

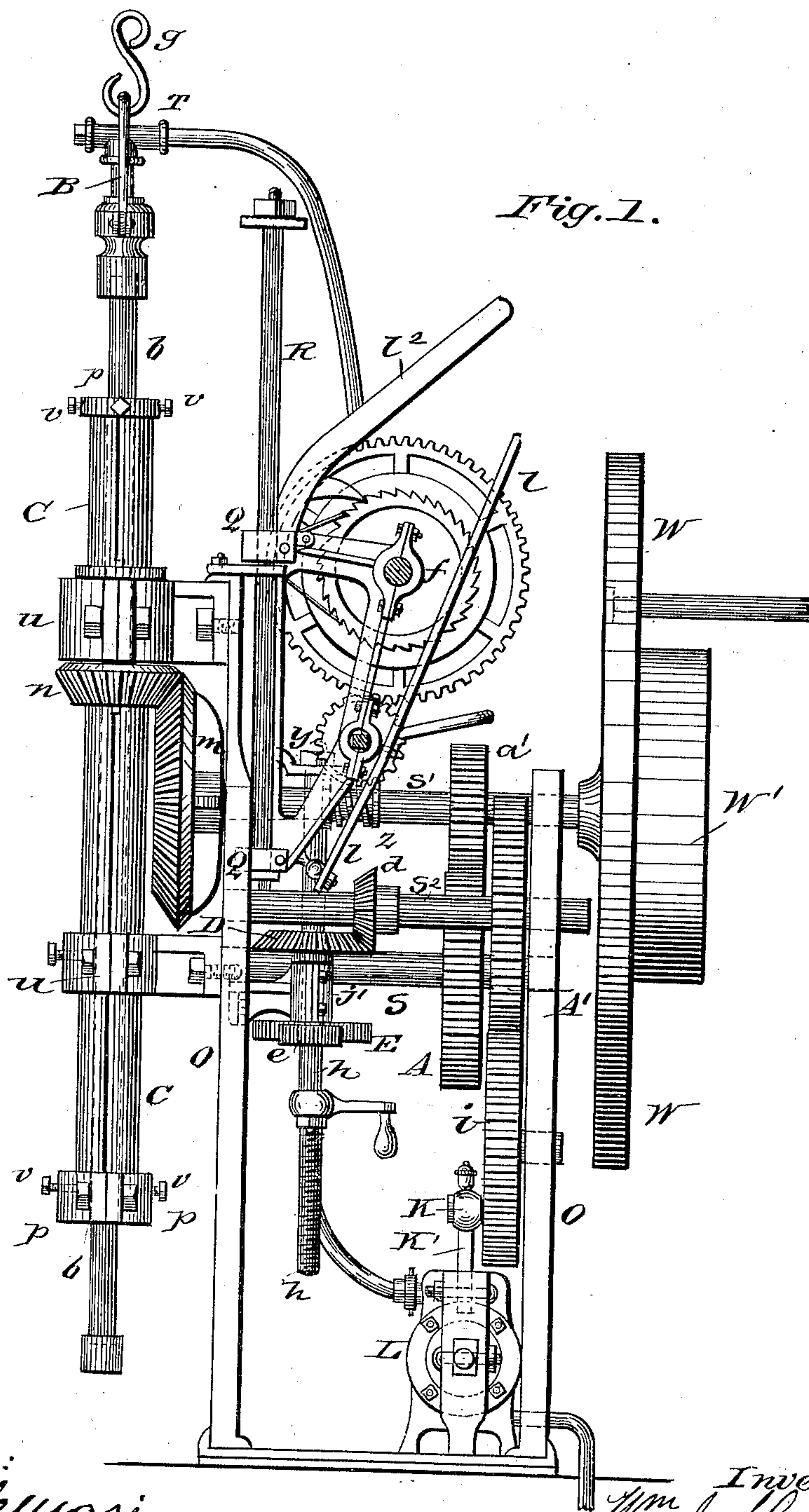
(No Model.)

W. J. SHERMAN.
WELL BORING MACHINE.

3 Sheets—Sheet 1.

No. 277,794.

Patented May 15, 1883.



Witnesses:

Philip LeMassi.
E. N. Bates

Inventor:

Inventor:
Wm J. Sherman.
by Anderson & Smith.
his Attorneys.

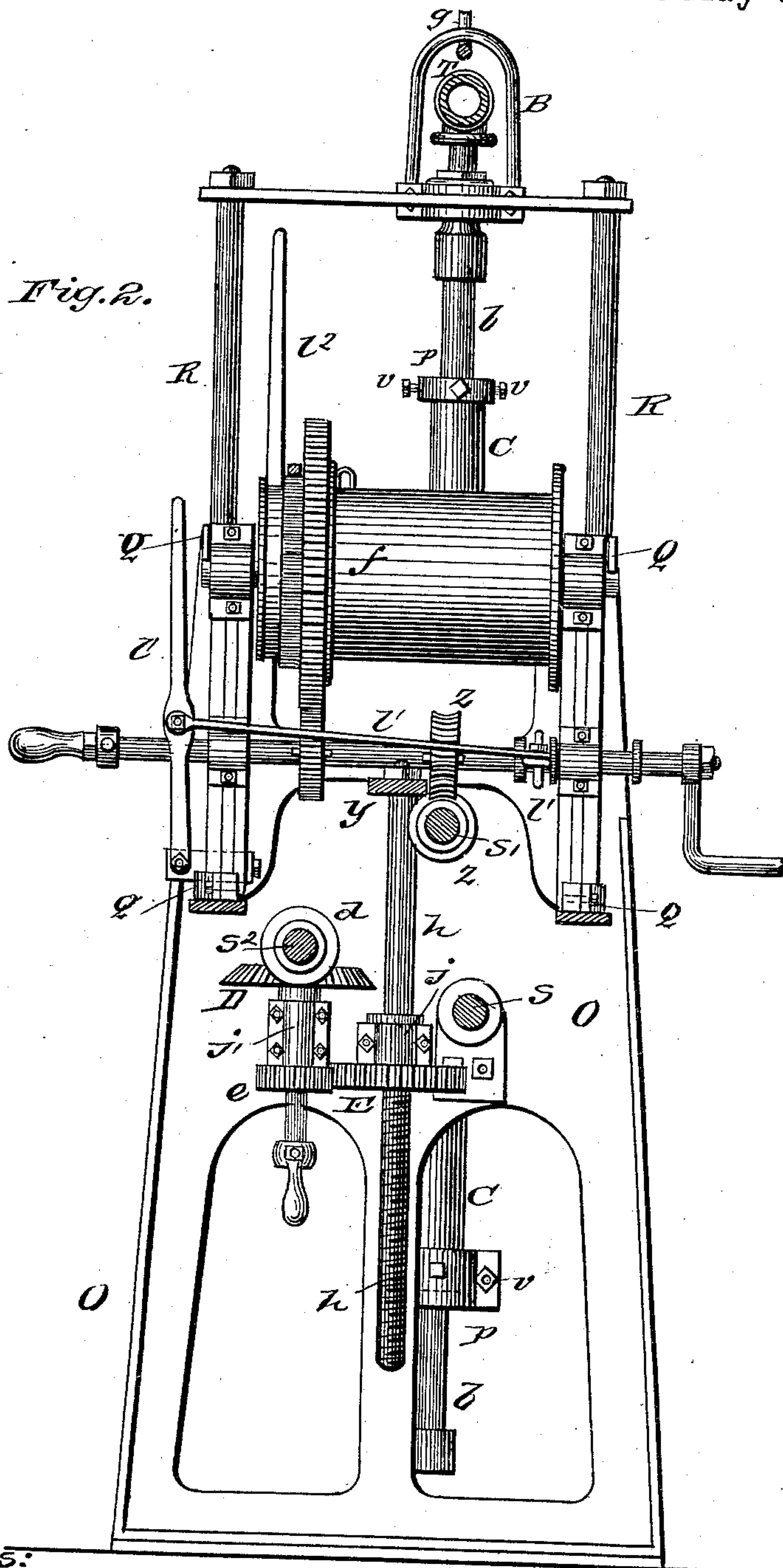
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W. J. SHERMAN.
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Witnesses:

Philip C. Cusi.
E. H. Bates.

Inventor:
Wm. J. Sherman
by Anderson & Smith
his Attorneys.

(No Model.)

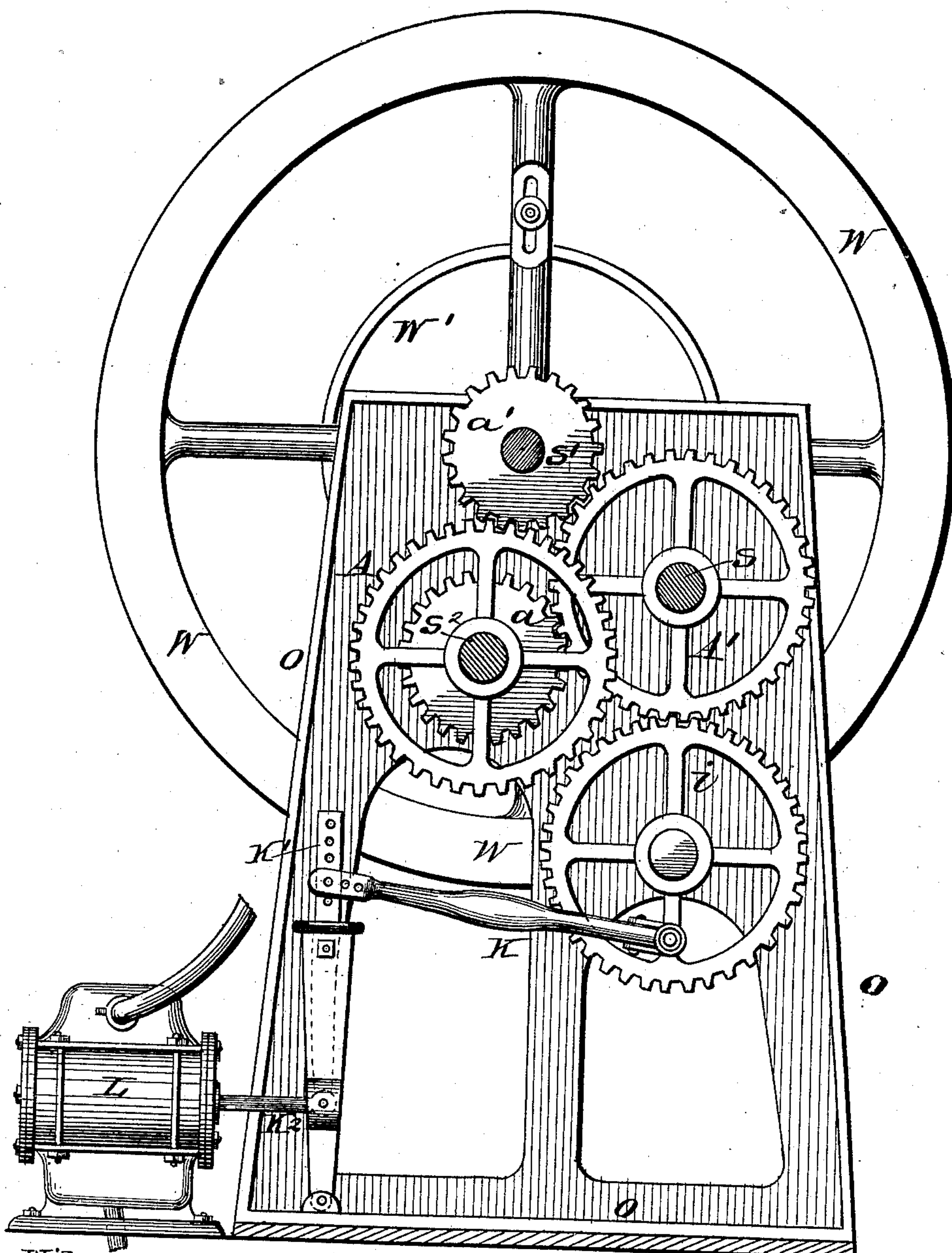
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Fig. 3.



Witnesses:

Philip Massi.
E. H. Bates.

Wm J. Sherman,
by Addison Smith
his Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM J. SHERMAN, OF ST. AUGUSTINE, FLORIDA.

WELL-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,794, dated May 15, 1883.

Application filed February 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SHERMAN, a citizen of the United States, resident at St. Augustine, in the county of St. John's and State of Florida, have invented certain new and useful Improvements in Rock-Drills; and I do 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view of my machine. Fig. 2 is a vertical sectional view, and Fig. 3 is also a longitudinal vertical section of my device.

This invention has relation to rotary rock-drilling machines for boring Artesian wells and the like, and is intended to be worked either by hand or other power at as fast or slow a rate of speed as may be required; and it consists in the construction and novel arrangement of parts, as will be hereinafter more fully described, and pointed out in the claims appended.

Referring by letter to the accompanying drawings, O designates the frame of the machine, in which the three horizontal shafts S, S', and S² have their bearings, and which are arranged to have their centers equidistant from each other, thereby permitting the teeth of the gear-wheels A A' and the pinions a' a to mesh with each other, as shown.

C designates a sleeve, and b the hollow drill. The said sleeve C is rotated by a bevel-wheel, m, keyed to the shaft S', and gearing with a bevel-gear wheel, n, which latter is bored out to permit the sleeve C to pass through it. The sleeve C is grooved its entire length, and a splint enters this groove and a recess in the interior of the pinion n, causing the sleeve to revolve with the pinion n and yet permitting it to slide freely up and down in the pinion n. The sleeve C is held in a vertical position by bearings u u, which permit it to rotate freely. The sleeve C is secured to the hollow drill-rod b by clamps p p and set-screws v v, so that when the sleeve is rotated the hollow drill-rod b will be also rotated.

W designates the fly-wheel, which may be operated by hand through the handle or by power by placing the belt upon the pulley W'. The fly-wheel may be shifted from the shaft S' to the shaft S², to change the speed, when desired, and replaced at pleasure. The hollow boring-rod b is secured at its upper end to a water swivel, T, which is connected by a T-joint and a flexible tube to a pump, L, operated by a gear-wheel, i, connected by a pitman-rod, K, to a vertical pivoted lever, K', to which the piston-rod K² of the pump L is attached. The pitman-rod K is perforated at one end, and the upper end of the pivoted lever K' is also perforated, in order that adjustments may be made to lengthen or shorten the stroke of the pump when desired. The gear-wheel i is driven by the gear A A' a' a.

A clamp and bail, B, are secured to the upper end of the water-swivel T, which turns in the clamp, and a hook, g, engaging the bail, passes over a pulley of a derrick and connects with the barrel of the winch f. The frame of the winch f is secured by a bracket, y, and a nut to the screw-spindle h, and by four slide-bearings, Q, to the guide-rods R, secured to the frame O. The screw-spindle h is operated by the gear-wheel E, the tapped boss of which revolves in the bearing j and gears with the pinion e, which in turn is keyed to a shaft carrying at its upper end the bevel-wheel D, said shaft being held in place by the bearing j'. The bevel-wheel D is driven by the bevel-pinion d, keyed to the shaft S², and operated by the combined action of the gears A A' a' a.

When the machine is in operation the revolving gear-wheel E pushes the winch f upward, which, being connected by a rope and hook, g, to the swivel of the hollow drill-rod b, allows the said drill-rod b and sleeve C to descend by their own weight at as fast or slow a speed as may be desired, according to the nature of the rock to be drilled. The bevel-pinion d can be thrown out of gear and the winch lowered by means of a handle on the upright shaft carrying the gears D and e.

The winch f may be also used for hoisting purposes, either by hand through handles, or by power by means of the screw-gear and wheel, and may be thrown in and out of gear by the lever-and-clutch attachment l, and

lever and pawl l^2 . By unscrewing the nut on the bracket y the winch may be used as a counter-balance for the sleeve C and drill-rod b .

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

1. In a rotary rock-boring machine, the combination of the driving gear-wheels A A' and pinions $a' a$, so arranged upon the shafts S S' S² with regard to the hollow drill and sleeve that the speed of the latter may be increased or diminished by simply shifting the fly-wheel, substantially as and for the purposes specified.

2. In a rotary rock-drilling machine, the combination of the driving wheels and pinions so arranged with relation to the driving wheels

and pinions of the feed motion as to increase or decrease the speed of the feed of the drill-rod automatically, according to the nature of the rock to be drilled, substantially as and for the purposes set forth.

3. In a rotary rock-drilling machine, the combination of the hoisting-winch with the machine when arranged to act as a counter-balance for the drill and sleeve, substantially as specified.

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

WILLIAM J. SHERMAN.

Witnesses:

JAMES F. CANOVA,
B. F. OLIVEROS.