Sept. 26, 1944. C. T. EAKIN 2,359,091

TEST CORE DRILL

Filed May 8, 1942

Fig. 1.

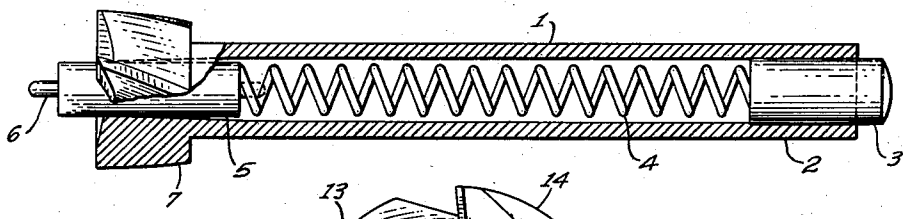


Fig. 2.

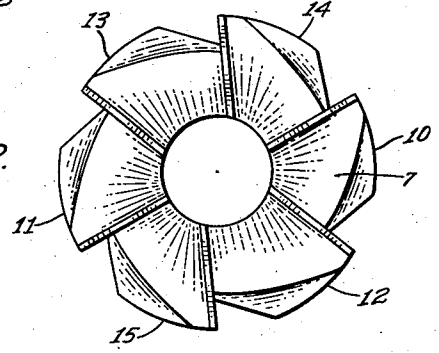
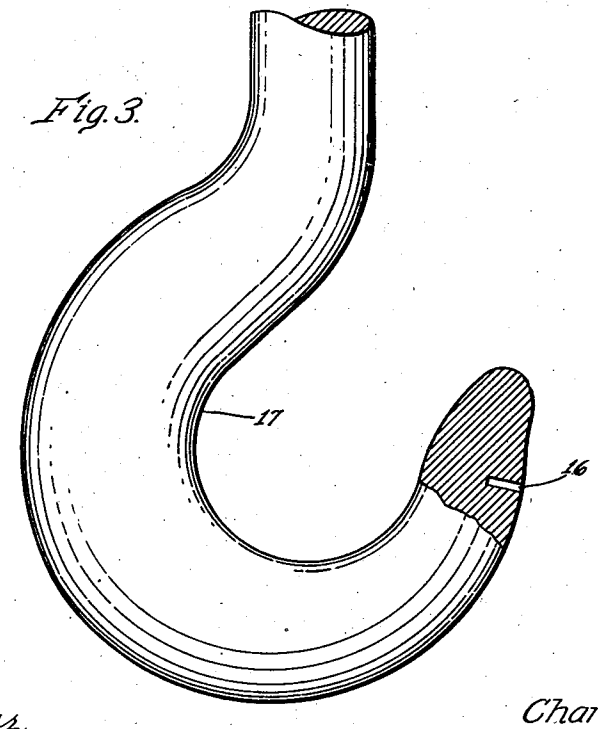


Fig. 3.



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Patented Sept. 26, 1944 2,359,091

UNITED STATES PATENT OFFICE

2,359,091

TEST CORE DRILL

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Application May 8, 1942, Serial No. 442,179

2 Claims. (Cl. 77—69)

My invention relates to a core drill for obtaining metallic test specimens and, more particularly, to a hand operated or power operated core drill for obtaining small steel, cast iron, copper or other metallic or non-metallic test pieces for the purpose of conducting tests on them.

Engineers and inspectors are frequently handicapped by the lack of a suitable tool for obtaining micro and other test pieces or specimens easily and expeditiously in the shop or field.

One object of my invention is the provision of a relatively small hand controlled manually operated, or power operated, core drill, or cutting tool, for obtaining slugs, cores and cuttings from metallic and non-metallic materials.

Another object of my invention is the provision of means for obtaining test specimens from the material objects such as, for example, machine parts without impairing them for their intended purpose or specimens of materials that need to be investigated by a microscope, chemically, or investigated for its mechanical strength or some other physical characteristic.

A broad object is the provision of means for obtaining expeditiously and cheaply relatively small, test specimens from materials to be investigated.

Tools of the prior art intended for somewhat the same objects as hereinbefore recited have been cumbersome, remove too much material, destroy the surface of the core or slug, and are not well adapted to portable drilling equipment nor for obtaining specimens from difficult positions.

Another object of my invention is thus the provision of a small portable device for obtaining test specimens.

Other objects of my invention will become more readily apparent from a study of the following specification and the drawing accompanying the specification, in which:

Figure 1 is a longitudinal sectional view of my device;

Fig. 2 is an enlarged bottom plan view of the cutting end of my device;

Fig. 3 is a showing of a machine part from which a test specimen may be taken without impairing the efficiency of the part.

In Figure 1, the drill tool 1 is of a hollow cylindrical shape having a shank end 2 of conventional outer contour to fit a portable hand operated or power operated drill. A rubber stopper, as a pencil eraser, or some other type stopper 3, is inserted at the right, and a relatively long soft spring 4 is disposed within the bore of the drill tool. This spring biases the centering pin 5 to the position shown. The centering pin has the projection 6 for definitely holding the cutter 7 in position during use.

The cutter is of special type as is apparent from an inspection of Fig. 2. It will be noted that the distribution of the cutting edges is not symmetrical. The teeth or cutting edges are somewhat staggered. This unequal spacing of the cutting edges has a steadying effect and improves the cutting life of the drill. This is particularly useful when a high speed power drill is used to operate the cutter.

The angle of the cutting edge of the teeth is varied with respect to the radius line. Some cutting edges may be radial as cutting edges 10 and 11; some may be so constructed that the inner end of the cutting edge leads the outer end, as cutting edges 12 and 13 and still other cutting edges are so constructed that the inner end of the cutting edge lags behind the outer end, as cutting edges 14 and 15. These angular differences have a favorable influence upon the chip and its removal.

In use, the operator first selects a place, as point 16 on the hook 17, on a machine part, or other material, where a specimen can be taken without, in any way, impairing the utility of the machine part subsequent to the taking of the test specimen. A small shallow hole is first drilled at the place selected. The diameter of this hole and its depth are selected to be a trifle greater than the diameter and length, respectively, of the projection 6.

The drill tool 1 is then used to take the core. The projection 6 effectively centers the drill tool. As soon as the cutter 7 has penetrated to a depth of about one-sixteenth to one-eighth of an inch the centering pin 5 and spring 4, their function of locating the drill having been accomplished, may be removed by simply raising, thus permitting them to drop out. The cutting member 7 may then be reinserted and the drilling resumed and drilled to the desired depth.

If only a short core is desired, it may not be necessary to remove the pin 5 and spring 4.

After the desired length of the core is cut, a punch or screw driver is inserted in the hole originally used by projection 6 for centering the drill tool, and by tapping the punch the test piece is broken off at its base and may then be removed from the machine part for inspection and tests.

While I have shown a drill tool having six cutters, I am not limited to the particular number of cutters nor otherwise to the particular showing

made. I desire to be limited only by the scope of the claims hereto appended.

I claim as my invention:

1. A drill tool for taking test specimens from materials, said drill tool being tubular and having a shank end for connection to an operating mechanism and having cutting teeth at the other end, said cutting teeth having their respective cutting edges disposed in the end face of the tubular drill tool, having the cutting edges asymmetrically circumferentially spaced in the said end face, and having their respective cutting edges vary in angular position with reference to radius lines drawn from the longitudinal axis of the drill tool to corresponding points on the teeth some diametrically opposite cutting edges being parallel to the radius lines, other diametrically opposite cutting edges having their inner ends leading their outer ends and still other diametrically opposite cutting edges having their inner ends lagging their outer ends.

2. A core drill tool of tubular construction having cutting teeth at the cutting end and means at the other end for connecting the tool to an operating mechanism, the teeth having cutting edges that vary in angular relation with reference to radius lines drawn from the longitudinal axis of the drill tool to corresponding points on the teeth, some cutting edges being parallel to the radius lines, other cutting edges having the inner ends leading the outer ends and still other cutting edges having the inner ends lagging the outer ends.

CHARLES T. EAKIN.