

No. 647,947.

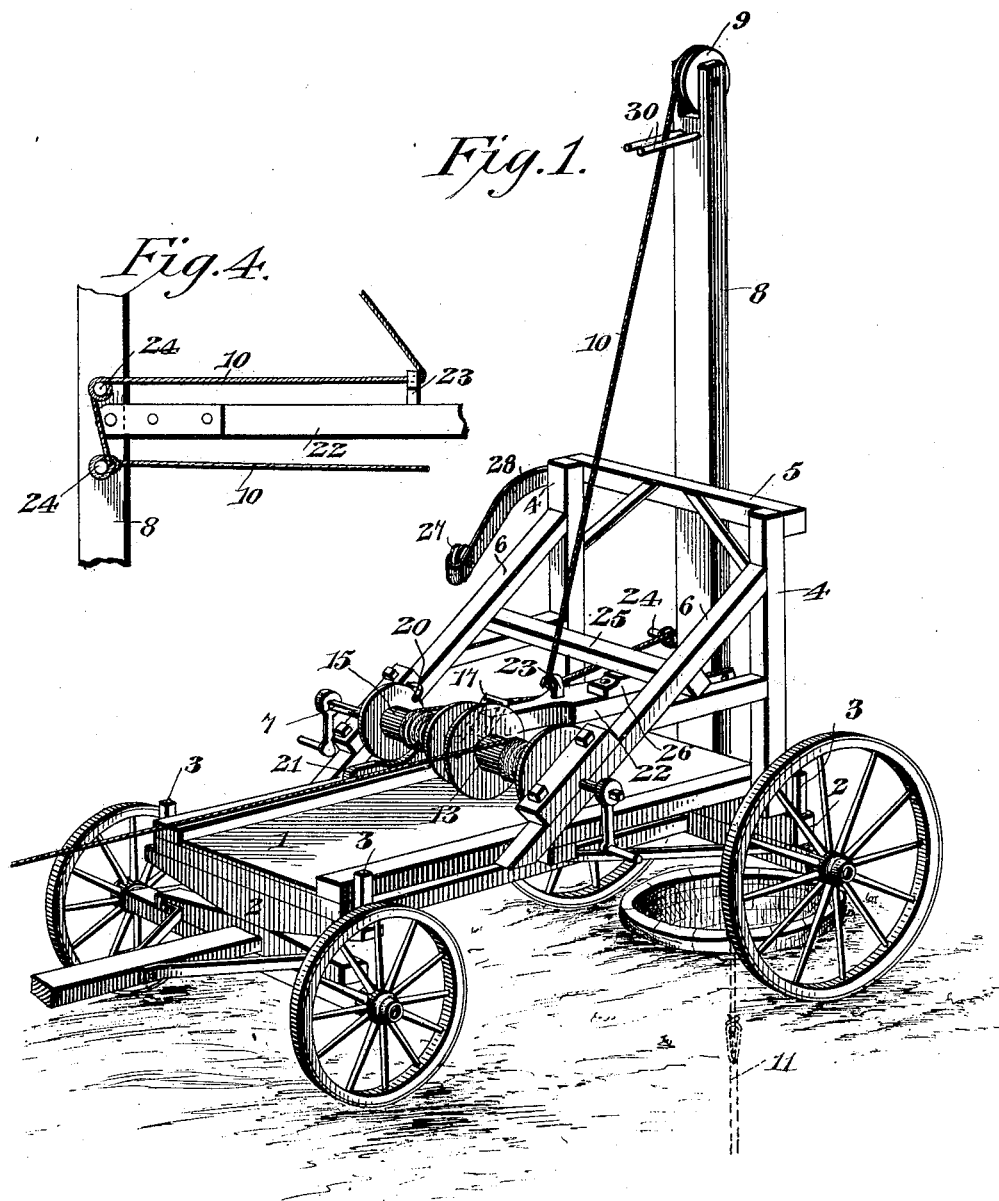
Patented Apr. 24, 1900.

E. H. COWAN.
WELL CLEANING MACHINE.

(Application filed Nov. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

James K. McLathran
[Signature]

E. H. Cowan Inventor

By *his* Attorneys,

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Fig. 3.

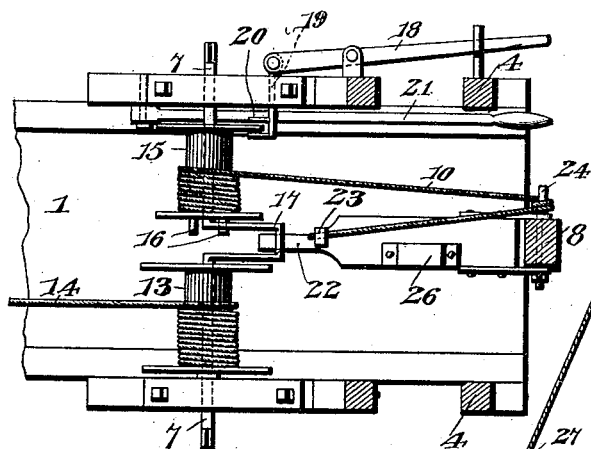


Fig. 5.



Fig. 2.

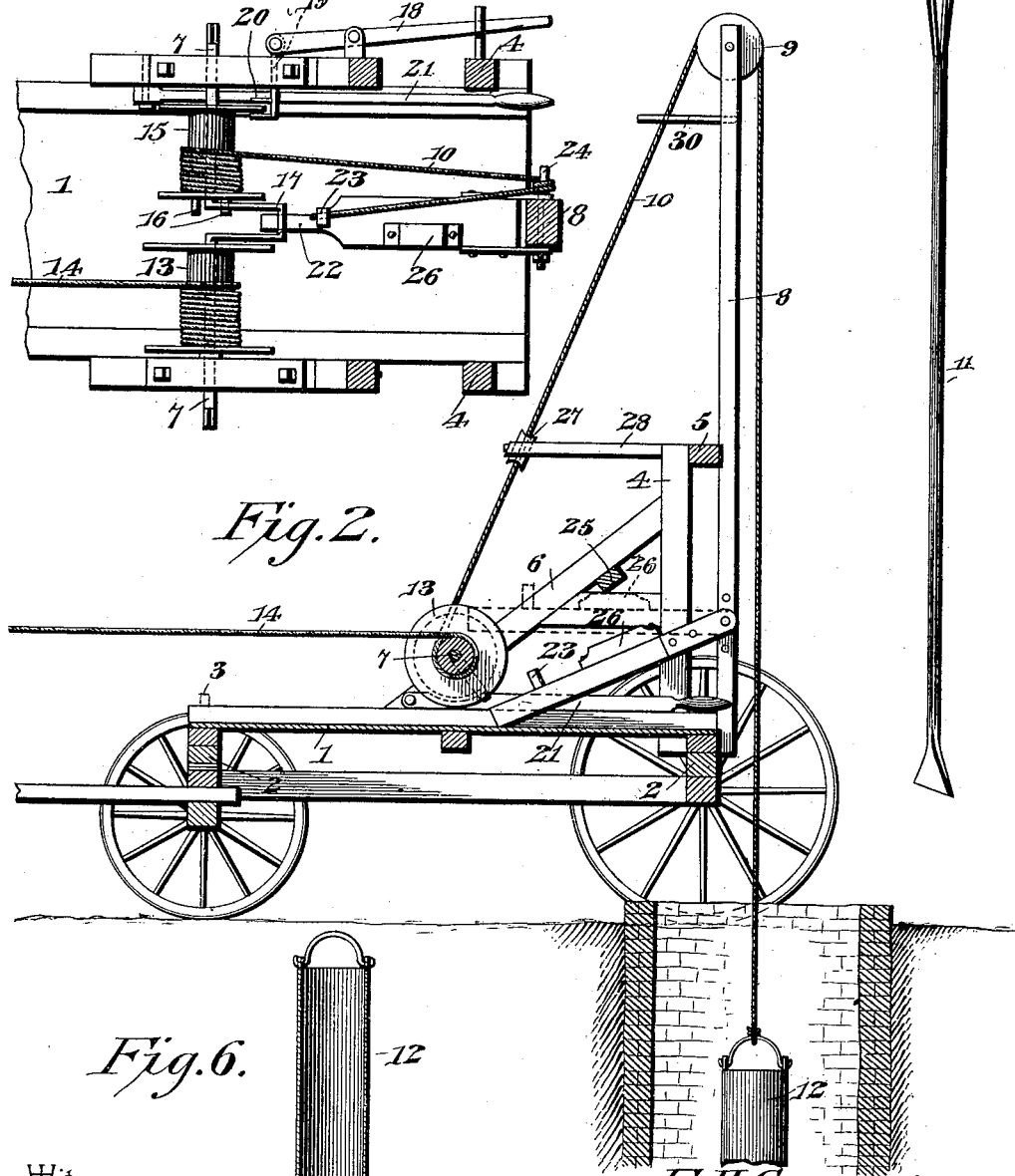
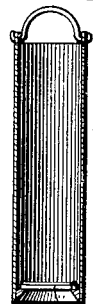


Fig. 6.



Witnesses

Jas. L. McLaughlin

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By his Attorneys,

29

E. H. Cowan Inventor

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UNITED STATES PATENT OFFICE.

ELIAS H. COWAN, OF OAKALLA, TEXAS, ASSIGNOR OF ONE-HALF TO HARVEY M. RAMSOWER, OF SAME PLACE.

WELL-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,947, dated April 24, 1900.

Application filed November 29, 1898. Serial No. 697,790. (No model.)

To all whom it may concern:

Be it known that I, ELIAS H. COWAN, a citizen of the United States, residing at Oakalla, in the county of Burnet and State of Texas, have invented a new and useful Well-Cleaning Machine, of which the following is a specification.

My invention relates to well-drilling machinery, and particularly to a well-cleaning machine adapted for farm and general use and designed to facilitate the cleaning of wells which have become more or less obstructed by accumulations or which require deepening to increase the yield; and the objects in view are to provide a simple and comparatively inexpensive apparatus adapted to be mounted upon a wagon-bed or other suitable truck for transportation to and from the point of use, said apparatus being provided with means whereby accumulations in the bottom of the well may be loosened and subsequently removed, and, furthermore, to provide an apparatus of the class described which may be operated either manually or by horse or other power.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings, Figure 1 is a perspective view of a well-cleaning apparatus constructed in accordance with my invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a partial horizontal section. Fig. 4 is a detail view of a portion of the oscillatory or spudding arm. Fig. 5 is a detail view of the drill-tool. Fig. 6 is a similar view of the bailer.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

The apparatus embodying my invention is preferably erected upon a base 1 for support upon the bed 2 of a wagon or similar vehicle, as upon the bed of a farm-wagon between the usual side standards 3, whereby the apparatus may be substituted for the wagon-body when desired. Rising from the base at its rear end are uprights 4, connected by a cross-piece 5 and secured against vibration and displacement by suitably-inclined braces

6, in bearings of which is mounted a guide-shaft 7. Also rising from the base between the vertical planes of the standards 4 is a mast 8, provided at its upper end with a hoisting-pulley 9, traversed by a cable 10, to one end of which may be attached a drilling or loosening tool 11 (shown in Fig. 1) or a bailing-bucket 12. (Shown in Fig. 2.)

Fixed to the shaft 7 is a terminally-flanged operating-drum 13, upon which is reeled an operating-cable 14, and loosely fitted upon said shaft 7 is a terminally-flanged hoisting-drum 15, upon which is reeled the hoisting-cable 10. The hoisting-drum is adapted to be locked upon the shaft to receive rotary motion therefrom by means of a clutch mechanism, which in the construction illustrated consists of spurs 16 for engagement with a crank-arm 17, the relative arrangement of the parts being such that when the drum 15 is moved axially toward the arm or cross-head 17 the spurs 16 will engage the same, and thus provide for the desired communication of motion from the shaft to the drum, or vice versa. The means whereby this axial shifting of the drum 15 may be accomplished consists of a shifting-lever 18, suitably fulcrumed upon the frame and connected with a slide 19, which is bifurcated at its inner end to form ears 20 to engage the adjacent flange of the drum 15. Also arranged in operative relation with the drum 15 is a brake-lever 21, adapted for contact with one of the drum-flanges when the free end of the lever is elevated to retard the rotary movement of said drum, as in lowering tools or the bucket into the well.

The crank-arm 17 is preferably of looped construction, and in operative relation therewith is arranged the free end of an oscillatory or spudding arm 22, hingedly or pivotally mounted at its rear end upon the mast 8 and provided at an intermediate point with a rope-hitch 23, with which the hoisting-cable may have a running connection.

When a drill-tool is in use, as in loosening the earth or other accumulations at the bottom of a well, the hoisting-cable 10 is engaged at an intermediate point with the hitch 23 and thence is extended rearwardly and engaged with a holding device consisting, for instance, of fastening-pins 24, projecting lat-

erally from the mast, the other end of the lever being reeled upon the drum 15. The operating or drive shaft now being turned either manually, as by means of a crank-handle, or by other power, such as horse-power, the looped crank-arm 17 is brought into engagement with the free end of the spudding-arm to depress the latter and thereby elevate the tools. When the free end of the spudding-arm is released by the crank-arm, the former returns to its elevated or normal position, where its motion is checked by a stop consisting of a cross-bar 25, with which engages a block or buffer 26 on the spudding-arm. Obviously the continuous rotation of the drive-shaft in a uniform direction will cause the oscillation of the spudding-arm, and consequently the reciprocation of the drill-tool, the return of the spudding-arm to its elevated position being due to the weight of the drill-tool or other device attached to the hoisting-cable when said cable is engaged with the running hitch 23. As the drilling operation proceeds the hoisting-cable may be fed manually by allowing it to "pay" around the belaying or fastening pins 24 and unreel from the drum 15. After the solid material in the well has been sufficiently loosened the drill-tool should be elevated by drawing upon the operating-cable 14 to unreel the same from the drum 13 and reel the hoisting-cable upon the drum 15, said drum 15 having previously been locked to the drive-shaft by sliding it axially to cause the engagement of the clutch members and the hoisting-cable having been disengaged from the belaying-pins 24 and the running hitch 23. In order that the hoisting-cable may be guided positively to the drum 15, I preferably employ a direction-pulley 27, supported by a forwardly-extending arm 28 of the frame. Having accomplished the elevation of the drill-tool by the extension of the cable 14, (the latter being accomplished either by horse-power or otherwise, as may be preferred,) the bailing-bucket 12 may be attached to the hoisting-cable and lowered into the well under the control of the brake 21, thereby rewinding the operating-cable 14 upon its drum 13. The bucket is provided in its lower end with an inwardly-opening valve 29, and by vertically reciprocating the bucket, as by drawing intermittently upon the hoisting-cable to successively raise and lower the bucket through a short interval, the loosened material in the well will be drawn into the bucket, whereupon the bucket may be withdrawn from the well by unwinding the operating-cable 14, as hereinbefore described. Obviously the drilling or loosening and bailing operations may be repeated as often as may be necessary to remove the desired solid material from the well.

From the foregoing description, taken in connection with Figs. 1 and 3 of the drawings, it is observed that in my machine I employ a single shaft which consists of two co-axially-disposed lengths and an intermediate

crank portion which connects the said lengths of the shaft. This shaft serves as the means for supporting the two cable-spools and for the operation of the spudding-arm. The cable-spool around which the operating-cable 14 is coiled is made fast with one length of this shaft. The other cable-spool 15 is fitted loosely on the shaft to remain at rest normally and adapted to be shifted into engagement with the crank of the shaft. The spudding-arm is mounted at one end pivotally on the frame, so as to have its other end disposed in the path of the said shaft, whereby the single shaft may be driven by the cable 14 or a crank, and this shaft serves to impart an oscillating or vibratory motion to the spudding-arm and the rotary motion to the spool on which the tool-cable is reeled. This spool is provided with clutch elements 16, adapted to be interposed in the path of the crank for the purpose of making the spool fast with the crank and the shaft, whereby the crank is made to serve as an element of the clutch mechanism. With the spool 15 is associated means for conveniently shifting the same into and out of clutching relation with the crank, and a brake-lever is also adapted for engagement with the spool to arrest the latter. It is to be observed, furthermore, that the spool may be shifted for its clutch to free the crank of the shaft, and the lever may be engaged with said spool to hold the latter at rest or to allow the spool to turn idly on the shaft in order to pay out the cable 10 in the operation of lowering the cutting-tool or bailer into the well; but to elevate the cable, so as to withdraw the cutting-tool or bailer from the well, this spool should be shifted for its clutch elements to engage with the crank, so that the spool will rotate with the shaft. The improved construction and arrangement of parts tend to materially simplify and cheapen the apparatus as an entirety, and all the elements thereof are arranged so as to be conveniently and easily operated without requiring the attendant to move from his station at the machine.

Projecting forward from the mast adjacent to the hoisting-pulley are guide-pins 30, which are of particular use when the cable is slack to prevent the disengagement thereof from the pulley.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, what I claim is—

A well drilling and cleaning machine comprising a frame having a mast, a single shaft provided with a crank, a power-spool, 13, fast with the shaft, a loose drum, 15, shiftably fitted on the shaft and having the spaced clutch-pins arranged for engagement with the crank, a lever, 18, having a slidable shipper-arm, 19, engaged loosely with the drum, 15,

an overhanging arm, 28, on the frame and provided at a point over the drum, 15, with the direction-pulley, 27, a spudding-arm disposed in the path of the crank and having a
5 running hitch, 23, a single cable guided on the mast and adapted to be fitted over the direction-pulley, 27, to be guided directly to the drum, 15, or to be passed beneath the hitch on the spudding-arm, and the pins, 24,
10 fast with the mast on opposite sides of the

pivot for the spudding-arm and adapted to detachably receive the cable when connected to said hitch, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 15 the presence of two witnesses.

ELIAS H. COWAN.

Witnesses:

J. M. BLACK,
E. RAMSOWER.