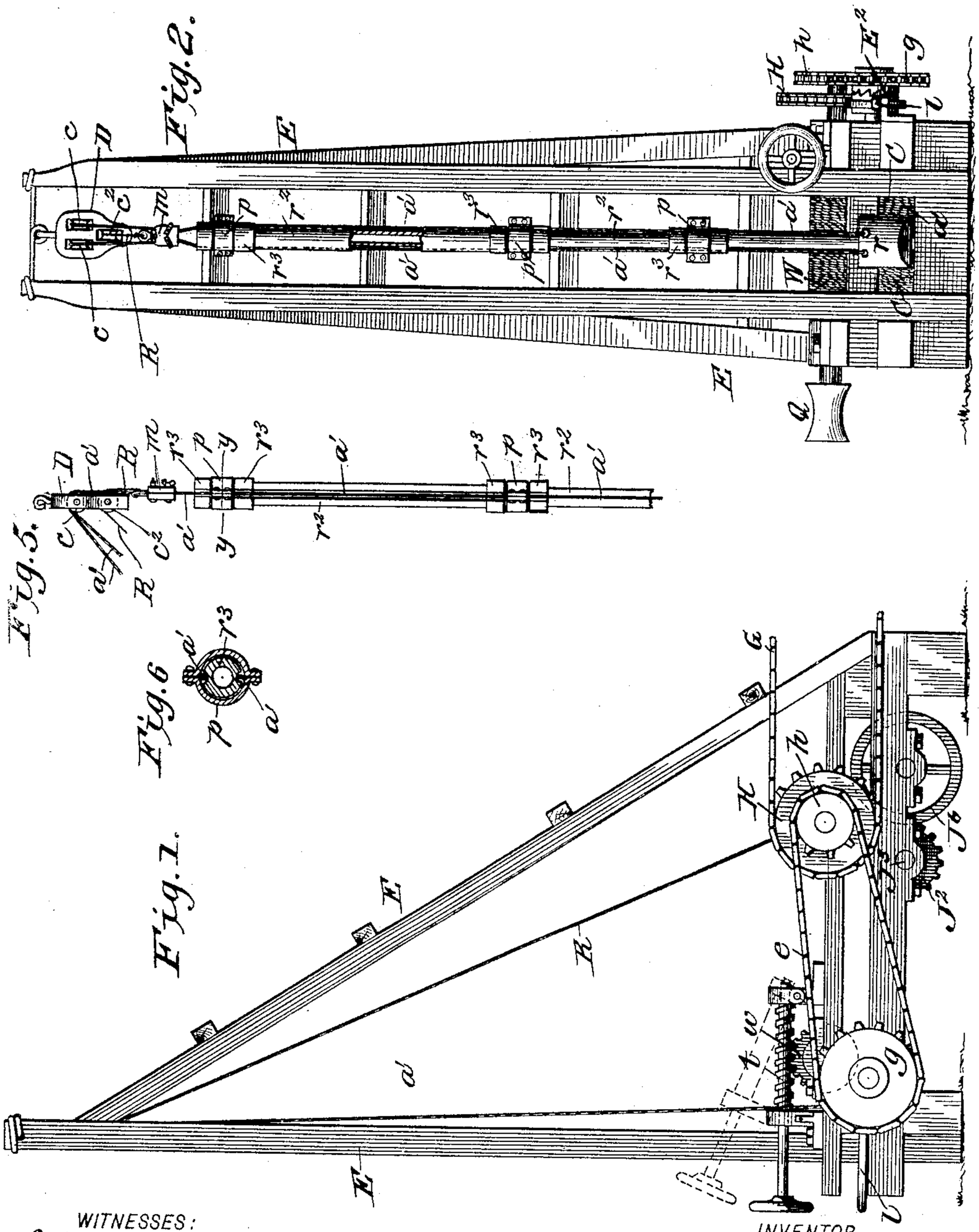
(No Model.) 2 Sheets—Sheet 1.

A. O. HISCOCK.

WELL SINKING MACHINE.

No. 462,134. Patented Oct. 27, 1891.



WITNESSES:

Fred G. Dieterich

Edw. W. Byrn.

INVENTOR

Alfred O. Hiscock.

BY Munn & Co

ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

A. O. HISCOCK.

WELL SINKING MACHINE.

No. 462,134. Patented Oct. 27, 1891.

Fig. 3.

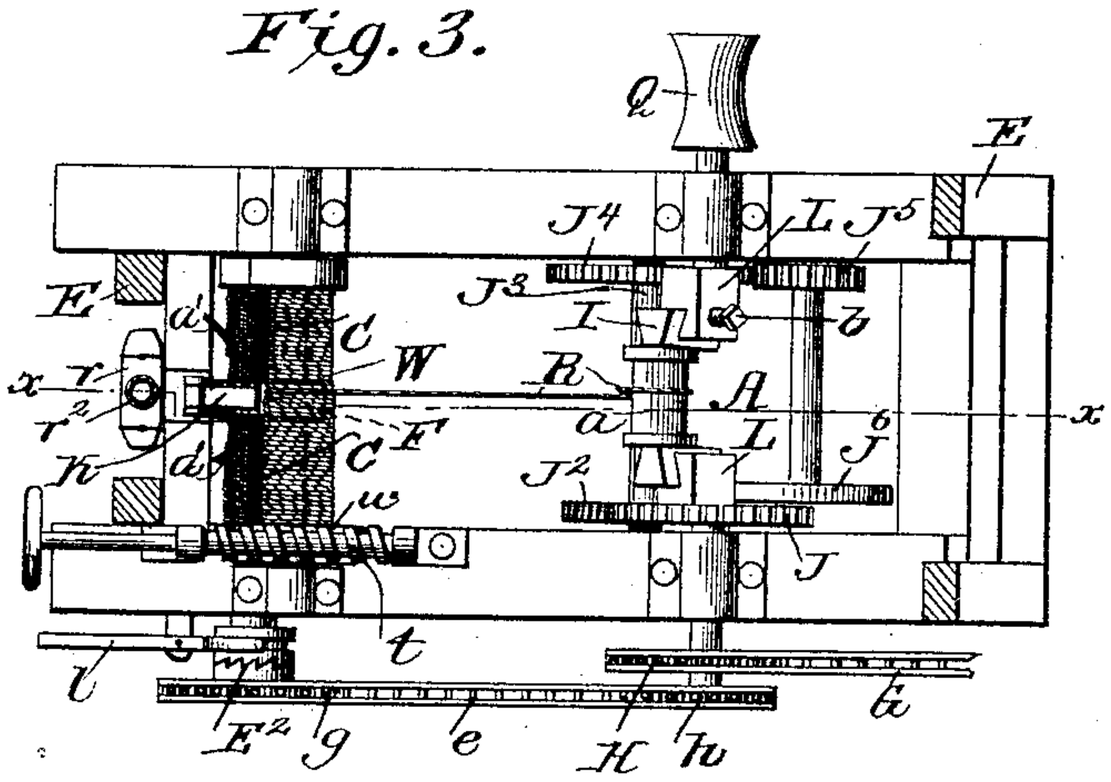
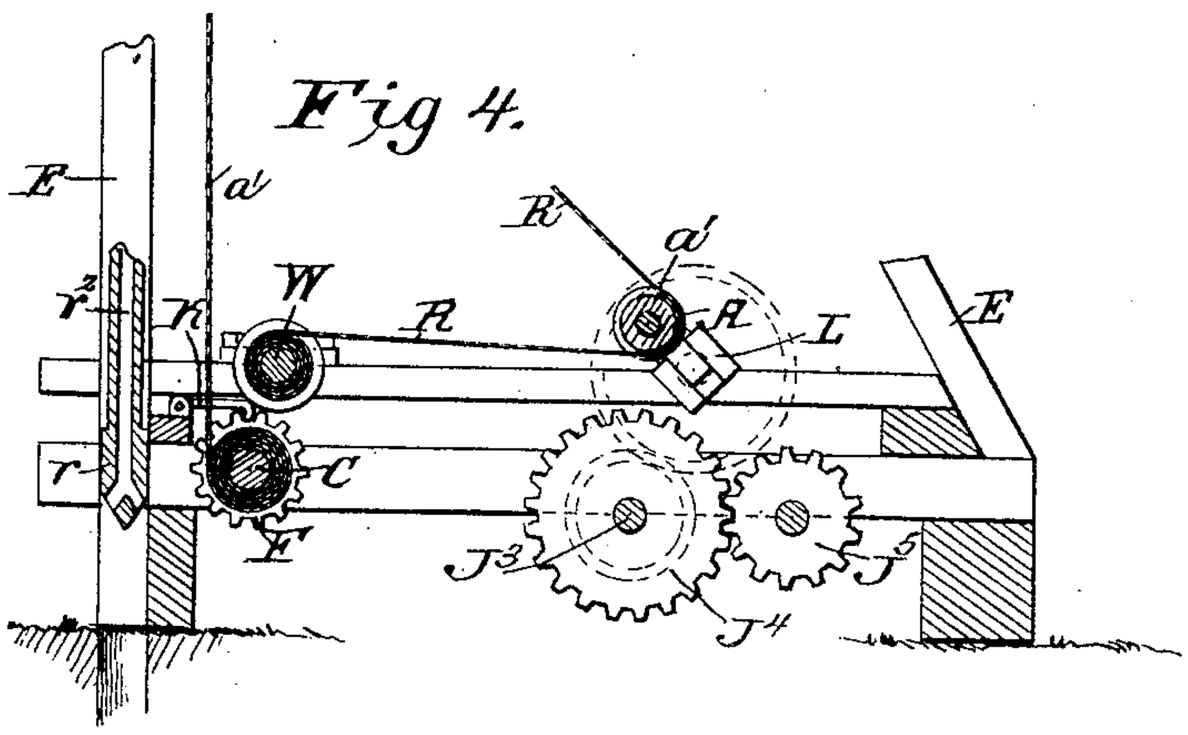


Fig 4.



WITNESSES:

Fred G. Dieterich

Edw. M. Byrn.

INVENTOR:

Alfred O. Hiscock.

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALFRED O. HISCOCK, OF WYOMA, ASSIGNOR OF ONE-HALF TO PRESTON B. BIRD, OF DRIFTON, FLORIDA.

WELL-SINKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,134, dated October 27, 1891.

Application filed June 25, 1891. Serial No. 397,534. (No model.)

To all whom it may concern:

Be it known that I, ALFRED O. HISCOCK, of Wyoma, in the county of Marion and State of Florida, have invented a new and useful Improvement in Well-Sinking Machines, of which the following is a specification.

The object of my invention is to provide a simple, effective, and convenient machine for sinking wells; and it consists in a peculiar construction and arrangement of parts hereinafter shown and described.

Figure 1 is a side elevation. Fig. 2 is a front end elevation. Fig. 3 is a plan view of the lower portion of the machine. Fig. 4 is a vertical longitudinal section on line $x\ x$ of Fig. 3. Fig. 5 is a side view of the drill-rod, and Fig. 6 a cross-section of the same through line $y\ y$ of Fig. 5.

In the drawings, A represents the dropper or spudder for alternately lifting and dropping the drill in the well. This consists of a revolving drum a, turning freely on an adjustable double crank I, whose arms have a dovetail sliding connection with the sections of transverse shaft L. This double crank is adjusted for greater or less radial throw by means of set-screws b, connecting the said crank rigidly to the shaft. This shaft is rotated by means of a wheel H, which receives motion through a chain belt G from any source of power.

J is a gear-wheel on crank-shaft L, which gear-wheel is connected with a small gear J^2 on a shaft J^3. The shaft J^3 has a gear-wheel J^4 on it that meshes with a smaller gear-wheel J^5 on a shaft carrying a balance-wheel J^6. This balance-wheel and train of gear-wheels give a uniform and easy motion to the spudder A as it revolves and prevents it from acting with a jerking motion.

C C is a double windlass having two spools, upon each of which is wound a wire cable a' and a'. These wire cables extend up to and over twin sheaves $c\ c$ in a triple pulley-block D at the top of the derrick E and then extend down to and are attached to the drill. These double windlasses serve to lift the drill out of the well.

On the same shaft with the windlass sections C C is a toothed wheel F, which is engaged by a pawl K, that holds the windlass-sections C C stationary when the drill is raised out of the well. To lift the drill quickly out of the well a loose sprocket-wheel g is connected to the shaft of the double windlass, and this sprocket-wheel is connected by a chain belt e with a smaller sprocket-wheel h on the same shaft with sprocket-wheel H, and between loose sprocket-wheel g and the windlass C C there is a clutch E^2, provided with a lever l for opening or closing the clutch. When the clutch E^2 is closed, the rotation of the main shaft serves, through the chain belt e, to rotate the windlass-sections C C and wind up the cables thereon until the drill is brought above ground.

R is the main working rope or cable. This is attached at the top of the hollow drill-rod sections and passes around a sheave c^2 in the triple pulley block D, and after passing around the spudder goes to the winding-shaft or feed-windlass W. This shaft has a toothed wheel w, whose periphery is engaged by a temper-screw t, by turning which the working rope may be paid off from the winding-shaft and the drill fed down into the well as it cuts its way.

Q is a small windlass fixed on the end of shaft L, which may be used instead of spudder A when it is desired to work the rope R by hand, which is done by simply taking a few wraps around windlass Q and alternately winding and slackening the rope. The wire cables $a'\ a'$, which are wound upon the drums C C and pass over the sheaves $c\ c$ in the pulley-block above, extend all the way down to the drill r, while the working rope R does not extend to the drill, but is connected at the upper end of the topmost drill-rod section. These drill-rod sections r^2 are made in tubular form and fastened together by screw-couplings r^3 and carry within clamps p along their sides the cables $a'\ a'$, which are housed and protected as they pass down to the drill. The tubular drill-rod sections are made of steel and wood, the ones next to the drill being of steel until a sufficient weight is obtained and the upper ones being of wood with metal screw-couplings. These hollow tubes form the drill-rod and a new section is put on as fast as the drill works its way down. In the wooden sections of tube are formed longitudinal grooves along their sides to receive and protect the cables. The rope R is connected to the cables $a'\ a'$

just above the drill-rod by two rope-clamps *m*. This causes the lifting and working strain to be exercised upon the drill from the bottom, so as to prevent the drill-rods from being pulled apart from their weight, as might take place if the working rope were attached to the topmost drill-rod direct. By means of the reduced weight of these wooden drill-rods a much greater depth of well can be obtained than if metal rods were used, and, besides, if there should be a break in the rods the drill may still be easily raised out of the well, since the cables *a* connect with it at the bottom. By using hollow drill-rods they are lightened, and the tube may be used for conveying water to the drill below.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a well-drilling machine, the combination of a drill, a series of sectional drill rods or tubes, a drill-operating rope attached at the top of the drill-rods to one or more drill-hoisting cables, and one or more drill-hoisting cables extending beside the drill-rods to the drill itself, substantially as shown and described.

2. The combination, with the drill and its sectional drill-rods, of two cables extending from the drill alongside the drill-rods, two windlasses for receiving these two cables, a working rope attached to the cables above the drill-rods, and a spudder or rope operating device for working the drill, substantially as shown and described.

3. A drill-rod having grooves along its sides and retaining-clamps, in combination with cables arranged therein, substantially as shown and described.

4. The spudder A, consisting of the revolving drum *a*, the adjustable double crank I, carrying said revolving drum, the sectional shaft L, with slotted or grooved ends, adapted to receive the arms of the double crank, and set-screws or locking devices for holding the parts together, substantially as shown and described.

The above specification of my invention signed by me this 29th day of April, 1891.

ALFRED O. HISCOCK.

Witnesses:
Z. H. BENNETT,
ESTHER BARBER.