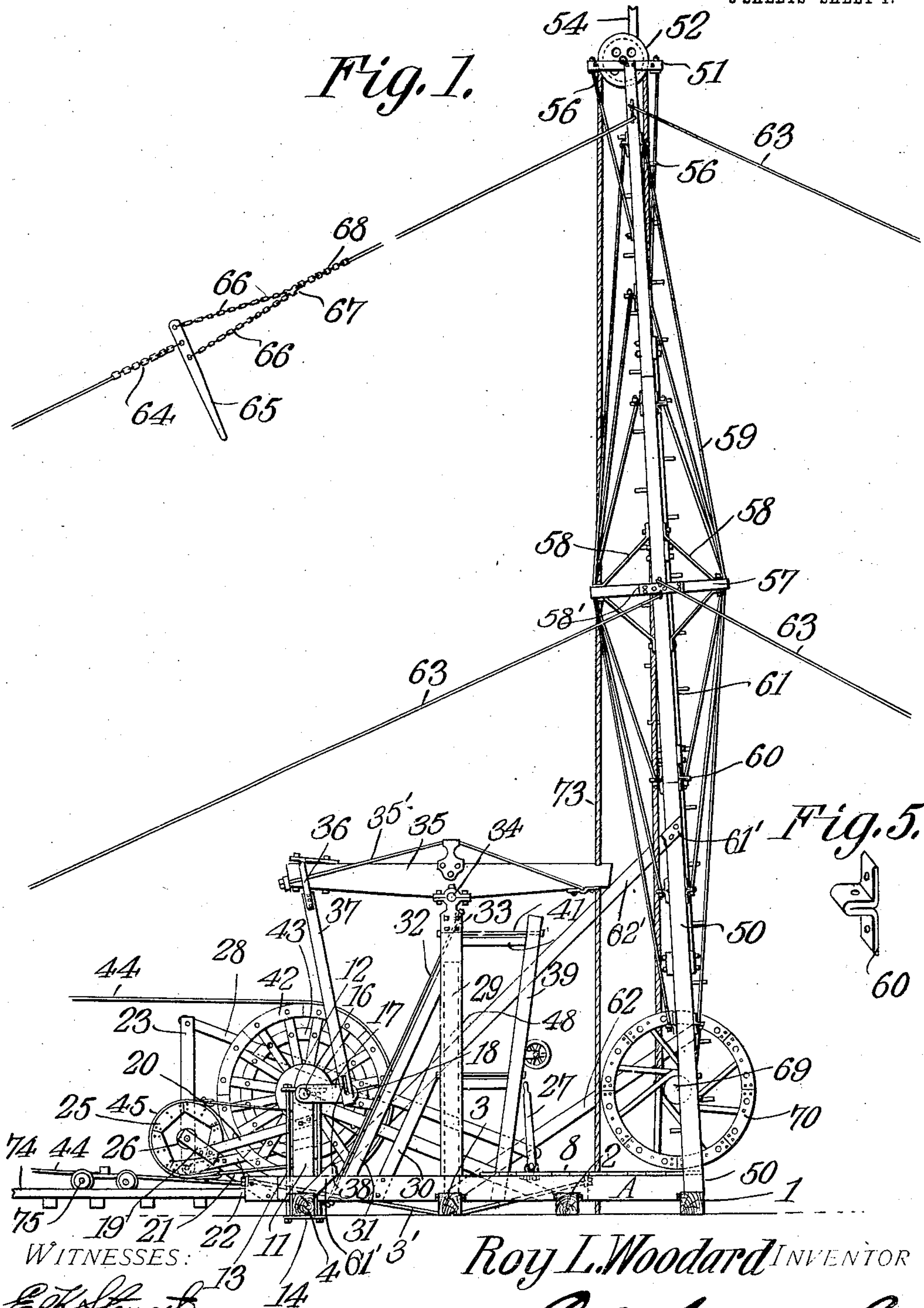


No. 861,928.

PATENTED JULY 30, 1907.

R. L. WOODARD.  
WELL DRILLING MACHINE.  
APPLICATION FILED NOV. 15, 1906.

3 SHEETS—SHEET 1.



WITNESSES:  
*E. H. Stewart*  
*Hubert Lawson*

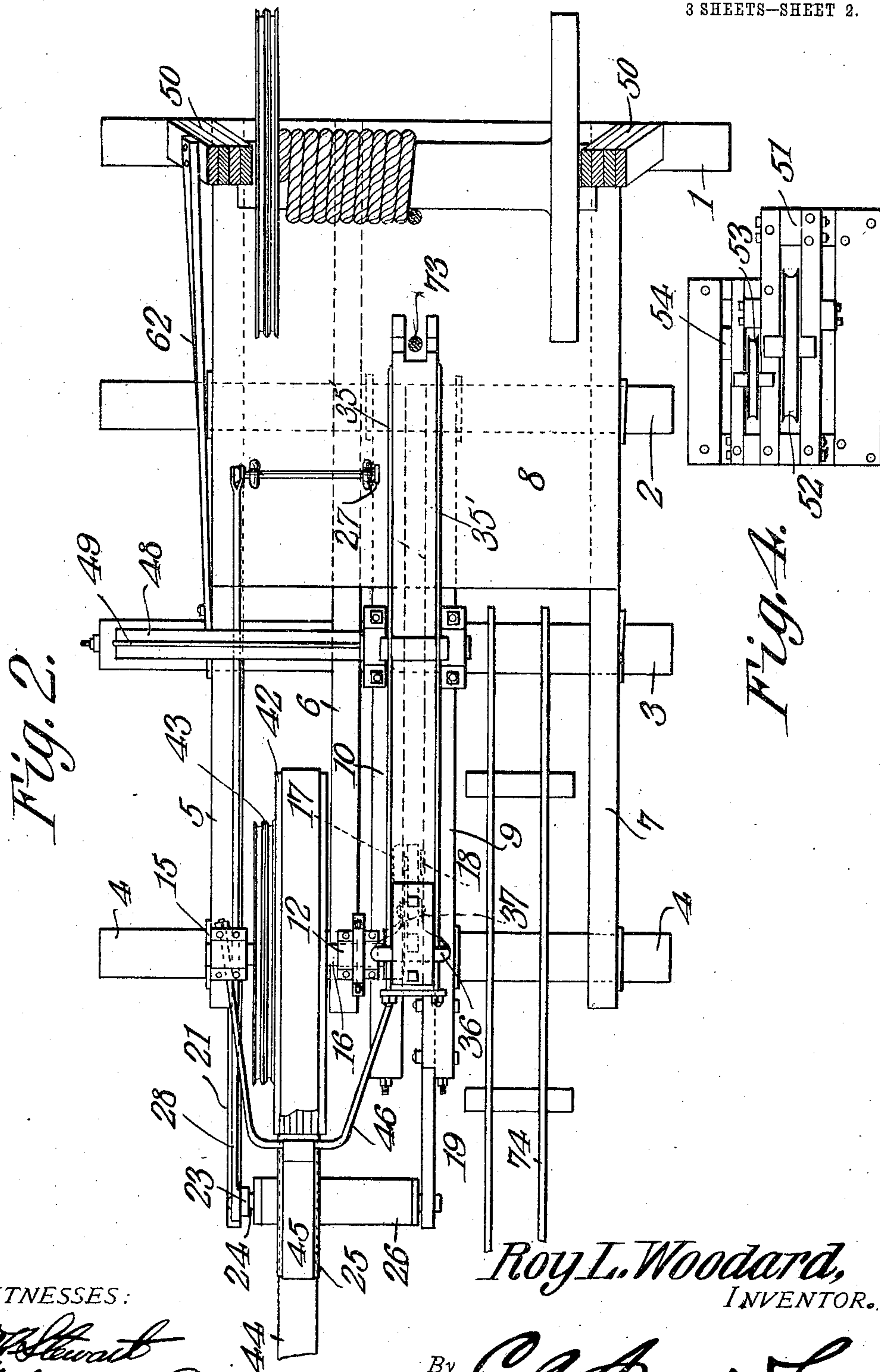
*Roy L. Woodard* INVENTOR  
By *C. Snow & Co.*  
ATTORNEYS

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INVENTOR.

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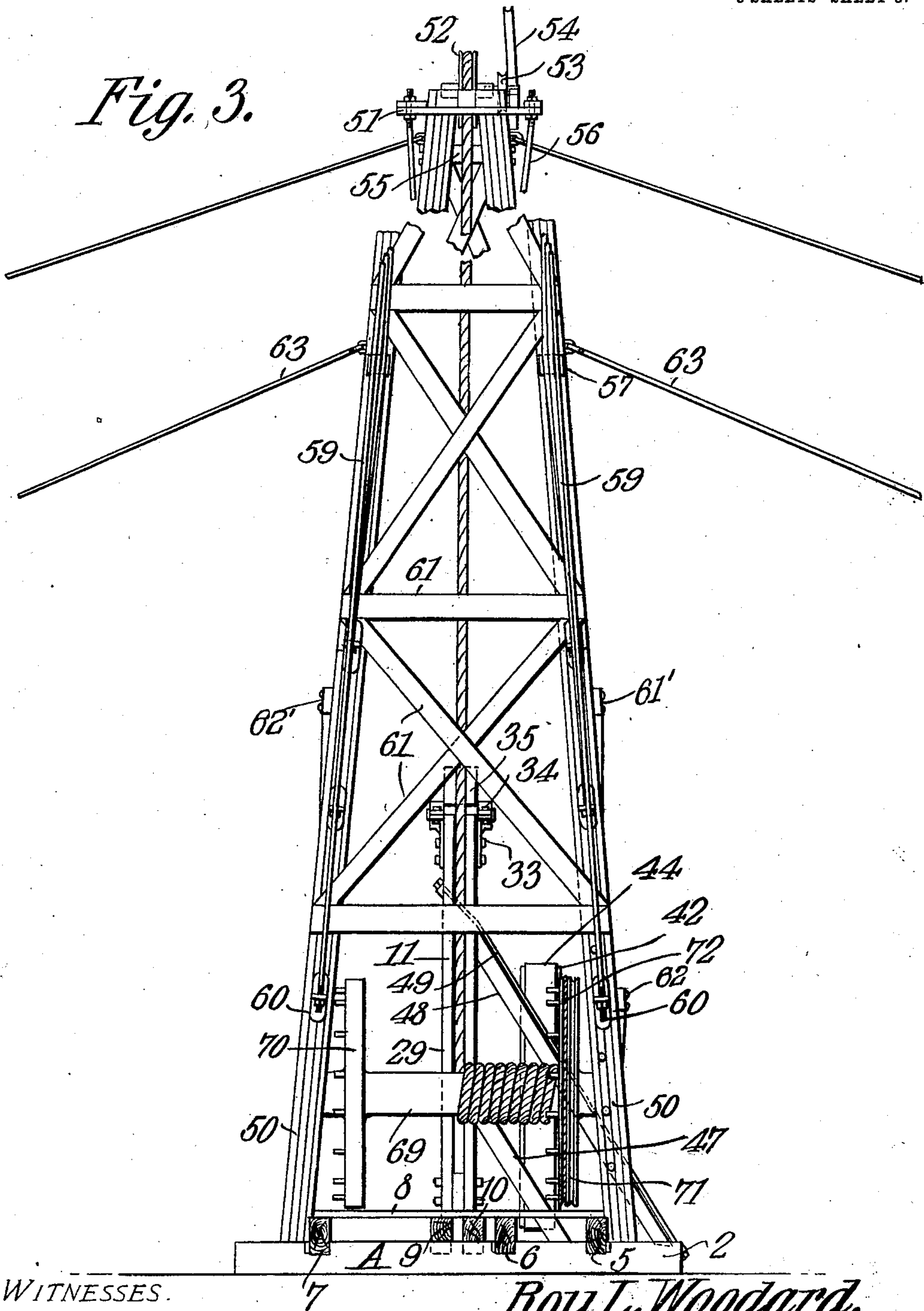
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3 SHEETS—SHEET 3.

*Fig. 3.*



WITNESSES.

*E. H. Smith*  
*Hubert D. Lawson*

*Roy L. Woodard,*  
INVENTOR.

By *C. A. Snow & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

ROY LEON WOODARD, OF RICHBURG, NEW YORK.

## WELL-DRILLING MACHINE.

No. 861,928.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed November 15, 1906. Serial No. 343,600.

*To all whom it may concern:*

Be it known that I, ROY LEON WOODARD, a citizen of the United States, residing at Richburg, in the county of Allegany and State of New York, have invented a new and useful Well-Drilling Machine, of which the following is a specification.

This invention relates to machines for drilling wells and its object is to provide a machine of this character which can be readily set up at the point of use and which is durable and compact in construction.

A still further object is to provide a well drilling machine having a derrick of novel construction which is reinforced throughout its length without the necessity of providing a plurality of brace strips such as have been heretofore utilized.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a side elevation of the machine; Fig. 2 is a plan view thereof, the derrick being removed; Fig. 3 is an enlarged front elevation of the derrick, a portion thereof being removed; Fig. 4 is an enlarged plan view of the derrick cap; and Fig. 5 is a detail view of one of the truss brackets.

Referring to the figures by characters of reference, A is the base frame of the machine made up of mud sills 1, 2, 3, and 4 on which are arranged longitudinal beams 5, 6 and 7, the sills 1, 2 and 3 being disposed below a platform 8. Disposed upon the sills 2, 3 and 4 and close to the beam 6 are parallel beams 9 and 10 upon one end portion of which is mounted a jack post 11 having a cap 12 thereon from which retaining rods 13 extend downward to a holding plate 14 which is disposed beneath the sill 4. Another jack post 15 of similar construction is mounted above the sill 4 and the beam 5, and journaled upon the two jack posts and retained thereon by the caps 12 is a shaft 16 carrying a crank arm 17 at one end of which is located a wrist pin 18.

An inclined support 19 extends rearwardly from the beam 9 and is suitably braced as shown at 20, said brace extending backward to the jack post 11. Another inclined support 21 extends rearwardly from the beam 5 and connected thereto is a brace 22 which is secured to the jack post 15 and extends across the support 19, there being a lever 23 pivotally connected to the upper end of said brace 22. Journaled within this lever and within the upper end of the support 19 are the trunnions 24 of a drum 25 and secured to this drum is a sand reel 26. An operating lever 27 is mounted at a suitable point upon the platform 8 and is connected to the upper end of the lever 23 by means of a rod 28 so that when the lever 27 is swung in one direction the drum 25 is shifted so as to swing the sand reel forward or backward.

Mounted on the beams 9 and 10 and above the sill 3 is a samson post 29 having inclined braces 30 and 31 secured thereto and to the beams 9 and 10, there being a rod 32 upon the upper face of the brace 31 which is bolted or otherwise secured to one of the beams 9 and 10 and to the upper portion of the samson post. Side plates 33 are fastened to the upper portion of the samson post and support a saddle 34 which is secured to the central portion of a walking beam 35. A stirrup 36 is arranged upon one end of the walking beam and is connected to a rod 37 which is provided adjacent its lower end with a slot 38 through which the wrist pin 18 extends. A post 39 is mounted upon the frame A close to the samson post and is connected thereto by means of braces 40 and rods 41. A band wheel 42 is secured upon the shaft 16 and disposed at one side thereof and rotatable therewith is a double tug pulley 43. The band wheel is adapted to receive power from a belt 44 or in any other suitable manner. A brake band 45 partly surrounds the sand reel and is secured at its ends to the jack posts 11 and 15 by means of rods 46. By shifting the sand reel in one direction by means of the levers 23 and 27 it will be forced against the brake band 45 and held against rotation and by shifting it a short distance in the opposite direction it will be brought into contact with the band wheel 42 and be rotated thereby. Side braces 47 and 48 are disposed at one side of the samson post and are secured to the base frame A and these braces are similar to the braces 30 and 31 and a brace rod 49 similar to the rod 32 is disposed along the upper face of the brace 48 and fastened to the base frame A and the samson post. By means of the two sets of braces which have been described the samson post is held rigidly in an upright position and will resist all ordinary strains to which it will be subjected.

Arranged upon one end of the base frame A and preferably directly above the sill 1 is the derrick of the machine. This derrick is made up of two uprights 50. Each of these uprights consists of a plurality of sections placed end to end as clearly indicated in Fig. 1 and, as shown particularly in Fig. 3 each section is made up of several thicknesses bolted together so as to form a rigid structure. The two uprights 50 converge toward their upper ends and carry a cap 51 in which is disposed a large pulley 52 and a sand reel pulley 53. An upright 54 is arranged upon the cap for facilitating the placing of the pulleys upon the cap after the derrick has been set up, said upright constituting a support for a rope which may be used for placing the pulleys. It is of course understood that the cap is rigidly fastened between the upper ends of the uprights 50. A solid spacing block 55 is interposed between the upper portions of the uprights directly below the cap. Brace rods 56 are secured to



opposite portions of the cap 51 and to opposite faces of the uprights 50. Oppositely extending arms 57 are arranged adjacent the center of each upright 50 and these arms are held at predetermined angles to the uprights by means of braces 58 and plates 58'. Secured within the arms are series of truss rods 59 the ends of which are threaded and extend through brackets 60 preferably formed of heavy sheet metal strips folded upon themselves as shown in Fig. 5 and held by means of nuts or in any other preferred manner. The truss rods are of different lengths so as to extend from the arms 57 to points at different distances from the center of the upright. The two uprights 50 are rigidly connected by means of brace strips 61 which are disposed at different points therebetween as shown in Fig. 3. A brace 62 also connects the lower portion of one of the uprights 50 with the sill 5 and two upper braces 62' connect both of the uprights 50 with the two sides of the frame A.

Guy ropes 63 extend from the upper portions of the uprights 50 to anchors which may be suitably placed. Each of these anchors preferably includes a tightener adapted to be located close to the ground and which may consist of a chain 64 having a lever 65 pivoted upon one end thereof. Chains 66 extend from the lever at opposite sides of its fulcrum and carry hooks 67 adapted to engage the links of a chain 68 secured to the guy rope. By means of this arrangement the lever can be swung upon its fulcrum so as to pull on one chain 66 and loosen the other whereupon any slack may be taken up by means of the loosened chain.

A drum 69 is journaled between the lower portions of the uprights 50 and carries a bull wheel 70 and a tug pulley 71 adapted to receive power from the pulley 43 through a belt or cable 72. The tool carrying cable 73 of the machine extends over the crown pulley 52 and is adapted to be wound on the drum.

The actuation of the sand reel will of course be fully understood from the foregoing description as will also that of the walking beam which is to be used for actuating the drill. The principal importance in the present case is attached to the construction of the apparatus whereby the same can be readily assembled at the point of use. It will be noticed that all of the parts are secured together by bolts and that the number of parts is reduced to the minimum. By providing the particular form of derrick the number of parts necessary to procure a derrick of sufficient strength is greatly reduced and said derrick can be easily set up and will be as durable as derricks of the well known tower type. In order that tubing drills, etc., may be conveniently brought on to the platform 8 a track 74 extends up to the platform from a point removed any desired distance from the machine and this track carries a truck 75 on which tubing may be conveyed into the apparatus. For instance if a very long and heavy stem is to be raised the rear or lower end is placed on the truck

while the upper or front end is attached to the rope 73 and by pulling on this rope the front end of the stem will be raised and the truck will ride inward on the track carrying the lower or rear end of the stem. There is nothing to prevent this gradual upward swinging of the stem as would be the case if a four-cornered derrick were used. It will also be understood that by removing the sills 7 and 1 the machine can be moved sidewise away from the well to any desired location. In order that the apparatus may be strengthened directly under the samson post 29 truss rods 3' are extended under the sill 3 and are secured to the ends of the beams 9 and 10, as shown in Fig. 1. Trusses 35' are also used upon the walking beam as shown in said figure.

The preferred form of the invention has been set forth in the foregoing description but I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of the claims.

What is claimed is:

1. In a machine of the character described the combination with a base; of a derrick disposed thereon and comprising converging uprights rigidly connected, oppositely extending arms upon each upright at a point between the ends thereof, truss rods extending from the arms to points upon the uprights, and a cap supported by the upright.
2. In a well drilling machine the combination with a base; of a derrick supported thereon and comprising converging uprights rigidly connected, each upright being made up of sections, oppositely extending arms at a point between the ends of each upright, braces connecting the arms and uprights, brackets disposed upon opposite faces of the uprights, and truss rods engaging the outer ends of the arms and adjustably mounted within the brackets.
3. In a machine of the character described the combination with a base frame; of converging uprights rigidly connected and mounted on the frame, said uprights constituting a derrick, truss rods arranged upon the braces and spaced therefrom at their centers, a cap carried by the uprights, a standard thereon, and pulleys removably mounted within the cap.
4. In a machine of the character described the combination with a base; of a derrick thereon and comprising converging sectional uprights rigidly connected, brackets disposed upon opposite faces of the uprights, oppositely extending brace arms adjacent the center of each upright, truss rods engaging the brackets and arms, a cap secured upon the upper ends of the uprights, braces extending from opposite portions of the cap to the uprights, a standard upon the cap, and pulleys removably mounted within the cap.
5. A derrick for drilling machines comprising rigidly connected uprights, oppositely extending arms projecting therefrom at a point between the ends thereof, and truss rods extending from the arms and connected to the uprights different distances from the ends thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROY LEON WOODARD.

Witnesses:

J. T. KING,  
B. MOON.