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SHARPENING AN INCREMENT BORER

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Importance

A core from a dull borer is not only likely to be marred and irregular, preventing accurate measurements, but it is also more difficult and time consuming to obtain. Fortunately with little practice and a few inexpensive tools, a borer can be kept in excellent shape.

Required Tools (Fig. 1)

To true, grind and hone cutting edge: light oil; one flat, tapered, fine India stone, 4 x 3/8 inches, tapered .05 to .2 inches; one 3-inch, tapered conical slip stone, tapered 1/4 inch to point; one tungsten-ignition-point file; and one No. 14 cork.

To reduce length of spiral threads: one 6-inch, 3-cornered tapered, die-maker's file.

General Procedure

1. True cutting edge with long axis of borer (Fig. 2).
2. Sharpen beveled cutting edge (Fig. 3).
3. Hone inside of cutting edge (Fig. 4).
4. Hone beveled cutting edge (Fig. 5).
5. File back spiral threads (Fig. 6).

Specific Procedure

Initial check. The borer needs sharpening if it fails to take hold easily and feels dull when the thumb is lightly passed over it.

True cutting edge. If cutting edge undulates when held horizontally at eye level and rotated, it should be trued. Place a few drops of oil on flat side of thin edge of India stone. With bit held as shown in Fig. 2 and flat side of stone at right angles to the long axis, lightly pass stone to and fro across cutting edge, slightly rotating bit at each pass. Repeat until true.

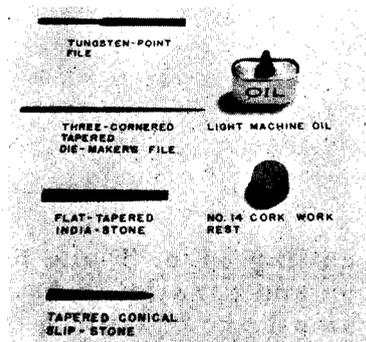


Fig. 1. Required tools



Fig. 2. Truing cutting edge

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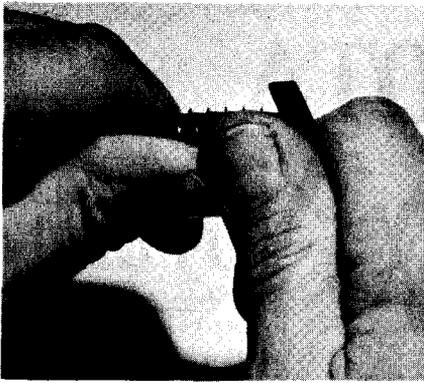


Fig. 3. Sharpening cutting edge

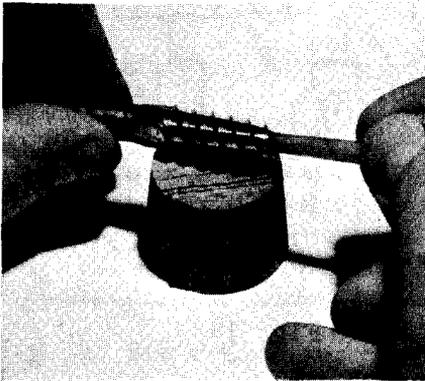


Fig. 4. Honing inside of cutting edge



Fig. 5. Honing bevel of cutting edge

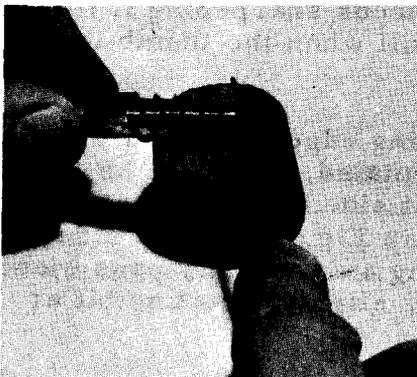


Fig. 6. Filing back spiral threads

Sharpening cutting edge. While holding bit on ball of thumb and India stone as shown in Fig. 3, slowly rotate the borer away from you and against the stone while holding stone parallel to and firmly on beveled edge. Continue around cutting edge and repeat until sharp. If the cutting edge is nicked, the tungsten-point file may be used to speed up this step. Use the file until the nicks are eliminated and follow this with India stone.

Honing inside of cutting edge. Place a few drops of oil on point of conical slip stone. As shown in Fig. 4, insert tip of stone in cutting end until it occupies about $3/4$ of core hole and very lightly rotate stone against inside of cutting edge or rotate the bit against the stone.

Honing beveled or outside of cutting edge. Place bit on cork, resting tip of slip stone on and parallel to bevel as shown in Fig. 5. Work over a small arc of cutting edge using very light strokes to and away from you. Repeat until entire edge has been honed. Repeat if necessary.

Filing back spiral threads. This should be done when the front edge of spiral gets to within $1/20$ " of the cutting edge. This procedure is comparable to sharpening an edge with a file. As shown in Fig. 6, use the 3-cornered file and beginning at the base of the front edge of a spiral, work both sides alternately using file strokes only toward the edge. The curve at the front edge of each spiral may need to be reformed. If this is necessary, the leading edge of each spiral thread should be resharpened by the same method used for cutting back threads.

Protecting cutting edge. If the borer is used so continuously that it does not pay to take it down and reassemble it, protect the cutting edge with a No. 14 cork. Keep the borer well oiled at all times.