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V. ROYLE

1,907,880

ROUTING TOOL

Filed June 19, 1930

Fig. 1.

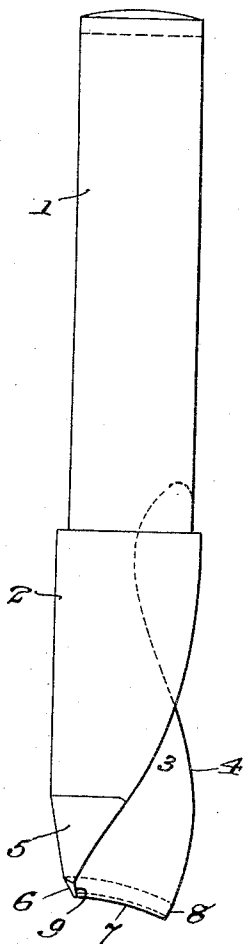


Fig. 2.

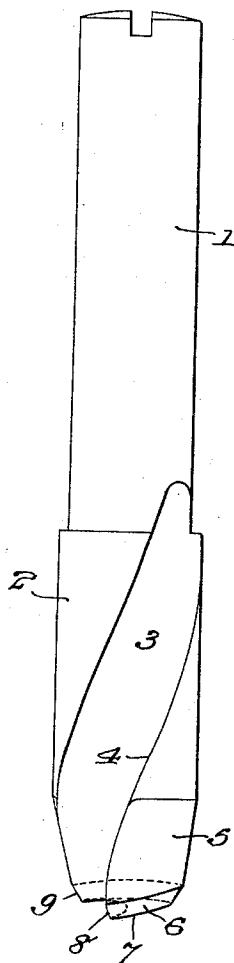
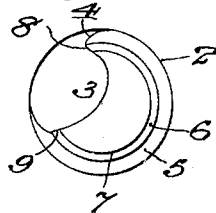


Fig. 3.



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ROUTING TOOL

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This invention relates to a routing tool and has for an object to provide a tool adapted for cutting by rotation and movement in a direction normal to its axis, which tool has a novel form of cutting portion that enables a clean and true operation to be attained and provides for elimination of the chips by imparting an upward movement to them.

Another object consists in providing certain improvements in the form of the tool whereby the above named and other objects may be effectively attained.

A practical embodiment of the invention is represented in the accompanying drawing, in which

Fig. 1 represents a side elevation of the tool,

Fig. 2 represents a similar view taken at right angles to Fig. 1, and

Fig. 3 represents an end view of the tool.

The routing of certain metals, notably copper and type-metal, has not been entirely satisfactorily performed by the character of routing cutters heretofore used, the defect residing chiefly in a somewhat ragged appearance of the cut. This result is believed to be due largely to the form or shape of the cutting portion of the tool which does not serve properly to provide lead and clearance and satisfactory elimination of the chips. I have found that, by shaping the cutting portion of the tool as shown in the accompanying drawing, this difficulty is eliminated and a substantially perfect cut obtained in all the materials upon which routing cutters are calculated to operate, including copper and type-metal.

Broadly speaking, the cutting portion of my improved tool embodies a spiral formation of the cutting edge with a spiral groove adjacent the edge whereby the lead and clearance of the tool are greatly improved and the elimination of the chips is rapidly

and thoroughly accomplished by imparting an upward movement to them.

Referring to the drawing, the shank of the tool is denoted by 1 and the cutting portion by 2.

The cutting portion has a spiral groove 3 formed therein which establishes a cutting edge 4 that is also of spiral shape.

The end of the tool has a large tapered portion 5 and its extremity is additionally tapered as indicated at 6, which taper terminates in the lower cutting edge 7.

It will be observed that the said extremity is of a spiral formation, considered with respect to a plane normal to the axis of the tool so that there is a gradual recession or upward development of the extremity of the tool from the point marked 8 to the point marked 9. It will further be observed that the point marked 7 is ground away in order to eliminate a sharp projection thereat which might tend to break off in the use of the tool.

The form of the cutting portion of the tool which has just been described provides that the cutting edges 4 and 7 recede from the point 8 in angular directions; i. e., the cutting edge 4 does not extend axially of the tool and the cutting edge 7 does not extend at right angles to the axis, but both said edges lie at acute angles to the axis. This insures a greatly improved lead and clearance for the cutting portion so as to promote rapid and clean routing.

The spiral groove 3 grows less in cross sectional size as it approaches its upper end where it vanishes into the shank 1, and the spiral formation of this groove, in addition to its decrease in cross sectional size, serves to impart an upward movement to the chips and to eliminate the same from the cutting area as they are formed. There is no opportunity for any of the chips to remain adjacent the active cutting edges for any length of time, so that they cannot impede

the progress of the tool or its lead into and operation upon the material.

The bevels 5 and 6 promote the initial entrance of the tool, by an axial movement, into the material, and the bevel 6 naturally cooperates with the shaping of the point 8 to eliminate any sharp projection thereat. However, the main utility of the tool, as is of course well understood, resides in the cutting operation performed while it is moving sidewise or in a direction at right angles to its axis, and it is to improve the operation in this respect by eliminating hitherto present discrepancies that this invention is directed.

I realize that a spiral cutting edge has been used on drills and the like for many years but, so far as I know, no such provision has ever been made in connection with a routing cutter that operates upon material in a direction and in a manner entirely different from a drill, in spite of the fact that the ragged character of the cut resulting from the use of prior routing tools, particularly in connection with certain materials, has been a distinct and thoroughly recognized disadvantage in this art.

It will be understood that various changes may be resorted to in the material and form of the tool without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the details herein shown and described, except as they may be included in the claims.

What I claim is:—

1. A routing tool for cutting by rotation and movement in a lateral direction with respect to its axis, said tool having a cylindrical shank, a spirally formed groove therein, one longitudinal edge of said groove being disposed at a greater distance from the longitudinal axis of the tool than the other edge to form a spiral longitudinal cutting edge, and a flat bottom on the shank inclined at an acute angle to the axis of the tool, the lowermost portion of said inclined bottom terminating at the lower end of said cutting edge and forming therewith a downwardly projecting cutting point at the periphery and the lower edge of the curved wall of the longitudinal groove adjacent the inclined bottom forming a spiral cutting edge between said cutting point and lower end of the other longitudinal edge of the groove.

2. A routing tool for cutting by rotation and movement in a lateral direction with respect to its axis, said tool having a cylindrical shank and a beveled lower end, a spirally formed groove therein, one longitudinal edge of said groove being disposed at a greater distance from the longitudinal axis of the tool than the other edge throughout the beveled portion to form a spiral longitudinal cutting edge, and a flat bottom

on the beveled end inclined at an acute angle to the axis of the tool, the lowermost portion of said inclined bottom terminating at the lower end of said cutting edge and forming therewith a downwardly projecting cutting point at the periphery and the lower edge of the curved wall of the longitudinal groove adjacent the inclined bottom forming a spiral cutting edge between said cutting point and lower end of the other longitudinal edge of the groove.

In testimony, that I claim the foregoing as my invention, I have signed my name this 18th day of June 1930.

VERNON ROYLE.