

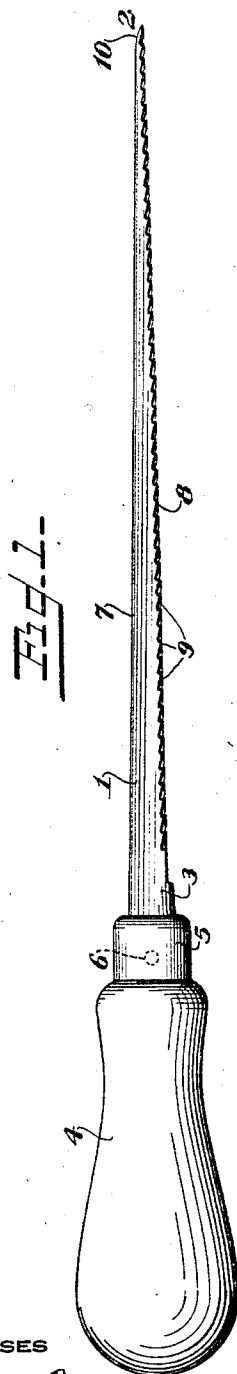
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M. J. SWANSON

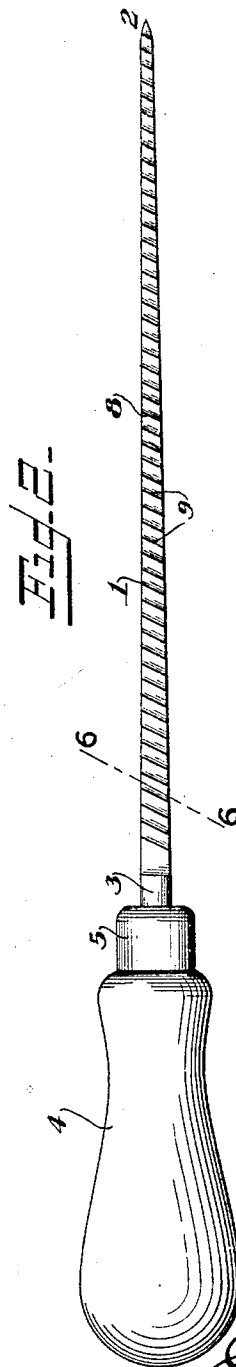
HOLE CUTTING TOOL

Filed March 24, 1924

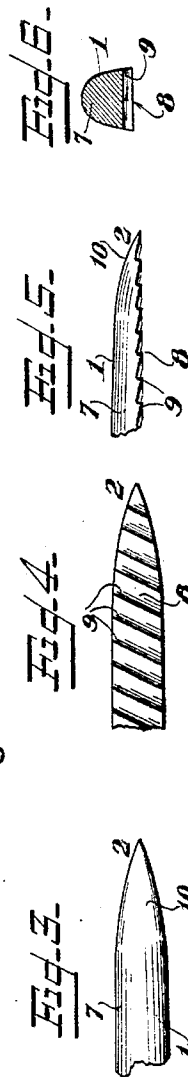


WITNESSES

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## UNITED STATES PATENT OFFICE.

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## HOLE-CUTTING TOOL.

Application filed March 24, 1924. Serial No. 701,494.

*To all whom it may concern:*

Be it known that I, MARTIN J. SWANSON, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented a new and useful Improvement in Hole-Cutting Tools, of which the following is a specification.

This invention relates to hole cutting tools.

The object is to provide a simple and cheaply manufactured tool which may be used by carpenters, plumbers, electricians, cabinet makers, locksmiths, and others, for the purpose of cutting holes in wood of varying shapes and thicknesses, the device being capable of cutting key-holes or round or square holes of any desired size.

Another object is to provide means in a single implement for starting the hole without the necessity for using an auger or bit, and then for easily and quickly enlarging the initial opening by sawing or rasping the same in the desired direction, the particular shape and construction of the penetrating point and the cutting teeth enabling the workman to complete the operation in a short time.

A further object is to provide a strong and durable tool of this character which will provide a clearance for itself as the wood is cut away in enlarging the opening, so that the tool may be easily turned in any direction to form a round, square or other shaped hole.

A final object is to construct a tool for the above purpose which may be readily filed to sharpen the cutting teeth and otherwise kept in good working condition without the services of an expert.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification, it being understood that while the drawing shows a practical form of the invention, the latter is not to be confined to strict conformity with the showing thereof, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawings, in which similar refer-

ence characters designate corresponding parts throughout the several figures:

Figure 1 is a side elevation of the improved tool;

Figure 2 is a bottom plan view of the same;

Figure 3 is an enlarged detail top plan view of the penetrating end of the tool;

Figure 4 is a similar view of the rasping side of the tool;

Figure 5 is a side elevation of the same; and

Figure 6 is a transverse sectional view taken on the line 6—6 of Figure 2.

The improved hole forming tool comprises an elongated shank 1 which is formed of the usual tempered grade of steel and is of sufficient cross sectional area to render the blade or shank entirely stiff at all times, as it is not intended that the tool shall flex or bend as in the case of an ordinary key-hole or compass saw.

The shank 1 is gradually and uniformly tapered from its free end or point 2 to the rear end of the shank, where the same is continued in the form of an elliptical extension 3 upon which is adapted to be mounted a wooden handle 4 which may be of any desired shape, size or proportions best adapted for the purpose. The extension 3 is preferably apertured where passing through the usual ferrule 5 for the reception of a pin 6, which permanently secures the handle to the shank and insures the turning of the device by the hand of the operator while in use.

As shown in Figure 6 of the drawing, the cross sectional shape of the shank 1 is semi-elliptical, with a relatively small difference between the larger and the smaller diameters of the ellipse, the top or back of the shank being rounded, as at 7, and the sides gradually flaring out toward the under or active side 8 of the shank, which is flat or straight across, the angle between the said bottom and the sides of the shank being the widest part of the shank. This causes the teeth to project at each side, as Figure 6 shows.

A plurality of transversely disposed, oblique teeth 9 are filed or otherwise cut in the flat side of the shank 1, the perpendicular walls of said oblique teeth being somewhat undercut to provide a series of chisel edges of ever increasing width from the point to the rear end of the shank, as

clearly shown in Figure 2. The teeth may be either right or left hand, as desired.

At the narrow end of the shank, the first tooth is so located with relation to the point 5 2, as to provide a V-shaped penetrating prong which is bent inwardly or downwardly toward the teeth slightly at an angle to the longitudinal axis of the shank, and having two cutting side edges which act to penetrate the wood and gouge or cut out the 10 same when the tool is rotated back and forth by the hand of the operator in a well-known manner.

After the initial opening has been formed 15 in the wood or plank in the above manner, the tool may be reciprocated in and out, through the opening thus formed, in the manner of a saw and at the same time be turned in the proper manner to form a 20 round, square or other shaped opening.

The rounded back 7 of the shank 1 is bevelled toward the point, as indicated at 10, to provide the aforesaid penetrating prong and at the same time the sides of the 25 prong are tapered inwardly to correspond thereto, as shown by Figures 2, 3 and 4.

By placing the point of the tool at the center of the desired key hole or other hole and rotating the same in opposite directions 30 in a well known manner, the side cutting edges of the point will rapidly form an opening large enough for the actual introduction of the end of the tool, after which the same may be thrust straight through the 35 same, each succeeding tooth entering therein, being wider than the preceding tooth, cutting away the wood at each side of the shank, and at the same time, the pressure downward of the hand causes the teeth proper on the flat side of the shank to remove 40 the wood in that direction, the obliquity of the cutting edges thereof greatly enhancing the work. The particular cross section shown and described not only facilitates the 45 lateral rocking of the blade which assists its entry into the work, but also strengthens it against bending laterally both during entry and its subsequent reciprocations.

From the foregoing it will be seen that a simple, cheaply manufactured, and efficient 50 tool has been provided for the purpose of cutting holes of various shapes in wood and that the same may be easily handled by any person for the purpose and readily kept in good working condition by simply filing the 55 teeth in the proper manner.

What is claimed is:—

1. A hole boring tool comprising an elongated stiff shank tapered from one end to the other and formed into a point at the 60 small end, a handle secured to the large end, said shank being substantially semi-elliptical in cross section, the long diameter of the ellipse being little greater than the short diameter thereof, the flat side of the shank 65 being at the widest part of the ellipse and having a series of cutting teeth formed therein, the remaining portion being rounded and smooth and flaring out toward the flat side causing the points of the teeth to 70 project at each side.

2. A hole boring tool comprising a non-flexible elongated shank having a uniform taper from one end to the other, a handle at the large end of the shank, said shank having 75 a flat bottom side constituting the active face thereof, the side walls of the shank converging toward the top and said top being rounded, obliquely arranged transverse cutting teeth formed in the flat bottom side of 80 the shank, said teeth having their perpendicular walls undercut, the side walls flaring out toward the flat bottom side causing the points of the teeth to project at each side, and a V-shaped point formed at the 85 small end of the shank and having an inclined flat side provided with cutting edges to initially penetrate the wood, said point being bent inwardly toward the side having the teeth and having the back beveled to 90 the point.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

MARTIN J. SWANSON,