

W. D. DESCHAMP & G. C. JONES.

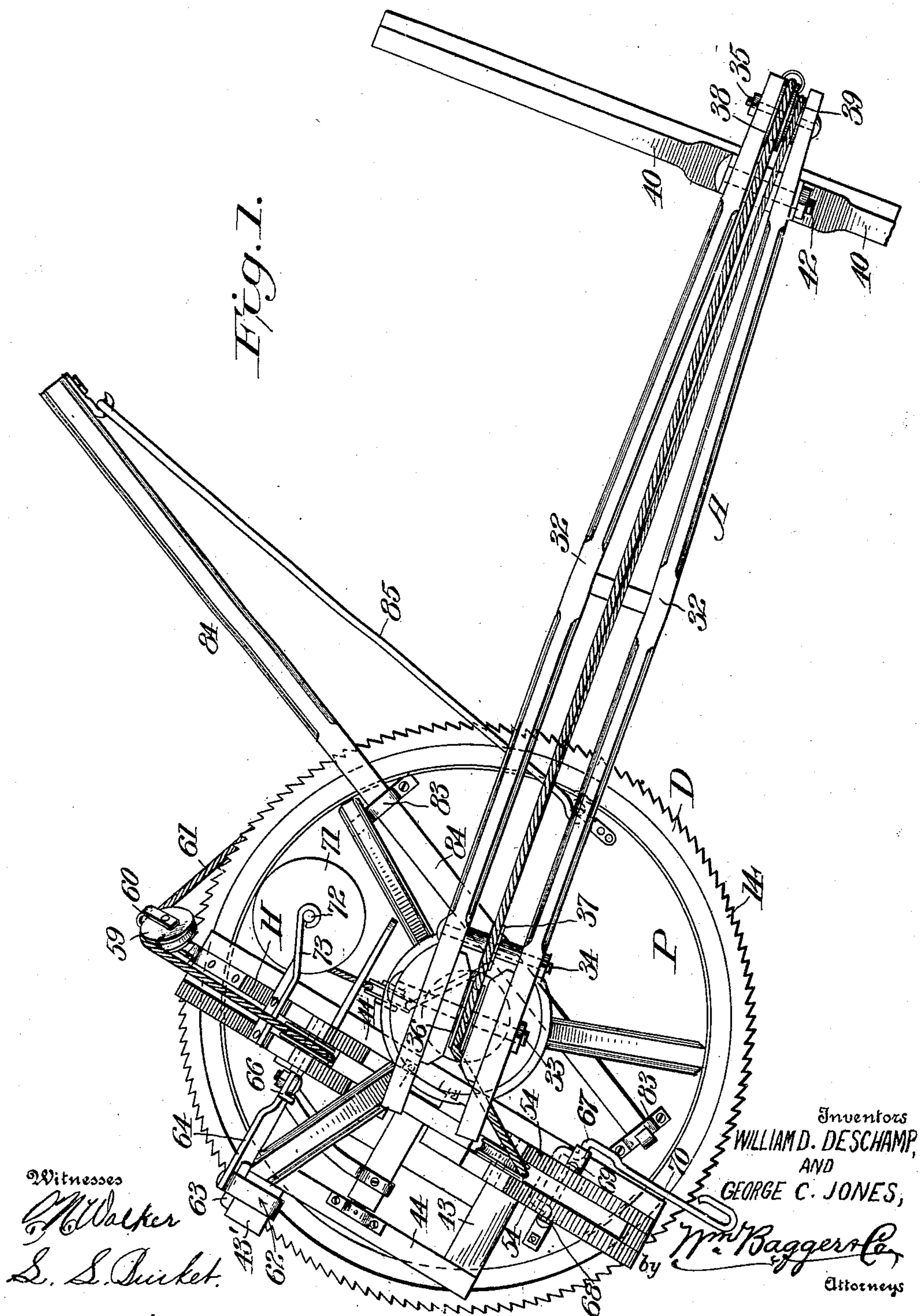
WELL DRILLING MACHINE.

APPLICATION FILED MAR. 11, 1909.

969,044.

Patented Aug. 30, 1910.

5 SHEETS--SHEET 1.



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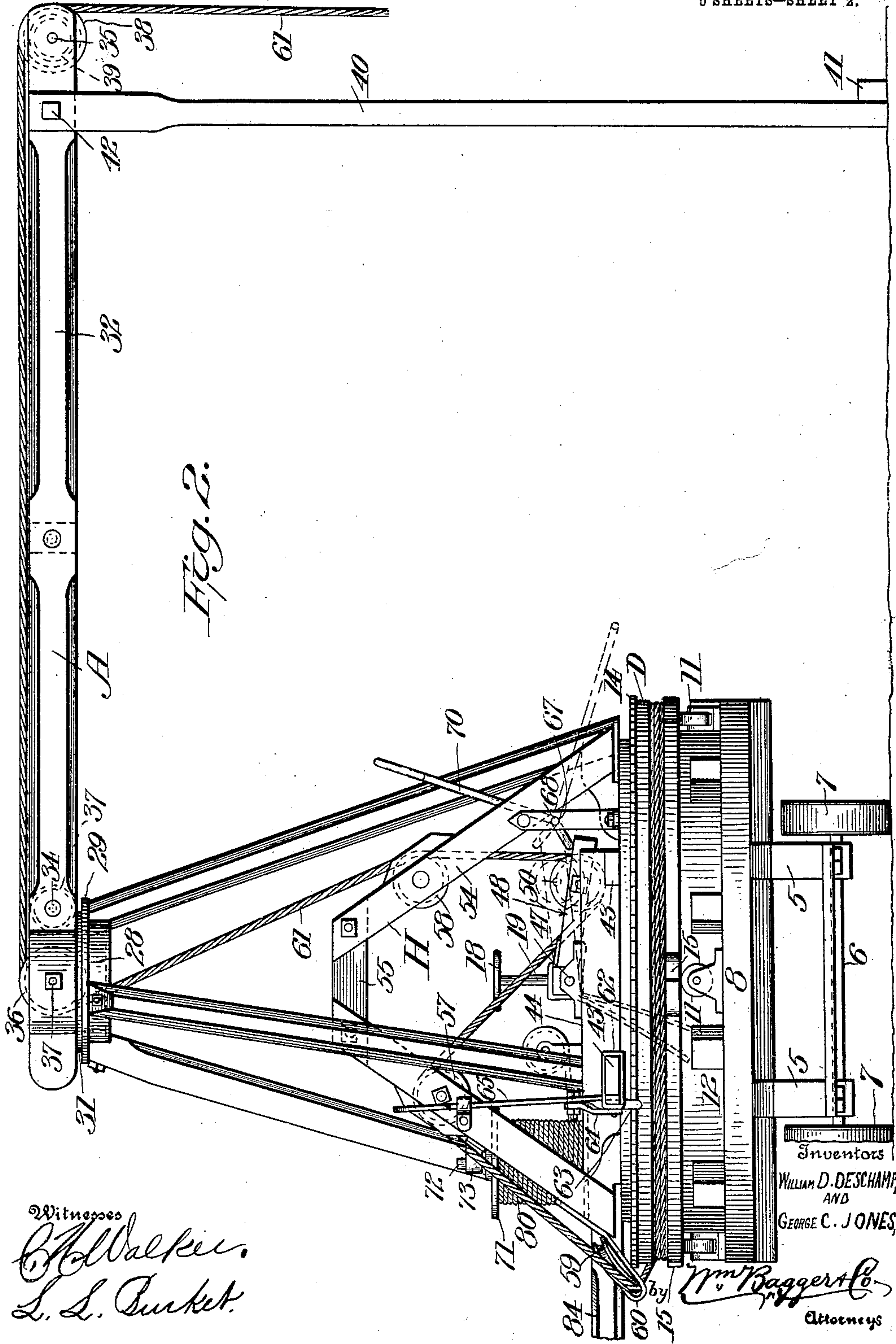
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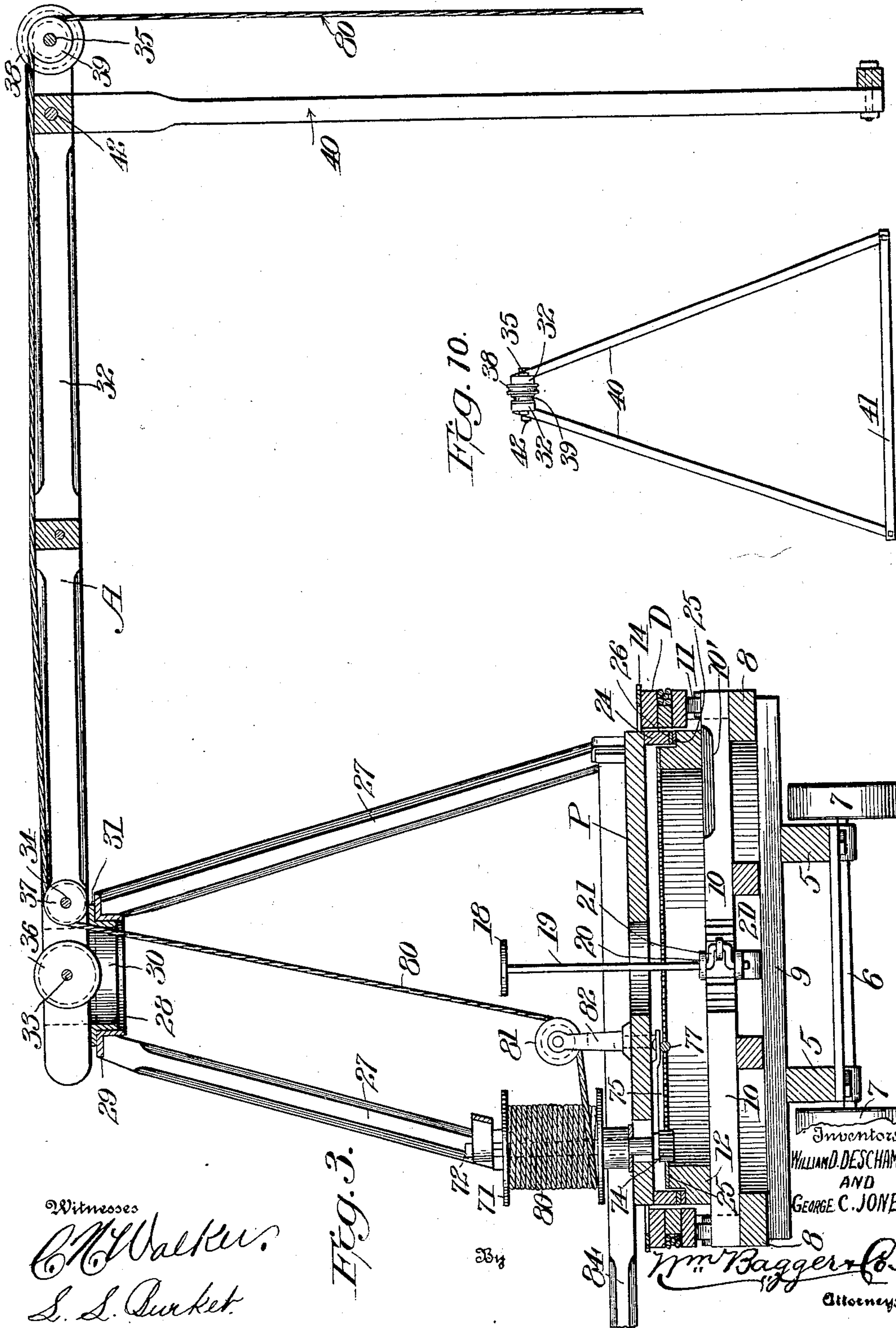




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5 SHEETS—SHEET 3.

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Witnesses  
C. M. Walker.  
L. S. Quaker.

Fig. 3.

Fig. 10.

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5 SHEETS—SHEET 4.

Fig. 5.

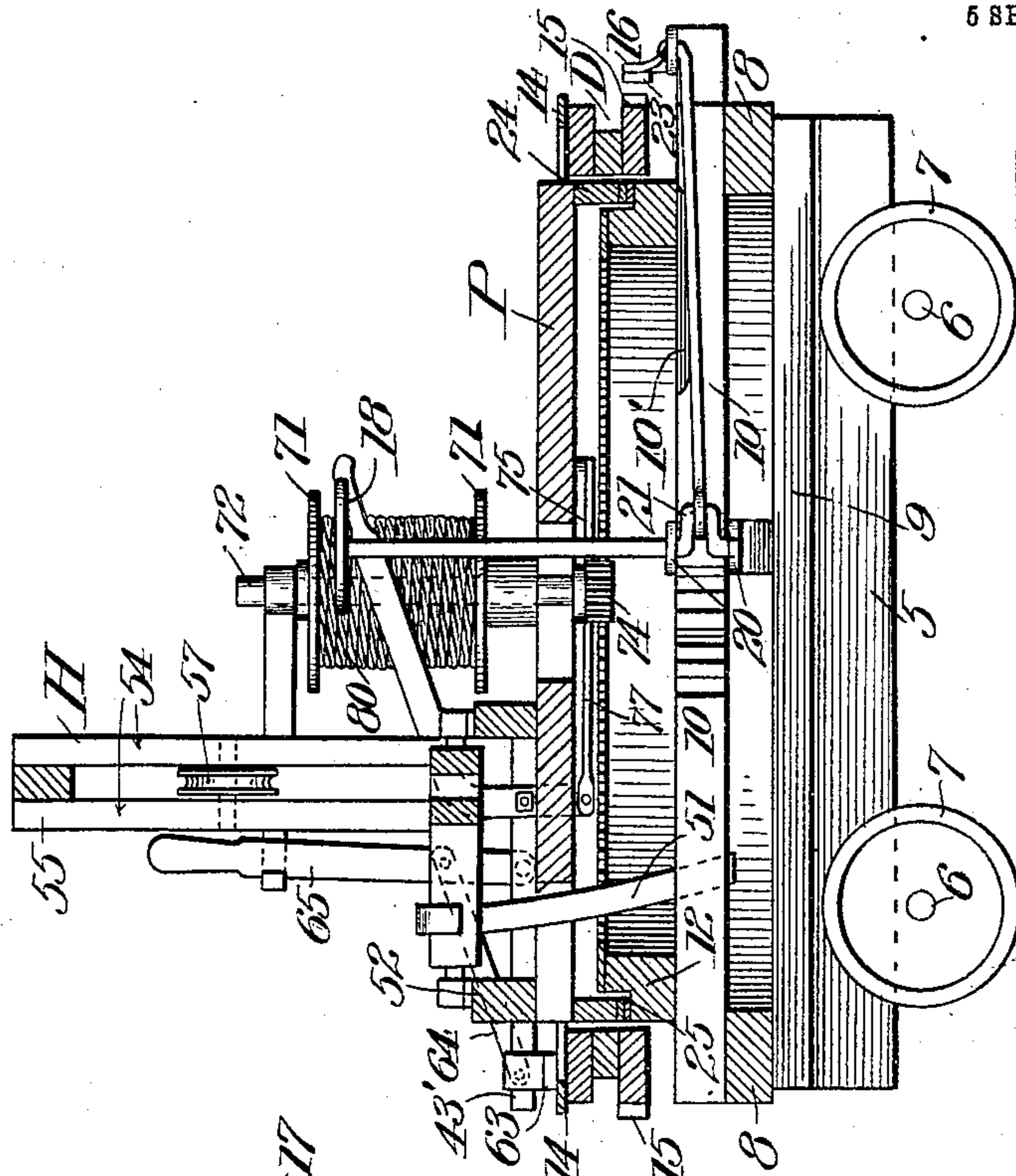
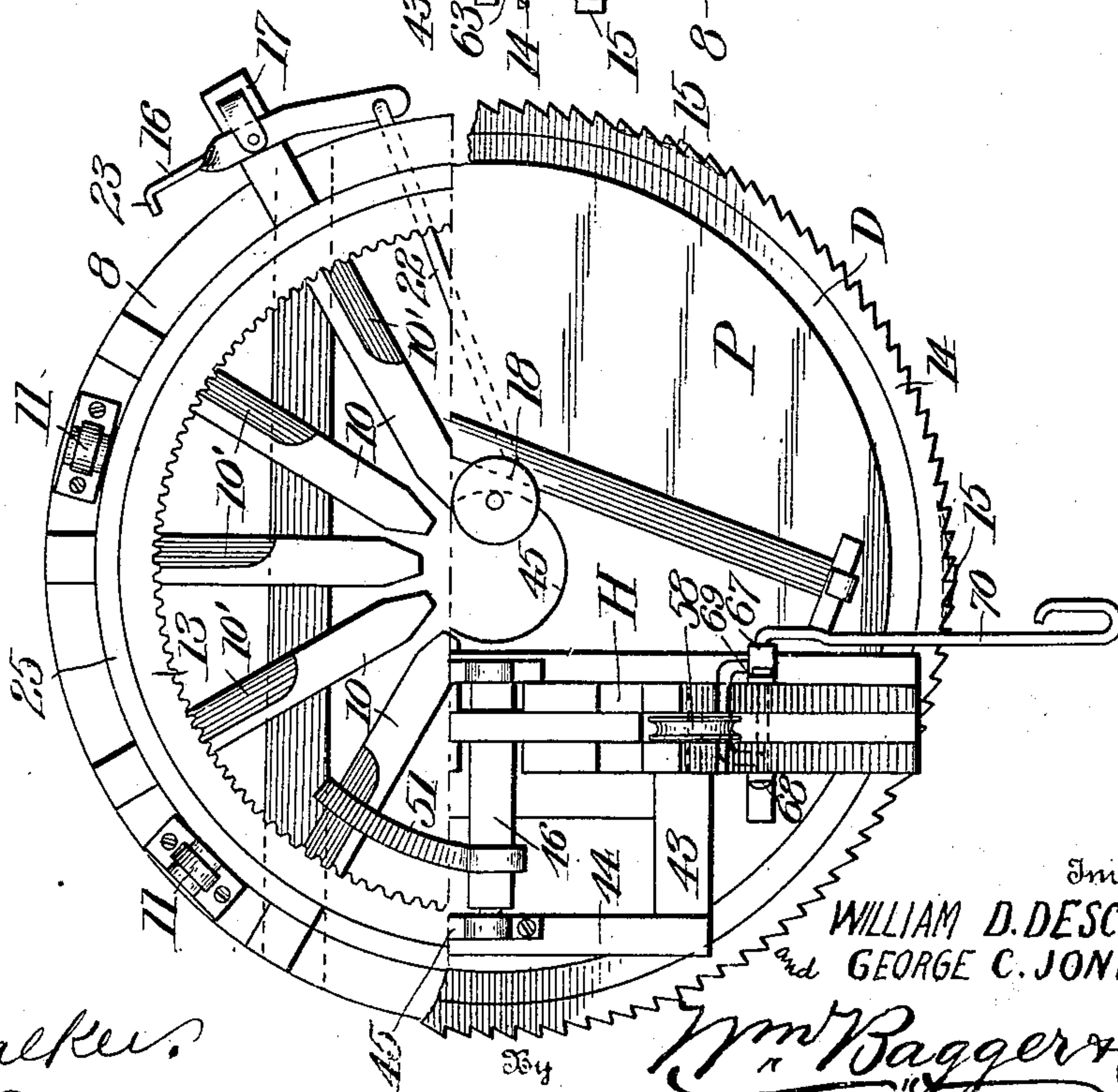


Fig. 4.



Witnesses

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6 SHEETS—SHEET 5.

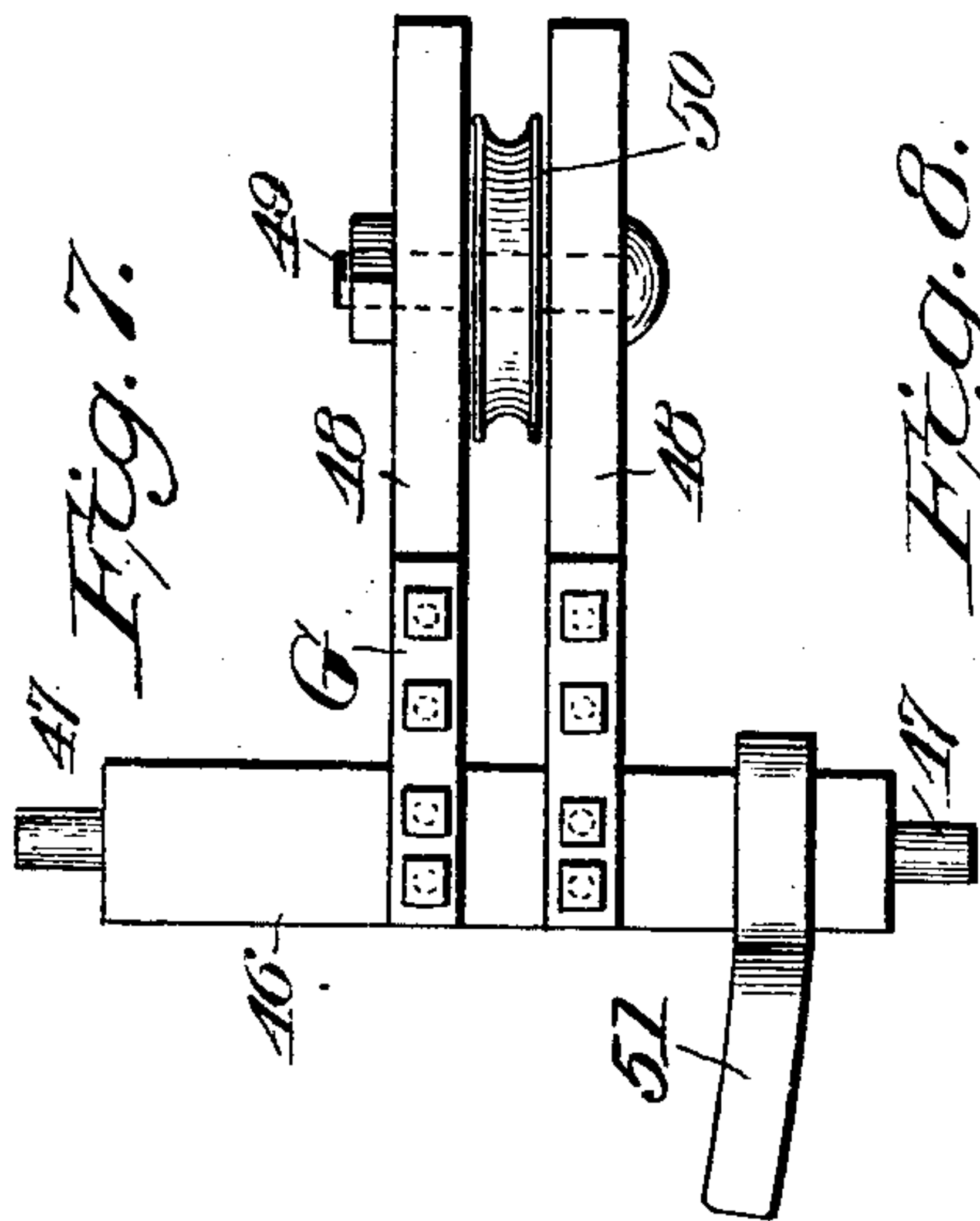


Fig. 7.

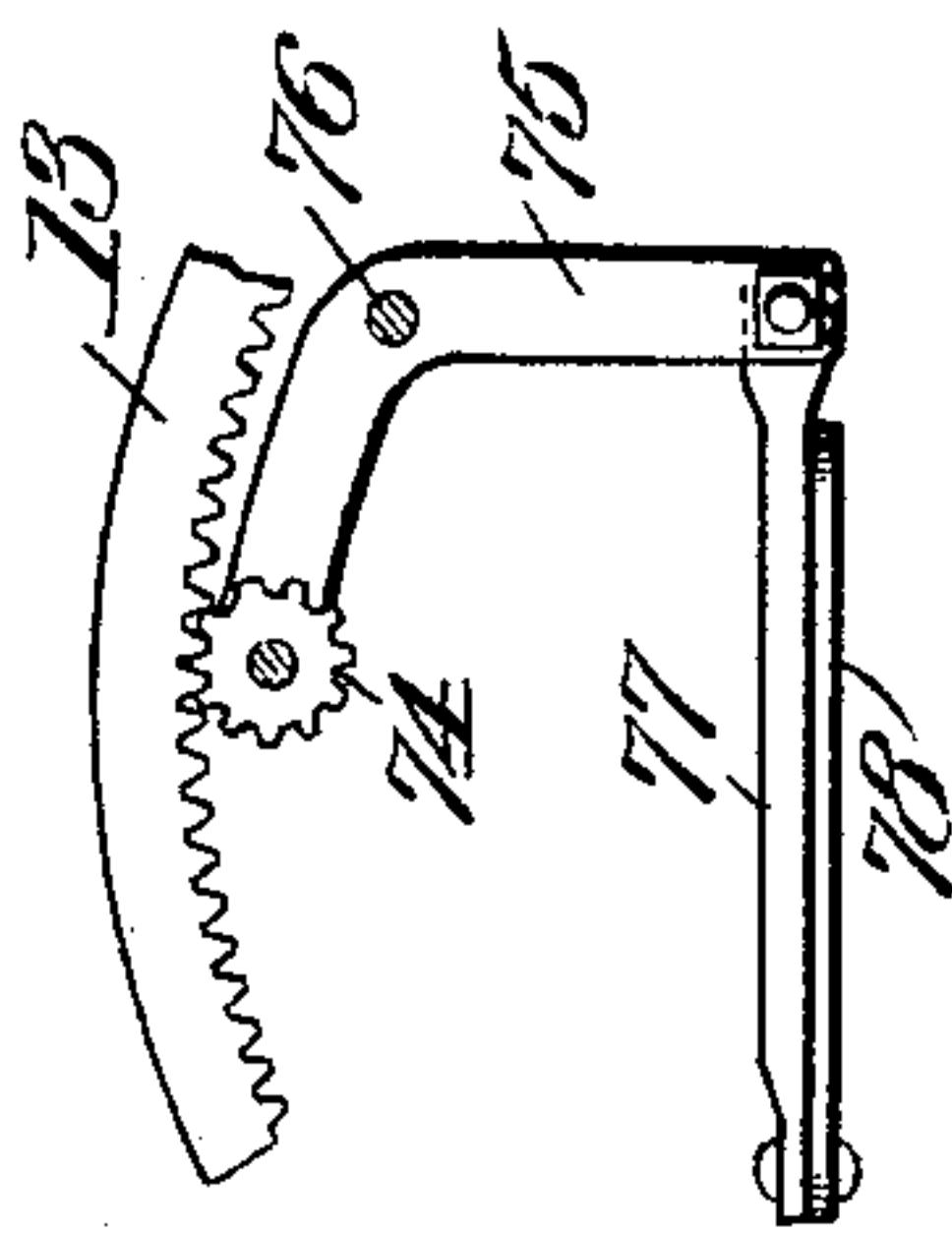


Fig. 8.

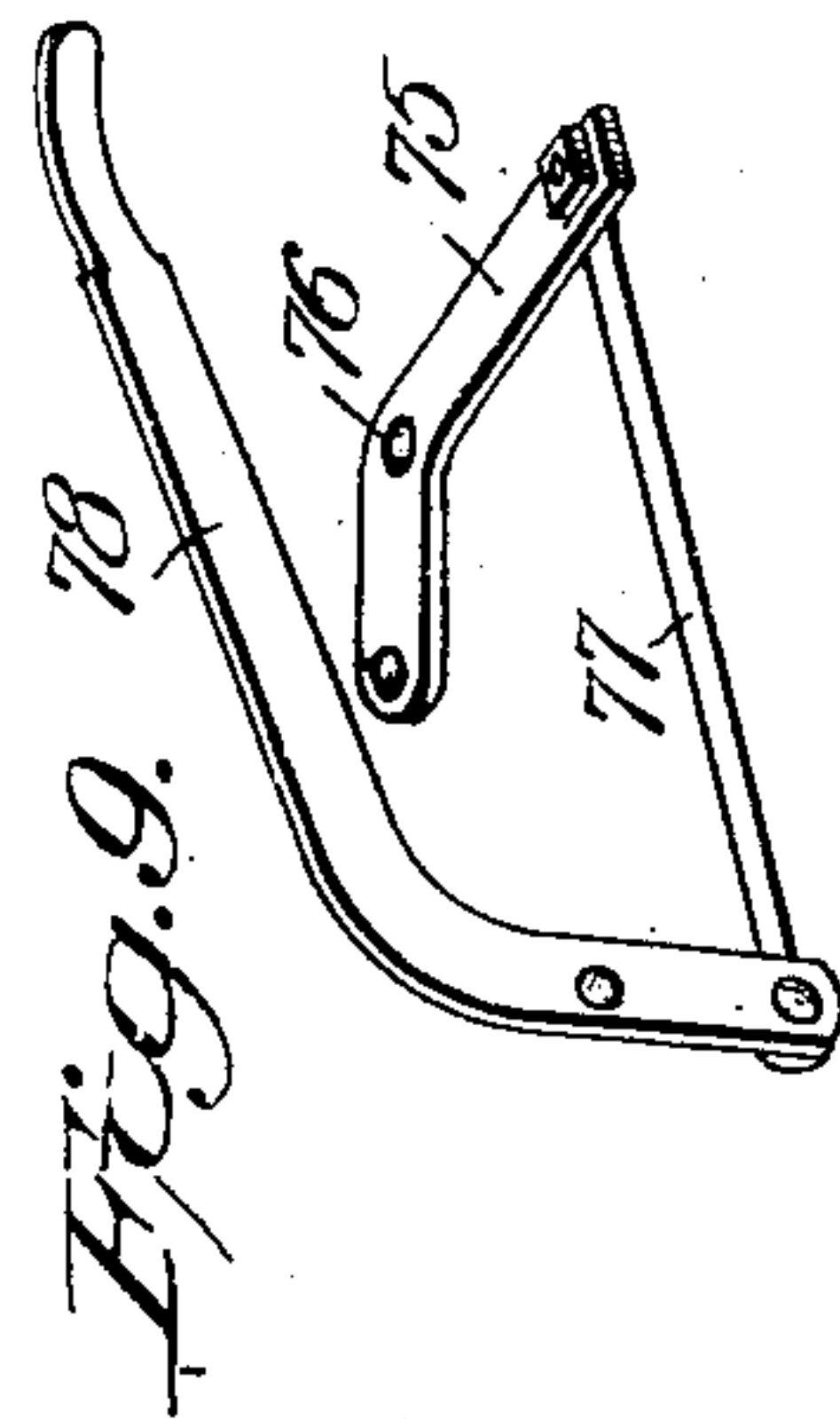


Fig. 9.

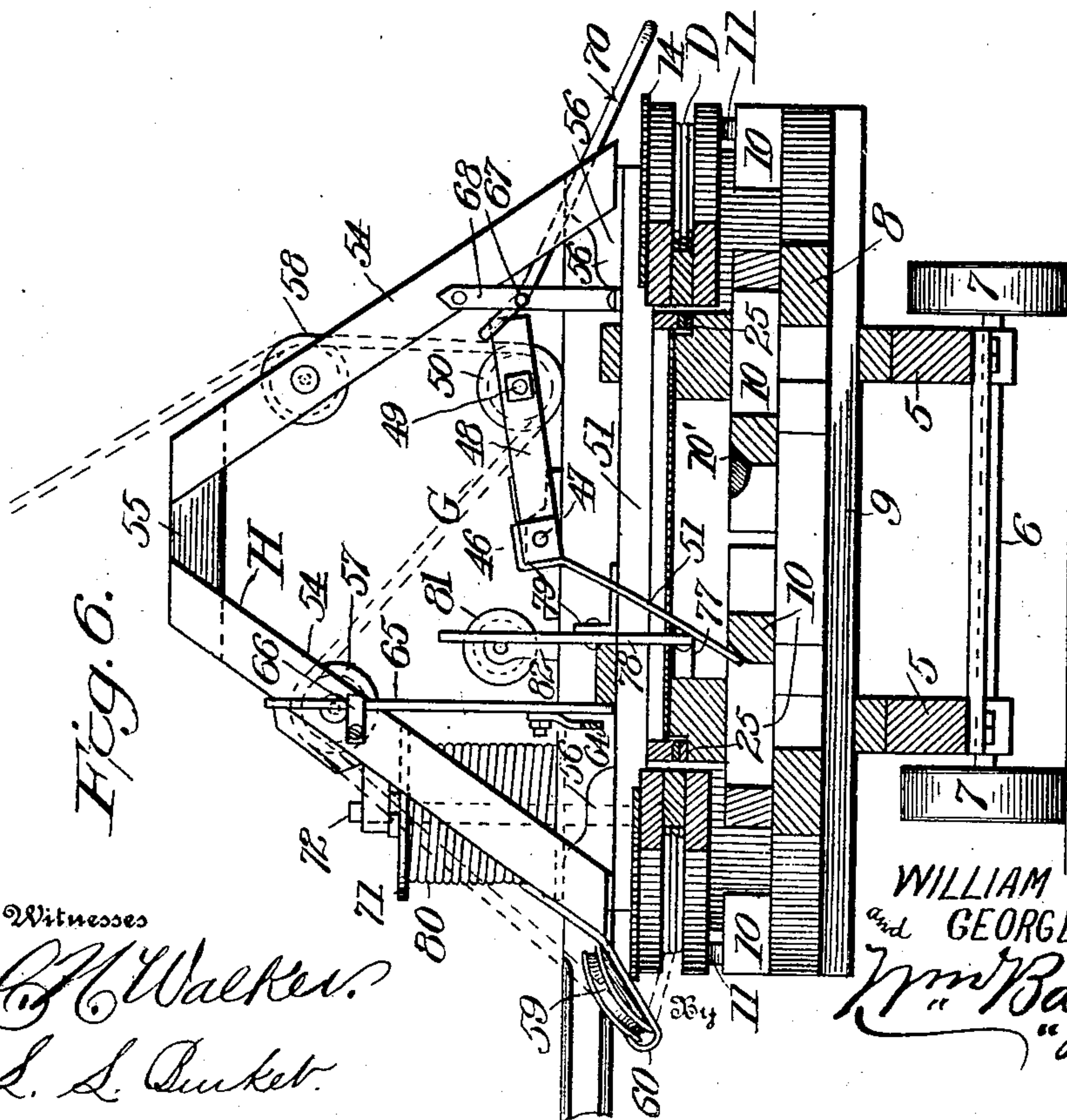


Fig. 6.

Witnesses

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# UNITED STATES PATENT OFFICE.

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DESCHAMP ASSIGNOR TO SAID JONES.

## WELL-DRILLING MACHINE.

969,044.

Specification of Letters Patent. Patented Aug. 30, 1910.

Application filed March 11, 1909. Serial No. 482,811.

*To all whom it may concern:*

Be it known that we, WILLIAM D. DESCHAMP and GEORGE C. JONES, citizens of the United States, residing at McAlester, in the  
5 county of Pittsburg and State of Oklahoma, have invented certain new and useful Improvements in Well-Drilling Machines, of which the following is a specification.

This invention relates to well drilling machines, and it has for its object to provide a machine of simple and improved construction, which may be conveniently transported from place to place and which may be quickly  
10 set up for use in the desired location.

15 A further object of the invention is to provide a rope winding drum of large dimensions, said drum being supported for rotation in an approximately horizontal plane.

20 A further object of the invention is to provide, in combination with the said horizontal drum, derrick means for supporting and guiding the drill rope in such a manner that the well may be bored as closely adjacent to the wall of a building or other similar  
25 obstruction as may be desired.

Still further objects of the invention are to simplify and improve the construction and operation of this class of machines, and  
30 to provide an apparatus which shall possess superior advantages in point of simplicity, durability and general efficiency.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel  
35 arrangements and combination of parts, which will be hereinafter fully described and particularly pointed out in the claims.

40 In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but changes, alterations and modifications within the scope of the invention  
45 may be resorted to when desired.

In the drawings—Figure 1 is a top plan view of a well drilling machine constructed in accordance with the invention, the machine being shown set up and ready for use.  
50 Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view. Fig. 4 is a detail plan view of a portion of the machine,

parts having been removed for the purpose  
55 of exposing the subjacent construction. Fig. 5 is a vertical sectional view taken longitudinally of the supporting truck. Fig. 6 is a vertical transverse detail view. Fig. 7 is a detail view showing the jigger-frame detached. Fig. 8 is a detail view showing a  
60 portion of the means for operating the sand line reel. Fig. 9 is a perspective detail view showing the means for supporting and tilting the sand-line reel. Fig. 10 is a detail  
65 view in elevation, reduced, of the means for supporting the outer extremity of the derrick arm.

Corresponding parts in the several figures are denoted by like characters of reference. 70

The improved well drilling machine is usually supported upon a truck-frame comprising suitably connected sills or side bars 5, 5, supported upon the axles 6, having  
75 transporting wheels 7, whereby the machine may be conveniently transported from place to place; but this supporting truck does not constitute an essential part of the invention and while it has been shown in some of the  
80 figures of the drawings, it has been omitted from other figures; it being understood that the frame of the machine may be supported for operation direct upon the ground or in any suitable and convenient manner.

The base of the machine consists of a circular frame or rim 8, which has been shown  
85 as being supported upon cross bars 9, which latter may be supported upon the sills 5 of the truck. The rim or frame 8, supports a plurality of arms or spokes 10, which are mounted  
90 upon the upper surface of said frame and extend inward in the direction of the center. The rim or frame 8 also supports a plurality of rollers 11, upon which the rope-winding drum D, is supported for rotation in a  
95 horizontal plane. The drum D is guided for rotation by a circular wheel or rim 12, which is firmly supported upon the spokes 10, and which supports an internally toothed stationary spur wheel 13. The rope-winding  
100 drum D, is provided upon its upper face with a ratchet wheel 14; the teeth of which project beyond the perimeter of the drum so as to be capable of being engaged by a clutch or locking member to be hereinafter  
105 described. The said drum D is also provided adjacent to its lower edge with a plurality of outward extending ratchet teeth



15, which are suitably spaced apart and capable of being engaged by a clutch lever 16, which is pivotally supported upon one of the spokes 10, which is extended in an outward direction beyond the frame 8, so as to form a bracket 17; for the purpose of actuating the clutch lever there is provided a hand-wheel 18, upon a vertical shaft 19, supported for rotation in bearings 20, and having a crank 21, which is connected by a link 22 with one end of the clutch lever 16; the latter may thus be conveniently manipulated to place its hooked end 23 in the path of the teeth 15, for the purpose of arresting the rotation of the drum; when desired, the said clutch lever may be moved out of the path of the teeth 15 so that it will not interfere with the rotation of the drum.

A circular platform P is provided adjacent to its outer edge with a downward extending flange 24, whereby it is supported for rotation upon the wheel or rim 12, which latter for this purpose is provided with a step or offset 25; metallic wear-plates 26 being mounted upon the opposed faces of the flange 24 and the step 25 for the purpose of reducing the friction between the parts; it will also be observed that the flange 24, is fitted within the rope-carrying drum D, so that the parts will be mutually guided for rotation in an approximately horizontal plane. The platform P supports a derrick-frame comprising a plurality of inclined beams or uprights 27, the lower ends of which are firmly supported upon the platform while the upper ends of said beams are bolted or otherwise secured upon a collar 28, having an annular flange 29 resting upon the upper extremities of the beams 27. Fitted in the collar 28, is a ring 30, having a flange 31, that engages the flange 29 of the collar. Firmly bolted or otherwise secured upon the flange 31 of the ring 30 is a derrick arm A, which has been shown as being constructed of beams 32 suitably spaced apart so as to afford bearings for the shafts 33 and 34 near the inner end of said derrick arm, and for a shaft 35, near the outer end of said arm. The shafts 33, 34, support guide-wheels or pulleys 36, 37, and guide wheels or pulleys 38, 39, are likewise supported for rotation upon the shaft 35, said pulleys being utilized for guiding respectively the drill rope and the sand line of the apparatus. The outer extremity of the derrick arm A, is firmly supported by suitable braces or uprights 40. It will be readily observed that the ring 30, constitutes a bearing upon which the collar 28, of the derrick-frame is guided for rotation when the rotary platform is in motion during the operation of the machine.

The uprights or braces 40 which, serve to support the outer extremity of the derrick arm A, when the machine is in operation,

are pivotally connected at their lower ends with a cross-piece 41, adapted to rest upon the ground, while the upper ends of said uprights are connected with the derrick arm by means of a transverse bolt 42. By this simple construction the derrick arm will be firmly supported; and the construction is such that when the machine is not in active use the parts may be disassembled by simply removing the bolt 42, and the uprights 40 may then be folded adjacent to the cross piece 41, and said uprights and cross-piece as well as the derrick-arm, which latter may be readily detached from its position on the derrick frame, may be stored upon the axles 6 between the sills 5, 5, of the truck which also in this manner will support the parts while the machine is being moved from place to place.

The rotary platform P, supports a pair of parallel bars 43, 43', which in turn support a pair of beams 44, 44', which are disposed approximately parallel to each other at one side of the axis of the platform. The beams 44, 44' are provided with boxes 45 constituting bearings for the jigger-frame G, which comprises an axial beam 46, having spindles 47 journaled in boxes 45, and provided with a pair of arms 48, carrying a bolt 49, upon which a grooved pulley 50 is supported for rotation. The axial arm 46 is also provided with a tappet arm 51, that extends downwardly through a slot or aperture 52 in the platform so that when the platform is rotated the said tappet arm will successively engage the spokes 10, 10, thus imparting to the jigger frame an oscillatory movement whereby the guide pulley 50 is reciprocated in an approximately vertical plane. The spokes 10 are beveled as shown at 10' to form contact faces for the tappet arm.

The platform P supports an upright frame H, comprising two pairs of inclined side-members 54, the upper ends are spaced apart and connected by means of a cap piece 55, while the lower ends of said side members are spaced apart and connected with blocks 56, supported upon the platform; said side members may also be connected with the beam 44' thus making a very firm and solid construction. Guide pulleys 57, 58, are supported for rotation between the spaced side-members 54 of the frame H, and an additional guide pulley 59 is supported for rotation upon a bracket 60 adjacent to one end of the frame H. The drill rope 61, which is wound upon the drum D is guided successively over the pulleys 59, 57, 50, 58, 36 and 38, the latter being located at the outer extremity of the derrick arm from which the drill rope depends into the well that is being drilled, a drill or tool of ordinary construction being connected with the drill rope in the customary manner.

Slidably mounted upon the bar or beam



43' is a collar 62 carrying a lug or pawl 63 that engages the ratchet wheel 14, upon the rope winding drum. The collar 62 is connected by a link 64 with a hand-lever 65, the lower end of which may be pivotally supported upon the beam 43', while the upper end or handle of said lever is adapted to engage a stop member 66, upon one of the inclined side members 54 of the frame H, thus serving to hold the pawl 63, securely in engagement with the ratchet 14, and thus locking the platform P and the drum D securely together. By simply disengaging the lever 65 from the stop 66 the pawl will be disengaged from the ratchet, and the platform will be released from the drum so that it may rotate independently of the latter.

A shaft 67 which is supported in suitable bearings in uprights 68 which connect the members 54 at one side of the frame H with the flooring P, is provided with a crank 69, adapted to engage and to bear against the upper faces of the arms 48, of the jigger frame; said shaft 67, being provided with an arm or lever 70 whereby it may be rocked or oscillated in its bearings for the purpose of depressing the jigger arms 48, thus temporarily raising or elevating the tappet arm 51 to a position above the plane of the upper faces of the spokes 10, 10, thus enabling the platform to be rotated without actuating the jigger frame. Suitable locking means may be provided, if desired, for the purpose of retaining the arm 70 of the shaft 67 in adjusted position, but such locking means are not considered essential.

The sand-line reel 71, is mounted upon a shaft 72, the upper end of which is supported for rotation in a bracket 73 secured upon the frame H; the lower end of the reel carrying shaft 72 is equipped with a pinion 74 adapted to mesh with the internally toothed spur-wheel 13, which is mounted upon the annular rim or guide-member 12; the lower end of said reel-carrying shaft 72 has a bearing in one end of a horizontally disposed arm or lever 75, fulcrumed upon a suitable bearing 76, upon the underside of the platform; and the opposite end of the arm or lever 75 is connected by a link 77, with the lower end of a hand-lever 78, fulcrumed upon a bracket 79, that is suitably located upon the platform. It will be readily seen that by rocking the lever 78, the lower end of the reel carrying shaft may be moved laterally to place the pinion 74 into or out of engagement with the spur wheel 13 as may be desired, thus causing the sand reel to rotate or to remain stationary, as the case may be, when the parts are in motion. The sand-line 80 which is wound upon the reel 71 is guided under a pulley 81, which is supported in a bracket 82 upon the platform, said line passing from the pulley 81, over the pulleys 37, and 39, upon the

derrick arm from which latter it depends when the sand-pump is in use. While drilling is in progress, the sand-line may be wound upon the reel and thus kept out of the way.

The platform is provided with clamps or keepers 83, in which a sweep 84 may be supported for the attachment of a horse or other animal from which the motive power is derived; said sweep being reinforced by a brace 85.

From the foregoing description taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.

After transporting the machine to the desired location it is set up for operation by mounting the derrick arm A, upon the derrick frame, the flanged ring 30 being inserted into the collar 28, and the outer extremity of the derrick arm being connected with and supported by the inclined braces or uprights 40, the lower extremities of which are connected, as described, with a cross-bar 41. The rope-carrying drum is now disengaged from the rotary platform P, by disengaging the pawl 63 from the ratchet wheel 14, thus permitting the drum D to be rotated independently of the platform while the drill-rope is being threaded over the several guide-pulleys including the pulley 50 carried by the jigger-frame and the pulley 38 at the outer extremity of the derrick arm from which it descends, the drilling tool being attached in the customary manner to the end of the rope. After a sufficient length of the rope has been paid out the pawl or clutch 63 is placed in engagement with the ratchet wheel 14 of the drum, thus locking the drum D and the platform P together. Power may now be applied to the sweep 84 for rotating the drum and platform with the result that as the platform rotates the tappet arm of the jigger frame will successively engage the spokes 10, 10, thus rocking or tilting the jigger frame and causing the drill rope to be alternately strained and slackened by the vertical reciprocatory movement of the pulley 50, thus reciprocating the drill in the usual manner, while, owing to the rotation of the parts, the body of the drill carrying portion of the rope together with the tool will be slowly rotated as will be well understood. When the limit of the paid out portion of the rope has been reached, the platform is unlocked or disengaged from the drum, and the latter is rotated for a short distance to pay out another portion of the rope; when this is being done, the clutch lever 16, may be actuated to place the hooked end thereof in the path of the teeth 15 upon the drum to prevent excessive rotation of the latter. This opera-



tion may be repeated as frequently as may be found necessary while the drilling is in progress.

When it is desired to withdraw the drill tool from the well, the drum D is disengaged from the platform P, and the clutch lever 16, is placed in the path of the teeth 15 of the drum to prevent rotation of the latter, while the platform is independently rotated, thus winding the drill rope upon the drum as it is being gradually withdrawn from the well. In this simple manner it will be seen that the drill rope and tool may be quickly and efficiently withdrawn from the well at any time.

While drilling is in progress it is usually intended that the sand-line shall be wound upon the reel, and the latter remain stationary. When the sand pump is to be used the line is threaded over guide pulleys provided for this purpose, the pump is attached to the end of the line, and it is then lowered into the well, the reel being capable of rotating freely while the pinion at the lower end of the reel carrying shaft is disengaged from the spur-wheel 13. When the pump or bucket has been lowered into the well a sufficient distance, it may be raised or withdrawn by first manipulating the hand-lever 58 to tilt the reel-carrying shaft until the pinion 74 at the lower end of said shaft is in mesh with the spur wheel 13; the platform, which is disengaged from the drum D, while rotation of the latter is prevented by the clutch 16, is now rotated by means of the sweep, thus rotating the sand-line reel and winding the sand-line upon said reel until the pump or bucket has been hoisted the requisite distance.

As will be seen from the foregoing description, the construction and operation of this improved well drilling machine is extremely simple, and the machine is capable of being successfully manipulated by one man. It is obvious that power of any description other than animal power may be utilized for operating the machine, when desired. By mounting the machine upon wheel carrying trucks, as herein described, it may be readily seen that the machine may be set up in such a manner that a well may be drilled in as close proximity as may be desired to a wall of a building, a fence, or any other similar obstruction; this is regarded as an important advantage in a machine of this character. Practically all of the working parts of the machine are protected within the casing formed by the frame and the platform of the machine and such parts as are exposed are not liable to accidental injury. The machine may be constructed at a very moderate cost and it has been found in practice to be eminently useful and efficient for the purpose for which it is provided.

Having thus described the invention, what is claimed is:

1. In a machine of the character described, an annular frame member, radial spokes supported upon the same and extending in the direction of a common center, an annular guide member supported upon the spokes, a winding drum guided for rotation about the annular guide member, and a platform supported for rotation upon the annular guide member.

2. In a machine of the character described, an annular frame member, radial spokes supported upon the same and extending in an inward direction toward a common center, an annular guide member supported upon the spokes, a winding drum guided for rotation about the annular guide member, and a platform supported for rotation upon the annular guide member.

3. In a machine of the character described, an annular frame member, radial spokes supported upon the same and extending inwardly in the direction of a common center, an annular guide member supported upon the spokes, concentric with the frame member, and having a step or offset, a winding drum guided for rotation about the annular guide member, and a platform having an annular flange engaging and supported for rotation upon the offset of the annular guide member.

4. In a machine of the character described, a circular supporting frame, radial spokes supported upon the same and extending inwardly toward a common center, an annular guide member supported upon the spokes, a winding drum guided for rotation about the annular guide member, a platform supported for rotation upon the annular guide member and having a depending annular flange interiorly engaging the winding drum, a ratchet wheel supported upon and connected with the winding drum, frame beams upon the platform, a collar slidable upon one of the frame beams and having a tooth constituting a clutch member adapted to engage the ratchet wheel, a hand lever fulcrumed upon the platform, a link connecting said hand lever with the slidable collar, and means for locking and securing the hand lever in an adjusted position to retain the clutch member of the slidable collar in engagement with the ratchet wheel of the drum.

5. In a machine of the character described, a circular frame member, radial spokes supported upon the same and having beveled contact faces, an annular guide member supported upon the spokes, a winding drum guided for rotation about the annular guide member, a platform supported for rotation upon the annular guide frame and having a depending annular flange interiorly engaging the drum, frame beams



supported upon the platform, a jigger frame supported for oscillation upon said frame beams, and including a tappet arm projecting downwardly in the path of the radial  
5 spokes, an upwardly extending arm supporting a guide pulley, a rock shaft supported in suitable bearings adjacent to the jigger frame and provided with a crank engaging the pulley carrying arms of said  
10 frame whereby said arms may be depressed to elevate the tappet arm out of the path of the radial spokes, and an operating arm or lever upon the rock shaft.

6. In a machine of the character described, an annular frame member, an annular guide member supported in concentric relation to the frame member, a winding drum guided for rotation about the annular  
15 guide member, a platform supported for rotation upon the annular guide member, an

internally toothed spur wheel supported securely upon the annular guide member, an approximately vertical tiltable shaft carrying a sand-line reel, a stationary bearing for  
25 the upper end of said shaft, an approximately horizontally supported lever having a bearing for the lower end of said shaft, a pinion upon said shaft adapted for engagement with the spur wheel upon the annular guide member, and means for rocking  
30 the lever that supports the lower end of the sand-line shaft to place the pinion into or out of mesh with the spur wheel.

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

WILLIAM D. DESCHAMP.  
GEORGE C. JONES.

Witnesses:

WM. H. JAGGERS,  
I. P. KEITH.