(No Model.)

G. CORBETT.

DRILLING RIG.

No. 385,241. Patented June 26, 1888.

Fig. 4.

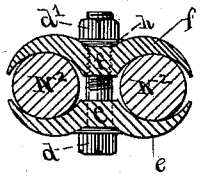


Fig. 8.

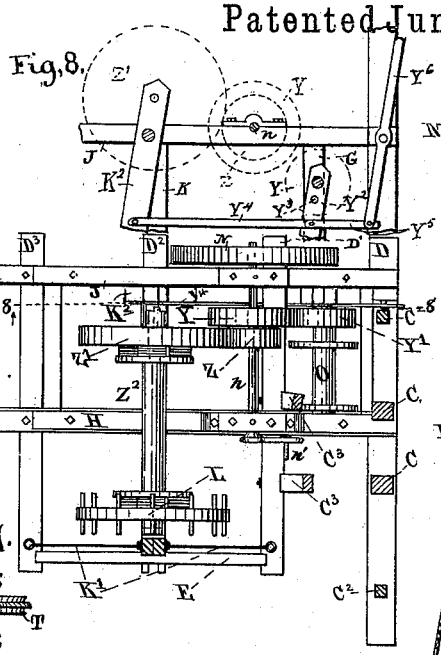


Fig. 5.

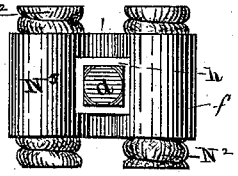


Fig. 6.

Fig 3

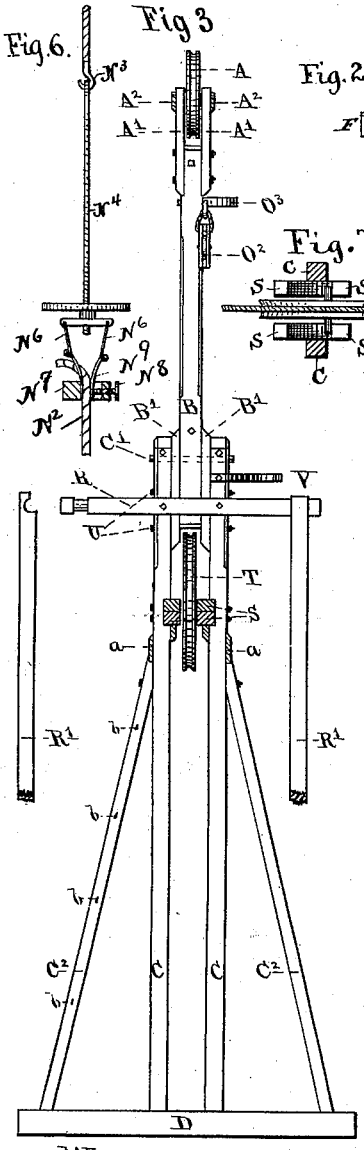


Fig. 2.

Fig. 7.

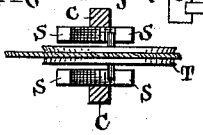
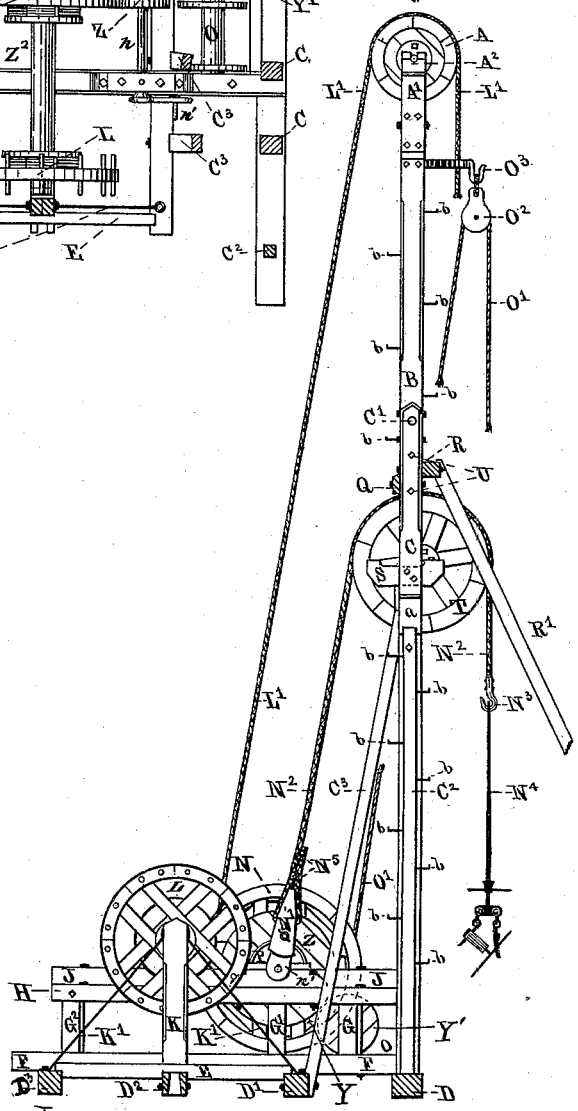


Fig 1



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UNITED STATES PATENT OFFICE.

GEORGE CORBETT, OF BRADFORD, PENNSYLVANIA.

DRILLING-RIG.

SPECIFICATION forming part of Letters Patent No. 385,241, dated June 26, 1888.

Application filed January 24, 1884. Serial No. 118,599. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CORBETT, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Drilling-Rigs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a portable rig for drilling wells; and it consists of certain details of construction, which are hereby fully described with reference to the accompanying drawings and definitely pointed out in the claims.

In said drawings, Figure 1 is a side elevation of my improved rig. Fig. 2 is a top view of the same, the derrick being broken off. Fig. 3 is a front elevation. Fig. 4 is a sectional view of the preferred form of clamp. Fig. 5 is a plan view of the same. Fig. 6 is a detail view of the clamp and temper-screw. Fig. 7 is a detail view of the elongated horizontal bearings for the rocking-wheel. Fig. 8 is a sectional view taken on the line 8 8, Fig. 2.

The frame-work of the rig consists of the mud-sills D D′ D^2 D^3, the cross-sills E F F, posts G G′ G^2 K K^2, samson-posts C C, and braces C^2 C^2 C^3 C^3 R′ R′, and cross bar or arm R. The cross bar or arm R is provided near its ends with rounded surfaces, against which rest sockets of corresponding shape in the upper ends of braces R′. The result of this arrangement is that while the cross bar or arm R necessarily aids in strengthening the frame of the derrick and acts with the braces R′ in supporting the latter, the method in which the parts R and R′ are joined enables the braces R′ to be set upon a base of any inclination. If the rig be set upon a hillside, the braces R′ need simply to be moved until, finding a steady resting-place, they firmly brace the derrick.

When it is not desired to use the rig for a regular frame-derrick, a mast, B, with a crown-pulley, A, mounted thereon is used. This mast is pivoted to the samson-posts C by bolt C′. In mounting the mast, the lower end of the latter is first raised and placed between the posts C. The bolt C′ is then inserted and the mast turned upon the latter as a pivot until it reaches a perpendicular position, when it is fixed by bolts U, passing through both the mast and samson-posts. The bull-wheel consists of shaft Z^2, hand-wheel L, and friction-wheel Z′, and is mounted in the posts K K^2, the former of which posts is planted rigidly in the sill D^2 and braced by the guides K′, while the latter is swung from the member J by means of a pivot-pin, J′, for a purpose to be hereinafter described. Upon the shaft Z^2 the drilling rope or cable L′ is wound, and thence passes over the crown-pulley A, which supports it immediately over the well. While the well is being drilled this rope L′ carries the tools. The operation of the tools, however, is effected by the working rope or cable N^2, which passes over a wheel or pulley, T, mounted in the derrick, and has a hook, N^3, from which is hung a temper-screw, N^4, carrying a clamp, which may be adjusted upon the drill rope or cable as the latter descends in the well. This clamp is suspended from the temper-screw by links N^6; and it consists of the piece N^7, hand-screw N^8, and plate N^9, which is swung from one of the links N^6, and against which the end of the hand-screw bears in clamping the rope. Gradual adjustment or lowering of the well rope or cable between the times of changing of the position of the clamp thereof is effected by the temper-screw N^4 in well-known manner. The prominent feature of this portion of my invention is the using, in connection with the rope or cable L′, which runs over pulley A to the bull-wheel, of a second working-rope and pulley beneath the former, my object being to secure the advantage of employing a wheel, T, over which the working-rope may pass and avoid the use of the drilling-rope as a working-rope. It will be perceived that if the drill-rope, which soon becomes sandy, were to be rocked back and forth over the pulley it would soon become worn, and great loss would be entailed. In my improvement an entirely distinct rope is used for this rocking back and forth over the wheel T, and on this rope the wear is expended.

The bearings of pulley or wheel T consist of pillow-blocks S, supported on the samson-posts C and having elongated bearings for the axle of said pulley or wheel. The object of this is to allow the wheel T to be run back to the rear of the samson-posts when it is de-

sired to use the sand-pump. In this manner and by the attachment for supporting the sand-pump rope hereinafter described I succeed in bringing such rope immediately over the mouth of the well.

The opposite end of rope N^2 from that which bears the hook N^3 is passed through block N′ and fixed by clamps N^5. Through this block the wrist-pin of crank n' passes. Said crank is on the main driving-shaft n, which carries driving-pulley N and friction-wheels Y Z. The latter bears against and operates the friction-wheel Z' of the bull-wheel. The former operates the friction-wheel Y′, carried by the shaft of the sand-reel O. One end of the shaft of the sand reel, like that of the bull-wheel, is mounted in a swinging lever or post, Y^2, which is pivoted at Y^3 to the upright G of the frame, and its lower end and the lower end of the pivoted post K^2 are connected together by means of the rod Y^4, and the latter is connected by a link, Y^5, to the lower end of the hand-lever Y^6, which is itself pivoted to a block on the member J. Now, by this arrangement it will be seen that either the friction-wheel Y′ of the sand-reel may be thrown into contact with the wheel Y or the friction-wheel Z' of the bull-wheel into contact with the wheel Z, by the operation of the hand-lever Y^6, and that when the bull-wheel is at rest the sand-wheel is in operation, and vice versa. The line O′ from the sand-reel passes over a block, O^2, hung from the bracket O^3, fastened to and projecting sufficiently far from the mast B to insure the locating of the line immediately over the mouth of the well.

The clamps for holding the rope after it has been passed through the block N′ are shown to a large scale in Figs. 5 and 6. They consist of plates *e f*, curved to approximately fit around the two parts of the rope and bound together by screw-bolt and nut *d d′*. The bolt having passed through a screw-threaded aperture in the part *f* is locked by nut *d′*.

V is a hook-shaped arm on one of the samson-posts, against which the tools can lean when drawn up out of the well.

It will be observed that all of the working-parts of this rig are included in small compass and can be set up in rough places, as on the side of a hill.

The engine may be placed close to or far from the band-wheel N, as desired. When the common derrick is used, the mast B will not be used; but when the well will probably not be very deep—say, not more than six hundred feet—the derrick may be dispensed with and the mast B will suffice. The mast may of course be steadied by guy-ropes.

From the above the operation of the derrick will be readily apparent. In drilling, the tools will hang from the rope L′; a firm hold is taken upon the rope by the clamp carried by the temper-screw N^4. The shaft n being then set in operation will rotate its crank n' and impart an intermittent motion to rope N^2 over the wheel T. This will raise and drop the drill, and as the drill descends the operator turns it in the well by turning the clamp and feeds it gradually downward by turning the temper-screw N^4 in the customary manner. From time to time the clamp is released from the drill-rope, the temper-screw run back to its uppermost position, the clamp again attached to the drill-rope, and the drilling proceeded with. In the meanwhile the drill-rope is fed out by the bull-wheel Z. When the drill is to be raised from the well, the friction-wheel Z' of the bull-wheel is brought into contact with the friction-wheel Z, and after the clamp has been loosened from the drill-rope the tool is rapidly raised by the revolution of the bull-wheel. When the sand-pump has been used, it is raised from the well in similar manner by bringing the friction-wheel Z' against the friction-wheel Y on the shaft n.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a derrick and a pulley or wheel for the working-rope, a pillow-block on which said pulley or wheel is supported, having elongated bearings to allow of transverse movement of such wheel, substantially as and for the purposes set forth.

2. The combination, with the driving-shaft n, having the friction-wheel Y, and a friction-wheel, Z, of smaller diameter than the wheel Y thereon, of the bull-wheel friction-wheel and the sand-reel friction-wheel adapted to engage the wheels Z Y, respectively, swinging levers in which said bull-wheel friction-wheel and sand-reel friction-wheel are mounted, a rod connecting the ends of said levers, and a lever connected to said rod for causing the bull-wheel friction-wheel and sand-reel friction-wheel to engage the friction-wheels on the shaft n alternately, as set forth.

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

GEO. CORBETT.

Witnesses:
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