NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

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A FLUSH-RIVET MILLING TOOL

By Robert Gottlieb
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Restriction/Classification Cancelled

)TED BULLETIN

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The investigation of machine-countersunk flush rivets for aircraft described in reference 1 revealed the necessity of having the height of the rivet heads greater than the depth of the countersunk holes if tightly riveted joints were to be obtained. If ordinary roundhead rivets were inserted from the opposite side of the joint and the countersunk heads formed in the driving of the rivets filled the countersunk holes completely, still tighter joints were obtained. In either case the rivets protruded above the skin surface after driving, and the protruding portion of the rivet heads had to be removed in order to obtain flush rivets.

A number of requests have been received for a description of the tool used to mill off the protruding portion of the rivet heads. This report contains assembly and detail drawings (figs. 1 to 5) of the latest flush-rivet milling tool used at the NACA Structures Research Laboratory. Figure 6 shows the tool in operation.

This tool is quite satisfactory for 1/8-inch rivets, but a more powerful motor is recommended for use with larger rivets.

Langley Memorial Aeronautical Laboratory,
National Advisory Committee for Aeronautics,
Langley Field, Va.

REFERENCE

1. Lundquist, Eugene E., and Gottlieb, Robert: A Study of the Tightness and Flushness of Machine-Countersunk Rivets for Aircraft. NACA R.B., June 1942.

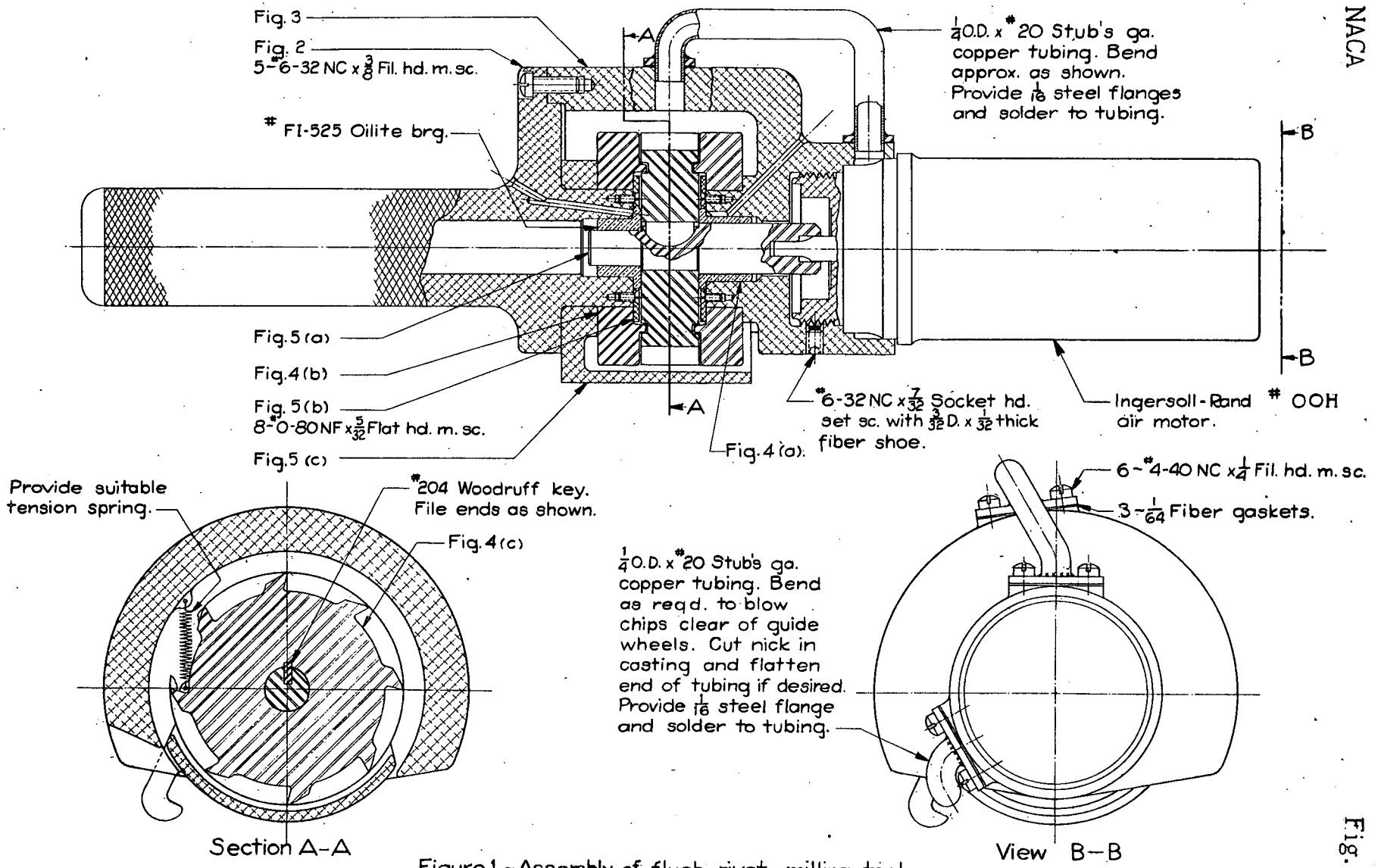


Figure 1.-Assembly of flush-rivet milling tool.

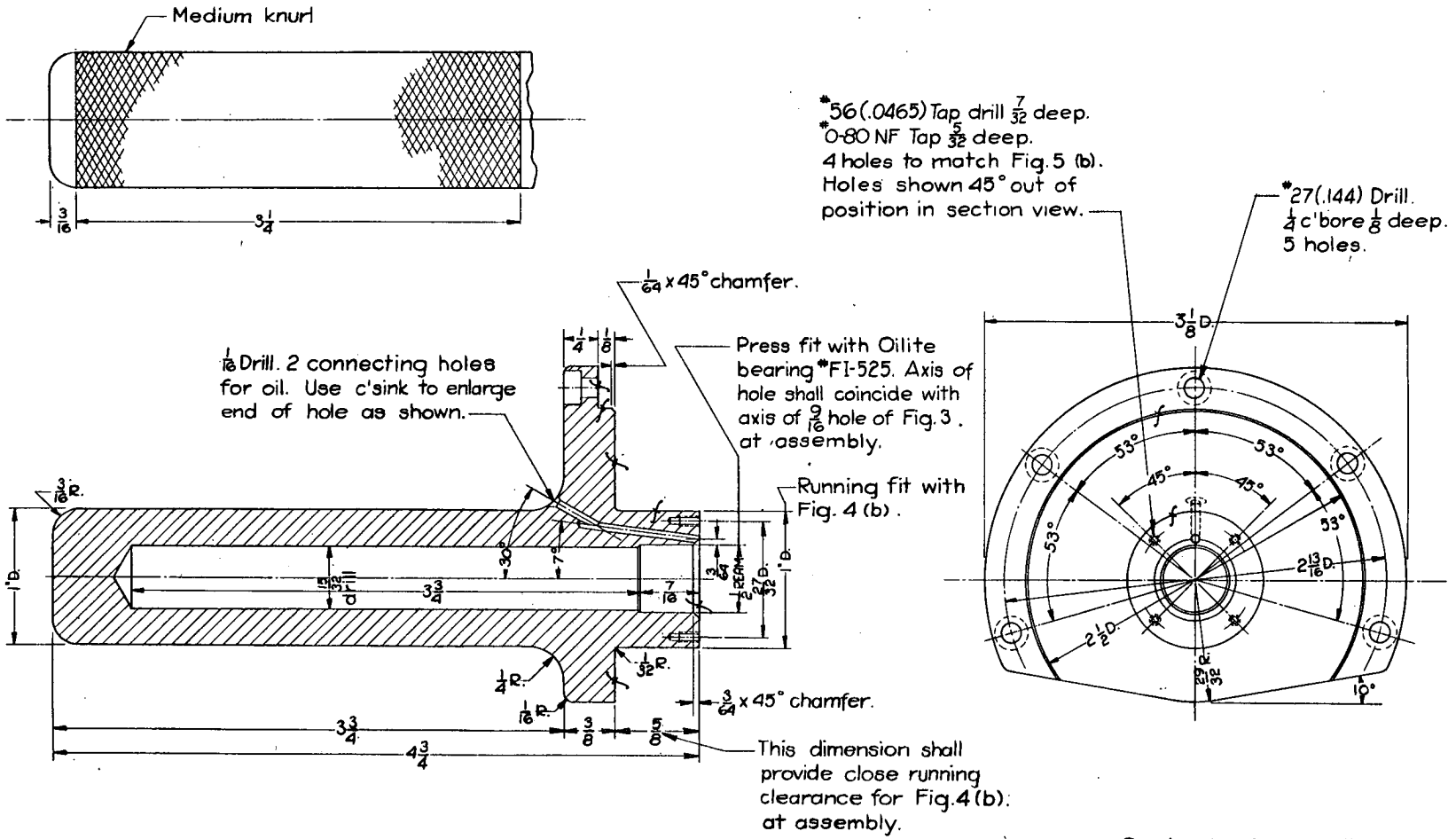


Figure 2. - Details of handle.

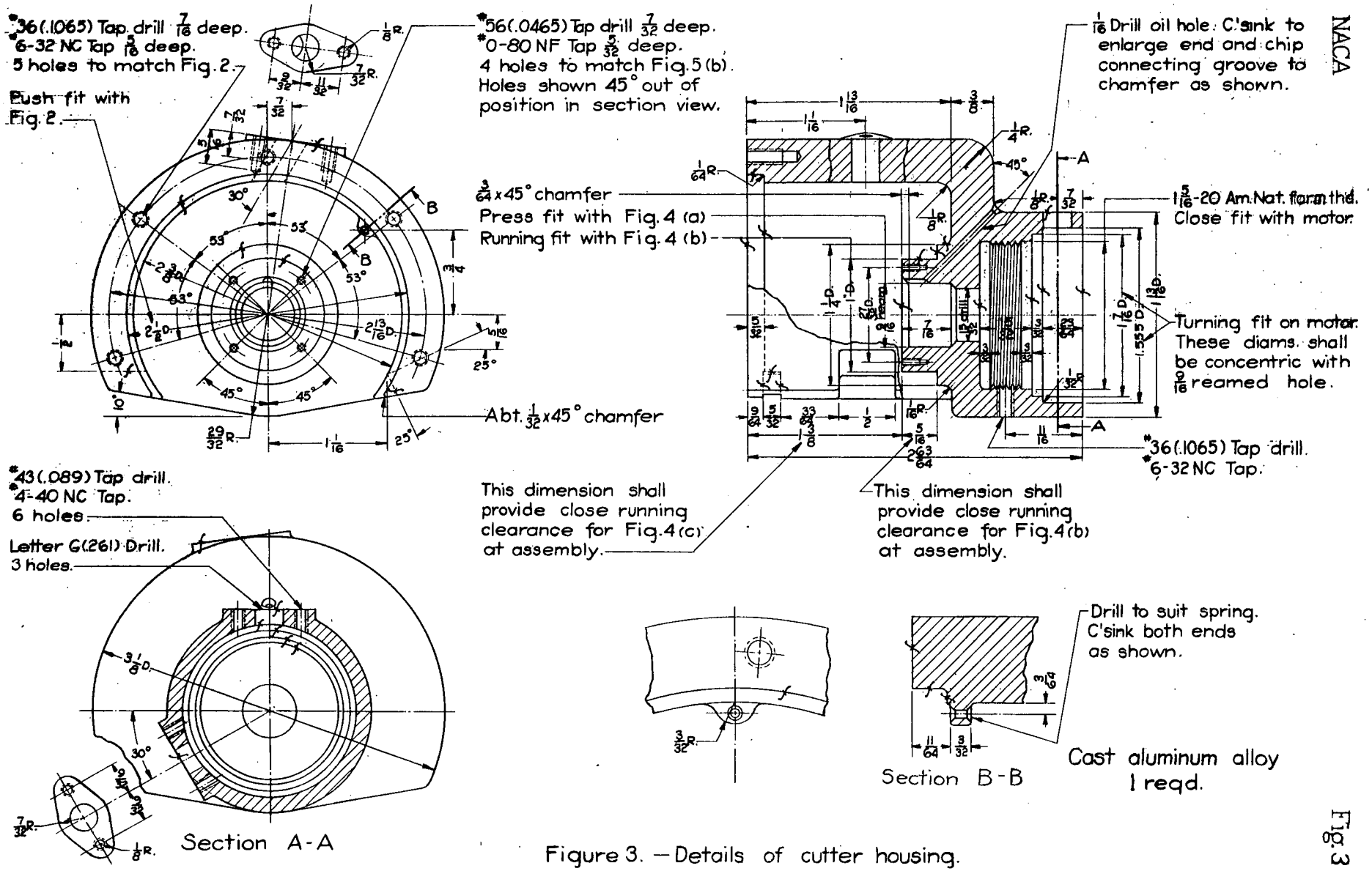
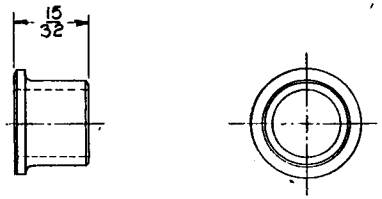


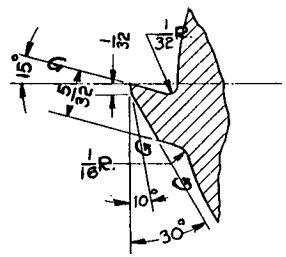
Figure 3. — Details of cutter housing.

NACA

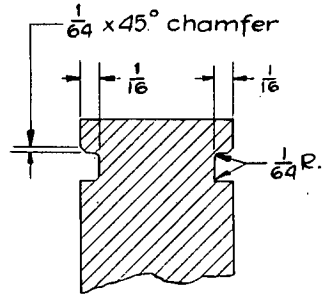
Fig. 3



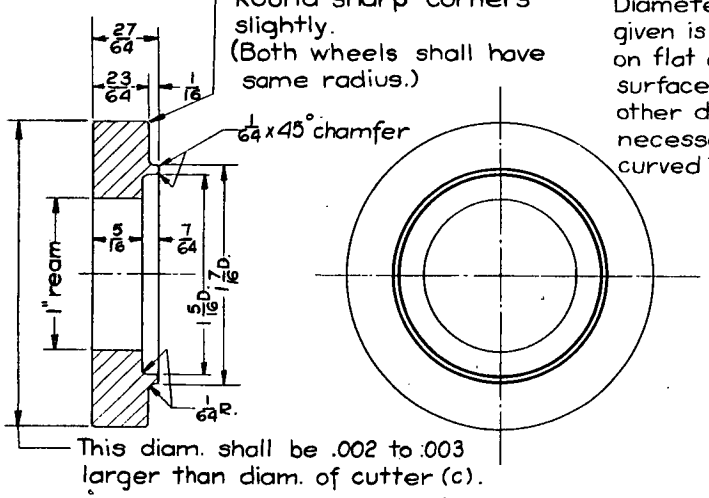
(a) Alteration to No. F I-504 Oilite bearing
1 reqd.



Section A-A



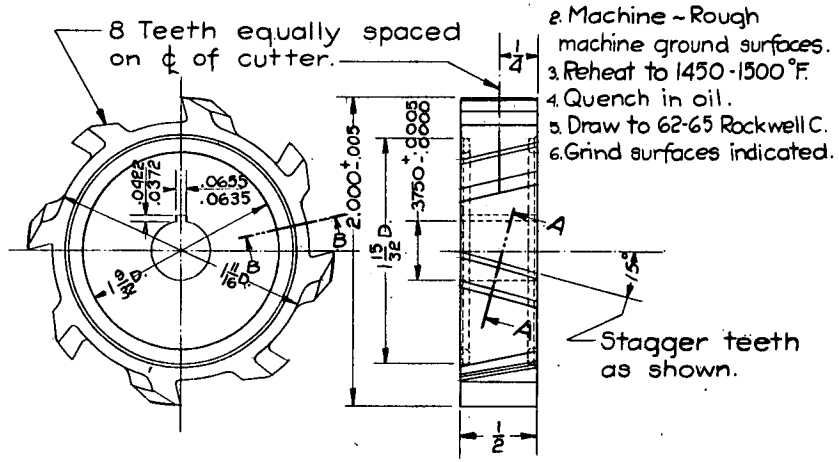
Section B-B



Note:
Diameter of wheel as given is suitable for use on flat or single curved surfaces. Wheels of other diams. will be necessary on double curved surfaces.

(b)
2 reqd.

Guide wheel
Machine steel



Heat Treatment for (c).
1. Normalize.
2. Machine - Rough machine ground surfaces.
3. Reheat to 1450-1500°F.
4. Quench in oil.
5. Draw to 62-65 Rockwell C.
6. Grind surfaces indicated.

(c)
1 reqd.

Cutter
Paragon steel (H. T.)

Figure 4. - Details of bearing, guide wheel, and cutter.

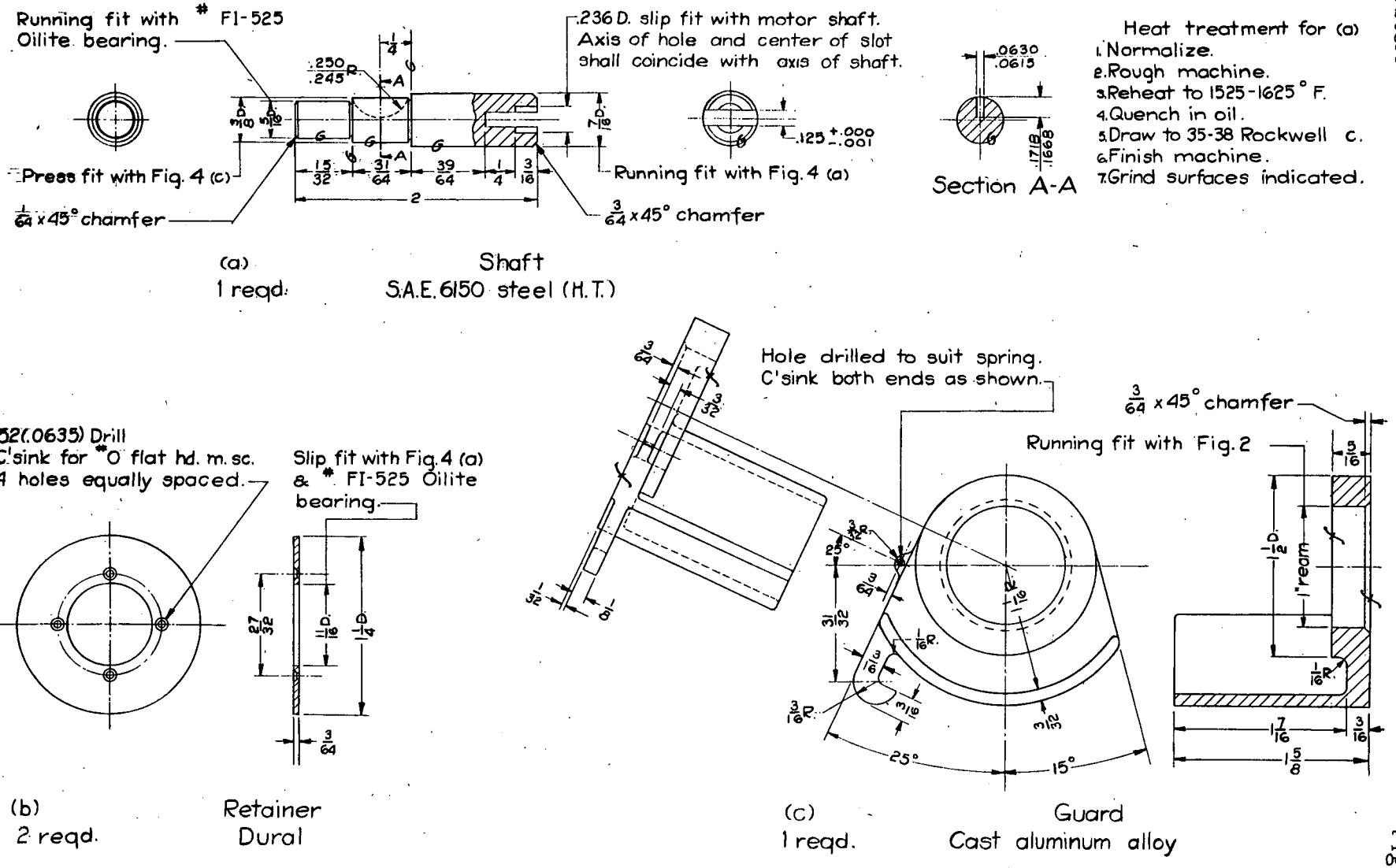


Figure 5. ~ Details of shaft, retainer, and guard.

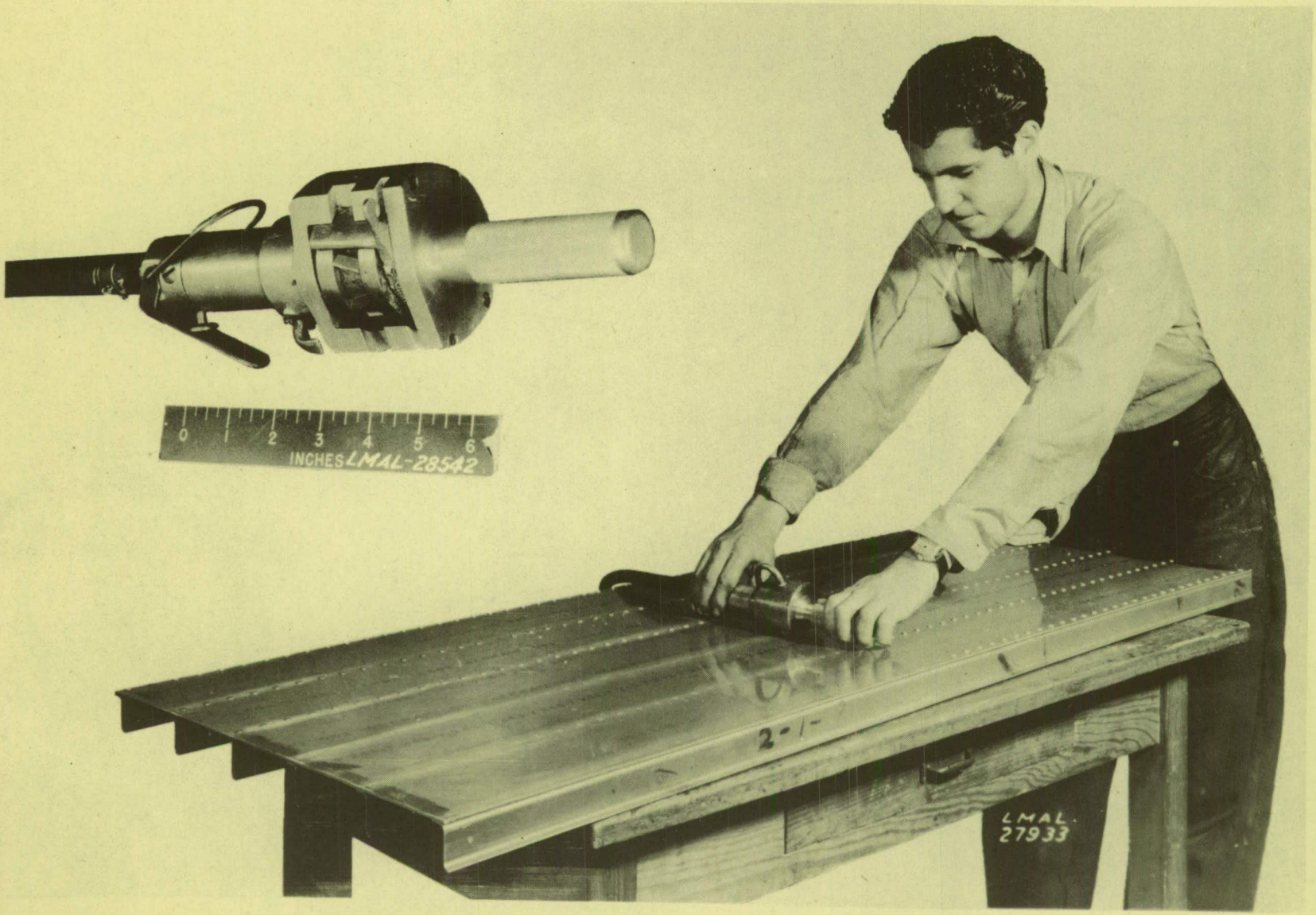


Figure 6.- Flush-rivet milling tool for removing the protruding portion of the rivet head.