(No Model.) 2 Sheets—Sheet 1.

W. C. LAYER & E. U. TAYLOR.

CARVING MACHINE.

No. 484,102. Patented Oct. 11, 1892.

Fig. 1.

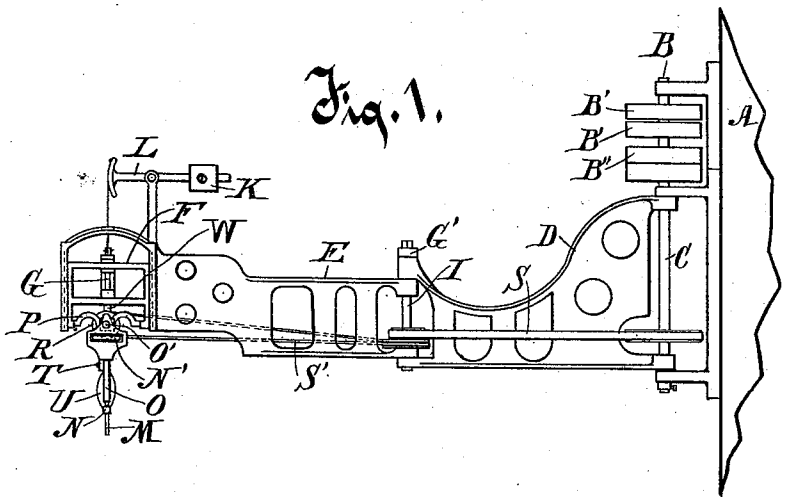
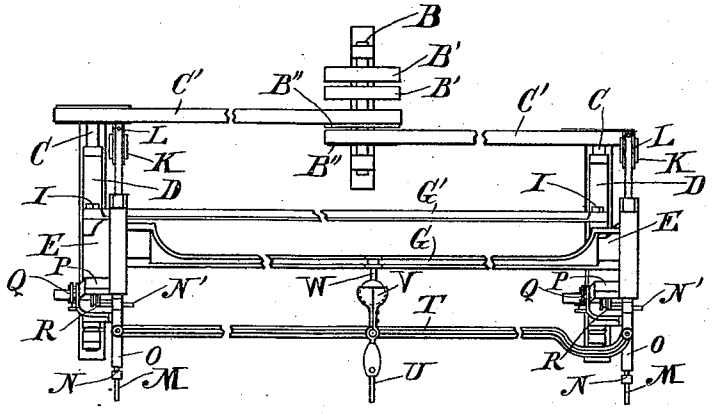


Fig. 2.



Witnesses.

C. A. Kinney,

Anna V. Faust

Inventors.

William C. Layer

Edward U. Taylor

By C. T. Benedict

Attorney.

(No Model.) 2 Sheets—Sheet 2.

W. C. LAYER & E. U. TAYLOR.

CARVING MACHINE.

No. 484,102. Patented Oct. 11, 1892.

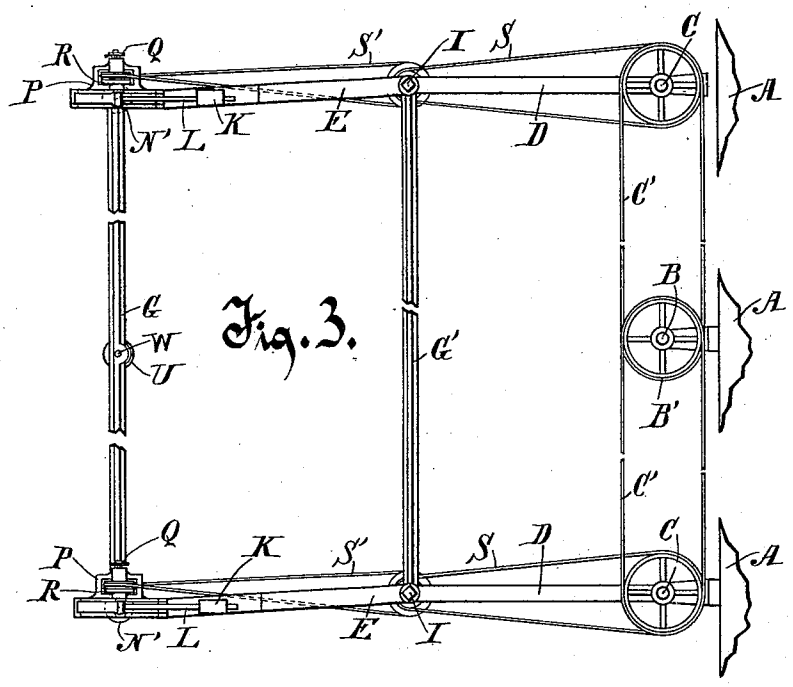


Fig. 3.

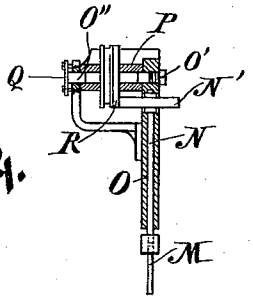


Fig. 4.

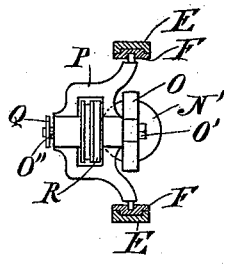


Fig. 5.

Witnesses.

A. F. Keeney,

Anna C. Faust.

Inventors.

William C. Layer

Edward U. Taylor

By C. F. Benedict

Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM C. LAYER, OF MILWAUKEE, AND EDWARD U. TAYLOR, OF FOND DU LAC, WISCONSIN.

CARVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,102, dated October 11, 1892.

Application filed November 9, 1891. Serial No. 412,260. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. LAYER, of Milwaukee, in the county of Milwaukee, and EDWARD U. TAYLOR, of Fond du Lac, in the county of Fond du Lac, 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.

Our invention relates to improvements in the carving-machine for which Letters Patent of the United States No. 460,340 were issued to us on September 29, 1891. In the machine shown in that patent the yoke in which the frame is pivoted that carries the tool-spindle is pivoted horizontally in a vertically-moving sash, the pivot or axis of the yoke being at one side of the axis of the spindle. This construction has been found to be undesirable in that the swinging of the spindle toward the vertical plane of the axis of the yoke tends to cause the tool to enter the material in a downward curve, while swinging it away from this plane carries the spindle abruptly and quickly upwardly away from the material.

The object of our invention is to obviate this undesirable construction of the machine shown in said former patent; and it consists in the novel construction of the parts of the machine carried in the vertical sashes and in which the cutting-tools are supported.

Figure 1 is a side elevation of the complete machine. Fig. 2 is a front elevation of the same machine, parts being broken away for convenience of illustration. Fig. 3 is a top plan view of the complete machine, parts being broken away for convenience of illustration. Fig. 4 is a detail of the tool carrying and operating mechanism, mostly in section. Fig. 5 is a top plan view of the spindle-carrying yoke and thereon supported parts, the side rails of the sash in which the yoke is pivoted and those parts of the arm in which the sash is supported being shown in transverse section.

Our mechanism is constructed and arranged to be conveniently attached to and supported on a vertical wall A. A driving-shaft B, journaled in a bracket affixed to the wall, carries thereon the fast and loose pulleys B′, on which the power-supplying belt runs. The shaft B also carries the fast power-transmitting pulleys B″ B″. Power-transmitting belts C′ run on the pulleys B″ and also on pulleys therefor on the counter-shafts C. The machine is preferably so arranged that the counter-shafts C are located one at each side of the shaft B and are journaled in brackets fixed to the wall A. Swinging arms D are pivoted at their inner ends on the shafts C, and arms E are pivoted to the arms D at their outer ends, so as to swing horizontally and in the plane of motion of the arms D. The frames or sashes F reciprocate vertically in ways therefor in the outer ends of the arms E. A connecting-rod G is pivoted at its ends to the respective sashes F in the ends of the arms E, and the connecting-rod G′ is pivoted at its ends on the pins I, which severally pivot together the arms D and E in sets. The arms E are of equal length, and the rods G and G′ are also of equal length, so that the arms E E and rods G and G′ form a jointed parallelogram. The sashes F are counterpoised by weights K on tilting beams L, pivoted medially on posts projecting upward from the arms E, the sashes being supported by flexible straps secured to the upper ends of segmental heads on the tilting beams. Each of the sashes F carries a revolving cutting-tool M, operated through mechanism supported on the sash. The cutting-tools M are each secured in the extremity of a revolving spindle N, having its journal-bearing in the spindle-frame O, which spindle-frame O is pivoted by the pins O′ O″ in the yoke P, which yoke is journaled in the sash F, the axis of the yoke being at right angles to the axis of the spindle-frame and the spindle and tool being in a radial plane of the axis of the yoke, normally in a vertical position at right angles to the material to be cut, so that when the tool is swung laterally in the sash on the yoke-pivots the tool will describe an arc away from the horizontal surface of the material equally in both directions. A friction-gear N′, fixed on the spindle N, bears against the pulley R, journaled in the yoke

P in the axis of the spindle-frame O. The pins O and O″, by which the spindle-frame O is pivoted in the yoke P, are made adjustable endwise in the spindle-frame and bear at their ends against the arbor of the pulley R, whereby the pins are adapted to take up any wear between the gear N′ and a pulley R and to adjust the pulley R toward and from the gear N′. The pin O′ is provided with a screw-thread, which turns in the spindle-frame, and the pin O″ is held in place by a plate-cap Q, secured adjustably to the spindle-frame by screws. Belts S, running on pulleys therefor on the shafts C and pins I, respectively, and belts S′, running on the pulleys on pins I and on pulleys R, transmit the required rotary motion to the cutting-tools. A connecting-rod T is pivoted at its respective ends to the spindle-frames O and serve to hold the spindle-frames to concurrent movement. A guide or tracer U is pivoted to the connecting-rod T medially, and is also connected by universal joint V to a stud W on the connecting-rod G.

By the construction and arrangement of the arms D and E and the connecting-rods G and G′ the cutting-tools M are permitted to move in any direction in a horizontal plane, and by the vertical movement of the sashes F the tools are raised and lowered any desirable distance within the limit of their travel, and by the additional universal movement permitted to the spindle-frames by the two hinged joints at right angles to each other and by which they are connected with the sashes. The tools are capable of being tilted to any desired angle and being connected by a rod on which the tracer is pivoted and supported in such manner as to have concurrent movement therewith. The tools are adapted to cut or carve material like the pattern or model, either in relievo or intaglio, and therewith making an undercut, if desired.

What we claim as our invention, and desire to secure by Letters Patent, is—

In a carving-machine having a vertically-movable sash in the outer end of a doubly-jointed swinging arm, a yoke journaled in the vertically-movable sash, a spindle-frame journaled in the yoke at right angles to the axis of the yoke and in a radial plane thereof and so as normally to be at right angles to the material to be carved, a pulley in the yoke, the axis of which pulley is in the axis of the spindle-frame, a spindle having its bearings in the frame and provided with a gear bearing against the pulley in the yoke, and a belt running on the pulley in the yoke, combined substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM C. LAYER.
EDWARD U. TAYLOR.

Witnesses to William C. Layer:
ANNA V. FAUST,
KATE PIKE.
Witnesses to Edward U. Taylor:
H. C. JOHNSON,
H. B. TAYLOR.