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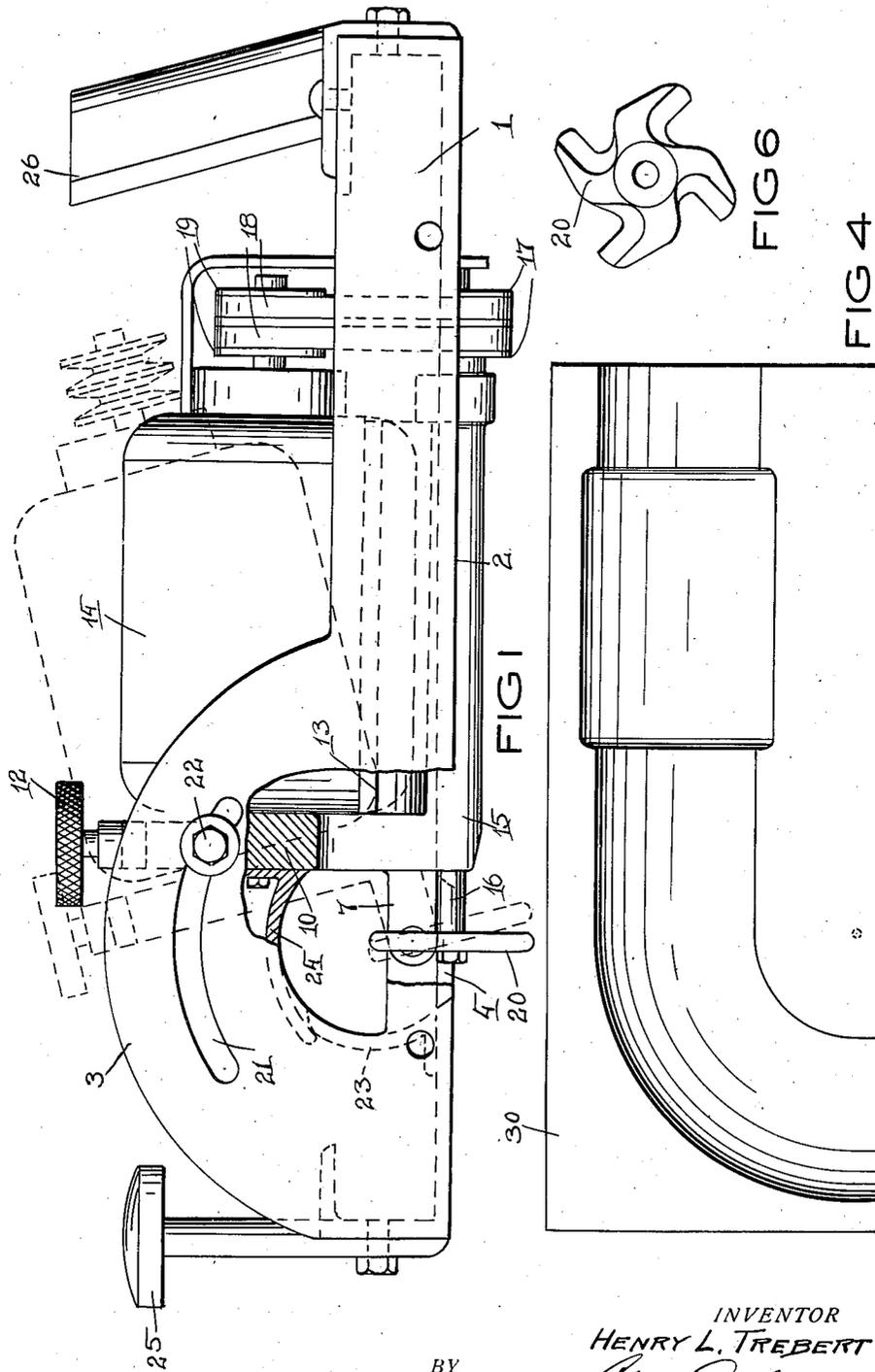
H. L. TREBERT

2,259,092

CHANNELING OR GROOVING MACHINE

Filed Jan. 23, 1939

2 Sheets-Sheet 1



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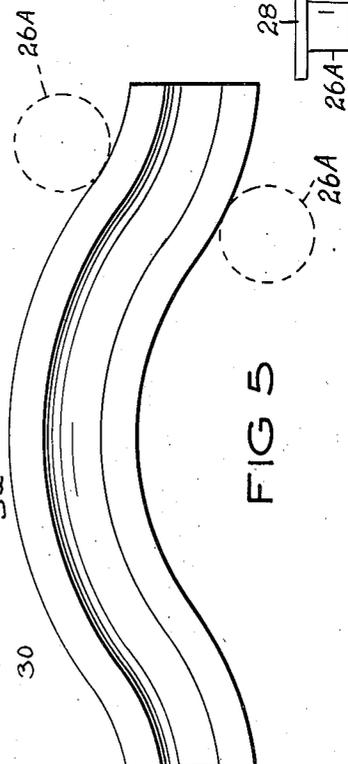
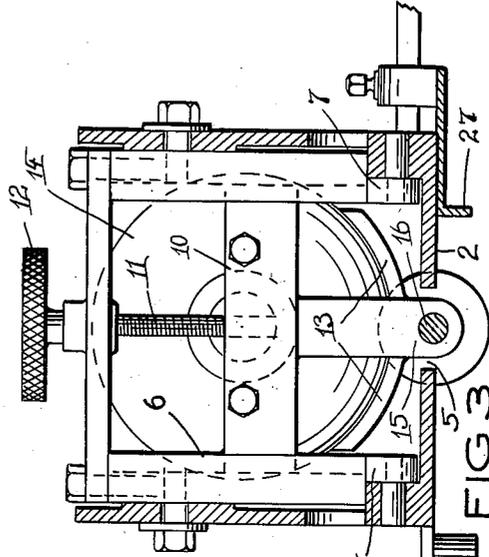
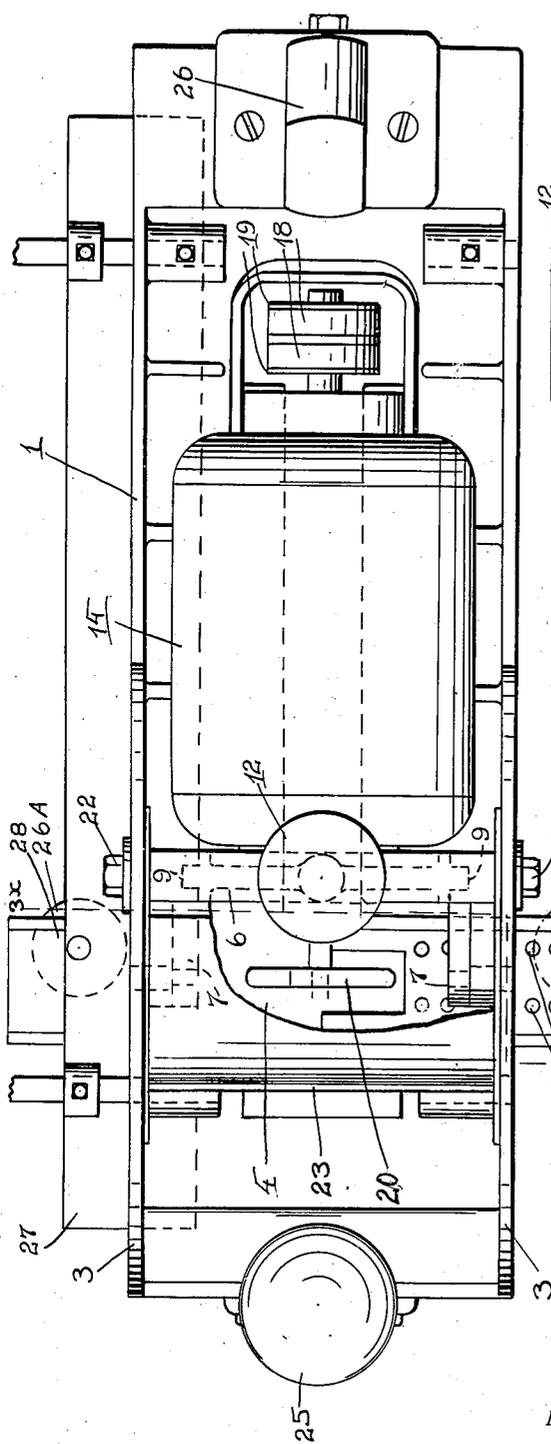
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CHANNELING OR GROOVING MACHINE

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6 Claims. (Cl. 144—136)

This invention relates to channeling or grooving machines and has for its principal object to provide a channeling or grooving machine which is adjustable and operable in a manner which makes it especially adapted for use in making patterns, core boxes etc.

Another object of this invention is to provide the channeling and grooving machine with guiding and adjusting means whereby the channels or grooves may be accurately cut at various depths, increased and decreased widths, either straight or curved and relative to preformed guide edges or predetermined layouts.

These and other objects and attendant advantages of the invention will become more clearly apparent from the detailed description thereof which follows, reference being had to the accompanying drawings in which

Figure 1 is a side elevation of the channeling or grooving machine partly broken away.

Figure 2 is a top plan view thereof.

Figure 3 is a vertical sectional view of the machine taken on the line 3x—3x of Figure 2.

Figure 4 is a plan view of a portion of a core box illustrating some of the channeling and grooving work performed by the machine.

Figure 5 is a plane view of an irregularly formed member which has been channeled or grooved with the machine.

Figure 6 is a detail front elevation of a cutter used in the channeling or grooving machine.

The machine forming the subject matter of my present invention is especially adapted for use by pattern makers for accurately channeling simple or difficult core boxes and patterns. The machine is simple in construction and operation and will perform work which heretofore could only be produced by more elaborately constructed and therefore considerably more costly machines.

As illustrated in the drawings, the machine has a flat bottom with a smoothly finished surface to form a sole 2 for accurately and slidably supporting the machine on the member to be channeled or grooved or for movement of the member to be channeled or grooved on the sole relative thereto. Semi-cylindrically shaped walls 3, 3 are provided on opposite sides at the forward end of the machine and midway of these walls and extending thru the sole is a transverse opening or mouth 4 which is extended rearwardly and longitudinally of the machine in the middle thereof with an opening 5 of reduced width. A supporting frame 6 is located and mounted to swing between the walls 3, 3 and is provided with the arms 7, 7 which carry the pivot pins 8 for pivotal engagement with the walls near the bottom thereof and at each end of the mouth in the sole. The sides of the frame 6 are provided with the opposing guide grooves 9, 9 to have the ends of the cross member 10 engage there-

into. An adjusting screw 11, which is rotatably supported in the middle of the frame 6 at the top thereof, is threaded into the cross member 10 so that the cross member can be moved up and down in the guide grooves on the rotation of the adjusting screw 11 by means of its handle 12.

Suspended from the cross member 10 is the cradle 13 in which is mounted the electric motor 14. The cradle carries on its under side a spindle bearing 15 so that the spindle 16 thereof is held suspended in the opening 5 with the head end of the spindle located centrally in the mouth opening 4. A pair of pulleys 17 on the rear end of the spindle 16 are operatively connected by a pair of belts 18 with the driving pulleys 19, 19 of the motor 14. The head end of the spindle 16 is threaded to provide for the fastening of a cutter 20 thereon and have this cutter operate in the mouth opening of the sole.

In the opposing walls 3, 3 are provided the curved slots 21, 21 which are concentric to the pivotal connection of the frame 6 with these walls. Clamping screws 22, 22, carried by the frame 6, pass thru these slots and move therein when the frame is angularly adjusted in the machine. With the cutter in the proper position the frame is thus adapted to be fixedly clamped in place between the walls by means of the clamping screws.

A guard plate 23 is attached to the machine in front of the mouth opening 4 and another guard plate 24 is fastened to the cross member 10 to extend over the mouth opening and partially overlapping the top of the guard plate 23 in order to cover the cutter in any of its angular positions in the opening.

A guide handle 25 is attached to the front of the machine and an operating handle 26 is provided at the rear of the machine so that the machine may be handled in the manner of a plane. To guide the machine, guide supporting rods project from the sides thereof so as to support the straight edge 27 between them and below the sole 2. This straight edge can thus engage the edge of the work while moving the machine to have the cutter channel or groove the surface of the work relative to said edge. When it is desired to channel or groove work relative to curved or irregular edges thereof, such as are illustrated in Figure 5, one or two guide rollers 26A, 26A are used. These guide rollers are removably mounted in holes provided in the guide plates 23 and are located thereon so as to have the rollers engage the edge of the work in predetermined relation to the channel or groove to be cut into the surface of the work. Where the work is narrow and has irregular but parallel sides, as illustrated in Figure 5, two rollers are used, one on each side of the machine. These

rollers are adjusted so as to straddle the work and simultaneously engage both sides thereof so that any movement of the machine will closely follow a path corresponding to the parallel edges of the work.

In order to produce a curved channel or groove a pivot pin or pivot screw is inserted thru one of the holes in one or the other of the guide plates 28 so as to enter the work and provide a pivot for the machine to swing thereon in a plane parallel to the surface of the work. The holes 29 in the guide plates are offset from the center line thereof so as to locate the pivot in a position in which it will be closely in line with the center of the cutter in its angularly adjusted positions in the mouth of the sole of the machine.

In Figure 4 I have illustrated a portion of a core box that may be cored out or grooved with my machine. For the straight, small diameter groove a small cutter is used and adjusted on the machine to cut the required channel or groove when the machine is moved and guided over the work in a straight line. For the enlarged section, the small cutter is replaced by a larger cutter in order to mill out the additional stock for the enlargement. Then with the straight section of the core milled out, the machine is pivotally anchored to the material at 30 by passing a pivot screw thru a hole 29 in the guide plate 28 that will provide the proper radius in which the machine must be swung in order to mill the curved portion of the groove at the proper radius as a continuation of the straight section thereof.

From the foregoing it will be apparent that the rotary cutter of the machine is adjustable vertically by moving the cradle in the supporting frame and angularly by swinging the frame with the cradle on the machine. In this way the cutting position of the cutter may be vertically and angularly adjusted to efficiently mill the desired channel or groove.

I claim:

1. A channeling or grooving machine, a fixed sole at the bottom of the machine for movable support of the machine or movement of the work on the sole relative thereto with an opening in the sole extending longitudinally in the direction of movement of the machine or movement of the work on the sole relative thereto, a supporting frame pivotally mounted on the machine, a spindle bearing at the bottom of said frame and extending longitudinally in the direction of movement of the machine or the movement of the work on the sole relative thereto for angular adjustment in a vertical plane in the opening of said sole, and a cutter spindle mounted to rotate in said spindle bearing and a cutter carried by said spindle substantially in the center of rotation of said frame.

2. A channeling or grooving machine, a fixed sole at the bottom of said machine for movable support of the machine or movement of the work on the sole relative thereto with an opening in the sole extending longitudinally in the direction of movement of the machine or movement of the work on the sole relative thereto, a supporting frame pivotally mounted in said machine, a spindle bearing at the bottom of said frame and extending longitudinally in the direction of movement of the machine or the movement of the work on the sole relative thereto for angular adjustment in a vertical plane in the opening in said sole, means for adjusting said spindle bearing in a vertical plane on said frame, and a cut-

ter spindle mounted to rotate in said spindle bearing and a cutter carried by said spindle substantially in the center of rotation of said frame.

3. A channeling or grooving machine, a fixed sole at the bottom of said machine for movable support of the machine or movement of the work on the sole relative thereto with an opening in the sole extending longitudinally in the direction of movement of the machine or movement of the work on the sole relative thereto, a supporting frame pivotally mounted in said machine, guide means carried by said frame, clamping means for clamping said frame and guide means into angular position on said machine, a cradle vertically adjustable in said guide means, a spindle bearing at the bottom of said cradle extending longitudinally in the direction of movement of said machine or the movement of the work on the sole relative thereto for angular movement in a vertical plane thru said opening in said sole, and a cutter spindle mounted to rotate in said spindle bearing and a cutter carried by said spindle substantially in the center of rotation of said frame.

4. A channeling or grooving machine, a fixed sole at the bottom of said machine for movable support of the machine or movement of the work on the sole relative thereto with an opening therethru extending longitudinally in the direction of movement of the machine and terminating in a transverse opening at one end thereof, a supporting frame pivotally mounted in said machine with its pivotal axis parallel to said transverse opening, a spindle bearing carried by said supporting frame for angular movement in a vertical plane in said longitudinal opening, a spindle mounted to rotate in said bearing and a cutter carried by said spindle for rotation and movement in said transverse opening substantially at the center of rotation of said frame.

5. A channeling or grooving machine, a fixed sole at the bottom of said machine for movable support of the machine or movement of the work on the sole relative thereto and having an opening therethru extending longitudinally in the direction of movement of the machine or the movement of the work on the sole relative thereto, a rotary cutter holder pivotally mounted in said machine for angular movement in a vertical plane in said opening, a cutter at the end of said holder, guide walls on said frame, guide slots in said guide walls, means carried by said cutter holder for engagement into said guide slots to clamp said cutter holder to said walls and hold said cutter holder in a selected angular position in said opening of said sole with the cutter substantially at the center of rotation of said cutter holder.

6. A channeling or grooving machine, a fixed sole at the bottom of the machine for movable support of the machine or movement of the work on the sole relative thereto, said sole having an elongated opening therethru extending longitudinally thereof in the direction of the movement of the machine or the movement of the work on the sole, a frame pivotally mounted on the machine for swinging movement relative to said sole, a spindle mounted to rotate in said frame and with said frame adjustable for angular movement in a vertical plane in said opening of said sole, and a cutter carried by said spindle substantially at the center of rotation of said frame on the machine.

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