No. 737,505. PATENTED AUG. 25, 1903.

L. D. SHRYOCK.

WELL DRILLING APPARATUS.

APPLICATION FILED OCT. 29, 1902.

NO MODEL.

FIG. 1.

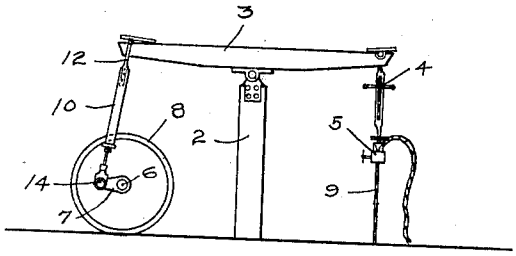



FIG. 3.

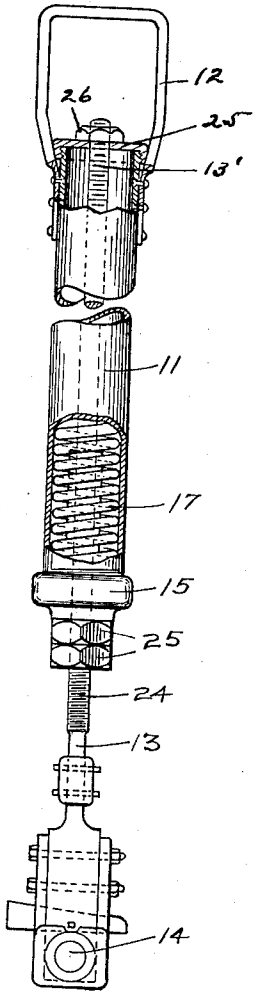
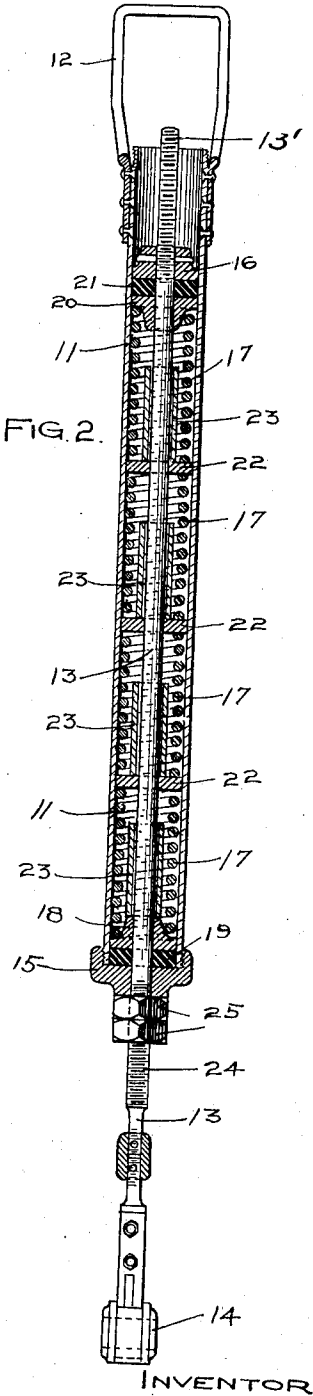



FIG. 2.




WITNESSES:

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No. 737,505. Patented August 25, 1903.

# UNITED STATES PATENT OFFICE.

LEONARD D. SHRYOCK, OF MARIETTA, OHIO.

## WELL-DRILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 737,505, dated August 25, 1903.

Application filed October 29, 1902. Serial No. 129,248. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD D. SHRYOCK, a citizen of the United States, residing at Marietta, in the county of Washington and State of Ohio, have invented certain new and useful Improvements in Well-Drilling Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to well-drilling apparatus, and has particular reference to an improved compensating pitman for connecting the power crank-shaft and walking-beam, the same being designed especially for use in conjunction with a wire drilling-cable.

A wire cable is much smaller in diameter than a manila cable of corresponding strength, making less bulk on the spool or reel when wound thereon, which is of particular moment in a cable of great length. Furthermore, the wire cable is less costly and far more durable than a hemp rope. Still the latter is used almost exclusively for deep drilling, as the compensation resulting from its inherent spring or stretch is essential, as by means thereof the operator is enabled to "feel" the drop of the tools on the bottom of the hole and to gage the stroke and the paying out of the cable accordingly. Also in the event of a cave in or other cause for the tools sticking fast the manila cable will stretch sufficiently to compensate for the stroke and prevent injury to the engine and other parts of the actuating mechanism. Under similar circumstances a wire cable unprovided with compensating means will not stretch sufficiently to prevent such injury. It is further characteristic of the non-stretching wire cable that the entire length thereof, together with the attached tools, forms a dead-weight which on the upstroke must be lifted bodily without yielding or compensating in any manner, and the extreme load thus instantly thrown on the engine is very injurious.

With the compensating connection between the cable and its actuating mechanism herein proposed the objections above noted incident to the wire cable for deep-well drilling are obviated, rendering the same entirely practicable and far more efficient than the manila cable.

In the accompanying drawings, Figure 1 is a view in elevation of an actuating crank-shaft and walking-beam connected by my improved pitman. Fig. 2 is a longitudinal sectional view of the pitman. Fig. 3 is a similar view of the crank-shaft end thereof, taken at right angles to Fig. 2.

The present embodiment of the invention is in connection with a walking-beam, and referring to the drawings, 2 designates the samson-post, 3 the walking-beam, 4 the temper-screw, and 5 the clamps depending therefrom, while 6 is the band-wheel shaft, 7 the crank thereon, and 8 the band-wheel driven by a belt from an engine, (not shown,) all of usual and well-known construction.

9 is the wire drilling-cable, secured in usual manner by clamps 5.

The pitman 10, which connects the wrist of crank 7 and the rear end of walking-beam 3, consists of an upper tubular portion 11, secured to the beam by stirrup 12, and movable longitudinally therein is lower rod portion 13, having at its lower extremity wrist-pin bearing 14. The lower end of tube 11 is closed by cap 15, which is apertured to pass rod 13, and secured to the upper inner extremity of the latter is head 16. Embracing rod 13 between cap 15 and head 16 is a succession of coiled springs 17, the lowermost spring resting on head 18, loosely embracing the rod, with a rubber disk 19 interposed therebetween and cap 15, while the uppermost spring 17 engages a similar head 20, with rubber disk 21 between it and head 16. Between the meeting ends of adjacent springs are disks 22, freely movable on or over rod 13. Also loosely embracing the latter and resting on each of disks 22, also on head 18, are the tubular sections 23, which when the pitman is distended and the springs contracted engage, respectively, the disks next above, the uppermost section engaging head 20, thereby limiting the compression of the springs, and when thus engaged making the pitman rigid throughout its entire length. Rubber disks 19 and 21 tend to relieve the springs and make them more durable. By employing several springs rather than a single long one the expense of replacement in case of breakage is minimized. The lower portion of rod 13 is threaded at 24, and adjustable thereon are nuts 25, by means of which the extent of movement of the piston

members with relation to each other is determined, likewise the tension of the springs.

With the pitman constructed as here shown it will be seen that while the same has sufficient normal rigidity it will yield whenever necessary during the drilling operation and afford sufficient spring or compensation to render the wire cable actuated thereby quite as practicable as the manila cable. The piston may be made rigid or non-compensating by placing apertured cap 25 on the upper end of cylinder 11 and securing the extended end 13′ of rod 13 by nut 26. Thus if a spring should break the work may proceed without stopping to repair the same.

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

1. A pitman for well-drilling apparatus comprising two pitman-sections movable longitudinally with relation to each other, a head at the inner end of each section, a succession of coiled springs embracing the inner pitman-section between said heads, disks or washers movable on the inner pitman-section between and separating adjacent springs, and an upwardly-projecting stop on each disk adapted to engage and limit the movement of the disk next above, substantially as described.

2. A pitman for well-drilling apparatus comprising two pitman-sections movable longitudinally with relation to each other, a head at the inner end of each section, rubber disks behind the heads for yieldingly holding them, and springs between the heads operating to resist extension of the pitman, substantially as described.

3. A pitman for well-drilling formed in two sections movable longitudinally with relation to each other, a normally yielding connection between the pitman-sections, and means for rigidly connecting said sections, substantially as described.

4. A pitman for well-drilling apparatus comprising a tubular pitman-section adapted at its upper end to connect with a beam, a rod extending through said tube and adapted to connect with driving mechanism, springs in the tube normally yieldingly connecting the tube and rod, and means for rigidly connecting the tube and rod, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEONARD D. SHRYOCK.

Witnesses:
JOHN C. SWAN,
C. F. ALBEE.