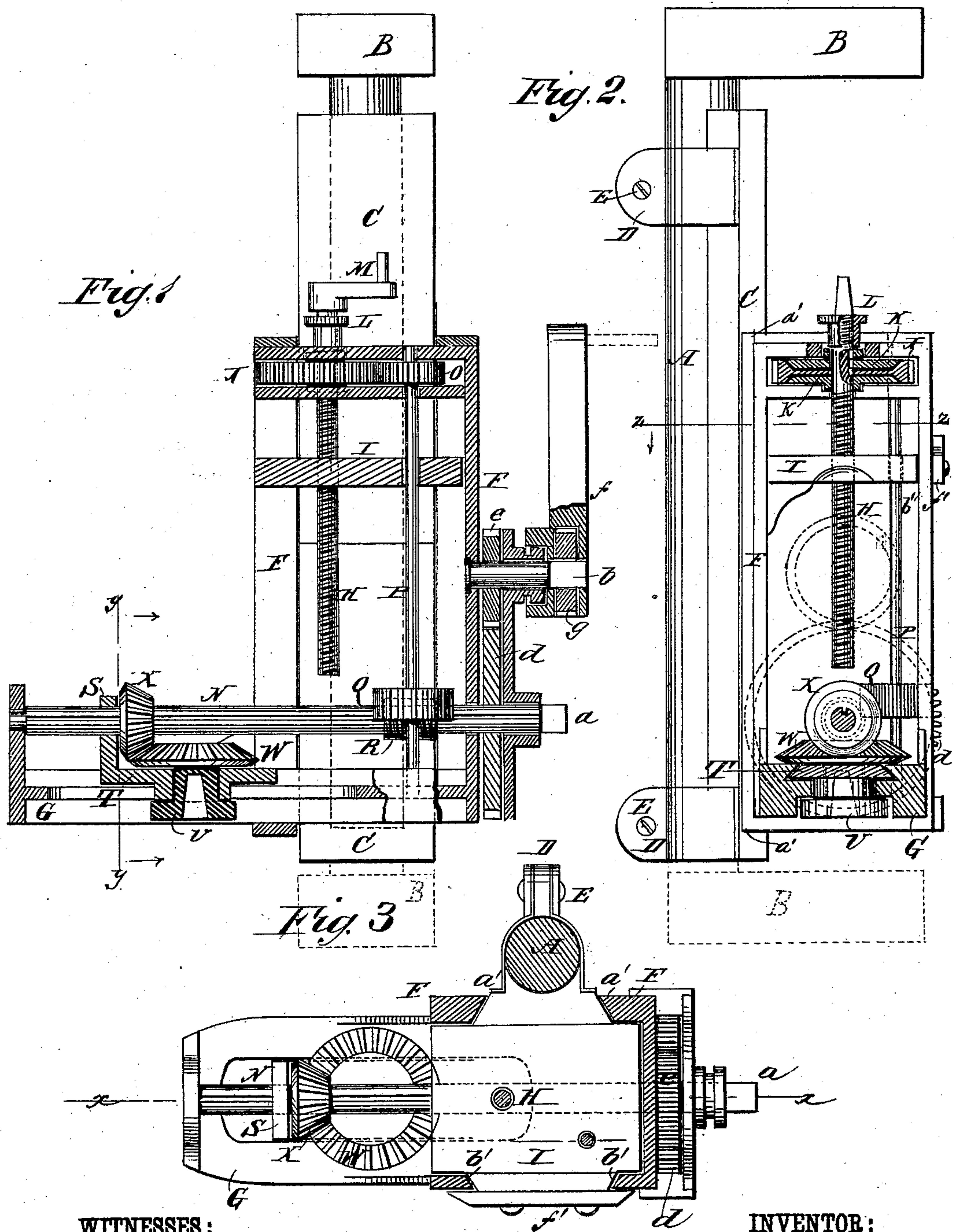


(No Model.)

J. C. SMITH.
DRILLING MACHINE.

No. 279,834.

Patented June 19, 1883.



WITNESSES:

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JAMES C. SMITH, OF THE DALLES, OREGON.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 279,834, dated June 19, 1883.

Application filed July 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. SMITH, of The Dalles, in the county of Wasco and State of Oregon, have invented a new and Improved Drilling-Machine, of which the following is a full, clear, and exact description.

My invention consists of an improved hand-power drilling-machine contrived for use as a bench or ratchet drill, and arranged for shifting the drill for boring in different positions, and also contrived with respect to the slide and the feed mechanisms in simple and efficient arrangements, as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of my improved drilling-machine, taken on the line $x x$ of Fig. 3. Fig. 2 is a sectional elevation taken on the line $y y$ of Fig. 1, and Fig. 3 is a horizontal section on the line $z z$, Fig. 2.

A represents a strong vertical support for the machine, to be fastened overhead or on any suitable foundation by the bracket B, said support being cylindrical, and having the slideway C, attached by strong clips D, allowing it to shift around the support A to set the machine in different positions, and securing it by binding-screws E. To this slideway the vertical frame F, with horizontal extension G, is attached so as to slide up and down freely, for which it is provided with a feed-screw, H, which works in a screw-tapped hole in bracket I, rigidly attached to the guideway C.

The feed-screw has a driving-wheel, J, which is made to turn it by the friction-disks K, which are tightened more or less, according to whether it is desired to feed heavily or lightly, by the thumb-nut L, and a crank, M, is applied to the top of the screw for raising and setting the drill to begin with. The wheel J for turning the feed-screw is geared with the main driving-shaft N by the pinion O, shaft P, worm-wheel Q, and the worm R on said shaft N.

The driving-shaft N is arranged horizontally in the horizontal part G of the frame, and works through the vertical arm S of a slide, T, carrying the drill-chuck U, and a wheel, W, attached to said chuck for turning it by a bevel-pinion, X, on the driving-shaft. The slide T

shifts along the frame G, to be fastened at any point between the ends by a binding-screw, and the bevel-pinion X slides along the shaft with it, being kept in position by wheel W and arm S. The end a of the driving-shaft is squared for the application of a hand-crank for turning it, and said shaft is also geared with another crank-shaft, b , by a wheel, d , and a pinion, e , for reducing the motion for large drills, and the crank f is connected with it by a ratchet, g , and pawl, so as to work the drill thereby in places where the crank cannot be turned entirely around.

By the arrangement of the vertical frame on the slideway and the driving-shaft on the horizontal frame, long bearings are obtained for substantial support, and at the same time the driving-shaft is located low down, where hand-power can be very conveniently applied.

The vertical frame has the bevel-slides a' at the back for working on the bevel-edges of the slideway C, and it also has bevel-slides b' at the front for working on the bevel-edges of the front of the bracket I, by which substantial support on the slideway is secured, and a cleat, f' , is attached to the front of the bracket to overlap the front side of the frame F for additional security.

To be used as a ratchet-drill, the support A may be applied with the bracket B, as represented in the full lines in the drawings, and said support is specially contrived for use in that arrangement to enable the machine to be placed between the hub and inside of the rim of a pulley to bore for the set-screw without boring through the rim of the wheel, as is commonly done.

To be used in an upright position, the support may be shifted with respect to the machine to the position represented in dotted lines, in which case the bracket B may be bolted to any support to hold the machine upright.

I propose to dispense with the horizontal frame G in some cases, and to locate the drill-chuck V directly under the feed-shaft H for vertical drilling.

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

1. The combination, in a drilling-machine, of the vertical cylindrical support A, verti-

cal slideway C, mounted thereon adjustably around it, vertical frame F, arranged on said slideway, and the horizontal frame G, the feed mechanism being arranged on the vertical frame and the drill mechanism on the horizontal frame, substantially as described.

2. The driving-shaft N, drill-slide T, chuck U, wheel W, and pinion X, combined and arranged with the frames F G, slideway C, and feed-screw H, substantially as described.

3. The driving-shaft N, worm R, worm-wheel Q, shaft P, pinion O, wheel J, feed-screw H, and the friction-clutch, combined and arranged with the frames F and G and the drill-chuck and its driving-gear, substantially as described.

4. The combination, with the support A and the slideway C, provided with the bracket I, and fitted to turn on the said support, of the frame F, provided with the slides *a' b'*,

fitted to the bevel-edges of the slideway and bracket, and the cleat *f'*, secured to the said bracket, substantially as and for the purpose set forth.

5. The combination, with the feed-screw H, of driving-wheel J, mounted loosely on the upper end of the feed-screw, the friction-disks K K on opposite sides of the said wheel, and the nut L on the end of the said feed-screw, substantially as herein shown and described, whereby the feed is regulated by tightening the nut, as set forth.

6. The combination, with the frames F G, of the support A, having bracket B, and being reversible with respect to said frames, substantially as described.

JAMES CURTIS SMITH.

Witnesses:

S. MALTERNER,
W. S. MYERS.