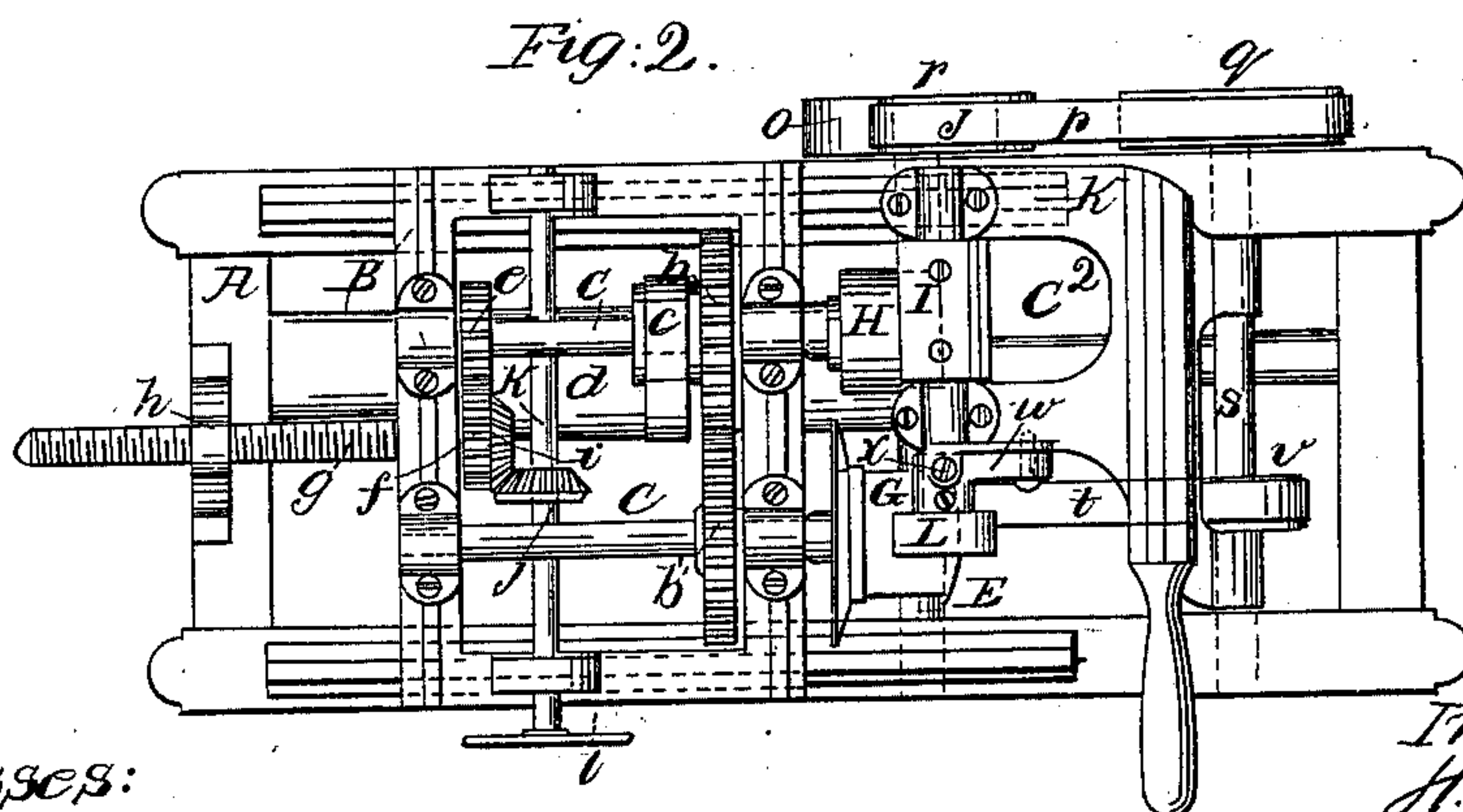
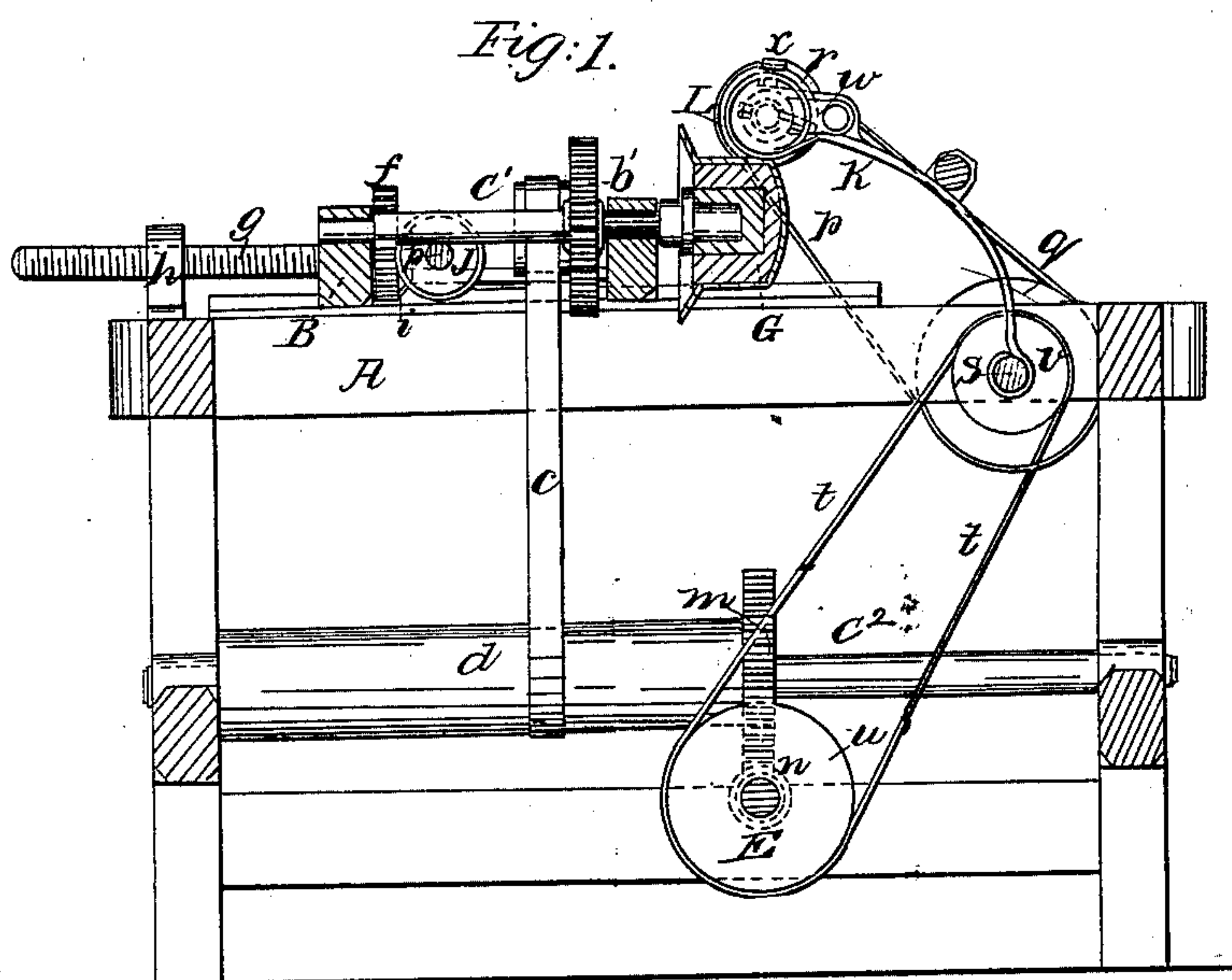


*Flint & Smith,*  
*Turning Irregular Forms.*  
*No 80,467.                      Patented July 28, 1868.*



*Witnesses:*  
*E. F. Hastenhuber.*  
*Chas. Wahlers.*

*Inventor:*  
*H. Flint*  
*G. B. Smith.*  
*for*  
*Van Selsvoort & Haupp.*  
*attys.*

# United States Patent Office.

HARRISON FLINT AND GEORGE P. SMITH, OF DANBURY, CONNECTICUT.

*Letters Patent No. 80,467, dated July 28, 1868.*

## IMPROVEMENT IN MACHINES FOR TURNING IRREGULAR FORMS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, HARRISON FLINT and GEORGE P. SMITH, of Danbury, in the county of Fairfield, in the State of Connecticut, have invented a new and useful Improvement in Machines for Turning Irregular Forms; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention.

Figure 2 is a plan or top view thereof.

Similar letters indicate corresponding parts.

This invention consists in giving to the block to be turned a motion in the direction of the spindle, to which the block is attached in such a manner that the cutter acts on the wood in the direction of the fibre, and thereby a much smoother surface can be produced than by cutting crossways to the fibre, and at the same time the surface, as well as one end of the block, can be reached by the cutter, and a hat-form, or other article of irregular form can be turned much more accurately and smoothly than it can with machines of the ordinary construction, where the block to be turned is hung between two centres, and the cutter acts crossways to the fibre of the wood.

The invention consists further in the arrangement of a swinging arm supporting the cutter, and the pattern-guide, in combination with a reciprocating carriage, forming the bearings for the spindles, to which the pattern and the block to be turned are attached in such a manner that the cutter is free to follow the motions of the pattern-guide, while the pattern and the block to be turned revolve freely and move towards or from the cutter, and thereby the cutting of the block is effected with ease and facility.

The invention consists also in securing the pattern-guide to an adjustable arm, which can be set higher or lower by set-screws, in such a manner that by raising or depressing said pattern-guide, different sizes of blocks can be turned from one and the same pattern.

The invention consists, finally, in a pattern-block made by filling a hat or other article with plaster of Paris in such a manner that a pattern of the desired form or shape can be produced with ease and facility.

A represents a frame, made of wood or any other suitable material, and provided with two ways, *a*, on which moves the carriage B. This carriage forms the bearings for the spindles C C', which are geared together by cog-wheels *b b'*, so that they revolve with the same velocity.

This revolving motion of the spindles is produced by a belt, *c*, which extends from a drum, *d*, over a pulley mounted on the spindle C, and on this spindle is also mounted a cog-wheel, *e*, which gears in a similar cog-wheel, *f*, secured to the end of a screw-rod, *g*, which passes through the end-piece of the carriage B, and is tapped into a lug, *h*, which rises from the frame A. By these means the screw-rod *g* receives a slow revolving motion, and the carriage receives a transversing motion on its guide-ways, in a direction parallel to the spindles C C'.

On the screw-rod *g* is also mounted a bevel-wheel, *i*, which gears into another bevel-wheel, *j*, secured to a spindle, *k*, which extends transversely through the carriage, and to which a revolving motion can be imparted by a hand-wheel, *l*. By turning this hand-wheel, a traversing motion can be imparted to the carriage B on its guide-ways in either direction. The drum *d*, from which the spindles C C' derive their motion, is mounted on a shaft, C<sup>2</sup>, which has its bearings in suitable boxes secured to the lower part of the frame A, and on which is mounted a worm-wheel, *m*, which gears into a worm, *n*, secured to the driving-shaft E. To this shaft the required motion is imparted by a belt running over a pulley, *o*, or by any other suitable means.

The ends of the spindles C C' project beyond the carriage B, and on the end of spindle C' is mounted the pattern G, while the end of the spindle C supports the block H to be turned.

In the drawing we have shown our machine as used for turning hat-blocks, and in this case the pattern-block may be produced by taking a hat, cutting off the brim, and filling the body of the same with plaster of Paris, or other suitable material, which will readily set and allow of being fastened to the spindle C'.

The operation of cutting or turning the block H is effected by means of a cutter, I, which is mounted on



an arbor, J, that has its bearings in an arm, K, and receives a rapid revolving motion by a belt, *p*, extending from a pulley, *q*, over a pulley, *r*, as shown in the drawing.

The pulley *q* is mounted on a shaft, *s*, to which a revolving motion is imparted by a belt, *t*, extending from a pulley, *u*, on the driving-shaft, over a pulley, *v*, on the shaft *s*. This shaft also forms the fulcrum for the arm K, so that this arm can be swung backward and forward without changing the belt *p*.

To the side of the arm K is secured the pattern-guide, L, the connection being effected by a link, *w*, which is adjustable by a set-screw, *x*, so that the position of the guide can be regulated, and that larger and smaller blocks can be turned from the same pattern and with the same pattern-guide.

The link *w* is so arranged that by depressing the same the pattern-guide moves in the segment of a circle, so that the same, in moving downwards, also retreats, and consequently, by changing the position of said pattern-guide, the length of the block to be turned, as well as its diameter, is changed.

In turning a block, the carriage B is brought in such a position that the guide L bears on the inner end of the pattern, the machine is then started, and the cutter I begins to act on the block H.

As the pattern revolves slowly, simultaneously with the block, the guide rises and falls in accordance with the sinuosities of the pattern, and by the guide the arm K rises and falls, and the block H is turned to correspond in shape to the pattern. As the motion of the machine continues, the carriage B recedes slowly, and the turning of the block is effected in the direction of the spindle, to which the same is secured, and in the direction of the fibres of the wood, and not crossways to the same, as heretofore, so that the surface becomes comparatively smooth by the action of the cutter, and requires but little labor to be finished after having been turned.

When the pattern-guide arrives at the edge of the pattern, it gradually descends over the tip, as the carriage recedes, and the tip of the block is turned to correspond to the tip of the pattern.

It is obvious that our machine can be used for turning blocks or irregular forms of various shapes, and we do not wish to confine ourselves to the operation of turning hat-blocks.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The swinging arm K, carrying the cutter and pattern-guide, arranged relatively to the reciprocating carriage B, carrying the spindles C C', on which the pattern and the block to be turned are secured, operating substantially as and for the purpose described.

2. The link *w* and set-screw *x*, for securing the pattern-guide L to the arm K, and for adjustment purposes, when operating substantially as described, for the purpose specified.

HARRISON FLINT,  
GEO. P. SMITH.

Witnesses:

HENRY T. HOYT,  
DAVID B. BOOTH.