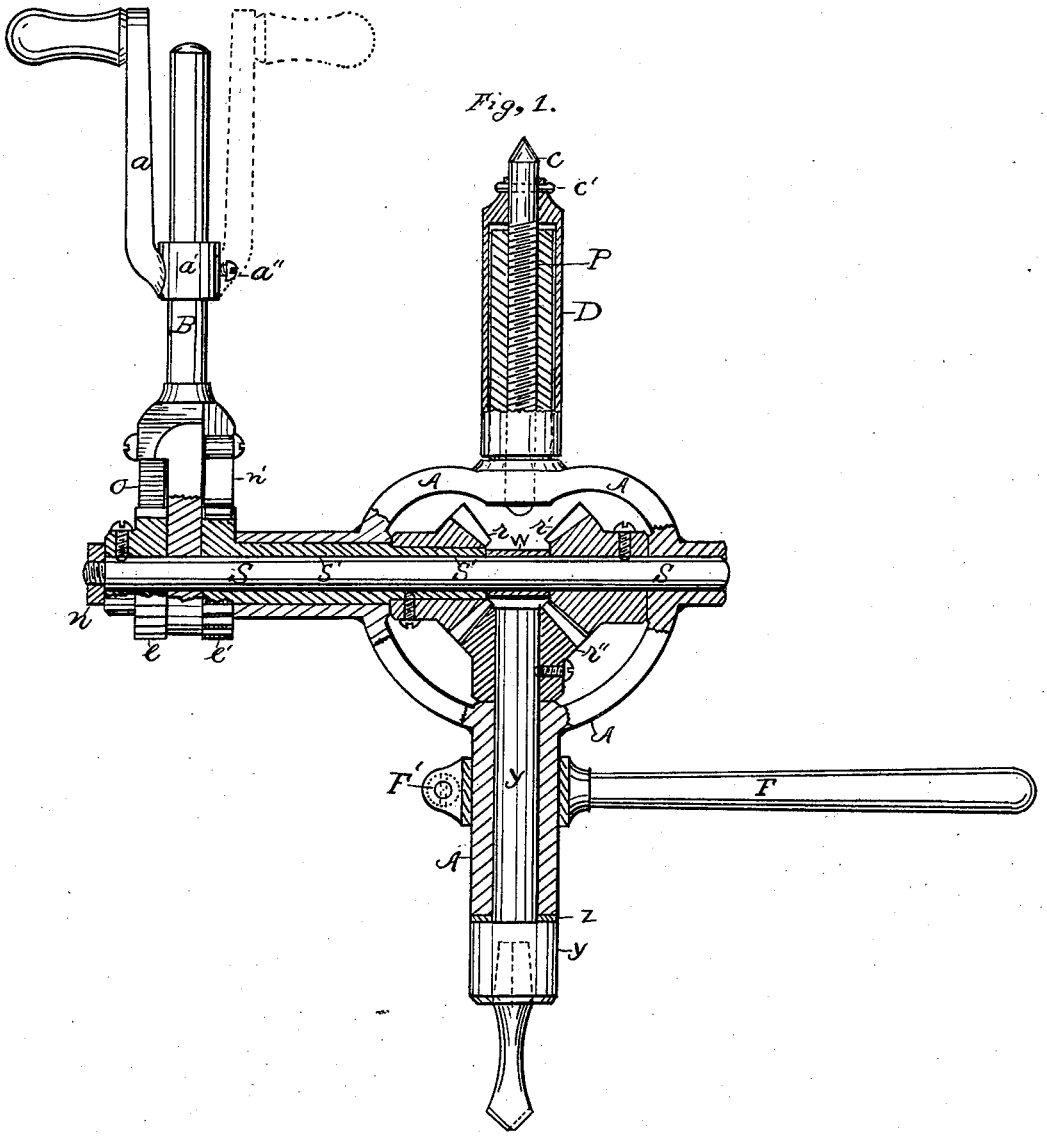
(No Model.) 2 Sheets—Sheet 1.

W. SANDIFORD.

RATCHET DRILL.

No. 264,107. Patented Sept. 12, 1882.

Fig. 1.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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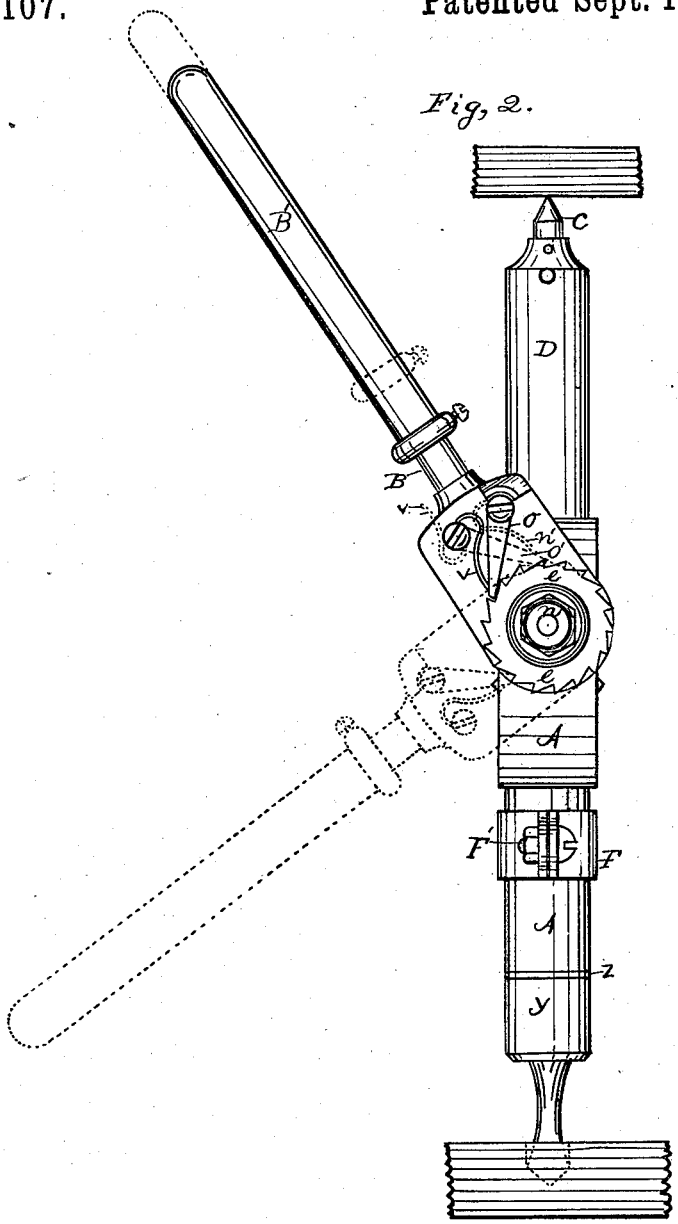
Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM SANDIFORD, OF JOLIET, ILLINOIS.

RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 264,107, dated September 12, 1882.

Application filed December 31, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SANDIFORD, of the city of Joliet, in Will county, and State of Illinois, have invented certain new and useful Improvements in Ratchet-Drills, the construction and operation of which I will proceed to explain, reference being had to the annexed drawings and the letters and figures thereon, in which—

Figure 1 is a vertical central section, and Fig. 2 an end elevation.

The nature of my invention consists in the construction and arrangement of a ratchet-drill, as will be hereinafter more fully set forth.

Referring to the drawings, A represents the main frame of the drill, depressed somewhat at the top to prevent pressure causing the frame to spread, and extending downward to support the drill-shaft *y*, and at one side at right angles with its other extension to support the driving-shafts S and S′. The driving-shaft S is provided at its outer end with the ratchet-wheel *e* and at its inner end with the miter-wheel *r′*, both of which are firmly keyed to it or held firm by set-screws. The hollow driving-shaft S′ is sleeved upon the driving-shaft S, and is also provided at its outer end with the ratchet-wheel *e′* and at its inner end with the miter-wheel *r*, both firmly fixed thereto by means of keys or set-screws. The upper end of the drill-shaft *y* is provided with the miter-wheel *r″*, firmly fixed to it, and which meshes with both the other miter-wheels *r* and *r′*, and from them receives a continuous forward rotary motion.

The operating-lever B is boxed upon the outer end of the driving-shaft S between the ratchet-wheels *e* and *e′*, and is provided with the two pawls *o* and *o′*, arranged one on either side of the operating-lever B, so that the pawl *o* engages with the teeth of the ratchet *e* and the pawl *o′* engages with the teeth of the ratchet *e′*. The teeth of the ratchets *e* and *e′* are turned in opposite directions. It will be readily seen that by moving the operating-lever B in one direction the pawl *o*, operating on the ratchet *e*, will rotate the driving-shaft S, and as the miter-wheel *r′* is attached to said driving-shaft S it will rotate the miter-wheel *r″* and with it the drill-shaft *y*. As the operating-lever B is moved in the opposite direction the pawl *o′* engages with the ratchet-wheel *e′*, which rotates the hollow driving-shaft S′, and the miter-wheel *r*, which meshes with the miter-wheel *r″* on the upper end of the drill-rod *y*, and rotates the said drill-rod *y* in the same direction it was rotated by the reverse motion of the operating-lever B, so that as the operating-lever B is moved back and forth it imparts a continuous rotary motion to the drill in the same direction.

In Fig. 2, B′ is an extensible sleeve on the operating-lever B, to lengthen it to any desired length, and held at any place by the set-screw at its lower end.

The springs *v* and *n′*, that operate on the pawls *o* and *o′*, to hold them down to work, may be turned backward, as shown in said Fig. 2 in the dotted lines, to relieve the pawl from pressure on the ratchets, or on one of the ratchets, when the adjustable crank *a* is attached to the operating-lever B, and it is rotated forward continuously instead of operating the operating-lever B back and forth, as stated, so that the ratchet not in use will not be worn by its pawl needlessly. The steadying-handle F has an eye at its inner end, which fits over the lower hub or projection of the frame A loosely. The eye of said handle F is cut and provided with gripes and a bolt, F′, passing through said gripes to hold them together, by means of which arrangement the handle F may be held firmly at any place or any position desired. A loose washer, *z*, is placed on the drill-shaft *y*, between the frame A and the shoulder of the said drill-shaft *y*, as shown in Fig. 2, so as to prevent friction and wear of the parts.

The arrangement to feed the drill to its work consists of the barrel P, being a continuation and a portion of the frame A, and threaded on its inner surface to receive the feed-screw *c*, to which screw *c* is attached a cap, D, by means of a pin, *c′*, at its upper end, by means of which cap D the feed-screw is rotated to drive the machine to its work, the point at the upper end of the feed-screw *c* being placed against some resisting object. The cap D not only forms a convenient object for the hand to grasp to rotate the feed-screw *c*, but forms a shield or cover to the other parts to keep them free from dirt or injury.

The sleeve *w* on the shaft S is to prevent a

nearer approach of the miter-wheels r and r' to each other.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. In the ratchet-drill described, in combination with the frame A, the hollow shaft S′, having the miter-wheel r and ratchet e', rigidly fixed thereto and sleeved upon the shaft S, having the miter-wheel r' and ratchet e, rigidly fixed thereto, miter-wheel r'', drill-spindle y, lever B, boxed upon the shaft S and provided with the reversed spring-pawls o and o', and feed consisting of the barrel P, screw c, and cap D, all arranged to operate in the manner and for the purpose set forth.

2. In the ratchet-drill described, the combination of the frame A, bevel-gears r r' r'', shafts S and S′, ratchets e and e', reversed spring-pawls o and o', lever B, provided with the adjustable crank-handle a, steadying-handle F, drill-spindle y, and feed consisting of the barrel P, feed-screw c, and cap D, all arranged to operate in the manner and for the purpose set forth.

WILLIAM SANDIFORD.

Witnesses:
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W. E. COMSTOCK.