

(No Model.)

F. E. WHITNEY.

MANUFACTURE OF TWIST DRILLS.

No. 341,084.

Patented May 4, 1886.

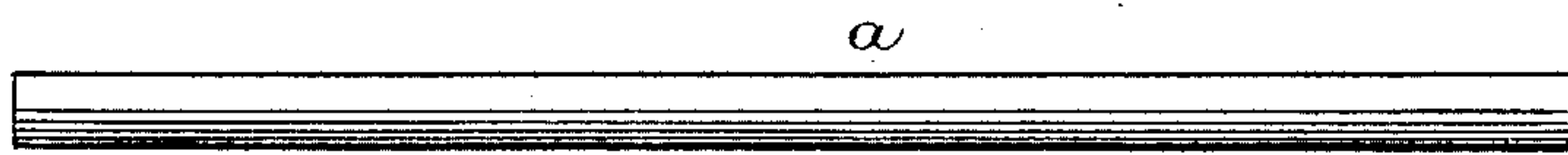


Fig- 1.



Fig- 2.

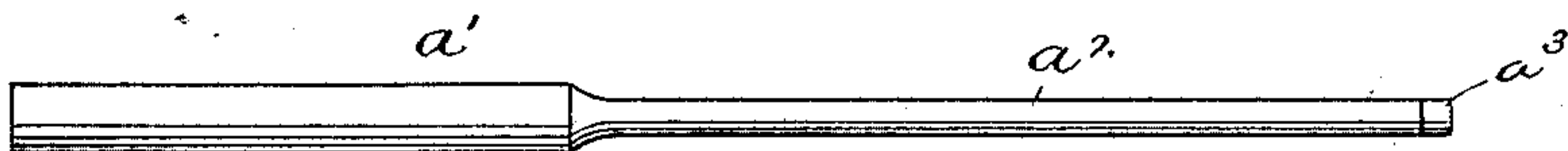


Fig- 3.



Fig- 4.

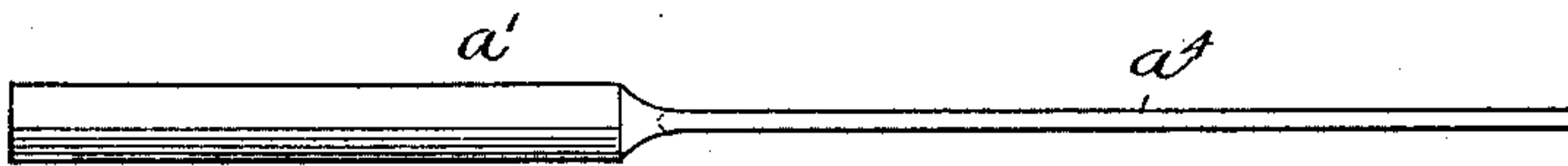


Fig- 5.



Fig- 6.



Fig- 7-



Fig- 8.



Fig- 9-

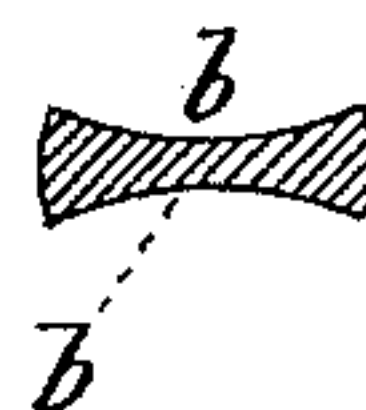


Fig- 10.

WITNESSES

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FRANK E. WHITNEY, OF MELROSE, MASSACHUSETTS.

MANUFACTURE OF TWIST-DRILLS.

SPECIFICATION forming part of Letters Patent No. 341,084, dated May 4, 1886.

Application filed January 29, 1885. Serial No. 154,301. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. WHITNEY, of Melrose, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature.

The invention relates to the class of drills known as "twist-drills."

Referring to the drawings, Figure 1 represents in plan, and Fig. 2 in end elevation, the blank from which the drill is made. Fig. 3 shows in plan, and Fig. 4 in end elevation, the shape to which the blank is first reduced. Fig. 5 is a plan, and Fig. 6 an end view, representing the shape of the blank after a second shaping. Fig. 7 is a plan, and Fig. 8 an end view, of the complete drill; and Figs. 9 and 10 show in section modifications hereinafter referred to.

In the manufacture of my improved drills I first form wire blanks *a* of the proper length and size. The blanks are then cold-rolled from shank *a'* to point, whereby the section *a''* is reduced in size, as represented in Fig. 3. The end *a'''* of the blank is then severed, say, from one-quarter to three-sixteenths of an inch back. The section *a''* of the blank is then further reduced by cold-rolling or by swaging, so as to form a shape, *a'''*, which is flattened, as represented in Fig. 6. The shank *a'* remaining of the same size, the blank is then submitted to the operation of a twisting device, whereby the part *a''* is cold-twisted, (see Fig. 7,) and the point is then formed by grinding.

The complete drill has the shank *a'*, which is the full size of the blank before shaping, and a twisted section made from the drawn or reduced part of the blank, and is therefore provided with a large shank, whereby it may be firmly grasped or held, and a stiff, tenacious, and strong working-section.

In lieu of forming the blank to the shape

represented in Fig. 6, I may cold-roll in the flattened blank the grooves or depressions *b*, so that the blank before twisting shall have either the cross-section represented in Fig. 9 or that shown in Fig. 10. For the larger form of drills perhaps this construction may be desirable, as it reduces the thickness of the metal at the center or portion of the drill-blank which forms the point of the drill.

For certain kinds of drills, especially for drills having a sharp pitch, it will be desirable to anneal the blank before it is twisted, in which case of course it is hardened after the twisting operation. This process of making a drill by cold rolling and twisting provides a cheap, quick, and economical process for making a very superior drill, as the drill thus formed has all the advantages which come from working metal cold rather than hot, and at the same time enables a comparatively large shank to be obtained. It has increased strength, because more rigid. It has a more uniform twist, because when twisted all parts are of the same diameter, and of course offer uniform resistance to the twisting-nut. There is also no waste of stock, as all the metal, excepting the end, is utilized in forming the drill.

The drill shown in Fig. 7 is especially applicable for wood-work and small drills, and as the reduced part of the blank is of substantially the same thickness throughout, and as the edges are rounded, I am enabled to obtain a very stiff and strong construction in a light or small drill.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

The process of manufacturing drills consisting in forming a blank, reducing or flattening a portion of the blank by cold-rolling, and then cold-twisting said portion, all substantially as and for the purposes described.

FRANK E. WHITNEY.

Witnesses:

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