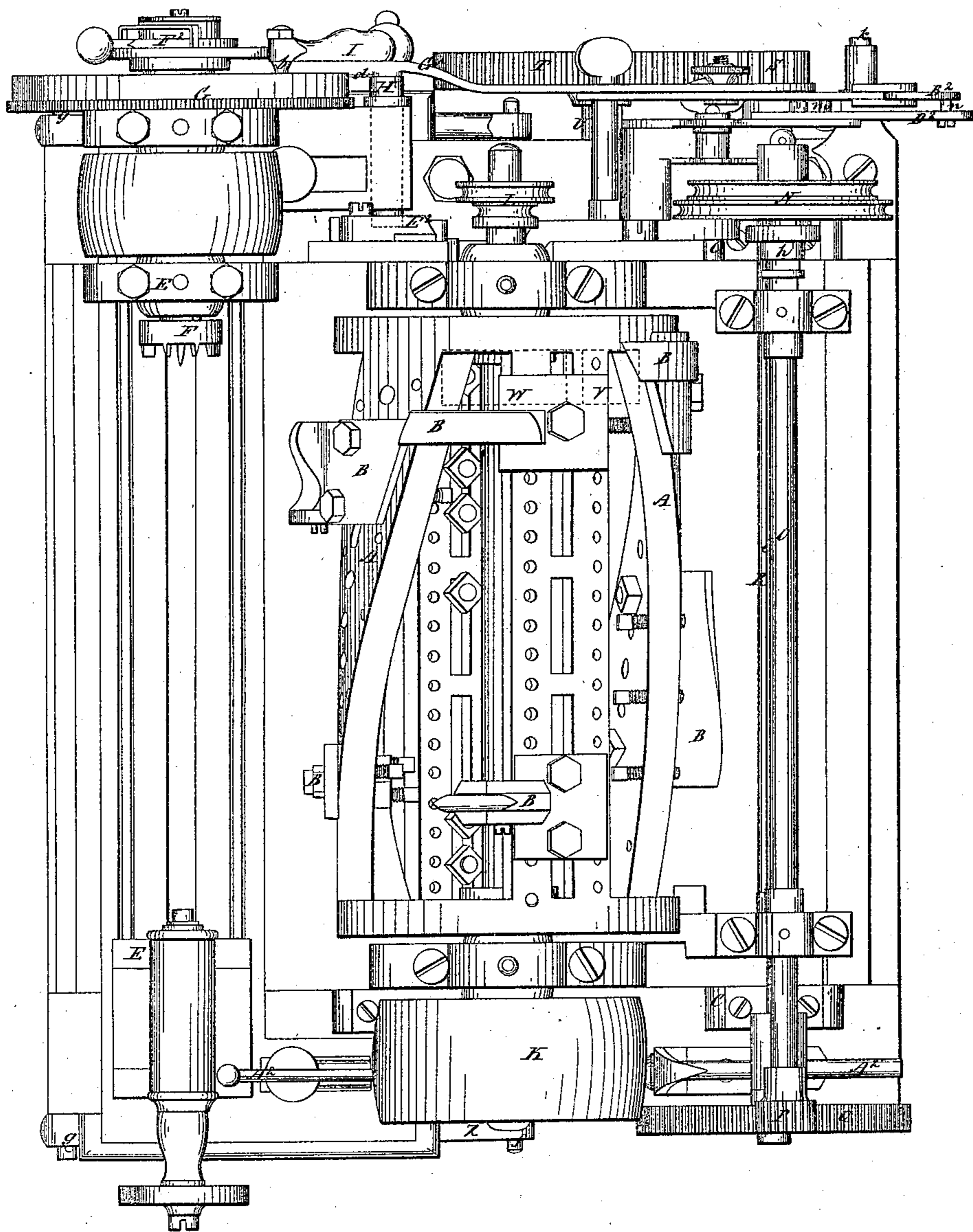


*M. Roberts,*  
*Turning Regular Forms.*

*N<sup>o</sup> 12,115.*

*Patented Dec. 19, 1854.*

*Fig. 1*

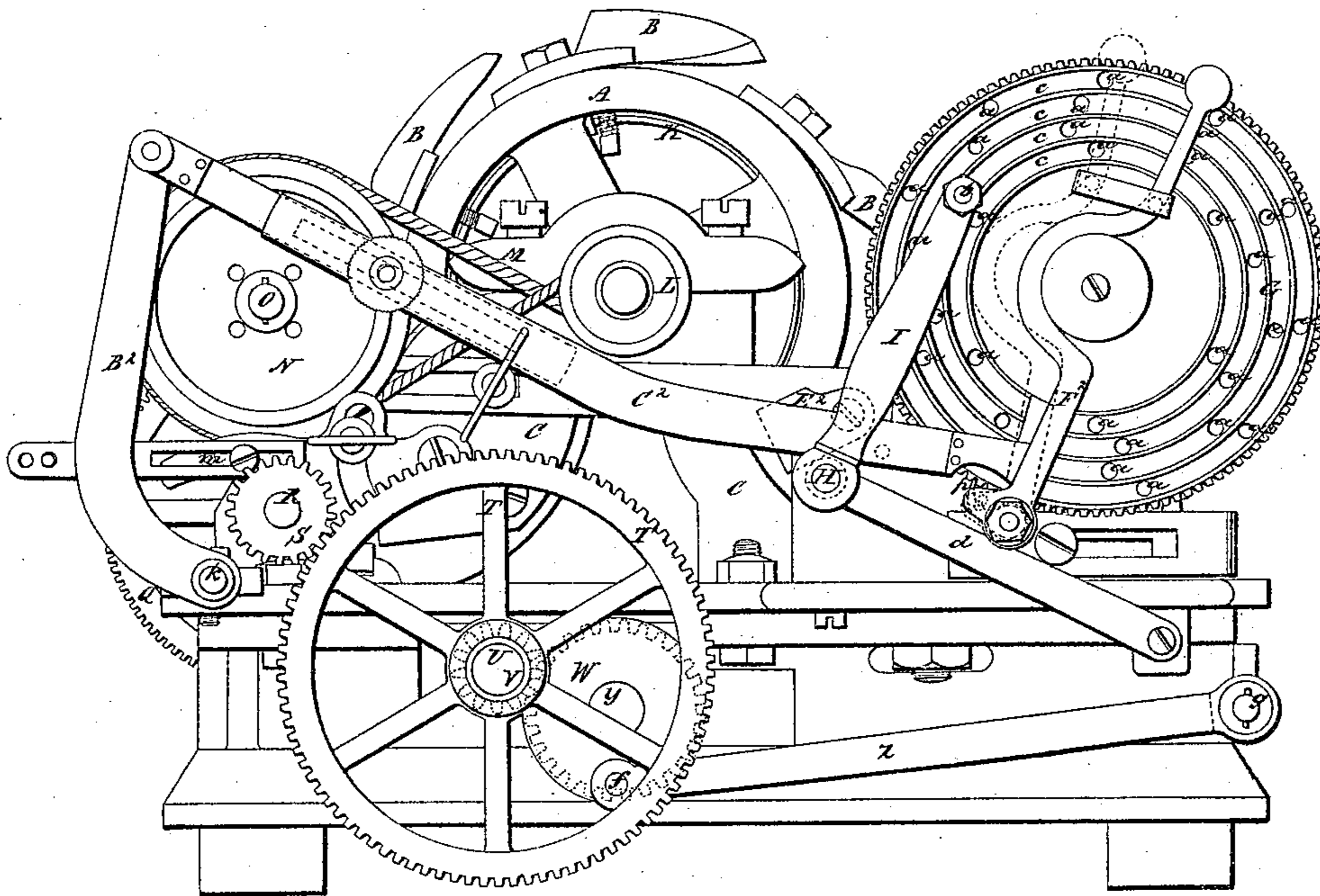


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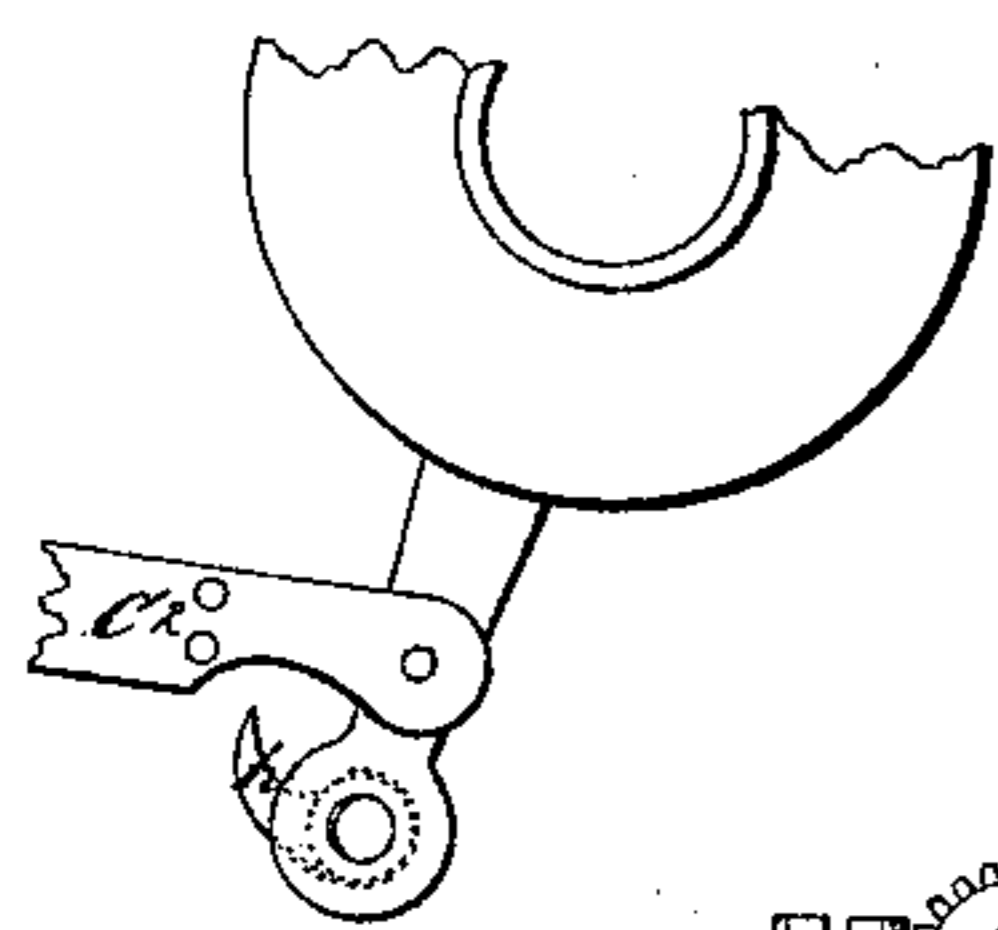
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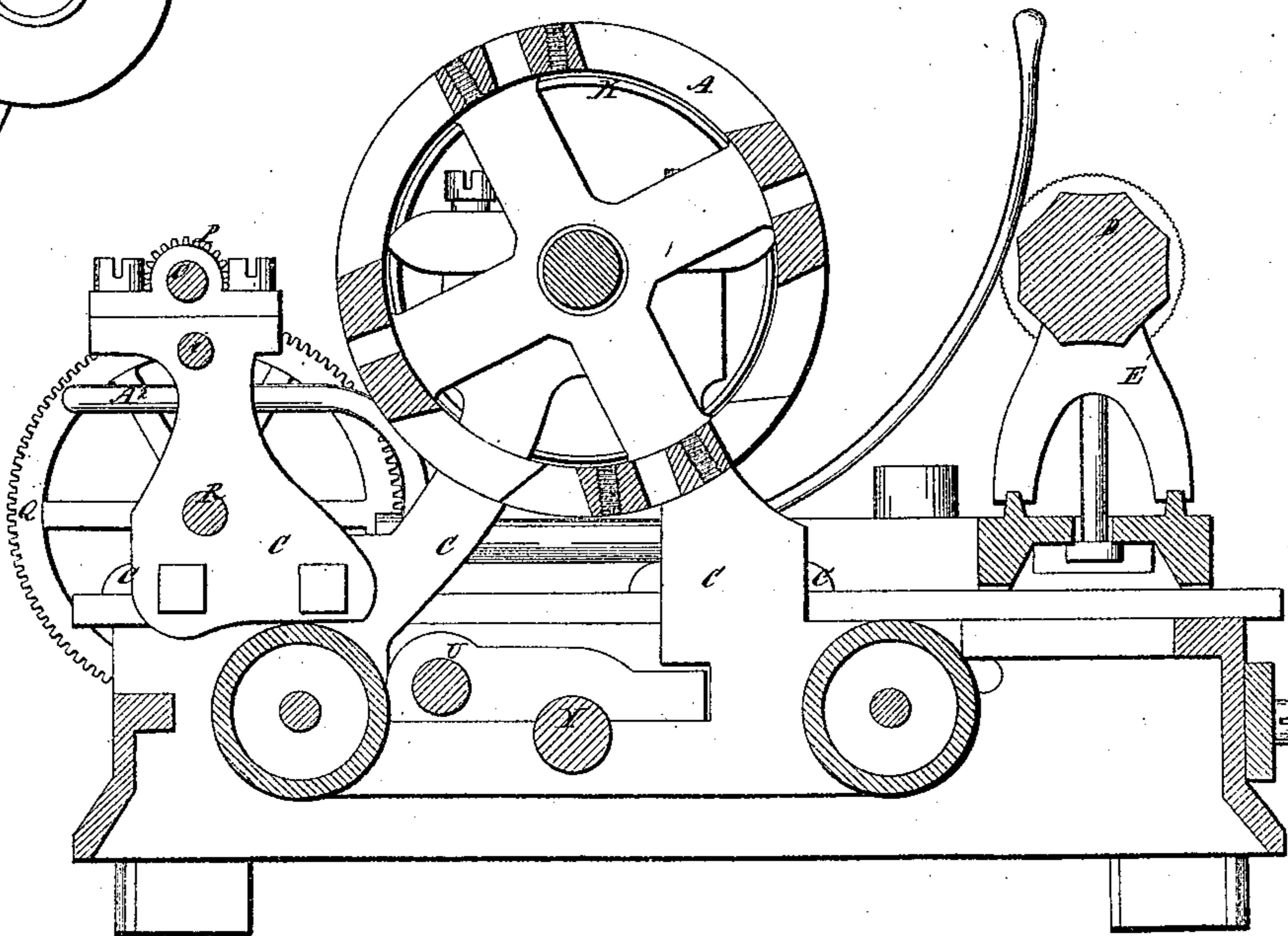
*Fig. 2*



*Fig. 1*



*Fig. 3*



# UNITED STATES PATENT OFFICE.

MILTON ROBERTS, OF BELFAST, MAINE, ASSIGNOR TO ROBERTS & PIERCE.

## MACHINE FOR TURNING PRISMATIC FORMS.

Specification of Letters Patent No. 12,115, dated December 19, 1854.

*To all whom it may concern:*

Be it known that I, MILTON ROBERTS, of Belfast, in the county of Waldo and State of Maine, have made certain new and useful Improvements in Machines for Turning Prismatic Forms, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, in which—

Figure 1 is a plan of my machine; Fig. 2, an end elevation; Fig. 3, a transverse section upon the line X X of Fig. 1 with the cutters removed; Fig. 4—details to be referred to hereafter.

Machines have been contrived for the purpose of cutting prismatic forms in which the block to be turned was caused to traverse beneath a cylinder of rotating cutters the motion of the block upon its axis, and also of the carriage upon which it was centered being governed entirely by hand, in consequence of which the operation of the machine is slow and defective.

To remedy these defects and to produce a machine capable of making more perfect work and one in which all the operations shall be automatically performed without assistance from the operative is the object of my present invention. And my invention consists of an automatic combination of a cylinder of rotating cutters, mechanism for causing the same alternately to approach the block and recede therefrom, and a suitable device for the purpose of turning the block a portion of a revolution after each cut; the operations all succeeding each other in the proper order without requiring the hand of the operative except to take out the finished article and put in a new block.

In the accompanying drawings A is the cutting cylinder, the cutters B being secured to the longitudinal bars of the same by nuts and screws as seen in Fig. 1. This cylinder runs in the sliding carriage C which is made to vibrate to and from the material to be cut D, in a manner which will be hereafter explained. The transverse bars of this carriage being made hollow for the purpose of strength as seen in Fig. 3. The block or log D to be operated upon is centered upon puppet-heads E, E' in the manner adopted in lathes of ordinary construction.

Upon the shaft of the mandrel F is a dial plate G pierced with circles of holes for the purpose of regulating the number of sides to be given to the prismatic body to be cut.

H is a spindle which slides longitudinally in the framework of the machine and carries the arm I from which projects the catch bolt *b* which enters one or other of the holes *a* of the dial plate. This catch bolt plays within grooves *c* in the face of the dial plate G and is pressed up against the wheel and retained within the grooves by a spring *d*.

Motion is communicated to the machine through the pulley K upon the shaft of the cutter cylinder.

L is a pulley upon the other end of this shaft from which motion is communicated by means of the band M to the pulley N upon the shaft O.

P is a pinion upon the other end of this shaft which engages with the wheel Q upon the shaft R. Upon the opposite end of this shaft is a pinion S which gears with the wheel T upon the shaft U. This shaft carries a pinion V seen in red in Fig. 1 and dotted in Fig. 2. This pinion engages with the wheel W upon the shaft Y. Upon the shaft Y and outside of the framework of the machine is a disk carrying a crank pin *f*, upon which plays the connecting rod Z, the other end of which is secured to the framework at *g*. The parts K, L, M, N, O, P, Q, R, S, T, U, V, W, Y, are all borne by the carriage C, and move with it and the cutter cylinder.

Through the connection of the parts already explained it is evident that as the cutter cylinder revolves the shaft Y will also revolve, though much more slowly, and thus by means of the connection between the crank pin *f*, and the rod Z as the shaft Y revolves it also vibrates back and forth carrying with it the sliding carriage and the cutter cylinder to and from the article to be cut. The pulley N runs loosely upon the shaft O, and is clutched therewith by means of the clutch *h*, which is moved by the shipping lever A<sup>2</sup>, and shipping rod *i*.

The block to be cut is rotated intermittently in the following manner. B<sup>2</sup> is an arm pivoted to the frame work at *k*,—to the upper end of which is secured an adjustable arm C<sup>2</sup>, which carries at its opposite extremity a spring pawl (seen detached in Fig. 4) which operates upon the teeth on the periphery of the dial plate G to move it in one direction.

*m* and *n* are pins projecting from an adjustable arm D<sup>2</sup>, secured to the carriage—these pins striking against the arm B<sup>2</sup>, move

it in and out together with the lever  $C^2$ . Before the dial plate can be revolved by the spring pawl  $p$ —it is necessary that the catch  $b$ , be withdrawn from the hole  $a$ ,—  
 5 this is effected in the following manner.  $E^2$ , is a swinging latch attached to the carriage  $C$ , and traveling with it. As the cutter cylinder recedes from its work the inclined surface of the latch  $E^2$  bears against  
 10 the end of the spindle  $H$  of the latch  $b$ , and withdraws the latter from the hole in the dial plate,—the next instant the pin  $m$  strikes the lever  $B^2$ , and the dial plate is revolved until the latch  $b$  falls into the next  
 15 hole  $a$ , when the dial plate and material are again held stationary until the cylinder has finished its cut and commences to return.

$F^2$ , is a lever by operating which the pawl  $p$ , may be held off from contact with the  
 20 teeth of the dial plate whenever it becomes desirable that the dial plate shall not be revolved by the motion of the carriage.

Operation: By means of the shipping lever  $A^2$  the pulley  $N$  is unclutched from its  
 25 shaft  $O$ , and the carriage remains stationary while a new block is being centered in the lathe,—the pulley  $N$  is then again clutched with its shaft and the carriage advances toward the material. During the rapid ad-  
 30 vance of the carriage the block is roughed off and worked down rapidly to its ultimate form. During the last moments however of the approach of the cutters to the block, viz., while the crank pin  $f$  passes its center, the  
 35 carriage moves very slowly, so that an exceedingly thin shaving only is taken off by the cutters and the surface of the article is thus finished much more highly than has

heretofore been the case in machines where the material has been caused to traverse 40 horizontally beneath the cutters. It is also evident that as the article being turned remains stationary while the cutters approach it in a plane passing through its center that the faces of the finished article will be fluted 45 and not plain as has heretofore been the case. The cylinder having finished its cut the carriage commences to recede and the latch  $E^2$ , strikes against the spindle  $H$  and withdraws the catch  $b$ , from the hole in the  
 50 dial plate  $G$ ,—the pin  $m$  then strikes the arm  $B^2$ , and the dial plate is revolved until the catch  $b$  falls into the next hole  $a$ , and a new portion of the block is presented to the cutters which now advance again as before. 55 The number of holes in the groove  $c$  corresponds to the number of sides to be given to the finished article.

I do not claim a rotating cylinder of cutters in combination with a carriage for hold- 60 ing the block when the motions of the block and of the carriage are governed by the hand of the operator but

What I do claim as my invention and desire to secure by Letters Patent is— 65

The within described machine for turning prismatic forms consisting essentially of the cylinder of cutters, the mechanism for rotating the block intermittently and for giving the transverse motion to the revolving cylinder, the whole operating automatically in the manner and for the purpose set forth. 70

MILTON ROBERTS.

Witnesses:

ROBERT WHITE,  
 SAML. F. BURD.