

No. 834,593.

PATENTED OCT. 30, 1906.

W. B. SWAN.
EXPANSION BIT.
APPLICATION FILED MAR. 14, 1906.

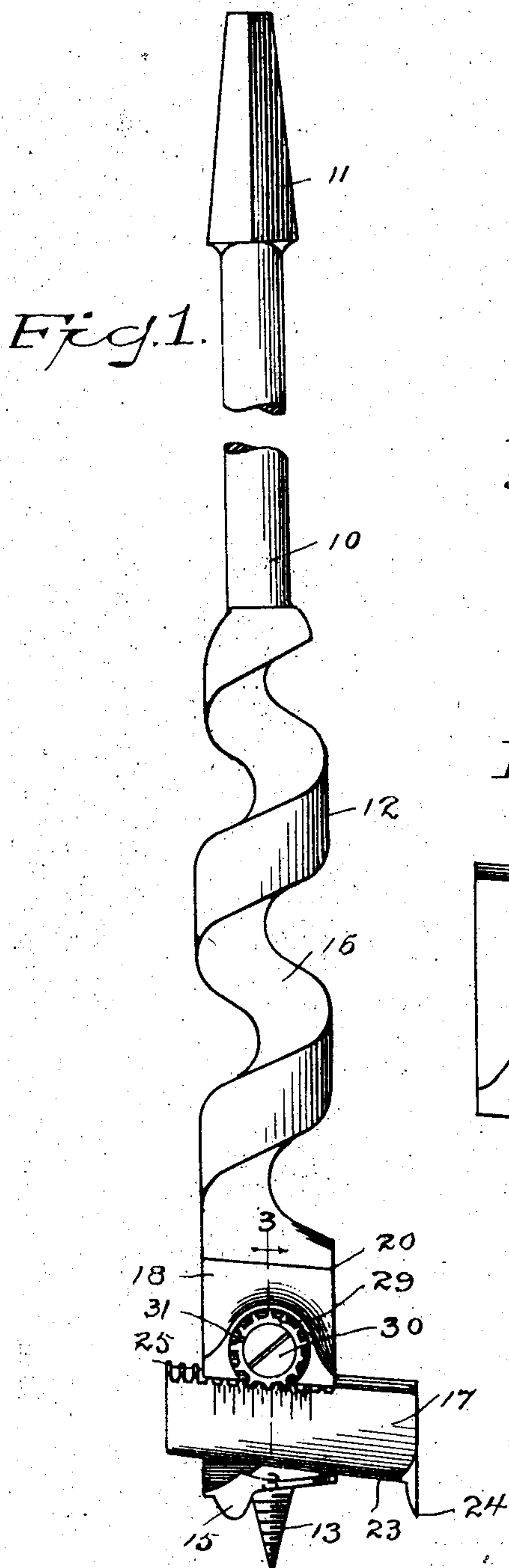


Fig. 2.

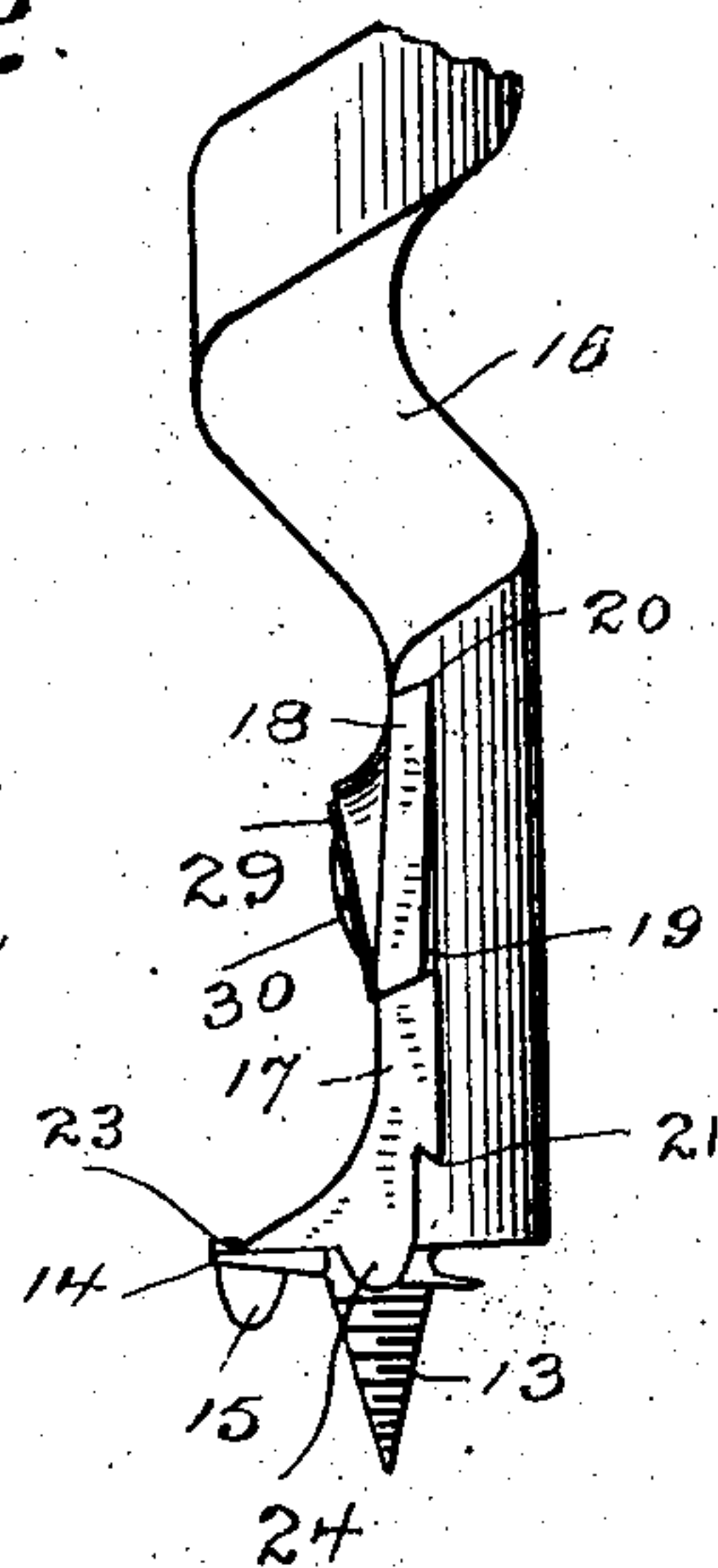


Fig. 4.

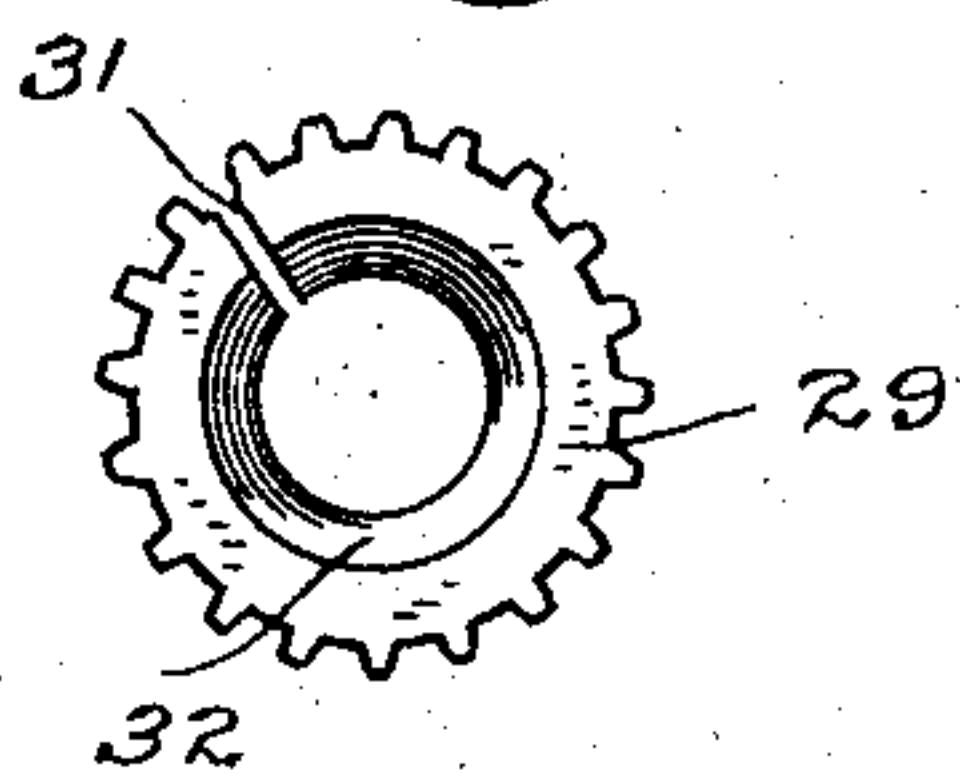


Fig. 5.

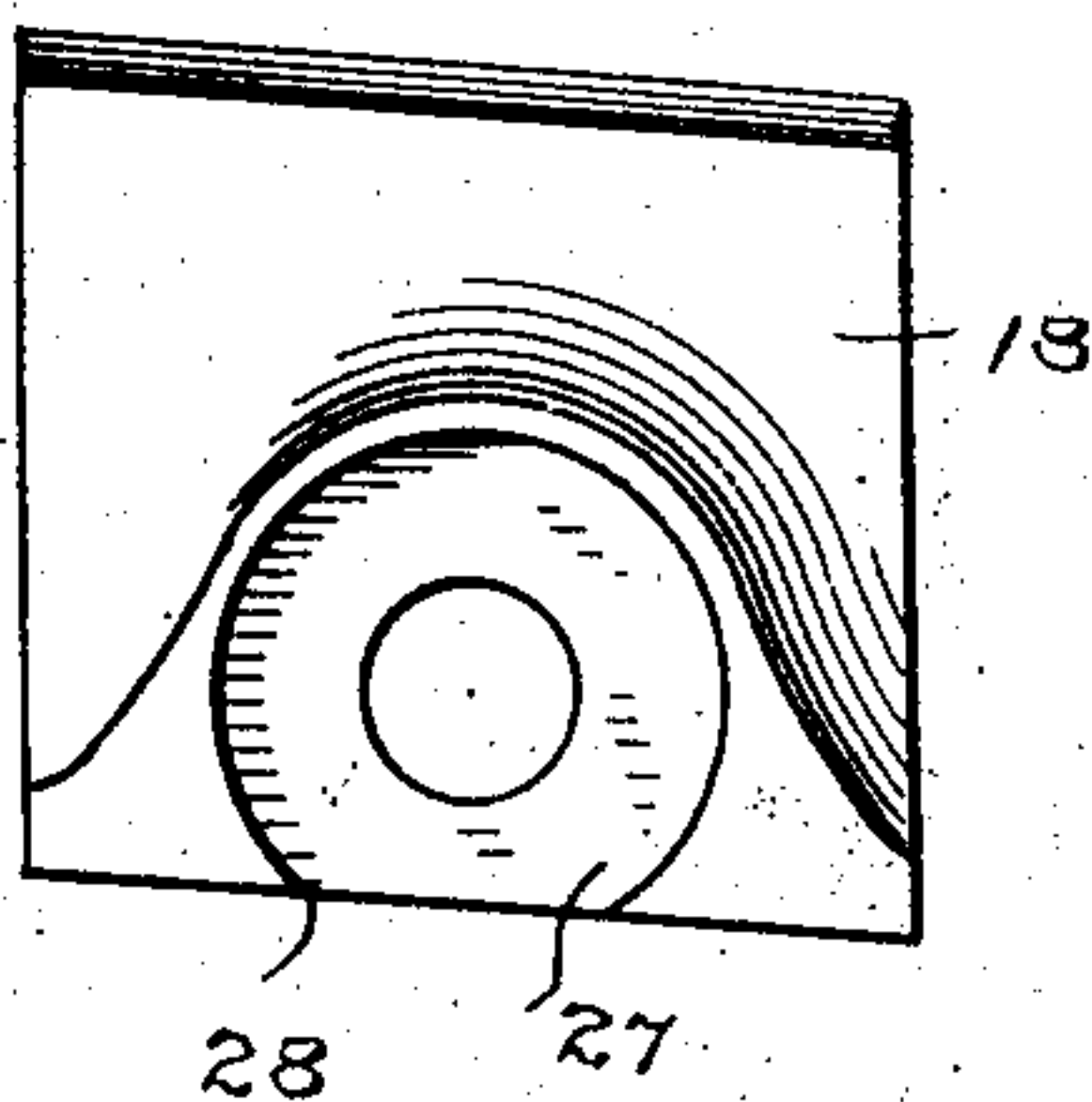
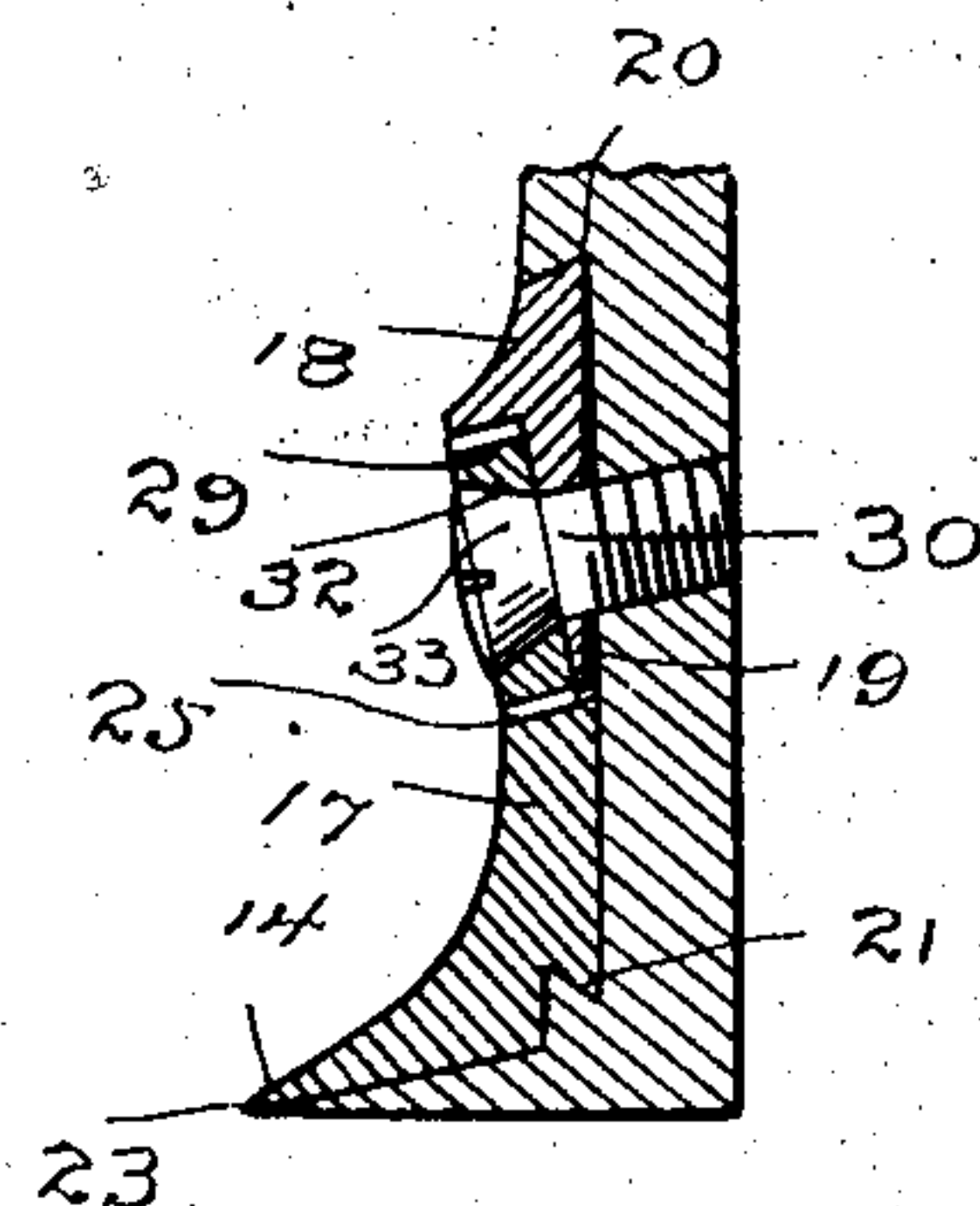


Fig. 3.



WITNESSES

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EXPANSION-BIT.

No. 834,593.

Specification of Letters Patent.

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Application filed March 14, 1906. Serial No. 305,999.

To all whom it may concern:

Be it known that I, WILLIAM B. SWAN, a citizen of the United States, residing at Seymour, county of New Haven, State of Connecticut, have invented a new and useful Expansion-Bit, of which the following is a specification.

This invention relates to the construction of expansion-bits—that is, bits provided with expansion-cutters for the purpose of boring holes of different diameters, but adapted to work equally well as ordinary bits without the expansion-cutters; and my invention has for its object to simplify, cheapen, and to generally improve the construction of this class of bits and to greatly simplify and improve their mode of operation in use.

With these and other objects in view I have devised the novel expansion-bit, of which the following description, in connection with the accompanying drawings, is a specification, reference characters being used to indicate the several parts.

Figure 1 is an elevation of my novel expansion-bit, showing the manner in which the expansion-cutter operates; Fig. 2, an elevation as seen from the right in Fig. 1; Fig. 3, a vertical section, on an enlarged scale, on the line 3 3 in Fig. 1 looking in the direction of the arrow; Fig. 4, an elevation of the expanding pinion detached, and Fig. 5 is an elevation of the retaining-block detached.

10 denotes the shank, 11 the tang, 12 the body, 13 the gimlet, 14 the cutter, and 15 the lip, of a bit, auger, or other boring-tool.

So far as my present invention is concerned it is immaterial to what type of bit or auger it is applied. In the present instance I have illustrated my invention as applied to a single-grooved bit, the groove being indicated by 16.

17 denotes the expansion-cutter, and 18 the retaining-block, both of which lie in a recess 19 at the lower end of the body. This recess is shown as undercut at both its upper and lower edges, as at 20 and 21, and as extending in a direction slightly oblique to a line at right angles to the axis of the bit.

The expansion-cutter is provided with a cutting edge 23 and a lip 24. The back of the expansion-cutter is undercut to correspond with undercut 21 in the recess in the body. At the top of the expansion-cutter is a forwardly-inclined rack 25. The upper

edge of the retaining-block is beveled to engage undercut 20 in the recess in the body, 55 and its lower edge is beveled to overhang the rack upon the extension-cutter. 27 denotes a socket in the retaining-block, which is provided with an opening 28 in its lower side and which receives an expanding pinion 29. 60 This pinion, the retaining-block, and the body are provided with corresponding screw-holes to receive a locking-screw 30. The pinion is provided with a cut 31, leading from its outer periphery into the central opening, 65 whereby it is made expansible; and the upper edge of the opening is beveled, as at 32, to correspond with a taper 33 on the locking-screw, by which the pinion is expanded when the locking-screw is turned in. 70

The operation will be readily understood from the drawings. In the present instance I have illustrated a seven-eighths bit in the drawings. Should it be required to bore a hole of greater diameter than seven-eighths 75 of an inch, an expansion-cutter would be used. To insert or remove an expansion-cutter, it is not necessary to remove the locking-screw, but merely to loosen it. As soon as the locking-screw is turned backward the 80 pinion will contract, leaving the expansion-cutter free to be moved in either direction or to be removed entirely by moving it toward the right, as seen in Fig. 1. In using the expansion-cutter when the cutter has been adjusted to bore a hole of the required diameter 85 it is locked in place by turning in the locking-screw. As the screw is turned in, the taper thereon engages the bevel of the pinion and expands the pinion, forcing the teeth of the 90 pinion into engagement with the rack upon the expansion-cutter and also with the periphery of the socket in the retaining-block, thereby locking the block, cutter, and pinion rigidly in place.

Having thus described my invention, I claim— 95

1. In a bit, the combination with an expansion-cutter provided with a rack, of a retaining-block provided with a socket, an expanding pinion in said socket which engages the rack and a tapering screw whereby the pinion is expanded to lock the expansion-cutter in position after adjustment.

2. In a bit, the combination with an expansion-cutter provided with a rack, of a re- 105

5 taining-block provided with a socket, a pinion in said socket having a beveled hole and a cut from the outer periphery inward to the hole and a screw passing through the pinion and the retaining-block and having a taper engaging the pinion whereby the latter is expanded and the parts are locked in place.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM B. SWAN.

Witnesses:

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A. AUGUSTA SWAN.