

No. 608,548.

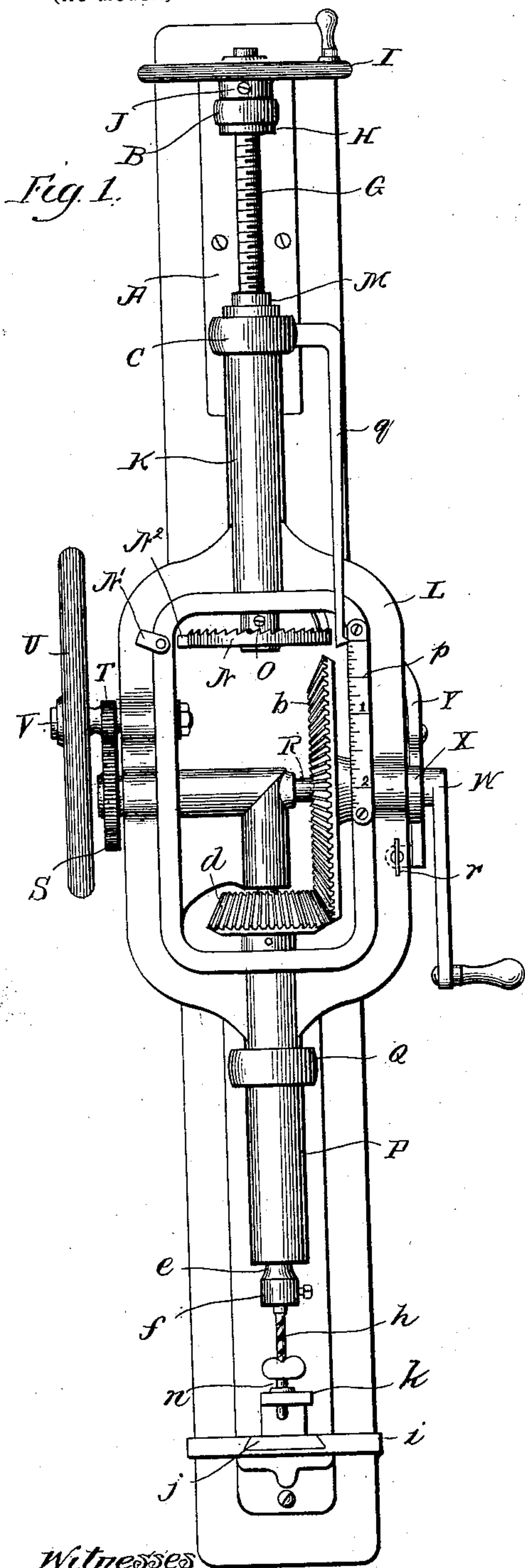
Patented Aug. 2, 1898.

C. COLUMBUS & C. R. HESSELTINE.

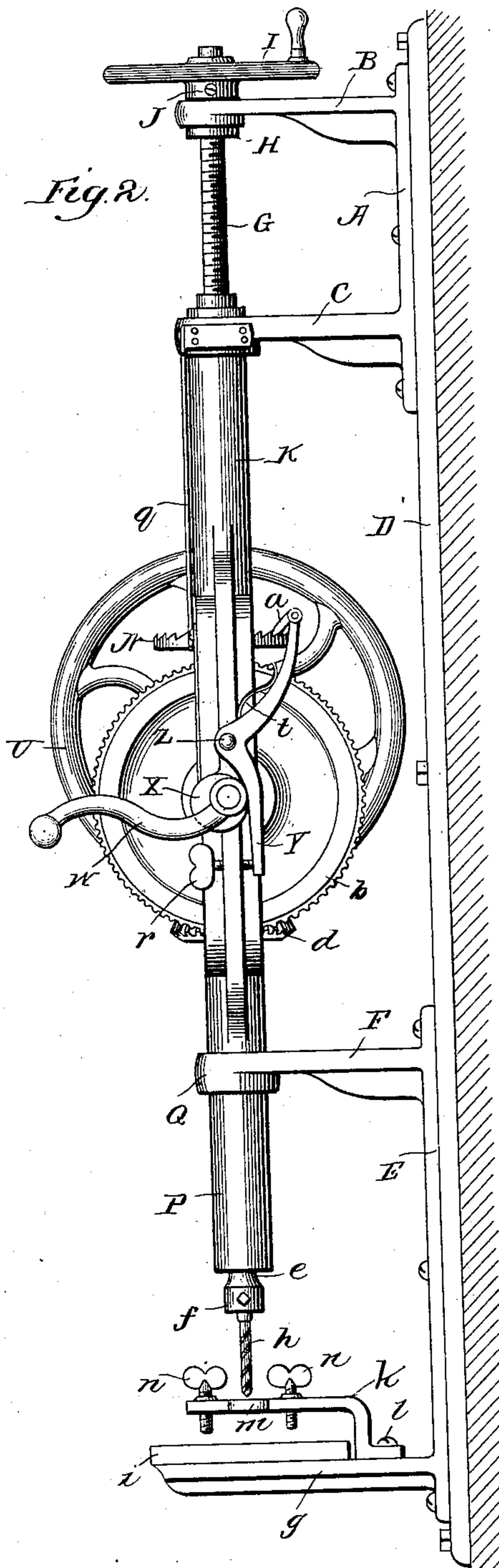
DRILL.

(Application filed Oct. 26, 1897.)

(No Model.)



Witnesses  
*H. D. Hallock.*  
*S. J. Williamson*



Inventors  
*Charles Columbus*  
*Charles R. Hessestine*  
 by *Geor. H. H. Gate* Attorney.



# UNITED STATES PATENT OFFICE.

CHARLES COLUMBUS AND CHARLES R. HESSELTINE, OF CRESTON,  
WASHINGTON.

## DRILL.

SPECIFICATION forming part of Letters Patent No. 608,548, dated August 2, 1898.

Application filed October 26, 1897. Serial No. 656,385. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES COLUMBUS and CHARLES R. HESSELTINE, citizens of the United States, residing at Creston, in the  
5 county of Lincoln and State of Washington, have invented a certain new and useful Improvement in Drills, of which the following is a full, clear, and exact specification.

Our invention relates to a new and useful  
10 improvement in drill-presses, and has for its object to provide a simple, cheap, and effective device which may be either operated by hand or by power—preferably the former—and will obviate all the disadvantages which  
15 have heretofore existed in connection with presses and other hand-drills, as well as improving upon the convenience of ordinary power-drills.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the  
25 construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

30 Figure 1 is a front view of a drill-press made in accordance with our improvement, and Fig. 2 a side elevation thereof.

In carrying out our invention as here embodied we provide a bracket A, which has  
35 projecting therefrom the two arms B and C, and this bracket may be secured to a board D or other surface, and we also provide a bracket E, from which projects an arm F. This last-named bracket is likewise secured  
40 to the board D, or, if found desirable, these two brackets may be made in a single piece or otherwise secured together, so as to form the complete frame of the drill-press. The object of the arms projecting therefrom will  
45 be hereinafter set forth.

G represents the feed-screw, the upper portion of which is threaded and run through a threaded bushing H, which latter is secured to the hand-wheel I by means of a set-screw  
50 J, and as the bushing has a shoulder upon its lower end and the hand-wheel a hub it

will be seen that the bushing and hand-wheel will be secured in place within the arm B. Thus the hand-wheel will be free to revolve, carrying with it the bushing, and as the lat-  
55 ter serves as a nut to the feed-screw it follows that said screw will be raised or lowered, as the case may be.

The lower portion of the feed-screw is not threaded, but passes through the upper ex-  
60 tension K of the yoke-frame L and is free to turn therein, said frame being held upon the screw by means of the collar M and the ratchet-wheel N, the latter being secured  
65 upon the lower end of the screw-rod by the set-screw O, as clearly shown in Fig. 1, and this ratchet-wheel is free to revolve with the screw within the yoke-frame, for the purpose hereinafter set forth.

The yoke-frame has formed therewith a  
70 lower extension P, which passes through the bearing Q of the arm F and may be raised or lowered therein, but is held from rotation upon its axis by any suitable means, such as a spline.

75 A shaft R is journaled in the yoke-frame and has secured upon one end thereof the gear-wheel S, which meshes with the pinion T, secured upon the hub of the balance-wheel U, said wheel being journaled upon a short  
80 stud V, secured in the yoke-frame, whereby a certain amount of momentum will be given to the operative parts when once in motion. The opposite end of the shaft has secured thereon a crank W for the revolving thereof,  
85 and a small eccentric X is secured upon the shaft just inside of the crank for the operation of the pawl-lever Y, which is pivoted at Z, the upper end thereof having pivoted there-  
90 to the pawl a, adapted to engage with the teeth of the ratchet N, so that for every revolution of the crank-shaft this pawl will intermittently actuate this ratchet-wheel one or more teeth, by which means it is obvious that  
95 the feed-screw will be revolved, and in so doing the yoke-frame will be fed downward for the purpose hereinafter set forth.

A beveled gear b is secured upon the shaft R inside of the yoke-frame and meshes with  
100 the beveled pinion d, which latter is secured upon the upper end of the drill-spindle e, said spindle being journaled in the extension P



and carrying a chuck *f* at its lower end, in which may be secured the drill *h*. From this description it will be seen that when the crank-shaft *R* is revolved in the proper direction the drill will not only be rotated upon its axis to give it a boring action, but will also be fed downward by the eccentric *X* and feed mechanism actuated thereby, as above described; but should this feeding of the drill not be sufficient to suit the requirements of the work it may be more readily fed to its work by the revolving of the hand-wheel *I*, which latter adds to the downward motion of the screw *G*.

When it is desired to elevate the drill, this is readily accomplished by the disengaging of the pawl *a* from the ratchet-wheel and the revolving of the hand-wheel *I* in the reversed direction, the ratchet having previously been locked against rotation by the latch *N'*, which is pivoted to the yoke-frame and adapted to enter into engagement with the notch *N*<sup>2</sup>, formed in said ratchet.

The bracket *E* has formed therewith an arm *g*, upon which the drill-bed *i* is supported, and this bed has a groove therein for the reception of a wooden block *j*, whereby the drill may be forced entirely through the work being operated upon without injury to the drill or drill-bed, since when the wooden block is worn away it may be replaced by another.

For convenience in holding the work in place when being operated upon by the drill a clamp-arm *k* is secured at *l* to the arm *g* and extends over the drill-bed and has an offset therein which provides a passage-way *m* for the drill, and this clamp-arm has threaded therethrough the set-screws *n*, which are adapted to be forced against the work in clamping the same.

In practice our drill is especially adapted for all classes of work to which sensitive or light drills may be put, but the principle embodied therein may be utilized for large power-presses.

It sometimes happens that the depth to which the drill has bored is desirable to be known without removing the drill to measure its depth, and this we have provided for by placing a graduated scale *p* upon the yoke-frame and extending a pointer *q* downward from the arm *C*, so that when the yoke-frame changes its position relative to the drill-frame this pointer will indicate the amount of such change, which is also the amount of vertical movement of the drill. The amount of feed brought about by the pawl *a* acting upon the teeth of the ratchet *N* may be varied by the set-screw *r* being so manipulated as to limit the inward movement of the lower end of the pawl-lever, and this lever is returned to its

normal position after having been operated by the eccentric by a spring *t*.

If desired, our improvement may be utilized as a breast-drill by the omission of the brackets *A* and *E* and the substitution of a breast attachment for the former, as will be readily understood.

Having thus fully described our invention, what we claim as new and useful is—

1. A drill - press consisting of suitable bracket-arms for the support of the operating parts of the device, a yoke-frame arranged in these arms so as to be raised or lowered, a feed-screw journaled within the yoke-frame so as to freely revolve, a bushing threaded upon said screw and journaled within one of the bracket-arms, a hand-wheel secured upon the bushing, a ratchet-wheel secured upon the lower end of the feed-screw, a drill-spindle also journaled in the yoke-frame, means for revolving said spindle, and means for feeding the yoke-frame downward in unison with the rotation of the drill-spindle, as specified.

2. In combination, a suitable drill-frame, a yoke-frame guided therein so as to have a vertical movement, a feed-screw journaled in the yoke-frame, a bushing threaded upon the feed-screw and journaled within the drill-frame, a hand-wheel secured upon the bushing, a ratchet-wheel secured upon the lower end of the feed-screw, a latch for holding said ratchet against rotation, a shaft journaled in the yoke-frame, a beveled gear secured upon said shaft, a pinion meshing with said gear, a drill-spindle journaled in the yoke-frame and having secured thereon the last-named pinion, an eccentric secured upon the shaft, a pawl-lever pivoted to the yoke-frame and adapted to be actuated by the eccentric, a pawl carried by the upper end of the pawl-lever for actuating the ratchet-wheel, and means for imparting motion to the operating parts of the device, as specified.

3. In combination, brackets, a frame slidably supported thereby, a feed-screw journaled in the frame, a bushing threaded on the screw having a reduced extension run through one of the brackets, a hand-wheel secured on the extension, a drill-spindle carried by the frame and means for rotating the spindle and feed-screw, substantially as described.

In testimony whereof we have hereunto affixed our signatures in the presence of two subscribing witnesses.

CHARLES COLUMBUS.  
CHARLES R. HESSELTINE.

Witnesses:

H. J. NEELY,  
S. H. MCKEE.