

No. 797,770.

PATENTED AUG. 22, 1905.

J. D. HAZLET.

BORING TOOL.

APPLICATION FILED DEC. 2, 1904.

Fig. 2

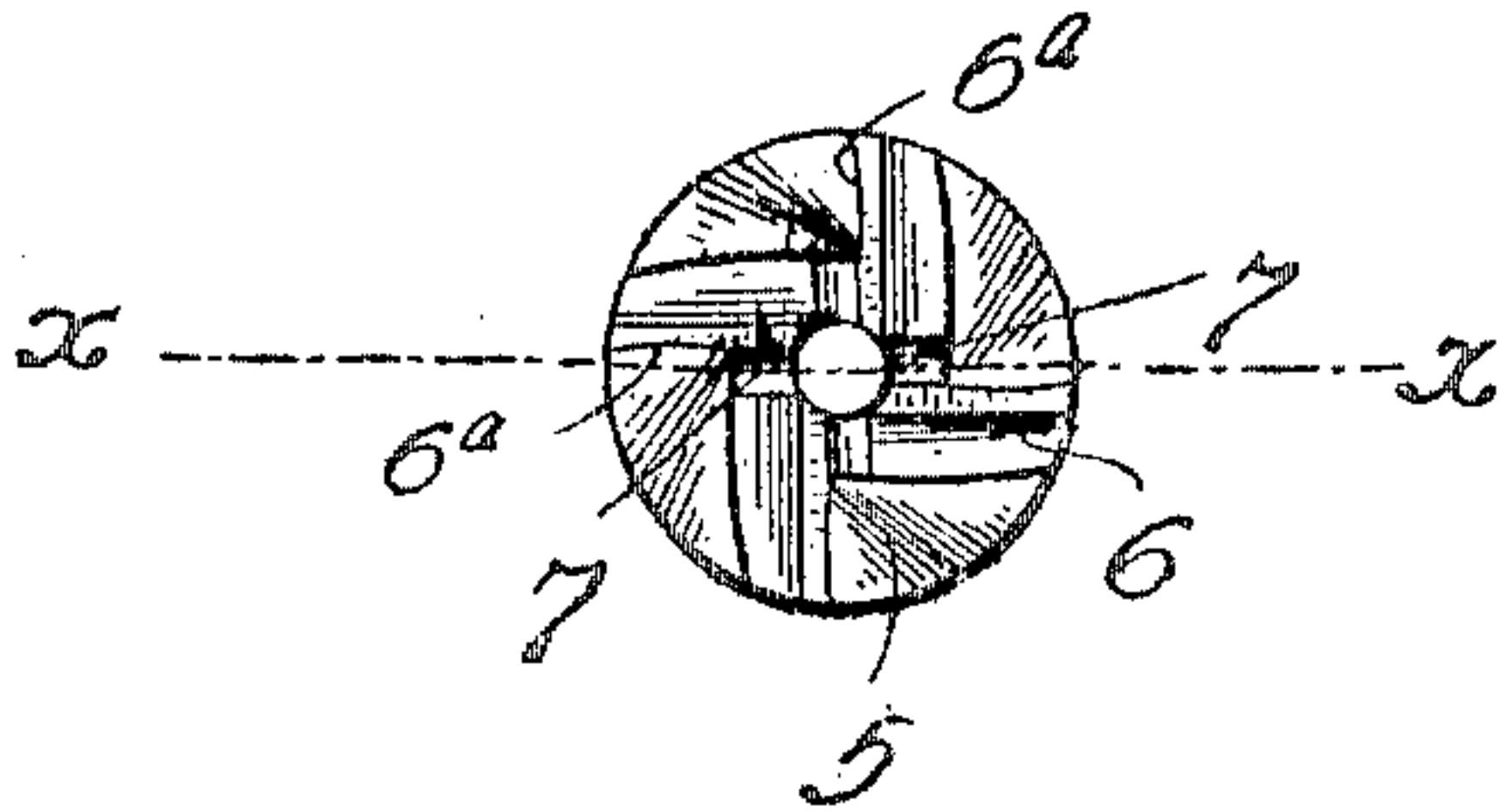


Fig. 1

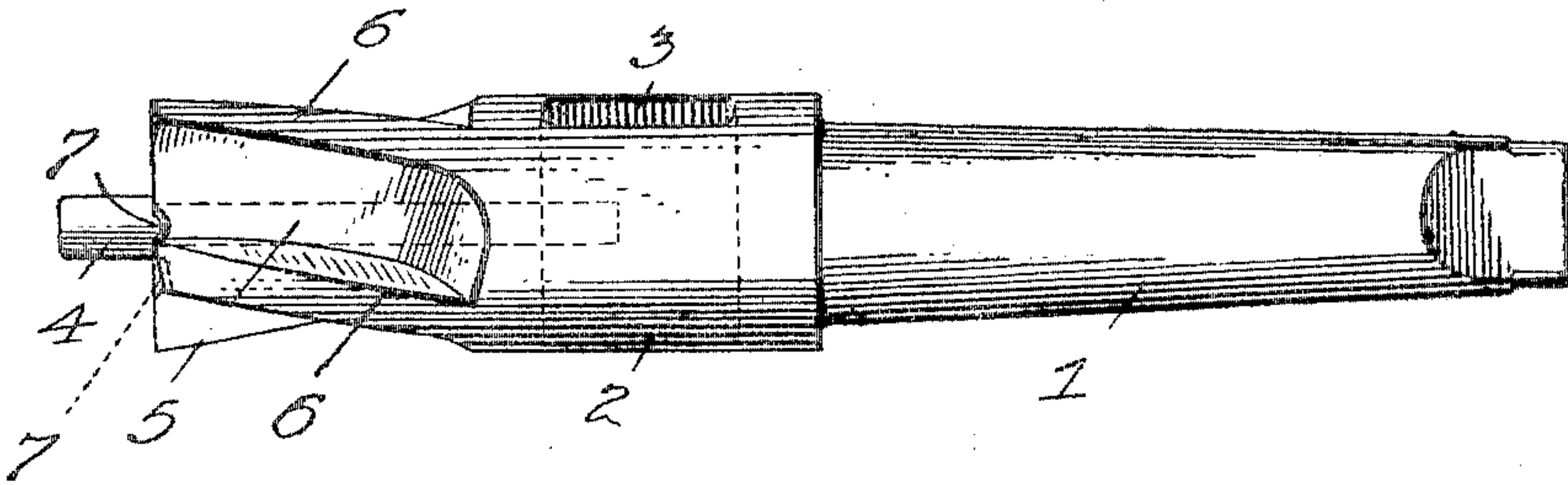


Fig. 3.

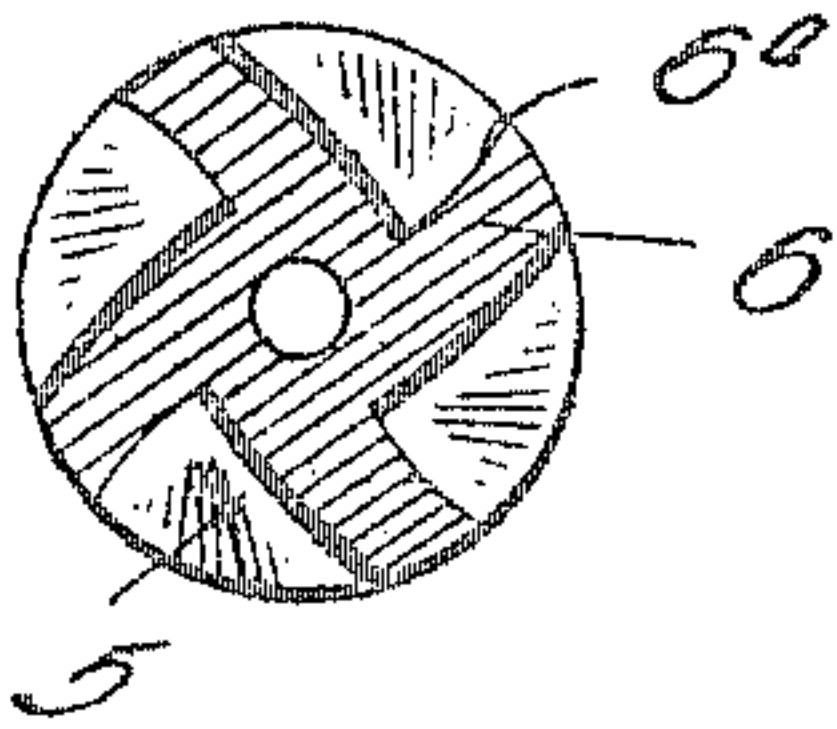
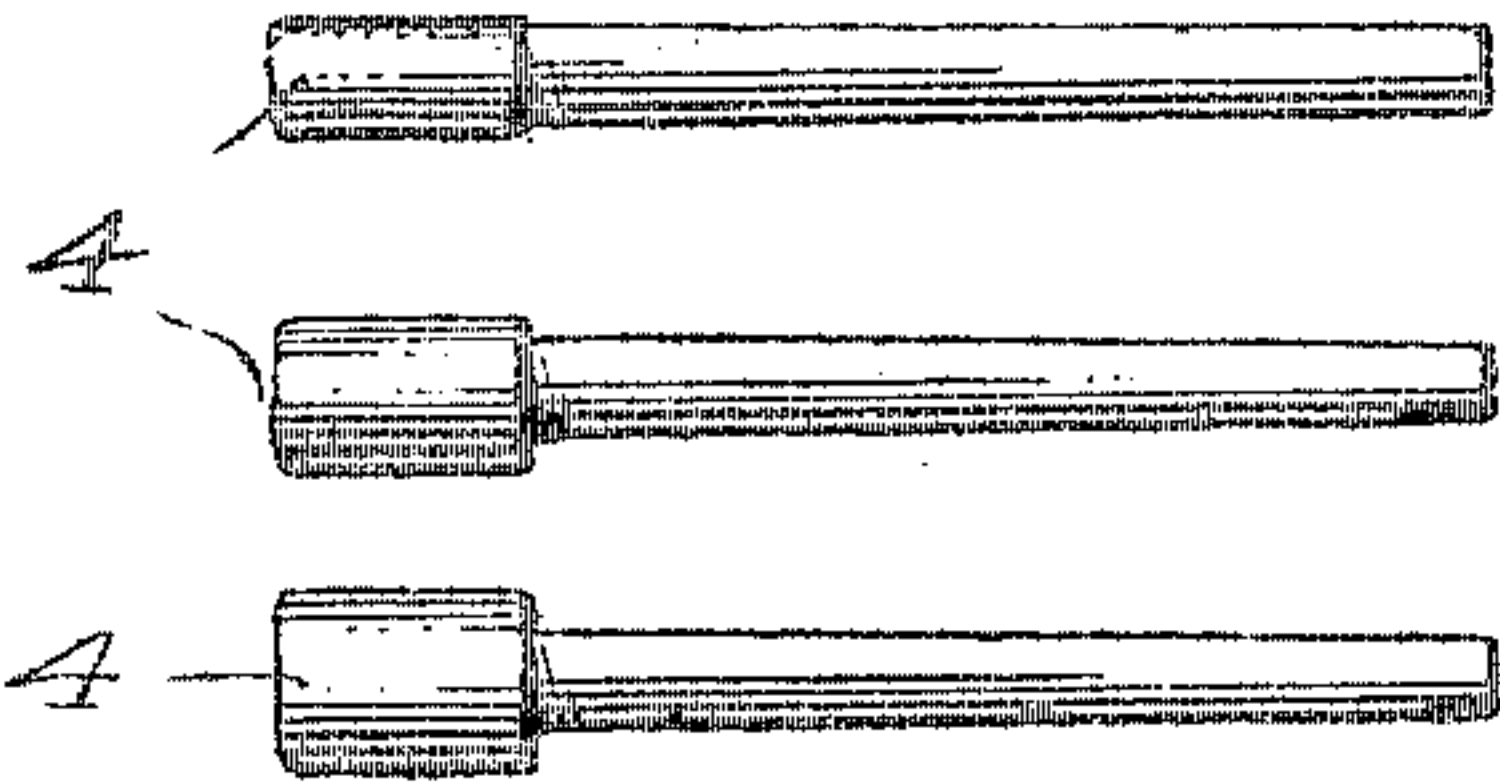


Fig 4.



## Witnesses

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# UNITED STATES PATENT OFFICE.

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## BORING-TOOL.

No. 797,770.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed December 2, 1904. Serial No. 235,202.

*To all whom it may concern:*

Be it known that I, JOHN D. HAZLET, a citizen of the United States, residing at Meadville, Pennsylvania, have invented certain new and useful Improvements in Boring-Tools, of which the following is a specification.

The object of my said invention is to provide a cutter or tool by which a hole may be bored or formed extending partially through a piece of work, but having a flat bottom, so that a bolt-head may be let into the level of the work and have the flat under face of the bolt-head bear against a flat surface at the bottom of the countersink. I have aimed to provide for this purpose an exceedingly simple, durable, and efficient tool which shall be free from all danger of clogging and which shall be capable of being readily reground without changing the relative shapes of the cutting parts.

With these and other objects in view the invention comprises a tool or cutter having a plurality of cutting lips or edges on its end, each of which may be set to one side of or in rear of or directly on a line passing diametrically through the center of the tool, with a flute or groove between the cutting edge of each blade or lip and the base or inner part of each preceding lip.

The invention further includes a tool having a plurality of cutting blades or edges with inclined or tapered radial grooves between the cutting blades or edges at their inner ends.

Further, the invention includes the combination with such cutting blades, lips, or edges of removable and interchangeable pilot devices, and, lastly, the invention includes the various features of construction, as hereinafter described, and particularly pointed out in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2 an end view. Fig. 3 is a sectional view with the guiding member removed, and Fig. 4 a view of several sizes of guides.

In these figures, while I have shown the tool as using a central removable guiding member in the shape of a cylindrical pin adapting the device for use in connection with a previously-bored cylindrical hole or opening and designed to provide at the entrance to said opening a larger cylindrical recess

with a flat bottom designed to receive a bolt-head, it will be understood that I do not limit myself to any particular form of central guiding member.

The tool, as shown in the drawings, may have an ordinary shank 1, and its body 2 may be provided with a transverse passage 3, through which a suitable instrument may pass to contact with the inner end of the removable guiding member 4 for the purpose of removing it and enabling it to be replaced by one of different size. The body 2 is grooved or fluted, as indicated at 5, providing wings or blades 6, which are shown as being inclined to the axis of the tool or spiral. It is preferable to provide the tool with four of these blades, and it will be seen in the drawings that they are so arranged with respect to the body of the tool that each has its advanced or cutting edge 6<sup>a</sup> located in rear of a line (see dotted line *x x*, for example) passing through the axis of the tool. The cutting edges are all located in a plane perpendicular to the axis of the cutting-tool, so that the opening or countersink which is bored with this tool necessarily has a perfectly flat bottom. In order to effectually remove all chips and prevent clogging at the center, I provide a groove or flute between the base or inner end of one cutting-blade and the advanced cutting edge of the blade next in rear thereof, as indicated at 7. These grooves are preferably flared or inclined both outwardly and upwardly, and they are arranged radially of the tool. By this arrangement it will be seen that with a four-bladed tool, such as that shown in the drawings, the grooves on opposite sides of the axis of the tool are directly in line with each other, and when the central guiding member is removed the grooves may be ground out quickly and accurately, and thus the sharpening of the tool is a very simple matter.

Having thus described my invention, what I claim is—

1. A countersinking tool or cutter having a plurality of integral cutting lips or edges on its end, with a flute or groove between the cutting edge of each lip and the base or inner part of each preceding lip, substantially as described.

2. A countersinking tool or cutter having a plurality of integral cutting blades or lips with their cutting edges located in a plane



perpendicular to the axis of the tool, a central removable guiding member, outwardly-inclined chip-removing grooves located on diametrically opposite sides of said guiding member and between the cutting edge of each lip and the base of each preceding lip, and spiral flutes in the sides of the body of said tool, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, November 16, 1904.

JOHN D. HAZLET.

Witnesses:

L. A. LEBEMAN,  
MATTHEW NELSON.