

C. RUPPEL.
WOOD CARVING MACHINE.
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1,433,154.

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2 SHEETS—SHEET 1.

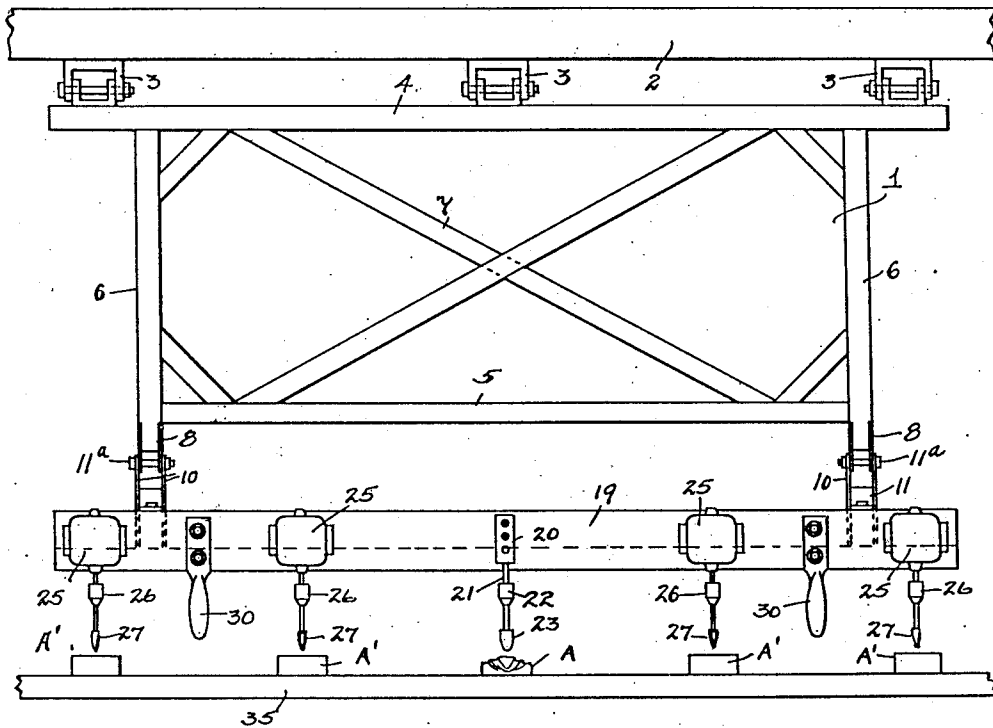


Fig. 1

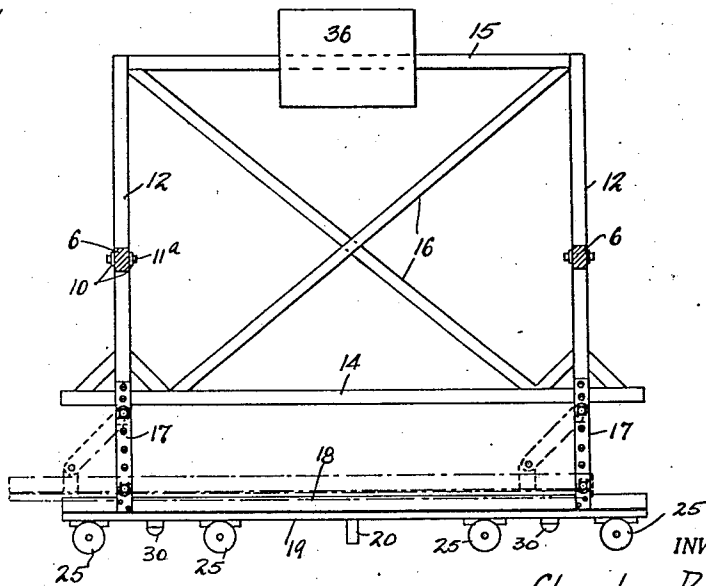


Fig. 3

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WOOD-CARVING MACHINE.

Application filed April 14, 1921. Serial No. 461,201.

To all whom it may concern:

Be it known that I, CHARLES RUPPEL, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Wood-Carving Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention relates as indicated, to wood carving machines and more particularly, to a type of machine adapted for reproduction work in which a tracer and a number of rotary cutter-carrying spindles are employed. The tracer and cutter-carrying spindles are mounted on a framework which is supported for movement in various directions. In machines of this character it has been the custom to drive the various rotary cutter-carrying spindles by means of belts or gears from a common drive. This has not always proven satisfactory as the belts either break, become loose or slip off of the pulleys and in the gear driven type the weight is considerable and requires a large number of parts. One of the features of my invention is the provision of an individual motor drive for each of the rotary cutter-carrying spindles. Another feature is the simplifying of the construction of the framework carrying the cutting tools. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is front elevation of my wood carving machine; Fig. 2 is side elevation of the machine as viewed from the right hand side; Fig. 3 is a plan of the machine on a reduced scale as indicated by the line 3—3, Fig. 2; Fig. 4 is an elevation on an enlarged scale showing a portion of the tracer and cutter-carrying spindle support; Fig. 5 is a section on the line 5—5, Fig. 4; and Fig. 6 is a view similar to Fig. 5 illustrating one of the operating positions of the machine.

The present invention is adapted primarily for wood carving, and more particularly, for producing copies of a carving already finished and comprises a frame-work 1 suspended from a beam or other support 2 by means of hinges 3 or other suitable devices whereby the frame 1 is adapted to be swung either forward or backward. The frame work 1 comprises upper and lower horizontal rails 4 and 5 respectively, having upright members 6 securely joined thereto. This frame-work is securely held against distortion by means of suitable diagonal bracing members 7 forming thereby a very rigid structure.

The uprights 6 extend below the lower horizontal rail 5 and are each provided with two downwardly depending metal plates 8 bolted or otherwise fastened thereto. These plates are provided with aligned apertures 9 which are adapted to register with apertures in plates 10 which extend upwardly from a horizontal frame-work 11. Bolts 11^a passing through the apertures in each of the series of plates forms a hinge about which the horizontal frame work 11 is adapted to swing.

The horizontal frame-work 11 is approximately rectangular in form and is provided with side rails 12 to which the plates 10 are bolted and front and rear rails 14 and 15 respectively. Suitable bracing 16 is secured to the frame-work by means of which the frame is held in alignment.

Pivotally attached to the front rail 14 of the horizontal frame 11 are two arms 17 which are in approximate alignment with the side rails 12 of the frame-work 11 and are adapted to be swung either to the right or the left in a plane parallel to the plane of the frame-work 11.

Pivotally carried on the outer ends of the arms 17 is a rail or member 18 to which is hinged the tool-carrying board or support 19. As shown best in Fig. 3, the distance between the pivotal points on the arms 17 are equal and by means of this construction the member 18 is always parallel to the rail 14 of the frame-work 11.

Mounted on the tool-carrying board or support 19 is a bracket 20 provided with a downwardly depending spindle 21 having a chuck or other holding means 22 thereon. A tracer point 23 is adapted to be held in the chuck 22. Mounted at spaced intervals

along the tool-carrying board 19 are motors 25 to the spindles of which are attached chucks 26, within the jaws of which are held the cutting tools 27, the type of which is
5 common to wood carving machines. In the drawings I have shown electric motors although I may employ compressed air or any other suitable type as the occasion may demand. I have also provided handles 30
10 on the tool carrying board 19 by means of which I am enabled to control and move the various parts of the machine and to follow the tracer over the carving being reproduced. As noted above, the tool carrying board 19
15 is hinged to the member 18. This permits the cutting tools 27 and the tracer 23 to be always held in a vertical position regardless of the angle of frame-work 11.

A table or support 35 is provided beneath
20 the machine on which are secured the carving A to be reproduced and the pieces of material A' to be carved. These pieces A' are secured beneath the cutting tools 27 in relatively the same position as the carving
25 A is to the tracer 23.

A counterweight 36 is provided and is carried preferably by the rail 15 of the horizontal frame-work 11 and is of such weight as to balance the weight of the outer end
30 of the frame-work 11 and make the operation of machine responsive to a slight effort on the part of operator.

As will be noted from the above description, I have provided a wood carving machine of very simple construction and one
35 having proportionately fewer parts than any machine of like character. It will be seen that by means of the various pivoted frame-works, I am enabled to move the cutting tools forward and backward, up or
40 down, and to the right or to the left. I have provided a machine in which I am enabled to obtain quite a large range in the forward and backward movement of the
45 cutting tools. This is accomplished by pivotally suspending the horizontal frame-work 11 on the lower end of the pivoted vertical frame-work 1. The amount of this movement is determined by the length of the
50 vertical members 6 on the frame-work 11.

By means of this construction it is not necessary to make the table 35 movable as is required in most carving machines.

I have also provided a simplified means
55 for driving the cutting tools thereby eliminating much of the trouble and inconvenience encountered in belt driven machines and by means of the individual drive for the cutting tools I am enabled to use as many of
60 the tools at one time as are required. By employing individual drives for each cutting tool, I eliminate the use of belts, pulleys and cross shafts and their numerous fittings, and also the use of a large and powerful
65 motor as the motors employed are small and

require a very small amount of current to operate.

By means of the hinged support for the cutting tools I am enabled to always maintain the cutting tools in a vertical position
70 with respect to the material being worked on, or, I can hold the tools at an angle when it is necessary to do so.

In view of the above description it will be noted that I have produced a simplified
75 form of carving machine, one having fewer parts and one in which each cutting tool has its own individual drive. It is comparatively light in weight yet it is rigid and strong enough to retain its alignment which
80 is necessary in machines of this character.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as
85 regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a wood carving machine the combination of a support, a vertically depending frame-work hinged to said support, a horizontal frame-work hinged to said vertically depending frame-work, a second horizontal frame-work hinged to said first horizontal frame-work, motors carried on said
90 second horizontal frame-work, said motors being provided with rotatable spindles, and cutting tools in operative connection with each of such spindles of said motors.

2. In a wood carving machine the combination of a support, a vertically depending frame-work hinged to said support, a horizontal frame-work hinged to said vertically depending frame-work, a second horizontal frame-work hinged to said first horizontal frame-work, a motor carrying support mounted on said second horizontal frame-work, motors carried by said motor
100 carrying support, cutting tools and means on said motors for rotating said cutting tools.

3. In a wood carving machine the combination of a support, a vertical frame-work
115 hinged to said support adapted to be moved forward and backward, a horizontal frame-work hinged to said vertical frame-work adapted to be moved vertically, a second horizontal frame-work hinged to said first horizontal frame-work and adapted to be moved in a plane parallel to the plane of said first horizontal frame-work, cutting tools carried by said second horizontal frame-work, a motor for each of said cutting tools
120 and means on said motors adapted to hold and rotate said cutting tools.

4. In a wood carving machine the combination of a support, a vertical frame-work hinged to said support adapted to be moved
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forward and backward, a horizontal frame-work hinged to said vertical frame-work adapted to be moved vertically, a second horizontal frame-work hinged to said first
5 horizontal frame-work and adapted to be moved in a plane parallel to the plane of said first horizontal frame-work, a motor carrying support hinged to said second horizontal frame-work, motors mounted on said
10 motor carrying support, a cutting tool for each of said motors, and means on said motors for holding and rotating said cutting tools.

5. In a wood carving machine the combination of a support, a vertical frame-work hinged to said support adapted to be moved forward and backward, a horizontal frame-

work hinged to said vertical frame-work adapted to be moved vertically, a second horizontal frame-work hinged to said first
20 horizontal frame-work and adapted to be moved in a plane parallel to the plane of said first horizontal frame-work, a motor carrying support hinged to said second horizontal frame-work, motors mounted on said
25 motor carrying support, a cutting tool for each of said motors, means on said motors for holding and rotating said cutting tools, a tracer supported on said motor carrying support and means for moving said frame-
30 works.

Signed by me, this 12th day of April, 1921.

CHARLES RUPPEL.