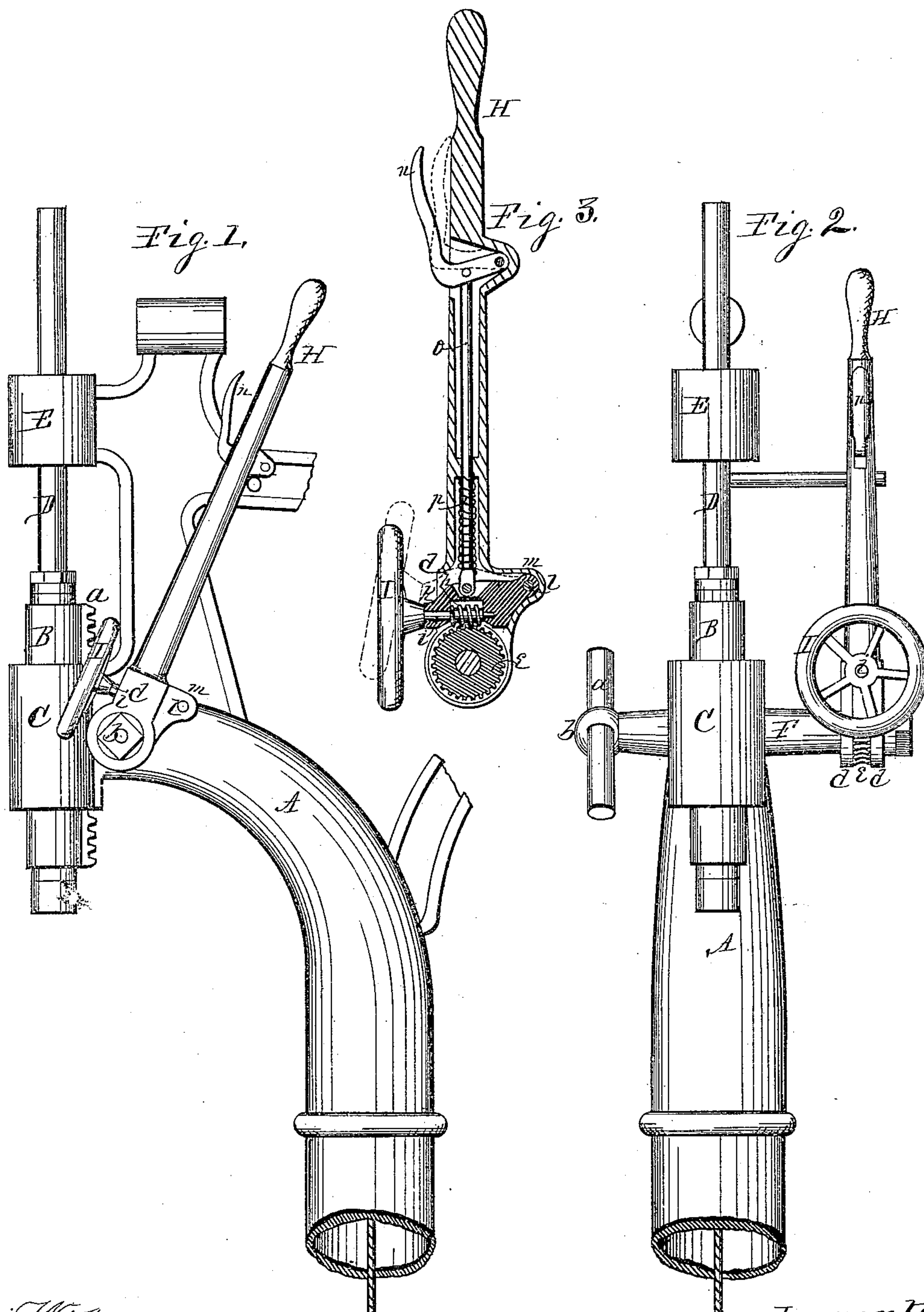


(No Model.)

J. & B. F. BARNES.  
FEED MECHANISM FOR DRILLS.

No. 270,537.

Patented Jan. 9, 1883.



Witnesses,  
A. O. Behl  
Attorney

Inventor,  
John Barnes,  
Benjamin F. Barnes,  
Per. Jacob Behl,  
Atty.



# UNITED STATES PATENT OFFICE.

JOHN BARNES AND BENJAMIN F. BARNES, OF ROCKFORD, ILLINOIS,  
ASSIGNORS TO W. F. & JOHN BARNES, OF SAME PLACE.

## FEED MECHANISM FOR DRILLS.

SPECIFICATION forming part of Letters Patent No. 270,537, dated January 9, 1883.

Application filed August 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN BARNES and BENJAMIN F. BARNES, citizens of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Drilling-Machines, of which the following is a specification.

This invention relates to that class of drilling-machines known as the "vertical drill."

The object of this invention is to improve this class of drilling machines in their feeding mechanism; and our invention consists in a combined screw-gear and lever-ratchet feeding mechanism capable of use as a screw-gear feed or as a lever-ratchet feed independently, which device is represented in the accompanying drawings, in which—

Figure 1 is a side elevation of such parts of a vertical drilling machine necessary to show the application of our improved feeding mechanism, which is represented in place thereon. At Fig. 2 is represented a front elevation, and Fig. 3 is a vertical transverse section of the feeding mechanism.

In the figures, A represents the upward-curving portion of the main column of a drilling-machine.

At B is represented a tubular spindle-bearing with its gear-toothed rack *a* supported to move vertically in a bearing, C, in the overhanging portion of the main column.

At D is represented a drill-spindle supported to revolve within the tubular bearing C, having its upper end suitably supported to revolve in a bearing, E, and capable of an endwise movement therein.

At F is represented a transverse bearing, in which is supported to revolve a transverse shaft, *b*. On this transverse shaft within the column is mounted a gear-pinion, the teeth of which engage the gear-teeth of the rack on the tubular spindle-bearing. One end of this shaft is provided with a quick-return lever, *c*, which is passed through the end of the shaft, and is employed to impart a quick endwise movement of the drill-spindle and its tubular bearing-support. These parts are substantially the same as like parts heretofore in use, and therefore are not new.

At H is represented a hand-lever having its end bifurcated, and the arms *d* thereof are pivoted in a free manner upon the end of the transverse lever opposite the end thereof in which the transverse lever is fixed, to permit of a free oscillatory movement thereon.

At *e* is represented a screw toothed gear-wheel, fixed to the transverse shaft *b* within or between the arms *d* of the lever.

At *h* is represented a screw toothed gear-pinion, mounted on a suitable shaft, *i*, supported to revolve in bearings in a pivoted lever, *k*. This lever *k* is fitted to enter between the fork-arms *d* of the hand-lever H, and is pivoted therein at *l* in a rearward projection, *m*, on the hand-lever H, in such position therein relatively with the screw-gear wheel that the teeth of the screw-pinion will engage the teeth of the screw-gear wheel in proper working contact.

At I is represented a hand-wheel mounted on the outward-projecting end of the shaft *i* of the screw-gear pinion, by means of which the screw-gear wheel may be rotated in either direction to impart an upward or downward movement to the drill-spindle, producing a screw-gear feed to the drill.

At *n* is represented a thumb-lever pivoted in the free end portion of the hand-lever H in position to be operated by an attendant. That portion of the hand-lever between the thumb-lever and the lever-bearing of the screw-gear pinion is tubular, and in this tubular portion of the lever is placed a connecting-rod, *o*, having a pivotal connection of its ends with the thumb-lever *n* and with the lever-bearing *k* of the pinion, in such a manner that the movements of the thumb-lever will be imparted to the lever-bearing of the pinion.

At *p* is represented a spiral spring, surrounding the lower end portion of the connecting-rod in such a manner that its spring action tends to hold the screw-gear pinion engaged with the screw-gear wheel in such a manner that a rotary motion of the hand-wheel will impart a rotary movement to the gear-wheel, and, by means of its pivoted connection with the hand-lever, serve as a pawl to connect the lever with the gear-wheel in a manner to cause the wheel to move with the oscillatory move-



ments of the lever; and by means of the rod-connection of the pinion with the thumb-lever it can be disengaged and re-engaged with the screw-gear at the pleasure of the attendant to  
5 cause the gear-wheel to rotate in either direction to raise or lower the drill.

From the foregoing it will be seen that we produce a combined screw-gear and lever-feed, capable of use either as a screw-gear feed or  
10 as a lever-feed, for the purpose of operating the drill, and by means of the thumb-lever the screw-pinion can be disengaged from the screw-gear to permit the drill to be operated by the quick-return lever.

15 We claim as our invention—

1. The combination, with the transverse shaft having a gear-connection with the tubular spindle-bearing, and with a hand-lever pivoted on said shaft, of a screw-gear mounted  
20 upon the transverse shaft, and a screw-gear pinion having its bearing-support pivoted to the hand-lever, said pinion adapted to engage the gear-wheel and capable of use as a screw-

gear feed and as a pawl to the lever-feed, substantially as set forth. 25

2. The combination, with the screw-gear pinion having a pivotal connection with the hand-lever and capable of use as a pawl to engage the screw-gear, of a pivoted thumb-lever having a suitable connection with the pivoted support of screw-gear pinion, substantially as and  
30 for the purpose set forth.

3. A spring-connection with the pivoted support of the screw-pinion, substantially as and for the purpose set forth. 35

4. The combination, with the screw-gear pinion having a pivotal connection of its bearing-support with the pivoted hand-lever, of a hand-wheel mounted upon the shaft of the screw-gear pinion, substantially as and for the purpose set forth. 40

JOHN BARNES.

BENJAMIN F. BARNES.

Witnesses:

A. R. REA,

A. O. BEHEL.