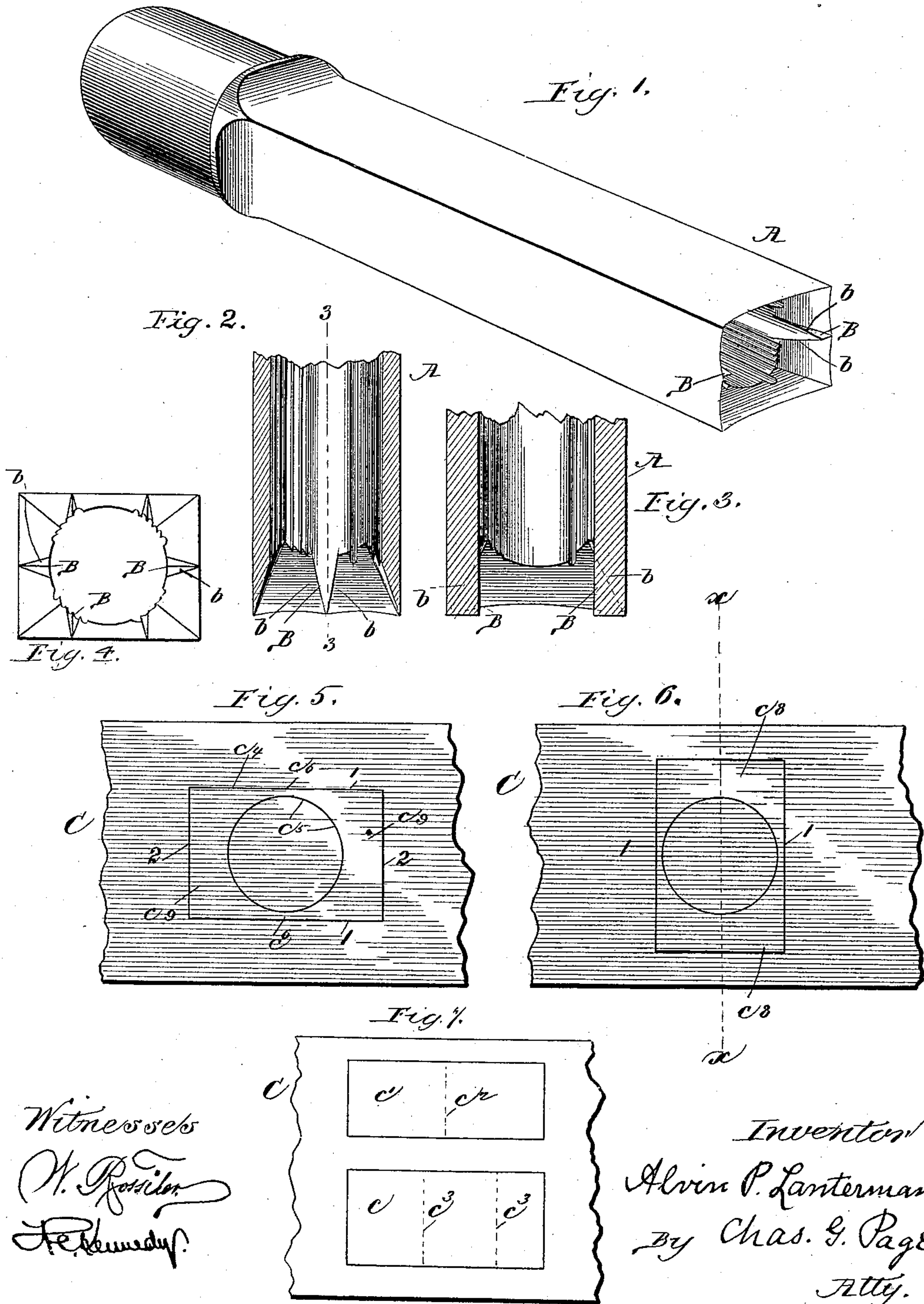


(No Model.)

A. P. LANTERMAN.
MORTISING CHISEL.

No. 444,596.

Patented Jan. 13, 1891.



UNITED STATES PATENT OFFICE.

ALVIN P. LANTERMAN, OF CHICAGO, ILLINOIS.

MORTISING-CHISEL.

SPECIFICATION forming part of Letters Patent No. 444,596, dated January 13, 1891.

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To all whom it may concern:

Be it known that I, ALVIN P. LANTERMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Mortising-Chisels, of which the following is a specification.

My invention relates to mortising-chisels of the kind embodied in Letters Patent of the United States granted to me October 8, 1889, No. 412,275.

The object of my invention is to adapt the chisel for making oblong mortises of different widths, to so break up the chips as to avoid breakage of the bit, and to break up the chips so that they shall be effectively carried off by the bit during operation; also, to permit the employment of what is known as a "straight" bit in connection with a hollow mortising-chisel.

In carrying out my invention I preferably employ a hollow mortising-chisel, which is of oblong rectangular shape in cross-section, (although I may apply my invention to a mortising-chisel which is square in cross-section,) and provide the same with chip-cutters arranged within the chisel at its cutting end, so that during operation the cutters shall sever the chips or portions of the wood between the chisel-cut and the bore made by the bit, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 represents in perspective a hollow mortising-chisel embodying my invention. Fig. 2 is a section taken longitudinally through the cutting end portion of the chisel. Fig. 3 is a section on line 3 3 in Fig. 2. Fig. 4 is an end view of a mortising-chisel, illustrating a modified form of construction embodying my invention. Figs. 5, 6, and 7 are diagrams which can best be explained in the following description.

I have not herein illustrated a bit, since the use of the same will be understood by referring to my said patent.

In said drawings, the hollow mortising-chisel A is shown made of oblong rectangular shape in cross-section, and is at its cutting end provided with oppositely-arranged chip-cutters B, which are arranged within the

chisel and extended back a short distance from the cutting-edge thereof. The peculiar function and advantage of these cutters will be understood by the following reference to Diagrams 3, 4, and 5.

In Diagram 7, C is understood to represent a piece of wood which is to be mortised. Two mortises of equal length, but of different widths, are indicated in said piece of wood, the mortise *c* being considerably wider than the mortise *c'*. The narrow mortise *c'* is understood to have been made by presenting the chisel to the work with its longer sides parallel with the length of the mortise, in which way the latter can, for instance, be formed by two cuts of the chisel, as indicated by dotted line *c²*, while, on the other hand, the wider mortise *c* is understood to have been formed by presenting the chisel to the work with the longer sides of the chisel transversely to the length of the mortise, and to have required three cuts of the chisel, as indicated by dotted lines *c³*. The narrow mortise *c'* can be made by a chisel in which the cutters B are absent; but it is impracticable to form the mortise *c* unless said cutters are present. This can be more readily explained by referring to Diagrams 5 and 6, in each of which C denotes the piece of wood, or "work," as it is usually termed, the lines running along the same being made to indicate the grain of the wood. Assuming that a mortise such as the mortise *c'*, Diagram 7, is to be made, the first cut of the chisel and the bore formed by the bit will be as in Diagram 5, wherein the rectangle *c⁴* denotes the chisel-cut, and the circle *c⁵* denotes the bore formed by the bit. It will be observed that in forming this mortise the grain of the wood runs parallel with the long side of the chisel, and that in the parts *c⁶* of the wood between the bore cut by the bit and the longer lines of cut 1 made by the chisel the wood will easily break up into chips, owing to its thinness made by the proximity of the cutting lines of the bit and chisel. On the other hand, at the sides of cut where the bore formed by the bit and the shorter lines of cut 2 made by the chisel are farthest removed, the grain of the wood runs transversely of the length of the chip, so that the portions

of wood between the bore and chisel cuts at such points will break up into chips quite easily. This breaking up of the wood into chips is of the greatest importance, for the reason that they must be carried up through the hollow chisel by the bit, and if not broken into pieces small enough to easily pass between the chisel and bit they will accumulate and impede or stop the operation of the bit, in which event the bit is liable to be broken. It is obvious, however, as above described in regard to Fig. 5, that the chips may be broken up sufficiently to pass up through the chisel. In Fig. 6, however, the diagram illustrates the position of the first cuts of the bit and chisel when the long sides of the chisel are presented transversely to the grain of the wood. It will be manifest that the wood will be broken into chips between the long sides of the chisel-cut and bit-bore formed by the bit. It is obvious, however, that the portions of wood at c^8 between the short sides of the chisel-cut and the bit-cut will not break up so as to pass between the bit and chisel, as the grain of the wood runs with the length of the resulting chip.

As a further explanation of the foregoing, it will be understood that in the portions c^9 of wood between the bit and chisel cuts (Diagram 5) the wood will more readily split into chips, since such portions are oblong in shape, with short lines of grain running transversely to the length thereof; but in forming a mortise, as in Fig. 6, the grain runs parallel with the oblong portions c^8 of the wood, and hence such portions, in place of being broken up into chips, will each separate from the work each as a single long chip, which in tough wood will tend to wrap about the bit without breaking. From this condition it has been found impracticable to form such a mortise as illustrated in Fig. 6, and at c , Fig. 7, with a chisel unprovided with chip-cutters B, as shown. In forming a mortise, as in Fig. 6, with a chisel having chip-cutters B located upon the short sides of the chisel, it will be seen that said chip-cutters will cut through the wood transversely to the grain and about midway the length of the portions c^8 , as on line $x x$, in which way such portions will be broken up into chips capable of being carried up or back by the bit which revolves within the chisel.

In forming the chisel the outer sides thereof are conveniently made straight and parallel, and the cylindric bore extends longitudinally through the same. The cutting-edges of the chisel are formed by tapering the metal outwardly from the cylindric bore, as shown in Figs. 1 and 2. The chip-cutters B have their cutting-edges located flush or substantially flush with the cutting-edges of the chisel and preferably are wedge-shaped, so as to have tapering sides $b b$, although they may be made of any shape which will insure their

cutting action. The inner walls of the chip-cutters may be straight and preferably form continuations of the walls of the bore of the chisel, as clearly shown in Fig. 3. It will be understood, however, that I can also make the inner wall of the chip-cutter beveled outwardly, in which case the cutting-edge of the cutter will not be as long as when the wall is straight.

By the use of the chip-cutters I am enabled to employ the ordinary straight bit in boring, as in practice the bit commonly used with a chisel unprovided with chip-cutters flares outwardly at its cutting end to fit the outwardly-beveled portion of the bore of the chisel, as such bits are found more advantageous in cutting. By thus being enabled to use a straight bit I save expense, for when a straight bit is broken it can be sharpened again, which cannot be done with a tapered or beveled bit. Furthermore, the straight bit can be placed within the chisel and withdrawn from the rear, which cannot be done with a beveled bit. It is obvious that being enabled to use a bit of ordinary construction the further expense of having a special form of bit is obviated.

In Figs. 1, 2, and 3 I have shown the said chisel as provided with two chip-cutters, which are located upon the short sides of the chisel. It will be understood, however, that although this construction is preferred I do not limit my invention to such number and location of the cutters, and in Fig. 4 is shown a modified form of construction embodying my invention. In this construction the chisel is provided with six chip-cutters, one located upon each of the short sides and two upon each of the long sides. It is evident that a chisel of this construction will break the chips into comparatively small pieces and insure their removal beyond a doubt. The location of the chip-cutters can be variously modified, as I contemplate disposing them where they will act with the greatest efficiency.

As before stated, the rectangular oblong shape of the chisel is not an essential feature of my invention, as it can be of any desired shape with any number of chip-cutters located thereon, as found desirable. In some instances it may be desired to employ but one cutter, and hence I do not limit myself to a plurality of cutters.

I claim as my invention—

1. A hollow mortising-chisel provided at its cutting end with one or more chip-cutters for severing the chip between the bore formed by the bit, and the surrounding cut made by the cutting end of the chisel, substantially as set forth.

2. A hollow mortising-chisel having a cutting-edge formed by beveling the metal outwardly from its bore at one end of said chisel, and one or more chip-cutters arranged upon

said beveled portion, substantially as set forth.

5 3. A mortising-chisel having a cylindric bore, and a cutting-edge formed by beveling the metal outwardly from the bore to one end of said chisel, and one or more chip-cutters arranged at said beveled portion with

their inner wall or walls forming a continuation of the wall of said bore, substantially as set forth.

ALVIN P. LANTERMAN.

Witnesses:

• CHAS. G. PAGE,
HENRY COBB KENNEDY.