

J. SWAN.  
 Manufacture of Auger-Bits.

No. 208,862.

Patented Oct. 8, 1878.

Fig:1.

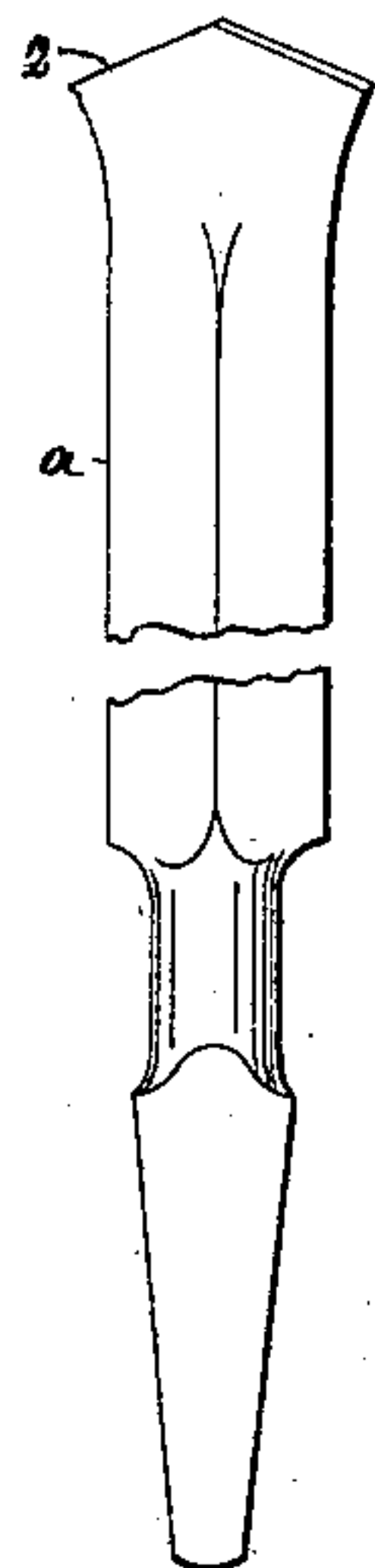


Fig:2.

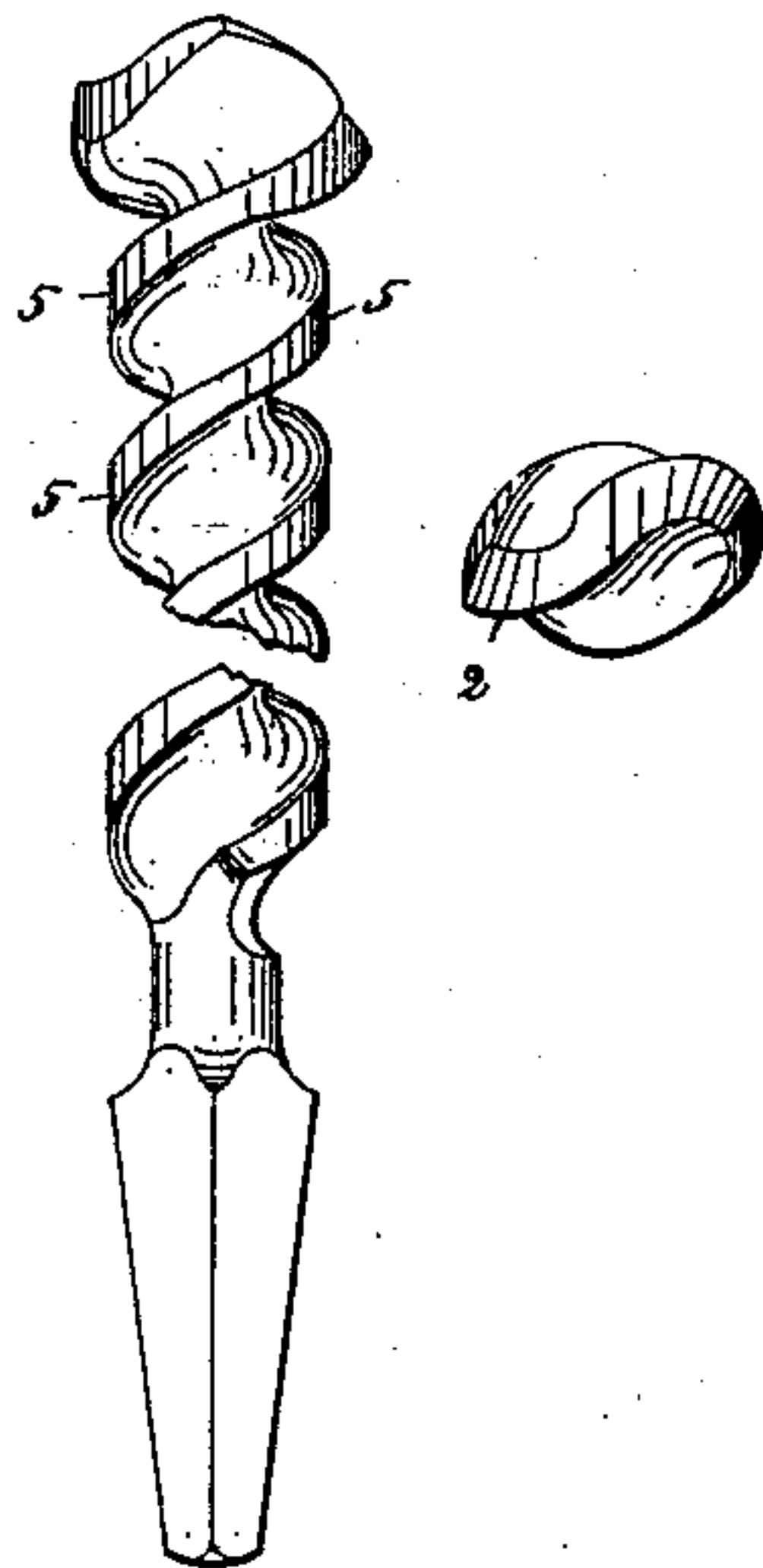


Fig:3.

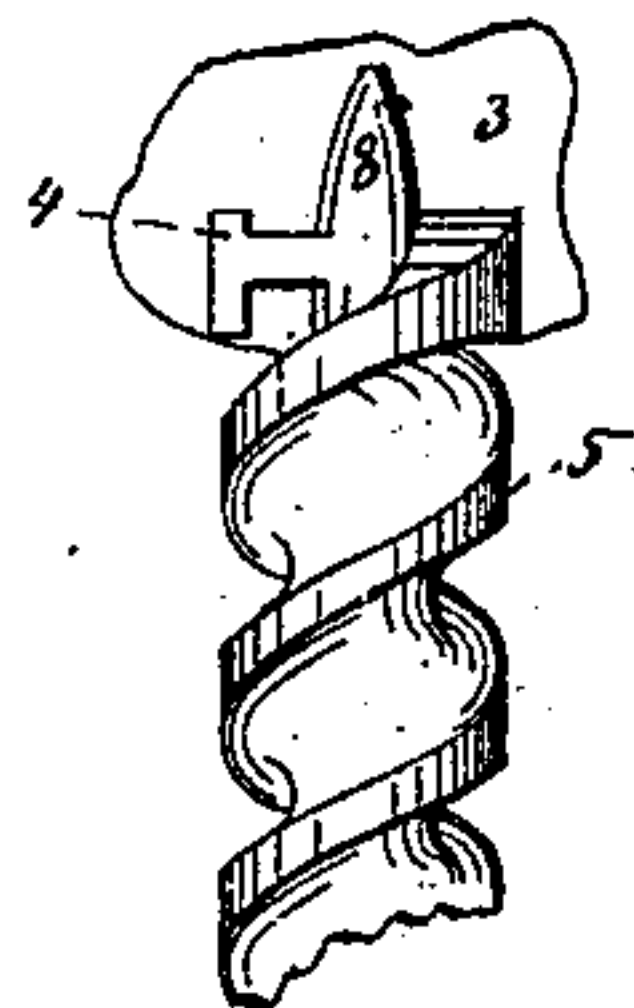


Fig:4.

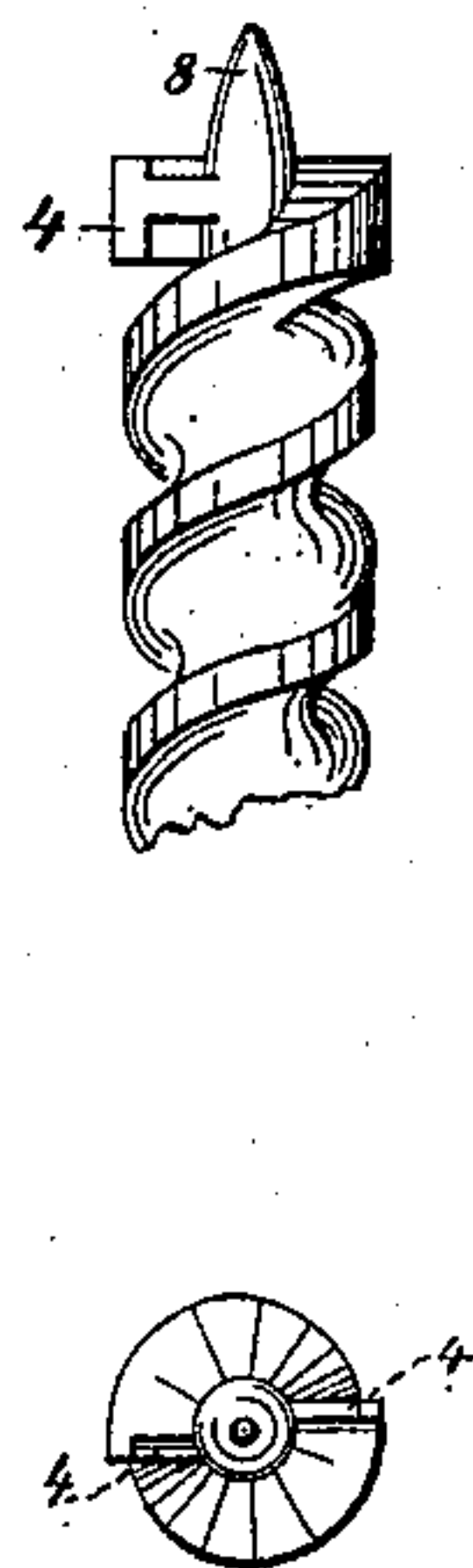


Fig:5.

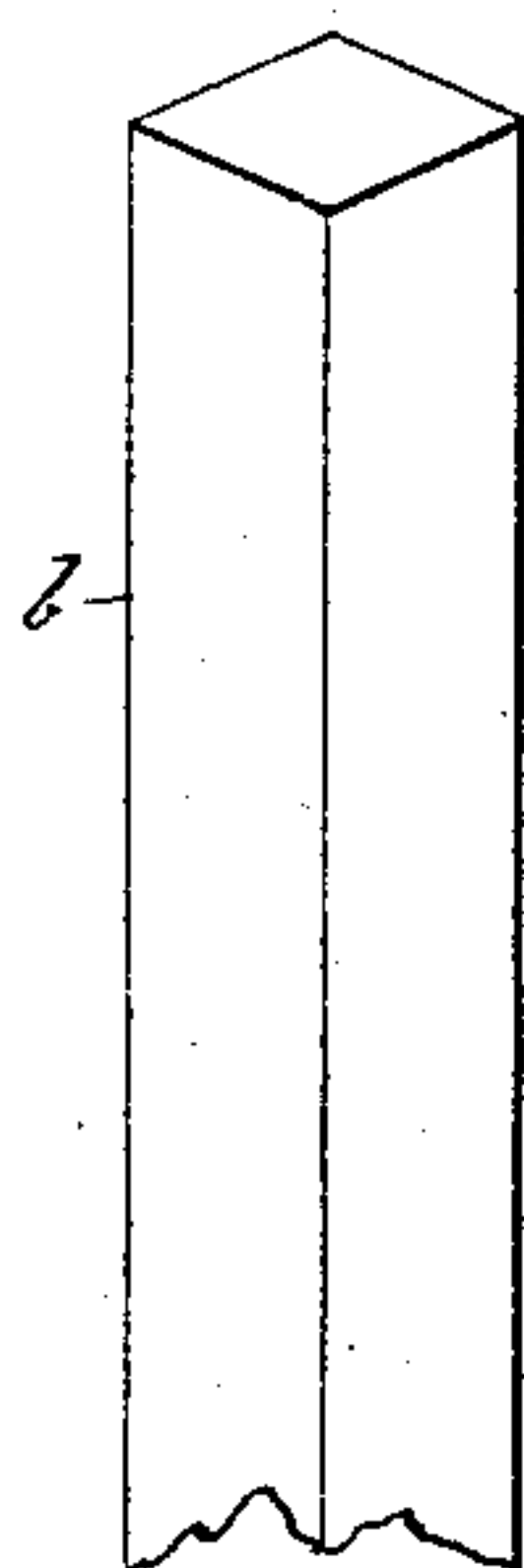


Fig:6.

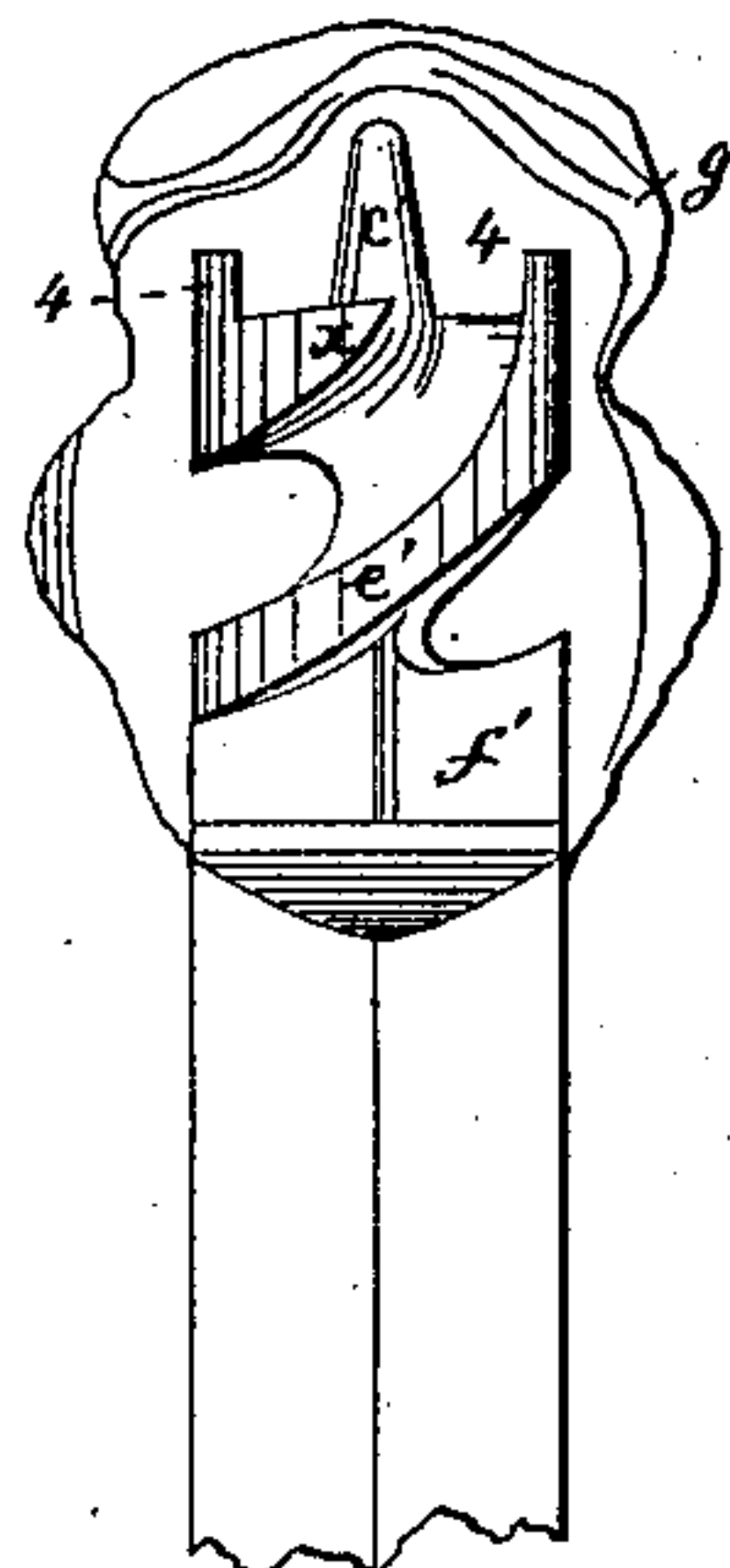


Fig:7.

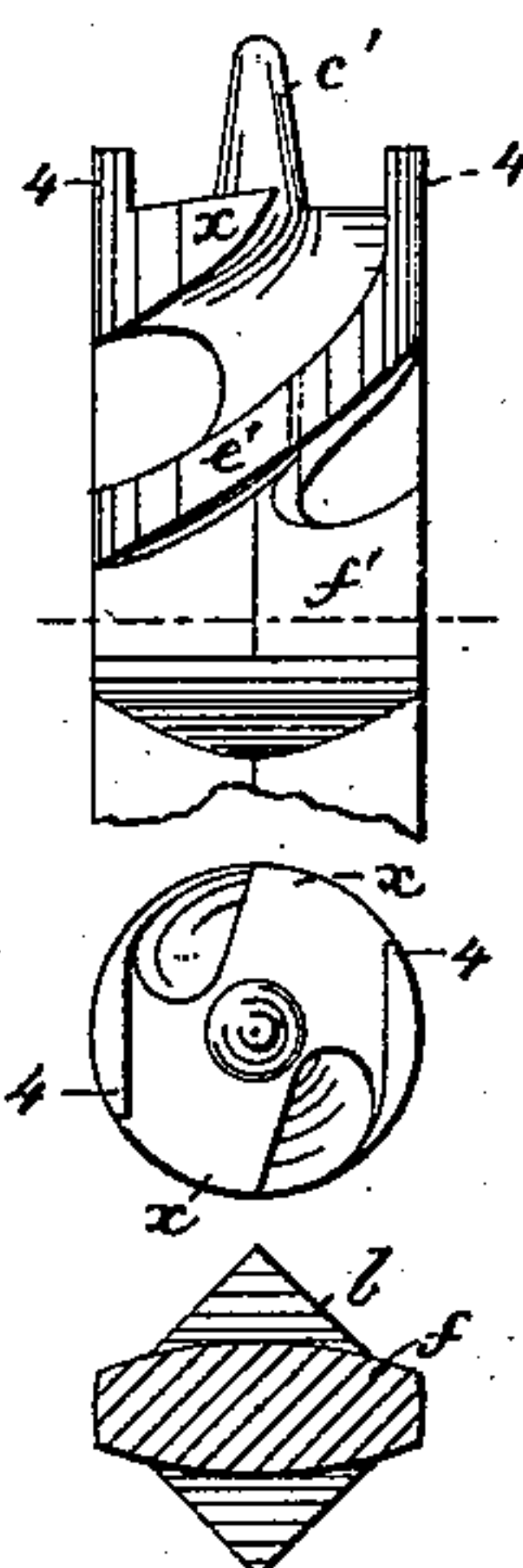


Fig:8.

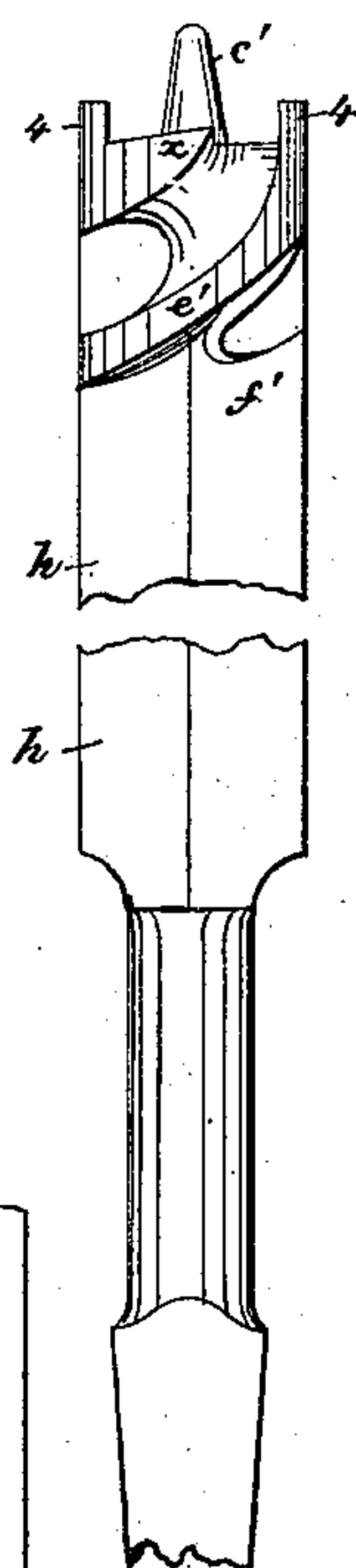


Fig:9.

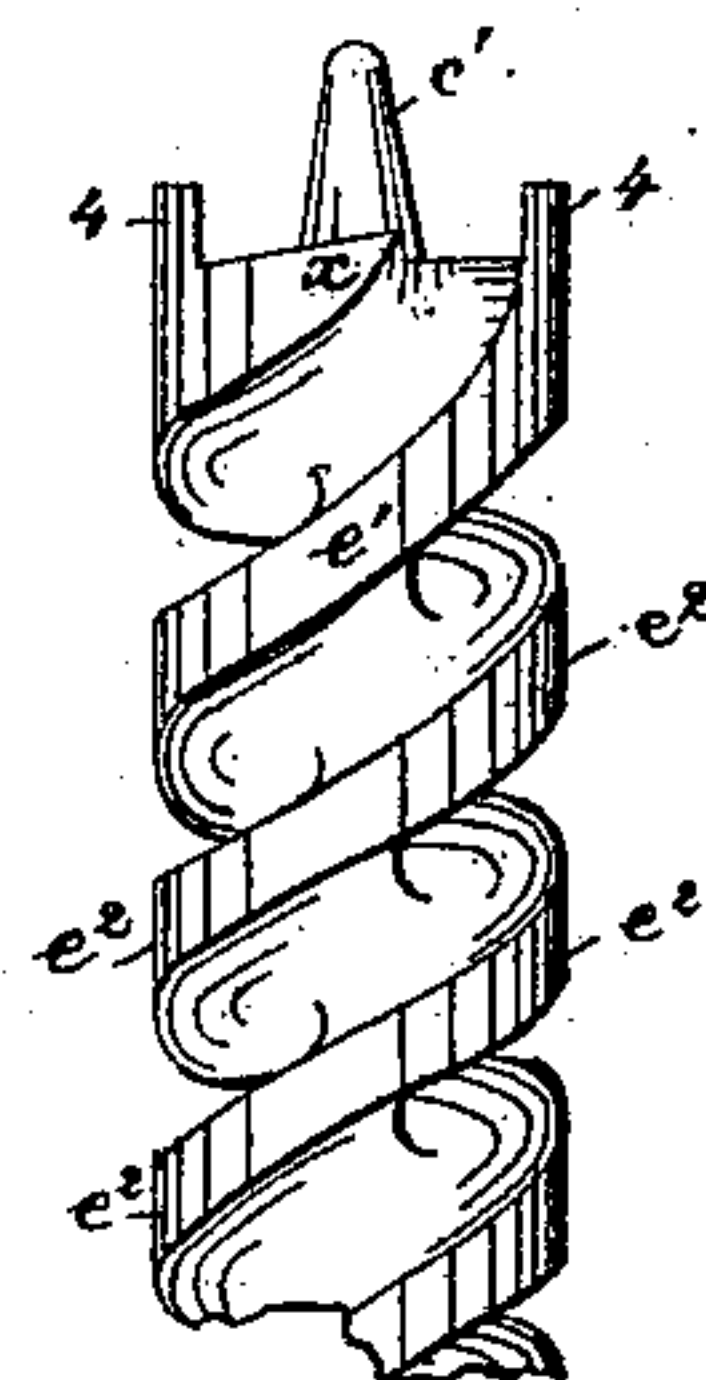
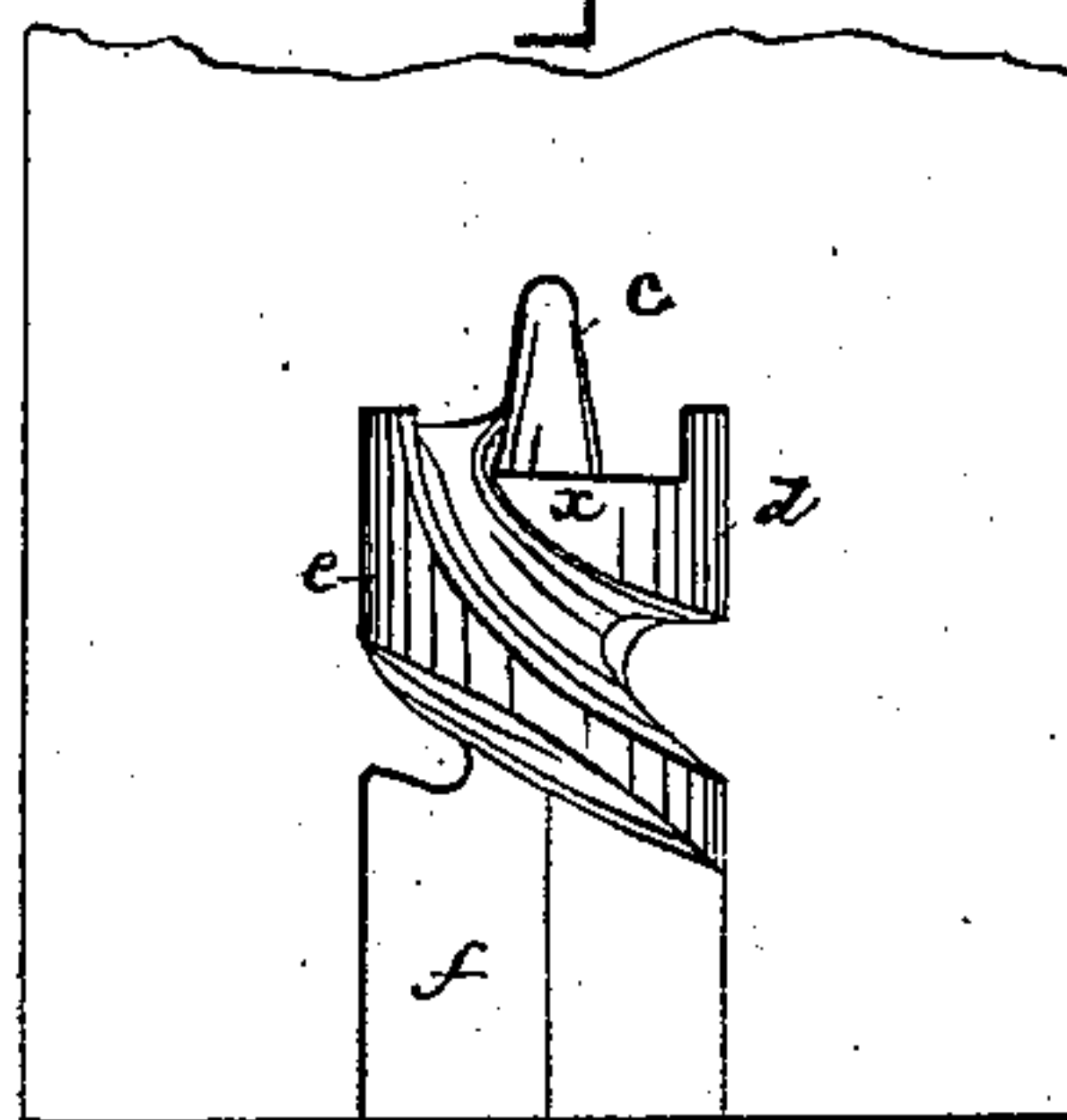


Fig:10.



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# UNITED STATES PATENT OFFICE.

JAMES SWAN, OF SEYMOUR, CONNECTICUT.

## IMPROVEMENT IN THE MANUFACTURE OF AUGER-BITS.

Specification forming part of Letters Patent No. **208,862**, dated October 8, 1878; application filed June 27, 1877.

*To all whom it may concern:*

Be it known that I, JAMES SWAN, of Seymour, county of New Haven, State of Connecticut, have invented an Improvement in the Manufacture of Auger-Bits, of which the following description, in connection with the drawing forming a part thereof, is a specification.

This invention relates to an improvement in the art or method of manufacturing bits or augers, the said improvement being specially valuable in the manufacture of that class of bits in which the floor-lips project beyond the spurs, as, for instance, the well-known "Jennings" bit.

The invention consists in that improvement in the art or method of forming bits, to be hereinafter more fully described, which consists in first subjecting the end of the bit-blank to the action of a die, which forms the head and a portion of the twist back of the cutting portions of the head, then subsequently removing the flash, drawing the blank from the head shaped by the dies to that part of shank which is squared to enter the bit-stock, and twisting the part so drawn to correspond with the twist started by the dies.

Figure 1 represents, in side view, a piece of metal drawn out to be twisted for a bit or auger. Fig. 2 represents the piece Fig. 1 twisted, but unpointed, ready to be placed in the dies described in United States Patent No. 80,027, heretofore granted to me, and an end view thereof; Fig. 3, the said bit after being operated upon by the said dies; Fig. 4, a side view of the bit with the flash removed, and also of the end of the bit; Fig. 5, a blank such as preferably used by me in this my new method. Fig. 6 shows the said blank formed in the dies; Fig. 7, the bit with the flash removed, and an end view and section thereof on the dotted line thereon; Fig. 8, the bit drawn out from the first twist. Fig. 9 shows the drawn bit of Fig. 8 twisted; and Fig. 10 represents one-half the die used to forge or stamp the blank Fig. 5 into the form Fig. 6.

In United States Letters Patent No. 80,027, heretofore granted to me, to which reference may be had, a piece of metal, *a*, drawn out as in Fig. 1, and made thick at its end 2, was

twisted into the form Fig. 2, was laid in a die to stamp the thickened end 2 into the form shown in Fig. 3, after which the flash 3 was removed and the spurs 4 and adjacent portions finished so as to cut, and the center point 8 was threaded.

The die in which was placed the twisted piece of metal, Fig. 2, besides having raised and sunken portions, as shown in the said patent, to form the spurs and center point, had spiral channels to receive the twisted portions or edges 5, but not to shape them.

In that patent the bit was a common one, and the floor-lip did not extend forward beyond the spur 4, as shown in the end view of Fig. 7, which shows a "Jennings" bit, the manufacture of which is the chief aim of my present invention.

The end view (see Fig. 4) of the old bit shows the difference between it and the "Jennings" bit—viz., the absence of the portion *x* of the floor-lip, shown in Fig. 7 as projecting beyond the spur 4.

In this my improved method of manufacturing "Jennings" bits a blank, *b*—preferably a square bar of metal, of a size requisite for the size of the auger to be produced—is placed between like dies, one of which is shown at Fig. 10, the said die having a recess, *c*, for the center point *c'* of the bit, a recess, *d*, for forming one spur, a recess, *e*, for forming the rear half of one spur, and the edge or raised portion *e'*, which represents a portion of the twist; and back of the recess *e* is a smaller recess, *f*, to flatten the metal blank, as at *f'*, so that it may be drawn from the point *f'* back toward the rear end of the blank, as in Fig. 8, for a sufficient distance to produce a bit with a twisted portion or blade of the desired length.

After the die shapes the head of the bit, as in Fig. 6, and starts the twist *e'*, (shown as extended from one spur at one side across to the other side of the bit,) the flash *g* is removed in the usual way, leaving the bit as in Fig. 7. Then the portion of the blank at the rear of the flattened or reduced portion *f'* is drawn out by a suitable hammer, as usual, into the form shown in Fig. 8, and then the portion *h* so drawn out is twisted so that its edges are made to form twists *e<sup>2</sup>* in prolongation of the twist *e<sup>1</sup>* shaped in the die. The bit shown in



Fig. 9 is then finished and sharpened in the usual way.

In the manufacture of "Jennings" bits the end of the blank has to be made quite thick to provide for the formation of the forwardly-projecting portion  $x$  of the floor-lip.

As heretofore practiced, blanks for "Jennings" bits have been drawn out as in Fig. 1; but to provide for the spurs which project forward of the floor-lips, the ends of the said blanks have been made very much thicker than for the manufacture of the common bit represented in Figs. 2 and 3. If one of said thickened blanks suitable for a "Jennings" bit was first twisted, as in Fig. 2, and placed in a die to be shaped for the formation of the head or cutting portion, the movement of the surplus metal of the thickened blank out from the die would disarrange the twist, and such method would therefore be impracticable.

It will be noticed that the dies complete the

shape of the head, including the spurs 4 and projecting floor-lips  $x$ , and also part of the twist, as at  $e^1$ , next the cutting portions of the bit at each side.

The dies are operated in the usual manner as for forging. Each half of the die forms one-half the head.

I claim—

That improvement in the art or method of manufacturing bits or augers which consists in subjecting the blank to the action of dies to form the spurs, forwardly-projecting floor-lips  $x$ , part of the twist  $e^1$ , and a flattened portion,  $f'$ , back of the twist, then drawing the blank and twisting it to prolong the twist started and defined by the dies, substantially as described.

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Witnesses:

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