

W. TUCKER.

Manufacture of Twist-Augers.

No. 158,337.

Patented Dec. 29, 1874.

FIG. 1.

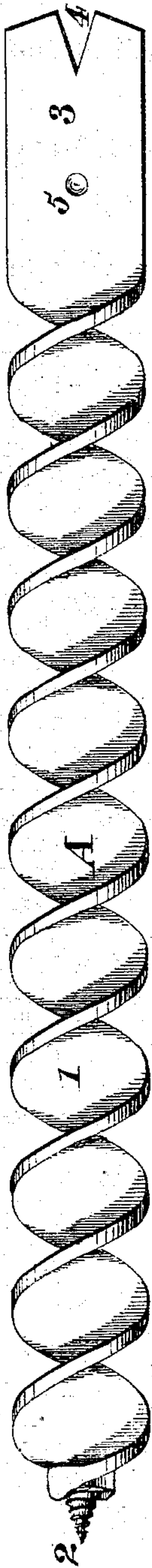


FIG. 2.

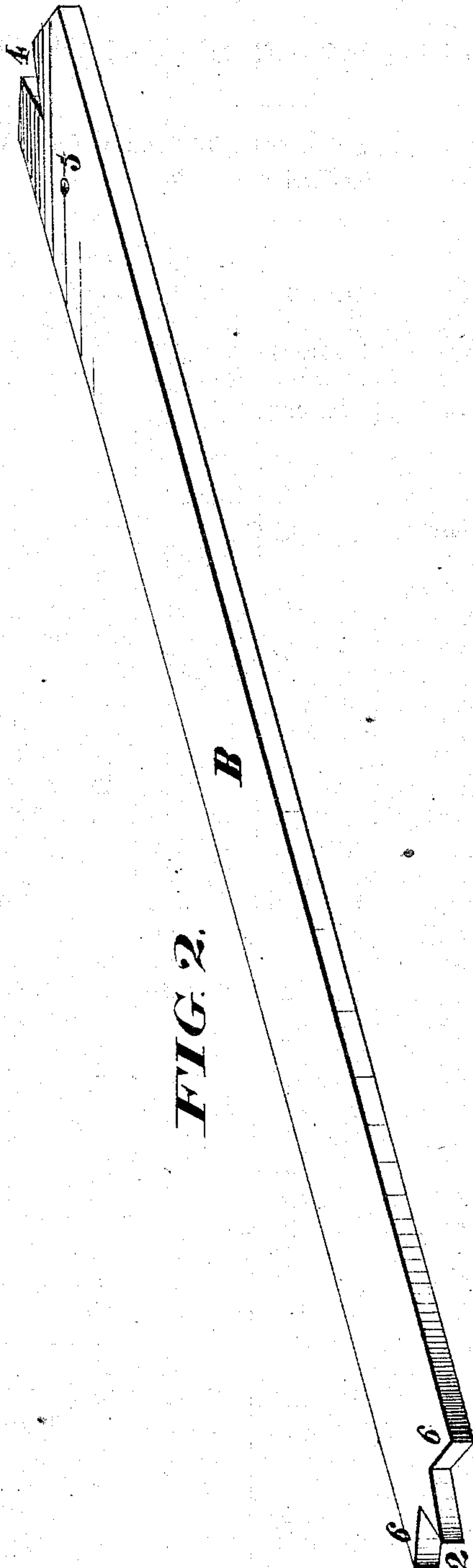


FIG. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN THE MANUFACTURE OF TWIST AUGERS.

Specification forming part of Letters Patent No. 158,337, dated December 29, 1874; application filed September 19, 1874.

*To all whom it may concern :*

Be it known that I, WILLIAM TUCKER, of Fiskedale, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in the Art of Manufacturing Augers and Auger-Bits, of which the following is a specification:

This invention relates to the production of screw, spiral, or twist augers and auger-bits, and has for its general objects the cheapening and improvement of these goods.

The present improvement relates primarily to the direct employment or use of stock as it comes from the steel-works in the form of flat rolled bars, without preliminary swaging.

The invention consists, first, in rolling the metal into flat bars of the required width and thickness for each size or pattern of bit or auger, then cutting therefrom flat blanks of the required length, and subsequently twisting, heading, and finishing the bits or augers, as hereinafter set forth. The invention consists, secondly, in the production of a peculiar shape of blank, adapted at its respective ends to form the screw-point and a peculiar shank or handle end, the same being cut from the flat bar, without any waste of stock, at a single operation, and of any length required.

The product is adapted to have a twisted portion of the entire length of the bit or auger, which possesses several peculiar advantages. This and a form of stock or holder adapted to the peculiar bit or auger constitute the subject-matter of separate inventions.

In the accompanying drawing, Figure 1 represents a side view of an auger-bit, illustrating the product of this invention. Fig. 2 is a perspective view of the peculiar blank. Fig. 3 is a plan view or diagram illustrating the mode of cutting the blanks from the flat bar.

Steel for the ordinary manufacture of augers and auger-bits comes square in form, and must be of sufficient size to make the square end of the shank of the bit without doubling. The blanks cut from this stock consequently require to be drawn out under trip-hammers, and then brought to the proper size by hammering and gaging preliminary to twisting. The point end of the plate is trimmed in shearing-dies. The common "square" and the round shank are formed in another preliminary operation

by draw-hammering and swaging in dies. The shank has been deemed essential as a connection between the square and the twisted portion. The product of the present invention, in its preferred form, is constructed without any square shank, or shank proper, outside of the holder or bit-stock to which the bit or auger is applied, the entire length of the bit or auger being twisted.

A peculiar construction of the holding end of the bit or auger, and a peculiar holder or bit-stock to receive the same, are incident to this peculiar construction, and constitute, with said primary feature of construction, the subject-matter of other inventions.

A bit, A, of the peculiar construction herein referred to, is represented by Fig. 1. This form of bit has a double spiral twist, 1, extending its entire length, or nearly so, and terminating at its lower end or point in a center screw, 2, with floor and side cuts and spurs, which may be of any approved pattern. Its other end terminates in a flat shank or holding portion, 3, of the same width and thickness as the twisted portion, except as the latter may be drawn out, and thus reduced in section in the twisting operation. The flat shank 3 has in its extremity a V-notch, 4, to receive a corresponding projection within the holder or stock, and a central countersink or depression, 5, in one side to receive the point of a set-screw for clamping the bit in the holder or stock. This peculiar fastening provides for holding bits of various widths and thicknesses perfectly true and tight in one and the same holder or stock.

The process of manufacture fully stated is as follows: The metal is first rolled into flat bars of the required width and thickness for each size or pattern of bit or auger to be manufactured. This may be accomplished in any ordinary rolling-mill in the steel-works. The rolled bars are next divided by transverse cuts into flat blanks B. This may be accomplished by means of cutting-dies or suitable shears. The shaping of the points and of the flat holding ends of the bits or augers may be accomplished at this stage of the process, and simultaneously with the operation of cutting off the blanks, as hereinafter specified, or by a subsequent trimming operation, if pre-



ferred. The flat blanks thus produced by rolling and cutting are ready for twisting, and the next step is twisting the bits or augers, which may be accomplished in any approved twisting-machine, or by the hand process, heading and finishing complete the process, and involve no peculiarity, but may be accomplished by ordinary means and modes. A blank, B, is represented in Fig. 2. This blank is perfectly flat longitudinally, and its cross-section is uniform, and substantially identical with that of the product at any point, except as the latter may be changed in the twisting operation. Any preliminary swaging of the blank is entirely dispensed with.

For forming the screw-point 2 and the peculiar notched holding end 3 4 of the preferred form of product, the blank B is formed with a corresponding central projection, 2, and central notch 4 in its respective ends. The required metal for the cuts is provided for by shorter projections 6 at the sides of the center point formed by oblique outward cuts. The countersink 5 for the reception of the holding-screw is, by preference, drilled in the blank, as represented, but may be formed in the product, if preferred. This blank is adapted to be, and is, by preference, produced of any desired length and complete in form, with the exception of the countersink 5, by severing the same from the flat bar in suitable cutting-dies, two ends of an adjoining pair of blanks being shaped at a single cut, and without any

waste of stock whatever, as illustrated in Fig. 3. The blank center point 2 is composed of the metal cut from the notch 4 of the adjoining blank, and the metal 6 for the side cuts and spurs is taken from the corners of the holding end without detriment to the latter. A superior form of bit or auger of any required lengths and diameters is thus adapted to be manufactured very cheaply.

The following is claimed as new in this invention, namely:

1. The process of manufacturing auger-bits and augers without preliminary swaging, consisting in rolling the metal into flat bars of the required width and thickness, then cutting therefrom flat blanks of the required length, having ends of proper shape, and subsequently twisting, heading, and finishing the bits or augers, substantially as herein described, the product having a twisted portion and a flat holding end or shank.

2. The within-described improvement in the art of manufacturing auger-blanks, which consists in first rolling the metal into flat bars, and subsequently forming at one cut projections on one blank for a point and cutting-lips, and a V-shaped holding-notch in another in the act of severing each blank, as and for the purpose specified.

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Witnesses:

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