S. MOREY.
Hand-Drill.

No. 204,990. Patented June 18, 1878.

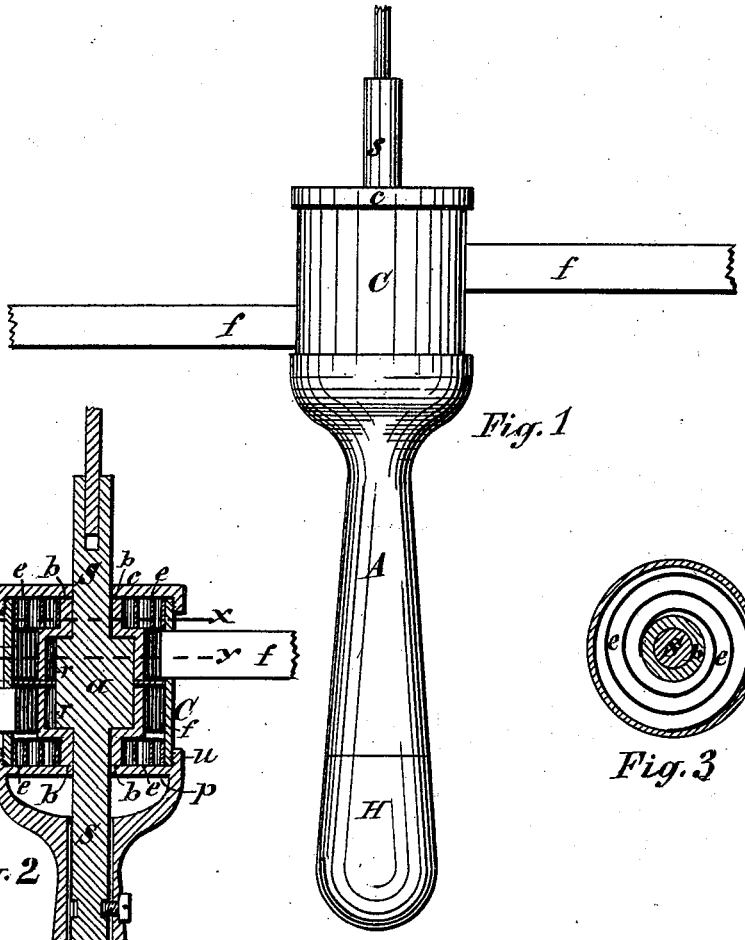

Fig. 1

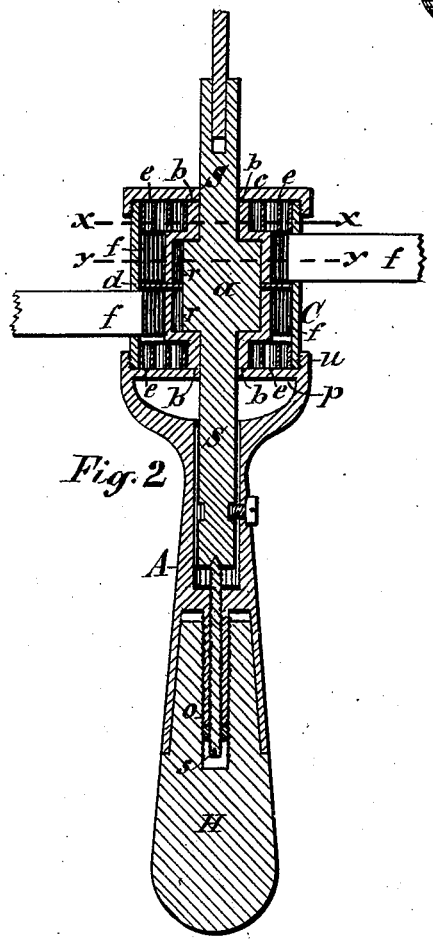

Fig. 2

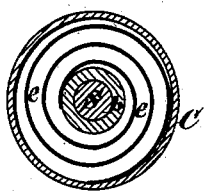

Fig. 3

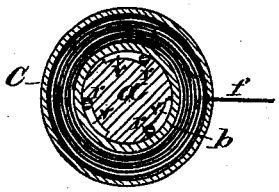

Fig. 4

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STEPHEN MOREY, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN HAND-DRILLS.

Specification forming part of Letters Patent No. **204,990**, dated June 18, 1878; application filed November 20, 1877.

To all whom it may concern:

Be it known that I, STEPHEN MOREY, of the city of Syracuse, State of New York, have invented a new and useful Improvement in Hand-Drills, of which the following, taken in connection with the accompanying drawing, is a full and exact description.

The nature of this invention consists in a novel construction and combination of a drill-stock, drill-spindle, and devices connected therewith, whereby a hand-drill is obtained which revolves the bit in one uniform direction, is operative in places and positions difficult of access and manipulation for ordinary hand or bow drills, convenient and effective in its operation, and simple, strong, and durable in its construction.

The invention is clearly illustrated in the accompanying drawing, wherein Figure 1 is an exterior view of my improved hand-drill; Fig. 2, a longitudinal section of same; Fig. 3, a transverse section on line *x x* of Fig. 2, and Fig. 4 a transverse section on line *y y* of Fig. 2.

Similar letters of reference indicate corresponding parts.

S is the drill-spindle, to one end of which the drilling or boring bit is secured, the other end passing into and being rotated by the following-described stock and mechanism connected therewith. A shank, A, provided at one end with a suitable handle for guiding and steadying the drill, has attached to its opposite end a cylindrical case, C, closed at the forward end by a removable cover, *c*.

The spindle S is arranged longitudinally central in the stock, one end extending into the shank A, and the opposite or bit end protruding through a closely-fitting aperture in the cover or cap *c* of the case, which cap, in conjunction with a set-screw, *s*, in the rear end of the shank, and fitted into a countersink in the end of the spindle, maintains the spindle in its proper axial or central position in the stock.

Within the case C the spindle is provided with a circumferential enlargement, *a*, extending partly the length of the case. In this enlargement of the spindle are a series of longitudinal cam-grooves, *v*, into the deepest part of each of which is fitted a roller, *r*. Midway the length of the case is a diaphragm, *d*, forming two separate compartments therein. In each of these compartments, and extending the length thereof, is a drum or sleeve, *b*, fitted to the therein-contained portion of the spindle and enlargement *a* thereof.

To that portion of the drum *b* surrounding the spindle proper is attached a coiled spring, *e*, confined at its opposite end to the case, and around the portion fitted to the enlargement *a* of the spindle is wound a band or cord, *f*, in such direction that an outward draft thereof will wind up the aforesaid spring, and at the same time cause the roller *r* to traverse toward the shallow portion of the cam-groove *v*, and thus wedge or bind the drum on the enlargement *a*, so as to force the spindle to rotate with it. In relaxing the draft upon the band the spring *e* is allowed to expand, thereby imparting a reversed movement to the drum *b*, which in turn winds up the band *f*, and simultaneously allows the roller *r* to drop into the deep portion of the cam-groove *v*, and thus releases its hold upon the spindle.

The mechanism in one of the chambers is arranged in an inverted position relative to that in the other chamber, and the respective bands *f* pass out in opposite directions through slots in opposite sides of the case. The two mechanisms being separated, and by their before-described arrangement rendered operative independent of each other, one drum, *b*, can engage and rotate the spindle, while the other traverses in a reversed direction, and winds up its respective band. By connecting the outer end of each band *f* respectively to opposite ends of a bow, and reciprocating this bow in the ordinary manner, a nearly continuous movement in one direction is imparted to the drill.

It will be evident to those familiar with the use of drills that by this improved method of operating the drill, smoother work, with a great saving of time, is obtained, and the cutting-edge of the bit preserved much longer.

In order to facilitate the attachment of the described mechanisms to the drill-stock, and to render the same easy of access for repairs or renewal thereof, the end of the shank A next the case C is provided with a plate, *p*, having a central aperture for the passage

through it of the spindle S, and forming one end of the case C, the cylindrical part of which is screwed into a threaded circumferential projection, *u*, of the shank beyond the plate *p*. The other end of the cylinder is closed in like manner by the removable cover *c*.

The spindle is held longitudinally in the stock at one end by the forward shoulder of the enlargement *a*, and at the rear by the set-screw *s*, before described. Any wear or abrasion that may be caused on the shoulders and end bearings of the spindle can be compensated by the set-screw *s*, thus maintaining the implement in a proper operative condition.

To protect the said set-screw, and at the same time provide ready access thereto, the handle H is screwed onto a screw-threaded stud, *o*, in the center of the socket of the shank, which stud constitutes a female screw, through which the set-screw *s* passes.

It will be observed that in case one of the mechanisms in the case C breaks, the drill is still operative by the other; and for some purposes, where the use of the bow is inadmissible, one of said mechanisms may be dispensed with and the drill operated by one band or cord, *f*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The improved hand-drill herein described, consisting of a drill-stock provided with the case C, the drill-spindle S, passing through the case C, and having inside thereof the enlargement *a*, with cam-grooves *v*, the rollers *r*, drums *b*, bands *f*, and springs *e*, all constructed and arranged within the case C, substantially in the manner specified and shown.

2. The within-described mechanism for rotating the drill-spindle, in combination with a drill-stock composed of the shank A, case C, and handle H, substantially as shown and described.

3. In combination with the drill-spindle S, having a shoulder near its forward end, a drill-stock provided in the socket of the shank A with stud *o*, having male and female threads, the set-screw *s*, passing through said stud and fitted into a countersink in the end of the spindle, and the handle H, screwed onto stud *o*, all constructed and arranged substantially as and for the purpose set forth.

4. The combination of the shank A, provided with plate *p* and screw-threaded flange *u*, cylinder C, and removable cap *c* with the described mechanism, and spindle S, substantially as and for the purpose set forth.

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