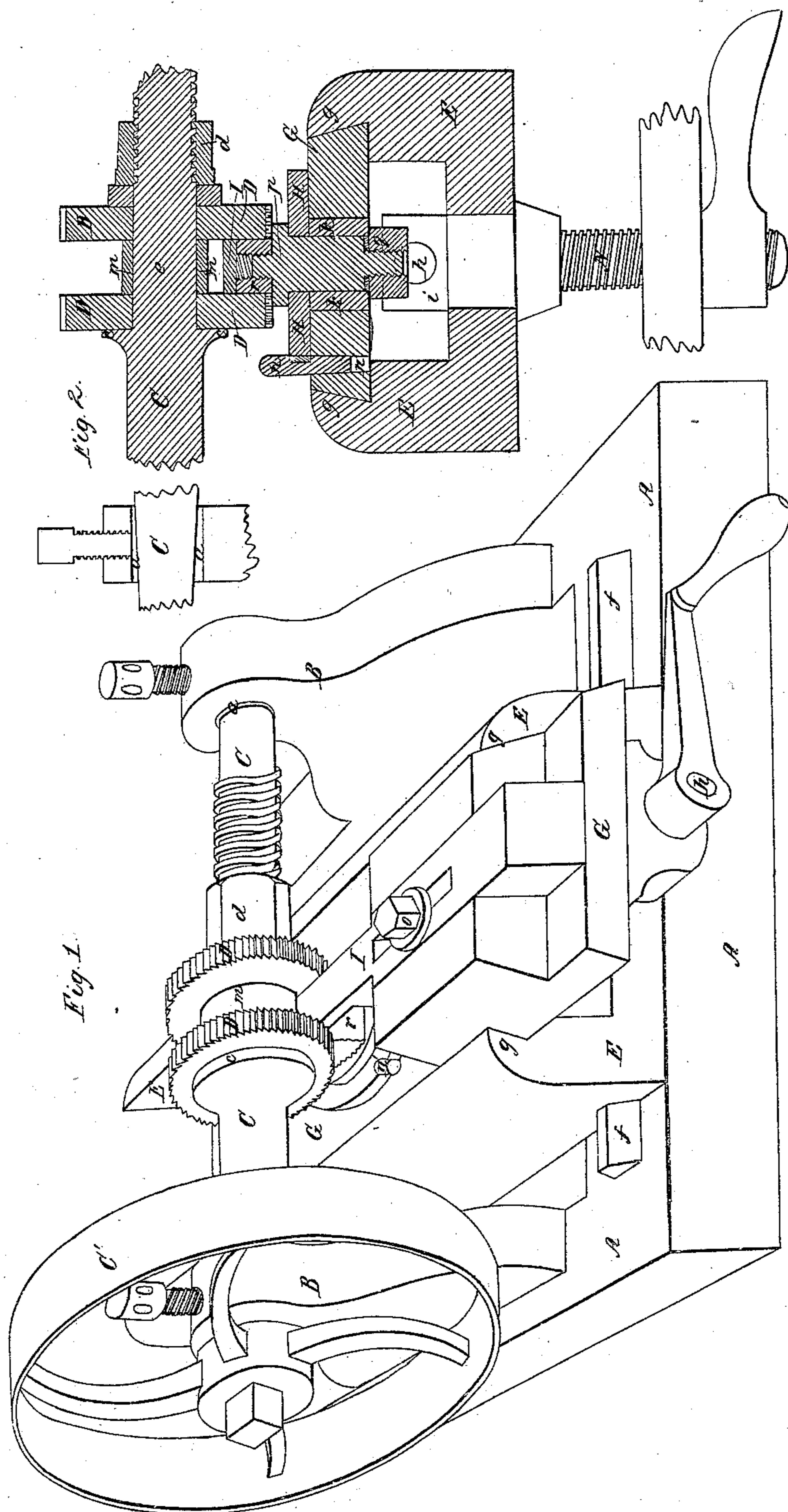


J King,

*Milling Machine,*

N<sup>o</sup> 6,140.

*Patented Feb. 27, 1849*



# UNITED STATES PATENT OFFICE.

JULIUS KING, OF BORDENTOWN, NEW JERSEY.

## MACHINE FOR DRESSING NUTS AND BOLT-HEADS.

Specification of Letters Patent No. 6,140, dated February 27, 1849.

*To all whom it may concern:*

Be it known that I, JULIUS KING, of Bordentown, in the county of Burlington and State of New Jersey, have invented certain  
5 new and useful Improvements in Machinery for Dressing the Sides of Bolt-Heads and Nuts, of which the following is a full and exact description, reference being had to the annexed drawings of the same, making part  
10 of this specification, in which—

Figure 1 is a perspective view of the machine in the act of dressing the sides of a bolt head, Fig. 2 is a vertical section, taken through the line  $x x$  of Fig. 1.

15 The same letters indicate the same parts in all the figures.

In the accompanying drawings A is a rectangular frame of metal, having standards B erected upon its ends to carry the mandrel C which rests in boxes  $a$  made in any  
20 manner that will admit of the easy removal of the mandrel for the purpose of changing or adjusting the cutters. One end of the mandrel projects beyond the standard, and  
25 carries a pulley C'. This pulley revolves the mandrel and cutter by motion received through the medium of a belt, from any main driving shaft, or other convenient source of motion, in the shop in which it is  
30 placed.

The mandrel is well and truly finished, its journals and the bearings for the cutters D being concentric, as will more plainly appear by reference to Fig. 2, in which  $c$  is  
35 the shoulder against which the cutters are pinched by the binding screw  $d$  to prevent them from turning on their seats. The cylindrical portion  $e$  forms the seat for the cutters, and for the sleeve or collet  $m$  which  
40 separates them a distance just equal to the diameter of the head or nut to be dressed by passing between them. A sufficient number of these collets, of different lengths, must be provided, to correspond with all the various  
45 diameters to which nuts and bolt heads are required to be dressed.

On the upper side of the frame two parallel ribs  $f$  are formed, which are also parallel to the mandrel. Upon these ribs a saddle or carriage E is placed, which is capable  
50 of sliding upon the ribs for the purpose of adjusting the nut or bolt holder to the proper position in reference to the cutters; when the saddle is thus adjusted it is held  
55 in place by the binding screw N. On the upper side of the saddle E two parallel ribs

$g$  are formed, in whose inner sides parallel dove-tail rabbets are made to receive and hold the nut and bolt holder G which is as well and tightly fitted therein as is consistent with its sliding freely to advance the  
60 nut or bolt against the cutters. On the under side of this sliding holder a revolving screw  $h$  is secured in suitable bearings, and passes through a nut  $i$  fixed to the saddle E, 65 so that when the screw is turned one way it moves the holder toward the cutters, and when turned the other way brings it back again. Upon the front end of the top of the sliding part of the holder G a revolving  
70 table H is placed, which turns upon an axis  $k$  in whose center a hole is made to pass the shanks of the bolts through, and also the mandrel upon which the nuts are screwed to be dressed, the edge of this table has a  
75 number of equidistant notches  $n'$  made in it, corresponding to the number of the sides of the prism into which the bolt head or nut is required to be dressed; these notches are  
80 concentric with a hole made in the top of the holder G into which a pin  $n$  is inserted to hold the nut or bolt head in one position until the cutters have dressed two of its opposite sides. As an additional guard against the turning of the nuts or bolts  $r$  while under the operation of the cutters, a binding  
85 bar or jaw I is pressed down upon it by means of a screw  $o$  which passes through a slot in its center.

A number of mandrels  $p$  for holding the  
90 nuts  $r$  must be provided with screws upon their upper ends, corresponding to the different sizes of the screws for which the nuts are made. The pinching nut  $q$  on the lower end of the mandrel  $p$  draws the nut down  
95 upon the table with sufficient force to hold it firmly while being dressed.

The operation is as follows: The nut or bolt  $r$  being secured and properly adjusted upon the graduated revolving table H the  
100 holder G is moved forward by the screw  $h$  to subject the nut or bolt head to the action of the cutters. This screw may either be turned by the hand of the attendant, or by wheels or belts connecting it with the gear  
105 which turns the cutters. When the nut or bolt head has thus passed once through between the cutters two of its opposite sides will have been rendered plane, smooth, and parallel, then by drawing the nut back again  
110 and turning the table one notch, and again moving it forward between the cutters two

more of its sides adjacent to those first dressed will be truly and smoothly finished, and by the repetition of this operation all the sides of the nut will in succession be  
5 dressed.

Difficulty has always been experienced in reducing rough nuts or bolt heads into prismatic forms with truly plane and smooth sides by means of a single cutter acting tangentially against them, because of the vibrations reciprocally induced by the cutter and metal being cut in each other, which vibrations extend through the whole machine, causing the nut or bolt head to turn on its  
10 axis however tightly it may be clamped, and the tool to make a wavy cut, the one making the side twisting, the other rendering it uneven. And these difficulties are always greatly enhanced by any unevenness in the texture of the metal, and as this unevenness prevails to a greater or less extent in the larger part of nuts or bolts, it may, for all practical purposes be considered a constant condition of the metal, in reference to which  
20 the cutting apparatus must be constructed.

During the operation of a machine in which only one cutter is used, the mandrel on which the cutter is placed is subject to great and constant oblique strain in one  
30 direction, which combined with the perpetual jar, causes the journals and bearings to wear very rapidly, and renders it very difficult to keep either the set or pinching screws from moving. These difficulties it has been attempted to remedy by making the various parts of the machine very strong and heavy—but with only partial success, and the remedy itself is subject to the disadvantage of rendering the apparatus too  
40 ponderous to be used with facility and convenience. Another difficulty of a different character results from the use of a single cutter, and that is the necessary absence of any means of determining the size of the  
45 nut except the very tedious one of alternate

cutting and measuring with calipers until the required size is obtained. These difficulties are all obviated in my machine by very simple means; the jarring is prevented by using two parallel revolving cutters  
50 which operating simultaneously on opposite sides of the nut, reciprocally neutralize the vibrations produced in each other, and in the metal which is being cut, and each also counteracts the tendency of the others to turn  
55 the nut or bolt head on its axis. These twin cutters being thus free from vibration, and all tendency to turn the nut, cut its sides down to the required dimensions at one operation, leaving them truly plane, and with  
60 a good smooth finish. By reason of the absence of the jarring, these double cutters may be fed much faster than the single cutter could, which in addition to dressing two sides of the nut at once, renders the machine  
65 capable of performing more than twice the quantity of work that can be done by a machine having but one cutter.

The cutters are adjusted so as to dress the nuts of any definite diameter by placing  
70 one of the series of sleeves provided for the purpose on the mandrel between the cutters.

Having thus described the construction, operation and comparative advantages of my machine for dressing the sides of bolt  
75 heads and nuts, what I claim therein as new, and desire to secure by Letters Patent, is—

The combination of the twin cutters with the sleeves or other equivalent device for gaging their distance apart, and with the  
80 mandrel upon which they are mounted, whereby the sides of nuts and bolt heads are finished in less time, and with a machine of less size and cost, than where only one cutter is used.

JULIUS KING.

Witnesses:

PETER WILLIAMSON,  
FRANCIS McDERMOTT.