W. TUCKER.

Manufacture of Augers.

No. 208,651. Patented Oct. 1, 1878.

Fig. 1.

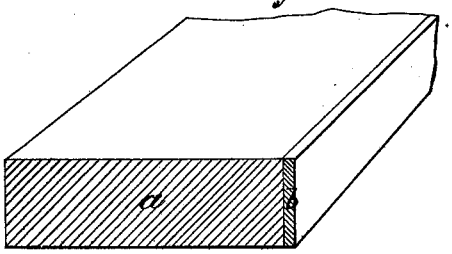

Fig. 2.

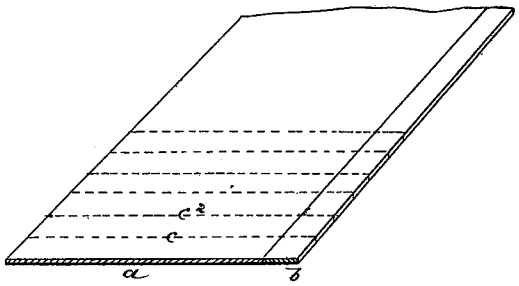

Fig. 3.

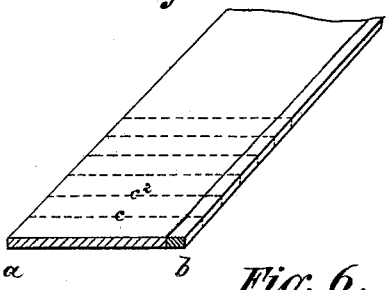

Fig. 4.

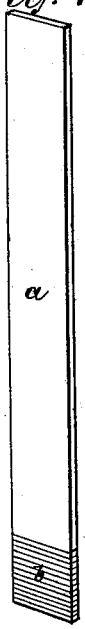

Fig. 5.

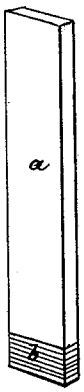

Fig. 6.

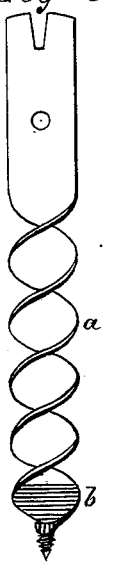

Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM TUCKER, OF EAST BROOKFIELD, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF AUGERS.

Specification forming part of Letters Patent No. **208,651**, dated October 1, 1878; application filed March 4, 1878.

To all whom it may concern:

Be it known that I, WILLIAM TUCKER, of East Brookfield, in the county of Worcester, Massachusetts, have invented a new and useful Improvement in the Art of Manufacturing Augers, of which the following is a full, clear, and exact description.

This invention relates to the manufacture of twist-augers or auger-bits; the object of the improvement being to produce tools of the very finest cutting qualities cheaper than those made of one kind of steel, of greatly inferior quality.

My said invention consists in a peculiar method or process of producing augers or bits possessing the said advantage, as hereinafter set forth.

Figure 1 of the accompanying drawing is a sectional perspective view of a large piece of steel illustrating this invention. Figs. 2 and 3 are sectional perspective views of thin bars or plates of the same material. Figs. 4 and 5 are perspective elevations, on a larger scale, of two bit-blanks cut from the latter; and Figs. 6 and 7 are elevations of different styles of auger-bits made from the respective blanks.

Like letters of reference indicate corresponding parts in the several figures.

In carrying out my present invention I weld or unite in large masses two qualities of steel, *a b*, one of them, *a*, of a cheap grade that will not harden, and, of course, would not alone make a cutting-edge. This forms the great bulk of the product. The other, *b*, is "gilt-edge," or the finest steel, of which only enough is used to form the cutting parts of the tools for which the steel is intended, and this is so disposed in the ingot or lump as to lie uniformly along one edge of a bar produced therefrom, as illustrated in Fig. 1. The heavy bar of variable proportions (represented by Fig. 1) is next reduced by rolling to a thin flat bar or plate, such as represented by Fig. 2 or 3, of the proper dimensions in cross-section for the length and thickness of blanks for any given style and size of augers or bits. The thin bars or plates are next cut transversely into blanks, Figs. 4 and 5, of the proper width, as illustrated by dotted lines *c* c^2, Figs. 2 and 3, and these blanks, in their turn, are converted by any known or approved process into augers or auger-bits—such, for example, as are represented by Figs. 6 and 7.

Fig. 6 represents one of my peculiar "all-twist" bits, patented December 29, 1874, and the thin plate represented by Fig. 2 is adapted to furnish proper stock for a blank, Fig. 4, suitable to be twisted into this style of bit.

Fig. 7 represents an ordinary bit, the blank of which is swaged to form the head and shank and reduce the blade before the latter is twisted. Fig. 5 represents a suitable blank for such a bit, and Fig. 3 stock from which such blanks may be cut.

The flat bars or plates will preferably be made at steel-works and sold to the trade, to be cut up into blanks by auger-manufacturers.

The repeated rollings of the metal completely unites the two qualities of steel, so as to absolutely preclude any separation at the weld.

The relative proportions of the two grades of steel and their relative fineness are not fixed, but must depend somewhat on circumstances.

I am aware that compound rolled bars of iron and steel have been made of various proportions and shapes, and for various purposes. Such bars could not, however, be cut transversely into blanks for augers or bits, for the reason that the grain or fiber of the iron, which lies longitudinally in the bar, would thus be rendered transverse in the bit, and this would not do, as it would not give the requisite stiffness to the tool, and, moreover, the grain of iron, running across the blank, would tear in twisting. Steel, on the contrary, can be made up either way of the bar without difference in the result.

The structural peculiarity of steel, unaffected by rolling, renders it thus essentially different from any quality of rolled iron for the purposes of this invention. The combination of different grades of iron and of iron and steel is, therefore, disclaimed as old, and as incapable of use for the purposes of this invention.

The following is what I claim as new and of my own invention, and desire to secure by Letters Patent, namely:

The method of making augers or auger-bits herein specified, consisting in welding together two qualities of steel in large masses, reducing the metal to thin bars or plates of proper proportions in cross-section, with the finer steel at one edge, cutting these bars or plates transversely into blanks of proper width, and subsequently twisting the blanks and forming the cuts by any approved apparatus, the said cuts being formed from the said finer steel.

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