

(No Model.)

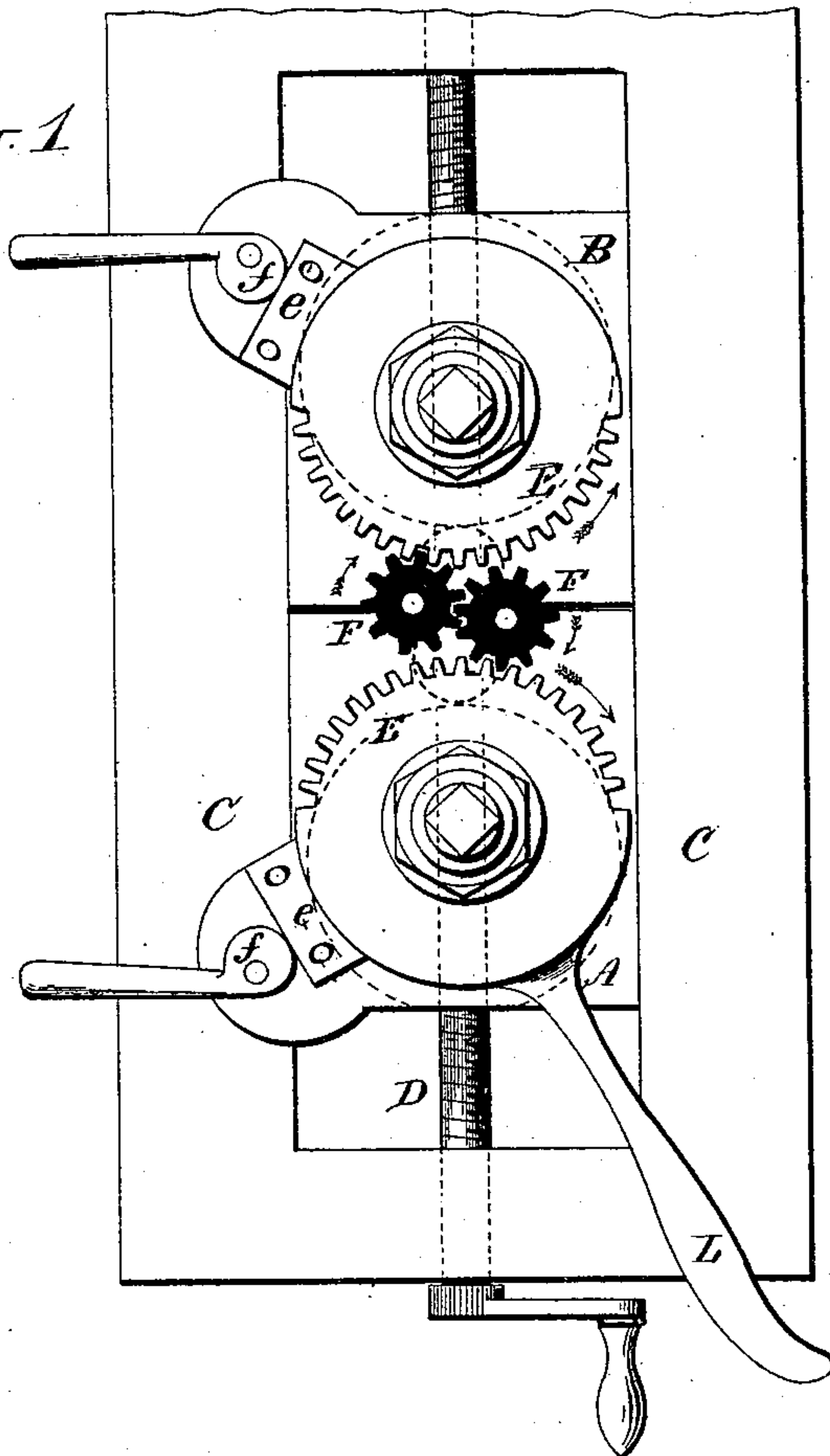
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MACHINE FOR TURNING CONCAVES.

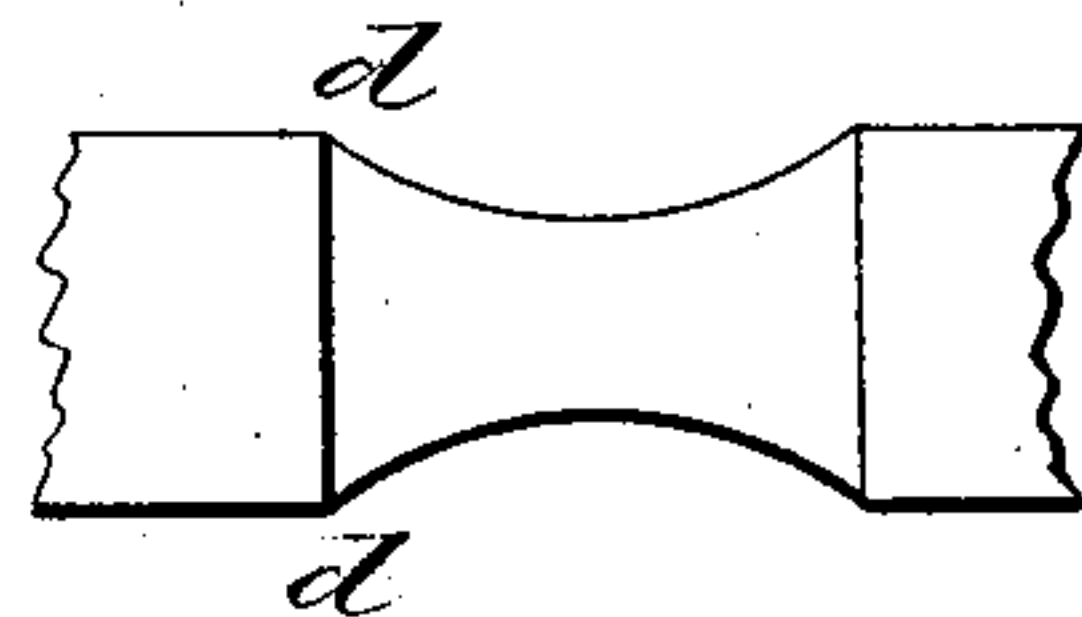
No. 262,734.

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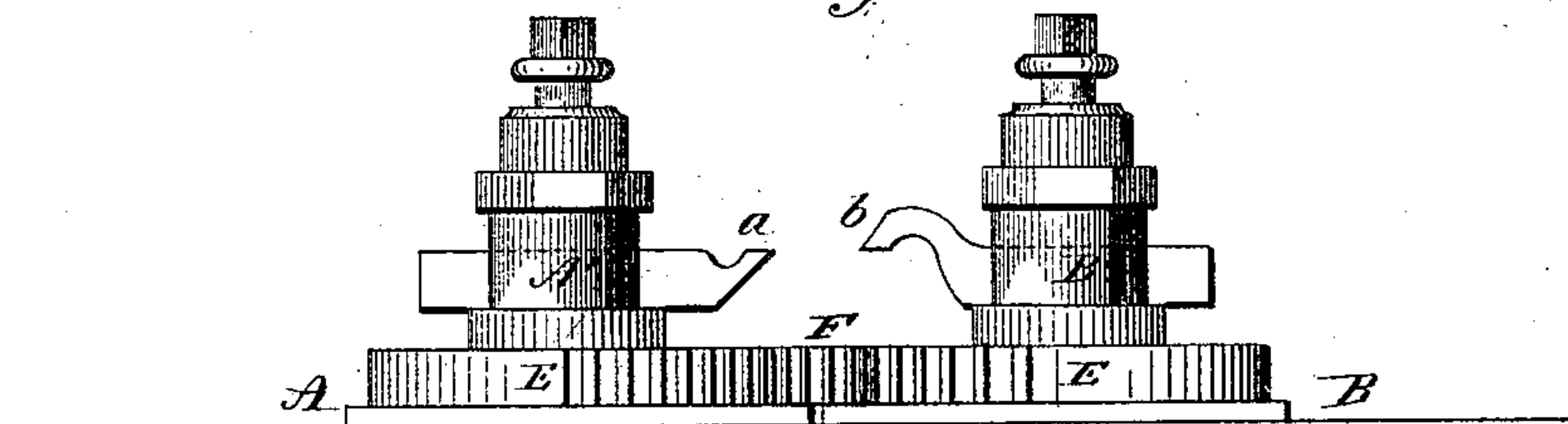
*fig. 1*



*fig. 3*



*fig. 2*



Witnesses.

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Invent

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# UNITED STATES PATENT OFFICE.

WILLIAM N. BUCKLEY, OF MERIDEN, CONNECTICUT.

## MACHINE FOR TURNING CONCAVES.

SPECIFICATION forming part of Letters Patent No. 262,734, dated August 15, 1882.

Application filed December 19, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM N. BUCKLEY, of Meriden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Turning Concaves; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top or plan view of the tool-carriage, the tools arranged thereon; Fig. 2, a side view of the same; Fig. 3, an article such as the invention is designed to work upon.

This invention relates to an improvement in devices for turning or finishing annular "hollows" in cylindrical articles—that is to say, articles in which, in longitudinal section, the surface presents a double concave, as seen in Fig. 3—the object being to finish the work at a single operation; and the invention consists in a pair of tool-posts arranged upon carriages movable toward or from each other in the same line, each carrying a tool and arranged upon opposite sides of the article to be operated upon, and which article revolves between the tools. The said tool-posts are pivoted so as to turn in a horizontal plane, and connected together so that they turn simultaneously on their respective pivots in the same direction to give a like path to both tools, as more fully hereinafter described.

A represents one carriage, and B the other, arranged between suitable guides, C, and so as to be moved freely toward or from each other between the guides, and parallel therewith is a leading-screw, D, fixed for free revolution, but without longitudinal movement, the thread at one end being right hand and at the other left hand, and engaging the carriages A B at the respective ends of the screw, so that turning the screw moves the carriages toward or from each other, according to the direction in which the screw is turned, in like manner as such a right-and-left-hand leading-screw moves articles in many mechanical devices. On each of the said carriages A B is respectively a tool-post, A' B', arranged upon a pivot so as to turn freely thereon in a hori-

zontal plane. Made fast to each post is a segmental toothed rack, E, the teeth of the said segment being concentric with the pivots of their respective tool-posts. Between the two segments and on their respective carriages are two pinions, F F, each gearing into the segment on its carriage, and the two also geared together, so that as one segment is turned the other will be simultaneously turned, and so that the two posts will be turned to carry their tools in the same direction. The pinions F F are adjustably attached to their respective carriages, so that as the carriages are moved toward or from each other they will still work together into their respective segments, notwithstanding they have relatively changed position—say as from the position in Fig. 1 to the position in broken lines, same figure. The adjustability of the two pinions F F is made by simply arranging the studs on which the wheels stand in slots in their respective carriages—a device well known for adjusting pinions for a connection between two gears.

Suppose the article to be operated upon be such as seen in Fig. 3. It is arranged in the lathe so as to lie between the two tools *a b*, and so that one will work upon one side and the other upon the opposite side. The front tool-post is provided with a suitable handle, L, to serve as a lever by which to turn the posts. The tool-posts are adjusted so that their respective centers correspond to the hollow segment or concave shape to be cut, and the tools are brought into position—say at the point *d d*. The operator, taking hold of the lever L, turns the forward tool-posts to carry the tool along the concave line to be cut, and this movement is imparted to the opposite tool, so that one follows the other, one tool being set slightly behind the other, so that the first tool will make the upper cut and the second tool make the finish. The guides C C represent the tool-carriage of a lathe, arranged upon the bed of a lathe in the usual manner for arranging tool-carriages. By this arrangement the surface is finished at a single operation, whereas in the usual manipulation a single tool makes the first cut, and that must be followed by a second tool. By this construction not only is the work more quickly done, but more perfectly. Because of the posi-



tive shape given by the single tools all the articles operated upon by the tools will be precisely alike.

At times it may be desirable to use either of the tool-holders separately and in a fixed position, substantially as the common tool-holder of a lathe. For the purpose of setting the tool-holders in such position, I provide a clamp, *e*, on one or both carriages, operated by a cam-lever, *f*, the said clamp operating against the periphery of the respective segments or disks *E E'*. With this arrangement the two tools may be fixed in their position and together moved with the tool carriage or guide *C* on the bed of the lathe to turn the surface of equal diameter; or either may be used as the ordinary tool of a lathe.

In some cases it is desired to burnish the surface turned. In that case a second or following tool may be a burnisher; or if the surface has been already turned and a more perfect burnishing is desirable each tool may be a burnisher, one following the other.

Instead of employing the two pinions *F F* between the segments of the two posts, other connections between the two posts may be made, whereby the rotation of the one will be imparted to the other to turn the pinions in the same line of work.

I claim—

1. The combination of the two carriages *A*

*B*, arranged between guides for movement toward or from each other, a right-and-left-hand screw arranged to move the carriages toward and from each other, each of said carriages carrying a tool-post pivoted thereon so as to turn in horizontal planes and on opposite sides of the work to be done, the said two posts connected by mechanism substantially such as described, whereby the tools carried by the posts are turned upon the pivot of their respective posts as a center in the same direction of movement, substantially as described.

2. The combination of the two carriages *A B*, arranged between guides for movement toward or from each other, a right-and-left-hand screw arranged to move the carriages toward and from each other, each of said carriages carrying a tool-post pivoted thereon so as to turn in horizontal planes and on opposite sides of the work to be done, the said two posts connected by mechanism substantially such as described, whereby the tools carried by the posts are turned upon the pivots of their respective posts as a center in the same direction of movement, with a clamp on one or both carriages to secure the tool-posts in a fixed position, substantially as described.

WILLIAM N. BUCKLEY.

Witnesses:

F. G. BOLLES,  
JOHN Q. THAYER.