SANFORD & SMITH.

Making Augers.

No. 6,305. Patented April 10, 1849.

Fig. 1.

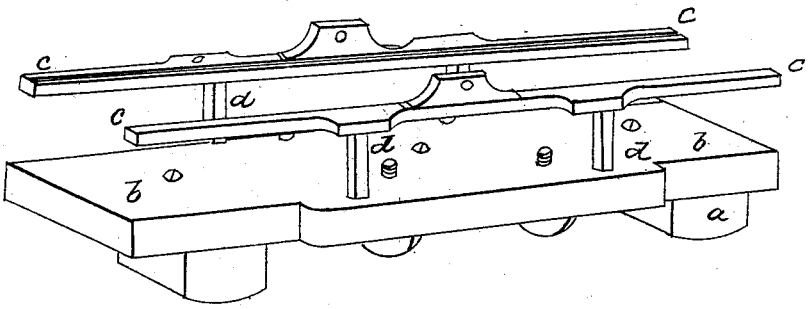


Fig. 2

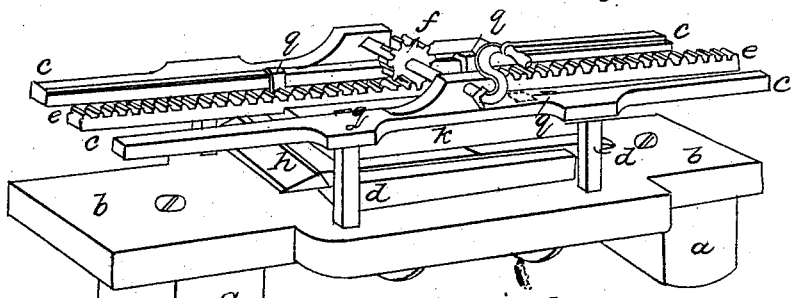


Fig. 3

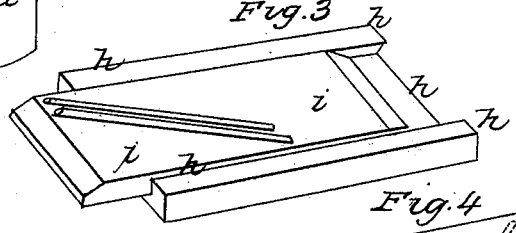


Fig. 5

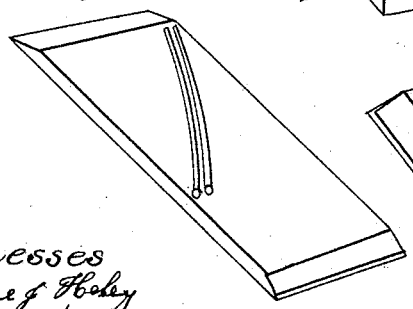
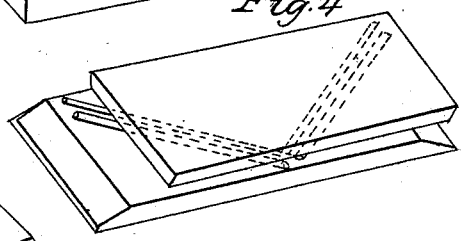


Fig. 4



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UNITED STATES PATENT OFFICE.

NATHANIEL C. SANFORD AND LUCIUS B. SMITH, OF MERIDEN, CONNECTICUT.

MACHINE FOR REGULATING THE TWIST AND DIAMETER OF SCREW-AUGERS.

Specification of Letters Patent No. 6,305, dated April 10, 1849.

To all whom it may concern:

Be it known that we, NATHANIEL C. SANFORD and LUCIUS B. SMITH, both of the town of Meriden, in New Haven county and State of Connecticut, have invented a new and useful improvements in the mode of equalizing and straightening the twist of double and single twist screw-augers, of which the following is a full and accurate description.

We set firmly in the ground, or otherwise secure to the floor, two posts marked (*a*) (see Figure 1) about six feet apart and fifteen inches in diameter, of sufficient length to elevate the machine to a convenient distance from the ground or floor. Upon the upper surface of these posts we place horizontally and secure strongly a stick of timber (*b*), say of oak, about twenty inches wide on its upper surface, and four inches thick. This we term the bed of the machine. Two straight cast iron bars (*c*) about two inches thick and two inches wide, of the same length as the bed, and raised about twelve inches therefrom, are then placed about twelve inches apart, parallel to each other and to the bed. We secure each of these bars to the bed by two vertical iron posts (*d*). Fig. 1, shows the machine as thus far constructed. We then take a piece of cast iron, say two feet long, fourteen inches wide, and one inch thick, with its lateral edges raised about one inch, so as to form a dove-tail on its upper surface. This we call the lower stock and is represented by that portion of Fig. 3 marked (*h*). This stock is placed in the center of the bed between the bars, four set screws passing through the bed and attached to the stock, serve to elevate or depress it at pleasure. Another set screw passing through the center of the stock and through the bed, enables the operator to confine and hold the stock firmly on the first named four set screws. Another piece of cast iron of similar dimensions but with the dove-tail on its under surface, is then placed under the bars, so that about one inch of each lateral edge of the upper surface of its entire length, shall bear upon the under surface of the bars. This we term the upper stock and is held to the bars by four hooks (marked *g* in Fig. 2) attached to the upper surface of the stock, and resting on the upper surface of the bars so as to admit of a sliding movement of this upper stock. This movement is effected by means of a rack (*e*) and pinion (*f*). The rack to be of sufficient strength should be formed of a cast iron bar, about two inches square, and of the same length as the bars with cogs about two inches in length, and is attached lengthwise to the upper surface of the upper stock. The pinions and shaft should be of corresponding dimensions, and being turned by means of crank or winch give an alternate backward and forward movement to the upper stock. Fig. 2, represents the machine with the upper stock (*k*), and the lower stock (*h*), in their respective places, and the rack (*e*) and pinion (*f*) attached. We then insert into these stocks metallic plates or dies of about one inch thickness which fit into, and are securely held by the dove-tails above mentioned. To each of these plates or dies are secured by means of rivets or screws two wales or beads of cast steel, running parallel to each other in an angular direction across the plates or dies. Fig. 3 shows one of these plates or dies (*i*) partially inserted in the stock (*h*). When the plates or dies are separated from their respective stocks the wales or beads upon the plate or die designed for the upper stock, run in the same direction as those upon the plate or die designed for the lower stock, and vice versa so that when the plates or dies are inserted in their respective stocks the wales or beads upon the upper plate or die, run in a reversed or opposite direction from those upon the lower plate or die, forming an angle with each other. The size of the wales or beads will depend upon the size of the auger to be formed, and the angle at which they cross the plate or die must be governed by the openness or closeness of the proposed twist, so that separate plates or dies adapted to each size of auger respectively will be required.

If it is desired to form the auger so as to make what is termed "the graduated twist" it may be effected by slightly curving and also tapering—(as shown in Fig. 5)—the wales or beads, increasing or diminishing the curve and taper in proportion to the degree of graduation contemplated.

The plates or dies are adjusted at the proper distance from each other required by the size of the auger to be formed, by means of the set screws aforesaid.

To operate the machine the crank is turned backward so as to move the upper plate sufficiently far to bring the extremity of the wales or beads on the upper plate di-

rectly over the opposite extremity of the wales or beads upon the lower plate, as shown in Fig. 4. The machine is then ready for operation.

The auger being twisted by hand in the usual way (which can be done with great expedition, as particular nicety in this respect is rendered unnecessary by the use of the machine) is placed while hot in the machine with the part nearest the shank on the wales or beads, which being adapted as aforesaid to the size of the auger to be operated upon, will fill the cavity of the twist. The upper plate is then moved forward by turning the crank or winch, and rolls the twist part of the auger between the plates or dies thus giving it an exact and uniform size, while at the same time the wales or beads operate upon the cavities of the twist, opening or closing them as may be necessary, and by a single forward movement of the machine produces a perfectly even and regular twist. Thus forming a better article, and at less expense than can be done by any method now in use.

We do not claim as our invention the plates or dies as such, neither do we claim any other of the parts or combinations of the machine, except as follows, to wit:—

We do claim as our invention and improvement, and desire to secure by Letters Patent—

The raising upon and securing to the surface of level metallic or other plates composed of hard substance, wales or beads, running either in straight or curved lines, and operated substantially in the manner above specified, for the purpose of forming and perfecting the twist of double and single twist screw augers.

NATHANIEL C. SANFORD.
LUCIUS B. SMITH.

Witnesses:
CATHARINE J. HELSEY,
BENAJAH ANDREWS.