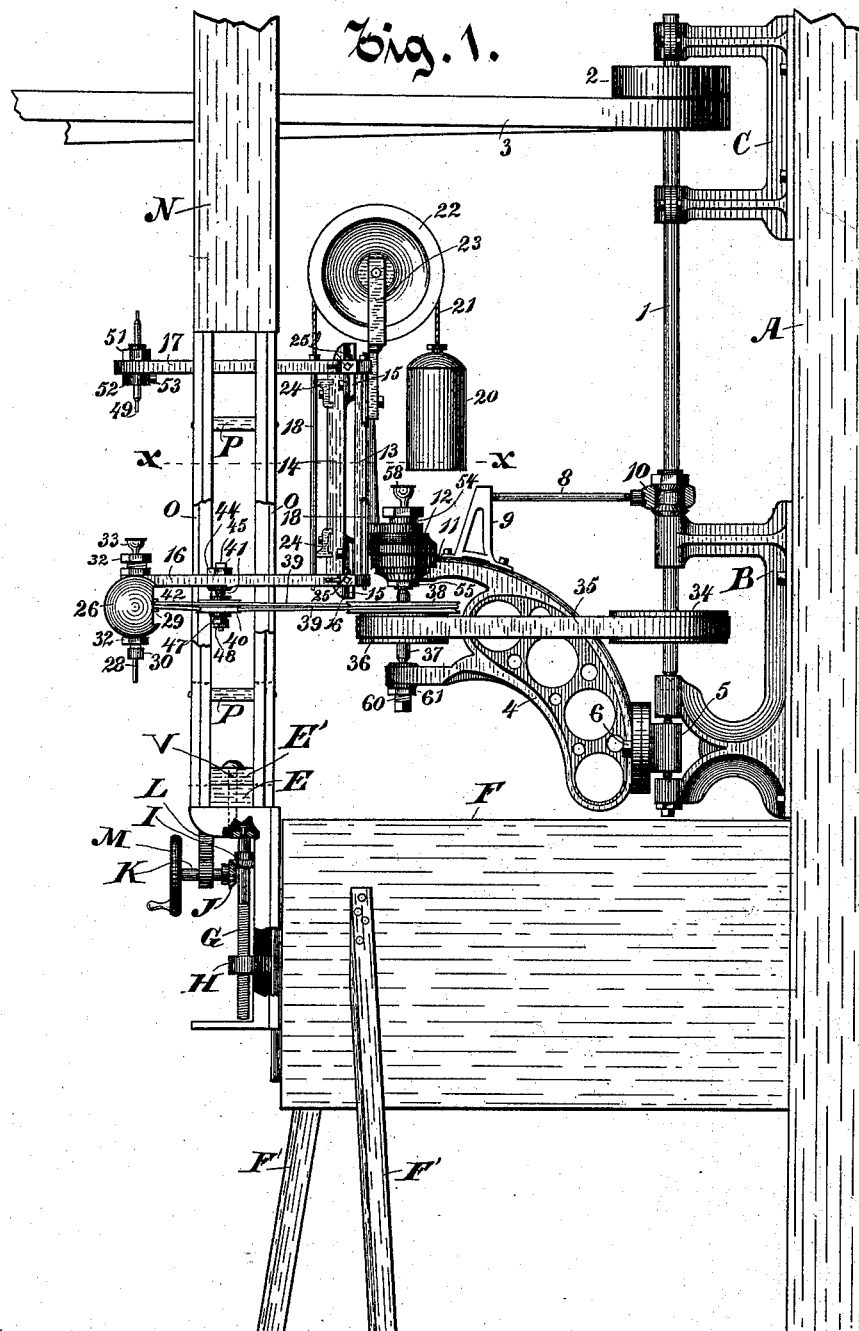


S. F. MOORE.
CARVING MACHINE.

No. 384,995.

Patented June 26, 1888.



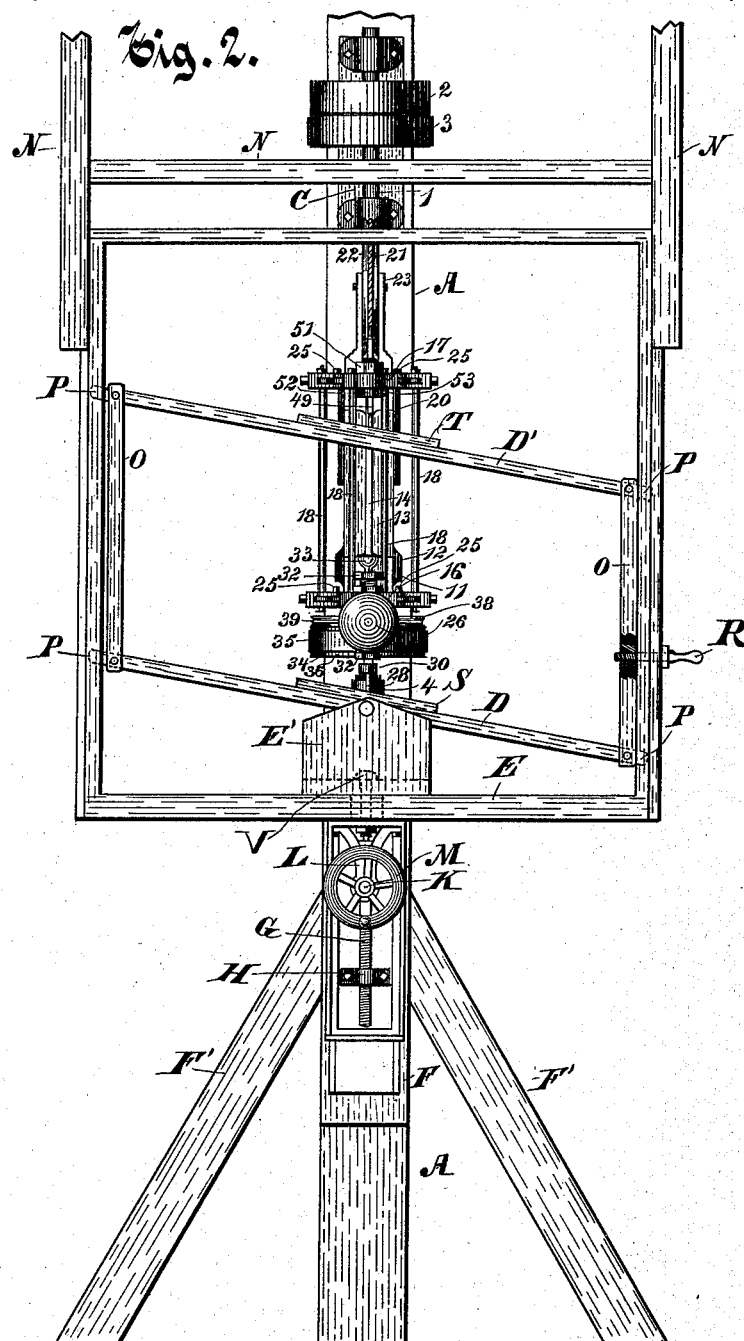
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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

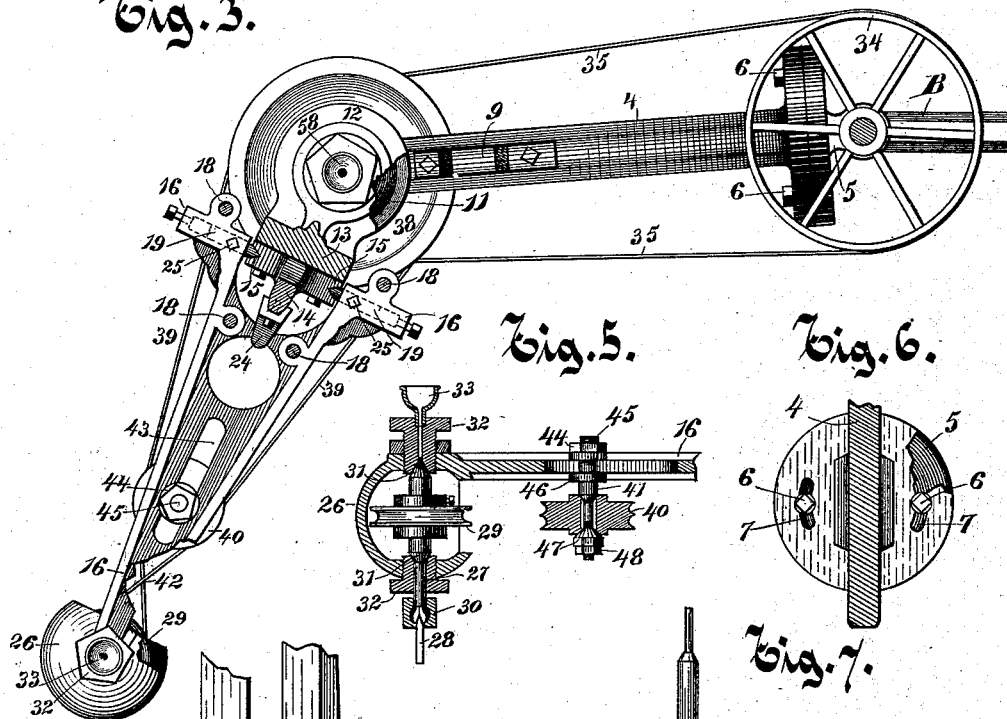


Fig. 5.

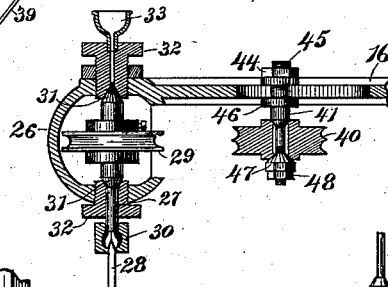


Fig. 6.

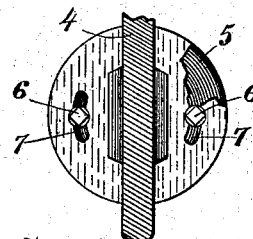


Fig. 7.

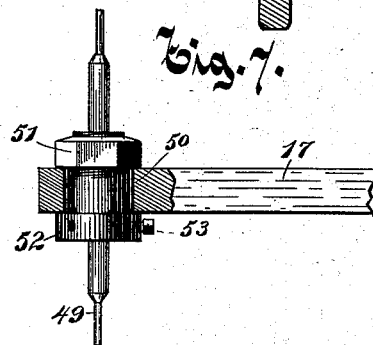
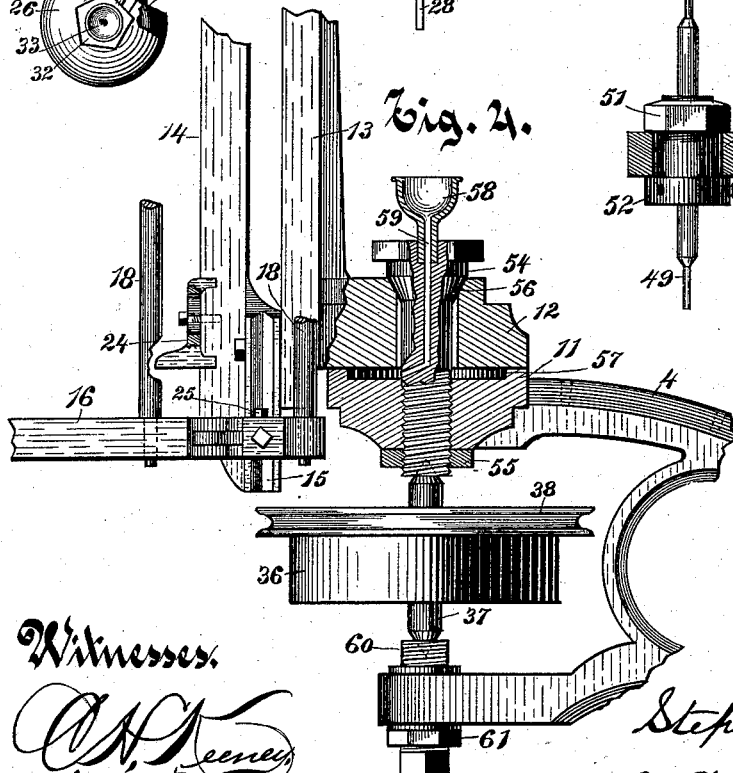


Fig. 4.



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UNITED STATES PATENT OFFICE.

STEPHEN F. MOORE, OF MILWAUKEE, WISCONSIN.

CARVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 384,995, dated June 26, 1888.

Application filed January 7, 1888. Serial No. 260,065. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN F. MOORE, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Carving-Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention, to be hereinafter claimed, relates to the peculiar form and construction of the various parts of my mechanism and to the location, combination, and arrangement of those parts in the complete device, in the manner and for the purposes hereinafter to be described.

In the drawings, Figure 1 is a side elevation of the complete device. Fig. 2 is a front elevation of the same device. Fig. 3 is a plan on line X X of Fig. 1 of the swinging arm and lower arm of the frame in which the cutting-tool is carried and operated. Fig. 4 is a central vertical section of the joint connecting the swinging arm and the thereon supported frame and of adjacent parts of the mechanism. Fig. 5 is a central vertical longitudinal section of a portion of the arm of the frame that supports and carries the carving-tool, with the carving-tool and its carrying and driving mechanism in connection therewith. Fig. 6 is a detail of the device for adjustably securing the swinging arm to its supporting-hinge. Fig. 7 is an elevation of the guide in the upper arm of its supporting-frame, a part being broken away to show interior parts.

The same reference letters and figures refer to like parts in all the views.

The mechanism for supporting and operating the cutting-tool is supported in brackets B and C secured to a post, A, or studding of the building. A vertical shaft, 1, is supported and rotates in journal-bearings in the brackets B and C. This shaft carries a fixed band-wheel, 2, whereon the band 3 runs which connects the mechanism with the power-supply. A swinging arm, 4, is supported by means of a pivoted hinge, 5, in the lower bracket, B. The arm 4 is so pivoted in the bracket B as to be adapted to swing horizontally through the

entire arc in front of the post A, and is adjustably secured to the hinge 5 by means of the set-screws 6 6, turning through the slots 7 7 in the enlarged end of the arm 4 into the hinge 5, whereby the arm may be tilted from the perpendicular, either to right or left to a limited extent, as desired, whereby I am able to get a proper alignment of the arm 4 and a certain amount of under-cut in carving, which is sometimes very effective, especially in figures in considerable relief.

Sometimes when heavy work is being done, and at all times, if desired, a brace-rod, 8, is secured at one end to a flange or bracket, 9, rigid on the arm 4, and at the other end to a collar, 10, supported and movable about the shaft 1. The rod 8 is inserted in the bracket 9 and collar 10 by reverse screw-threads at its respective ends, whereby by its rotation it is loosened or tightened in its respective seats, and sufficient play is thereby provided for the tilting of the arm provided for in the adjustable bearings between the arm and hinge 5. At its outer end the arm 4 on its upper surface is provided with an enlarged horizontal face, 11, whereon is supported and swings horizontally the thereto-pivoted hinge 12, having a corresponding bearing-face. This hinge 12 is integral with and a part of the upright standard 13. In front of the standard 13 and rigidly secured thereto is an upright post, 14, which post is provided at its top and bottom, on both sides, with recessed diamond-shaped bearings 15 15, forming ways for supporting and guiding the vertical movements of the tool supporting frame. This frame consists of the lower tool-carrying arm, 16, and of the upper guide-carrying arm, 17, which arms are rigidly connected together, but at a distance apart, by the rods 18 18. This frame is provided with adjustable bearings or guides 19 19, constructed and adapted to enter and travel in the ways 15 15, whereby the frame is guided in its travel vertically. To facilitate the manipulation of this frame, it is supported by a counterpoise, 20, connected therewith by a cord, 21, passing over a pulley, 22, supported in a bracket, 23, secured to the standard 13. The movement of this frame vertically is limited by the stops 24 24, secured adjustably to the post 14, and adapted to impinge against

the upper side of the lower arm and against the lower side of the upper arm, respectively. A vertical alignment of this frame with reference to its supporting-post 14 may be secured 5 by the adjustment of the guides 19 19 in or out in their bearings in the arms 16 and 17, and securing them therein by the set-screws 25 25, turning through the arms 16 and 17 against them. The outer end of the arm 16 10 terminates in a bracket or globe-like shield, 26, in which a small vertical shaft or spindle, 27, is supported and journaled, which spindle in its lower end carries the carving-tool 28. The bracket 26 is preferably constructed in 15 the form of a spherical shield having one side broken away, in which form it provides an upper and lower bearing for the spindle 27, and at the same time is a shield for the fixed pulley 29 on the spindle 27, and is adapted to 20 serve as a knob or handle for the operator whereby to guide and manipulate the carving-tool. The lower end of the spindle 27 is constructed as a chuck, split to receive the end of the tool 28 therein, which tool is held in position by being clamped therein by the nut 30, 25 turning on a screw-thread on the spindle 27. To obviate friction, the spindle 27 is provided with beveled bearings 31 31, fitted into beveled bearings in the plug-nut journals 32 32, turning in the bracket 26. For lubricating purposes the upper plug-nut journal 32 is provided with an oil-cup, 33, and an aperture therefrom through the plug-nut to the bearing of the spindle. 30

For driving the carving-tool a band-wheel, 34, is fixed on the shaft 1, and a belt, 35, running thereon, runs also on a band-wheel, 36, fixed on a shaft, 37, which shaft 37 is pivoted in the outer end of the swinging arm 4, and a 40 pulley, 38, rigid on the shaft 37 carries a belt, 39, which also runs upon the pulley 29, fixed on the tool-carrying spindle 27. An intermediate belt-tightening pulley, 40, supported and rotating on an arbor, 41, is located between the pulleys 29 and 38, and the belt 39 runs on said pulleys 29 and 38, and runs also on the pulley 40, and is arranged to be guided and tightened thereby. For this purpose, and to get the greatest possible amount of adhesion of the belt 39 to the pulley 29, to avoid the slipping of the belt thereon, I preferably cross the belt between the pulleys 29 and 40, as shown at 42. For the purpose of adjustment the arbor 41 is made adjustable in the arm 16 55 longitudinally in the slot 43, in which the arbor is inserted, and to which arm it is secured by means of a screw-threaded nut, 44. This arbor is constructed of a central bolt, 45, a collar, 46, bearing on its upper surface against the arm 16, and at its lower end beveled to receive a corresponding bearing of the pulley 40 thereagainst, and a lower collar, 47, also provided with a beveled upper end adapted to receive a corresponding beveled bearing of the pulley 40 and the two nuts 48 and 44 at its respective ends. 65

It will be noticed that the diameter of the

aperture through the center of the pulley 40 is somewhat greater than the diameter of the bolt 45, and that the pulley is so constructed 70 as to have bearings only on the beveled ends of the collars 46 and 47, respectively, whereby the least amount of friction is secured in connection with proper steadiness of the pulley.

Directly above the tool 28, and in the outer 75 extremity of the arm 17, a guide, 49, is located and adjustably secured. This guide is a small rod or spindle held upright in the arm 17, through which it is inserted. For the purpose of adjustment this spindle 49 is fitted nicely, 80 but movable lengthwise, in a sleeve, 50, which sleeve at its upper end is provided with a screw-thread, whereon a nut, 51, turns, which nut is adapted to bear against the top surface of the arm 17. The sleeve 50 at its lower end 85 is provided with a flange or head, 52, through which a set-screw, 53, turns against the spindle 49, and the diameter of the aperture through the arm 17 is somewhat greater than the diameter of the sleeve 50, but less than the diameter of the flange 52. By this construction the spindle or guide 49 may be adjusted vertically in the sleeve 50, and secured in position by the set-screw 53, and may be adjusted horizontally in the aperture in the arm 17 and secured in place by the nut 51. It will be understood that the function of this guide 49 is to follow the elevations and depressions of a pattern placed immediately under it, whereby the movements of the tool 28 are guided up 90 and down. 95

In the construction of the joint between the hinge 12 and the arm 4 a bolt, 54, is inserted through the hinge 12 into the arm 4, which bolt turns by a screw-thread into and through 105 a part of the arm 4, and is further secured in place by a jam-nut, 55, turning thereon. The upper part of the shank of this bolt 54 is provided with a beveled shoulder, 56, adapted to receive a corresponding beveled bearing of the hinge 12 thereagainst, and the diameter of the aperture through the remaining portion of the hinge 12 is somewhat larger than the diameter of the shank of the bolt 54, so as to reduce as much as possible the points of bearing, and consequently the friction of the hinge 12 against the bolt 54. A recess, 57, is provided in the surface 11 of the arm 4 for receiving oil for lubricating purposes, and an oil-cup, 58, is secured in the top of the bolt 54, and a duct, 59, leads therefrom through the bolt 54 into the recess 57. The shaft 37 has beveled or conical bearings in the lower end of the bolt 54 at one end, and at the other end in the bolt 60, turning through a part of the arm 4. For greater security the bolt 60 is provided with a jam-nut, 61. 110 115 120 125

For supporting the material to be carved and the pattern for the work to be done a tilting table in duplicate leaves D and D' is located in front of the swinging arm 4, and in proper position for the work of the cutting-tool and pattern in connection therewith. The part or leaf D of the table is pivoted and sup- 130

ported on the uprights E' E', which are parts of the frame E, which frame is supported and movable vertically on the sill F, which sill is supported in position by the legs F' F'.

5 For moving the frame E vertically a rotating shaft, G, is secured in its under surface, which shaft is provided with a screw-thread turning in the bracket H, which bracket is rigid to the sill F. The shaft G is also provided with a pinion, I, meshing with a pinion, J, fixed on a shaft, K, supported and rotating in a bracket, L, which bracket is fixed to the frame E. The shaft K is provided with a hand-wheel, M, for rotating it. The frame E is guided in its movements vertically in ways in the guide-frame N, which guide-frame is affixed to the ceiling of the building. The upper leaf or table, D', is supported on and made a part of the lower leaf or table, D, by means of the bars O O, secured at their respective ends pivotally to the lower and the upper table, D and D', respectively. The outer ends, P P, of these tables D and D' are received between and guided in their vertical movements by the uprights of the frame E, and a set-screw, R, passing through a slot in the upright of the frame E, and turning into one of the connecting-bars O, is adapted to secure the tables D and D' in position as desired.

30 The material or block S to be carved is placed on the table D, and the pattern T is placed on the table D' directly above the block S. This block S and pattern T may be clamped to their respective tables, if desired, for which purpose an ordinary wooden clamp, such as is commonly used by carpenters and manufacturers for clamping purposes, may be used. Such clamps are not shown in the drawings, as they are so universally and well known as to need no description. It is only when an under-cut is to be made that it is necessary to tilt the tables as shown in Fig. 2, as for all other work the tables are placed and held in a level position.

45 It will be understood that in operating this machine any desired horizontal movement of the cutting-tool can be readily obtained through the combined movements permitted by the swinging arm 4 and the thereon-hinged post 13, and that sufficient vertical movement can be obtained in the vertical movement provided for of the arms 16 and 17 on the post 14, while any angular or under cut can be secured by the tilting of the tables D and D'. The uprights E' E' are supported on the lower rails of the frame E and have a slight lateral movement thereon, being secured thereto movably by a pin or bolt, V, through the lower part of the upright and through the lower rail of the frame E, in a longitudinal slot provided therefor. The uprights E' E' are located one at each side of the table D, front and rear. The part 5, heretofore called a "hinge," is in effect a part of the swinging arm 4, the axis of which arm in the hinge 5 is in a vertical line with the axis of the vertical shaft 1 above it. The axis of the shaft or axle 37 is in the line

of the axis of the hinge 12, where pivoted onto the arm 4. The post 14 may, if desired, be made integral with the standard 13; or the two may be combined in one, if so desired, and the hinge 12, standard 13, post 14, and thereon-swinging arms 16 and 17 (connected together by the rods 18 18) form the swinging tool and guide-carrying frame.

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

1. In a carving-machine, a horizontally-swinging arm, 4, the standard 13, located near to the arm 4 and hinged and swinging horizontally thereon, with the horizontally-projecting arms 16 and 17, one above the other, secured together at their inner ends near to and supported and having a vertical movement on the standard 13, which arms carry in their outer ends, at a distance from the standard 13, the cutting-tool and guide-spindle, respectively, substantially as described.

2. In a carving-machine, a horizontally-swinging arm, 4, the thereon-supported and thereto-pivoted standard 13 and the tool and guide carrying frame, with a hand-wheel, 36, pulley 38, pulley 29, located below the lower arm of the tool-carrying frame, and belt 39, said hand-wheel, pulleys, and belt being located below the lower arm, 16, of the tool carrying frame, substantially as described.

3. In a carving-machine, a cutting-tool in a spindle located and supported in a bracket formed in the free end of a swinging arm, which bracket is expanded into a globe like shield mostly surrounding the spindle and its driving-pulley thereon, said bracket, so expanded, being adapted for a guard for the inclosed mechanism and for a knob to be grasped by both hands for the manipulation of the cutting-tool, substantially as described.

4. The horizontally-swinging hinge 5 and the thereto adjustably-secured arm 4, with collar 10, and the brace-rod 8, adjustably secured at one end to the arm 4 and at the other end to the collar 10, the axis of which collar is the continuation of the axis of hinge 5, substantially as described.

5. In a carving-machine, a spindle-holding sleeve, 50, provided with a flange or head, 52, and a nut, 51, with a supporting-arm, 17, having an aperture, in which the sleeve 50 is located, somewhat larger than said sleeve, substantially as and for the purpose set forth.

6. The horizontally-swinging arm 4, provided with the ring-face 11, in combination with the rotating hinge 12, and the securing pivotal bolt 54, having beveled shoulder 56, adapted to receive a corresponding beveled bearing on the hinge 12, the remainder of that part of the shank of the bolt passing through the hinge 12 being smaller than the aperture through the hinge, substantially as and for the purpose described.

7. The lubricating device consisting of a supporting-arm, 4, provided with a recess, 57, and a face, 11, and the thereon-supported and rotating hinge 12, pivotal bolt 54, and oil-cup

58, having a duct therefrom through the bolt 54 into the recess 57, substantially as described.

8. In a carving-machine, a swinging arm, 4, carrying the cutting-tool and pattern-guide in a frame supported on an arm hinged on said arm 4, said arm 4 being secured adjustably to its pivotal hinge 5 by means of set-screws 6 6, whereby the arm 4 may be rotated limitedly on its longitudinal axis, thereby providing for an inclined or under cut of the tool, substantially as described.

9. In a carving-machine, a pulley, 40, supported on a pivot-bolt, 45, by collars 41 and 47, which bolt is secured in a swinging arm of the machine, in which arm said bolt is adjustable horizontally, whereby said pulley is adapted for use as a belt-tightener in said arm, substantially as described.

10. In a carving-machine, a spindle, 49, supported adjustably in an arm, 17, by a sleeve, 50, provided with a flange, 52, and the through-turning set screw 53, and a nut, 51, turning on the sleeve 50, substantially as described.

11. In a carving-machine, a vertically-moving tool and guide-carrying frame connected with and forming a part of a horizontally-swinging portion of the mechanism, and a gravity-weight connected to said frame by a cord running over a pulley, whereby said frame is balanced and supported at any point vertically to which it is moved by extrinsic force, substantially as described.

12. In a carving-machine, a table having a lower and an upper leaf, one directly above the other, the upper one being supported on and connected to the lower one by supporting-

rods pivoted thereto, whereby the two leaves are constantly parallel to each other, the table being supported pivotally, whereby it is adapted to be tilted, substantially as described.

13. In a carving-machine, a vertically-moving frame, E, the therein-supported tilting parallel leaves D D', and the guide-frame N, substantially as described.

14. A table consisting of the upper and lower leaves, D and D', connected together by there-to-jointed rods O O and supported pivotally on the uprights E' E', the uprights E' E' supported movably on and forming a part of the frame E, the frame E supported and having a vertical movement on a sill, F, the upright rails of the frame E being adapted as guides for the ends of the table in its tilting movements, substantially as described.

15. The combination of a frame provided with two horizontal arms, one above the other, carrying the cutting-tool in one arm and the guide in the other arm, said frame being supported and having vertical movement on a standard hinged to a swinging inner arm, 4, with a table having upper and lower leaves for supporting, respectively, the pattern and material to be carved, substantially as described.

16. The combination of the swinging arm 4 and the swinging tool and guide-carrying frame, with the frame E and the two-leaved tilting table D D', all located, supported, and arranged substantially as described.

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

STEPHEN F. MOORE.

Witnesses:

C. T. BENEDICT,
C. E. MONROE.