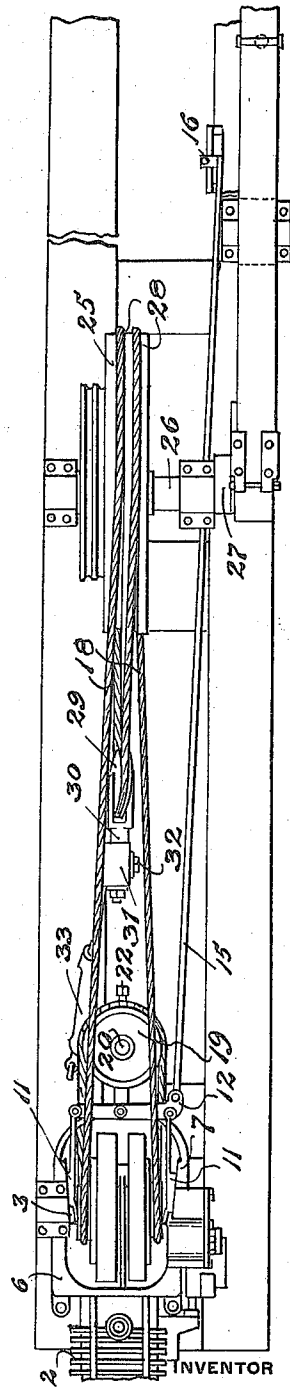


DRIVING GEARING FOR WELL DRILLING APPARATUS.
APPLICATION FILED MAY 14, 1913.

Patented Oct. 19, 1915.

١٠٤

F. E. Gaither.
Ellen McConnell



၆၂၆

C. F. Rigby
By J. M. V. V. V.

C. F. RIGBY.
 DRIVING GEARING FOR WELL DRILLING APPARATUS.
 APPLICATION FILED MAY 14, 1913.

1,157,582.

Patented Oct. 19, 1915.
 2 SHEETS—SHEET 2.

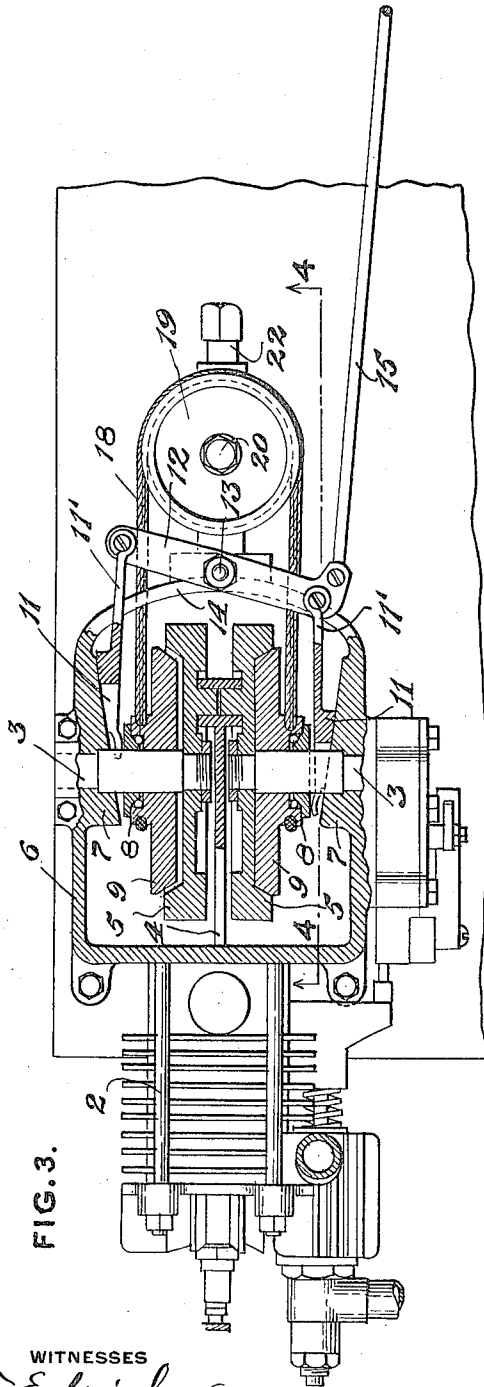


FIG. 3.

WITNESSES
F. E. Gaithers.
Ellis McConnell

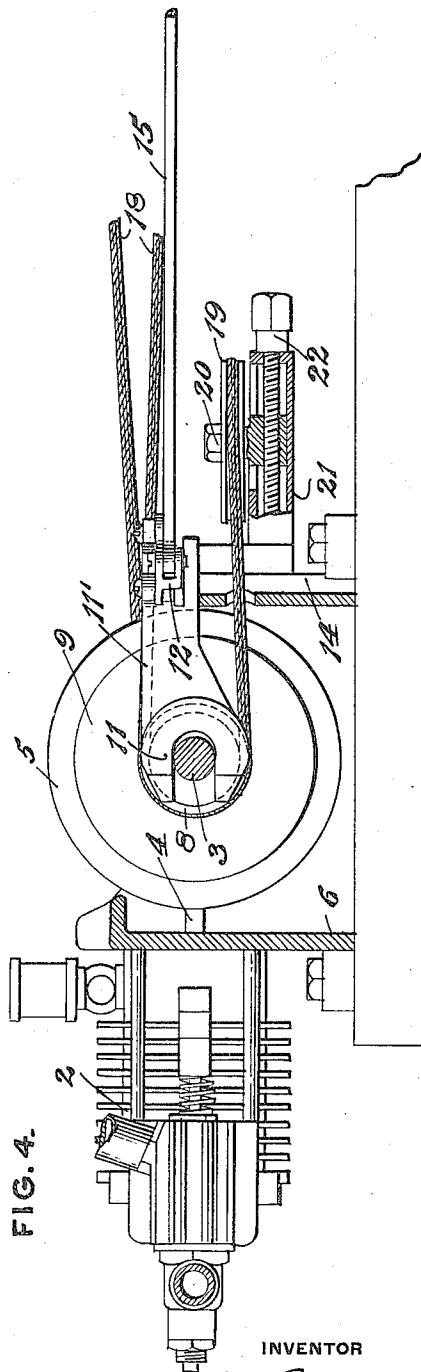


FIG. 4.

INVENTOR
C. F. Rigby.
By J. M. [unclear]
att.

UNITED STATES PATENT OFFICE.

CLARK F. RIGBY, OF BUTLER, PENNSYLVANIA.

DRIVING-GEARING FOR WELL-DRILLING APPARATUS.

1,157,582.

Specification of Letters Patent.

Patented Oct. 19, 1915.

Application filed May 14, 1913. Serial No. 767,605.

To all whom it may concern:

Be it known that I, CLARK F. RIGBY, a citizen of the United States and resident of Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Driving-Gearing for Well-Drilling Apparatus, of which the following is a specification.

One object of this invention is to provide simple and efficient means for reversing a wire cable belt drive without stopping or in any manner disturbing or interrupting the belt driving mechanism.

A further object is to provide against the slipping of a belt when great strain is exerted on the belt driven part, this regardless of whether such stress is in opposition to the driving force of the belt or in a reverse direction.

Still a further purpose is to facilitate the adjustment of slack in the belt.

Another and very important feature of the invention is the arrangement of belt gearing directly on the crank shaft of an engine, and particularly an explosive engine, whereby the power is directly transmitted, with means for reversing the direction of the transmitted power without interfering with the operation of the engine.

In the accompanying drawings, Figure 1 is a side elevation of the improved mechanism, and Fig. 2 is a top plan of the same. Fig. 3 is a sectional plan of the reversing mechanism mounted on the engine crank shaft, and Fig. 4 is a sectional elevation on line 4-4 of Fig. 3.

The improved mechanism is designed primarily for use with well drilling apparatus, and such an adaptation is shown in the drawings, although it will be understood that it may be applied to other uses without departing from the invention.

Referring to the drawings, 2 designates an explosive engine and 3 the crank shaft thereof which is connected to the engine piston or pitman 4 in the usual manner, shaft 3 carrying the combined fly wheels and clutch heads 5. The crank shaft is mounted in the engine frame 6, and secured to opposite sides of the latter in the plane of the shaft are the wedge-like abutments 7. Rotatable and slidable on the shaft are sheaves 8, and carried by the sheaves are clutch disks 9 which

are adapted to engage the combined fly wheels and clutch heads 5.

Embracing shaft 3 between sheaves 8 and abutments 7 are the bifurcated wedges 11, each carried by an arm 11' and these arms are pivoted to opposite ends of the lever 12, the latter being fulcrumed between its ends at 13 to the transverse frame part 14 which connects abutments 7. Lever 12 is connected by rod 15 with the hand adjusting lever 16. With the mechanism thus described either driving sheave may be clutched to the engine and the driving direction of cable 18 extending around the sheaves thus determined, the unclutched sheave simply serving as an idler. The cable is passed from one sheave to the other by means of idler 19 provided with a vertical journal 20 which is supported by a bracket 21 projecting from frame part 14, being adjustable in said bracket by means of screw 22.

The mechanism driven by the belt consists of a band wheel 25 which is here shown mounted on shaft 26 of well drilling mechanism, the shaft being provided with the usual crank 27 for imparting motion to a walking beam or other tool operating mechanism, not shown. The periphery of the band wheel is formed with two parallel grooves 28 to provide for accommodating a double winding of belt 18, the latter being preferably a wire rope. For shifting the belt from one groove to the other of the band wheel it is caused to pass around an idler 29 which has a swivel support 30 in a post 31, so that the idler may assume the angle necessary for shifting the belt. The idler post 31 is preferably located between the band wheel and the engine and is pivotally supported at its lower end at 32 and is adjustably held by the turnbuckle stay 33, the latter affording convenient means for adjusting the idler as may be necessary for properly directing the belt, also for taking up slack.

The invention is peculiarly well adapted for utilizing wire cable as a driving belt, danger of slipping being reduced to a minimum.

The advantages of the invention reside in the facility with which power in reverse directions may be applied directly from an engine, and particularly a non-reversible

engine, also in the non-slipping hold of the belt, this regardless of the stress that may be placed thereon. Hence in well drilling operations, with the belt properly adjusted, there is no danger of slipping when elevating the tools, nor when the rotation of the crank shaft is accelerated by the down stroke of the tools, and such movement is equally impossible when the rotation of the crank shaft is accelerated by the down stroke of the tools.

I claim:—

1. The combination of an explosive engine cylinder and piston, a crank shaft, a pair of fly-wheels secured to the shaft, a pitman located intermediate the fly-wheels and operatively connecting the piston and said crank shaft, two sheaves normally loose on the shaft, a set of clutch members for each sheave with one member of each set rigid with the sheave and the other member rigid with a fly-wheel, and means for uniting the clutch members of each set.

2. The combination of an explosive engine and a crank-shaft therefor, fly wheels on the shaft, two sheaves normally loose on the shaft, a set of clutch members for each sheave with one member of each set rigid

with the sheave and the other member rigid with a fly wheel, and means for uniting the clutch members of each set.

3. The combination of an explosive engine and a crank-shaft therefor, fly wheels secured to the shaft and formed with clutch faces, two sheaves normally loose on the shaft, a clutch member rigid with each sheave and adapted to cooperate with the clutch face of a fly wheel, and means for effecting such cooperation.

4. The combination of a driving shaft, two driving sheaves normally rotatable on the shaft, a set of clutch members for each sheave with one member of each set secured to a sheave and the other member secured to the shaft, wedges for moving the sheaves on the shaft for engaging the sheave-carried clutch members with the shaft-carried clutch members, a lever to which the wedges are connected, and lever operating means.

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

CLARK F. RIGBY.

Witnesses:

J. M. NESBIT,
ELLA McCONNELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."