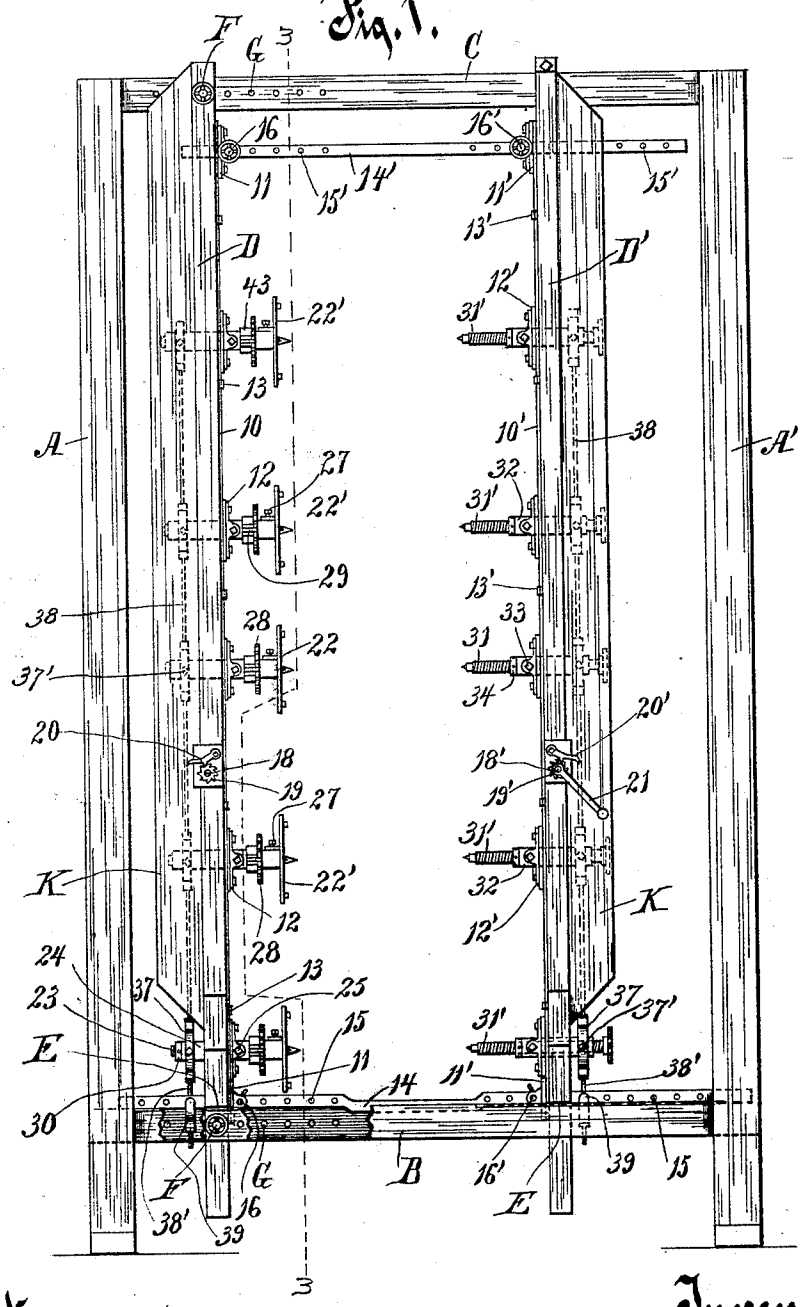
(No Model.) 2 Sheets—Sheet 1.

C. S. YARNELL.

FRAME FOR SUPPORTING PATTERNS AND MATERIAL FOR CARVING MACHINES.

No. 519,752. Patented May 15, 1894.

Fig. 1.



Witnesses.

A. Kenney.

Anna A. Faust.

Inventor.

Charles S. Yarnell

By Bendrick & Morsell

Attorneys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

C. S. YARNELL.

FRAME FOR SUPPORTING PATTERNS AND MATERIAL FOR CARVING MACHINES.

No. 519,752. Patented May 15, 1894.

Fig. 2.

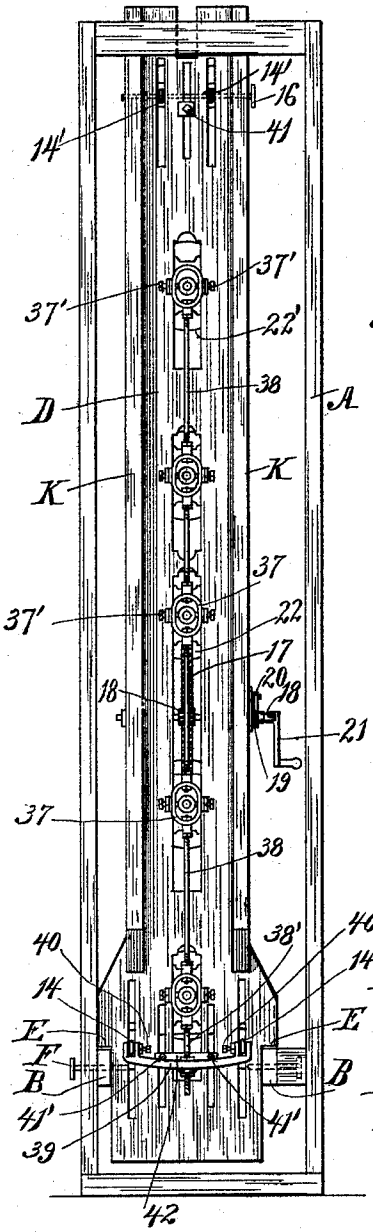


Fig. 3.

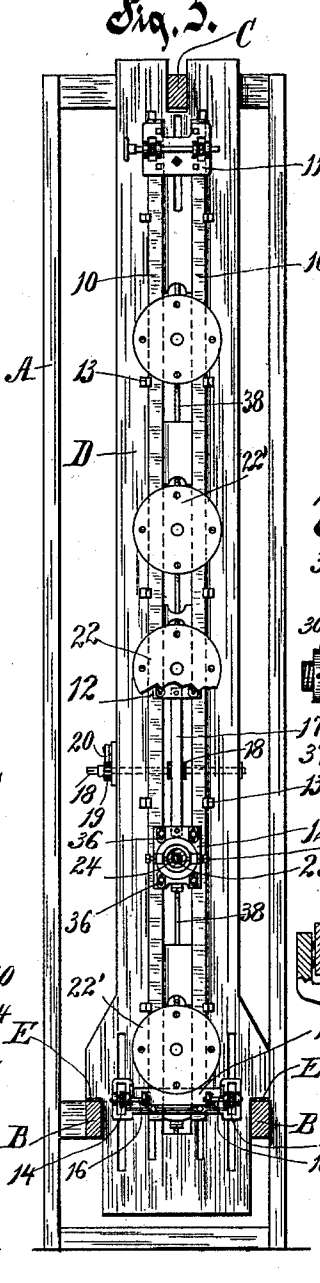


Fig. 4.

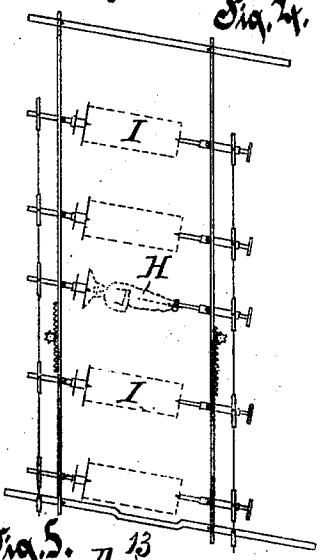


Fig. 5.

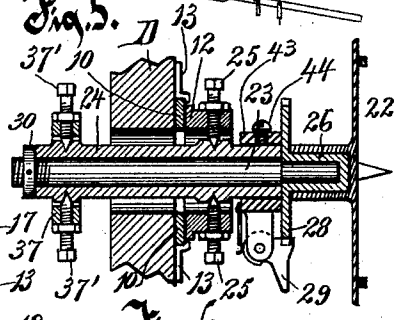


Fig. 6.

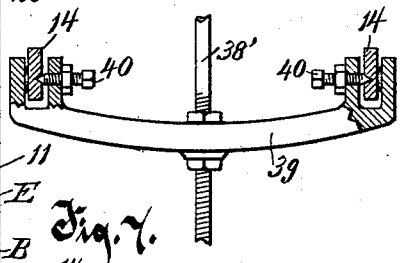
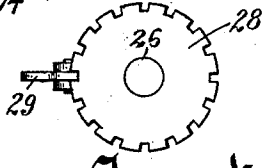


Fig. 7.



Witnesses.

C. N. Kenney

Anna O. Faust.

Inventor.

Charles S. Yarnell

By Benedict & Morsell

Attorneys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES S. YARNELL, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE MOORE CARVING MACHINE COMPANY, OF SAME PLACE.

FRAME FOR SUPPORTING PATTERNS AND MATERIAL FOR CARVING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 519,752, dated May 15, 1894.

Application filed July 15, 1893. Serial No. 480,588. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. YARNELL, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Tables or Frames for Supporting Patterns and Material for 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 is embodied in an improved table or frame for supporting material for a carving machine, like the carving machine shown and described in the patent to S. F. Moore, No. 452,144, issued May 12, 1891, or analogous machines, in which the tool guide and the cutting tool or tools, are arranged vertically one above the other, and have free lateral or horizontal movement over the pattern and material, being carved.

The object of the invention is to provide means by which the pattern and material may be adjusted, tilted and rotated, thus providing for adjusting the material suitably to the pattern, and that the tools, guided by the pattern, will carve the material on all sides of it and in undercuts in conformity therewith. The apparatus is especially adapted for supporting material in carving statues, newel posts, caps and similar articles.

The invention and its parts consist in the apparatus hereinafter described and claimed, or their equivalents.

In the drawings, Figure 1, is a front elevation of the complete apparatus. Fig. 2, is a side elevation of the apparatus as seen at the left of Fig. 1. Fig. 3, is a vertical section on line 3—3 of Fig. 1 looking toward the left. Fig. 4, is a diagram of the tilting frame, illustrating the method of correspondingly tilting the material and pattern. Figs. 5, 6 and 7 are details.

A permanent frame of suitable size and form to support the operative parts, consists preferably of the end frames A A′, the bottom rails B and the top rail C. Two vertical posts D D′ are supported movably and adjustably toward and from each other on the rails. These posts are conveniently supported adjustably on the bottom rails B B, by the shoulders E E projecting from the posts and resting on the rails, the principal part of each post extending downwardly between the rails, against which the post bears loosely. At their upper extremities the posts D D′ are provided with recesses in which the rail C is received, the upwardly projecting furcate parts of the post bearing loosely against the sides of the rail, being held upright and guided thereby. In use one or the other of these posts is secured releasably to the top and bottom rails, while the other is left free to move thereon. In the drawings the post D, which is the one usually and preferably made fast to the rails, is shown as secured thereto by pins F F inserted removably in the post and in corresponding apertures in the top and bottom rails, of which apertures there is a series G G in the top and bottom rails, arranged to provide for adjusting the post toward or from the vertical center of the permanent frame. This adjustment is especially adapted for adjusting the posts with reference to the support of patterns and material of different lengths.

By reference to Fig. 4 it will be seen that a pattern H and material I are supported in the apparatus on chucks so as to be tiltable vertically. The devices for so supporting the pattern and material are constructed and mounted as follows. Two vertically disposed metal bars 10, 10, located at a little distance apart are secured rigidly to each other by a series of plates 11, 12 bolted thereto, and are secured, movable vertically, on the inner face of the post D by bearing plates 13, fixed on the post. Corresponding bars 10′ connected rigidly together by the plates 11′ and 12′ are correspondingly secured to the post D′, by the bearing plates 13′. Connecting rods 14, 14′ each provided with series of apertures 15, 15′ are pivoted through ears on the plates 11 and 11′ respectively by removable pins 16, 16′, to the metal bars 10 and 10′ near the top and bottom, thereby forming with the metal bars a jointed parallelogram frame. These connecting rods 14 and 14′ project, in suitable vertically elongated slots therefor, through the posts D and D′. The apertures 15, 15′ in the rods 14, 14′, provide for the adjustment of the posts D and D′, and the metal bars 10, 10′ thereon at less or greater distance apart,

and toward and from the vertical center of the permanent frame, as desired. For raising and lowering the metal bars 10 and 10′, or the sides of the parallelogram frame, respectively, they are each provided with a fixed rack 17 (Fig. 2) which mesh with pinions on shafts 18, 18′ having bearings in the posts D D′. These shafts are provided with ratchet wheels 19, 19′ and with pawls 20, 20′ engaging therewith in one direction, and a detachable crank handle 21, is provided for rotating them. The construction as described provides for the slight movement of the free posts as D′, toward and from the post D, when the bars 10 or 10′ are raised or lowered in the manner described.

A series of chucks 22, 22′ preferably of the disk form, are severally mounted on spindles or stocks 23 (Fig. 5), which stocks have their bearings revolubly in sleeves or sleeve-boxes 24, said sleeve-boxes being fulcrumed by pin-pointed screws 25, to swing vertically on the plates 12, the screws turning through ears on the plates therefor. The chucks 22 are each provided with an annular rack 28, the rack being formed by recesses in the perimeter of a radially projecting flange on a cap 26 which fits rigidly on the extremity of the stock 23. The hubs of the chucks 22 fit, adjustable revolubly, on the caps 26 and are held releasably thereto by screws 27 (Fig. 1). A spring-actuated latch 29 hinged on a collar 43, engages the rack 28, and locks the chuck against revolution releasably, to the sleeve-box. The collars 43, are adjustable revolubly on the sleeve-box, being held thereto releasably by set screws 44. A nut 30 turning on the other extremity of the stock 23 in each case, retains the stock revolubly in its sleeve-box bearings. The racks 28 are the duplicates of each other in construction, and in use they are arranged correspondingly. By means of the revoluble adjustment of the collars 43, the operator may adjust any chuck and the material thereon revolubly, a distance less than the distance between the notches in the rack 28, to conform with the pattern or other pieces of material, and by means of the racks 28 and allied parts, may before and during the progress of carving, correspondingly adjust revolubly, the pattern and several pieces of material on the chucks. Opposite the chucks 22, 22′, for supporting the other extremity of the pattern and material, screw-threaded center chucks 31, 31′ turn longitudinally in sleeves 32 fulcrumed by pin-pointed screws 33 to swing vertically on the plates 12′ fixed on the bars 10′. The chucks 31, 31′ are adjustable by means of their screw threads in the sleeves 32 toward and from the chucks 22 and may be locked in position by the nuts 34 turning thereon against the ends of the sleeves 32. These chucks are each provided with a rigid hand wheel 35 for rotating them. The plates 12 and 12′ are each secured to their respective bars 10 and 10′, by bolts through vertical slots 36 in the plates (Fig. 3) whereby a slight amount of vertical adjustment on the bars is provided for. This permits of the required truing up and centering of the chucks on the parallelogram frame with reference thereto, and with reference to each other.

To provide for coincidently and correspondingly tilting all the chucks when the parallelogram frame is tilted, the sleeves and the sleeve boxes of the chucks are connected to the connecting rods 14. For this purpose the outer extremity or tail of each sleeve and sleeve box is pivoted by pin-pointed screws 37′ in a link 37, which several links are connected together by screw-threaded rods 38, and the lower link is connected by a corresponding rod 38′ to a yoke 39, the two extremities of which yoke are furcated and straddle the lower connecting rods 14 and are hinged thereto by the pin-pointed screws 40 (Fig. 6), turning through parts of the yoke against the connecting rods. Nuts turning on the connecting rods 38, 38′ bear against the links and against the yoke, and hold the parts in place, and provide for their adjustment relative to each other. This construction compels the concurrent and corresponding tilting of the chucks when one side or the other of the parallelogram frame is raised or lowered.

The upper plates 11 and 11′ are held movably to the posts D and D′ by bolts 41, fixed in the plates, which bolts extend through vertically elongated slots therefor in the posts, the bolts being provided with enlarged heads or plates that bear movably against the outer surface of the posts. The lower plates 11, 11′ are held movably to the posts D and D′ by bolts 41′ 41′ fixed therein and extending through slots therefor in the posts, which bolts carry straps 42 thereon, which bear loosely against the outer surface of the posts.

Laterally projecting pieces K K are fixed on the outer surfaces of the posts D D′ near their edges which serve to reinforce the posts. As will be observed the chucks 22 and 31 and the chucks 22′ and 31′ are opposite each other in sets on the parallelogram frame, and are adapted in such sets to support the pattern and material for carving, transversely of the frame.

In use, the pattern is commonly supported on the chucks 22 and 31, and the several pieces of material are supported on the chucks 21′ and 31′ above and below the pattern, but the pieces of material may all be above or below the pattern if preferred.

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

1. The combination with a permanent frame, of two vertical oppositely disposed posts supported adjustably toward and from each other on the frame, bars supported and independently adjustable vertically on the posts, and chucks arranged in sets fulcrumed normally at a right angle to, and so as to swing vertically on the bars, substantially as described.

2. The combination with a permanent frame,

of two vertical oppositely disposed posts supported on the frame one of which is movable thereon toward and from the other post, a jointed parallelogram frame so secured to the posts that one side at least of the parallelogram is adjustable endwise on and parallel with its post, and a plurality of chucks mounted thereon pivotally, normally at a right angle thereto, substantially as described.

3. The combination in an apparatus of the character described, of two vertical oppositely disposed posts, one at least of which is movable toward and from the other post, chuck-carrying bars secured to and movable endwise on and parallel with the posts, and connecting rods provided with series of apertures adapted to receive connecting and pivotal pins whereby the bars and their supporting posts are adjustable toward and from each other and the bars are severally and independently adjustable endwise on the posts, substantially as described.

4. The combination in an apparatus of the character described, of two vertical oppositely disposed posts, one at least of which is movable toward and from the other post, chuck-carrying bars secured to and adjustable on the posts, racks fixed on the bars and shafts mounted in the posts provided with pinions meshing with the racks on the bars, whereby the bars can be raised and lowered, substantially as described.

5. The combination in an apparatus of the character described, of two vertical posts one of which at least is movable toward and from the other post, a jointed parallelogram frame mounted on the posts, chucks opposite each other in sets, sleeves mounted to swing vertically on the sides of the parallelogram frame, in which sleeves the chucks are mounted severally, substantially as described.

6. The combination in an apparatus of the character described, of two vertical posts one of which at least is movable toward and from the other post, a jointed parallelogram frame mounted on the posts, chucks opposite each other in sets, sleeves mounted to swing vertically on the sides of the parallelogram frame in which sleeves the chucks are mounted severally, and means connecting the sleeves to the parallelogram frame in such manner as to compel a corresponding movement therewith, substantially as described.

7. In an apparatus of the character described, vertically disposed posts, bars movable vertically on the posts, chuck-carrying sleeves fulcrumed on the bars, a rod or rods jointed to and connecting the bars, and other rods connecting the sleeves to the first mentioned rod or rods, substantially as described.

8. In an apparatus of the character described, a series of chuck-carrying sleeves fulcrumed on a support one above another, means whereby the sleeves and their chucks may be concurrently tilted independently of their support, consisting of links in which the sleeves are severally pivoted at a distance from their fulcrums, and rods connecting the links, substantially as described.

9. In a pattern and material-holding apparatus, a series of sleeve boxes mounted analogously so as independently of their support to tilt in the same plane coincidently toward and from each other, chucks revoluble in said sleeve boxes, annular racks secured to the chucks, latches mounted on said sleeve boxes adapted to lock the chucks releasably against revolution in the boxes, other sleeve boxes opposite and complementary to the sleeve boxes aforesaid, mounted and tiltable in the same plane therewith, pin-pointed center-chucks adjustable endwise in said last mentioned sleeve boxes toward and from the first mentioned chucks, and means for locking the center-chucks in the sleeve boxes, substantially as described.

10. In a pattern and material-holding apparatus, a chuck, a revoluble stock on which the chuck is mounted, a sleeve-box in which the stock has its bearing revolubly, an annular rack secured to the chuck, a latch adapted to engage the rack and a collar on which the latch is mounted, which collar is adjustable revolubly on the sleeve-box, all combined, substantially as described.

11. The combination with a frame having apertures G, of movable posts D D′, pins F, movable bars 10, 10′ mounted on the posts, and connecting rods 14, 14′ provided with a series of apertures 15 and pins by which the bars are connected adjustably to the connecting rods, substantially as described.

12. In an apparatus of the character described, the combination with posts D D′ of bars 10, 10′ supported and movable endwise thereon connecting rods 14, 14′, and chuck-carrying plates 12, 12′ secured to the bars 10, 10′ adjustably, substantially as described.

13. The combination with a post D, of chuck-carrying bars 10, supported and movable endwise thereon, tie plates 11 secured rigidly to the bars, and bearing and guiding bolts 41, 41′ fixed in the plates and holding them movably to the posts, substantially as described.

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

CHARLES S. YARNELL.

Witnesses:

L. A. CONDIT,

CHARLES G. VAN WERT.