

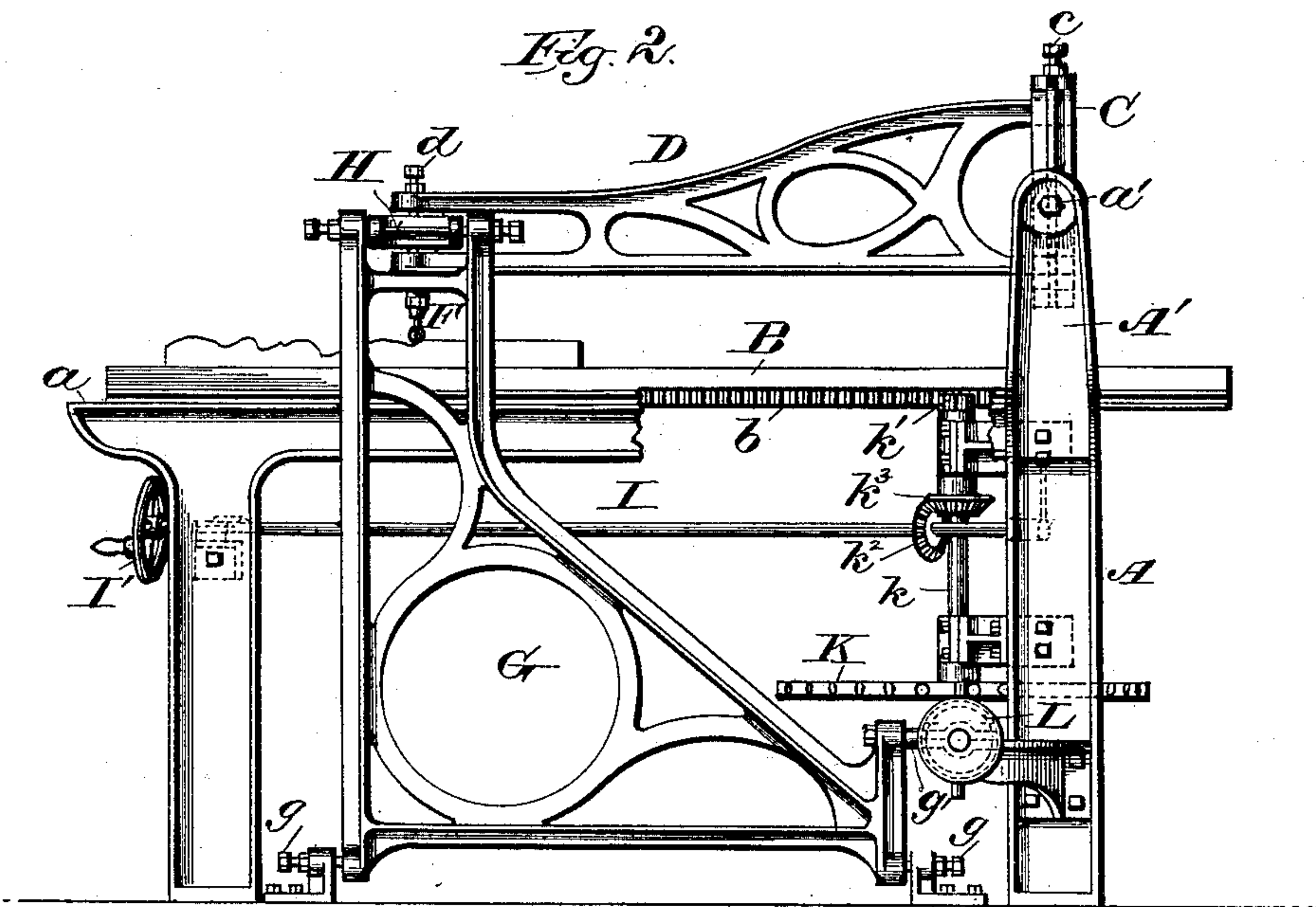
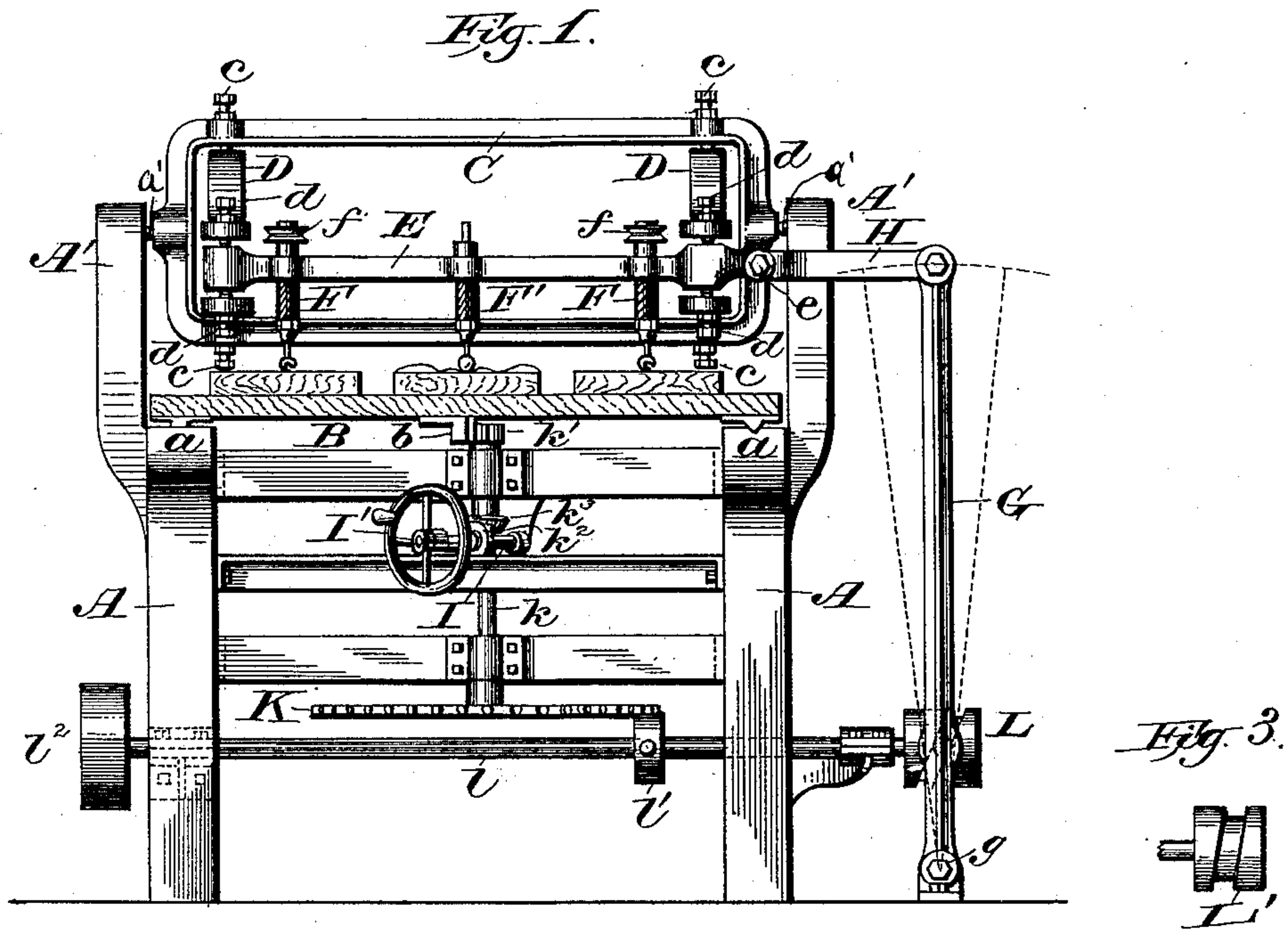
(No Model.)

T. L. SMITH.

FEEDING MECHANISM FOR CARVING MACHINES.

No. 452,241.

Patented May 12, 1891.



Witnesses:  
E. G. Somner  
Chas. L. Goss.

Inventor:  
Thomas L. Smith  
By Henderson & Wither  
Attorneys.



# UNITED STATES PATENT OFFICE.

THOMAS L. SMITH, OF REEDSBURG, ASSIGNOR TO THE MILWAUKEE CARVING COMPANY, OF MILWAUKEE, WISCONSIN.

## FEEDING MECHANISM FOR CARVING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 452,241, dated May 12, 1891.

Application filed June 23, 1888. Renewed January 31, 1891. Serial No. 379,779. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS L. SMITH, of Reedsburg, in the county of Sauk and State of Wisconsin, have invented certain new and useful Improvements in Feeding Mechanism for Carving-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to cause the pattern and work to be automatically traversed by the guiding and cutting tools.

It consists, essentially, of combining with the tool-carriage and work-table of a carving-machine mechanism producing an automatically-reciprocating feed and mechanism producing an automatic cross-feed, whereby the entire face of the pattern and work is caused to be traversed by said tools.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a front elevation; Fig. 2, a side elevation of my improved machine; and Fig. 3 is a side elevation of a cam having a groove of different pitch for producing a shorter reciprocating movement of the tool-carriage.

A represents the frame of a carving-machine to which my improvements are applied. It is provided with ways *a a*, upon which the work-table B is supported and slides, and with standards *A' A'*, with which the tool-carriage-guiding mechanism is connected.

E is the tool-carriage, provided at the middle with a guiding-tool holder or hand-piece *F'* and at or near each end with cutting-tool holders or hand-pieces *F F*. The cutting-tool holders are each furnished with a rotary spindle, to which the cutting-tools are attachable, and on these spindles are fixed pulleys *f f*.

C is a yoke bearing at each end on cone-pointed screws *a'* and capable of oscillation on a horizontal axis passing through said screws.

D D are vibratory arms pivoted at their rear ends between the upper and under sides of yoke C on cone-pointed screws *c c*, so as to

swing on axes at right angles to the axis of said yoke. In the front bifurcated ends of said arms the tool-carriage E is pivoted at each end between cone-pointed screws *d d* in lines parallel with the axes of the pivot-screws *c c*.

In place of the mechanism hereinbefore described for the purpose of illustrating my improvements, I may employ various other forms in which are found the essential conditions to admit of an automatic reciprocating feed and a cross-feed.

G represents a vibratory arm or frame fulcrumed at its lower end to suitable supports by means of cone-pointed screws *g g* and connected at its upper end by a link H with the tool-carriage E.

*l* is a horizontal shaft supported in suitable bearings in frame A and provided with a cam L, having in its periphery an inclined groove which engages a pin or projection *g'* on the vibratory frame G and causes the latter to swing back and forth transversely to the travel of the work-table B.

*k* is a vertical shaft mounted in suitable bearings in the frame of the machine in the same plane with shaft *l*. It is provided at its upper end with a pinion *k'*, which works with a rack *b*, attached longitudinally to the under side of work-table B, and at its lower end with a toothed disk or wheel K, with which two pins in the pin-wheel *l'* on shaft *l* work, turning said disk K one tooth to each half-revolution of the shaft *l* and moving the work-table forward an interval at each reversal of the movement of the tool-carriage.

*l<sup>2</sup>* is a driving-pulley fixed on shaft *l* and connected with any convenient source of power from which the feeding mechanism is to be driven.

I is a shaft supported underneath the work-table B in suitable bearings and provided at the front end of the machine, readily accessible to the operator, with a crank-wheel *I'*, by means of which the table is moved back by hand after having reached the limit of its advance movement or from any desired point of its travel. It is provided with a bevel-gear *k<sup>2</sup>*, which works with a similar gear *k<sup>3</sup>* on the shaft *k*.

The cam L may be replaced by other cams,



as L', (shown in Fig. 3,) having grooves of different inclinations or pitches, whereby a longer or shorter reciprocation of the carriage E is produced, according to the width of the pattern to be traversed, or the same result may be attained by making the cone-screws *g g* or fulcrums on which the frame G vibrates vertically adjustable, so as to move them nearer to or farther from the pin *g'*. It is obvious that both movements may be communicated by the feeding mechanism to either the work-table or the tool-carriage with the same results.

A continuous feed crosswise of the reciprocating feed may be employed instead of the intermitting feed, although I prefer the latter, and various well-known forms of mechanism—such as a screw, pawl, and rack—may be used to produce either the continuous or intermitting feed.

The automatic feeding mechanism can be easily disconnected by moving the pin-wheel *l'* on the shaft *l* out of engagement with the toothed wheel K and withdrawing the bolt *e*, which connects the link H with the tool-carriage E, and the work can then be finished, moving the tool-carriage by hand.

It is obvious that various constructions and arrangements of the parts constituting the carving-machine proper may be employed with my improved feeding mechanism.

I claim—

1. In a carving-machine, the combination, with a sliding work-table, of a tool-carriage provided with a guiding and one or more cutting tools and movable transversely to the direction of the movement of said work-table and vertically with reference to the work, and mechanism connected with and arranged to automatically move said tool-carriage and work-table transversely to each other in straight lines, substantially as and for the purposes set forth.

2. In a carving-machine, the combination, with a sliding work-table, of a tool-carriage provided with a guiding and one or more cutting tools and movable transversely to the direction of the movement of said work-table and vertically with reference to the work, and mechanism connected with said work-table and carriage and arranged to automatically impart a rectilinear intermittent movement to the one and a transverse reciprocating movement to the other, substantially as and for the purposes set forth.

3. In a carving-machine, the combination, with a sliding work-table, of a tool-carriage

provided with a guiding and one or more cutting tools movable vertically with reference to the work, a vibrating arm connected with and arranged to automatically impart a reciprocating endwise movement to said carriage, means for adjusting the length of the arc of vibration of said vibrating arm, and mechanism connected with and arranged to automatically move said work-table in a straight line transverse to the reciprocating movement of said tool-carriage, substantially as and for the purposes set forth.

4. In a carving-machine, the combination, with a tool-carriage provided with a guiding and a cutting tool and capable of endwise and vertical movement and a work-table movable transversely thereto, of a vibratory arm connected with said carriage, a cam arranged to rock said arm, and mechanism working with said work-table to move the same an interval to each reciprocation of the carriage transversely thereto, substantially as and for the purposes set forth.

5. In a carving-machine, the combination, with a tool-carriage provided with a guiding and a cutting tool and capable of endwise and vertical movement and a work-table movable transversely thereto, of a rack attached to said table, a pinion working with said rack, a toothed wheel on the pinion-shaft, a continuously-rotated pin-wheel working with said toothed wheel, so as to impart an intermitting rotation thereto, and mechanism imparting a continuous reciprocating movement to said tool-carriage, substantially as and for the purposes set forth.

6. In a carving-machine, the combination, with a tool-carriage provided with a guiding and a cutting tool and capable of endwise and vertical movement and a work-table movable transversely thereto and provided with a rack, of a vibratory arm connected with said carriage, so as to impart a reciprocating endwise movement thereto, a cam arranged to vibrate said arm, a pinion working with the rack on said table, a toothed wheel on the pinion-shaft, and a pin-wheel on the cam-shaft working with said toothed wheel and producing an intermitting rotation thereof, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS L. SMITH.

Witnesses:

CHAS. L. GOSS,  
M. E. BENSON.