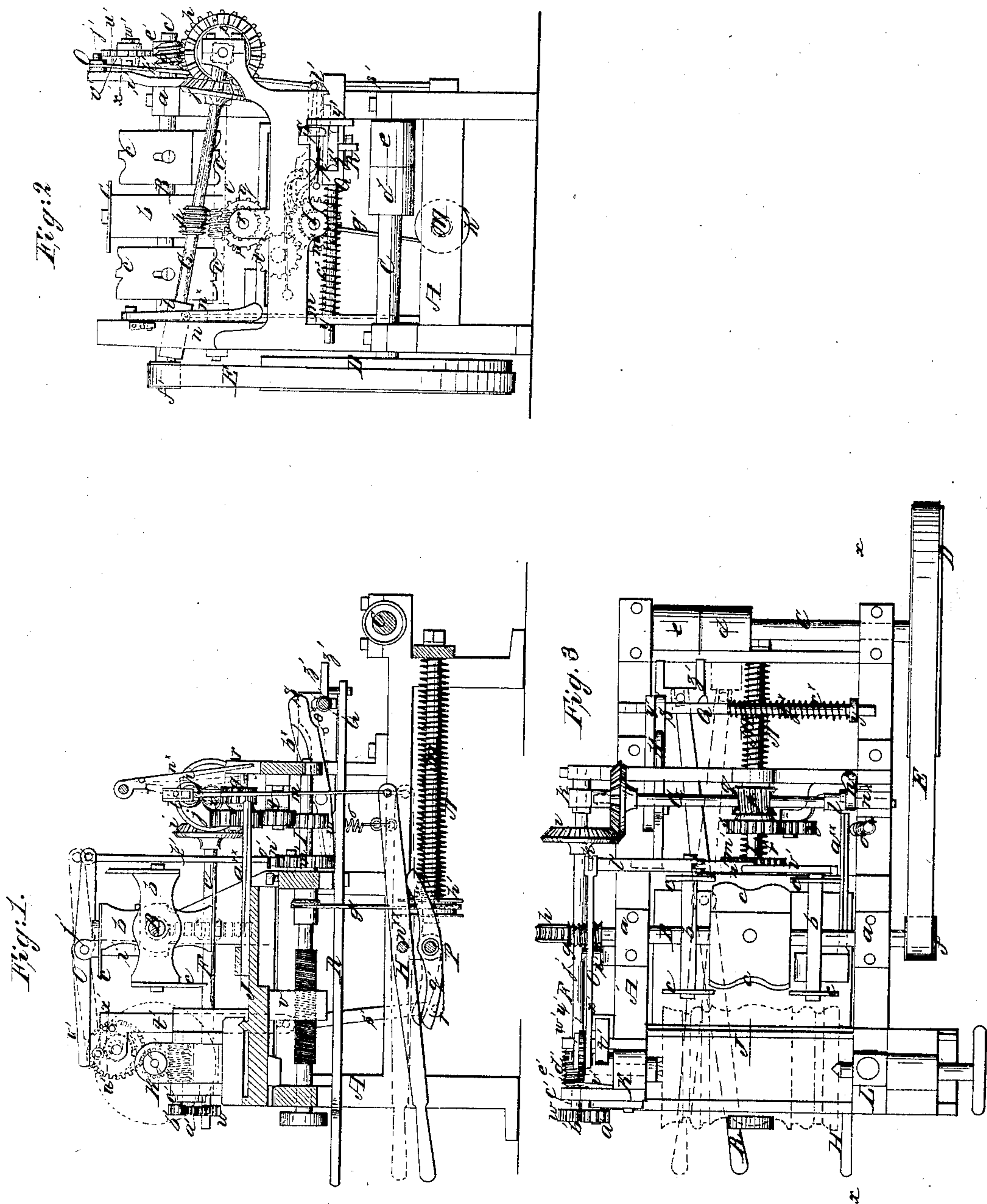


J. Mc Nary,
Turning Regular Forms.
N^o 20,166. Patented May 4, 1858.



UNITED STATES PATENT OFFICE.

JNO. McNARY, OF BROOKLYN, NEW YORK.

AUTOMATIC LATHE.

Specification of Letters Patent No. 20,166, dated May 4, 1858.

To all whom it may concern:

Be it known that I, JOHN McNARY, of Brooklyn, in the county of Kings and State of New York, have invented a new and improved machine for turning regular or cylindrical ornamental forms, such as newels, balusters, and similar beaded or ornamental work; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side sectional elevation of my improvement taken in the line x, x , Fig. 3. Fig. 2, is a front elevation of ditto. Fig. 3 is a plan or top view of ditto.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a peculiar arrangement of means for operating rotary cutter stocks and traveling heads, between which the stuff to be turned is centered, whereby the machine is rendered automatic in its action throughout, and made to work rapidly and in the most efficient manner, as hereinafter fully shown and described.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents the framing of the machine which may be constructed in any proper way to support the working parts.

B, represents a shaft which is placed transversely in proper bearings a, a , on the upper part of the framing. On this shaft B, cutter stocks b , are secured and to each stock cutters c , are attached, one to each end, the cutting edges of the cutters being so formed as to cut or turn the work of the desired pattern.

C, is the driving shaft which is placed at one end of the framing A, d , is the working or fast pulley, and e the idle pulley.

D, is a pulley placed on one end of the shaft C, said pulley communicating motion to the shaft B, by means of a belt E, which passes over a pulley f , at one end of said shaft B.

On the opposite end of the shaft B, a screw g , is formed, and this screw gears into a worm wheel h , on a horizontal shaft F, which is placed in suitable bearings at the upper part of the framing A, at one side. On the front end of the shaft F, a bevel wheel i , is placed, which gears into a cor-

responding wheel j , placed on one end of a shaft G, at the front part of the framing A. The end of the shaft G, near the wheel j , is fitted in a bearing k , which is placed loosely on the shaft F, and the opposite end of shaft G, is fitted in a bearing l , which is attached to the upper end of a rod m , the lower end of said rod being pivoted to a lever H, which is attached by a fulcrum pin n^x , to the lower part of the framing at one side. The bearing l , is fitted and works in a vertical guide n , attached to the framing, and a spiral spring o , is attached to the lever H, said spring having a tendency to keep the bearing l , at the upper part of its guide n . To the guide n , a catch n^x , is attached, the use of which will be hereinafter shown.

On the shaft G, a screw p , is placed. This screw gears into a worm wheel q , which is placed on an arbor r , said arbor having a pinion s , on it, which gears into a pinion t , the pinion t , gearing into a corresponding pinion u , which is placed on the front part of a horizontal screw rod or shaft I, fitted longitudinally in the framing A. The screw shaft I, passes through a nut v , which projects downward from the under side of a carriage J, which is placed on the upper part of the framing A, and fitted in suitable guides. On the upper part of the carriage J, two heads K, L, are placed. These heads are constructed precisely similar to those of an ordinary turning lathe, one of them, the head L, being allowed to slide so that sticks of varying length may be fitted or centered between the two heads.

On the back end of the shaft F, a pinion w , is placed. This pinion gears into a corresponding pinion a' , on the framing, and the pinion a' , gears into a pinion b' , which is placed on one end of an arbor c' , said arbor having a screw d' , upon it which screw gears into a worm wheel e' , placed on the outer end of an arbor f' , which is fitted in the head of K, and by the rotation of which the stuff to be turned, which is centered between the heads, is rotated, see Figs. 1 and 2.

To the screw shaft I, a cord or chain g' , is attached. This cord or chain is connected to a pulley h' , which is placed loosely on a stationary shaft M, said shaft being placed horizontally and longitudinally in the framing A, and having a spiral spring N, placed

around it, one end of the spring being attached to the shaft and the opposite end attached to the pulley h' .

On the upper part of the framing A, and just above the shaft F, a lever O, is placed. This lever is pivoted to the upper end of an upright i' , as shown at j' . The front end of this lever is pivoted to a vertical rod k' , the lower end of which is pivoted to the outer end of a pawl l' , the inner end of said pawl catching into a ratchet m' , which is placed on the screw shaft I. To the inner end of pawl l' , a supplementary pawl n' , is pivoted, said pawl also catching into the ratchet m' , and serving as a holding pawl, the two heads acting alternately against the ratchet, see dotted lines Fig. 2. A spring o' , bears against the upper side of the pawl n' , and a spring p' , bears against the under side of pawl l' , said springs keeping their respective pawls engaged with the ratchet m' .

P, is a shaft which is placed in the lower part of the framing A. This shaft has a cross arm q' attached to one end of it, as shown clearly in Fig. 1, and the opposite end of the shaft has an arm r' , attached to it. This arm is connected by a rod s' , to a vertical slide t' , to the upper end of which a pinion u' , is attached, said pinion having a friction roller v' , attached to its inner side near its periphery, and a spring w' , attached to its outer side, the spring w' , having a tendency to keep the friction roller v' , against a pin x' , on the upper end of slide t' .

Q, is a belt shipper which is formed of a slide z^x , fitted in bearings y' , y' , attached to the framing, the slide being allowed to work freely in its bearings. To this slide a fork z' , is attached in which the driving belt works. To the slide z^x , a lever R, is connected and S, is a catch the front end of which, when the driving belt is on the working pulley fits in a recess in the slide z^x , and is retained therein in consequence of a spring b^x , bearing upon its upper surface. The back end of the catch S, extends underneath the outer end of pawl l' . A spiral spring c^x , encompasses the slide z^x , and has a tendency to keep its fork z' , in line with the idle pulley e .

The operation is as follows:—The stick to be turned is centered between the two heads K, L, and the shaft G, before the machine is started is thrown upward, as shown in Fig. 2, and the belt shipper Q, keeps the driving belt on the idle pulley e , see Fig. 2, when the stick is centered between the heads K, L. The outer end of the lever H, is raised and the shaft G, is thereby brought down and its screw p , made to gear into the pinion q , the shaft being retained in this position by the catch n^x , which passes over the upper edge of the bearing z . The lever R, is

then operated and the belt shipper Q, so moved as to throw the driving belt on the working pulley d , the belt shipper being retained in proper position by the catch S. Motion being given to the shaft C, the shaft B, is rotated therefrom by the belt E, and motion is communicated to the screw shaft I, from the shaft B, through the medium of the screw g , on said shaft, worm wheel h , on shaft F, and the gearing i , j , screw p , on shaft G, and gearing q , s , t , u . The screw shaft as it rotates moves the carriage J, in the direction indicated by arrow 1, and feeds the stick toward the cutter c , the stick being at the same time rotated by the gearing w , a' , b' , screw d' , and worm wheel e' , the stick and cutters rotating in the same direction. As the stick is fed or moved toward the cutters, the cutters cut or turn it of the desired form corresponding of course to the form of the cutters, and when the stick has advanced a requisite distance an adjustable rod a^x , which is attached horizontally to the carriage J, throws outward the catch n^x , and the spring o , which is connected to lever H, will throw upward the shaft G, thereby disconnecting the driving power from the screw shaft I, and stopping the feed movement; at the same time the cross arm q' , of shaft P, is actuated by lever H, and the arm r' , of said shaft draws down the slide t' , and pinion u' , which pinion in consequence gears into the worm wheel e' , the worm wheel rotating the pinion u' , until the friction roller v' , which is attached to it, raises the lever O, and thereby causes the outer end of the pawl l' , to be depressed so that the inner ends of both pawls l' , n' , will be raised free from the ratchet m' , and the spiral spring N, through the medium of the pulley h' , and chain or cord g' , allowed to rotate the screw shaft rapidly so as to throw back the carriage J, to its original position. The catch S, is also raised at the same time so that the spring c^x , is allowed to actuate the belt shipper and throw the driving belt on the idle pulley e . The finished is then removed and another inserted in its place to be acted upon in a like manner. When the feed motion is stopped, the stick is turned one revolution, so that the cutters c , may act upon it, to turn it perfectly cylindrical. This is necessary, for while the stick is being fed to the cutters, the cutters cut into it spirally or in volute form, so that a shoulder would be left on the stick were the cutters not allowed to act upon it after the feed motion ceases. The spring w' , throws the pinion u' , back to its original position when the pinion is raised free from the worm wheel e' , and the shaft G, is depressed so that its screw p , gears into the pinion q , and the pinion w , is fitted loosely on the shaft F, and is made to turn therewith by means of a feather and groove. This is to allow the head K, to slide forward

and at the same time allow the gearing to rotate the stick.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is,

1. The sliding or traveling lathe heads K, L, between which the stick to be turned is centered, in combination with the rotary cutters *c*, when the above parts are arranged to operate as shown, viz, so that the stick will be gradually fed to the cutters, until the desired form is given it, and then its feed motion stopped and the stick rotated so that a perfect symmetrical form may be given it.
2. I further claim giving the feed and return motion to the stick to be turned and

also rotating the same from the cutter shaft B, by means of the screw *g*, on said shaft, worm wheel *h*, on shaft F, in connection with the gearing *w*, *a'*, *b'*, screw *d'*, worm wheel *e'*, and the screw *p*, on shaft G, together with the gearing through the medium of which the screw shaft I, is rotated, the above parts being used in connection with the lever H, and the catch *n^x* rod *a^{xx}*, and with the pawls *l'*, *n'*, actuated by lever O, and pinion *u'*, the whole being arranged to operate as and for the purpose set forth.

JOHN McNARY.

Witnesses:

W. TUSCH,
J. W. COOMBS.