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PATENTED AUG. 4, 1908.

W. F. MANGELS.
CARVING MACHINE.

APPLICATION FILED SEPT. 21, 1907.

38 PAGES—SHEET 1

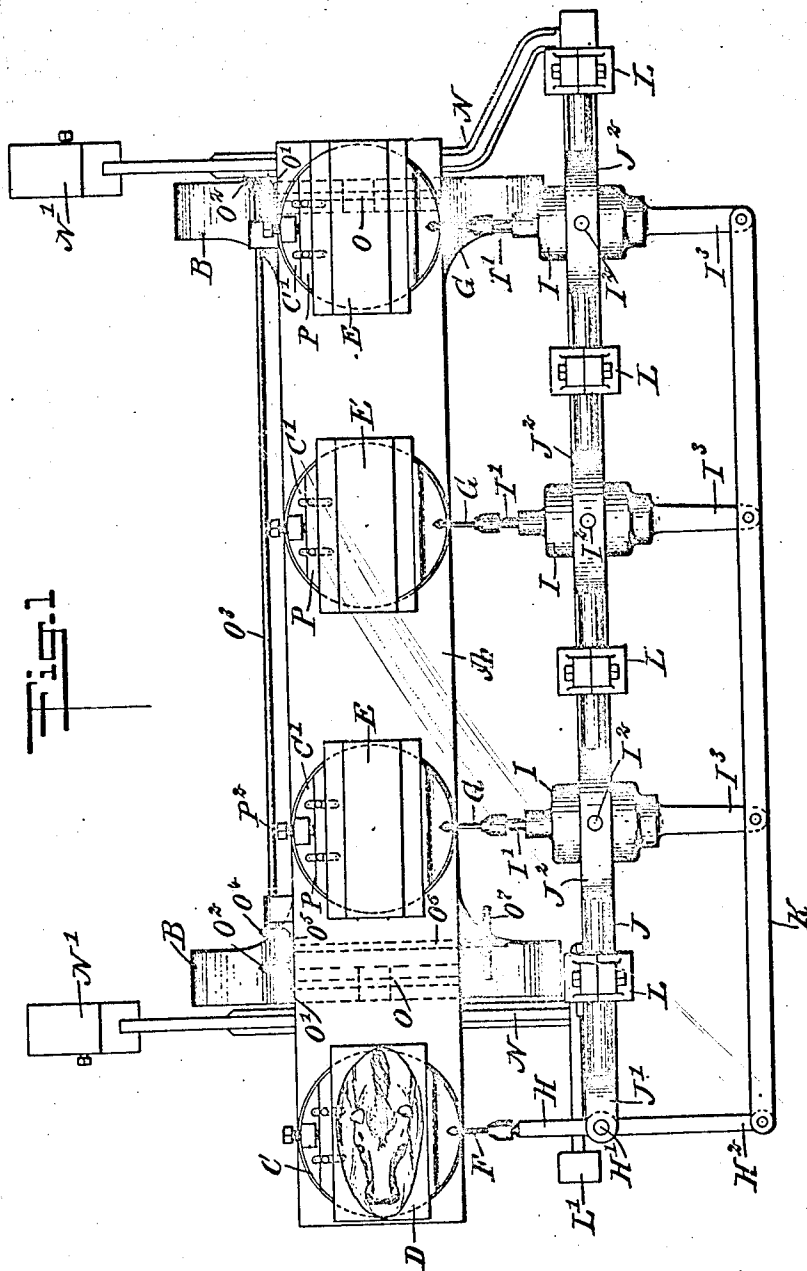


Fig. 1

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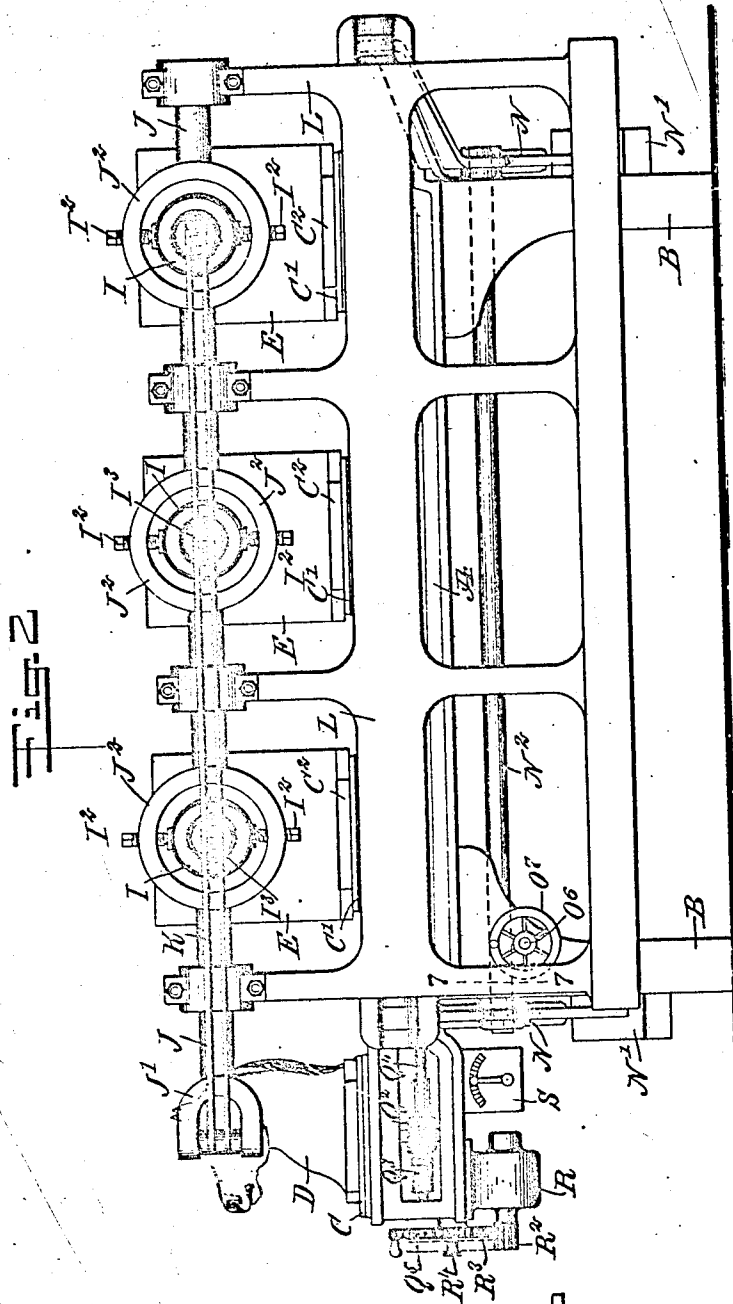
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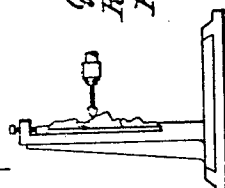
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3 SHEETS—SHEET 2.



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Fig. 3



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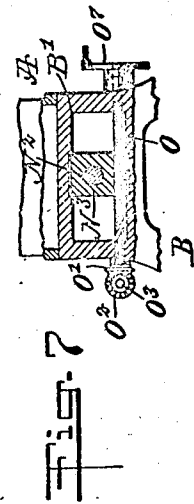
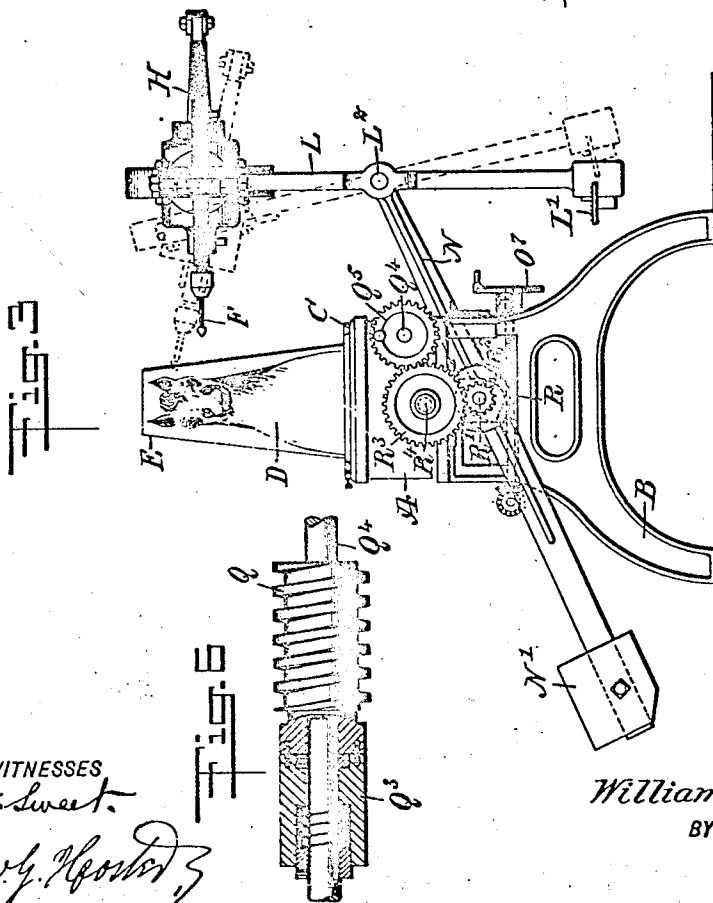
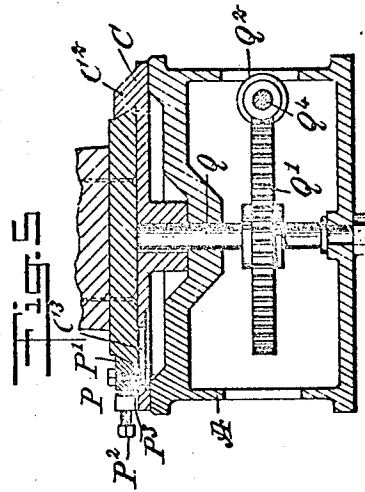
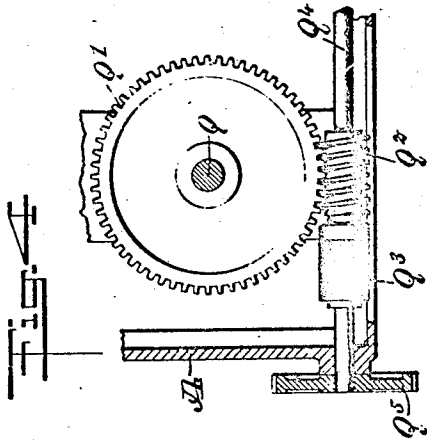
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM F. MANGELS, OF NEW YORK, N. Y.

CARVING-MACHINE.

No. 895,383.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed September 21, 1907. Serial No. 393,979.

To all whom it may concern:

Be it known that I, WILLIAM F. MANGELS, a citizen of the United States, and a resident of the city of New York, (Coney Island, borough of Brooklyn,) in the county of Kings and State of New York, have invented a new and Improved Carving-Machine, of which the following is a full, clear, and exact description.

10 The object of the invention is to provide a new and improved carving machine, for accurately and quickly reproducing in wood or other materials a plurality of parts simultaneously, according to a pattern.

15 The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

20 A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

25 Figure 1 is a plan view of the improvement; Fig. 2 is a side elevation of the same; Fig. 3 is an end view of the same; Fig. 4 is an enlarged sectional plan view of the gearing for rotating the pattern or a work support; Fig. 5 is a transverse section of the same; 30 Fig. 6 is an enlarged sectional plan view of the coupling for throwing the gearing for a support in or out; Fig. 7 is a transverse section of the shifting mechanism for shifting the shaft of the counterbalancing levers in a transverse direction, and Fig. 8 is an end 35 elevation of the improvement arranged for panel work.

40 The bed A on which the machine is mounted is provided with suitable legs B, and on the top of the bed A is arranged a revoluble support C for supporting a pattern D, and on the top of the said bed A are arranged a plurality of revoluble supports C', each carrying a block E of wood or other material to be carved correspondingly to the configuration of the pattern D.

45 A tracer F under the control of the operator follows the configuration of the pattern D, and carving tools G in the form of revoluble cutters are adapted to cut the blocks E to reproduce the pattern D, as hereinafter more fully described. The tracer F is removably held in a holder H, and the carving tools G are removably attached to the shafts 50 I', of electric or other rotary motors I, for rotating the carving tools G at a high rate of

speed. The holder H is pivoted at H' in the forked end J' of a shaft J, and the motors I are hung on pivots I² held in rings J² formed on the shaft J, as plainly indicated in the 60 drawings, the pivots H' and I² standing at right angles to the axis of the shaft J. The tracer holder H and the motors I are provided with extended arms H², I² pivotally connected with each other by a link K, so 65 that when the operator having hold of the holder H imparts a swinging motion to the holder, then a like swinging motion is simultaneously given to the several motors I.

70 The shaft J extends longitudinally and is journaled in the upper end of a frame L, provided at its lower end with a foot piece or pedal L', under the control of the operator's foot. The frame L is pivoted at its ends at L² on levers N, having counterbalancing 75 weights N', and secured on a shaft or a pivot N², journaled in bearings N³, mounted to slide transversely in guideways B', formed on the legs B supporting the bed A. In the bearings N³ screw transversely extending 80 screw rods O, mounted to turn in suitable bearings arranged on the legs B, the rear ends of the screw rods O being provided with bevel gear wheels O' in mesh with bevel gear wheels O² secured on a longitudinally ex- 85 tending shaft O³ journaled in suitable bearings arranged on the legs B (see Fig. 1). On the shaft O³ is secured another bevel gear wheel O⁴ in mesh with a bevel gear wheel O⁵ secured on a transversely extending shaft O⁶ 90 provided at its front end with a hand wheel O⁷ under the control of the operator, for turning the shaft O⁶ so as to rotate the shaft O³ in either a forward or reverse direction, according to the direction in which the hand 95 wheel O⁷ is turned. The rotary motion of the shaft O³ is transmitted by the gear wheels O², O' to the screw rods O, so that the bearings N³ are shifted transversely whereby the shaft or pivot N² is carried in a like direction, thus moving the counterbalancing 100 levers N and the frame L with the parts supported thereon, bodily in a transverse direction. Thus by the arrangement described, the frame L moving with the levers N can be 105 shifted towards or from the blocks E and the pattern D, and an up and down movement can be given to the frame L, and at the same time a rocking movement, and in addition the tracer holder H as well as the motors I 110 can be rocked on their own pivots held on the shaft J, which can also be rocked in its

bearings in the frame L. Thus by the arrangement described, movement in any desired direction can be given to the tracer F and the carving tools G, by the operator manipulating the tracer holder H correspondingly.

Each of the supports C, C' is preferably in the form of a circular platform or disk, on which the base of the pattern D or work E is clamped by a clamping device P, preferably in the form of a bar C² fixed on the support, and a slidable clamping bar P' adjustable on the support by a set screw P² (see Figs. 1 and 5), and between which bars C² and P' the base of the pattern D or the base of the work E is clamped. The bar P' is guided by bolts P³ engaging elongated slots C³ in the support C or C'. Each support C or C' is secured on the upper end of a vertically disposed shaft Q journaled in suitable bearings in the bed frame A (see Fig. 5), and on each shaft Q is secured a worm wheel Q' in mesh with a worm Q² normally coupled by a hand coupling or clutch Q³ (see Fig. 6) with a longitudinally extending shaft Q⁴ journaled on the bed A. The left hand end of the shaft Q⁴ is provided with a combination hand and gear wheel Q⁵, under the control of the operator, for turning the shaft Q⁴, which by the gearing described, rotates the several shafts Q and the supports C, C' in unison. Any one of the supports C or C' can be temporarily cut out at any time by the operator shifting the coupling or clutch Q³ out of engagement with the worm Q², to stop rotation of this particular support. It will be understood that the operator retains his hold on the clutch to keep it out of engagement.

The shaft Q⁴ may be rotated from a motor R mounted on the bed A and carrying on its shaft R' a pinion R² in mesh with an intermediate gear wheel R³ slidable on a stud R⁴ attached to the left hand end of the bed A. The gear wheel R³ is adapted to mesh with the combination hand and gear wheel Q⁵, so that when the motor R is running a rotary motion is transmitted to the hand wheel Q⁵, thus rotating the shaft Q⁴ and the supports C, C', as above described. The gear wheel R³ can be shifted on its stud R⁴, to move the gear wheel R³ out of mesh with the combination hand and gear wheel Q⁵.

An electric switch S for controlling the motors I and R, is preferably mounted on the left hand end of the bed A, to be within convenient reach of the operator standing at this end of the machine and having hold of the tracer holder H, for guiding the tracer F over the pattern D.

The operation is as follows: When the several parts are in the position illustrated in the drawings and the motors I are running, then the operator takes hold of the holder H and moves the pointed head of the tracer toward the pattern D, so that the revolving carving

tools G come in contact with and cut the blocks E, the tools G used being roughening tools, to give an outline shape to the block according to the pattern D.

It is understood that the operator on manipulating the holder H can readily bring the tracer F into any desired position relative to the pattern D, so that the carving tools G are moved into a position most effective for doing the desired carving or cutting on the blocks E. After the blocks E are cut down, suitable finer tools G are used to allow of accurately carving the blocks according to the pattern, it being understood that as the tracer F can be moved into any desired position by the operator and the tools G assume like positions, any desired angular or undercut can be executed to insure the formation of accurate images, without danger of splitting or otherwise injuring the material acted on by the tools G. The operator on turning the hand wheel Q⁵, can turn the pattern and the blocks, to facilitate cutting all around the blocks, and by the operator turning the hand wheel O', the entire cutting device and tracer holder are shifted bodily toward or from the pattern or work, as is found most advantageous by the operator.

When doing panel or similar work, as shown in Fig. 8, the turning mechanism for the platform can be dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A carving machine, comprising supports for a pattern and the work, connected counterbalancing levers, a rock frame journaled on the said levers, a rock shaft journaled on the said frame and having its axis parallel with the axis of the rock frame, a driving tool holder pivoted on the said rock shaft and carrying a tracer for following the pattern, a rotary motor pivoted on the said rock shaft and carrying and driving a carving tool for engagement with the work, the pivots for the said holder and motor standing at angles to the axis of the rock shaft, a link connecting the holder and the motor with each other, transversely slidable bearings in which the pivot for the counterbalancing levers are journaled, and a manually controlled means for shifting the said bearings transversely.

2. A carving machine, comprising counterbalancing levers, a rock frame mounted to rock on the said levers, a rock shaft mounted to rock in the said frame, a tracer holder pivoted on the said shaft, a rotary motor pivoted on the said shaft and carrying and driving a carving tool, a link connecting the said tracer holder with the said motor, revoluble supports for a pattern and the work, and manually controlled means for revolving the said supports.

3. A carving machine, comprising counter-

balancing levers, a rock frame mounted to rock on the said levers, a rock shaft mounted to rock in the said frame, a tracer holder pivoted on the said shaft, a rotary motor pivoted on the said shaft and carrying and driving a carving tool, a link connecting the said tracer holder with the said motor, revoluble supports for a pattern and the work, manually controlled means for revolving the said supports, and means for throwing any one of the supports out of gear.

4. A carving machine comprising a base, a rotatable pattern support, a plurality of rotatable work supports, means for rotating the supports in unison, means for clamping them in adjusted position, means for disengaging any of the supports from the rotating means, bearings movable transversely of the base, means for moving the bearings in unison, a shaft journaled in the bearings, arms on the ends of the shafts, an adjustable weight on one end of each arm, a frame having its ends pivoted to the other ends of the arm, a shaft journaled in the upper end of the frame, and having rings interposed at spaced intervals, the plane of the rings being parallel with the shaft, tools mounted to swing in the rings on an axis transverse to the shaft, each of the tools having an arm projecting rearwardly therefrom, a link connecting the arms, a tracer connected with the end of the shaft and mounted to swing on an axis transverse thereto, said tracer being provided with a rearwardly projecting arm connected with the link.

5. A carving machine comprising a base, a rotatable pattern support, and a plurality of rotatable work supports means for rotating the supports in unison, a shaft journaled on the base, means for moving the shaft transversely of the base, arms on the ends of the shaft, a frame fitted between the corresponding ends of the arms, a shaft journaled in the upper end of the frame, and having rings interposed at spaced intervals, the plane of the rings being parallel with the shaft, tools mounted to swing in the rings on an axis,

transverse to the shaft, a tracer connected with the end of the shaft, and mounted to swing on an axis transverse thereto, a connection between the tracer and the tools whereby to swing said tracer and tools in unison, and means for oscillating the shaft.

6. A carving machine comprising a base, a rotatable pattern support, a plurality of rotatable work supports, means for rotating the supports in unison, means for clamping them in adjusted position, means for disengaging any of the supports from the rotating means, bearings movable transversely of the base, and means for moving the bearings in unison, a shaft journaled in the bearings, arms on the ends of the shafts, an adjustable weight on one end of each arm, a frame having its ends pivoted to the other ends of the arms, a shaft journaled in the upper end of the frame, and having rings interposed at spaced intervals, the plane of the rings being parallel with the shaft, means for oscillating the shaft, tools mounted to swing in the rings on an axis transverse to the shaft, each of the tools having an arm projecting rearwardly therefrom, a link connecting the arms and a tracer connected with the end of the shaft and mounted to swing on an axis transverse thereto, said tracer being provided with a rearwardly projecting arm connected with the link.

7. A carving machine comprising a rock frame, a shaft mounted for oscillating in the frame, a tracer holder pivoted on the shaft, a carving tool pivoted on the shaft, means for driving the tool, a link connecting the tracer holder with the carving tool, rotatable supports for a pattern and the work, and manually controlled means for rotating the supports.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM F. MANGELS.

Witnesses:

THEO. G. HOSTER,
EVERARD B. MARSHALL.