No. 655,986, Patented Aug. 14, 1900.

R. M. NUTTALL.

LATHE.

(Application filed Apr. 4, 1900.)

(No Model.)

Fig. 1.

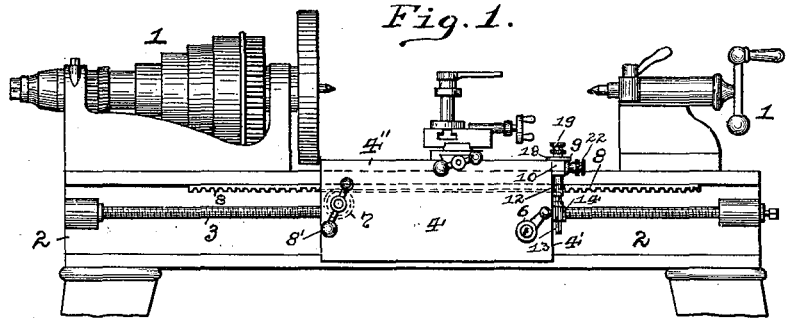


Fig. 2.

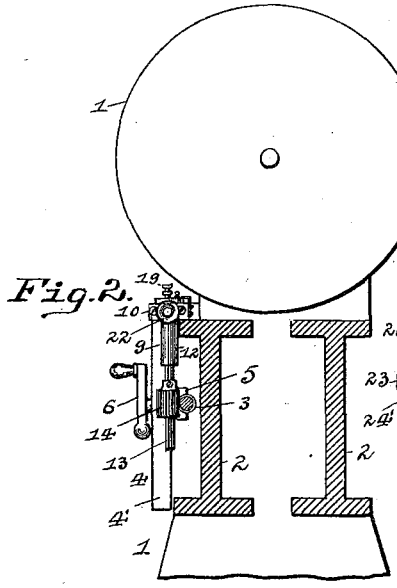


Fig. 3.

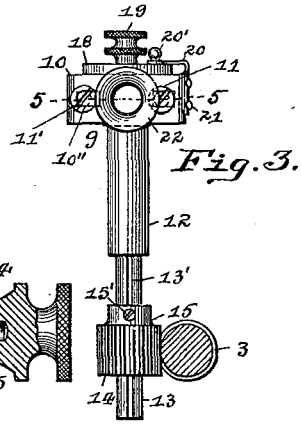


Fig. 7.

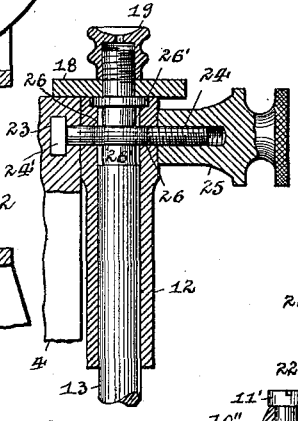


Fig. 4.

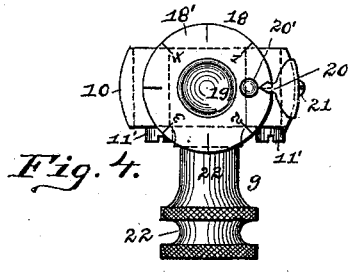


Fig. 5.

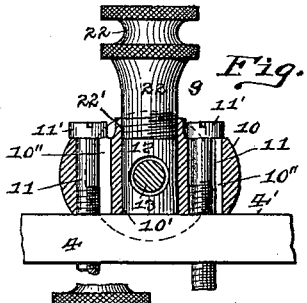
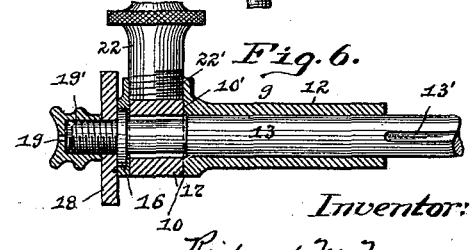


Fig. 6.



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UNITED STATES PATENT OFFICE.

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LATHE.

SPECIFICATION forming part of Letters Patent No. 655,986, dated August 14, 1900.

Application filed April 4, 1900. Serial No. 11,512. (No model.)

To all whom it may concern:

Be it known that I, RICHARD M. NUTTALL, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Lathe-Stars; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to lathe-stars for chasing threads on taps and other articles; and it has for its object to provide a cheap and simple device for this purpose which can be applied to any form of lathe, as well as one which can be seen conveniently at all times by the mechanic, and one which can be shifted out of engagement when not in use and locked in its different positions.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use the lathe-star, I will describe the same more fully, referring to the accompanying sheet of drawings, in which—

Figure 1 is a side view of a portion of a lathe, showing my improved star applied thereto. Fig. 2 is an enlarged cross-section of such lathe, showing the star in engagement therewith. Fig. 3 is an enlarged face view of the star. Fig. 4 is an enlarged top view of the same. Fig. 5 is a cross-section of the same on the line 5 5, Fig. 3. Fig. 6 is a longitudinal section of the same removed, and Fig. 7 is a sectional view showing another manner of applying the star to the lathe-table.

Like characters herein indicate like parts in each of the figures of the drawings.

1 represents the lathe of the ordinary approved construction, which is provided with the body portion or frame 2 for supporting the operative parts of the lathe and on which is journaled the feeding-screw bar 3. A table 4 for carrying the tools travels along said frame 2 and is connected to the chasing and feeding screw bar 3 by a split nut 5, which also acts to feed the table 4 and is connected to and operated by a handle 6, journaled in said table 4, and a pinion 7 is journaled in the table, having a handle 8' connected thereto, which is adapted to engage with a rack 8 on the body portion 2 of the lathe 1 for shifting the table 4 when necessary. The star 9 is removably secured to the end 4' of the table 4 and consists of a head 10, which is held against the end 4' by means of screw-bolts 11, which are provided with heads 11' thereon, and pass through slotted holes 10'', formed in the head 10 and into the end 4' of the table. The head 10 is also provided with a tubular extension 12, which extends down below the same and within which a shaft or spindle 13 is mounted for carrying a gear wheel or pinion 14, which is adapted to mesh with the feeding-screw bar 3, and a collar 15 is formed on said pinion 14, within which a screw or pin 15' is adapted to pass and fit within a slot or groove 13', formed in the spindle 13 for adjusting said pinion 14 and holding it in place. A collar 16 is formed on the spindle 13, which fits on the top of a plunger-ring 17, which fits loosely around the spindle 13 and within an opening or seat 10', formed in the head 10. A disk 18, having a dial-face 18' thereon, is mounted around the spindle 13 above the collar 16 and is adapted to extend over the top 4'' of the table 4, while a thumb-nut 19 is adapted to engage with the threaded end 19' on the spindle 13 and with the disk 18 for holding the latter in place. A finger or pointer 20 extends over the dial-face 18' of the disk 18 and is secured to one end of the head 10 by means of screw-bolts 21, while a handle 20' is secured to the disk 18 for moving or revolving the same when desired. A thumb-screw 22 engages with a threaded portion 22' of the opening or seat 10' in the head 10 and is adapted to come in contact with the plunger-ring 17 within such seat 10'.

The use and operation of my improved lathe-star are as follows: The star 9 being secured in place upon the end 4' of the lathe-table 4, as shown in Figs. 1 and 2, and it is desired to use the same in the chasing of threads on a tap or other article or object placed on the lathe 1, all that is necessary is for the operator to loosen or unscrew the thumb-screw 22 in the seat 10' of the head 10 and move over the star 9 toward the lathe 1, so causing the pinion 14 on the spindle 13 to come into contact and mesh with the feeding-screw bar 3 on the lathe 1, after which the thumb-screw

22 can be tightened up against the plunger-ring 17 within the seat 10′ of the head to press said ring 17 against the end 4′ of the table 4, and so hold the star 9 in position for operation. As the screw-bar 3 on the lathe 1 is constantly revolving in the same direction when power is applied to the lathe, and as the table 4, carrying the tool, travels to the left of said lathe 1 by means of the nut 5 engaging with said screw-bar the pinion 14 on the spindle 13 of the star 9 and meshing with the bar 3 travels along with said table 4, and as soon as the table 4 has traveled a sufficient distance to chase the threads on the tap or other article by means of the tool on said table the operator releases the nut 5 from engagement with the screw-bar 3 by means of the handle 6. After this is accomplished the operator grasps the handle 8′ and turns the same to the right, which revolves the pinion 7 connected therewith and engages with the rack 8 on the lathe 1 to shift the table 4 to the right for another operation in chasing, and as the table 4 is thus shifted the pinion 14 on the spindle 13 will still be in mesh with the revolving screw-bar 3, so that the movements of the spindle 13, pinion 14, and disk 18, with parts connected thereto, will be reversed within the head 10. When the table 4 and star 9 thereon have reached the required position at the right of the lathe 1 and it is desired to chase threads on another tap or article, all that is necessary is to grasp the handle 6 and turn the same so that the nut 5 engages the screw-bar 3, when the particular point on the dial 18′ of the disk 18 is revolved by the spindle 13 and reaches the finger or pointer 20, so enabling the tool on the table 4 to start to chase the threads on the tap or other article when desired. The disk 18, with its dial 18′ thereon, being thus revolved by the spindle 13, can be turned by the handle 20′ thereon and set by the thumb-nut 19 on the threaded end 19′ of the spindle 13, so that the particular point on said dial 18′ is indicated by the finger or pointer 20 in the making or chasing of different kinds of threads—as, for instance, in making even threads the nut 5 can engage the bar 3 when any one of the eight points on the dial reaches the pointer 20, in chasing add threads when any one of the four points reaches the pointer 20, in chasing one-half threads when any one of two opposite points reaches the pointer 20, and in chasing three-quarter threads when the disk 18 has been revolved three-fourths of the distance from one of the points so set and this point reaches the pointer 20.

When it is desired to use the lathe 1 for other purpose than that of chasing threads, the star 19 can be removed from engagement with the screw-bar 3 by unscrewing the thumb-screw 22 within the opening or seat 10′ in the head 10, so as to free the plunger-ring 17 from contact with the end 4′ of the table 4, when the operator can grasp the star 9 and pull the same outward, so freeing the pinion 14 on the spindle 13 from engagement with the screw-bar 3 and permitting the head 10, carrying the operative parts of the star 9, to move outward on the bolts 11 through the medium of the slotted holes 10′ in said head 10. After the star 9 has been thus moved outward and the pinion 14 is free from contact with the bar 3 the thumb-screw 22 can be tightened up within the opening 10′, so as to press the plunger-ring 17, surrounding the spindle 13, against the end 4′ of the table 4 and so lock the star 9 in such outward position, when the lathe can be used for any other purpose desired.

In Fig. 7 there is shown another manner of attaching the star to the table, and it consists in forming a T-shaped slot 23 in the table, within which the head 24′ of a screw-bolt 24 is adapted to fit and around which the head of the star is removably secured by means of a thumb-nut 25, engaging with said bolt 24, and a hole or opening 26 is formed through the head, which is adapted to coincide with a hole or opening 26′, formed through the bolt 24, within which holes or openings 26 and 26′ the spindle carrying the operative parts of the star is adapted to be seated and carried thereby. It will be evident that by the screwing or unscrewing of the thumb-nut 25 and the moving of the bolt 24 within the slot 23 of the table the star carried by such bolt 24 can be set in engagement with the screw-bar of the lathe and locked in such position or shifted out of engagement with the screw-bar and locked in such position or removed entirely from the table, if desired, and so do away with the slotted holes in the head and screw bolts fitting therein, as well as the plunger-ring surrounding the spindle of the star.

In some forms of lathes it may be desirable to use a feeding-screw for the table separate from the chasing-screw bar, and in this case the feeding-nut of the table can engage with the feeding-screw bar and the pinion of the star engage with the chasing-screw bar.

Various other modifications in the construction and design of the various parts of the device may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

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

1. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a thread-indicator having a shaft or spindle, a pinion on said shaft or spindle adapted to engage with said screw-bar, and means on said shaft or spindle for shifting the indicator in and out of engagement with the screw-bar.

2. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a thread-indicator adapted to engage with said screw-bar, means on said indicator for shifting the same in and out of engagement with the screw-bar, and

means for locking said indicator in its inward and outward positions.

3. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a shaft or spindle mounted within said head and carrying a dial thereon, a pinion on said shaft or spindle adapted to mesh with the screw-bar, and means on said head for permitting the shifting of the said pinion in and out of engagement with the screw-bar.

4. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head screwed on said table, a spindle mounted within said head and carrying a dial thereon, a pinion on said spindle adapted to mesh with the screw-bar, and bolts secured in said table adapted to pass through slots in said head for permitting the shifting of the said pinion in and out of engagement with the screw-bar.

5. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted in said head and carrying a dial thereon, a pinion on said spindle adapted to mesh with the screw-bar, means on said head for permitting the shifting of the said pinion in and out of engagement with the said screw-bar, and means connected to said head and spindle for locking the same in their inward and outward positions.

6. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted in said head and carrying a dial thereon, a pinion on said spindle adapted to mesh with the screw-bar, means on said head for permitting the shifting of the said pinion in and out of engagement with the said screw-bar, a plunger-ring within said head surrounding the spindle, and a thumb-nut fitting within an opening in said head and adapted to press the plunger-ring against said table for locking said head and spindle in its inward and outward positions.

7. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted within said head and carrying a dial thereon, a pinion on said spindle adapted to mesh with the screw-bar, means on said head for permitting the shifting and locking of said pinion in and out of engagement with the screw-bar, and means for raising and lowering said pinion on said spindle.

8. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted within said head and carrying a dial thereon, a pinion on said spindle adapted to mesh with the said screw-bar, means on said head for permitting the shifting and locking of said pinion in and out of engagement with said screw-bar, and a set-screw on said pinion adapted to engage with a groove in said spindle for permitting the raising and lowering of said pinion.

9. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a thread-indicator having a dial thereon adapted to engage with said screw-bar, means on said indicator for permitting the shifting and locking of the same in and out of engagement with said screw-bar, and means for setting or locking said dial at any desired point.

10. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted within said head and carrying a dial loosely mounted around the same, a pinion on said spindle adapted to mesh with the screw-bar, means on said head for permitting the shifting and locking of said pinion in and out of engagement with said screw-bar, and a thumb-nut adapted to engage with the said spindle and dial to lock the latter at any desired point.

11. The combination with a lathe having a table thereon adapted to engage with a revolving screw-bar, of a head secured on said table, a spindle mounted within said head and carrying a dial loosely mounted around the same, a pinion on said spindle adapted to mesh with said screw-bar, means on said head for permitting the shifting and locking of said pinion in and out of engagement with said screw-bar, a thumb-nut adapted to engage with said spindle and dial to lock the latter at any desired point, a handle on said dial, and a pointer extending over said dial and secured to said head.

In testimony whereof I, the said RICHARD M. NUTTALL, have hereunto set my hand.

RICHARD M. NUTTALL.

Witnesses:
J. N. COOKE,
JAMES L. WEHN.