

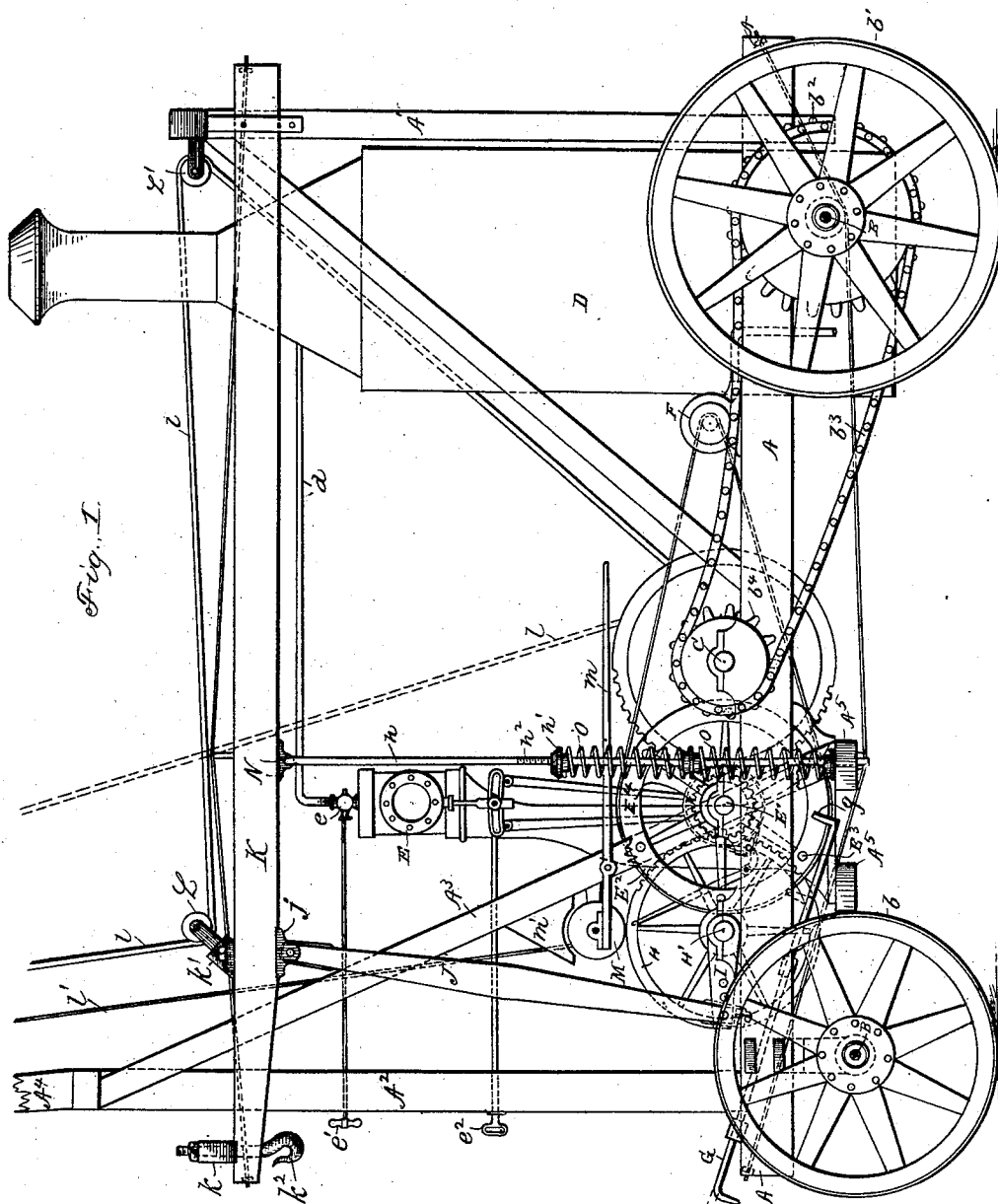
(No Model.)

3 Sheets—Sheet 1.

H. S. & C. E. GLENN.
PORTABLE DRILLING APPARATUS.

No. 472,619.

Patented Apr. 12, 1892.



Witnesses
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A. A. Edlin

Inventors.
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By O. D. Lewis
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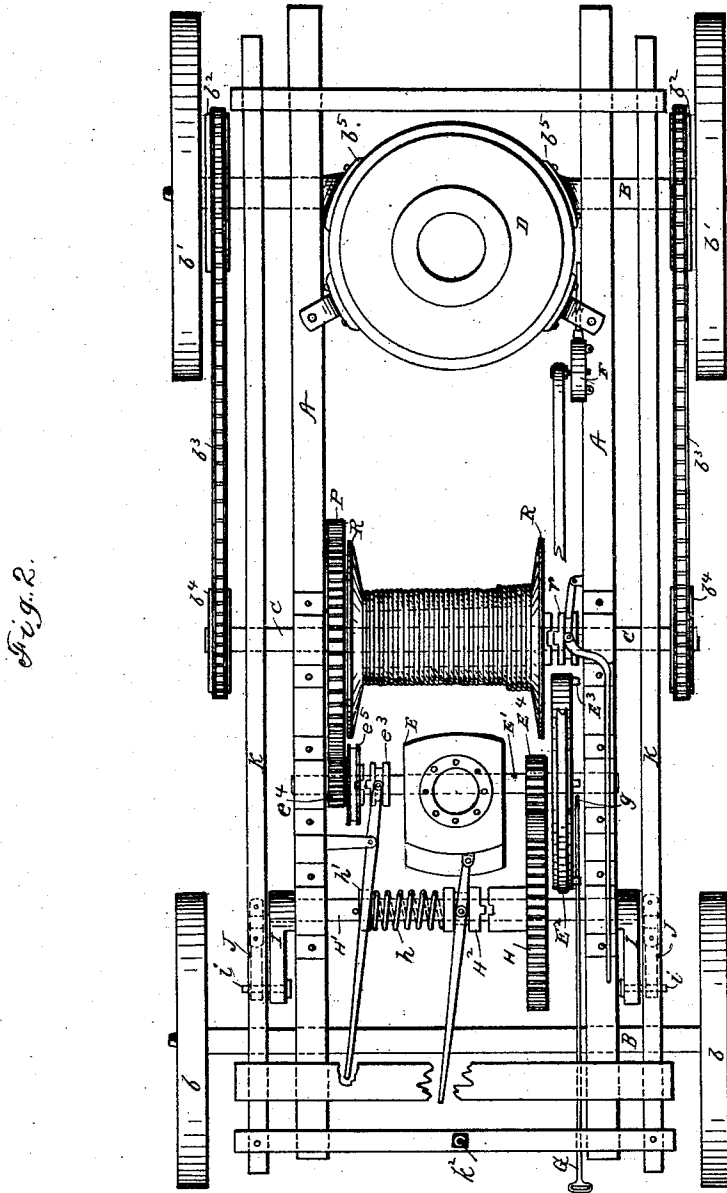
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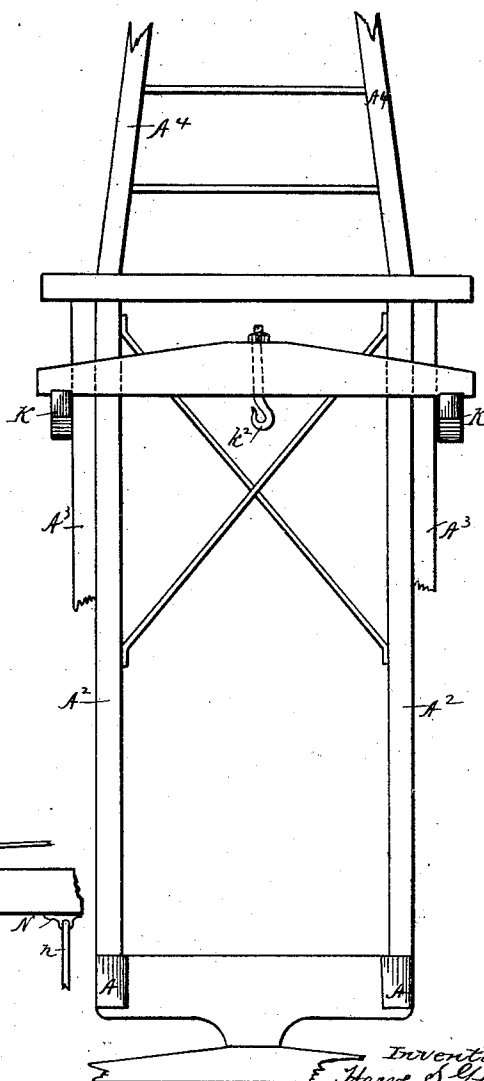
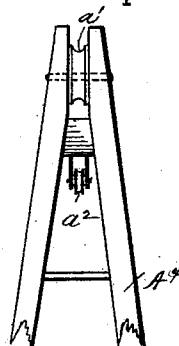
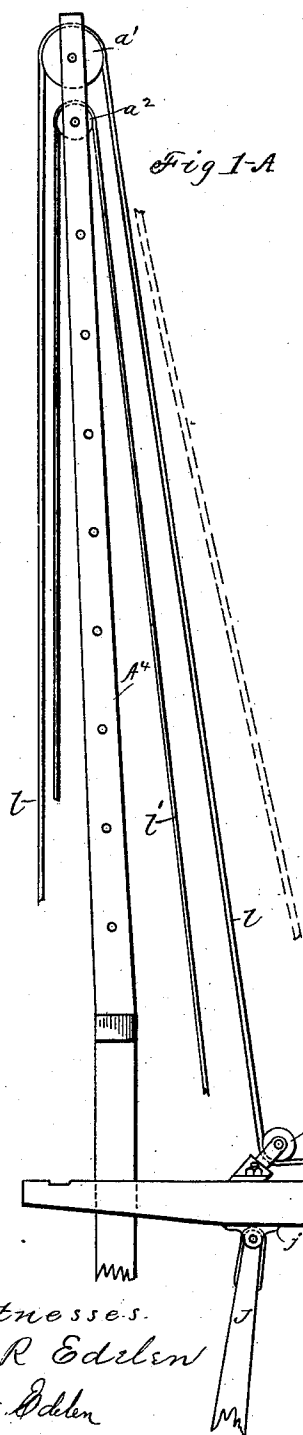
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UNITED STATES PATENT OFFICE.

HARVE S. GLENN AND COULTER E. GLENN, OF BUTLER, PENNSYLVANIA.

PORTABLE DRILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 472,619, dated April 12, 1892.

Application filed April 13, 1891. Serial No. 388,768. (No model.)

To all whom it may concern:

Be it known that we, HARVE S. GLENN and COULTER E. GLENN, citizens of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Portable Drilling Apparatus; and we 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to improvements in portable drilling apparatus for Artesian wells, in which all pertaining to the same is self-contained.

It also further relates to the arrangement of a double walking-beam being provided with double pitmen and cranks for operating the same.

It also further relates to the spring-actuating mechanism for elevating the walking-beams on their return stroke and the adjustability of the same for any additional or extraneous weights or pressure that may come upon said springs.

It also further relates to the arrangement of the drilling and spudding devices being so constructed as to operate either without any material inconvenience in changing the same.

It also further relates to the various convenient clutching devices for operating each portion of the machine independently or simultaneously in part.

It also further relates to the improved breaking mechanism when operating the bull-wheels, and also the arrangement and breaking mechanism pertaining to the sand-reel.

It also further relates to the novel means employed for forcing the engine off the center by means of a lever and lugs upon the fly-wheel.

It also further relates to the arrangement of a blower or fan being located on the machine.

It also further relates to the arrangement of the propelling devices for operating the drilling machinery when desiring to change its location.

It also relates to the arrangement of the steam-engine and the various levers for operating the same, and other features of construction, which will be hereinafter described and noted in the claims.

In the drawings, Figure 1 represents a side elevation of our improved drilling apparatus. Fig. 1^a represents the upper portion of the derrick, which constitutes a continuation of that portion shown in Fig. 1. Fig. 2 represents a plan of our improved machine with some of the braces and parts removed to better exhibit the mechanism of the same. Fig. 3 represents a front elevation of the derrick proper with the operating mechanism of the drilling devices not shown in the rear.

Our improved drilling apparatus is supported on heavy frame-work A and provided with suitable braces for supporting and holding the same rigid. Said frame A is mounted upon axles B B, which are provided with wheels b b, &c. The rear wheels b' b' are provided with sprocket-wheels b² b² and sprocket-chain or link belting b³ b³, said link belting being driven indirectly by a sprocket-wheel b⁴ mounted on the bull-wheel shaft C. The boiler D and engine E are also mounted upon said frame-work A, and also provided with suitable supplemental timbers for supporting the same. A portion of said boiler is supported by the rear axle, flanges b⁵, being formed upon the same for securing the same by bolts to said boiler. Steam-pipe d communicates from the boiler to the engine through the medium of the throttle-valve e, said valve e being operated by a suitable hand-rod e'. The valve-gear of said engine is also controlled by a hand-rod e². The driving-shaft E' is provided with a grab-clutch e³, driving-pinion e⁴, brake-wheel e⁵ integral with said pinion, and both being loose upon said shaft. At the opposite end of said shaft is a suitable fly-wheel E². Said fly-wheel performs several duties outside of its normal function of assisting the engine. It acts as a hand-wheel in driving the fan or blower F, and is also used as a helper in forcing the engine over the center by means of the lugs E³ E³, &c., (secured to the inner face of the same,) in conjunction with the hand-rod G.

Said rod G is provided with a hook *g*, which is in a convenient position to either push or pull against one of said lugs E³, and at the same time is not in the way of said lugs when the engine is in operation, as shown in Fig. 1. Mounted upon said driving-shaft E' is another pinion E⁴, said pinion being secured rigidly upon the shaft and engaging with the spur gear-wheel H, which is mounted loosely upon its shaft H', and which is provided with a grab-clutch H², and which is also provided with a spline and groove for holding said clutch rigid upon said shaft. Enveloping said shaft and abutting against said grab-clutch H² is a compression-spring *h*, which is held in position by a collar *h'*, rigidly secured to said shaft. Secured to the opposite ends of said shaft H' are cranks I I, which are provided with wrist-pins *i i'*. Said wrist-pins *i i'* support and communicate motion to pitmen J J, said pitmen being secured in boxes *j j*, attached on the under side of walking-beams K K. The rear end of said walking-beams are pivoted or fulcrumed to the standards A A', the forward ends of said walking-beams being provided with cross-timbers *k k'*. The timber *k'* is provided with snatch-blocks L L', which are used in conjunction with the drilling-cable *l* when spudding, or when first removing the earth or detritus from the drive-pipe before reaching the rock preparatory to drilling. On the extreme end of said walking-beams said timber or beam K is secured and provided with a hook *k²* for engaging a temper-screw when drilling. (Said temper-screw not shown in the drawings.) When spudding, as previously referred to, said timber *k* is removed (see Fig. 1^a) to allow the cable *l* sufficient room to work in a vertical position directly over the well-hole. Rigidly secured to the forward end of the drilling apparatus to beams A A are posts A² A² and supported by braces A³ A³. Mounted on the extreme end of said posts A² A² are booms or sheer-legs A⁴ A⁴, which lean slightly forward out of a plumb line and constitute the derrick. This derrick is provided with sheaves *a' a²*, respectively, for the drilling-cable *l* and sand reel-rope *l'*. Braces for supporting said derrick are employed, but not shown in the drawings. Mounted upon the under side of the diagonal braces A³ A³ is the sand-reel M with its operating-lever *m*, of ordinary construction, and brake-shoe *m'*. Secured loosely in a suitable bearing N on the under side of the walking-beams K K, are elevating-rods *n n*. Said rods extend downward, passing through one of the engine-timbers A⁵. Part way on said rods screw-threads *h² h²* are cut for elevating or depressing collars *n' n'* when necessary to increase or decrease the tension of spiral springs O O. The pinion e⁴, mounted on shaft E', engages with the spur gear-wheel P, which is rigidly mounted on said bull-wheel shaft C. The bull-wheels R R, with their connecting hollow shaft, form a rigid reel and are hung or mounted loosely

upon their respective shaft C, and operated by means of clutch *r* when necessary to operate the same.

When operating our improved drilling device, the spudding is performed, as previously referred to, by means of the spud (not shown) secured to the rope or cable *l* and operating through the snatch-blocks L and L' up to the derrick-sheave *a'*, and thence into the well or drive pipe. When the bed-rock is reached, the rope or cable *l* is detached from the snatch-blocks L and L', assumes the position shown at *l³* in dotted lines for drilling, the beam *k*, which was removed for spudding, being replaced for securing the temper-screw for drilling. When drilling, the engine-shaft E' is in constant operation, and consequently the driving-pinion E⁴, and also the loose spur-gear H, the latter gear being held rigid by means of the spring-actuating clutch H², which thus communicates motion to the walking-beams K K through the pitmen J J and cranks I I. When the drilling has progressed for a few feet, the tools are removed from the well for sand-pumping. The grab-clutch H² is detached, and the clutch e³ is closed for operating the bull-wheels R, which elevate the tools through the medium of cable *l*. When lowering the tools in the well, clutch e³ is detached and the friction-brake e⁵ is employed for regulating the speed of the descending tools. When drilling, the power of the engine is exerted only in pulling down the walking-beam in conjunction with the weight of the tools against the tension of the compression-springs O O, said springs being employed exclusively for elevating the walking-beam and tools, which has been found very practical and satisfactory in comparison to the old method of drilling. When necessary to remove the drilling apparatus to another location for drilling, the grab-clutch e³ is closed, which, in conjunction with pinion e⁴ and spur-gear P, rotates bull-wheels R R, said wheels being secured to said gear P. Said bull-wheels, being loose upon shaft C, will revolve loosely until clutch *r* engages said bull-wheels, when said shaft C will revolve, and consequently sprocket-wheels *b⁴ b⁴* will communicate motion to sprocket-wheels *b² b²* and *b² b²* through the medium of the sprocket-chains *b³ b³*, thus revolving the wheels *b' b'*, which will move the drilling apparatus in either direction.

Having described our invention, that which we desire to secure by Letters Patent is—

1. In a drilling apparatus, the combination, with the frame, of a pair of walking-beams pivotally secured thereto at one end, a cross-piece connected with the free ends of said beams, a hook midway of the cross-piece, and a pair of crank-arms and pitman for operating the beams, substantially as described.

2. In a drilling apparatus, the combination, with a frame, of a walking-beam thereon, an elevating-rod for the beam, the intermediate portion of which is screw-threaded and the

lower end passed through the engine-timbers, an adjusting-nut on the screw-threaded portion, and a spring around the rod between the collar and the timber, substantially as described.

3. In a drilling apparatus, the combination, with a frame having a derrick at its front end, of a walking-beam at each side of the frame, two cross-pieces connecting the free ends of the beams, one of which is removable and the other one is provided with a snatch-block, and a drilling and a sand-reel rope, the drilling-rope passing through the snatch-block, and means for operating them, substantially as described.

4. In a portable drilling apparatus, the combination, with the frame, of the operating

mechanism, the shaft of the bull-wheel of which passes loosely through the winding-drum and is provided with a sprocket-wheel at each end, sprocket-chains for connecting the said sprocket-wheels with the rear axle, and means for securing the bull-wheel to its shaft and for operating the same to move the apparatus from place to place, substantially as described.

In testimony that we claim the foregoing we hereunto affix our signatures this 6th day of April, A. D. 1891.

HARVE S. GLENN. [L. S.]

COULTER E. GLENN. [L. S.]

In presence of—

CHARLES LARGE,
M. E. HARRISON.