(No Model.) 2 Sheets—Sheet 1.

O. E. WALLNER.

AUGER.

No. 541,780. Patented June 25, 1895.

Fig. 1.

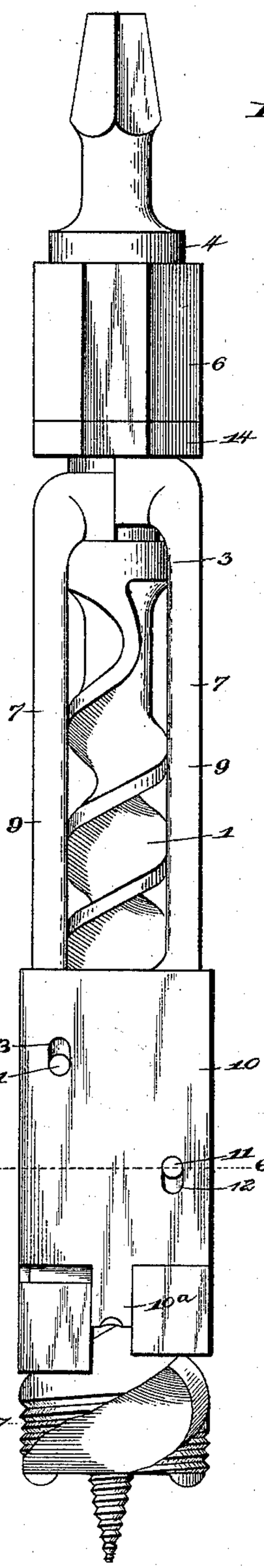


Fig. 5.

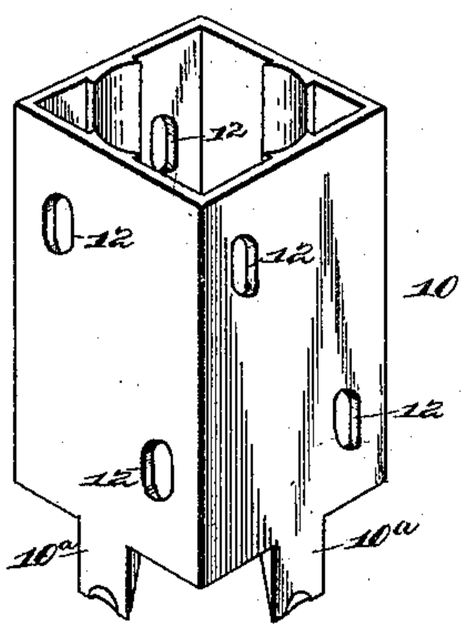


Fig. 6.

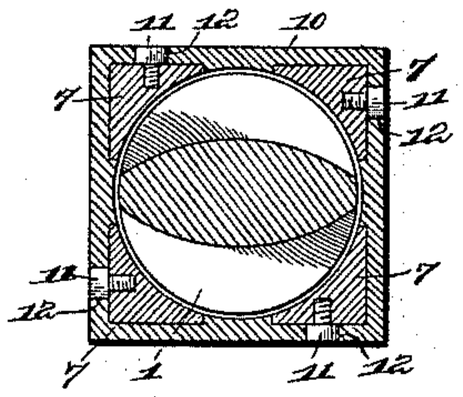
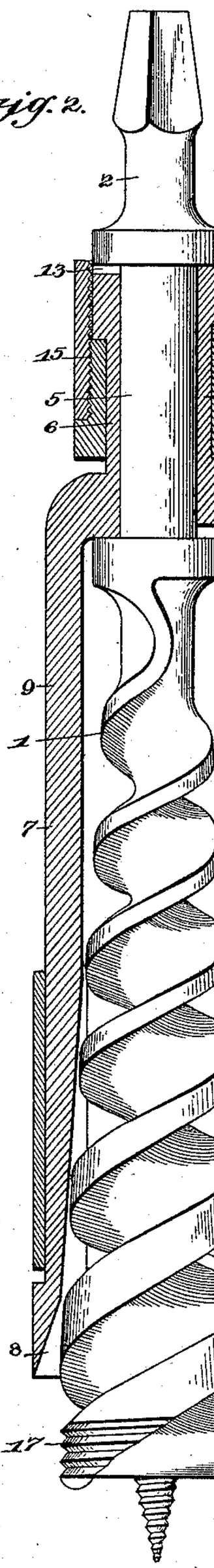


Fig. 2.



Witnesses

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O. E. Wallner.

Inventor

By his Attorneys.

Olof E. Wallner.

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(No Model.) 2 Sheets—Sheet 2.

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No. 541,780. Patented June 25, 1895.

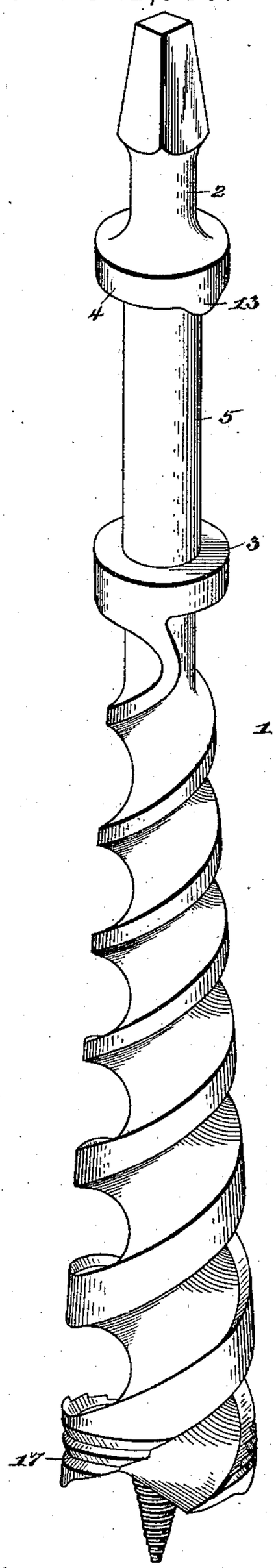

Fig. 3.

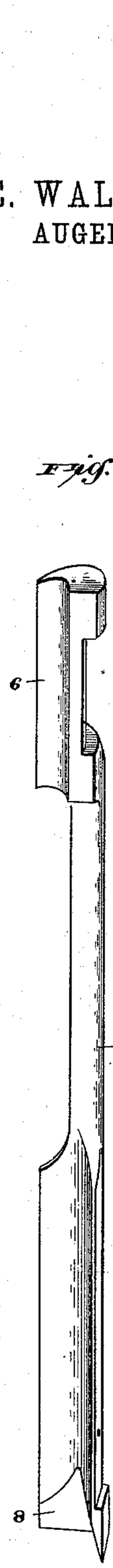

Fig. 4.

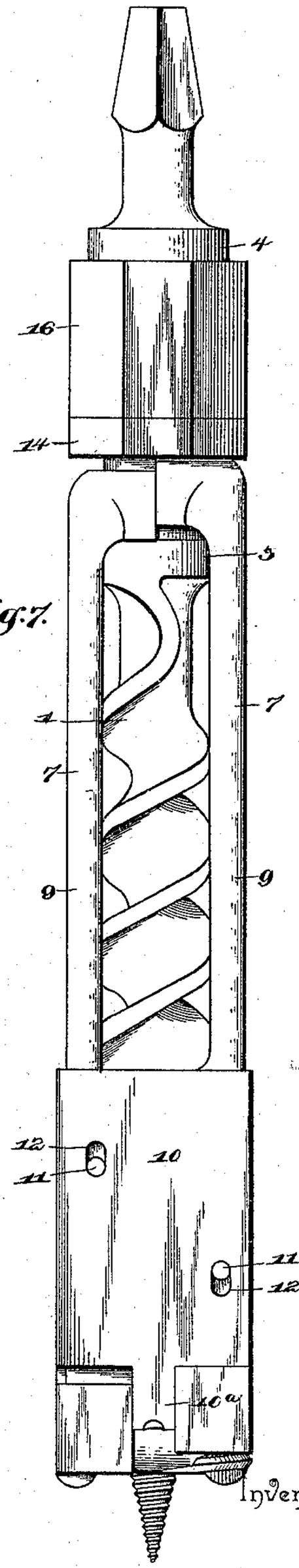

Fig. 7.

Witnesses
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C. E. Wood

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UNITED STATES PATENT OFFICE.

OLOF E. WALLNER, OF SUPERIOR, WISCONSIN.

AUGER.

SPECIFICATION forming part of Letters Patent No. 541,780, dated June 25, 1895.

Application filed January 19, 1895. Serial No. 535,527. (No model.)

To all whom it may concern:

Be it known that I, OLOF E. WALLNER, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented a new and useful Auger, of which the following is a specification.

My invention relates to an auger or boring tool for drilling angular holes; and it has for its object to provide improved mechanism capable of being operated similarly to an ordinary auger and without necessitating a reversal of its position in order to secure symmetry in boring.

Further objects and advantages of the invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side view of an auger embodying my invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a perspective view of the bit. Fig. 4 is a similar view of one of the intermittent angle-cutters. Fig. 5 is a similar view of the intermediate cutters and the sleeve whereby they are carried. Fig. 6 is a transverse section on the line 6 6 of Fig. 1. Fig. 7 is a side view of a slightly modified form of the invention.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a bit, of the ordinary construction with the exception that it is tapered or reduced in diameter toward its upper end. The shank 2 of this bit is reduced to provide shoulders 3 and 4 and an intermediate bearing 5, and upon this bearing are slidably mounted the guides 6, of the angle-cutters 7. In the construction shown in the drawings said angle-cutters are right angular in section and are disposed to form a square within which is arranged the bit 1. The tips or cutting-heads of the angle-cutters are square at their lower extremities, and their inner sides are cut away to form angular channels 8, as clearly shown in Fig. 4. The upper portions of the angle-cutters are reduced or cut away, as shown at 9, to permit the cuttings of the bit to escape laterally.

Slidably mounted exteriorly upon the angle-cutters, and serving as a means for holding the latter in operative positions, is a sleeve 10, which is connected to the angle-cutters by means of bolts 11 carried by said cutters and engaging longitudinal slots 12 in the sleeve. These slots allow a limited vertical movement of the cutters independent of the sleeve. The sleeve carries intermediate side cutters 10^a which are arranged between the contiguous edges of the angle-cutters. The upper ends of the guides 6 are beveled or rounded, and the contiguous shoulder 4, of the shank, carries a cam 13, to engage said rounded or beveled terminals successively to depress the cutters during the rotation of the bit. The guides are channeled upon their outer sides to receive a split collar 14, having a threaded portion 15, which is engaged by a nut 16, to connect the parts of the collar and secure the same upon the reduced portions of the guides in order to maintain the latter in the proper position in their bearing.

The outer surface of the lowermost portion, or portion of the greatest diameter of the bit is threaded, as shown at 17, to score the wood which is subsequently detached by the angle-cutters, and also to perform the additional function of assisting in feeding the auger.

This being the construction of the improved auger, the operation thereof, briefly stated, is as follows:—The manipulation of the auger is similar to that of any tool of the same general nature, and after the bit has entered the wood slightly the cutting edges of the angle cutters will engage the surface of the material and will be held from rotation by such contact. The rotation of the shank of the bit causes the successive depression of the angle cutters by the contact of the cam carried by said shank with the rounded or beveled extremities of the guides with which the angle-cutters are provided. As each angle-cutter is depressed, the sleeve bearing the intermediate cutters is similarly operated, due to the fact that the pins which are carried by the angle cutters are arranged in contact with the lower ends of the slots in the sleeve but owing to arrangement of the pins and slots, the movement of one angle-cutter is not communicated to the others. The depression of the angle-cutters separates the wood upon the

lines of their cutting edges and forces the same inwardly into the opening formed by the bit whereby it is cut away and removed in the ordinary manner.

It will be understood that I do not limit myself to the use of any specific number of angle-cutters, for the reason that any number, from three up may be employed without altering the principle of the construction; also, the device may be used as a hand-bit or in connection with machinery, and in the latter case, the form shown in Fig. 7, in which the lower end of the auger does not project below the plane of the lower ends of the angle-cutters, is preferably employed.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, I claim—

1. The combination with a rotary bit, of slidable angle-cutters, means carried by the bit to operate said angle-cutters, and intermediate cutters arranged between the contiguous edges of and operatively connected to the angle cutters, substantially as specified.

2. The combination with a rotary bit, of slidable angle-cutters operatively connected to the bit, a sleeve slidably mounted upon said angle-cutters, intermediate cutters carried by the sleeve and operating between the contiguous edges of the angle-cutters, and guiding devices comprising bolts and carried by the angle-cutters and operating in longitudinal slots in the sleeve, substantially as specified.

3. The combination with a rotary-bit, slidable angle-cutters capable of reciprocation parallel with the axis of the bit, and operating connections for the bit and the angle-cutters, of intermediate cutters arranged between the contiguous edges of the angle-cutters, and operating connections between the angle-cutters and the intermediate cutters, whereby the latter are simultaneously reciprocated by the forward movement of either of the angle cutters, substantially as specified.

4. The combination of a rotary-bit provided with a shoulder 4 having a cam 13, angle cutters provided at their upper ends with guides which are mounted upon the shank of the bit and are provided with rounded upper ends arranged in the path of said cam, a split collar embracing said guides and fitting in a channel formed in the outer surfaces thereof, said collar having a threaded extension, and a nut engaging said threaded extension to hold the parts of the collar and hence the guides in operative positions, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLOF E. WALLNER.

Witnesses:
E. A. ARNOLD,
MORTEN MORTENSAW.