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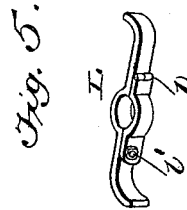
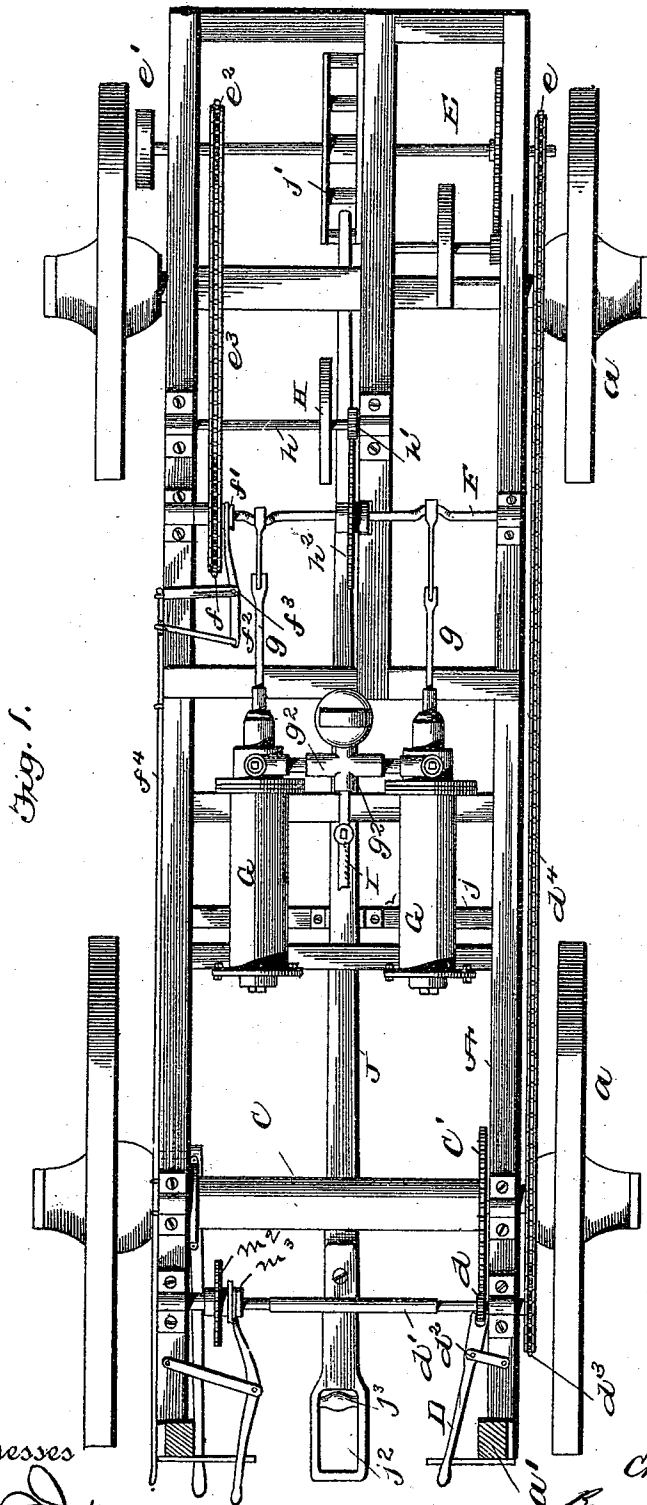
3 Sheets—Sheet 1.

C. W. WALKER.

WELL BORING AND DRILLING MACHINE.

No. 501,261.

Patented July 11, 1893.



Witnesses

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Mrs. S. Hodges.

Inventor

Chas W. Walker

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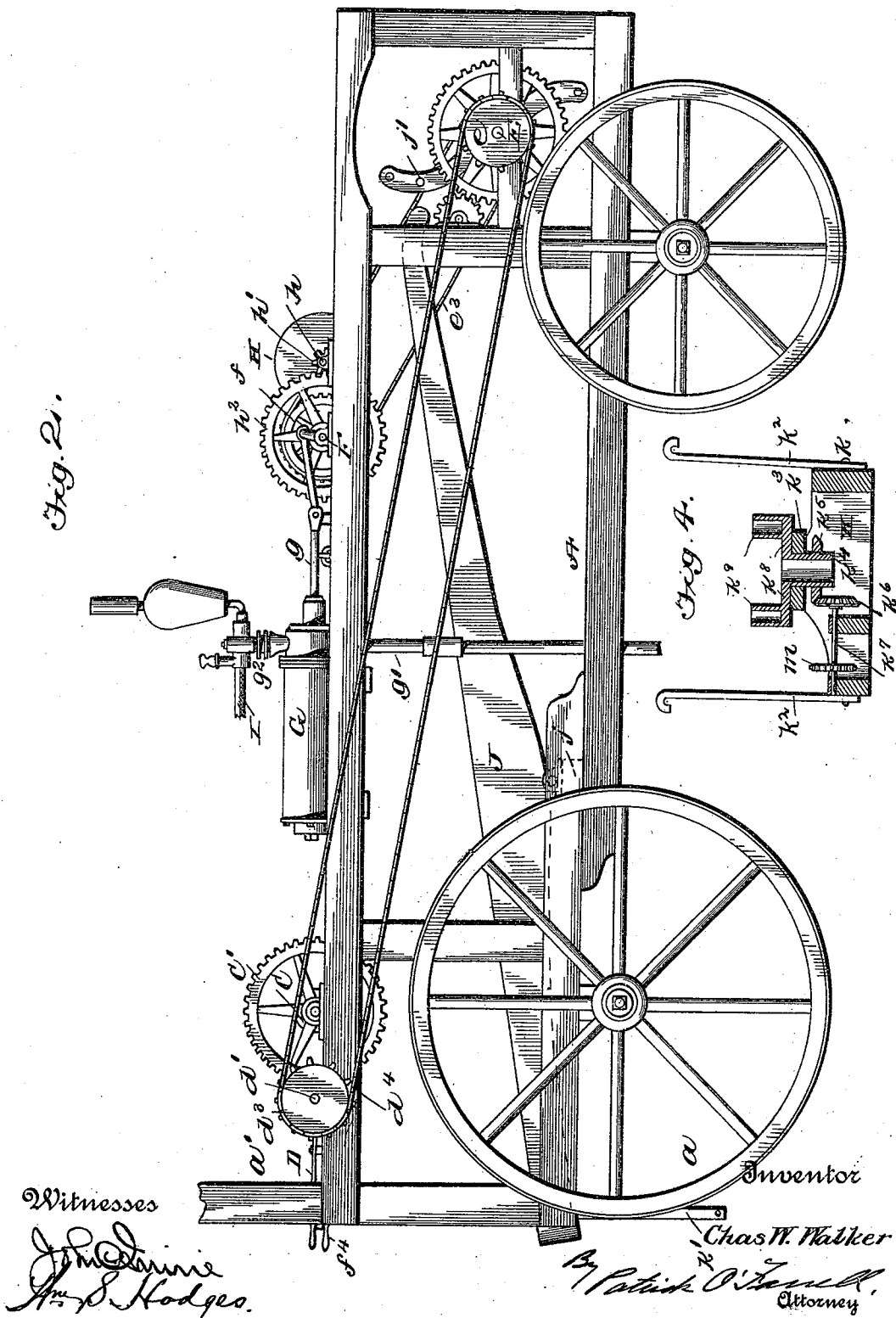
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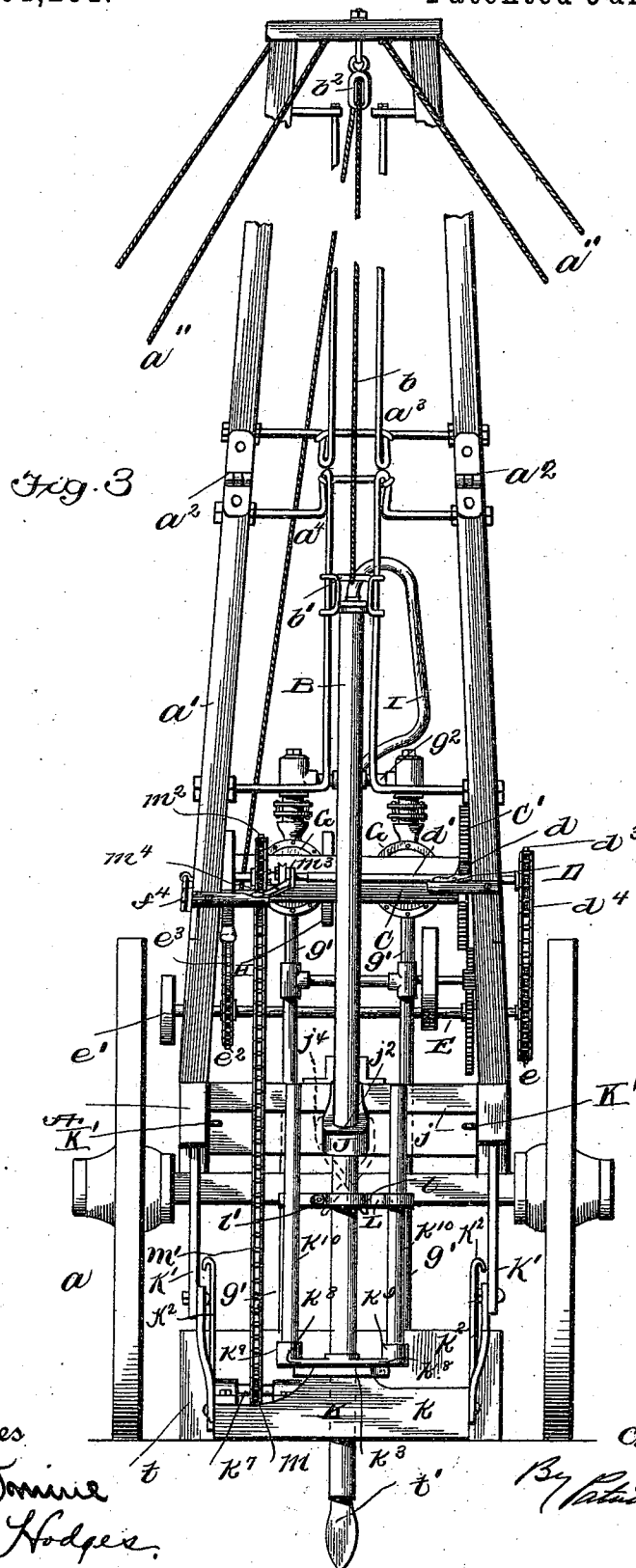
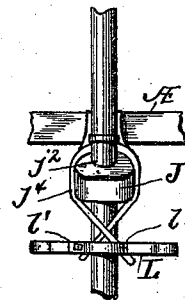


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES WILLIAM WALKER, OF BLUE SPRINGS, ASSIGNOR OF ONE-HALF
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WELL BORING AND DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 501,261, dated July 11, 1893.

Application filed November 5, 1892. Serial No. 451,068. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILLIAM WALKER, a citizen of the United States of America, residing at Blue Springs, in the county of Gage and State of Nebraska, have invented certain new and useful Improvements in Well Boring and Drilling Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a new and improved well boring and drilling machine, the same being mounted on wheels and capable of being transported from place to place ready for use.

The invention has for its object, primarily, to provide cheap, simple and highly efficient mechanism whereby a boring and drilling action can be readily imparted to a well-forming tool; and it comprises the detail construction, combination and arrangement of parts, substantially as hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings—Figure 1 is a plan view of my improved boring and drilling machine. Fig. 2 is a side view thereof parts being broken away. Fig. 3 is a rear end view. Fig. 4 is a view of the boring attachment or driver, a portion being broken away. Fig. 5 is a detail view, showing the clamp. Fig. 6 is a detail.

Referring to the drawings, A designates the frame or body, and *a* the carrying wheels upon the axle of which said frame is mounted.

a' is a derrick or extension, secured to the rear end of frame A and formed in two parts or sections connected by hinges *a²* and said derrick is braced by guy ropes *a''*. To this derrick are secured upper and lower sets of parallel guide rods *a³* and braces *a⁴*.

B is the boring tube guided by rods *a³*, and suspended by a rope or chain *b* connected to a yoke *b'* secured to pipe B, and passed over a pulley *b²* at the upper end of derrick *a'*, and connected at its outer, free end to a windlass C mounted in the sides of frame A. To the shaft of this windlass is secured a gear-wheel C' with which is designed to engage, at will, a pinion *d* so secured on a shaft *d'* mounted in frame A as to revolve therewith,

but capable of being moved into or out of engagement with said gear-wheel by a lever D, fulcrumed at *d²*, said pinion being in the forked end of said lever. A sprocket-wheel *d³* is secured upon the outer end of shaft *d'*, and around it is passed a sprocket chain *d⁴* which also encompasses a sprocket wheel *e* on a main operating shaft E at the forward end of frame A. This shaft E is mounted in said frame, and upon one end is secured a band-wheel *e'* around which is passed the driving belt (not shown) leading from any suitable motive power. Upon the other end of this shaft E is a sprocket-wheel *e²* around which is passed a sprocket chain *e³* which encompasses a sprocket wheel *f* loosely mounted on a double-crank-shaft F journaled in frame A. A sliding clutch-collar *f'* capable of always revolving with shaft F is designed to be thrown into and out of engagement with wheel *f* by a lever *f²* fulcrumed at *f³* and connected to a cranked operating rod *f⁴* which leads to the rear end of frame A.

To the cranked portions of shaft F are connected the outer ends of piston rods *g* of two pumping cylinders G, which are designed to pump water through pipes *g'* leading from a tank *t* or other suitable source of supply. By operating rod *f⁴* these pumps can be thrown into or out of operation. A balance-wheel H is secured on a shaft *h* journaled in frame A, and a pinion *h'* on said shaft gears with a wheel *h²* on crank-shaft F. To a cross-pipe *g²* of pumping cylinders G is connected one end of a hose or flexible tube I, the other end of which is extended into the upper end of boring pipe B, whereby water can be supplied to said pipe to float the sand, dirt, &c. loosened in the boring operation.

J is a walking beam or lever fulcrumed on a cross-rod *j* of frame A, and extended longitudinally the length of said frame. This beam is moved up and down by an S-shaped cam secured on operating shaft E, and having rollers *j'* between its parallel side-bars, which rollers strike against the end of the beam and force the same downward. The rear end of this beam has an oblong opening *j²*, in one end of which is a frictional roller *j³*. The boring tube B is projected through said

opening, and is secured by a strap or chain j^4 when it is desired to drill through rock or other hard substance.

K is the driver or attachment for rotating the boring tube and its tool t' . It consists of a frame k secured by bars k' to frame A, and capable of being held elevated when out of operation by pivoted hooked arms k^2 secured thereto and engaging eyes k' of frame A.

Mounted in a cross-piece k^3 of frame k is a hub or sleeve k^4 to the lower end of which is secured, or it may be formed therewith, a bevel gear k^5 with which engages a beveled pinion k^6 on a shaft k^7 journaled in frame k . From the upper end of hub or sleeve k^4 project lateral arms k^8 having at their outer ends vertical hollow extensions or sockets k^9 wherein are secured the lower ends of parallel vertical arms k^{10} .

L is a clamp composed of two parts or sections pivoted together at l , and designed to be rigidly held together at their free ends by a threaded bolt l' after being passed around well tube B. The longer part or section has oppositely curved ends which are designed to be engaged by the vertical arms k^{10} of the driver. A sprocket wheel m is secured upon shaft k^7 and around it is passed a chain m' which encompasses a sprocket-wheel m^2 loosely mounted on shaft d' . A sliding clutch collar m^3 is also secured on this shaft and by means of a lever m^4 can be thrown into or out of engagement with wheel m^2 according as it is desired to operate the driver, power being transmitted to the latter through the sprocket chains m' .

When the tool is used for boring through dirt or sand the driver is thrown into operation, but when it is desired to drill through rock or other hard substances, the driver is held up out of the way by means of the hooks arms K^2 being made to engage eyes K' , (or it may be entirely removed) and a chain or strap is passed around the ends of clamp L, and the walking beam or lever, whereby the boring tube is secured to said walking beam. The operation of the machine being continued the S-lever on the main operating shaft will impart a rocking movement to the walking beam, and cause the raising and lowering of the boring tube and its tool, the suspending rope being supplied as may be required.

My improved machine being portable can be moved from place to place and operated at any desired point.

I claim as my invention—

1. The herein-described well boring and drilling machine, comprising the frame or body, the derrick or extension at one end thereof, the upper and lower sets of parallel guide-rods secured to said derrick, the pulley, the well boring tube and tool, the yoke connected to the upper end of said tube and engaging said guide rods, the rope or chain secured to said yoke and passed over said pulley, the windlass to which the free end of said rope or chain is connected, the driver having rotary

arms, the clamp secured on said tube and having its ends engaged by said rotary arms, and means for rotating said arms, substantially as set forth.

2. The herein-described well boring and drilling machine, comprising the frame or body, the derrick or extension at one end thereof, the upper and lower sets of parallel guide rods secured to said derrick, the pulley, the well boring tube and tool, the yoke connected to the upper end of said tube and engaging said guide rods, the rope or chain secured to said yoke and passed over said pulley, the windlass to which the free end of said rope or chain is connected, the driver having a rotary hub or sleeve provided with a bevel gear and lateral arms having hollow extensions or sockets, the vertical arms projecting from said hollow extensions or sockets and engaging the ends of said clamp, the shaft mounted in the frame of said driver having a beveled pinion engaging said bevel gear, the sprocket wheels secured on said shaft, the shaft having a sprocket wheel, the chain passed therearound and encompassing said former sprocket wheel, and the connection between said shaft and the main operating shaft, substantially as set forth.

3. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft having a sprocket wheel, the windlass having a gear wheel at one end, the shaft d' having a pinion designed to engage said gear wheel, a sprocket wheel on said shaft, the sprocket chain d^4 , the derrick or extension having a pulley, the well-boring tube, the yoke secured to the upper end of said tube, the rope or chain secured to said yoke and passed over said pulley and attached to said windlass, the driver having rotary arms, the clamp secured on said tube and having projecting ends engaged by said arms, the rotating shaft mounted in the frame of said driver having a sprocket wheel, the sprocket wheel m^2 on shaft d' , the chain m' encompassing said latter sprocket wheels, and the sliding clutch collar on said shaft d' designed to engage said sprocket wheel m^2 , substantially as set forth.

4. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft, the S-shape cam secured thereon and revolving therewith, the pivoted walking beam or lever designed to be engaged by said S-shape cam and having an outer open end, an anti-frictional roll therein the well boring tube projected through said open end of said walking beam or lever, and means for connecting said tube and walking beam or lever, substantially as set forth.

5. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft, the S-shape cam secured on said shaft and having loosely mounted rollers between its side pieces, the walking beam or lever designed to be engaged by said S-shaped cam and having an outer open end,

an anti-frictional roll secured therein, the well-boring tube, and means for connecting said tube and said walking beam or lever, the suspending rope or chain connected to
5 said tube, and the windlass to which said rope or chain is connected, substantially as set forth.

6. In a well-boring machine, the combination with the frame, of the derrick or extension formed in sections, the upper and lower
10 sets of parallel guide rods secured to said der-

rick, the pulley, the well-boring tube, the yoke secured thereto, and engaging said guide rods the rope or chain and the windlass, substantially as set forth.

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

CHARLES WILLIAM WALKER.

Witnesses:

N. S. SPENCER,

J. D. AMES.