

(No Model.)

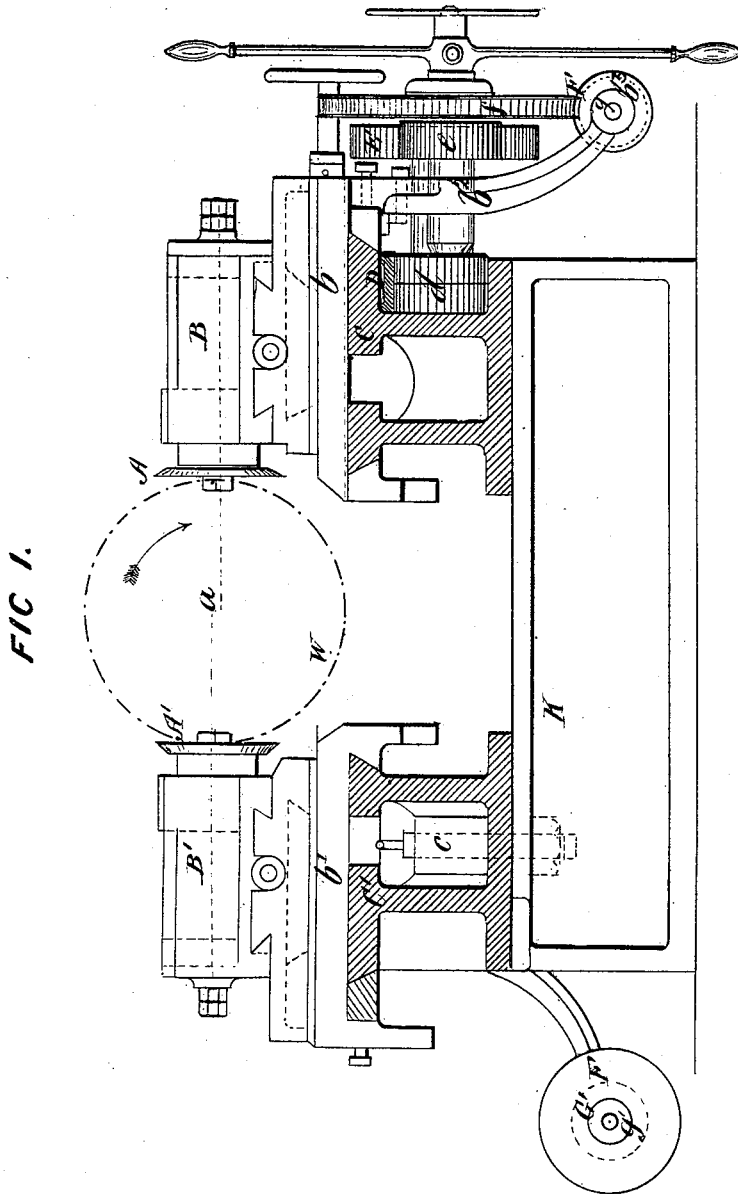
2 Sheets—Sheet 1.

J. D. BRUNTON & F. H. J. TRIER.

MACHINE FOR TURNING STONE.

No. 269,381.

Patented Dec. 19, 1882.



Witnesses
E. A. Dick
R. B. Young

Inventors:
J. D. Brunton & F. H. J. Trier
by *Marcellus Bailey*
their attorney.

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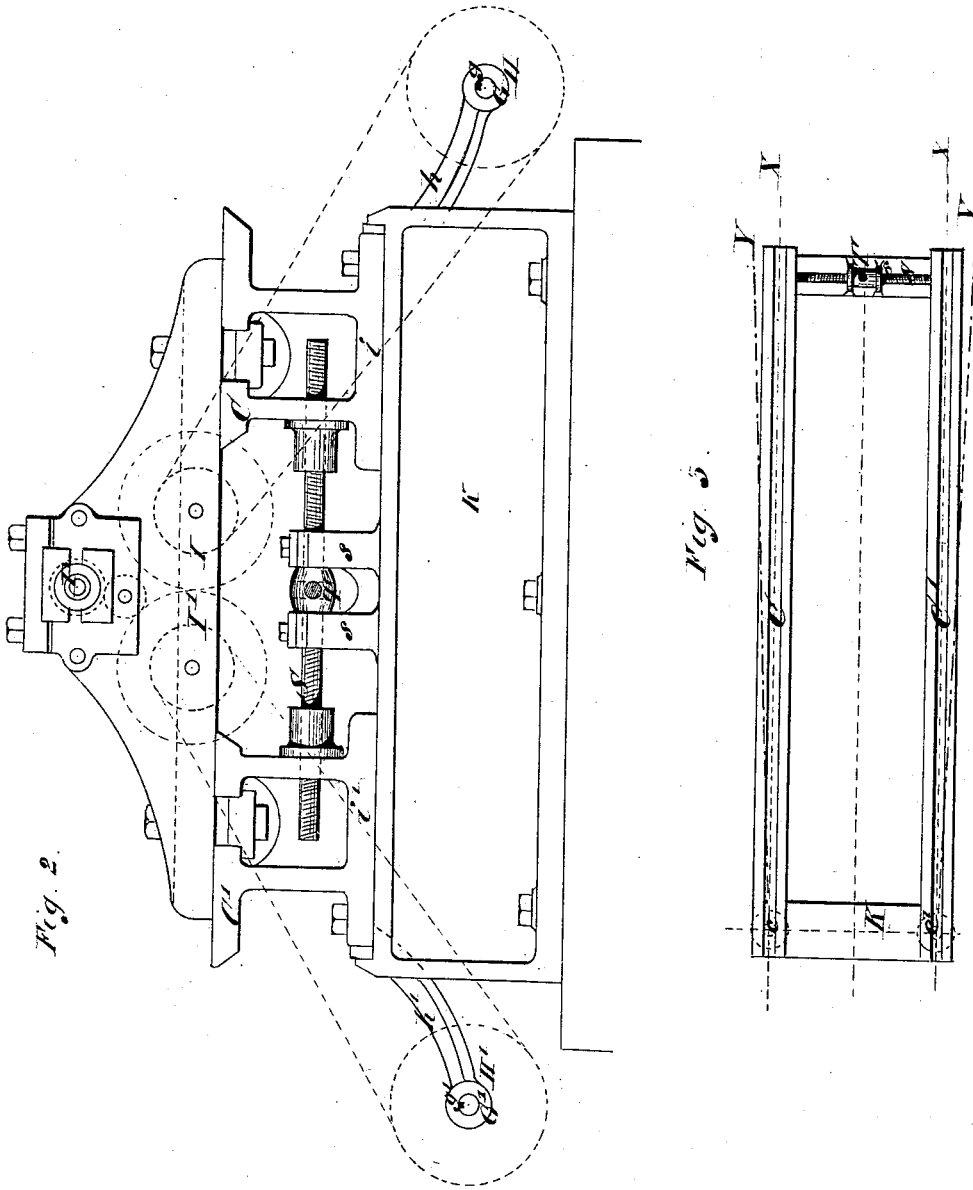
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UNITED STATES PATENT OFFICE.

JOHN D. BRUNTON AND FRANK H. J. TRIER, OF NO. 19 GREAT GEORGE STREET, WESTMINSTER, ENGLAND.

MACHINE FOR TURNING STONE.

SPECIFICATION forming part of Letters Patent No. 269,381, dated December 19, 1882.

Application filed January 24, 1882. (No model.)

To all whom it may concern:

Be it known that we, JOHN DICKINSON BRUNTON and FRANK HENRY JULIUS TRIER, subjects of the Queen of Great Britain and Ireland, and residing respectively at No. 19 Great George street, in the city of Westminster, England, have invented certain Improvements in Machines for Turning Stone, of which the following is a specification.

Our said invention, relating to apparatus for turning stone, has reference, first, to the employment of a pair of cutters arranged to simultaneously operate on both sides of the work; and, secondly, to the construction and arrangement of a movable bed, whereby the cutters are caused to perform a gradually-diverging progression, so as to be able to cut a tapering column of stone.

According to the first part of our invention, we mount a pair of rotary cutters, of any one of the well-known shapes, upon the usual bed, so as to simultaneously operate upon the opposite sides of the stone to be turned, by which position the cutters mutually support the work against side pressure. We are thus enabled to turn very slender and fragile columns without difficulty. These two opposite cutters may receive similar and simultaneous longitudinal progressive motion—one cutter following up the other—obtained by means of suitable gearing connected with a pair of longitudinal counter-shafts arranged at the side of the machine and driven at the same velocities by gearing from the main shaft. By giving one cutter a slight lead and taking a heavy cut with the leading cutter and a light one with the following one we are able to rough-dress and finish a column at one operation.

In carrying out the second part of our said invention, we construct the beds which control the path of the aforesaid cutters in separate parts, and mount them at one end—say, for example, at their ends nearest the head-stock—on pivots, around which the frames may be moved out of their parallel relation by a right-and-left-handed screw or equivalent device. In this manner it will be understood that the pair of cutters and their holders may be caused to advance in a divergent or convergent path.

This part of our said invention is also applicable when a single cutter only is used.

In order that our said invention may be fully understood, we shall now proceed more particularly to describe the same, and for that purpose shall refer to the several figures on the annexed sheet of drawings, the same letters of reference indicating corresponding parts in all the figures.

Figure 1 of the accompanying drawings represents a transverse section of a lathe with a pair of cutters arranged according to the first part of our said invention. Fig. 2 is an end view of the machine, showing the arrangement of gearing for driving the said cutters, and also the screw device for altering the relation of the beds in accordance with the second part of our said invention; and Fig. 3 shows diagrammatically the arrangement and operation of the said beds.

A A' are a pair of circular cutters carried by the holders B B', arranged at opposite sides of the work W, and mounted to slide on beds C C' in the well-known manner. These circular cutters are free to rotate by frictional contact with the revolving work on which they operate. The cutters and holders are capable of angular and transverse adjustment with relation to the surfaces of the work W and the axis thereof, α , in the usual manner. Both cutter-holders, arranged in similar positions at opposite sides of the work, are provided with saddle-pieces $b b'$, having arms b^2 , terminating with bosses or collars b^3 , which embrace the two counter-shafts G G', arranged at the side of the machine. Upon each of these counter-shafts are provided corresponding worms, F, suitably connected with the aforesaid arm and collars $b^2 b^3$, and which have feathers sliding in the longitudinal grooves $g g'$, formed in the said shafts G G', so that the revolutions of the latter cause the worms to revolve with them, but leave the worms free to receive longitudinal motion.

In the drawings, for convenience, the double gearing is not shown; but it will be understood that the arrangements are exactly similar (or in duplicate) on both sides of the machine.

The worm F gears into the worm-wheel f ,

carrying a pinion, *e*, which drives a spur-wheel, *E*, actuating a similar pinion, *d*, the latter working into a rack, *D*, fixed at the side of the machine.

5 The longitudinal counter-shafts *G G'* are carried by suitable brackets, *h h'*, and simultaneously driven at the same velocities by speed-pulleys *H H'*, actuated by straps *i i'*, which are driven by counter-gearing *I I'*, receiving
10 motion from the main or prime shaft *P*.

It is obvious that other suitable equivalent means may be adopted for driving the counter-shafts at uniform velocities from the prime mover without departing from our invention.

15 It will now be understood that as both the counter-shafts and gearing receive exactly similar motion, bearing a definite relation to the revolving stone or work, so the two circular cutters are caused to perform a similar determined
20 and uniform progression, this being effected by means of the worms *F* and the intermediate spur-gearing working into the fixed racks *D*, which cause the feathers on the said worms to travel in the longitudinal grooves *g g'*, formed
25 in the counter-shaft, so as to push or propel the arms *b'* and holders *B B'* forward. The arbors on which the cutters rotate are so arranged that the axis of that on the *A* side shall pass below and that on the *A'* side above the
30 center *a* of the column or other article being turned, (see Fig. 1,) the cutter-arbor axis being raised or depressed, in order to give the necessary clearance between the stone and the cutting-edge. The direction of rotation is indicated by the arrow in the drawings. A similar arrangement is also adopted when a single
35 cutter only is used, the axis of its arbor passing above or below the center of the turned work, according to the direction of rotation of
40 the latter.

According to the second part of our invention we construct the beds *C C'*, which carry the holders *B B'*, in separate parts and mount them on beel-pivots *c c'*, so that they
45 may be opened out at their opposite ends by means of a right-and-left-handed screw device,

S, in order to cause the cutters to follow a divergent course of progression. In Fig. 3 this arrangement is diagrammatically shown, so that the operation may be readily understood. 50
The beds in this illustration are represented in their normal or parallel position *X X*; but upon revolving the boss or collar *T*, arranged between two fixed checks, *s s*, the right-and-left-hand screw *S* will cause the frames to move
55 radially apart around the pivots *c c'*, carried by the fixed frame *K*, and so bring them into the divergent position indicated by the dotted lines *Y Y*. Thus it will be understood that as the cutter-holders are made to advance by the
60 mechanism hereinbefore described, or equivalent means, they are caused to gradually recede from or approach to the axis *a* of the revolving stone or work, and so turn or shape a column to a tapering form or varying section. 65

We claim—

1. The combination of the stone holding and rotating mechanism, the two cutters arranged to operate upon the periphery of the stone from
70 opposite sides thereof, the cutter-holders movable lengthwise of the work, and the radially-expanding bed on which said cutter-holders are supported and move, substantially as and for the purposes hereinbefore set forth.

2. The freely-revolving cutter-disk adapted
75 to be rotated by contact with the work, in combination with the cutter-arbor arranged so that its axis shall pass above or below the longitudinal center of the column or other article being turned, according to the direction of rotation
80 of the latter, as hereinbefore described with reference to Fig. 1 of the accompanying drawings.

In testimony whereof we have signed our names to this specification in the presence of
85 two subscribing witnesses.

JOHN DICKINSON BRUNTON.

FRANK HENRY JULIUS TRIER.

Witnesses:

CHAS. MILLS,

JOHN JAMES.

Both of 47 Lincoln's Inn Fields, London.