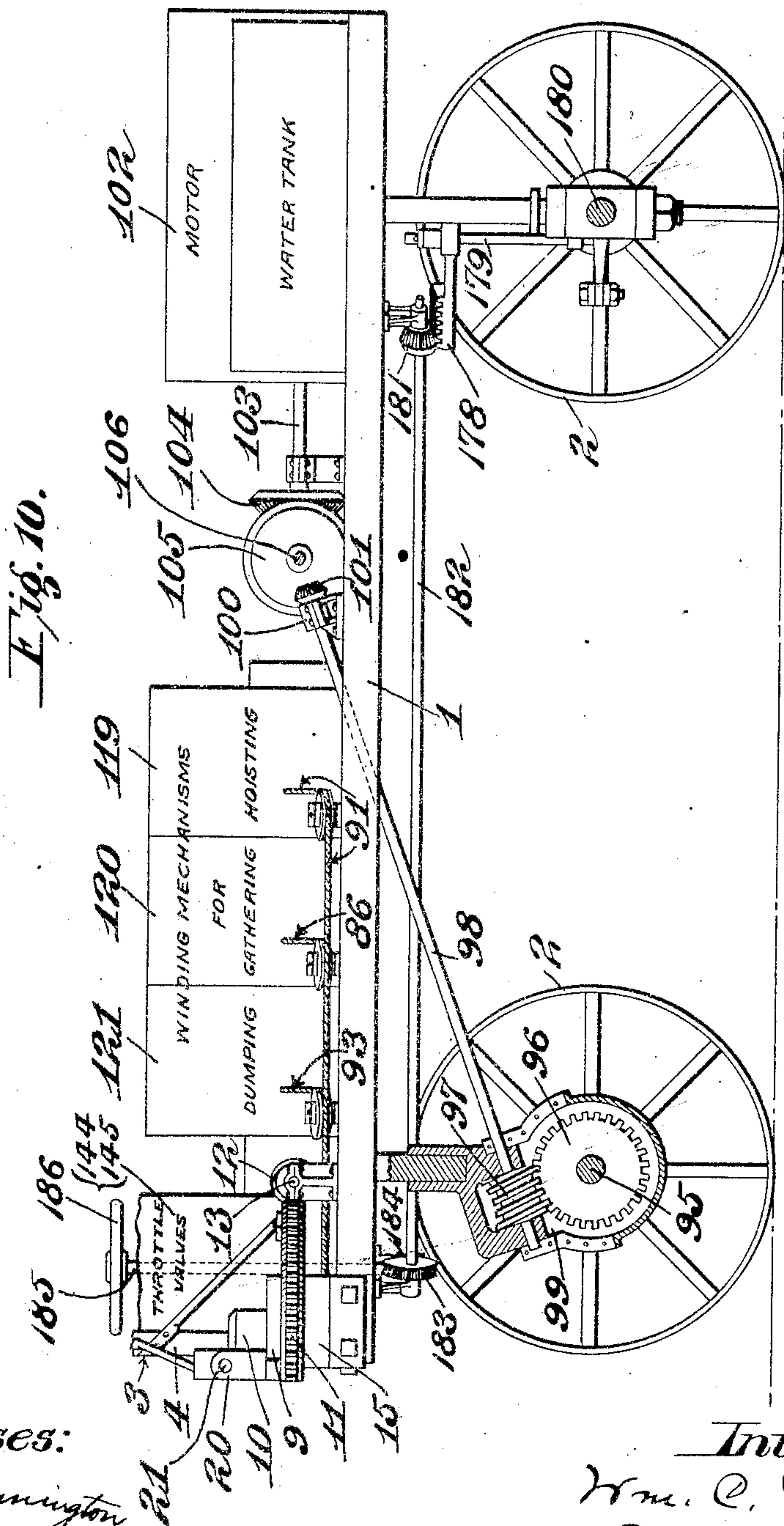
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954,492.

W. C. ZELLE.
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APPLICATION FILED-NOV. 27, 1908.

Patented Apr. 12, 1910.

11 SHEETS—SHEET 7.



Witnesses:

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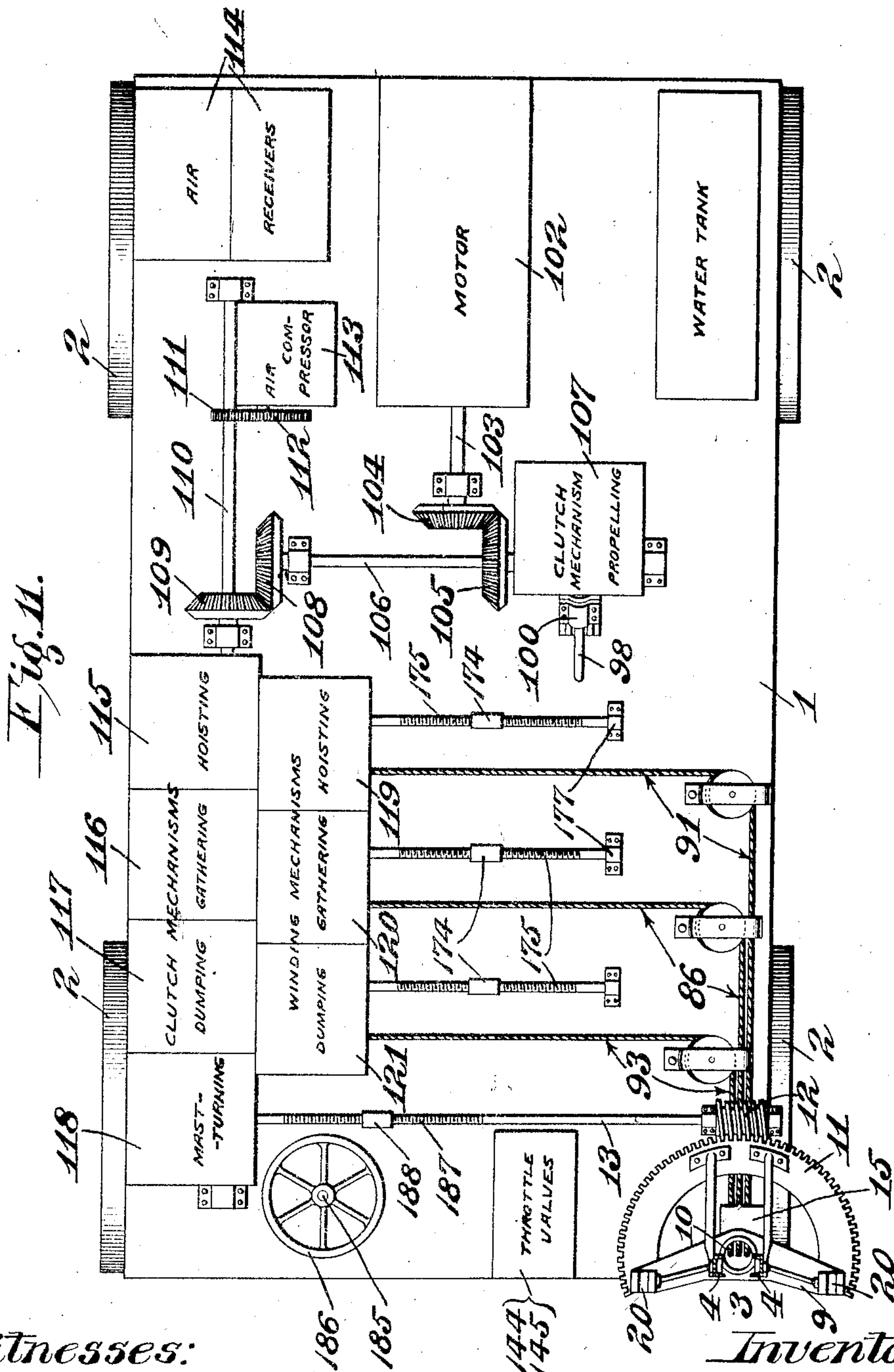
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W. C. ZELLE.
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APPLICATION FILED NOV. 27, 1908.

Patented Apr. 12, 1910.

11 SHEETS—SHEET 8.



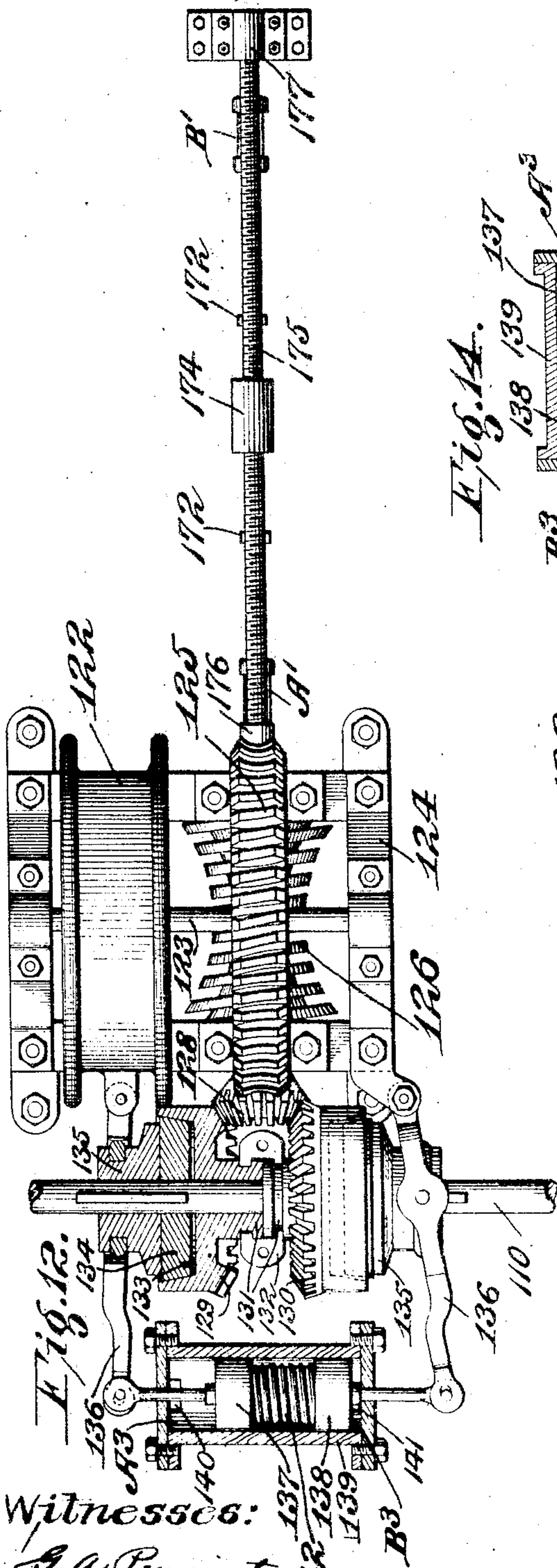
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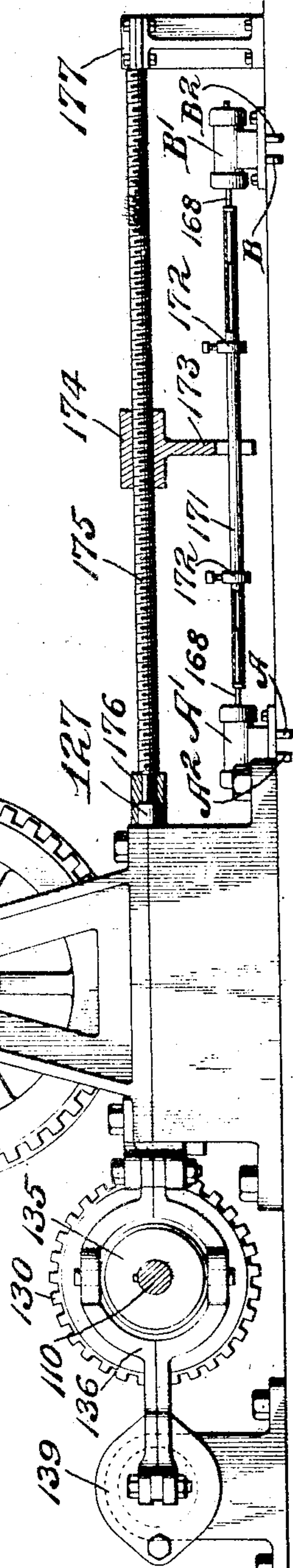
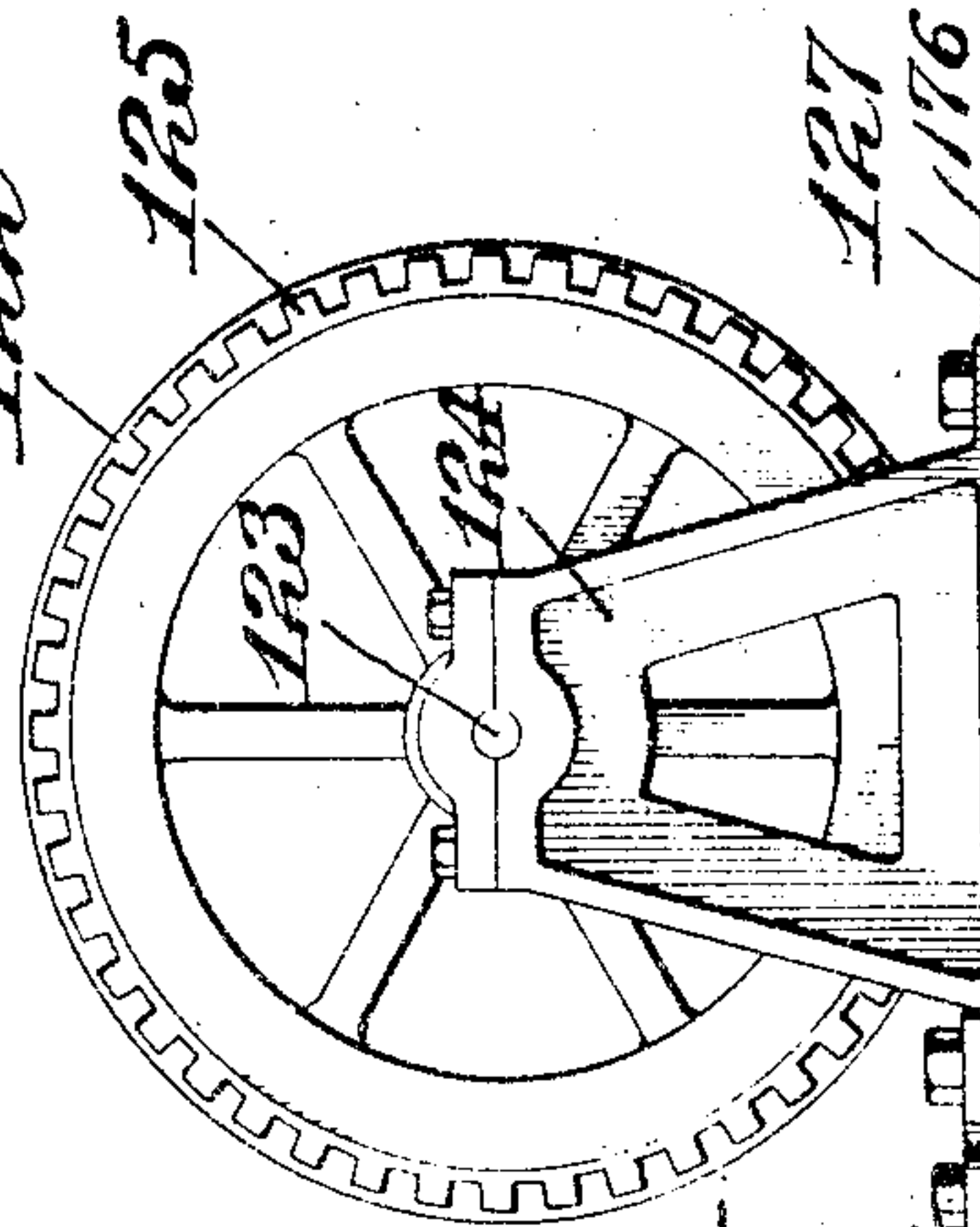
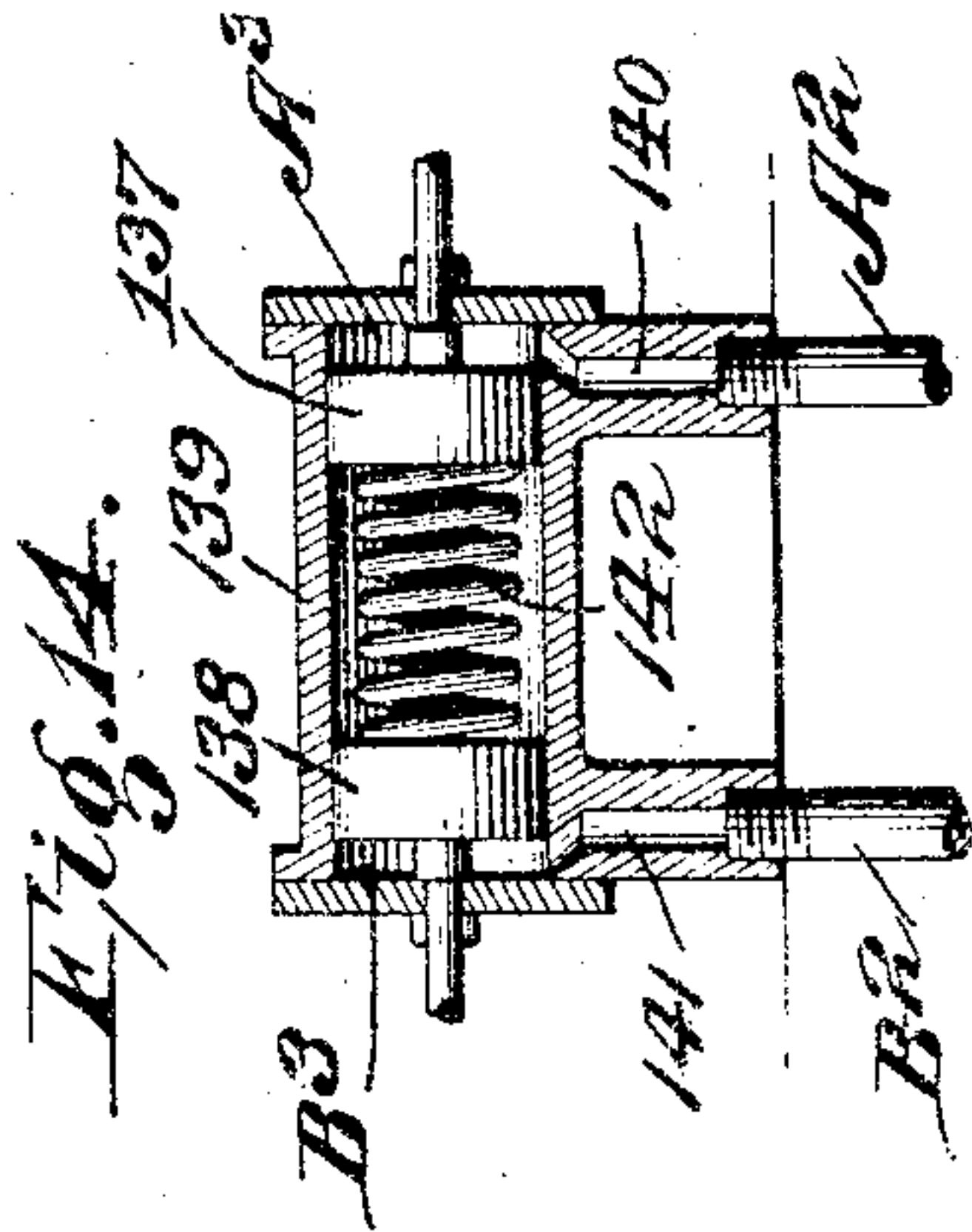
954,492.

Patented Apr. 12, 1910.

11 SHEETS—SHEET 9.



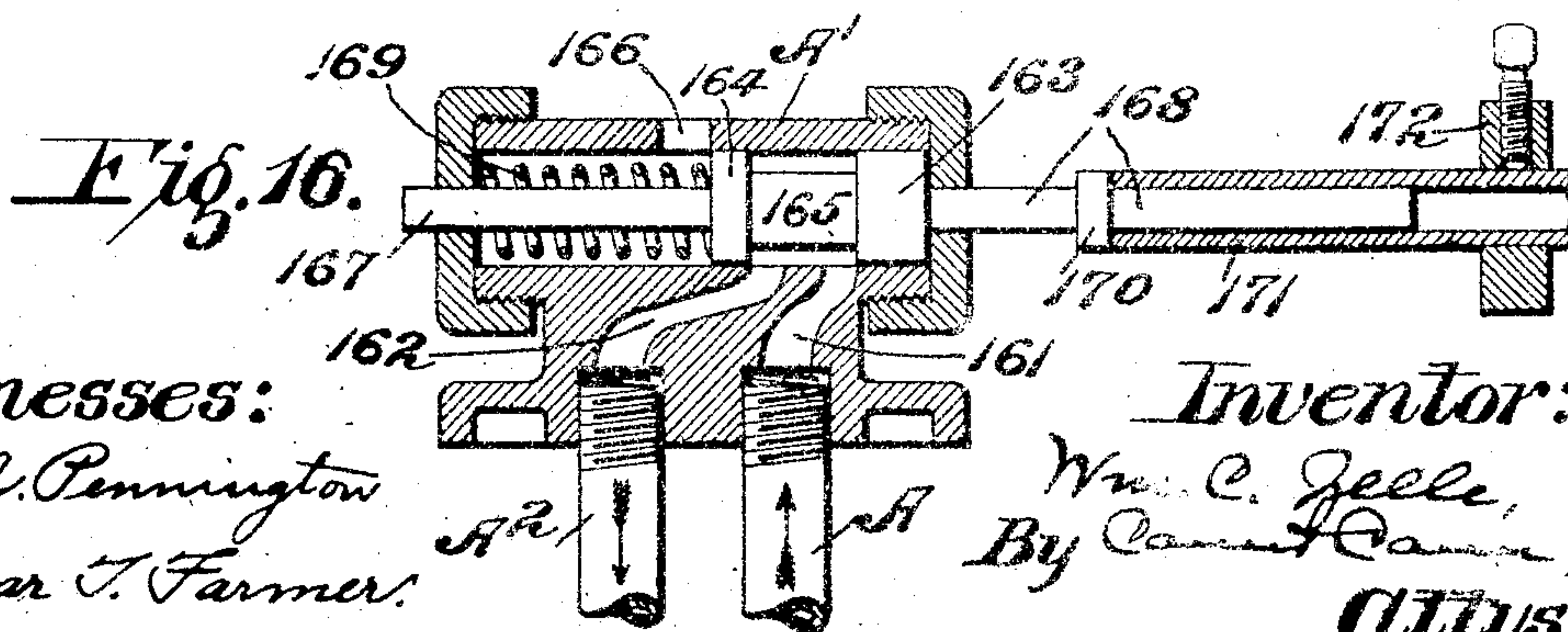
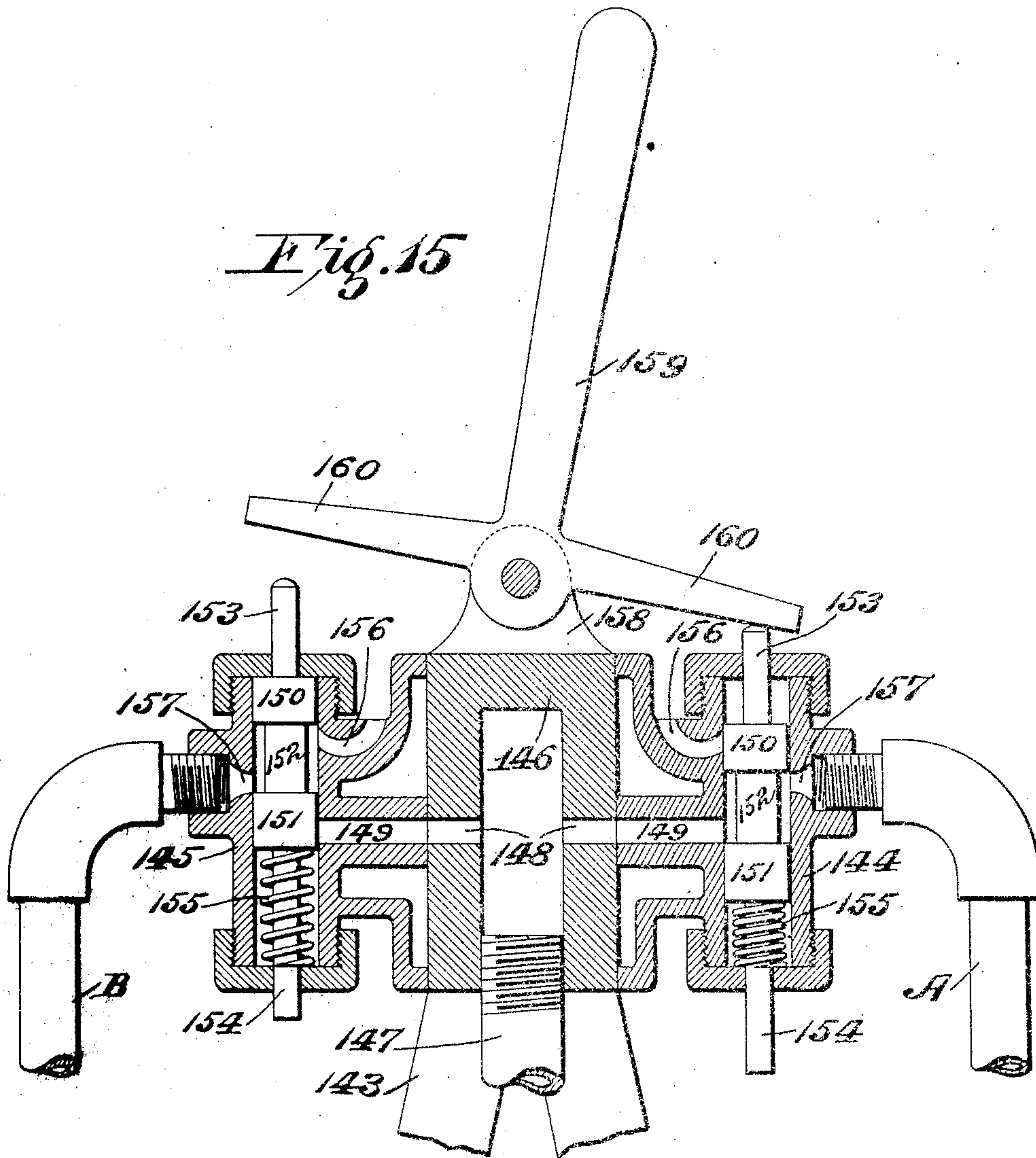
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954,492.

11 SHEETS—SHEET 10.



Witnesses:

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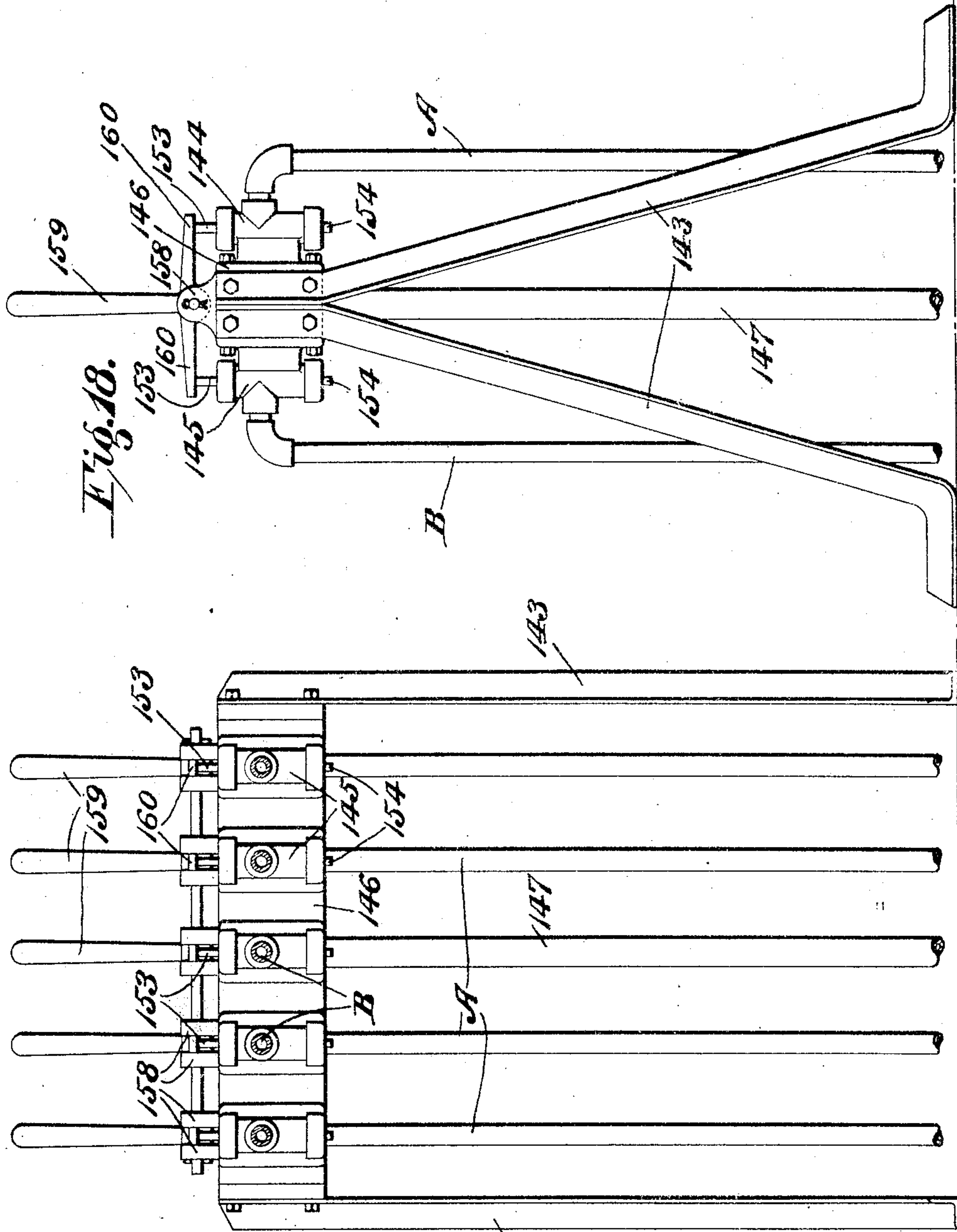
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954,492.

W. C. ZELLE.
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APPLICATION FILED NOV. 27, 1908.

Patented Apr. 12, 1910.

11 SHEETS—SHEET 11.



Witnesses:
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Fig. 17.

143

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UNITED STATES PATENT OFFICE.

WILLIAM C. ZELLE, OF ST. LOUIS, MISSOURI.

PORTABLE LOADING-MACHINE.

954,492.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed November 27, 1908. Serial No. 464,719.

To all whom it may concern:

Be it known that I, WILLIAM C. ZELLE, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Portable Loading-Machines, of which the following is a specification.

This invention relates to portable loading machines.

It has for its principal objects to facilitate the economical handling and loading of materials for transportation; to provide for gathering, hoisting and dumping the material to be handled; to provide for the easy operation and control of the various mechanisms of the machine, and to attain certain other advantages hereinafter more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a side elevation of a portable sugar cane gathering and loading machine embodying my invention, showing the crane lowered and the gathering device in position to be operated, portions of the actuating and controlling mechanisms being omitted; Fig. 2 is a fragmentary rear view showing the crane raised and swung laterally from the portable platform with its hinged end frame in dumping position above a wagon body adapted to receive the material from the gathering device; Fig. 3 is a fragmentary side elevation showing the crane in raised position in front of the portable platform with its hinged end frame folded back and the gathering device restored to first position; Fig. 4 is a front elevation of the rotatable mast upon which the crane is pivotally mounted; Fig. 5 is a vertical section through the mast and its support; Fig. 6 is a longitudinal vertical section through the main frame portion of the crane; Fig. 7 is a detail longitudinal vertical section through the outer end portion of the crane main frame and the hinged end frame in closed position with the gathering device drawn forwardly thereon; Fig. 8 is a front elevation of the lower portion of the hinged end frame with the gathering device thereon; Fig. 9 is a top plan view of the gathering device detached from the crane; Fig. 10 is a view partly in side elevation and

partly in vertical section of the portable platform, showing the relative positions of the several actuating and controlling mechanisms in diagram; Fig. 11 is a top plan view of the portable platform showing portions of the actuating and controlling mechanisms in diagram; Fig. 12 is a view, partly in top plan and partly in horizontal section, showing a winding drum and the actuating and controlling mechanisms therefor; Fig. 13 is a side elevation of the winding drum and its actuating and controlling mechanisms; Fig. 14 is a longitudinal vertical section through an air cylinder for the clutch mechanisms; Fig. 15 is a vertical cross section through the main air supply duct and two companion reversing throttle-valve cylinders communicating therewith; Fig. 16 is a longitudinal vertical section through a safety or stop valve casing and portion of the tubular valve-actuating rod; Fig. 17 is a side elevation of the main air supply duct casting with the several throttle-valves thereon and the supporting standards therefor; and, Fig. 18 is an end elevation of said supporting standards, air supply duct casting and throttle-valves thereon.

Sugar cane is usually planted and grown in rows of ridges or hills about six feet apart with furrows averaging one foot in depth between the rows. In harvesting sugar cane the cane is cut close to the soil. In fact, it is usually cut off a short distance under the soil so as to protect the rooted plants or stubs in order to yield a good stand of cane for the following season and, also, for the reason that there is more sugar in the cane closer to the roots than at the tops thereof. Therefore, no stubs are left to project above the soil, and for the purposes of my invention, the cut canes or stalks are laid crosswise of the furrows from hill to hill. Preferably, for convenience in harvesting, to facilitate handling and loading, and to minimize the cost thereof, the canes or stalks cut from three adjacent hills or rows are laid in a single row crosswise of the furrow between two adjacent hills so that throughout the field the cut canes will be symmetrically arranged crosswise in rows with a space of two open furrows and one unoccupied hill between each row of cut canes so arranged. This arrangement permits of the passage of a wagon lengthwise of the open furrows and also permits of the progressive travel of the loading machine without disturbing the

rows adjacent to the one being gathered and loaded, as will hereinafter more fully appear.

The loading machine illustrated in the accompanying drawings comprises a portable platform 1 which is mounted on suitable traction wheels 2. The machine is provided with suitable propelling and steering mechanism hereinafter more fully set forth. The traction wheels 2 are preferably spaced apart a distance sufficient to straddle from middle to middle of two adjacent furrows. At the front of the platform is mounted a derrick or crane comprising a rotatable mast 3 which is mounted at one front corner of said platform 1 and at a point to be substantially medially above the furrow when the machine is in operation. Preferably, this mast comprises two parallel channel members 4 having their flanges disposed inwardly. At the top of the mast is secured a casting or forging 5 from which projects an upstanding pivot stud or projection 6 to which the upper ends of stay members 7 and 8, respectively, are pivotally connected. The stay member 7 is secured at its lower end to the rear of the platform 1 while the stay member 8 is likewise secured to the side of the platform opposite to that on which the mast is mounted. The lower ends of the channel members 4 of the mast are riveted or bolted to a base casting or turn-table 9 which is provided with a central hub or bearing portion 10 and a segmental, peripherally toothed worm wheel 11 which is arranged to mesh with a worm screw 12 secured on a driving shaft 13 and whereby the mast may be rotated as hereinafter more fully set forth. The central bearing portion or hub 10 of the turntable is swiveled on a cylindrical tubular projection 14 on a hollow supporting casting or base 15. This supporting member has a series of grooved pulleys or sheaves 16 journaled therein and under which the respective operating cables or ropes of the gathering and loading mechanisms are passed.

The gathering and loading mechanism comprises a structural swinging frame or boom which is pivotally connected at one end to the mast 3 and has pivotally mounted on its outer end a carrier frame for the gathering and dumping devices. Preferably, the boom frame comprises two parallel channel side members 17 which are connected by cross tie members or angles 18. Hinge members 19 are secured to the inner end portions of the channel members 17. These hinge members are arranged to fit in vertically bifurcated lugs 20 located on the turntable 9 on opposite sides of the mast. The ears or forks of the bifurcated lugs 20 are provided with alining perforations 21 adapted to receive the pivot bolts 22 for the hinges. The boom frame has a depending bracket

frame at its inner end comprising downwardly extending members or angles 23 at each side which are rigidly connected to the respective channel members 17 and have cross connecting members or angles 24. Preferably, the lowermost cross connecting angle 24 is secured to the extreme lower end portions of the downwardly extending angles 23 and the intermediate cross angle 24 is located a short distance above said lowermost angle 24 so as to serve as rests and limiting stops for the end portion of a carrier frame which is pivotally mounted on the outer end of the boom frame. Said depending bracket frame further comprises diagonal stays or braces 25 which are rigidly connected to the channel members 17 and to the lower end portions of said members 23.

The carrier frame preferably comprises a parallel pair of channel members 26 having their flanges inwardly disposed so as to provide guideways or tracks for a gathering device as will hereinafter be more fully set forth. The channel side members 26 are connected at their inner ends by cross connecting members or angles 27 and at suitable intervals throughout their lengths by tie members or angles 28. Rigidly secured to the outer ends of the side members 26 is an upstanding frame comprising upright side posts or angles 29 and cross members or angles 30. The upper end portions of the perpendicular side posts are connected to the inclined braces or stay members 31 which are connected at their lower ends to the side members 26 near the inner ends thereof. The two inclined braces 31 are preferably connected by cross tie-members or angles 32, and it is also preferable to provide gusset plates 33 at the joints of both the boom and the carrier frame structures. So, too, the frames may be otherwise stiffened by providing ordinary lattice work or diagonal cross braces in any obvious arrangement (not shown).

The carrier frame is provided with perforated ears or hinge members 34 on opposite sides thereof near its outer end which are adapted to cooperate with perforated hinge members 35 secured on the outer end portions of the boom frame members 17. A rod or shaft 36 is passed through the hinge members 34 and 35 so as to constitute the pivot pin for the hinges and it has a grooved pulley or sheave 37 journaled thereon about midway between the sides of the frames. A second pulley or sheave 38 is journaled above said first mentioned pulley in vertical alignment therewith and in close relation thereto. This second mentioned pulley is mounted on a shaft 39 which is carried by upstanding brackets or arms 40 secured on the shaft 36 on each side of the pulley 37. These pulleys serve to guide the rope for operating the gathering device.

Hingedly mounted on the front or outer end of the carrier frame is a dumping frame comprising channel side members 41 having their flanges disposed inwardly. These channel members are of the shape and size to correspond to the channel members 26 of the carrier frame and are arranged to constitute a continuation of the same when the dumping frame is in closed position. The dumping frame further comprises a perpendicular inner end portion comprising side posts or angles 42 and cross tie members or angles 43 corresponding substantially to the perpendicular outer end portion of the carrier frame against which it abuts in the closed position of the dumping frame. The dumping frame further comprises diagonal braces 44 which extend from the top of the perpendicular inner end portion down to the outer end portions of the channel members 41.

A cover plate 45 is secured to the channel members 41 across the forward portion of the dumping frame and this cover plate is preferably reinforced by an angle 46 secured on its upper face along its front marginal portion. A cross tie member or angle 47 is secured to the channel member 41 across the rear portion of the dumping frame. A pair of plates or brackets 48 are secured to this cross member 47 and to the lower cross member 43. These plates or brackets support a shaft 49 on which is journaled a grooved pulley or sheave 50 adapted to cooperate with the operating rope for the gathering device.

At the front of the dumping frame is mounted a rock shaft 51 which is provided with a series of holes diametrically there-through. Bars or fingers 52 are adjustably secured in said holes by set screws 53. Notched disks 54 are fixedly mounted on the rock shaft 51 so as to cooperate with pivotal dogs or pawls 55 which are fixedly secured on a rock shaft 56 which is journaled on the dumping frame inwardly from the first mentioned rock shaft 51. The dogs 55 are resiliently held in engagement with the notched portion of the disks 54 by springs 57 which are interposed between the top of the plate 45 and the arms 58 fixedly secured on the rock shaft 56. The notched disks and holding dogs are arranged so that the fingers or prongs 52 are held normally perpendicularly pendent from the dumping frame. The fingers are limited in swinging in one direction by a cross member or angle 59 which is secured at its ends to the undersides of the channel members 41.

The tripping device for the dogs or pawls 55 comprises a lever or arm 60 which is fixedly secured on the rock shaft 56. This arm is connected by a rod 61 to a similar arm 62 of a bell crank whose other arm 63 is bifurcated to straddle a trigger member

which is pivotally mounted on a cross bar 64 in the upper portion of the dumping frame. The trigger member comprises a yoke or slotted frame 65 in which a cross head 66 is slidably mounted. This cross head is connected to a rod 67 which projects through an opening in the bottom of the yoke or frame 65 and is provided with a loop or eye 68 to which the dumping rope is attached. The cross head projects laterally from opposite sides of the yoke so as to overhang the forks of the bifurcated arm 63 of the bell crank in order to engage and actuate the same when it is desired to throw the dogs 55 out of engagement with the disks 54 in a manner hereinafter more fully set forth. The cross head 66 and rod 67 are held normally retracted by a spring 69 which is coiled about the rod between the cross head and the lower end of the yoke.

The boom and carrier frames are held normally suspended in lowered position with the dumping frame folded back in closed position against the carrier frame by stay chains or cables 70 which are preferably connected at one end to the cross bar 64 in the upper part of the dumping frame and have their opposite ends secured to the upper portion of the mast. Preferably, two stay chains are employed and they are arranged in parallel relation so as to evenly balance the suspended frames.

The gathering device comprises a frame comprising two parallel elongated side members 71 which are preferably angles arranged with one flange or leg vertical and having their horizontal flanges or legs disposed inwardly. Rollers 72 are journaled on stub shafts or studs 72^a secured to the vertical flanges of said side members 71. These rollers are adapted to travel in the trackways provided by the inwardly disposed flanges of the channel members 26 and 41, respectively, of the carrier and dumping frames. The rear end portions of the angle members 71 are riveted or otherwise rigidly secured to the horizontal portion 73 of an angularly bent plate whose end marginal portion is reinforced by an angle 74 secured to the under face thereof. Said bent plate has a downturned perpendicular portion 75 which is provided with lateral extensions or wings 75^a. Preferably, the wings or extensions 75^a are bent forwardly at a slight angle with respect to the downturned portion 75 of the plate. Stiffening members or angles 76 are secured across the front faces of the portions 75 and its lateral extension 75^a on a line with the upper and lower marginal portions of said extensions. Diagonal braces 77 are preferably connected to the rear of the horizontal and downturned portions 73 and 75, respectively, of the plate so as to further stiffen the structure. The gathering device further com-

prises a series of horizontal prongs or fingers 78 having upturned portions 79 which are secured on the back of the downturned portion 75 of the plate. On the backs of the wings or extensions 75^a are mounted downwardly projecting fingers 80. These prongs or fingers 78 and 80 are preferably slidably mounted in yokes or seats 81 and secured by set screws or other suitable devices 82 so as to be adjusted vertically to conform to the contour of the furrow as shown in dotted lines in Fig. 8. The fingers or prongs 52 on the dumping frame may also be similarly adjusted.

The gathering device is actuated by a rope or cable which will be referred to as the "loading rope". This rope is preferably attached at one end to a rock arm or lever 83 which has a limited movement and is resiliently held normally in a rearward position. Preferably, this arm or lever 83 projects through a slot in the horizontal plate 73 and is fixedly mounted on a rock shaft 84 which is journaled in brackets on the underside of said horizontal plate 73. This rock shaft 84 has dogs or pawls 85 secured on its ends so as to impinge against the undersides of the channel members 26 and 41, respectively, of the carrier and dumping frames. The loading or operating rope 86 is passed through an eye in a lug or projection 87 on the vertical plate 75. Preferably, a spring 88 is coiled around said rope between said projection 87 and the rock arm 83 whereby said rock arm is restored to normal or retracted position when the pull upon the loading rope is relinquished, and whereby said dogs 85 are resiliently held in contact with the channel members 26 and 41. The loading rope 86 is carried forwardly and over a pulley 89 journaled on the middle portion of the shaft 51 at the front of the dumping frame, thence rearwardly over the pulley 50 at the rear of said dumping frame, between the pulleys 37 and 38 at the front of the carrier frame, over a pulley 90 at the bottom of the mast 3, and thence to a suitable winding and controlling mechanism.

Preferably, horizontal forwardly projecting fingers 78^a are provided at the top of the gathering device in substantially parallel relation to the middle gathering fingers 78.

A hoisting rope or cable 91 is secured to the outer portion of the boom frame, preferably near the middle thereof. This rope may be conveniently attached to the shaft 36 at the outer end of the boom frame and carried over the uppermost pulley 92 on the mast 3, and thence to a suitable winding and controlling mechanism.

A dumping rope 93 is attached to the tripping device and carried over the intermediate pulley 94 on the mast 3 and thence to a suitable winding and controlling mechanism. The several winding and control-

ling mechanisms are preferably similar and will be hereinafter more fully set forth.

The operation of so much of the machine as has been herein set forth is as follows: As hereinbefore stated the cut canes or stalks are laid in rows crosswise of a furrow between two adjacent hills with an open space of two furrows between each row of cut canes so arranged throughout the field. The wagon W upon which the cane is to be loaded, straddles the hills between the two open furrows to the left of the row of cut canes (see Fig. 2 of the drawings). The wheels of the running gear are preferably spaced apart a distance to run on the bottoms of the furrows as shown. The traction wheels on the left hand side of the portable platform travel behind the gathering device in the furrow across which the row of cut canes being gathered are laid while the wheels on the opposite side of the platform travel in the furrow on the right of the row of canes being gathered.

The boom and carrier frames are lowered to a position substantially as shown in Fig. 1 of the drawings with the fingers or bars 52 at the front of the dumping frame in contact with the soil, the gathering device being at the rear end of the carrier frame and beyond the end of the row of cane to be gathered. The winding mechanism for the loading or operating rope 86 for the gathering device is operated to draw said gathering device forwardly on the carrier frame with its horizontal prongs or forks dragging on the ground beneath the canes suspended across the furrow. The hinged arrangement of the carrier frame on the boom frame permits of a limited swinging movement of said carrier frame so as to permit the gathering device to accommodate itself to any unevenness in the ground. The canes in the path of the moving gathering device are collected and carried forwardly on said device until resisted by the downwardly projecting fingers 52 at the front of the dumping frame, whereby said gathered canes are clamped and bound into a tight bundle. The arrangement of the downwardly projecting fingers 80 on the forwardly bent lateral wings 75^a of the gathering device insures the binding of the bundle of canes near the ends thereof. When the bundle is securely clamped on the gathering device, the winding mechanism for the hoisting rope 91 is operated so as to raise the boom and carrier frames. As said frames are being raised the hinged dumping frame will open away from the carrier frame by its own weight. During this actuation of the parts, the stay chains 70 sustain the upper end portion of the dumping frame and limit the dumping position thereof. After the frames have been raised, the mast is rotated substantially a quarter turn so as to swing the dumping frame above the body

of a wagon to the side of the machine, as shown in Fig. 2 of the drawings. The dumping rope 93 is then actuated sufficiently to trip the mechanism for throwing the pawls 55 out of engagement with the notched disks 54 on the shaft 51 carrying the fingers 52 at the front of the dumping frame, whereupon said fingers will be free to swing outwardly as shown in dotted lines in said Fig. 2 and thereby release the bundle of canes which will then fall into the wagon. After the load is dumped from the gathering device, the dumping rope 93 is further actuated to fold or close the dumping frame back against the carrier frame and the mast may then be turned to bring the frame in front of the platform as shown in Fig. 3 of the drawings. The loading rope 86 is then let out sufficiently to permit the gathering device to return to normal or first position on the carrier frame as shown in said Fig. 3. The machine may then be moved forwardly and the frames lowered into position so that the gathering device may gather another bundle of canes, beginning at the point where the depending fingers 52 of the dumping frame rested during the gathering of the previous bundle.

Any suitable propelling and steering mechanism may be provided for the portable platform 1. Preferably the front axle 95 is the driving axle. On this axle is fixedly secured a worm wheel 96 which meshes with a worm screw 97 on a shaft 98. This shaft is journaled at one end in a gear casing or housing 99 which surrounds said worm wheel and screw. It extends upwardly at an incline to a point above the platform 1 where it is journaled in a bearing 100. On the upper end of the shaft 98 is fixed a bevel pinion 101 which is adapted to mesh with two oppositely disposed reversing gears of a clutch mechanism such as is illustrated in Fig. 12 of the drawings. The clutch mechanisms for the propelling, mast-turning and winding devices are preferably similar, and, therefore, will be shown merely diagrammatically in Figs. 10 and 11, and in detail in Figs. 12 to 14, inclusive, of the drawings.

Referring now more particularly to Figs. 10 and 11, wherein the mechanism and devices which are mounted on the platform are shown partly by diagrams, a suitable motor 102, preferably a gasoline engine, is indicated at the rear of the platform. The driving shaft 103 which is connected to the motor has a bevel gear 104 thereon which meshes with a similar gear 105 on a jack shaft 106. This jack shaft is operatively connected with the clutch mechanism 107 for the propelling device herein referred to, and it has on its end a bevel gear 108 which meshes with a like gear 109 on a line shaft 110. This line shaft has a gear or pinion 111 thereon which meshes with a gear 112

on the operating shaft of an air compressor 113 which may be of any suitable construction. From this air compressor any suitable pipe connection may be made to air receivers 114 which may supply compressed air to the several controlling devices in a manner hereinafter more fully set forth. The line shaft 110 extends longitudinally on one side of the platform and is operatively connected with a series of clutch mechanisms 115, 116, 117, 118 for the respective winding devices 119, 120, 121 of the hoisting, gathering and dumping mechanisms, and the driving shaft 113 of the mast-turning mechanism.

Referring now to Figs. 12 to 14, inclusive, a winding drum 122 is secured on a shaft 123 which is journaled in a frame 124 which may be mounted on the platform 1. The shaft 123 also has secured thereon a worm wheel 125. The worm wheel meshes with a worm screw 126 which is secured on a cross shaft 127 which is journaled in said frame 124. This shaft 127 has a bevel pinion 128 on its end which meshes with two oppositely disposed bevel gears 129, 130, respectively, which are loosely mounted on said line shaft 110 so as to rotate freely thereon but are held from moving endwise thereof. Preferably, the gears 129, 130, have abutting hub portions 131 which are grooved peripherally so as to cooperate with a counterpart portion of an annular coupling member 132. Said gears are provided with an outwardly flaring circular pocket 133 in their outer ends adapted to receive the tapered clutching portion 134 of oppositely disposed clutch members 135 which are feathered on the driving shaft 110. These clutch members 135 are arranged to be shifted on the shaft and held in clutching position relative to their respective gears 129, 130, by pivotally mounted yokes 136 which preferably have a slot and pin connection with the outwardly projecting rods of pistons 137, 138, respectively, in an air cylinder 139. This cylinder is provided with ports 140, 141, respectively, at each end thereof which communicate with air pipes A², B², respectively, in a manner hereinafter more fully appearing. A coiled spring 142 is interposed between the two pistons 137, 138 in each of the air cylinders 139 of which there is one for each of the respective clutch mechanisms for the several actuating devices of the machine. The spring 142 is provided to restore the pistons to normal or outward position and to resiliently hold them in such position, in which position the clutch members 135 are disengaged from their respective gears 129, 130, on the driving shaft.

Separate controlling devices are provided for the several clutch mechanisms. Preferably, these controlling devices are conveniently arranged in a closely arranged series on a common supporting frame 143

(see Figs. 17 and 18) which may be mounted in any desirable position on the portable platform so as to be within reach of an operator. Preferably, the respective controlling devices comprise oppositely disposed, reversing throttle valves, 144, 145, which are preferably mounted on opposite sides of a hollow casting or air duct 146 which is mounted on the supporting frame 143. This air duct is connected with a supply pipe 147 which communicates with one of the compressed air receivers 114 in any suitable manner. The air duct 146 is provided with a series of openings 148 in its opposite sides which communicate with ports 149 in the castings for the respective controlling valves 144, 145 which are secured on said air duct. The controlling valve castings have vertical cylindrically bored chambers with which said ports 149 communicate. Slidably mounted in each of said cylindrical chambers is a cylindrical valve block having enlargements or heads 150, 151 and a reduced intermediate portion 152. The valve blocks have stem portions 153, 154 projecting from opposite ends thereof through central openings in the top and bottom heads, respectively, of said valve cylinders. A spring 155 is coiled around the lower stem of each valve block inside of the cylinder so that the block is resiliently held in normally raised position. The valve blocks are so proportioned that their lower heads 151 normally close the ports 149 in the valve castings, and the reduced intermediate portions of the blocks are of such a length that communication is normally established between an exhaust port 156 in the valve casting and a port 157 therein which communicates with an air pipe A or B according to which one of the pair of valves is referred to. The distance from the exhaust port 156 to the port 157 is substantially the same as the distance between said port 157 and the port 149 so that when the valve block is depressed communication is established between said two last mentioned ports. In the depressed position of the valve block the exhaust port 156 is closed by the upper head 150 of the valve block as shown to the right in Fig. 15 of the drawings.

Pivotaly mounted between pairs of lugs 158 on the air duct 146 is a series of hand levers 159, there being a single lever for each pair of reversing throttle-valves 144, 145. These hand levers are provided with oppositely extending lateral arms 160 which overhang the upwardly projecting valve stems 153. Normally, the hand levers are held in vertical position by the resiliently mounted valve blocks whose stems 153 bear against the undersides of said laterally projecting arms 160 as shown in Fig. 18 of the drawings. By this arrangement, the hand levers may be rocked toward either side of

the air duct as the case may be to depress the block in the valve it is desired to actuate. Thus, for example, when it is desired to actuate one of the clutch mechanisms to drive its companion winding or operating device in one direction, the hand lever for that particular mechanism may be moved as shown in Fig. 15 of the drawings. As illustrated, communication is established between the air supply duct 146 and the air pipe A which preferably communicates with a port 161 in a safety valve casting or cylinder A¹ (see Figs. 13 and 16 of the drawings). A second air pipe A² communicates with a port 162 which opens into the valve chamber at a point adjacent to said first mentioned port 161. This air pipe A² leads to the port 140 at the end A³ of the clutch air cylinder 139. Pressure being admitted behind the outer face of the piston 137, said piston will be moved inwardly and thereby the clutch member 135 will be forced into engagement with the gear 129. Thus the motion is transmitted from the driving shaft to the bevel gear 128 of the shaft 127 of the winding or operating device as the case may be. When it is desired to stop the rotation of the driven shaft 127, the hand lever 159 is moved or restored to normal position thereby permitting the spring to restore the valve block in the throttle-valve 144 to normal position, whereupon the pressure in the air pipes A, A², and the clutch air cylinder is exhausted through the exhaust port 156 in said throttle-valve casing 144.

The safety valves A¹ are provided, and preferably arranged to be automatically operated at a predetermined time, to exhaust the pressure in the air pipes and clutch air cylinders in case the operator fails to stop the actuation of the respective winding or operating devices by restoring the throttle-valves to normal condition. Preferably, each of these safety valves comprises a cylindrical chamber having the port openings 161, 162 above referred to, which are arranged close together near one end of the chamber. A reciprocatory cylindrical valve block is mounted in said chamber. This valve block has heads or enlargements 163, 164 at its opposite ends and a reduced intermediate shank portion 165 which is of a sufficient length to span the two port openings 161, 162, so as to establish communication therebetween when the block is at the end of the chamber as shown in Fig. 16. An exhaust port 166 is provided in the valve cylinder, and it is normally closed by the head 164 of the valve block. The exhaust port 166 is located at such a distance from the port 162 that the reduced shank portion 165 of the valve block will span said ports 162 and 166 so as to establish communication therebetween when the valve block is

moved inwardly until the head 163 closes the port 161, and whereby the air pressure supply is cut off from said pipe A² and the pressure therein and in said clutch air cylinder is exhausted through said exhaust port 166.

The safety-valves are preferably operated in the following manner: The valve blocks are provided with stems 167, 168, which project from their opposite ends through central openings in the heads of the valve cylinders. A spring 169 is coiled around the stem 167 inside of the cylinder so as to bear against the valve block to resiliently hold the same in normal position. The opposite stem 168 projects to the outside of the cylinder a considerable distance and is provided with a collar or shoulder 170 against which the end of a sleeve or tubular rod 171 is adapted to bear. This rod 171 loosely fits said stem 168 and it has a collar or stop 172 adjustably mounted thereon so as to be in the path of a projection 173 on a nut 174 which is threaded on a screw 175. This screw 175 is connected to or receives motion from the shaft 127 of the winding or operating device. Preferably, this screw 175 is connected axially at one end to the shaft 127 by a coupling 176 and is journaled at its opposite end in a bearing 177. The screw 175 is arranged in parallel relation to the rod 171 and the lower end of the projection 173 on the nut 174 is preferably bifurcated so as to straddle said rod. By this arrangement, the nut will travel lengthwise of the screw when said screw is rotated with the shaft 127 until the projection 173 bears against the stop 172 on said rod. The continued travel of the nut 174 will cause the valve block to be moved inwardly until communication is established between the port 162 and the exhaust port 166, whereupon the clutch will be automatically released should the operator fail to restore the handle lever for the throttle-valve to normal position. When the safety-valve has operated as above set forth, the winding or operating device will become instantly inactive and cannot be again actuated in the same direction until the handle lever 159 has been restored to normal position and then operated reversely to operate the opposite throttle-valve 145 to admit air pressure into the air pipe B and through the safety-valve chamber B¹, air pipe B², port 141, and thence into the end B³ of the clutch air cylinder 139. The opposite clutch member 135 will thereby engage its companion bevel gear 130 on the driving shaft and through the bevel pinion 128 on the shaft 127 said shaft will be rotated in a reverse direction, thereby reversing the operation of the winding or operating device and also causing the nut 174 to move reversely on the screw 175, thereby permitting the spring 169 to restore the

valve block to normal position. Should the operator fail to stop the actuation of the mechanism at the proper time, the safety-valve B¹ will operate in a manner similar to the safety-valve A¹, as hereinbefore set forth. As shown in Fig. 13 each valve may be independently actuated by a single tubular rod 171 and nut 174. The stop collars 172 may be readily adjusted thereon to any desired position so as to cooperate with the projection 173 on the nut 174 at any predetermined time. The travel of the nut 174 is governed by the pitch of the screw threads and speed at which the screw 175 is rotated.

The operating shaft 13 for the mast-turning mechanism may be screw-threaded as at 187 in a manner corresponding to the screws 175 so as to receive a nut 188 which is adapted to cooperate with an operating rod 171 for the safety-valves of a reversing clutch mechanism in a manner as hereinbefore set forth.

The platform may be provided with a steering mechanism comprising a bevel toothed sector 178 which is mounted on a vertically disposed rock shaft 179 which is in turn operatively connected to the steering axle 180 or to the wheels thereon in any well known manner. The toothed sector meshes with a bevel pinion 181 on the end of a shaft 182 which has a worm gear 183 on its opposite end. This worm gear cooperates with a worm screw 184 on the lower end of a staff 185 which extends upwardly above the platform adjacent to the controlling valves and is provided with a hand wheel 186 whereby a single operator may easily control the entire machine.

Obviously, the gathering device or scoop may be modified in many ways so as to gather materials other than canes or stalks, and the entire mechanism may be modified without departing from my invention. Therefore, I do not wish to be limited to the exact construction and arrangement of parts herein shown.

What I claim as my invention and desire to secure by Letters Patent is:

1. A loading machine comprising a movably supported carrier frame, a dumping frame thereon, a gathering device movably mounted on said carrier frame lengthwise thereof and adapted to be moved onto said dumping frame and means for moving said gathering device on said carrier frame and onto said dumping frame.

2. A loading machine comprising a movably supported carrier frame, a dumping frame thereon, a gathering device movably mounted on said carrier frame and adapted to be moved onto said dumping frame, means for moving said gathering device on said carrier frame and onto said dumping frame, means for raising and lowering said carrier frame, means for limiting the dump-

ing position of said dumping frame, and means for releasing the gathered material from the gathering device while on said dumping frame in the dumped position thereof.

3. A loading machine comprising a portable platform, a carrier frame pivotally supported at the front thereof, a dumping frame pivotally mounted on the outer end of said carrier frame, means for raising and lowering said carrier frame, a connection between said dumping frame and a support on said platform, whereby said dumping frame is held in closed position and said carrier frame is supported in its lowermost position, said connection also permitting and limiting the opening of said dumping frame into dumped position as said carrier frame is raised, a gathering device movably mounted on said carrier frame and adapted to be moved onto said dumping frame, means for actuating said gathering device, and means for releasing the gathered material from said gathering device while on said dumping frame in the dumped position thereof.

4. A loading machine comprising a portable platform, a crane mounted on the front end thereof, said crane comprising a boom frame, a carrier frame pivotally mounted on the outer end of said boom frame and extending rearwardly thereof, means on the boom frame for limiting the swinging movement of the carrier frame with respect to said boom frame, means for raising and lowering the boom frame, a dumping frame hingedly mounted on the outer end of the carrier frame, a connection between the dumping frame and a support on the platform, whereby said dumping frame is held in closed position and the boom frame together with said other frames thereon are supported in their lowermost positions, said connection also permitting and limiting the opening of said dumping frame into dumped position as said boom frame together with said other frames thereon are raised, a gathering device movably mounted on said carrier frame and adapted to be moved onto said dumping frame, means for actuating said gathering device, and means for releasing the gathered material on said gathering device while on said dumping frame in the dumped position thereof.

5. A loading machine comprising a portable platform, a crane mounted on the front end thereof, said crane comprising a rotatable mast, a boom frame pivotally mounted on said mast, a carrier frame pivotally mounted on the outer end of said boom frame, means for limiting the swinging movement of said carrier frame with respect to said boom frame, a hoisting cable secured to said boom frame and passing over a pulley on said mast, means for operating said hoisting rope, and means for ro-

tating said mast, a dumping frame on the outer end of said carrier frame, a flexible connection between the dumping frame and said mast, whereby said dumping frame is held in closed position and the boom frame together with said other frames thereon are supported in lowermost position, said flexible connection also permitting and limiting the opening of the dumping frame into dumped position as the boom frame together with said other frames thereon are raised by the hoisting cable, a gathering device movably mounted on the carrier frame and adapted to be moved onto said dumping frame, means for actuating said gathering device, and means for releasing the gathered material from the gathering device while on said dumping frame in the dumped position thereof.

6. A loading machine comprising a portable platform, a rotatably supported crane at the front end thereof, said crane comprising a carrier frame having a dumping frame on the outer end thereof, a gathering device slidably mounted on the carrier frame and arranged to be moved onto said dumping frame, means for actuating the crane, means for moving the gathering device lengthwise of said carrier frame and onto said dumping frame, and means for releasing the gathered material from said gathering device while on said dumping frame in the dumped position thereof.

7. A loading machine comprising a crane, said crane comprising a pivotally supported carrier frame having trackways thereon, a dumping frame hingedly mounted on the outer end of said carrier frame, said dumping frame having trackways thereon arranged to form a continuation of the trackways on said carrier frame in the closed position of said dumping frame, a gathering device movably mounted on the trackways on said carrier frame and adapted to be moved onto the trackways on said dumping frame, means for raising and lowering said carrier frame, means for moving said gathering device lengthwise of said carrier frame and onto said dumping frame, and means for releasing the gathered material from said gathering device while on said dumping frame in the dumped position thereof.

8. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, said carrier frame having parallel trackways thereon arranged to lie substantially horizontal in the lowered position of said carrier frame, a gathering device movably mounted on said trackways, a dumping frame hingedly mounted on the outer end of said carrier frame, said dumping frame having trackways arranged there-

on to form a continuation of the trackways on said carrier frame in the closed position of said dumping frame, and said dumping frame also having an abutment thereon adapted to cooperate with said gathering device to hold the gathered material thereon, means for moving said gathering device on the trackways of said carrier frame and onto the trackways of said dumping frame, and means for releasing the gathered material from said gathering device while on said dumping frame in the dumped position thereof.

9. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame, a dumping frame mounted on the outer end of said carrier frame, said dumping frame being arranged to receive said gathering device from said carrier frame in the closed position of said dumping frame, and said dumping frame also having an abutment arranged thereon to cooperate with said gathering device to hold the gathered material thereon, and means for moving said gathering device on said carrier frame and onto said dumping frame.

10. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame, a dumping frame mounted on the outer end of said carrier frame, said dumping frame being arranged to receive said gathering device from said carrier frame in the closed position of said dumping frame, and said dumping frame also having a swinging abutment thereon adapted to cooperate with said gathering device to hold the gathered material thereon, means for holding said abutment in cooperative relation to said gathering device, and means for releasing said abutment from such cooperative relation to release the gathered material from said gathering device while on said dumping frame in the dumped position thereof.

11. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, a dumping frame hingedly mounted on the outer end of said carrier frame, trackways on said carrier frame and corresponding trackways on said dumping frame, a gathering device comprising a frame having rollers arranged to travel on said trackways, said last mentioned frame also having gathering fingers thereon, a swinging abutment on the outer end of said dumping frame, said abutment

comprising fingers arranged to cooperate with said gathering fingers to hold the gathered material thereon, means for holding said swinging abutment in cooperative relation to said gathering fingers, means for releasing said swinging abutment from such cooperative relation to release the gathered material from said gathering device, and means for actuating said gathering device.

12. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, a dumping frame hingedly mounted on the outer end of said carrier frame, corresponding trackways on each of said frames, said trackways being arranged to lie substantially horizontally in the lowered position of said carrier frame, a gathering device comprising a frame having rollers arranged to travel on said trackways, said last-mentioned frame also having vertically adjustable gathering fingers thereon, a swinging abutment on the outer end of said dumping frame comprising vertically adjustable depending fingers arranged to cooperate with said gathering fingers to hold the gathered material thereon, means for holding said swinging abutment in cooperative relation to said gathering fingers, means for releasing said swinging abutment from such cooperative relation to release the gathered material from said gathering device, and means for actuating said gathering device.

13. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lowering said carrier frame, a dumping frame on the outer end of said carrier frame, corresponding trackways on each of said frames, said trackways being arranged to lie substantially horizontal in the lowered position of said carrier frame, a gathering device arranged to be moved on said carrier frame and onto said dumping frame, said gathering device comprising a frame having rollers arranged thereon to travel on said trackways, said last mentioned frame having forwardly bent lateral wings, depending vertically adjustable gathering fingers on the intermediate portion of said frame, said gathering fingers having forwardly projecting lower end portions, and depending vertically adjustable fingers on said lateral wings, a swinging abutment on the outer end of said dumping frame, said swinging abutment comprising depending vertically adjustable fingers adapted to cooperate with said gathering fingers to hold the gathered material thereon, means for holding said swinging abutment in cooperative relation to said gathering fingers, means for releasing said swinging abut-

ment from such cooperative relation to release the gathered material from said gathering device, and means for actuating said gathering device.

5 14. A loading machine comprising a vertically swinging carrier frame, means for supporting said carrier frame in lowered position, and means for raising and lower-
 10 ing said carrier frame, a dumping frame on the outer end of said carrier frame, corresponding trackways on each of said frames, a gathering device movably mounted on said carrier frame and adapted to be
 15 moved onto said dumping frame, said gathering device comprising a frame having rollers arranged thereon to travel on said trackways, depending gathering fingers on
 20 said last mentioned frame, said fingers having horizontal forwardly extending end portions, horizontal forwardly extending fingers on said frame above said first men-
 25 tioned horizontal finger portions, a swinging abutment on the outer end of said dumping frame adapted to cooperate with the fingers on said gathering device to hold
 30 the gathered material thereon, means for holding said swinging abutment in cooperative relation to said gathering device, and means for releasing said abutment from
 such cooperative relation to release the gathered material from said gathering device.

15. A loading machine comprising a vertically swinging carrier frame, means for
 35 supporting the same in lowered position, means for raising and lowering said carrier frame, a dumping frame on the outer end of said carrier frame, a gathering device arranged to travel on said carrier frame and
 40 being also adapted to be moved onto said dumping frame, means for actuating said gathering device, means for releasing the gathered material from said gathering device while on said dumping frame in the
 45 dumped position thereof, and means for holding the empty gathering device in place on said dumping frame in the dumped position thereof.

16. A loading machine comprising a vertically swinging carrier frame, means for
 50 supporting the same in lowered position, and means for raising and lowering said carrier frame, a dumping frame on the outer end of said carrier frame, a gathering device arranged to travel on said carrier frame and
 55 being also adapted to be moved onto said dumping frame, means for actuating said gathering device, a releasable abutment on said dumping frame arranged to cooperate with said gathering device to hold the gathered material thereon, means for releasing
 60 said abutment to release the gathered material from said gathering device while on said dumping frame in the dumped position thereof, and means for holding the empty

gathering device in place on said dumping frame in the dumped position thereof.

17. A loading machine comprising a vertically swinging carrier frame, means for
 70 supporting the same in lowered position, and means for raising and lowering said carrier frame, a dumping frame on the outer end of said carrier frame, a gathering device arranged to travel on said carrier frame and
 75 being also adapted to be moved onto said dumping frame, means for actuating said gathering device, a releasable abutment on said dumping frame arranged to cooperate with said gathering device to hold the gathered material thereon, means for releasing
 80 said abutment to release the gathered material from said gathering device while on said dumping frame in the dumped position thereof, and means for holding the empty gathering device in place on said dumping
 85 frame in the dumped position thereof, said holding means comprising a resiliently pressed pawl which normally bears against said carrier frame or said dumping frame, said pawl being so connected and arranged
 90 with respect to the actuating means for said gathering device that it is rendered inactive while said gathering device is being actuated.

18. A loading machine comprising a portable platform, a crane mounted at the front
 95 end thereof, said crane comprising a rotatable mast, a boom frame pivotally secured at one end to said mast, a carrier frame pivotally mounted on the outer end of said
 100 boom frame and extending rearwardly thereof, means for limiting the swinging movement of said carrier frame with respect to said boom frame, a dumping frame hingedly mounted on the outer end of
 105 said carrier frame, corresponding trackways on each of said carrier and dumping frames, a gathering device arranged to travel on said trackways, means for actuating said gathering device, said means comprising
 110 a cable secured at one end to said gathering device and passed over a sheave at the outer end of said dumping frame, thence back over a sheave on the rear portion of said dumping frame, between sheaves on the
 115 front portion of said carrier frame, thence over sheaves on said mast, and thence to a winding drum on said platform, a releasable abutment arranged on said dumping frame in cooperative relation to said gathering device,
 120 a tripping device on said dumping frame for said releasable abutment, a cable secured at one end to said tripping device and passed over sheaves on said mast and thence to a winding drum on said platform,
 125 a hoisting cable secured at one end to the outer end of said boom frame and passed over sheaves on said mast and thence to a winding drum on said platform, an operating mechanism for each of said winding
 130

drums, a reversible controlling device for each of said drum-operating mechanisms, and a flexible connection between said dumping frame and said mast, whereby said dumping frame is held in closed position and said boom frame together with said other frames thereon are held in lowered co-operative position, and said flexible connection also permitting and limiting the opening of said dumping frame into dumped position as said boom frame together with said other frames thereon are raised by said hoisting rope.

19. A loading machine comprising a portable platform, a vertically and laterally swinging carrier frame at the front end of said platform, mechanism on said platform for operating said carrier frame, a dumping frame on the outer end of said carrier frame, a gathering device movably mounted on said carrier frame and adapted to be moved onto said dumping frame, connected mechanism on said platform for actuating said gathering device, a releasable abutment arranged on said dumping frame in co-operative relation to said gathering device, a tripping device on said dumping frame for said releasable abutment, connected mechanism on said platform for actuating said tripping device, connected mechanism on said platform for raising and lowering said carrier frame, and means for holding said dumping frame in closed co-operative position relative to said carrier frame in the lowered position thereof, said holding means also permitting the opening of said dumping frame into dumped position as said carrier frame is raised.

20. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, means for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame lengthwise thereof, means for actuating said gathering device, an abutment frame arranged to coöperate with said gathering device to gather the material and hold said material thereon, and means for releasing the gathered material from said gathering device.

21. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, means for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame lengthwise thereof, means for actuating said gathering device, a releasable abutment on said carrier frame for coöperating with said gathering device to gather the material and to secure the gathered material thereon, and means for dumping said gathering device.

22. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, connected

mechanism on said platform for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame lengthwise thereof, connected mechanism on said platform for actuating said gathering device, an abutment arranged to coöperate with said gathering device to gather the material and hold said gathered material thereon, means for dumping said gathering device, connected mechanism on said platform for actuating said dumping means, and controlling devices on said platform for each of said connected mechanisms, said controlling devices comprising automatic mechanism for rendering the respective mechanisms inactive at a predetermined time.

23. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, connected mechanism on said platform for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame, connected mechanism on said platform for actuating said gathering device, means for dumping said gathering device, connected mechanism on said platform for actuating said dumping means, and safety devices arranged to render the respective mechanisms inactive at a predetermined time.

24. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, connected mechanism on said platform for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame, connected mechanism on said platform for actuating said gathering device, means for dumping said gathering device, connected mechanism on said platform for actuating said dumping means, and a power shaft, clutch mechanisms between said power shaft and the respective first mentioned mechanisms, manually-operable controlling devices for said clutch mechanisms, and safety devices arranged to render said clutch mechanisms ineffective at a predetermined time.

25. A loading machine comprising a portable platform, a carrier frame movably supported at the front end thereof, connected mechanism on said platform for raising and lowering said carrier frame, a gathering device movably mounted on said carrier frame, connected mechanism on said platform for actuating said gathering device, means for dumping said gathering device, connected mechanism on said platform for actuating said dumping means, and a power shaft, oppositely disposed reversing clutch mechanisms between said power shaft and the respective first mentioned mechanisms, reversible manually-operable controlling devices for said clutch mechanisms and reversely-acting safety devices arranged to render said clutch mechanisms ineffective at a predetermined time.

26. A loading machine comprising a substantially horizontally movable frame having depending gathering fingers thereon, said fingers having forwardly projecting, substantially horizontal portions, and forwardly projecting fingers arranged on said frame above the forwardly projecting portions of said first mentioned gathering fingers and a stationary abutment frame comprising a series of depending fingers arranged in coöperative relation to said horizontally movable frame.

27. A loading machine comprising a substantially horizontally movable frame having depending gathering fingers thereon, said fingers having forwardly projecting, substantially horizontal portions, forwardly projecting fingers arranged on said frame above the forwardly projecting portions of said first mentioned fingers, and depending fingers on said frame laterally disposed relative to said first mentioned depending fingers and a stationary transverse abutment frame comprising a series of depending fingers arranged in coöperative relation to said horizontally movable frame.

28. A loading machine comprising a substantially horizontally movable frame having depending gathering fingers thereon, said gathering fingers having forwardly projecting, substantially horizontal portions, forwardly projecting fingers arranged on said frame above the forwardly projecting portions of said depending fingers, and depending fingers arranged on said frame laterally and forwardly of said first mentioned depending fingers on each side there-

of and a stationary, transverse abutment frame comprising a series of depending fingers arranged in coöperative relation to said horizontally movable frame.

29. A loading machine comprising a substantially horizontally movable frame having vertically adjustable, depending gathering fingers thereon, said gathering fingers having forwardly projecting, substantially horizontal portions, forwardly projecting, substantially horizontal fingers arranged on said frame above the forwardly projecting portions of said gathering fingers, and vertically adjustable, depending fingers arranged on said frame in inclined rows laterally and forwardly of the depending portions of said gathering fingers on each side thereof, and a stationary, transverse abutment frame having a series of vertically adjustable depending fingers in coöperative relation to said horizontally movable frame.

30. A gathering device for loading machines comprising a frame having vertically adjustable depending gathering fingers thereon, said fingers having forwardly projecting, substantially horizontal portions, and vertically adjustable, depending fingers arranged on said frame laterally of said first mentioned fingers on each side thereof.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses this 25th day of November, 1908.

WILLIAM C. ZELLE.

Witnesses:

G. A. PENNINGTON,
J. B. MEGOWN.