J. L. Johnson,

Turning Lathe,

No. 46,677. Fig. 1. Patented Mar. 7. 1865.

Sectional View

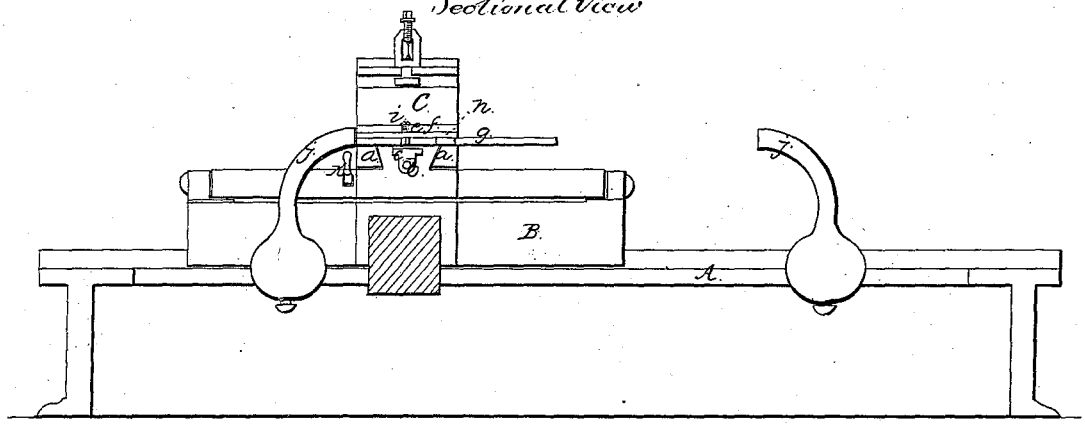


Fig. 2.

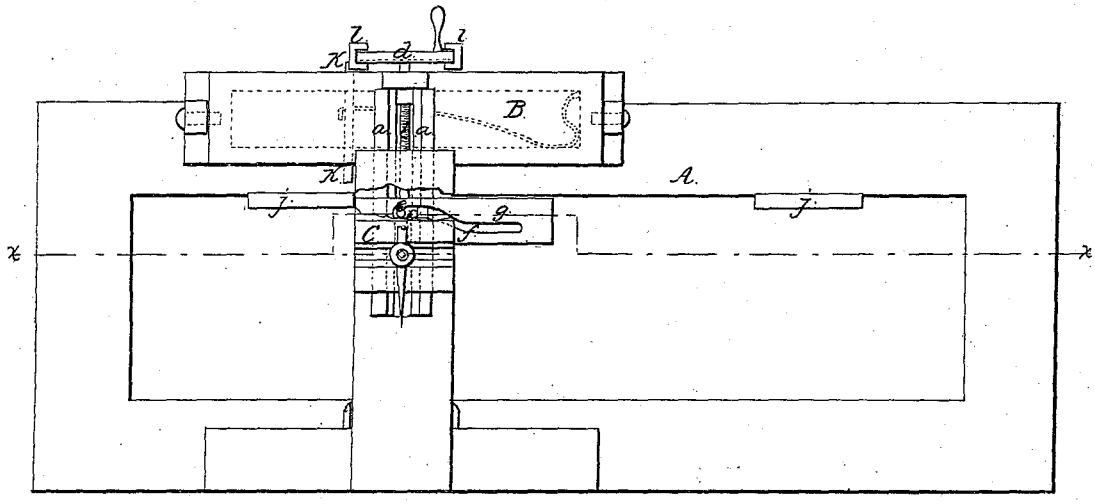
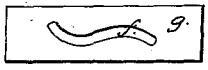


Fig. 3.



Witnesses.
Theo. Tusch.
C. L. Topliff.

Inventor.
J. L. Johnson,
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attys.

UNITED STATES PATENT OFFICE.

JAMES L. JOHNSON, OF ASHBURNHAM, MASSACHUSETTS.

IMPROVED ENGINE-LATHE.

Specification forming part of Letters Patent No. **46,677**, dated March 7, 1865.

To all whom it may concern:

Be it known that I, JAMES L. JOHNSON, of Ashburnham, in the county of Worcester and State of Massachusetts, have invented a new and Improved Engine-Lathe; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, Fig. 2, indicating the plane of section. Fig. 2 is a plan or top view of the same; Fig. 3, a detached plan of the slide with cam-slot.

Similar letters of reference indicate like parts.

This invention consists in the employment or use of a slide and cam-slot, or other equivalent device, in combination with a pair of adjustable tappets and with the tool-stock of a slide-rest in such a manner that by the action of said slide against the tappets the tool is automatically drawn back from and pushed out toward the work, and in cutting screws, for instance, no further attention is to be paid to the position of the tool, except to turn it forward at every new start far enough to take the requisite chip. In order to regulate the size of the chip, the hand-wheel which serves to impart motion to the screw and tool-stock is provided with two (more or less) adjustable lugs, which act in combination with a sliding spring-stop in such a manner that the motion imparted to the hand-wheel can be adjusted with the greatest nicety, and the thickness of the chip is determined without requiring any further attention of the operator.

A represents the shears of an engine-lathe, constructed in the ordinary manner, and made to support the slide-rest B, to which the requisite motion is imparted by a screw-spindle in the usual manner. The tool-stock C moves on its ways *a* in a direction transversely to the shears, and it receives its motion by the action of a screw, *b*, which is tapped into a nut, *c*, and to which a rotary motion is imparted by a hand-wheel, *d*.

The nut *c* is furnished with a stud, *e*, which projects from its upper surface, and this stud is fitted into a cam-slot, *f*, in a plate, *g*, which passes through a suitable mortise in a direction parallel with the shears and transversely to the tool stock. A key, *h*, which is secured in the top part of said mortise by a screw, *i*, prevents the slide *g* from rising up and becoming disengaged from the stud *e*. Said slide is thus allowed to move in a direction parallel to the shears as far as the slot *f* will allow, and it is obvious that if this slot would be made parallel with the shears the motion of the slide would produce no effect on the tool slot; but if the slot is made oblique or curved a motion imparted to the slide produces a corresponding motion of the tool-stock toward or from the work to be turned.

The motion of the slide *g* is rendered automatic by the application of two tappets, *j j*, which are secured to the shears, one on either side of the slide-rest. These tappets are adjustable, and their position has to be changed according to the work to be turned. In cutting screws, for instance, it is necessary to throw the tool back when the same is at the end of the screw-thread, and forward when it arrives at the beginning of the thread, and this object is effected automatically by the action of the tappets *j j* on the slide *g*. In order to take a chip of the required thickness or size, it is also necessary to turn the tool forward at every new start, and in ordinary screw cutting or engine-lathes the size of the chip is determined by turning the hand-wheel *d* more or less, as the operator may think proper. The thickness of the chip is thus made dependent entirely upon the skill of the operator. Sometimes the chip taken is too thick, sometimes too thin, and in the former case the tool is liable to break, or the work bends, or the chip has to be reduced before the slide-rest completes its stroke, and the work becomes uneven and poor, and if the chip is taken too thin much unnecessary time is lost. For these reasons it is desirable to provide a gage which will positively determine the thickness of the chip and leave nothing to guess-work. This object is effected by one or more adjustable lugs, *l*, which are secured to the circumference of the hand-wheel *d*, and which, when the hand-wheel is turned, strike a spring-stop, *k*, which passes through a suitable socket in the slide-rest. By adjusting the lugs or the wheel at suitable intervals a full or any part of a revolution can be allowed said hand-wheel, and the tool-stock is fed forward at every new

start precisely as far as the position of the lugs will allow. By these means the thickness of the chip can be regulated at pleasure, and if the lugs *l* have once been adjusted no particular attention need be paid to this portion of the operation.

It remains to remark that instead of the slide *g*, with cam-slot *f*, other devices might be used—such, for instance, as an eccentric, which would be turned back and forth at the proper moments; or a cam or other equivalent attachment might be employed to produce the requisite motion of the tool-rest. By giving to the cam-slot different shapes the lathe may be used for turning various articles, such as tool-handles, &c.

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

1. Giving to the tool-stock an automatic motion back and forth at the termini of the stroke of the slide-rest by means of the slide *g* and cam-slot *f*, constructed and applied substantially as set forth.

2. The application of adjustable lugs *l* to the hand-wheel *d* and screw *b*, which serves to operate the tool-stock, in combination with a spring-stop, *k*, constructed and operating substantially as and for the purpose described.

JAMES L. JOHNSON.

Witnesses:

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