

No. 817,527.

J. W. SHAWVER.
WELL DRILLING MACHINE.
APPLICATION FILED JULY 19, 1906.

PATENTED APR. 10, 1906.

5 SHEETS—SHEET 1.

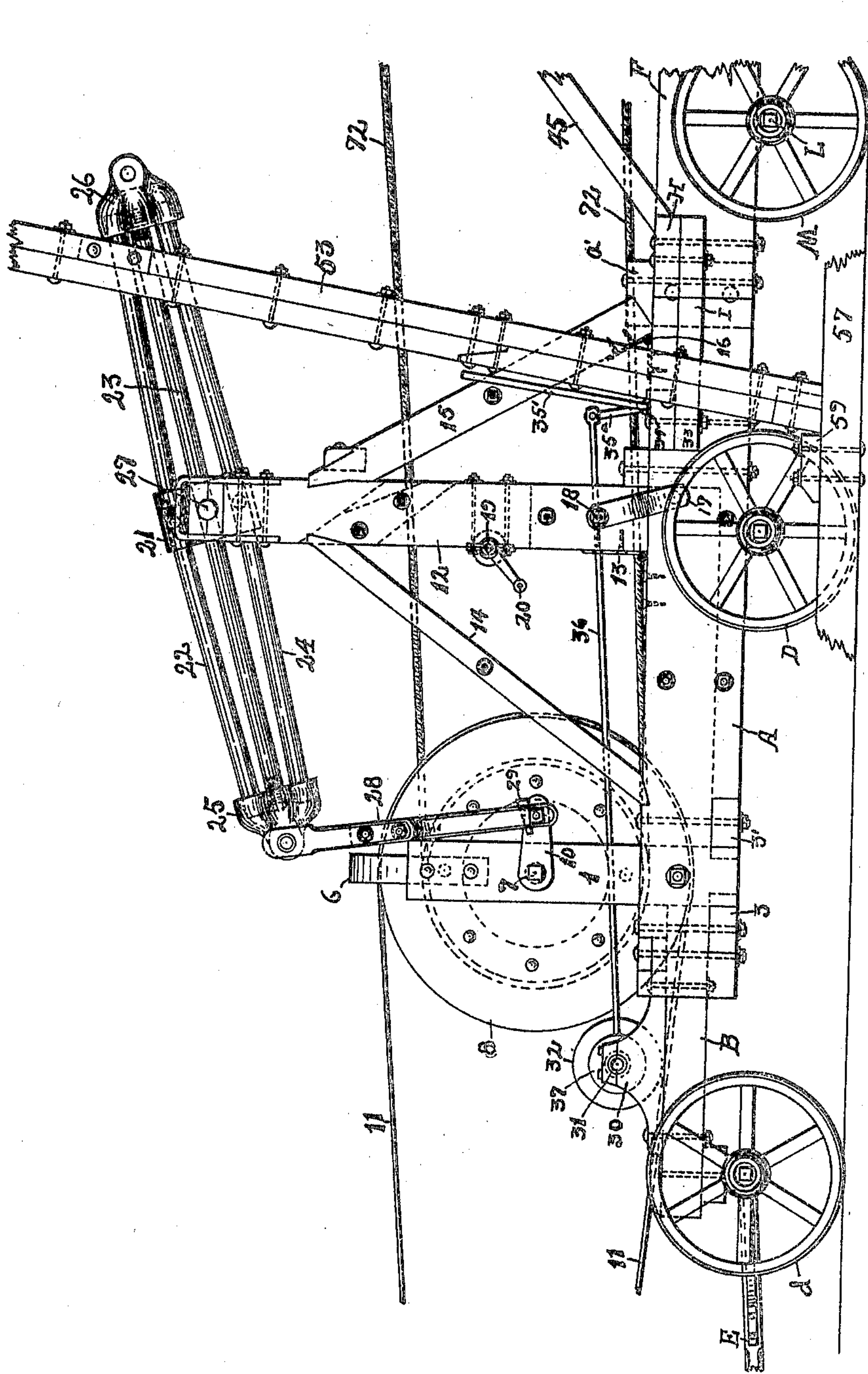


Fig. 1.

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5 SHEETS—SHEET 2.

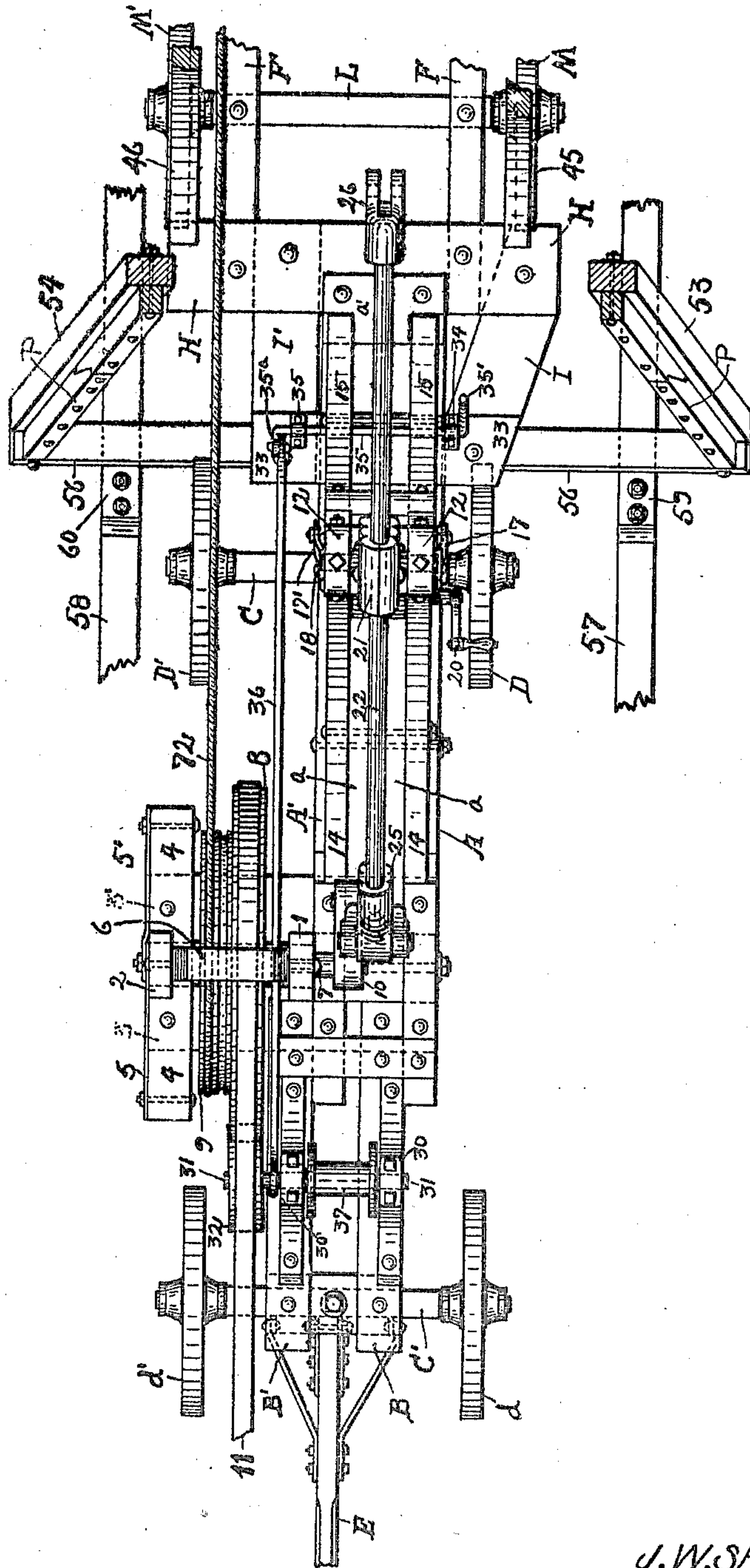


Fig. 2.

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5 SHEETS—SHEET 3.

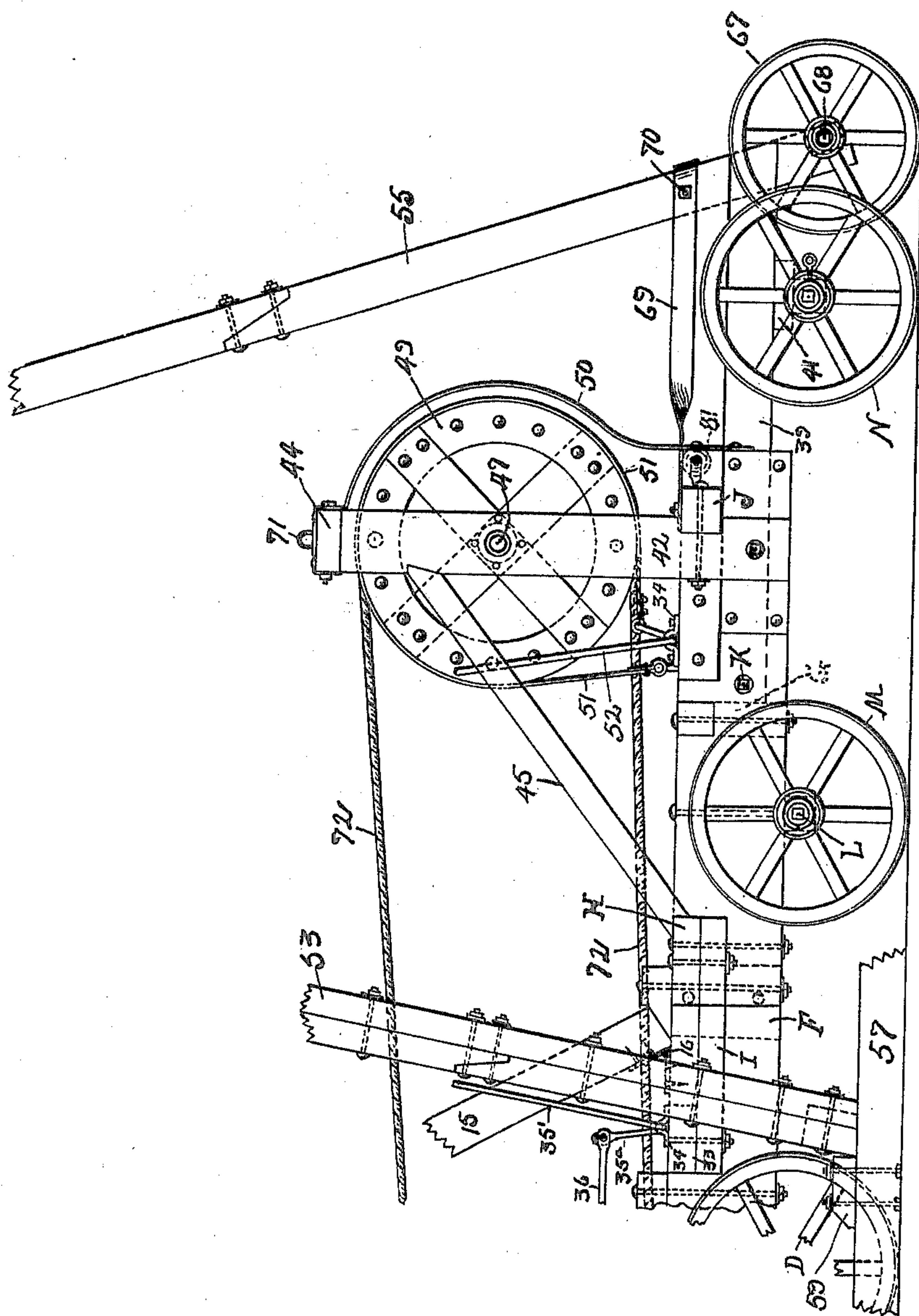


Fig. 3.

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5 SHEETS—SHEET 4.

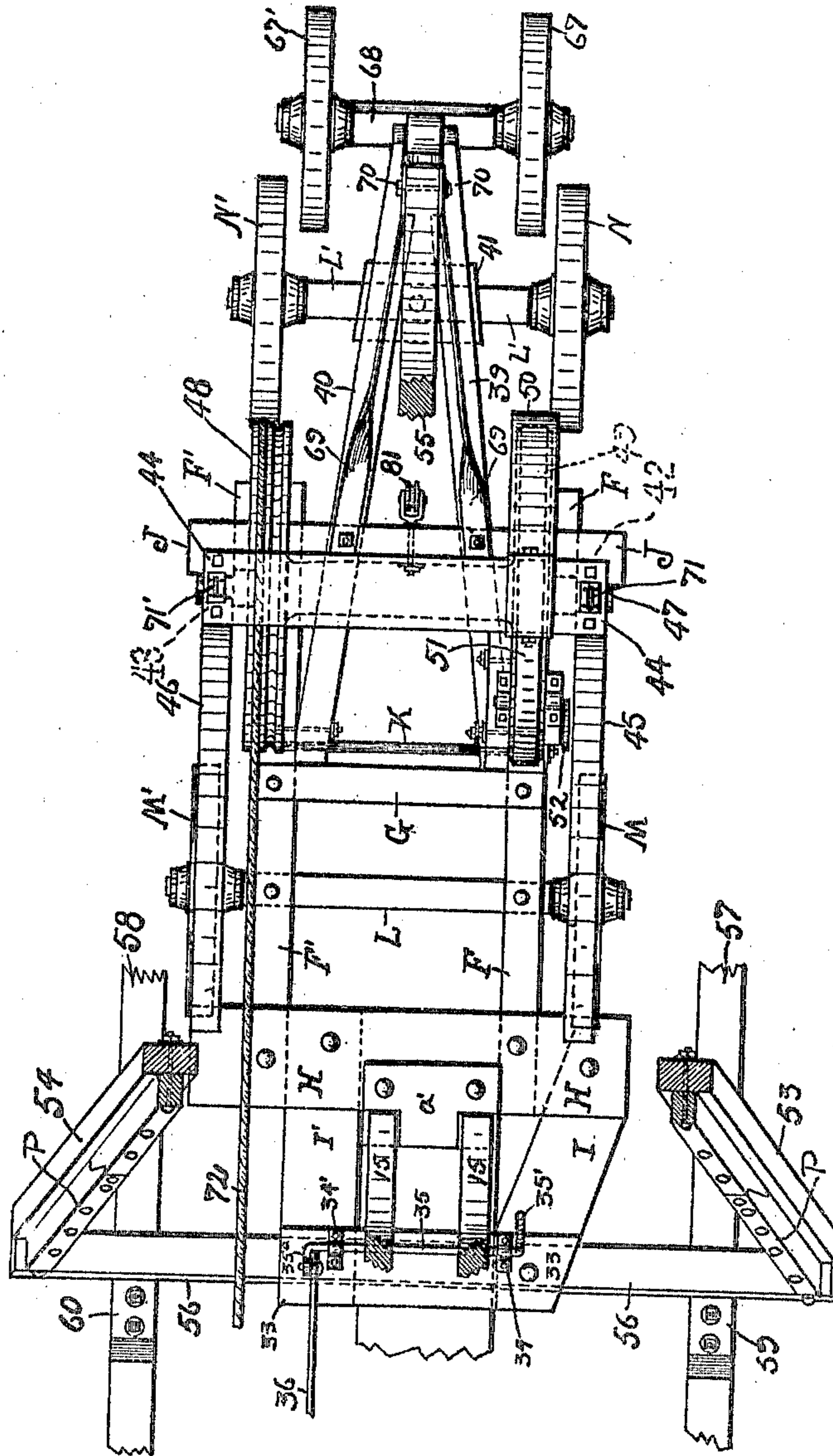


Fig. 4.

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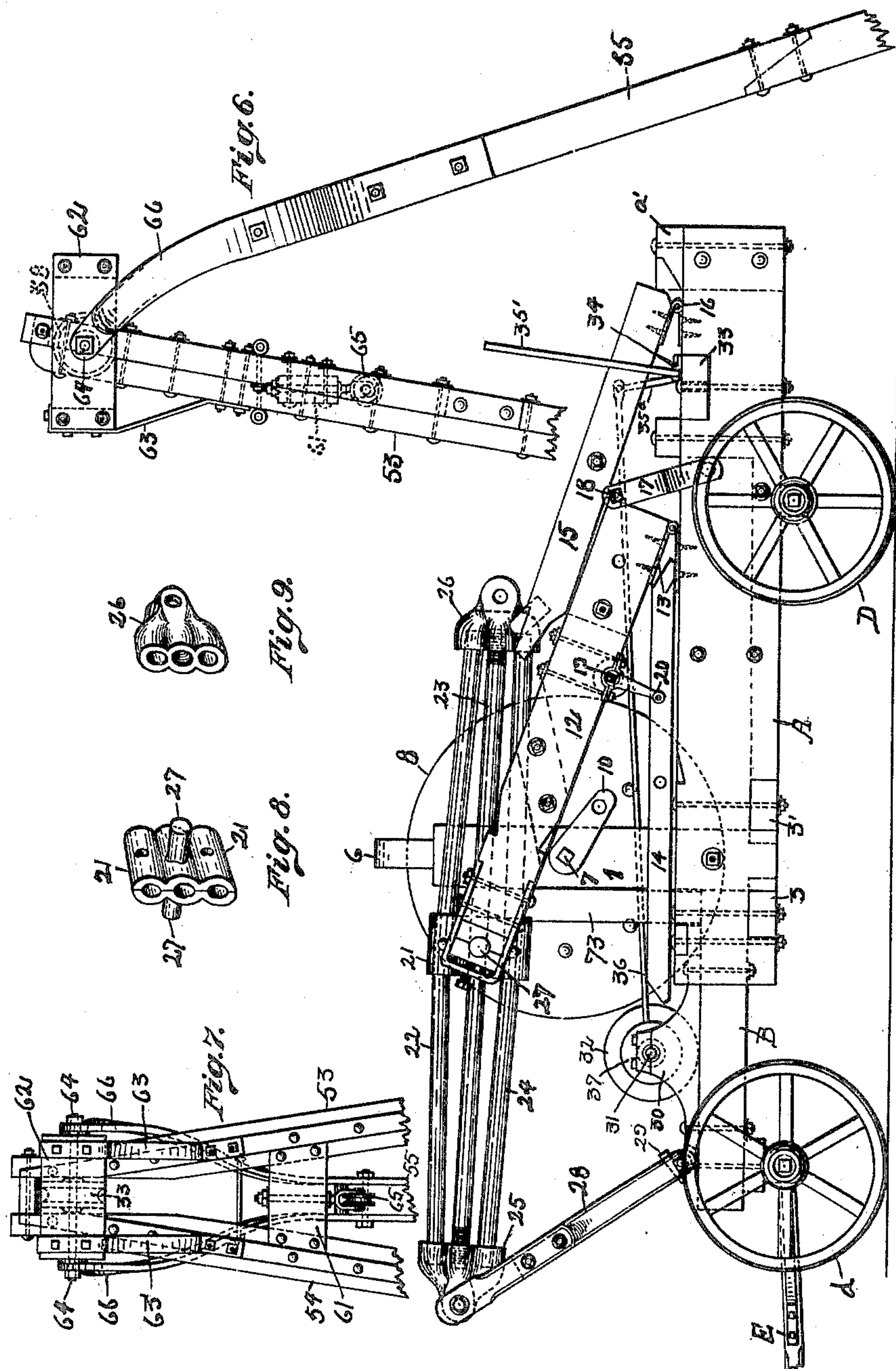
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

JOHN W. SHAWVER, OF PORTLAND, INDIANA.

WELL-DRILLING MACHINE.

No. 817,527.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed July 19, 1905. Serial No. 270,337.

To all whom it may concern:

Be it hereby known that I, JOHN W. SHAWVER, a citizen of the United States, residing in Portland, in the county of Jay, and in the State of Indiana, have invented new and useful Improvements in Well-Drilling Machines, of which the following is a true specification, by which, when taken in connection with the accompanying drawings, forming a part thereof, a full and complete understanding may be had of my invention by those skilled in the art to which this invention relates.

The object of this invention, broadly stated, is the production of improved well-drilling machines in which a maximum of mechanical efficiency may be developed with a minimum of power applied, while at the same time providing a machine composed of a minimum of mechanical parts consistent with the work it is adapted to perform.

Another generic object is to provide a well-drilling machine which will be neat, artistic and attractive in appearance, compact and symmetrical in its proportions, strong and durable in construction, positive in action, and capable of a wide scope of usefulness and efficiency.

A more specific object of my invention is to provide a well-drilling machine in which the various parts and mechanisms are so positioned and arranged that the weight will be evenly divided among the various bearings and supports, while at the same time preserving the proper alinement and the most advantageous working points for the various mechanisms.

Other specific objects are: to provide a well-drilling machine or rig mounted on two or more sets of trucks of four wheels each, whereby the rig may be more easily transported from job to job; to provide means for folding the walking-beam mechanism; to provide a new construction in walking-beams, and to generally improve the specific and general construction of well-drilling machines and the like.

Other minor objects and advantages of this invention will be made manifest in the course of the ensuing specification.

My invention consists in a well-drilling machine containing the several distinguishing features stated and the relative disposition of the several parts, substantially as particularly described elsewhere in this specification and in the legitimate combinations

herein set forth with reference to each other and to the machine as an entirety.

Referring now to the drawings forming a part of this specification for a visualization of my preferred construction, in which five sheets of drawings are employed, Figure 1 is a side elevation of the forward portion of my machine. Fig. 2 is a top plan view of the parts shown in Fig. 1. Fig. 3 shows a side elevation of the rear portion of my machine. Fig. 4 is a top plan of the parts shown in Fig. 3. Fig. 5 is a side view, same as shown in Fig. 1, except that the walking-beam mechanism is shown folded ready for transportation. Fig. 6 is a side elevation of the upper portion of the derrick. Fig. 7 is a front view of the upper portion of the derrick. Fig. 8 is an isometrical view of the center portion of the walking-beam, and Fig. 9 is an isometrical view of one of the end members of the walking-beam.

Similar reference characters denote and refer to like parts throughout the several views of the drawings.

With all of the above-designated views in mind and for the purpose of making my invention more clear to those unfamiliar with the art to which it appertains I will now take up the detail description thereof and will refer to the essential parts as briefly and compactly as I may.

Reference is now had to the drawings in detail.

Front section.—The letters A and A' denote the two side or main sills of the front section of the machine, their greater central portions being connected and spaced apart by the relatively long block *a*, while their rear ends are connected and spaced apart by the gib-block *a'*, and which latter rises somewhat above the main sills, as shown in Figs. 1 and 5.

The letters B and B' denote the auxiliary front sills, the former extending out from between the front end of the main sill and the latter extending out from the side of the main sill A', as is shown in Fig. 2. Underneath and toward the rear of the main sills is permanently secured the axle C, which projects out at either side to receive the ground-wheels D and D', and underneath the forward ends of the auxiliary sills B and B' is pivotally mounted the axle C', which projects out at either side in alinement with the axle C to receive the ground-wheels *d* and *d'*.

The letter E denotes a tongue attached to the front axle C'.

Secured to the outer face of the side of the sill A' near its forward end and rising some distance thereabove is the standard 1, and corresponding therewith and located out some distance to the right therefrom is the standard 2, the latter being supported as follows: Extending across underneath the forward portions of the sills A A' and projecting some distance to the right are the parallel supports 3 and 3', across the outer end of which is secured the plate 4, from which latter rises the said standard 2, being provided with the braces 5 and 5', and the upper ends of the said standards 1 and 2 are connected by the metal bridge 6. A horizontal shaft 7 extends through and between the central portions of the standards 1 and 2, on which shaft is mounted the combination pull-wheel 8 and the drum 9, which are permanently connected together, as shown. On the outer end of the shaft 7 is secured the crank 10. A belt 11 may be placed over the pulley 8 and then extended to the power—for instance, an engine.

King-post.—Resting on and rising vertically from the sills A A' is the two-part king-post 12, which rests on said sills at points directly above the axle C. The king-post 12 is hinged to the main sills by hinges 13, whereby the king-post may be folded forward, as in Fig. 5. The king-post is braced when erect in working position by the removable double brace 14 in front, which extends up from the main sills at an angle to near the top of the king-post, and also by the double brace 15 in the rear, which extends up from the main sills at an angle to near the top of the king-post, its lower end being hinged to the sills by hinges 16. When erect, the king-post is further secured to the sills by a pair of clips 17 17', bolted to the faces of the sills A A' and then extending up the sides of the king-post, where they are removably connected by a bolt 18, which passes through an eye in the upper ends of the clips and passes entirely through the king-post, as shown. Mounted across on the front edge of the king-post is a shaft 19, carried in suitable boxings, being provided at one end with the crank 20, whereby it may be revolved by hand. In the forks of the upper end of the king-post is located a pair of boxings in which the axle of the walking-beam may oscillate.

Walking-beam.—My walking-beam is of a peculiar novel construction and consists of three rods or bars of equal lengths spaced apart and secured in their centers by the coupling 21, having three separated and parallel apertures therethrough to receive there-through the said rods or bars, which latter are denoted by the numerals 22, 23, and 24. The ends of the said rods are brought near together at their ends, where they are se-

cured in the end members 25 and 26, front and rear, respectively. Secured across in the center of the coupling 21 is the shaft 27, which is adapted to operate in the boxings referred to in the upper end of the king-post 12, by which it will be seen that the walking-beam is mounted between the forks of the king-post, as shown in Figs. 1, 2, and 5. The outer end portions of the end members 25 and 26 are concentrated and somewhat flattened, forming an eye portion for attachment thereto of other working parts.

The numeral 28 denotes a connecting-rod pivotally mounted at one end in said eye portion of the end member 25 and then extending down, where it is removably pivoted to the wrist-pin of the crank 10, being removably attached at the latter point by the employment of the key 29. In the eye of the end member 26 may be attached the desired tools for operating in the well being formed directly therebelow—that is, in the center and in the rear of the main sills above mentioned.

Sand - reel mechanism.—Rising from the auxiliary sills B and B' are the two hangers 30 and 30', respectively, having boxings thereon at their central apex, in which is mounted the shaft 31, which shaft extends to the right beyond the sill B', on which projection of said shaft is secured the friction-wheel 32, which is adapted to have its periphery contact with and be released from the periphery of the pulley-wheel 8, the operation of which is accomplished as follows: The numeral 33 denotes a platform extending across and beyond the surface of the sills A and A' at a point in the rear of the king-post. Secured on top of the platform 33, toward each end thereof, are hangers 34 34', in which is mounted the rod 35, which has a lever 35', turned at the left end, and a crank 35^a, turned at the other end, all as shown in Fig. 2. The numeral 36 denotes a rod connected at one end to the crank 35^a and at the other end being secured around the shaft 31, as shown, whereby as the lever 35' is operated the face of the wheel 32 is brought into contact with or is moved from the face of the wheel 8. Mounted on the shaft 31 between the auxiliary sills B and B' is a spool 37, adapted to have wound thereon a cable or the like to extend up over the pulley 38, located in the upper portion of the derrick for operating the sand-pump or the like in the well being formed.

Rear section.—The characters F and F' denote the two side sills of the rear section of my machine, which sills are spaced apart and are connected by the center sill G, and at their ends next the front section they are connected by the top plate or platform H, which plate or platform is notched in its outer central portion to receive the ends of the main sills of the front section of the machine, as shown in Fig. 4.

The characters I and I' denote the two connecting-plates pivotally bolted to the under side of the top plate H outside the sills F F' and with their free ends adapted to be secured detachably to the under side of the platform 33 by bolts or otherwise to connect the front and rear sections of the machine. The rear ends of the rear frame are connected by the cross-sill J, and just in the rear of the center sill G the main sills are connected by the tie-bolt K.

The figures 39 and 40 denote a pair of hounds secured on the tie-bolt K, converging toward each other outwardly, secured near their centers to the sill J, and extending therebeyond centrally of the rear portion of the machine, their ends being spaced apart and secured by the cross-tie 41, secured on their under edges.

The letter L denotes the front axle of the rear section of the machine, which is permanently secured to the under side of the sills F F', its ends projecting beyond said sills and being provided with the ground-wheels M and M'. Pivotally mounted in the center to the under side of the center of the tie 41 is the axle L', on the outer portions of which is mounted the ground-wheels N and N'.

Rising from the sides of the sills F and F' is a frame composed of the perpendicular posts 42 and 43, which posts are connected at the top by the cross-tie 44, said frame being braced by the two angularly-disposed braces 45 and 46, which braces extend upward and rearward from the top of the plate H to near the top of the posts 42 and 43.

Mounted horizontally between the posts 42 and 43 is the shaft 47, having secured thereto near the post 43 the channel-wheel 48, its face being provided with two parallel channels to receive a rope or cable belt, and also secured on the shaft 47 near the post 42 is the friction-wheel 49. Thus it will be seen that a rope or cable may be wound on the reel formed by the shaft 47 and the inner faces of the wheels 48 and 49.

Extending from the tie 44 in a curve corresponding to the curvature of and a slight distance from the wheel 49 is the guard 50, its lower end being attached to the end of the sill F.

Pivoted to the top of the sill F, below the forward segmental portion of the wheel 49, is the permanent end of the spring friction-band 51, which passes over substantially three-fourths of the periphery of the friction-wheel 49 and ending slightly in the rear of the permanent end thereof. The free end of the said friction-band is attached to the crank of the lever 52, which is mounted on top of the sill F in rear of said permanent end. It will now be apparent that by moving the top of the lever 52 forward said friction-band may be caused to grasp and hold the wheel 49, and therefore the entire reel, from re-

volving or in order to allow it to revolve at the desired rate of speed.

The derrick.—The derrick is formed primarily of three upwardly-converging posts, (denoted by the figures 53, 54, and 55,) each being formed in separable sections, as indicated, whereby they may be taken apart for transportation. The first two denoted posts rise from the sides of the machine, while the latter rises from the rear of the machine. The posts 53 and 54 are connected at their lower ends by the cross-sill 56. When in position, the cross-sill 56 should extend across underneath the machine immediately in the rear of the rear wheels of the front section of the machine, as is indicated in the drawings, and should be supported from the ground by the mud-sills 57 and 58, and in practice I have found it advisable to have the mud-sills formed in sections and extend from end to end of and underneath the machine, which may be provided with suitable cross-ties (not shown) bolted thereacross and then to have the cross-sill 56 bolted or otherwise secured to the mud-sills after the derrick is positioned.

The numerals 59 and 60 denote scotch-blocks bolted to the mud-sills to prevent the posts 53 and 54 from slipping when the derrick is being raised or lowered. The posts 53 and 54 may be reinforced by securing thereto a cleat P, as shown in Figs. 2 and 4. The said posts 53 and 54 may be further secured by means of cross ties and braces—as, for instance, the tie 61. (Shown in Fig. 7.) The upper ends of the posts 53 and 54 are spaced apart, and yet rigidly secured by the employment of the crown or boxing 62, Figs. 6 and 7, which is bolted together and then secured to the sides of the posts 53 and 54, and on the forward side a pair of braces 63 and 63' extend down therefrom to the respective posts 53 and 54, as shown. Extending through the center of two opposite sides of the crown and also through the posts 53 and 54 at that point is an axle-bolt 64, on which is mounted the pulley-wheel 38, above referred to. Securely mounted from and extending below the lower edge of the tie 61 is the pulley 65, over which a rope or cable may be passed for operations in the well being formed. The third post 55 has on its upper end a harp or two-pronged member 66, the ends of which prongs are pivoted on the axle-bolt 64 outside the sides of the crown 62, as shown in Figs. 6 and 7. The lower end of the post 55 is mounted on a pair of ground-wheels 67 and 67', which are on the axle 68, which latter is secured centrally to the lower end of the pole 55, as shown in Figs. 3 and 4. When in operative position, the lower portion of the pole 55 just above the axle 68 is adapted to fit in between the points of the hounds 39 and 40, as shown in Figs. 3 and 4, where it may be held securely by means of the retainer 69, the ends of which retainer are removably secured

by bolts to the cross-sill J, and the outer central portion of the retainer should be secured by the bolt 70 to the lower portion of the post 55, as shown. The numeral 81 denotes a pulley secured to the rear central portion of the sill J, over which pulley a rope or cable may be passed for raising and lowering the derrick, which operation will be described later.

10 *Guyes.*—The numerals 71 and 71' denote eyes in which guy-lines (not shown) may be secured.

Operation.—The work to be performed by this machine is immaterial to this specification, in that it is well known in the art. Suffice it to say that the various operations of producing a well are to be performed herewith in substantially the same manner as are at present accomplished by machines or rigs of this general character. For instance, an engine (not shown) may be employed, over the drive-pulley of which the belt 11 is operative, whereby the wheel 8 is to be revolved for operating the walking-beam and for operating the sand-reel, and when both of the above are disconnected it may be used for raising and lowering the derrick, which last operation will presently be described in detail. The numeral 72 denotes a belt operative over the drum 9 and then over the channel-wheel 48, whereby the shaft 47 is revolved. A rope or the like (not shown) is to be wound on the reel formed by the shaft 47 and thinner faces of the wheels 48 and 49, its free end being extended up through one of the pulleys in the upper part of the derrick and then extending down into the well for accomplishing various operations.

40 *Assembling and disassembling.*—In Figs. 1, 2, 3, 4, 6, and 7 are shown various parts of my machine, each part appearing in its operative position. Therefore for convenience I will first describe the operation of disassembling the parts and arranging them for transportation—that is, for transferring the machine to a new job, there to be again erected. The first thing in disassembling the machine would be to disconnect the connecting-rod 28 from the crank 10. A rope or the like (not shown) is then secured to the shaft 19 and is then secured to some stationary object to the rear—as, for instance, one of the posts of the derrick—said rope passing through between the members of the king-post 12. The front braces 14 are then removed. I then remove the bolt 18, and then the king-post is allowed to turn forward on its hinges 13, controlled by the crank 20. The connecting-rod should be turned under to rest on the sill B, allowing the center portion of the walking-beam to rest on the upper end of the prop 73, the lower end of said prop being rested on or in a cavity formed in the sills therebelow. As the king-post turns forward the rear braces 15 follow thereagainst and finally lie

thereon, and when thus arranged the parts of the front section will appear as shown in Fig. 5. Then by detaching the connecting-plates I I' from the platform 33 the front section of my machine will be ready to be hitched to for removal. The next operation will be the disassembling of the derrick. To accomplish this, the rope previously referred to as being wound on the reel 47 is removed from the pulley in the derrick, and after being wound on the reel the free end thereof is placed through the pulley 81, and its free end is then secured near the base of the pole 55. The retainer 69 is then removed, and then by allowing the foot of the pole 55 to travel to the rear, carried on the wheels 67 67' and controlled by the lever 52, the derrick is lowered until it lies flat upon the ground, which, it is apparent, can be accomplished without injury to any of the parts. After being lowered the derrick can be taken apart and loaded for transportation. The derrick being removed and the front section of the machine disconnected, I now have only to secure a tongue between the rear parts of the hounds 39 and 40, and then the rear section of the machine will be ready to be hitched to and hauled rearward. In assembling and setting up my machine it is apparent that the reverse of the above will be necessary except that in raising the derrick the belt 72 is placed over the wheel 48 and over the drum 9 and the belt 11 is placed over the pulley 8 and over the drive-pulley of the engine, whereby the derrick may be raised with the power from the engine.

From the above description, when taken in connection with the accompanying drawings, it will be apparent that I have produced an improved well-drilling machine embodying the objects elsewhere referred to in this specification, and while I have illustrated and described the best means now known to me for carrying out the principles of my invention I desire that it be fully understood that I do not restrict myself to the exact details of construction shown and described, but hold that any changes or variations therein as would suggest themselves to the ordinary mechanic would clearly fall within the limits and scope of my invention.

Having now fully shown and described my invention and the preferred manner for its construction, what I claim, and desire to secure by Letters Patent of the United States, is—

In a well-drilling machine having in combination, two main frame-sections, ground-wheels on which the said main frame-sections are mounted, an axle for each pair of ground-wheels, the forward section having a walking-beam mounted thereon, the frame of said front section being formed of a pair of main sills spaced apart and extending to the rear beyond the rear wheels of said front section

and forwardly terminating in the rear of the front wheels thereof, auxiliary sill extending from the sides of the main sills forward and being pivotally mounted to the axle of the
5 front wheels, a derrick extending over and above the sections, means for securing the derrick in position, and means for raising and lowering the derrick by power transmitted through the mechanisms located on the ma-

chine, all substantially as shown and described and for the purposes set forth.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. SHAWVER.

Witnesses:

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R. W. RANDLE.