C. B. HUNT.

Process of Manufacturing Twist-Drills.

No. 167,766. Patented Sept. 14, 1875.

Fig 1.

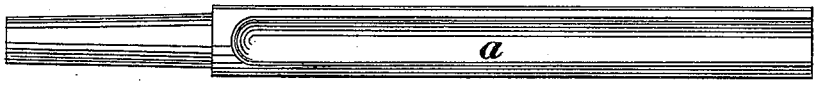

Fig 2.

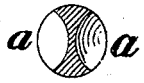

Fig 3.

Fig 4.

Witnesses;

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UNITED STATES PATENT OFFICE.

CHARLES B. HUNT, OF SPRINGVILLE, PENNSYLVANIA.

IMPROVEMENT IN PROCESSES OF MANUFACTURING TWIST-DRILLS.

Specification forming part of Letters Patent No. **167,766**, dated September 14, 1875; application filed May 1, 1875.

To all whom it may concern:

Be it known that I, CHARLES B. HUNT, of Springville, in the county of Susquehanna and State of Pennsylvania, have invented a new and valuable Improvement in Twist-Drills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of the bar of steel after the first process of hammering. Fig. 2 is an end view of the same. Fig. 3 shows the finished and twisted drill. Fig. 4 shows an end view of the same.

This invention has relation to drills; and the novelty consists in the manufacture of a twist-drill, as will be hereinafter more fully set forth.

In the accompanying drawings, *a* represents a bar of steel, forged, swaged, or hammered to the required size, producing two concave and two convex faces in the length thereof.

By swaging or hammering the steel bar, it becomes firm and solid in the central part, or that portion of the drill that should be the strongest.

When the steel bar is fully hammered or swaged into the required form, as shown in Figs. 1 and 2, it is then twisted while hot with a regular and even twist, and terminating with a curved lip or cutting-edge, *b*, as shown in Figs. 3 and 4. The twisted drill is then again hammered or forged. The cutting-lips *b b* are made with a slight curve, as shown in Fig. 4, for the purpose of narrowing the chips as they are being cut, so that they will be readily ejected and less liable to clog the flukes or grooves when deep holes are being drilled.

The drill is tempered equally throughout its length before and after the hammering or swaging. The steel in its natural state has no grain or fiber. By twisting the bar while hot the grain or fiber, which follows the curve of the grooves, greatly increases the strength, smoothness, and durability of the drill.

The object sought in forging or hammering and twisting a steel bar is to preserve the full crystalline strength of the steel, the process only modifying the form of the crystals and their arrangement, not impairing their power of resistance, as in the case where the spiral fluting is produced by cutting away the metal.

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

The process of forming a twist-drill consisting in tempering the blank, then forging or hammering it into the form of two straight grooves with a curve at top and bottom, then twisting it while hot, and again hammering and tempering it, substantially as described.

CHARLES BROWN HUNT.

Witnesses:
J. M. TOLLMAN,
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