R. ANTHONY.

WELL DRILL MACHINE.

APPLICATION FILED DEC. 12, 1908.

945,437. Patented Jan. 4, 1910.

Fig. 1.

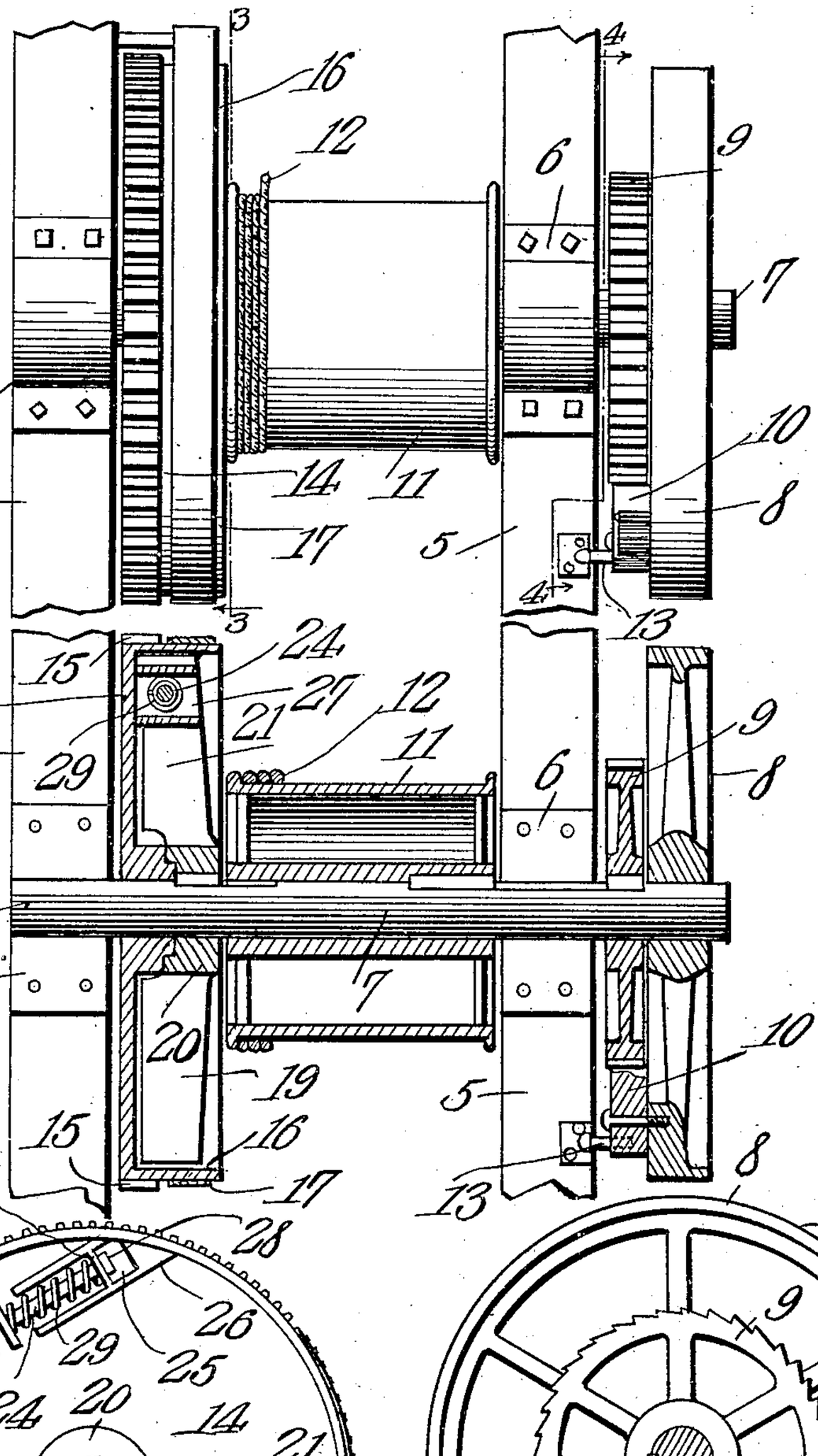


Fig. 2.

Fig. 3.

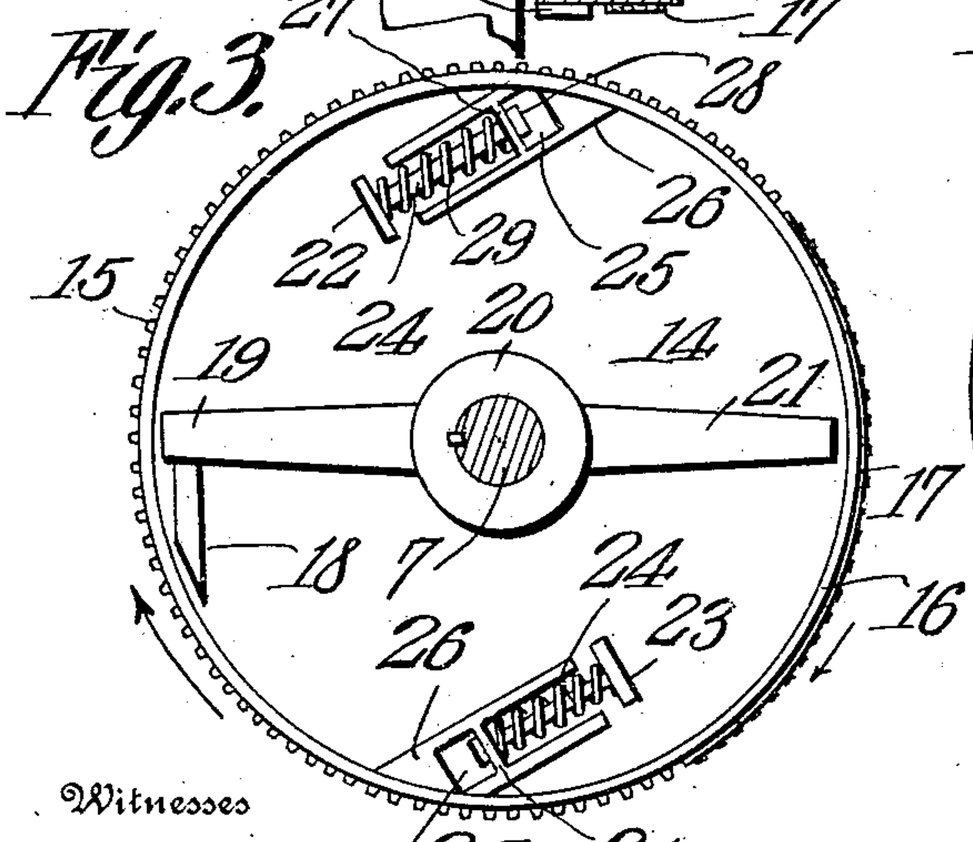
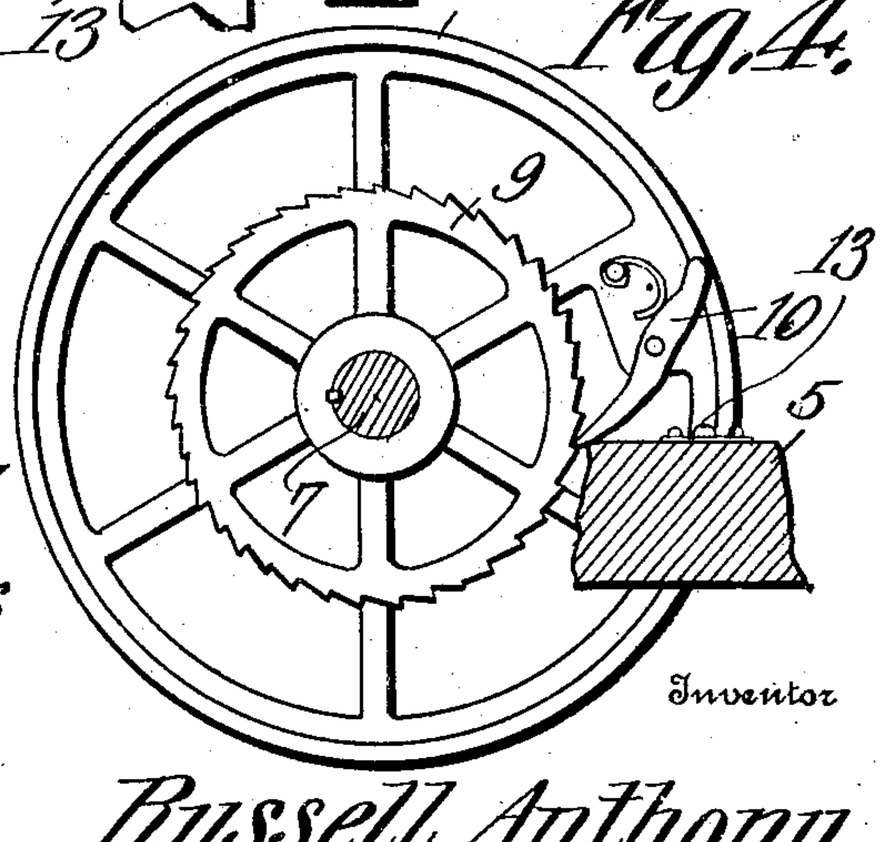


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

RUSSELL ANTHONY, OF SAN ANGELO, TEXAS.

WELL-DRILL MACHINE.

945,437. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed December 12, 1908. Serial No. 467,209.

To all whom it may concern:

Be it known that I, RUSSELL ANTHONY, a citizen of the United States, residing at San Angelo, in the county of Tom Green and State of Texas, have invented a new and useful Well-Drill Machine, of which the following is a specification.

The present invention relates more particularly to the mechanism whereby a drilling tool is alternately raised and dropped, and has for its object to provide an improved mechanism of this kind characterized by simplicity of construction and efficiency of operation.

A further object of the invention is to provide an operating mechanism whereby the drill-rope is held taut, and a quick return is had.

The invention also has for its object an improved feed mechanism, together with other novel features of construction, as will appear more fully hereinafter.

In the accompanying drawings Figure 1 is a plan view of the invention. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a transverse section on the line 3—3 on Fig. 1. Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

In the drawings, 5 denotes a pair of sills on which the mechanism is supported. On these sills are bearings 6 for a transverse shaft 7 on which is mounted a loose pulley 8, driven from any suitable source of power. To the shaft 7 is keyed or otherwise secured so as to turn therewith, a ratchet-wheel 9 which is engageable by a spring-pressed pawl 10 pivotally mounted on the pulley 8, whereby the rotation of the latter is communicated to the shaft.

At 11 is indicated a drum on which the drill-rope 12 is wound, said drum being secured to the shaft by keys or otherwise so as to turn therewith.

The shaft 7 is adapted to be rotated in one direction by the pawl-and-ratchet mechanism herein described, to wind up the drill-rope and thus elevate the drilling tool. The dropping of the tool is accomplished by tripping the pawl 10 and thus releasing the shaft 7, whereupon the drill-rope unwinds, and the drilling tool drops by gravity. The pawl is tripped by a pin 13 projecting from the adjacent sill 5 into the path of the tail of the pawl which it strikes once every revolution of the pulley 8 and thereby disengages the pawl from the ratchet, thus releasing the shaft as stated.

The feed mechanism comprises the following instrumentalities: On the shaft 7 is loosely mounted a disk 14 formed with spur teeth 15 and having on one side thereof a rim 16 for a band-brake 17. On that face of the disk from which the rim projects, is a laterally projecting stop-block 18 which extends into the path of and is engageable by an arm 19, projecting from a hub 20, keyed or otherwise secured to the shaft 7 so as to turn therewith. Diametrically opposite this arm is another arm 21 which also projects outwardly from the hub. On the face of the disk 14 are buffers 22 and 23 respectively, which are engageable by the arms 19 and 21, and serve to cushion the blow thereof. Each buffer comprises a head formed on a stem 24 which is slidably mounted in a slot 25 formed in a block 26 secured to the disk, and passing through an opening in a cross-bar 27 extending between said slot. Behind the cross-bar, the stem has a head 28 to prevent withdrawal. Around the stem, between the cross-bar 27 and the buffer head, is coiled a spring 29 which is compressed when the buffer is operated. The head 28 limits the inward movement of the stem by striking the inner end of the slot, and thus serves as a stop.

When the drilling tool is being alternately raised and dropped as heretofore stated, the disk 14 is stationary, and the arm 19 swings back and forth between the block 18 and the buffer 22. The arm 21 swings toward and from the buffer 23. If the drill rope unwinds sufficiently to cause the arms to strike the buffer, the shock will be taken up thereby. To feed the drilling tool, the disk 14 is turned in the direction of the arrow in Fig. 3, whereupon the block 18 comes into engagement with the arm 19, and turns the shaft 7 in a direction to pay out the drill-rope. Any suitable form of gearing (not shown) may be employed for operating the feed disk. The band-brake 17 engaging the rim 16 controls the descent of the drilling tool.

The mechanism herein described is simple in structure and effectually serves the purpose for which it is designed, there being no complicated parts to get out of order. The

drill-rope works tight, and a quick return is had. Only one rope is required to operate the drilling tool and the slush bucket.

What I claim is:

1. In a well-drilling machine, a shaft, a drum made fast thereon on which the drill-rope is wound, a loose pulley on the shaft, means for periodically coupling said pulley to the shaft, a feed disk loose on the shaft and having a stop-projection, and an arm fast on the shaft and projecting into the path of the stop-projection.

2. In a well-drilling machine, a shaft, a drum made fast thereon on which the drill-rope is wound, a loose pulley on the shaft, means for periodically coupling said pulley to the shaft, a feed disk loose on the shaft, a stop-projection and a buffer on the disk, and an arm fast on the shaft and extending between the stop projection and the buffer.

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

RUSSELL ANTHONY.

Witnesses:

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LEE C. SPRINGER.