

T. J. LAVERY.

Improvement in Ratchet-Drills.

No. 130,645.

Patented Aug. 20, 1872.

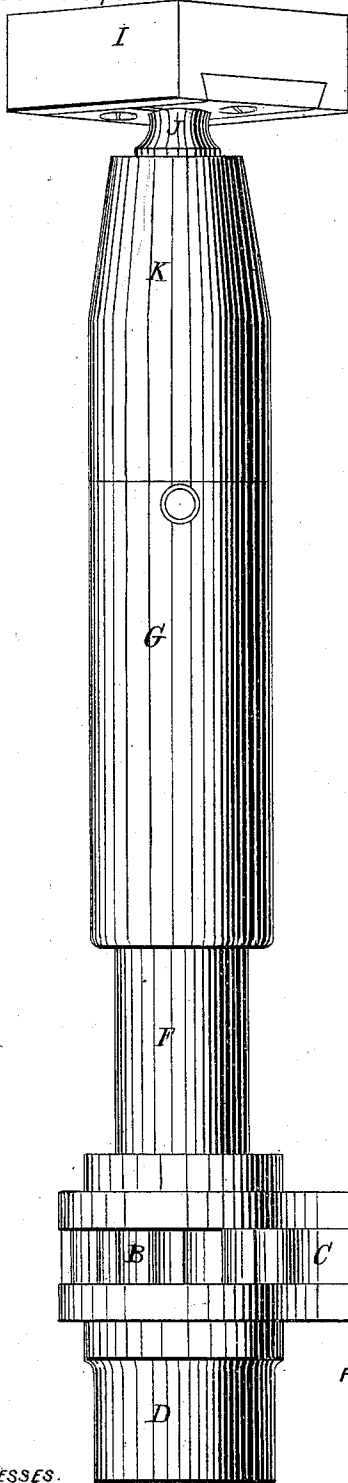


FIG. 1.

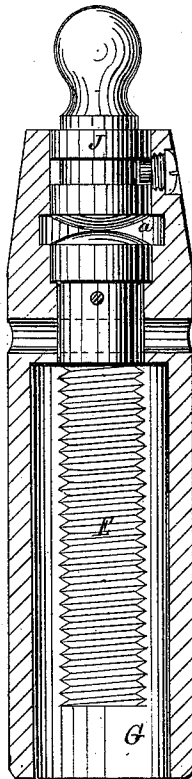


FIG. 4.

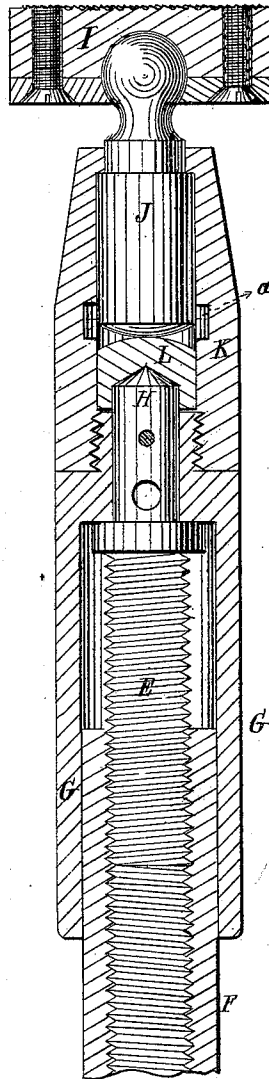


FIG. 2.

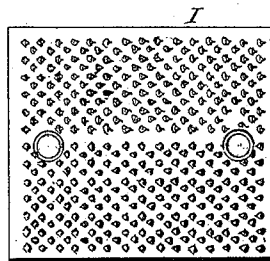


FIG. 3.

WITNESSES.

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IMPROVEMENT IN RATCHET-DRILLS.

Specification forming part of Letters Patent No. 130,645, dated August 20, 1872.

Specification describing certain new and useful Improvements in Ratchet-Drills, invented by THOMAS J. LAVERY, of Boston, in the county of Suffolk and State of Massachusetts.

In the use of ratchet-drills, as heretofore constructed, it has always been necessary to carry with the drill, to the place of use, a short piece of iron or steel plate, with a countersunk recess formed therein, to be employed as a rest for the upper end of the drill-stock, the conical point thereon being placed in said countersink, and revolving therein when the drill is in use. Said rest-plate being made separate from the drill, and having no connection therewith, except when in use, was always a source of trouble, from the fact that it required two men to set a drill in position for use; the plate was liable to slip when placed on an inclined surface and throw the drill out of line, and often falling into out-of-the-way or inaccessible places when using the drill on board ship or in other difficult places. Another source of trouble, arising from the construction and manner of using the old ratchet-drills was the impossibility of properly lubricating the bearing-point in the countersunk rest-plate, which took the whole thrust of the drill. To overcome these objections is the object of my invention; and it consists, first, in attaching the rest-plate to the drill-stock in such a manner that it is always with and forms a part of the same, and so that it may accommodate itself to the surface against which it is desirable to have it bear. It consists, in the second place, in making the outer surface of the rest-plate serrated or roughened, by raising teeth thereon somewhat like a coarse rasp, to prevent it from slipping when placed on an inclined surface. It consists, in the third place, in transferring the point of revolving contact from the rest-plate to a point within the casing of the drill-stock, where the bearing-surfaces can be well lubricated, as will be further described.

Figure 1 of the drawing is an elevation of an ordinary ratchet-drill with my improvement attached thereto, a portion of the handle being broken away, and the rest-plate being shown slightly inclined. Fig. 2 is a

vertical section of the same. Fig. 3 is a plan of the rest-plate; and Fig. 4 is a modification, representing the mode of construction for new drills, Figs. 1 and 2 showing the improvement as constructed to be applied to drills already in use.

A is the ratchet-lever; B, the ratchet-wheel; C, a spring-pawl; D, the drill-socket; E, the feed-screw; F, the shank containing the nut; G, the sleeve inclosing the feed-screw, and by which it is operated; and H, the steel point, which, in working the drills now in use, is placed against the rest-plate, and revolves thereon; all of the above-mentioned parts making up a well-known drill now in common use, the upper end of the sleeve G being slightly altered in order to apply my improvement. I is my improved rest-plate, having its upper surface roughened, as shown in Figs. 2 and 3, and attached to the spindle J by a ball-and-socket joint, as shown. The spindle J is fitted to the casing K in such a manner that it cannot be accidentally removed therefrom, and has its lower end slightly convex. A washer, L, having its upper surface convex, and its lower surface cupped out so as to fit closely onto the point H of the old drill-stock, is placed in the casing K in such a position that the spindle J will rest thereon, and, as there will be much less friction between the two convex surfaces of the washer L and spindle J than between the ball at the upper end of the spindle J and its socket in the rest-plate, or between the under side of said washer and the conical point H, it is evident that the point of revolving contact will be between said convex surfaces, instead of between the upper end of the spindle J and the rest-plate I, and, as said convex bearing-surfaces are inclosed in the casing, they can be kept well lubricated, said casing being provided with an oil-chamber, *a*, for the purpose. The casing K, as shown in Figs. 1 and 2, is made separate from the drill-stock proper, and screwed thereto, so as to become virtually a part of the drill-stock; this being done in order to apply my improvement to drills already in use; but in the manufacture of new drills with my improvement I propose to make the casing K and the sleeve in one piece; and also the feed-screw E and washer L in con-

piece, as shown in Fig. 4, thereby reducing materially the whole length of the improved drill.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a "ratchet-drill," commonly so called, arranged to be operated by means of a lever and pawl, and provided with a feed-screw, the rest-plate I, permanently attached thereto by means of a ball-and-socket joint, or its equivalent, so as to operate substantially as described, for the purpose specified.

2. The arrangement in the casing K of a ratchet-drill stock, of the convex-bearing surfaces J and L to receive the thrust of the drill, and upon which the drill-stock revolves, substantially as described, for the purposes specified.

Executed at Boston this 16th day of April, 1872.

THOMAS J. LAVERY.

Witnesses:

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