Dec. 16, 1924. 1,519,344

H. ALLEMEIER

MEANS FOR CUTTING SPHERICAL OPENINGS

Filed Sept. 18, 1922

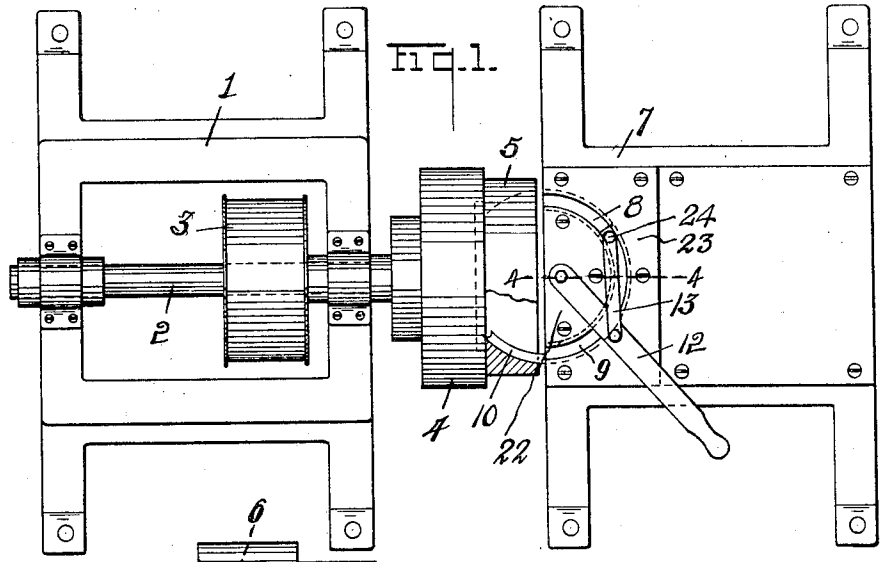


FIG. 1.

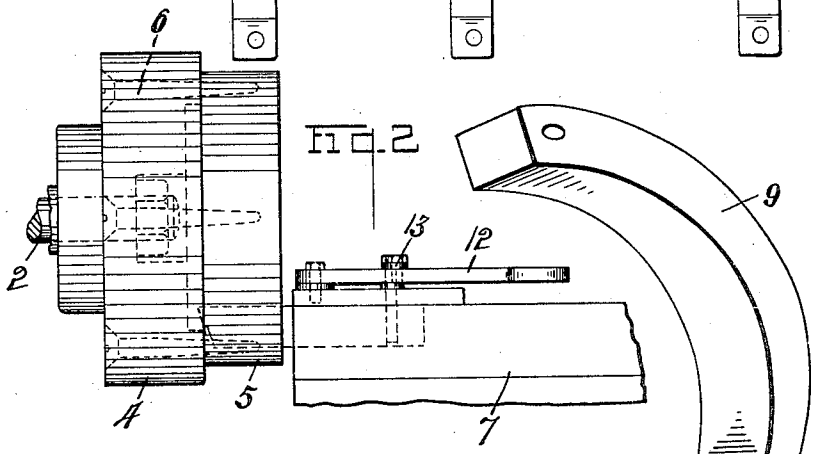


FIG. 2.

FIG. 5.

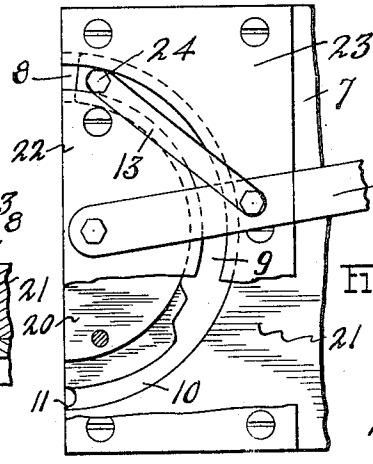


FIG. 3.

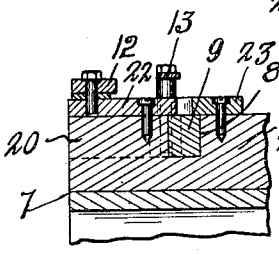


FIG. 4.

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UNITED STATES PATENT OFFICE.

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MEANS FOR CUTTING SPHERICAL OPENINGS.

Application filed September 18, 1922. Serial No. 588,828.

To all whom it may concern:

Be it known that I, HERBERT ALLEMEIER, a citizen of the United States, and a resident of Maumee, in the county of Lucas and State of Ohio, have made an Invention Appertaining to a Means for Cutting Spherical Openings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates particularly to woodworking apparatus, and has for its object the provision of a simple, novel and efficient apparatus of this character for cutting openings of spherical form in blocks of wood or other suitable, workable material.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view of an apparatus embodying the invention with the cutter member thrown to block engaging position and with a part of the block broken away; Fig. 2 is an enlarged fragmentary side elevation of the block holding and cutting parts of the apparatus; Fig. 3 is an enlarged plan view of the cutter member in retracted position together with a portion of dismounting, with parts broken away; Fig. 4 is a section on the line 4—4 in Fig. 1, and Fig. 5 is an enlarged perspective view of the knife.

Referring to the drawings, 1 designates a frame part which has a horizontal shaft 2 journaled in its top portion and provided with a pulley 3 to enable the shaft to be belt driven from any suitable power source. The shaft at one end projects beyond the frame 1 and carries a work holder 4 to which a work block 5 is secured by a plurality of screws 6 or in any other suitable manner. The work block 5 is customarily of wood and has an opening therein of cylindrical shape.

A second frame 7 is disposed at the outer side of the holder 4 and is provided in its top with a segmental knife guide or race 8 in which a knife 9 is mounted for longitudinal rotary reciprocatory movements. The raceway 8 is formed by securing a block 20 having a concaved edge to the frame 7, and by securing a second block 21 having a convex edge adjacent to and in spaced relation with the block 20 whereby a raceway is provided between said edges of the blocks. A metal plate 22 having a similar concave edge is secured on top of the block 20 and projects beyond the concaved edge of same, while a metal plate 23 having a convex edge is secured on top of the block 21 and projects beyond the convex edge thereof, thereby providing an arcuate groove between the adjacent edges of the plates 22 and 23 in which the pin 24 connecting the cutter 9 and the link 13 is adapted to operate.

The knife or cutter 9 has a broad prolonged arcuate nose portion 10, the free end of which is preferably concave in a radial plane and provided with a cutting edge 11 extending crosswise of the nose portion. The back or outer side of the nose portion 10 is transversely grooved to conform to the curvature of the block opening which it is desired to form and which curvature has the block center as its axis.

A knife operating lever 12 is pivoted at its inner end within the circle of movement of the knife at or near its center and is connected to the rear or inner end of the knife by a link 13 so that a swinging of the lever will impart a corresponding arcuate movement to the knife.

In the use of my invention a block 5 having a cylindrical opening therein is secured to the work holder 4 in centered relation to its axis of rotation and the holder is then driven at a high speed to impart rotation to the block. The operator then moves the handle 12 to gradually cause the cutting edge of the knife nose 10 to enter and cut away the inner marginal edge portion of the block to enlarge its opening and make it of spherical form or curved both in a plane which is radial to the axis of rotation to the block and in a plane which is longitudinal to the axis of the block with one end of the opening larger than the other, as indicated in Fig. 1. This device is found in practice to be very efficient and rapid in its operation in forming blocks with spherical openings and prevents or materially lessens the liability of breakage of the blocks during the cutting of such openings therein. The blocks are intended particulary for use in connection

with radio equipment, for instance, the field holding members of variometers.

I wish it understood that the invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of embodiment in numerous forms without departing from the spirit of the claim.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is,—

In an apparatus of the class described, a rotatable work holder, a guide member disposed opposite to and spaced from said work holder including a block having a concave edge, and a second block having a convex edge spaced from said concave edge to provide a race way in conjunction therewith, a metal plate secured on said block having the concave edge and projecting over the same, a metal plate secured on top of the block having the convex edge and projecting over the same in spaced relation with the adjoining edge of said first mentioned metal plate to provide a second race way, a lever pivoted at its inner end to said first mentioned block concentrically of the first raceway, a curved knife slidably positioned in the first raceway, a pin attached to the inner end of said knife and having a bearing in the raceway formed by the adjoining edges of said plates, and a link connected to said pin and to the lever.

In testimony whereof I have hereunto signed my name to this specification.

HERBERT ALLEMEIER.