No. 650,766. Patented May 29, 1900.

ST. GEORGE M. ANDERSON.

LATHE.

(Application filed Sept. 6, 1899.)

(No Model.)

FIG. 1.

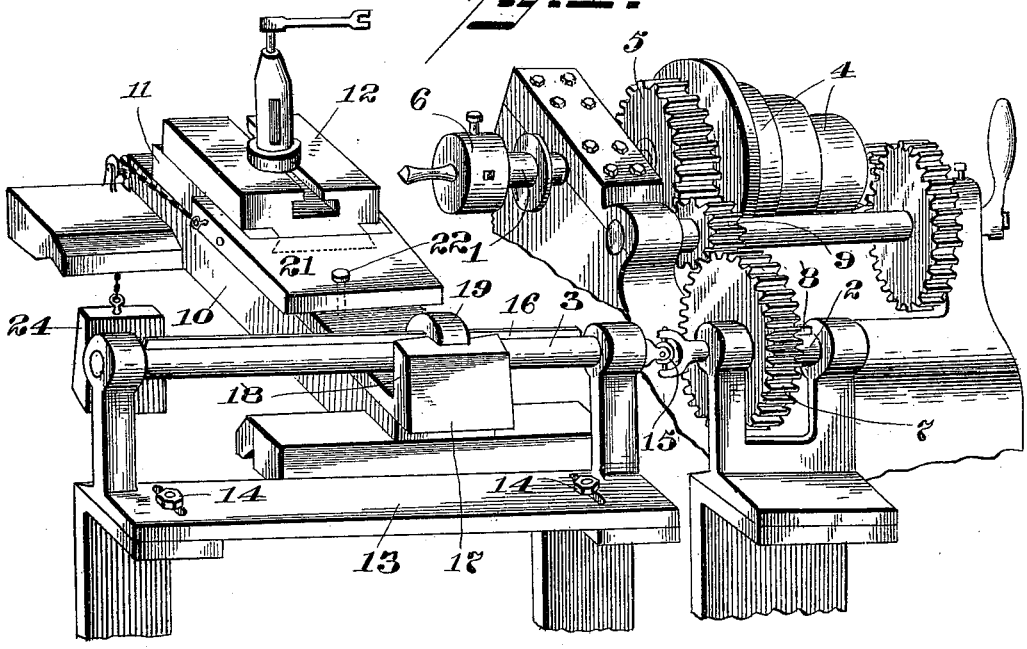
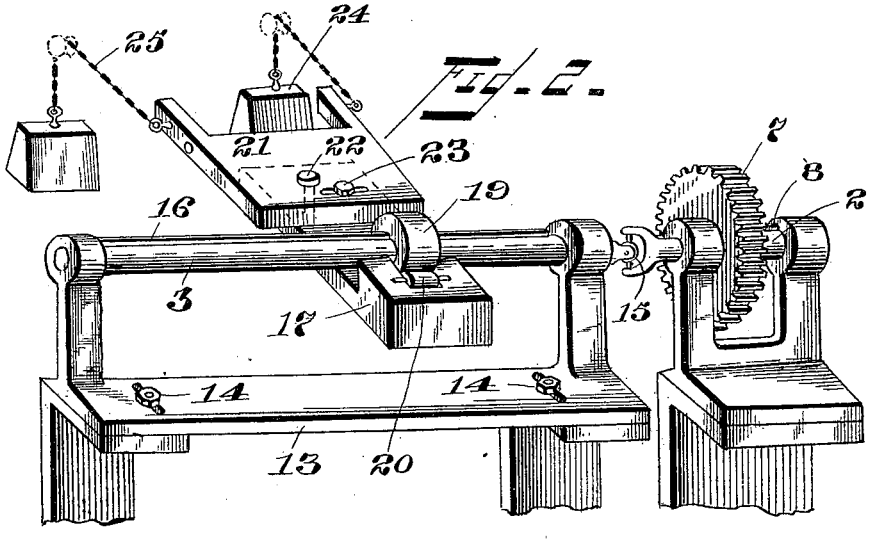


FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

ST. GEORGE M. ANDERSON, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-FOURTH TO ALBERT S. GARDNER, OF SAME PLACE.

LATHE.

SPECIFICATION forming part of Letters Patent No. 650,766, dated May 29, 1900.

Application filed September 6, 1899. Serial No. 729,598. (No model.)

To all whom it may concern:

Be it known that I, ST. GEORGE M. ANDERSON, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Lathes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in lathes, and particularly to that class of lathes which are adapted to turn articles of varying shapes and sizes.

It consists in a lathe having a suitable work-carrying spindle, tool-carrying slides, a counter-shaft, and a shaft adapted to be set at different angles to the axis of the work-carrying spindle, a former carried by the said latter shaft, and means connecting the said former with the tool-carrying slides for causing them to produce a shape upon the article turned corresponding with the shape of the former.

It also consists in an attachment for lathes comprising a shaft, an adjustable shaft connected therewith in such a manner that it may be set at different angles to the axis of the lathework-spindle, a former carried by the said adjustable shaft, and means for adjustably connecting the former with the tool-carrying slides of the lathe whereby the tools used will be so moved as to produce work of a shape to correspond with the shape of the said former.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a lathe constructed in accordance with my invention, and Fig. 2 represents a detail perspective view of a portion of the same.

1 in the drawings represents a work-carrying spindle, 2 a counter-shaft, and 3 an adjustable shaft.

My improvement may be embodied in a complete lathe, but is well adapted to be produced as an attachment for lathes, as it can be readily applied to lathes already in use.

My invention is designed for use in turning articles having various shapes in cross-section, either circular, elliptical, square, polygonal, or other irregular forms, as may be desired. It is also designed to enable the formation of articles which taper uniformly from one end to the other.

In carrying out the features of my invention the spindle 1, which is mounted in a suitable frame, is provided with actuating-pulleys, as 4 4, the said spindle also carrying a gear-wheel 5. Upon one end of the spindle is mounted a chuck, as 6, of any suitable construction, for holding the work in the machine. The counter-shaft 2 is mounted upon suitable bearings in the frame of the machine, so as to be parallel with the axis of the spindle 1, and it carries a gear-wheel, as 7, which is preferably splined upon said counter-shaft by means of a feather, as 8, so that while it moves with the said shaft it may be slipped back and forth upon the same. An intermediate gear, as 9, is interposed between the gear-wheels 5 and 7, so as to impart motion from the spindle-shaft to the counter-shaft when the gear-wheel 7 is brought opposite to the said pinion, as seen in Fig. 1. It will be apparent that by sliding the gear-wheel 7 to one side upon the shaft 2 it may be thrown out of gear with the gear-wheel 9, and hence cease to actuate said shaft 2. To one side of the chuck 6 is mounted a tool-carrying slide, as 10, which moves upon suitable ways in the frame longitudinally with respect to the spindle 1. Mounted upon the slide 10 is a second slide 11, which is adapted to move transversely of the machine upon said slide. The slide 11 also carries an upper slide 12, which supports the cutting-tools used for shaping the material turned in the lathe. The adjustable shaft 3 is mounted upon a supporting frame or bracket, as 13, which is adjustably secured upon the main frame of the machine. Adjusting-screws, as 14 14, pass through slots in the bracket 13 in order to enable the said bracket to be set at different angles, as may be desired. The shaft 3 is connected with the shaft 2 by means of a universal joint, as at 15, so that while the said shaft 3 may be set at different angles to the axis of the shaft

2 it will still be actuated by the same. A former 19, having a contour of the shape which it is desired to impart to the work, is splined upon the shaft 3, so as to slide longitudinally thereon, by means of a feather 16. A block 17 is mounted upon the slide 10, having an upturned end, as 18, adapted to bear against the periphery of the former 19. An antifriction-roller, as 20, may or may not be interposed between the said block and the former, as may be found best. The block 17 is pivotally connected to a plate 21 by means of a pivot-bolt 22, so that the said block may accommodate itself to the angle of the shaft 3. When the said block is in proper position, it may be clamped in the said position by means of a set bolt or screw 23. The plate 21 is rigidly secured to the slide 11, so as to move the same back and forth upon the slide 10 as it is actuated by the former 19. The plate 21 is normally pulled away from the former 19 by means of weights 24 24, attached thereto by means of chains 25, which pass through suitable pulleys mounted upon the frame of the machine. The action of these weights will be such as to hold the block 17 continually against the former 19 and will move the tool back and forth with respect to the work in accordance with the shape of the said former. By the arrangement of the shaft 3 and its connection with the shaft 2 by means of the universal joint the said shaft 3 may be set at an angle with respect to the axis of the work, so that a taper of greater or less degree may be imparted to the said work when desired. The slots through which the bolts 14 pass may have graduations marked along their edges, so as to be able to set the bracket 13 very accurately with respect to the work.

It will be seen that by making the former of the shape which it is desired to impart to the work a corresponding result will be produced upon the article turned. By changing the formers and putting on other formers of different shapes any number of different forms or shapes may be produced in the lathe. The work may also be given a tapered shape or it may be made of the same size throughout. When turning an article which is not tapered and which is cylindrical, the shaft 2 may be thrown out of engagement, the laterally-moving slides 11 and 12 being held in a stationary position upon the slide 10. This lathe can also be used to bore any work or article which is large enough to contain the tools which can be used in the said lathe.

It will be apparent that my improvement may be manufactured and put upon the market as an attachment for lathes, as it can be easily adjusted to lathes in common use.

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

1. In a lathe, the combination with a suitable frame, of a spindle mounted thereon, a counter-shaft, gearing connecting the spindle with the counter-shaft, a former-shaft, a universal joint connecting said former-shaft with the counter-shaft, a former splined upon said shaft and tool-carrying slides adjusted by the said former, the construction being such that the former-shaft can be adjusted at two different angles to the axis of the spindle so that articles may be produced which have the same cross-section throughout or are tapered as may be desired, substantially as described.

2. In a lathe, the combination with a suitable frame, of a work-carrying spindle, a counter-shaft, gearing connecting the two, a former mounted upon the adjustable bracket, a universal joint connecting the former-shaft with the counter-shaft, the said bracket having adjusting-bolts adapted to work in graduated slots whereby the former-shaft may be set at any desired angle, a former splined upon said shaft and means for engaging said former for adjusting the tool-slide according to the shape of the former, substantially as described.

3. An attachment for lathes comprising a former mounted upon a suitable shaft, a block engaging said former, and secured to the tool-slides of a lathe, means for permitting the said block to accommodate itself to the angle of the former, weights secured to the block so as to hold it against the former, means for adjusting the former-shaft to different angles, a counter-shaft geared with the spindle-shaft of the lathe, and a universal joint connecting the counter-shaft with the former-shaft, whereby the former-shaft will be rotated in its different adjusted positions, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ST. GEORGE M. ANDERSON.

Witnesses:
W. R. TRAINHAM,
E. W. COOPER.