F. C. BRANDENBURG.

STAGGERED TOOTH CUTTER FOR DRESSING ABRASIVE ELEMENTS.

APPLICATION FILED MAY 22, 1920.

1,423,075. Patented July 18, 1922.

Fig. 1.

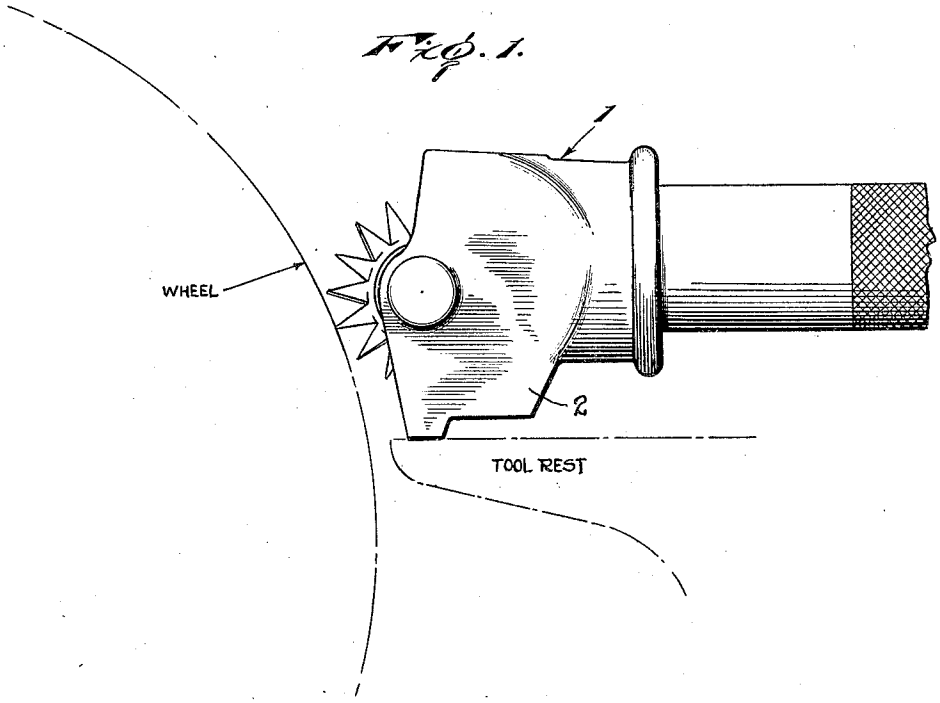


Fig. 2.

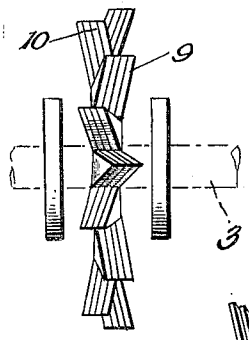


Fig. 3.

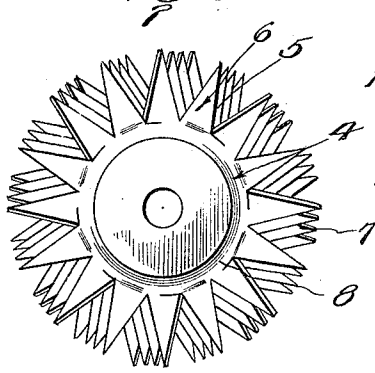


Fig. 4.

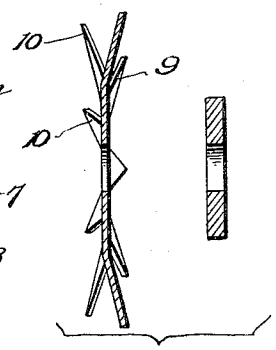
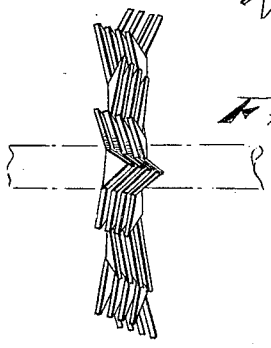


Fig. 5.



Inventor

Francis C. Brandenburg.

By Lacy & Lacy, Attorneys

UNITED STATES PATENT OFFICE.

FRANCIS C. BRANDENBURG, OF PIQUA, OHIO.

STAGGERED-TOOTH CUTTER FOR DRESSING ABRASIVE ELEMENTS.

1,423,075. Specification of Letters Patent. Patented July 18, 1922.

Application filed May 22, 1920. Serial No. 383,435.

To all whom it may concern:

Be it known that I, FRANCIS C. BRANDENBURG, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Staggered-Tooth Cutters for Dressing Abrasive Elements, of which the following is a specification.

This invention relates to cutters for emery wheel dressing tools and has as its object to provide an improved form of cutter for rough dressing emery wheels, the cutter being specially designed for use in connection with the tool forming the subject matter of my Patent No. 1042761, issued October 29, 1912, and the improvement thereon shown in my copending application filed April 10, 1919, Serial No. 288,934.

The invention has as a particular object the provision of a tool which will impart a spirally roughened face to the emery or other abrasive wheel being rough dressed, and which will evenly and yet rapidly act upon the face of the wheel to dress the same.

A further object of the invention is to provide a cutter, the individual units of which may be pressed or stamped from sheet metal and thus manufactured at low cost.

Another object of the invention resides in providing a cutter the units of which are so assembled with respect to each that when grouped together in their assembled relation they are held against rotation past one another and yet may have limited relative rotative movement to a desired extent and likewise a limited longitudinal movement.

The invention further provides a cutter having sharp staggered teeth which are especially adapted for spirally corrugating the face of an abrasive wheel.

In the accompanying drawing:

Figure 1 is a side elevation of the cutter embodying the present invention mounted in the head of the tool in connection with which it is to be employed and illustrating the manner of using the tool;

Fig. 2 is an edge view of the cutter comprising the assembled units;

Fig. 3 is a side elevation of one of the units;

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 3, the view also illustrating one of a pair of spacing or thrust washers employed in connection with the cutter;

Fig. 5 is a view similar to Fig. 2 but with the units rotated relative to each other and moved to the desired limited extent longitudinally, the position which they assume when dressing the wheel.

As the tool itself is described and claimed in my patent and in my co-pending application, a specific description thereof is not here necessary, it being sufficient to state that the head of the tool, indicated in general by the numeral 1 in the drawings, is provided with spaced cheek pieces 2 between which the cutter is mounted, and in which cheek pieces there is rotatably mounted a bearing spindle for the cutter indicated by the numeral 3. The cutter comprises an assemblage of units, and as these units are all of identical construction, a description of one will suffice. Each of these units, indicated in general by the numeral 4, is stamped or pressed from a circular sheet metal blank, and in the stamping or pressing operation the blank is formed with a number of incisions 5 of V-shaped form defining the teeth of the unit. This arrangement of the incisions forms V-shaped teeth 6 in the peripheral portion of the unit, the incisions and teeth alternating, as clearly shown in Figure 3 of the drawings and providing pointed teeth. The unit is formed with a central opening 7 to receive the spindle 3 and each unit comprises a web portion 8 lying within the circle touched by the inner ends of all the incisions, the incisions being all substantially of the same depth. This web portion is flat upon both of its faces and, of course, when the unit is fitted upon its spindle, occupies a plane at right angles to the axis of the spindle.

While the teeth are indicated in general by the numeral 6 and are all pointed, I have designated certain of the teeth of the unit by the numeral 9 and others by the numeral 10. Referring to Figures 2, 3 and 4 of the drawings, it will be observed that the teeth 9 and 10 lie or extend at opposite sides of the plane occupied by the web portion of the unit, and the said teeth 9 and 10 are alternately arranged. It will further be observed that while the teeth of each set are relatively separated by the incisions and lie at opposite sides of the plane of the web portion of the unit, nevertheless, the teeth of each set are correspondingly helically dis-

posed with relation to the axis of the unit. In other words, the teeth of each set are distorted or twisted so that their common line of curvature is helical to the axis of the unit. Also it will be evident from the drawings that while the teeth 9 and 10 are located on opposite sides of the plane of the web of the unit, their outer edges are all inclined in the same direction and extend along lines spiral to the axis of the unit.

In building up the cutter, the desired number of units are placed in assembled relation side by side upon the spindle 3 and when so disposed the side faces of the teeth of one unit will contact with the side faces of the teeth of the next adjacent unit throughout the series. Also it is evident that when the units are properly assembled they will, in a sense, interlock so that relative rotation of the units with respect to each other is positively prevented except that there may be a slight relative movement displacing the teeth of the one unit progressively with respect to the teeth of the other units or, that is to say, the combined corresponding teeth will be displaced relative to each other through a slight arc dependent upon the amount of lateral displacement of the cutter units on the spindle 3. The lateral displacement is limited by the provision upon the spindle 3 at opposite sides of the assemblage of units, of washers 11 which contact the outer faces of the web portions 8 of the end units of the assemblage and also the inner or opposing faces of the cheek pieces 2 of the head of the tool 1, and which are of sufficient thickness to space the teeth from the said cheek pieces so that in rotation of the cutter said teeth will not contact with the inner faces of the cheek pieces and interfere with rotation of the cutter upon its spindle.

I claim:

1. A cutter for a dressing tool comprising an assemblage of cutter units each having a peripheral series of sharp-pointed staggered teeth having their side faces extending diagonally of the axis of the unit, corresponding teeth of the units lying side by side throughout the series and presenting their sharp points to the face of the work piece.

2. A cutter for a dressing tool comprising an assemblage of cutter units each having a peripheral series of sharp-pointed staggered teeth, the units being arranged side by side and the teeth of adjacent units interlocking in a manner to permit a limited relative rotative displacement of the teeth in one direction and presenting their sharp points to the face of the work piece.

3. A cutter for a dressing tool comprising an assemblage of cutter units each having a peripheral series of helically disposed sharp-pointed staggered teeth, a spindle upon which the units are rotatably mounted side by side, the teeth of adjacent units interlocking, and means upon the spindle to limit relative lateral separation of the units, said teeth presenting their sharp points to the face of the work piece.

4. A cutter for a dressing tool comprising a plurality of cutter units closely assembled on a spindle, each unit being provided with an even number of sharp pointed teeth extending radially from the body of the unit and alternate teeth being bent to right and left from a plane running transversely to the spindle axis; the sharp points of the teeth of the assembled cutter forming a helical line with relation to said axis and said sharp points being directed against the face of the work piece.

In testimony whereof I affix my signature.

FRANCIS C. BRANDENBURG. [L. S.]