Nov. 23, 1926. 1,607,895

A. H. KARR.

SHAPING MACHINE

Filed March 6, 1925

Fig. 1.

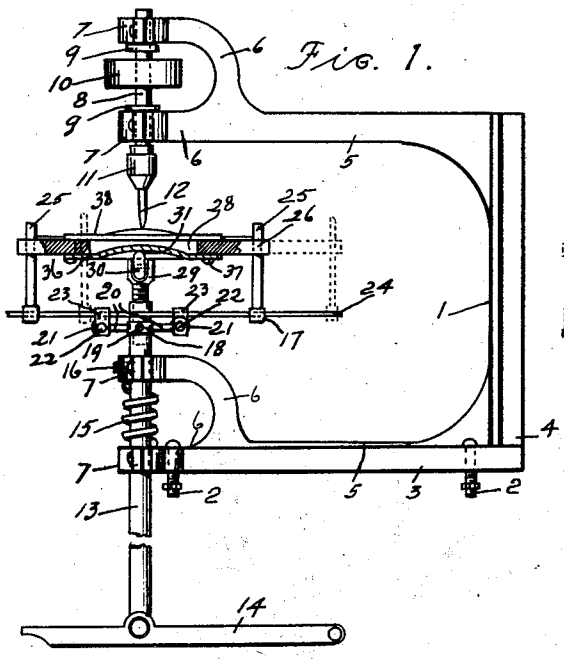


Fig. 2.

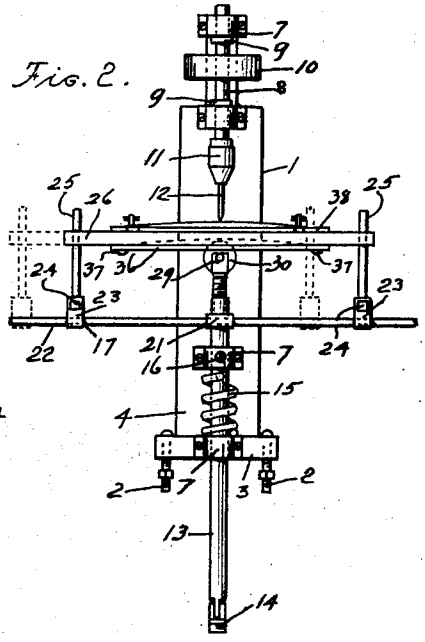


Fig. 3.

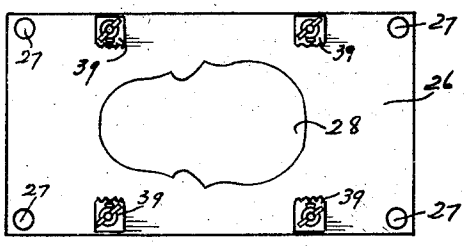


Fig. 4.

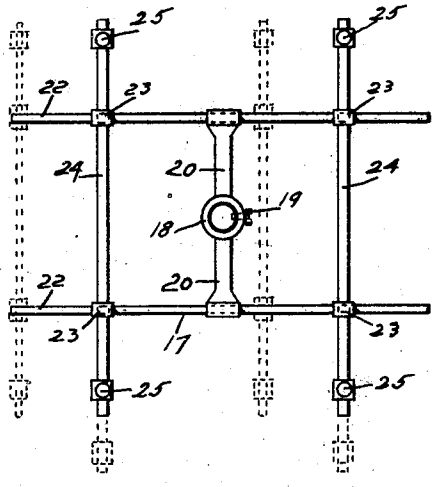
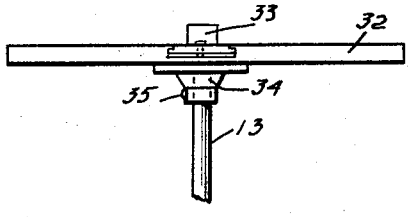


Fig. 5.



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ALBERT H. KARR, OF KANSAS CITY, MISSOURI.

SHAPING MACHINE.

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My invention relates to shaping machines, and the object of the invention is to provide a simple, inexpensive, and highly efficient machine of this character having facilities for shaping material to conform to the particular shape and form of a model or pattern carried by the machine to direct the shaping operation.

I attain these objects and other advantages by means of the mechanism and parts illustrated in the accompanying drawing in which—Figure 1 is a side elevation of a shaping machine embodying my invention: Figure 2 is a front elevation of the machine: Figure 3 is a top plan view of the table for supporting the material to be worked and the model for directing the shape of the same: Figure 4 is a top plan view of the carrier device, a part of my invention and Figure 5 is a side elevation of a modified form of the table to be used without the carrier when cutting grooves for inlay material.

Similar reference numerals refer to corresponding parts throughout the several views.

Referring to the drawings—the numeral 1 designates a frame for supporting the machine elements and which may be secured to any suitable support by bolts 2. The frame comprises a base 3, a vertical back portion 4, and horizontally aligned arms 5 which terminate in bracket arms 6 having bearing boxes 7 on their ends. A vertically extending shaft 8 is journaled in the boxes on the upper pair of bracket arms and supported in position by collars 9. A driving pulley 10 is secured on the shaft and between the upper pair of bracket arms. A tool chuck 11 is mounted on the lower end of the shaft and adapted to hold a tool 12. A plunger 13 is slidably mounted in the bearing boxes on the ends of the lower pair of bracket arms 6 and vertically aligned with the shaft 8, and the lower end portion of the plunger is pivotally connected to a foot lever 14. A compression spring 15 is mounted on the plunger between the lower pair of bracket arms, one end of the spring being secured to the plunger. A set screw 16 is mounted in the upper of the lower pair of bracket arms to engage and hold inoperative the plunger. A carrier 17 is removably secured on the upper portion of the plunger, said carrier having a collar 18 which is slidably mounted on the plunger and held in place by a set screw 19. The collar 18 has horizontally extending arms 20 disposed in opposite relation and the ends of the arms are provided with bearing boxes 21 having circular bores therein. In the bearings 21 are secured, in any suitable manner, circular rods 22, and on the rods, at opposite sides of the bearings 21, are slidably mounted bearing members 23, having in their lower portions circular bearings to slidably receive the circular rods 22, and in their upper portions square bearings to slidably receive square rods 24 which are extended at right angles to the rods 22. On the outer end portions of the square rods are secured posts 25. A table 26, having openings 27 apertured therein at the corners thereof, is slidably mounted on the posts 25. A central opening is apertured in the body of the table and representing, in this instance, the outline of the body of a violin, the opening being shown at 28, in Figures 1 and 3. In the upper end of the plunger 13 is a longitudinal bore provided with internal screw threads adapted to receive the screw end portion of a forked member 29 and in which is revolubly mounted a small wheel 30, having a convexed periphery 31. A flat and solid table 32 is provided for interchange with the table 26. The table 32 has a slidably mounted guide 33, and a hub 34 adapted to receive the upper end of the plunger 13, a set screw 35 being provided to set the hub on the plunger. A model 36 is secured on the lower side of the table 26, by screws 37, the convexed side of the model disposed in the opening 28, so that the outline of the convexed portion of the model shall register with the outline form of the opening. A suitable slab of material 38 is disposed on the upper side of the table 26 and is held in place by slidably mounted fastening devices 39, the latter having serrated ends adapted to penetrate the slab of material.

The machine described is shown operative to shape the slab of material to conform to the shape and form of the model, in this instance, the front and back members of the body of a violin. To operate the machine a model or pattern of the shape to be produced for the material is secured to the lower side of the table 26, in this instance, with the convexed portion of the model disposed in the opening in the table, the outline of the form of the convexed portion of the model conforming to the outline of the opening. The material to be operated upon

is secured to the upper side of the table 26, by the fasteners 39 and which are forced into the edges of the material. The carrier is then pulled back to the limit of its endwise stroke and the bearing member 29 adjusted on the plunger to bring the wheel 30 to bear on the lower side of the flat margin of the model. The plunger is then moved down a suitable distance by means of the foot lever 14, thereby, allowing the table 26 to fall to permit the adjustment of the cutting tool 12 in the chuck, whereupon, the plunger is permitted to move upward by the reaction of the spring 15, until the table has been elevated sufficiently to allow the tool to cut to the proper depth to duplicate the thickness of the model, the plunger being held at this point by applying the set screw 16 thereto. The shaft 8 is then driven and the carrier pushed sidewise forward to bring the material on the table in position to receive the first cut of the tool and to bring the flat margin of the model to bear on the wheel 30. Then the carrier is pushed lengthwise to make its forward end stroke and the tool engages and cuts the material to the end of the stroke. Then the carrier is pulled back endwise to the limit of its backward end stroke and pulled sidewise to feed the material to the tool for the second cutting. Then the carrier is pushed endwise on its forward end stroke and the tool makes its second cut. The operations described are repeated until the upper surface of the material is invested with a form and shape corresponding to the upper side of the model, an outer margin of the material being left uncut to assure the effectiveness of the fastening devices, the margin being separated from the finished shape when it is removed and reversed. When the carrier is advanced sidewise to feed the material to the tool and the wheel 30 leaves the flat portion of the model and travels on the concaved portion of the same the table 26 falls correspondingly a distance regulated by the convexity of the model so that the cutting away of the material will produce a shape and form in imitation of the convexed side of the model and likewise the flat portion thereof. After the material has been invested with a shape imitating the convexed side of the model the latter is reversed on the lower side of the table and the material body also reversed on the upper side of the table, the convexed portion of the material being disposed in the opening 28, the outline of the convexed portion registering with the outline of the opening. The model and the material are secured in place as before explained and the carrier manipulated as before stated, thereby producing a flat and a concave portion of the material in imitation of the convexed side of the model. The two operations described gives shape and form to the slab of material in exact imitation of the model. In the last operation the wheel 30 travels from the flat portion to and over the convexed portion of the model, so that as the wheel travels from the flat portion to the convexed portion the table 26 is raised a distance regulated by the convexity of the model, thus permitting the tool to cut away the material to form a concaved portion in imitation of the concaved portion of the model. When the table 26 is moved lengthwise the bearing members 23 slide on the rods 22 and, when it is moved sidewise, the square rods 24 slide in the square bearings in the members 23. The table being mounted on the posts 25 it is carried both lengthwise and side wise by the rods 24 and, at the same time, is reciprocated by the wheel 30, as it travels on the convexed and concaved portions of the model. When the shaping operation is completed, the carrier may be removed from the machine and the flat table substituted in its place on the plunger, first removing the wheel 30 therefrom. The table 32 supporting the finished shape and the guide 33 guiding the course of the groove or channel cut by the tool in which inlay material may be disposed to reenforce the member or decorate the same.

Having described my invention what I claim is—

In a shaping machine, a vertically extending frame having two horizontally extending vertically aligned arms, a shaft journaled vertically in the upper arm on said frame, a cutting tool carried by the lower end of said shaft, a plunger rod slidably mounted on the lower arm on said frame and axially aligned with said shaft, a carrier secured on the upper portion of said plunger and adapted for right angle horizontal movements, said carrier comprising a pair of horizontally disposed transverse rods secured on said plunger rod in spaced parallel relation and provided with slidable bearing members having bars slidably mounted in their upper end portions and disposed in spaced parallel relation at right angles to the transverse rods and provided on their respective end portions with oppositely disposed posts, a work-table slidably mounted on said posts, a work-piece secured to the upper side of said table, and a wheel adjustably mounted on the upper end of said plunger and bearing on the lower side of said template.

ALBERT H. KARR.