

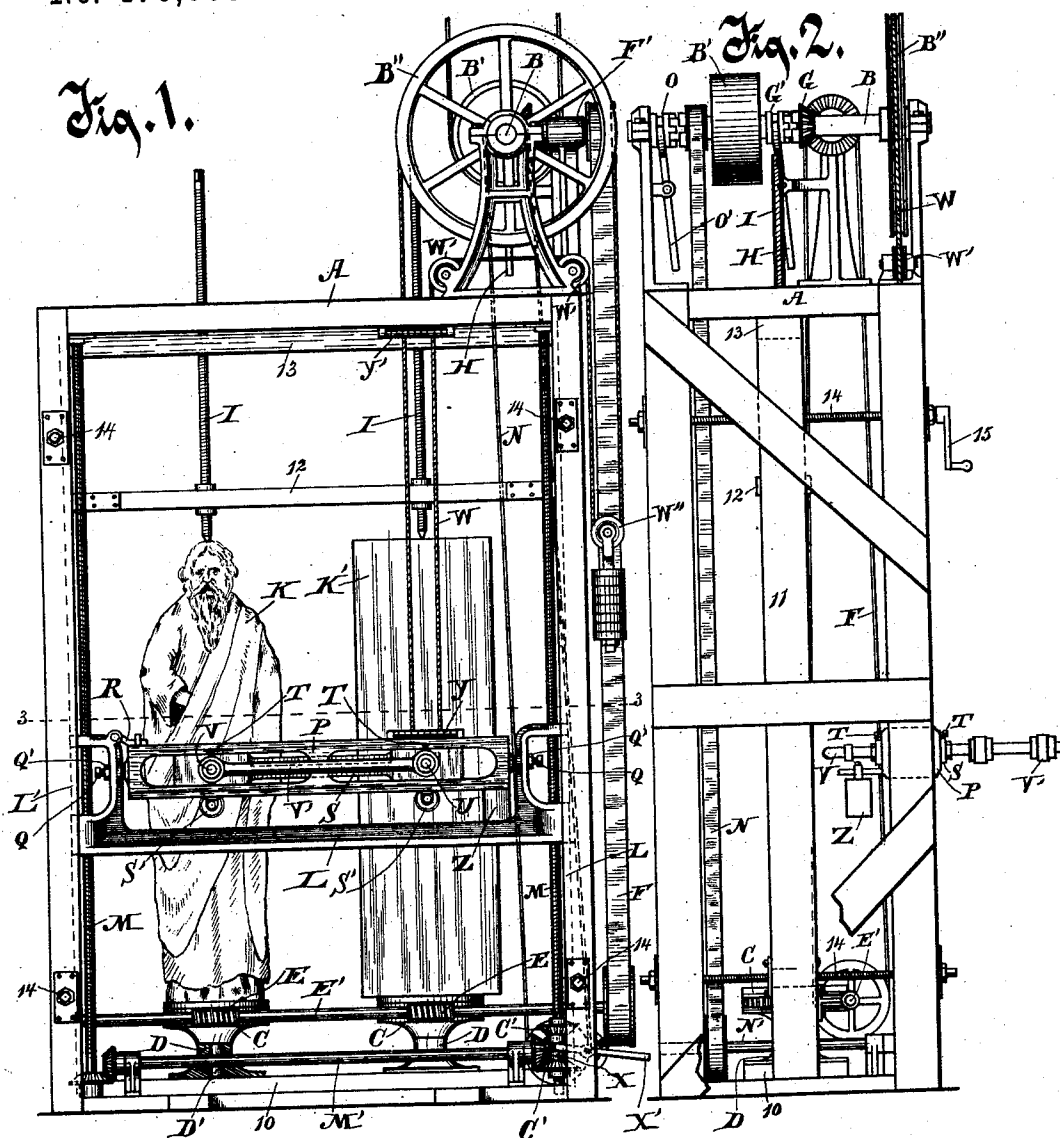
(No Model.)

2 Sheets—Sheet 1.

J. E. BRIELMAIER.
CARVING MACHINE.

No. 470,659.

Patented Mar. 15, 1892.



Witnesses.

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Inventor.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

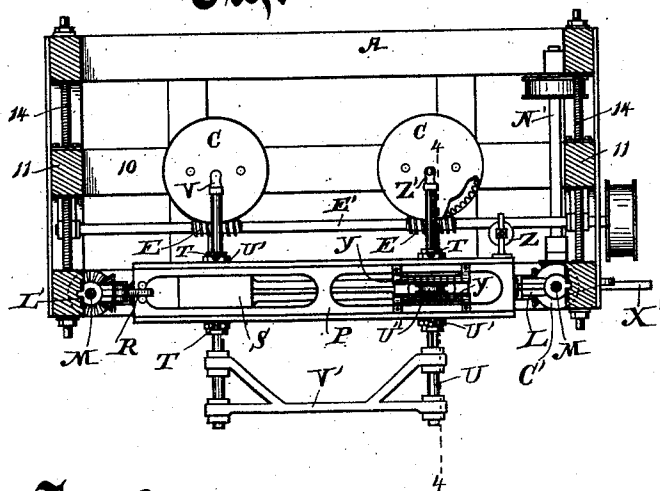


Fig. 4.

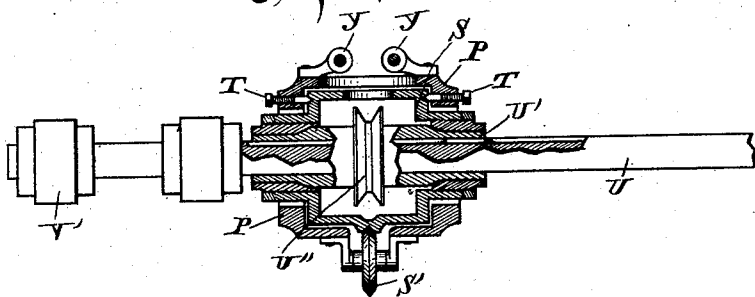
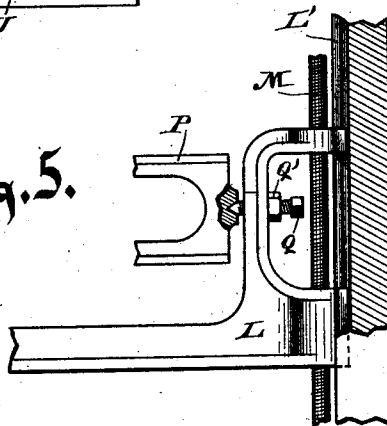


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN E. BRIELMAIER, OF ST. FRANCIS, WISCONSIN.

CARVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,659, dated March 15, 1892.

Application filed March 27, 1891. Serial No. 386,651. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. BRIELMAIER, of St. Francis, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Carving-Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in carving-machines adapted for routing in wood; and my invention is embodied in a machine especially adapted for carving statues, statuettes, or figures which are cut from a block of wood and involve routing or cutting on all sides of the block.

My invention consists in novel features in the construction and arrangement of the mechanism, which will be hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of the complete machine. Fig. 2 is a side elevation of the machine as seen from the left in Fig. 1. Fig. 3 is a transverse section of the frame and plan view of the mechanism looking downwardly, as taken on line 3 3 of Fig. 1, a part being broken away to show interior construction. Fig. 4 is a transverse vertical section of a portion of the machine taken on line 4 4 of Fig. 3. Fig. 5 is an elevation of a fragment of the machine, parts being broken away and shown in section for better illustration.

The stationary frame A is of suitable form to support the operative machinery. A driving-shaft B has its bearings in the frame and is provided with a belt-pulley B'. Two rotatable tables C of the same size are supported revolubly on the bases D by pivot-pins D', fixed in the tables centrally, which pins are loose in bearings therefor in the bases D. The bases are fixed on the sill 10 of the movable frame. The tables are each provided with a worm-gear in its periphery, which meshes with a corresponding worm E on a shaft E', having its bearings in brackets fixed to the posts 11 of the movable frame. The shaft E' is provided with a fixed pulley, and a belt F running thereon runs also on a pulley fixed on a shaft F', having its bearings in the frame. The shaft F' is geared to the driving-shaft B through the pinion G, loose on the shaft B,

but arranged to be clutched thereto by the clutch-collar G', splined and movable endwise on the shaft, a lever-handle H, pivoted on the frame and riding in the collar, being provided to throw it into and out of engagement with the pinion. By this mechanism the pattern K and the material K' to be carved, standing, respectively, on the tables C, are rotated horizontally. The pattern and material are centered and secured revolubly in position by the dead-spindles I, turning in the cross-beams 12 and 13 of the movable frame against the pattern and material, respectively.

For supporting the cutting-tool and guide or tracer a cross-head or frame L travels vertically in ways L' therefor in the frame, the cross-head or vertically-moving frame L being carried on vertical screws M, having their bearings in the frame, which screws are connected operatively by the shaft M' and the pinions thereon and are driven by the belt N, running on a pulley on the shaft N', which gears releasably with one of the pinions C' on sleeve X, splined on one of the screws M. The sleeve X is shiftable on the screw M by means of the lever-handle X', pivoted on the frame, and thereby the screws M are capable of being rotated in either direction, thus providing for raising or lowering the frame L, as desired. The belt N runs on a pulley on the shaft N' and on a pulley loose on shaft B, which pulley is arranged to be clutched revolubly thereto by a clutch-collar O, splined on the shaft B and adapted to be shifted into and out of engagement with the belt-pulley by means of a lever-handle O', pivoted on the frame. A rocking bar or frame P is pivoted at its ends in the cross-head L by means of screws Q, turning through parts of the cross-head into bearings therefor in the ends of the bar or frame. The screws Q are locked in position by jam-nuts Q'. The frame P is pivoted and tiltable on the screws Q. A swinging latch R, hinged on the cross-head, engages pins on the frame P and locks it against rocking or rotating when not in use.

A tool-holding frame S, located in the rocking bar or frame P, is supported and travels on wheels S', axled in the lower part of the frame P, and is supported and held in position, movable endwise, against tilting in the

frame P by means of the screws T, which turn through the frame P into grooves therefor in the frame S. A tool-holding spindle U is splined in a sleeve or collar U', so as to have
 5 endwise movement therein, and the collar U' has its bearings revolubly in the frame S. The spindle U projects outwardly in front of the rocking frame P, and a guide or tracer V, corresponding in size and form with the spindle U and the tool therein, is supported, movable endwise, transversely in the frame S, and the spindle U and the tracer V are connected together by a cross-branch cross-bar handle V', in which the spindle is revoluble, being
 10 held against endwise movement in the handle by means of collars on the spindle on both sides of the branching handle. The spindle U and tracer V are at a distance apart and are located, respectively, in front of the material to be carved and the pattern, and the spindle and tracer move concurrently and alike toward and from the material and pattern, respectively, and in vertical and lateral directions.

25 A cable or belt W, running on a pulley B' on the driving-shaft B, runs also on the pulley U'', fixed on the spindle U, and for the holding it taut as the spindle travels with the frame L toward and from the driving-shaft B one leg of the belt runs over pulleys W', axled on the frame, and carries thereon a weight supported on a movable sheave W'', about which the cable runs.

35 Anti-friction rollers or wheels Y are loose-axled on fixed rods on the frame P on both sides of the cable W to guard and bear against it under great rocking movement of the frame P. Corresponding anti-friction rollers or wheels Y' are loose-axled on rods supported
 40 on the frame A and are adapted to guide and steady the cable W where it passes that portion of the frame.

A counterpoise Z, hung on an arm projecting from the frame P inwardly, serves to some
 45 extent to balance the cross-bar handle V' and adjacent parts of the mechanism.

The cutting-tool Z', secured removably in the spindle U, is adapted to cut or rout the material K' to a depth and in the form followed and permitted by the tracer V following the surface of the pattern K.

The movable material and pattern-holding frame consisting of the sill 10, the posts 11, and the cross-beams 12 and 13, in which the
 55 spindles I are supported, is adapted to be moved laterally by means of the screws 14, which have bearings revolubly in the frame A and turn by their screw-thread through the posts 11. The screws are rotated by a crank-wrench 15. By this construction the material and pattern holding frame, with the mechanism and pattern and material supported thereon, are movable laterally toward and from the frame L and the cutting-tool
 65 and tracer supported thereon.

The machine is operated as follows: A pattern is placed on the table C in front of the

tracer V and the material to be carved is placed on the other table C in front of the cutting-tool Z', and both the pattern and material are centered and held revolubly in position by the spindles I turned against them.
 70 The pattern and material are moved toward or from the cutting-tool and tracer by rotating the screws 14, thus moving the material-holding frame toward or from the cutting-tool and tracer. The pattern and material are rotated, so as to bring all portions thereof in front of the tracer and cutting-tool, respectively, by rotating the shaft E', whereby the tables supporting the material and the pattern are rotated horizontally. The tracer and tool-carrying frame L are raised and lowered to a desired position in front of the pattern and material by rotating the screws M by the
 75 action of the belt N, running on the driving-shaft and on a pulley on the shaft N', connected operatively to one of the screws M. The cutting-tool and tracer are moved laterally to desired positions by shifting the tool-holding frame S in the rocking frame P, journaled in the frame L. The tracer and cutting-tool being thus brought to the desired position vertically and horizontally in front of and near to the pattern and material are held up to their work by the operator taking
 80 hold of the bar-handle V' and pushing the tracer and cutting-tool up to their work, the spindle U, in which the cutting-tool is supported, and the tracer V therefor being splined and having endwise movement in collars U', which cutting-tool collar U' is revoluble in bearings therefor in the frame S and is revolved by the belt W running on the pulley U'.
 85 90 95 100 105

By operating the mechanism in the manner described in a general way the machine is made to reproduce the pattern in all its details.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a carving-machine, the combination, with an upright main frame in which the cutting-tools are arranged and carried substantially at right angles thereto normally, of a material-holding frame supported and reciprocable horizontally in the main frame toward and from the cutting-tool in the line of its axis as normally disposed, screws adapted to move the material-holding frame in the main frame, and rotatable tables and spindles opposite thereto in the material-holding frame adapted to hold the material and pattern, substantially as described.

2. In a carving-machine, the combination, with a main frame in which the cutting-tools are arranged and carried substantially at right angles thereto normally, of a material-holding frame supported and reciprocable horizontally in the main frame toward and from the cutting-tool in the line of its axis as normally disposed, screws adapted to move the material-holding frame in the main frame, rotatable tables and spindles opposite thereto in
 125 130

the reciprocable frame, adapted to hold the material and pattern, a shaft having worms meshing with gear on the tables, and a means connecting the shaft detachably with the driving mechanism of the machine, whereby it is revolved controllably, substantially as described.

3. In a carving-machine, the combination, with a main frame, of a cross-head or tool-supporting frame, screws on which the tool-holding frame travels, the shaft and gear connecting the two screws operatively, a sleeve with pinions splined on one of the screws, means for shifting the sleeve, a shaft with a pinion arranged to mesh with one or the other of the pinions on the sleeve, a belt connecting the shaft operatively with the driving-shaft, and means for putting the belt into operative connection with the driving-shaft or releasing it therefrom, substantially as described.

4. In a carving-machine, a cross-head or frame adjustable reciprocably on ways therefor in a plane parallel with the axes of the material and pattern, a rocking bar pivoted in the cross-head in its plane of adjustment, and a tool-holding frame reciprocable in the rocking bar in the line of its axis, combined substantially as described.

5. In a carving-machine, a cross-head or frame adjustable reciprocably on ways therefor in a plane parallel with the axes of the material and pattern, a rocking bar pivoted in the cross-head in its plane of adjustment, a tool-holding frame reciprocable in the rocking bar in the line of its axis, and a spindle and tracer connected together and supported and movable concurrently in the tool-holding frame reciprocably transversely of its line of motion, combined substantially as described.

6. In a carving-machine, a pivoted rocking bar, a frame therein supported and reciprocable on wheels journaled in the rocking bar, and a spindle and a tracer connected rigidly together by a cross-bar and reciprocable transversely in the reciprocating frame, combined substantially as described.

7. In a carving-machine, a reciprocable tool-holding frame, a sleeve journaled in the tool-holding frame transversely thereof, a spindle splined to and movable endwise in the axis of the sleeve, a tracer connected to the spindle and movable therewith reciprocably in and transversely of the tool-holding frame, combined substantially as described.

8. In a carving-machine, the combination, of a pulley on the driving-shaft, a cross-head adjustable on the frame toward and from the driving-shaft, a tool-holding frame reciprocable in the cross-head at right angles to the adjustment of the cross-head, a sleeve-pulley on a spindle in the tool-holding frame, the axis of which spindle is at right angles to the line of reciprocation of the tool-holding frame, and a belt running on the pulley on the driving-shaft and on the pulley on the spindle, one leg of which belt runs over a supporting idle pulley and carries thereon a sheave supporting a belt-tightening weight.

9. In a carving-machine, a rocking bar in which the cutting-tool spindle is carried, a belt running on the pulley on the spindle and on a pulley on the driving-shaft, and anti-friction rollers loose-axled on rods fixed on the rocking bar at both sides of the belt, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN E. BRIELMAIER.

Witnesses:

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ANNA V. FAUST.