

No. 724,969.

PATENTED APR. 7, 1903.

E. THERN.
CARVING MACHINE.

APPLICATION FILED FEB. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

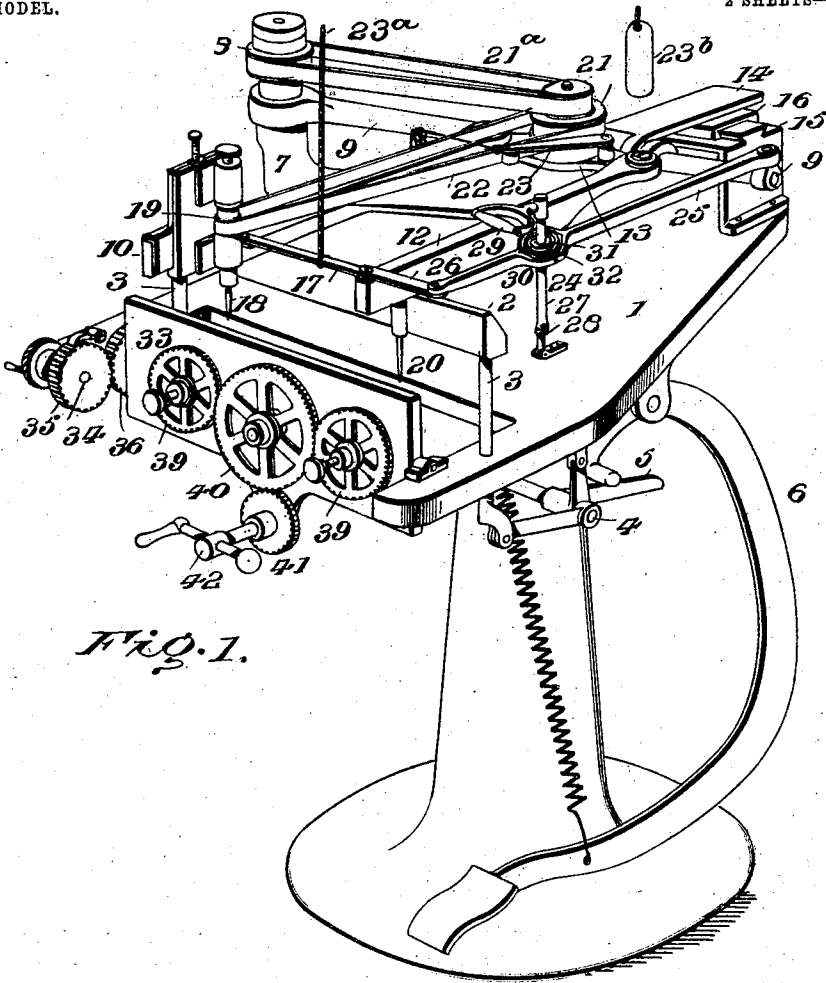
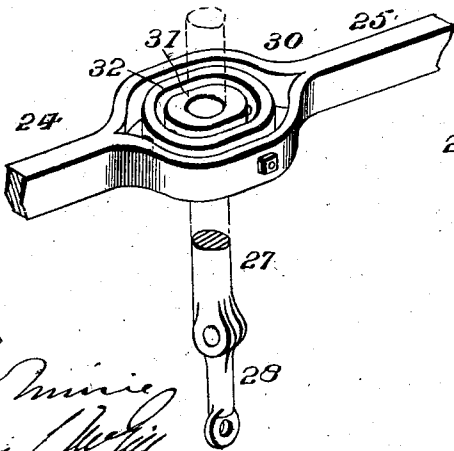


Fig. 1.

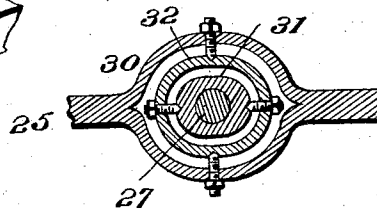
Fig. 5.



Witnesses

For Mining
Charles L. Miller

Fig. 6.



Inventor

Emrick Thern,

By *John A. Miller*
Attorney.

No. 724,969.

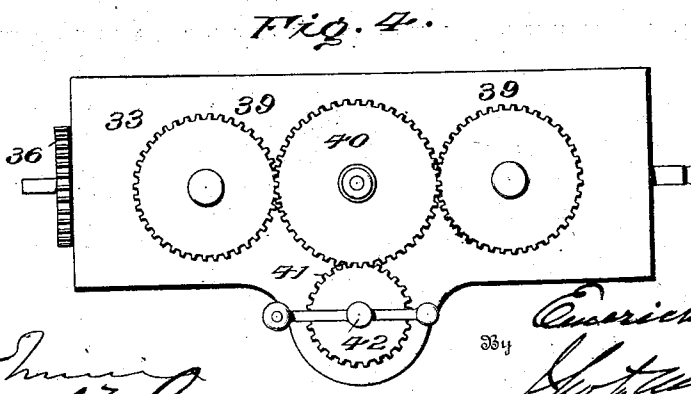
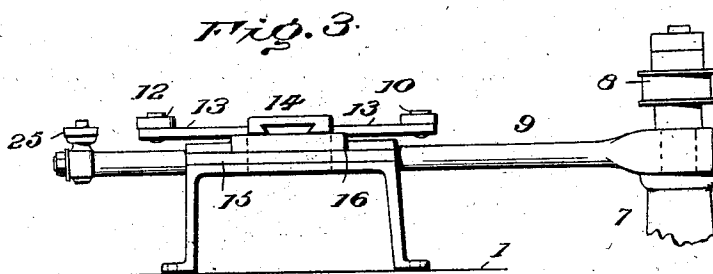
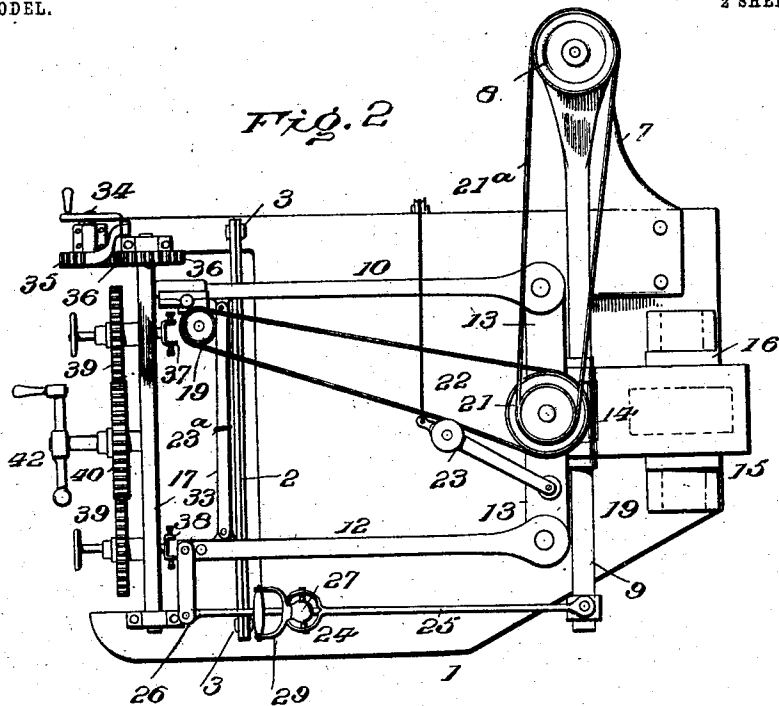
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2 SHEETS—SHEET 2.



Witnesses

James H. ...
Charles L. ...

Inventor

Emrich Thern
J. H. ... Attorney

UNITED STATES PATENT OFFICE.

EMERICH THERN, OF BOSTON, MASSACHUSETTS.

CARVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 724,969, dated April 7, 1903.

Application filed February 21, 1902. Serial No. 95,121. (No model.)

To all whom it may concern:

Be it known that I, EMERICH THERN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Carving-Machines; 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.

The primary object of this invention is to provide a carving-machine with improved means for simultaneously adjusting the tracer and cutter arms.

A further object is to provide a carving-machine with means for presenting the model or pattern and the part to be worked to both the guide-pin and the cutter, respectively, at any desired angle, so that a maximum of working capacity is secured; and a further object is to provide a machine of this character of such simplicity of construction and operation that it may be manipulated by an unskilled person.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective. Fig. 2 is a top plan view. Fig. 3 is a rear end view of the tool-carrier with parts omitted. Fig. 4 is a front view of the work-table. Fig. 5 is an enlarged view of a portion of the shifter. Fig. 6 is a horizontal section through a portion thereof.

Referring to the drawings, 1 designates the table; 2, a cross-bridge; 3, rods depending from the bridge and connected to arms of a crank-shaft 4, mounted beneath the table. An arm 5 of this shaft is engaged by one end of a foot-lever 6, by moving which the bridge may be held in different positions—that is, in relation to the table-top.

7 is a bracket for supporting an upright shaft, whereon is a pulley 8 and a swinging arm or support 9, extended horizontally across the table and free to be moved on its axis to any desired point.

The tool-carrier comprises the swinging arm 9 and two parallel arms 10 and 12, which latter are connected by a link 17 and articulated at their rear ends to laterals of a bracket 13.

This bracket is loose on arm 9 to permit of its turning thereon in the rise and fall of arms 10 and 12 and to allow of the back-and-forth swinging of arm 9, such bracket instead of moving on the arc of a circle traveling on straight lines in being shifted back and forth. For this purpose a rearwardly-extended guide-plate 14, secured to the bracket, has a right-angular sliding connection with a stationary block 15 through an interposed sliding block 16. The latter is free to be moved on block 15 at right angles to the longitudinal movements of the guide-plate, which is held thereto by a dovetail socket-and-groove connection, a like connection holding block 16 to the stationary block 15. The arm 10 supports a revolving cutter 18 and a band wheel or pulley 19, while the arm 12 has secured thereto a tracer or guide-pin 20. The pulley 8 actuates a pulley 21 on bracket 13 through a belt 21^a, and pulley 19 is in turn actuated by a second belt 22. A belt-tightener 23 serves to hold the latter under proper tension. A cord or rope 23^b, connected to the tool-carrier and engaging an overhead pulley, (not shown,) is secured to a weight 23^b, by which the carrier is held in balance.

24 is a shifter for manipulating the tool-carrier in any direction in the prosecution of the work. It comprehends a bar 25, pivotally connected at one end to a collar free to rotate on arm 9, permitting such bar to be swung both vertically and laterally, while at its other end the bar is connected by a link 26 to arm 12. A lever 27, having at its lower end a universal connection 28 to table 1, and at its upper end a handhold 29, is passed upwardly through bar 25. Between this lever and the bar there is a universal connection 30, consisting of two rings or collars 31 32, the former set within and pivotally hung to the latter, which in turn is set within and pivotally hung to an open widened portion of arm 25. By this means the tool-carrier may be easily and quickly shifted in any desired direction by moving lever 27—that is, the arms of the carrier may be moved on straight lines back and forth and transversely of the table and always retain their parallelism.

33 designates the work-table, which is axially mounted between two front end exten-

sions of the main table 1. By means of a crank-shaft 34, having a gear-wheel 35 meshing with a second gear-wheel 36 on one of the journals of the work-table, the latter may be axially turned and held by any suitable means—as, for instance, a pawl-engaging wheel 35. The work-table is equipped with two holders 37 and 38, one for the block of wood or other article to be worked and the other for the model or pattern, which latter is to be traced by the guide-pin, while the former is to be operated by the cutter. These holders are on shafts journaled in the table 33 and on which are keyed gear-wheels 39, with both of which meshes an intermediate gear-wheel 40, which in turn is rotated by a small gear-wheel 41 on a crank-shaft 42. The turning of wheel 41 causes the shafts of the two work-holders to revolve uniformly in the same direction. By this means the model and the part to be worked are individually and simultaneously rotated and presented to the guide-pin and cutter, respectively, from every point obtainable by axial movement, and, in addition thereto, by axially mounting the table supporting the holders the part to be worked may be presented in various positions obtainable by a rotation at right angles to the individual rotation of the work-holders. Hence I am enabled to accomplish an extended line of work. The cutting may be done on all sides and even inwardly from one end. In consequence an unskilled operator may, by keeping the guide-pin down to the model, produce most artistic results.

In practice the model is placed on its holder and the block to be cut in reproduction thereof is secured on the other holder, and both holders are turned axially by the train of gearing on the work-table, and the latter is itself adjusted by turning crank-shaft 34, the bridge being properly adjusted to support the front end of the tool-carrier, the weight whereof is counterbalanced, and the cutter is caused to engage with the block to be worked, while the guide-pin is directly over the model. The operator controls the work of the machine by constantly retaining hold of lever 27 and moving the tool-carrier back and forth or from side to side, as conditions may require. When the arms are raised or lowered by the treadle mechanism, bracket 13 turns partially around arm 9. To effect the longitudinal adjustment of the arms, lever 27 is thrown back or toward arm 9, the latter moving rearwardly in the arc of a circle and plate 14 sliding in block 16, the latter moving in block 15, thus compensating for the curved line of direction of arm 9. The arms 10 and 12 being pivotally secured to the laterals of the bracket and the latter controlled by the guiding mechanism, as before described, the arms remain in exactly the same relative plane during this longitudinal adjustment. The movement of the lever 27 at right angles to this plane of arms 10 12 causes bracket 13 to move longi-

tudinally of arm 9 and likewise block 16 in block 15 through the medium of slide 14, which latter during this lateral movement remains in stationary relation to block 16.

The advantages of my invention are apparent to those skilled in the art.

I claim as my invention—

1. In a carving-machine, a swinging support, tracer and cutter arms, a connection between said arms to which the arms are pivoted, and means for securing such connection to said support to allow it to turn on the latter and move longitudinally thereof, as set forth.

2. In a carving-machine a swinging support, a bracket mounted on said support capable of turning around the same and moving longitudinally thereof, said bracket having laterals, tracer and cutter arms pivotally secured to said laterals, and a second connection between said arms, as set forth.

3. In a carving-machine, in combination, a table, a bracket mounted on said table, a support pivotally mounted at one end on said bracket and designed to swing in a horizontal plane over said table, tracer and cutter arms, means pivotally connecting said arms and loosely secured to said support and capable of turning around the same and moving longitudinally thereof, and means for shifting said arms and support, substantially as set forth.

4. In a carving-machine, the combination with a support axially mounted at one end, and means for swinging such support, of a bracket loosely mounted on such support, two parallel arms, carrying, respectively, the cutter and tracer, such arms being pivotally secured to said bracket, and designed to move in unison, and mechanism connected to such bracket for controlling the movements thereof in straight lines during the swinging movements of the support, substantially as set forth.

5. In a carving-machine, the combination with a swinging support, tracer and cutter arms, and a bracket loose on said support and to which said arms are pivoted, of a slide connected to said bracket, a guide-block in which said slide is designed to move, a second guide-block in which said former guide-block is designed to move at right angles to the movement of said slide, and means for shifting said arms and support, substantially as set forth.

6. In a carving-machine, the combination with the swinging support, of the bracket mounted thereon having laterals, tracer and cutter arms held in fixed relation to each other and pivotally secured to said laterals, a slide extending from said bracket, a guide-block on which said slide is designed to move, a second guide-block on which said former guide-block is designed to move at right angles to the movement of said slide, means for raising and lowering said arms, and means

for shifting said arms, bracket and support, substantially as set forth.

7. In a carving-machine, the combination with the swinging support, the tracer and cutter arms held in fixed relation to each other and carried by said support and capable of turning around the same, of a shifter-arm, means connecting said arm to said support to permit of its being swung both vertically and laterally, a connection between said shifter and one of said arms, and means for guiding said arms and support during the shifting movement, substantially as set forth.

8. The combination with the table, the parallel arms and the movable support therefor, of an approximately horizontal bar pivotally connected to the support and to one of said arms, a vertical lever, a universal hinge connection between the lower end of the lever and the table, and a second universal hinge connection between the bar and lever, substantially as set forth.

9. The combination with the table, parallel arms, and the movable support for the latter, of the shifter comprising an approximately horizontal bar connected to the support and having an opening, a link connecting said bar to one of said arms, a lever passed through such opening, two hinged rings or collars in the latter forming a universal connection between the bar and lever, and a universal

hinge between the lever and the table, as set forth.

10. In a carving-machine, the combination with the table having extensions, of a work-support pivotally mounted between said extensions, a gear-wheel on the journal of said work-support, means on one of said extensions for operating said gear-wheel, holders on said support, and means for rotating said holders at right angles to the rotation of said support, as set forth.

11. In a carving-machine, the combination with the table having extensions, of a work-support pivotally mounted between said extensions, means for rotating said support, spindles extending through said support, holders mounted on said spindles, gear-wheels on said spindles, a gear-wheel intermediate of and meshing with said former gear-wheels, and means for rotating the same whereby said holders may be rotated simultaneously at right angles to the rotation of said support, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses:

EMERICH THERN.

Witnesses:

ELIZABETH R. PORTER,
GEORGE A. FLYNN.