No. 111,859. PATENTED FEB. 14, 1871.

F. B. MILES.

TURNING LATHE.

2 SHEETS—SHEET 1.

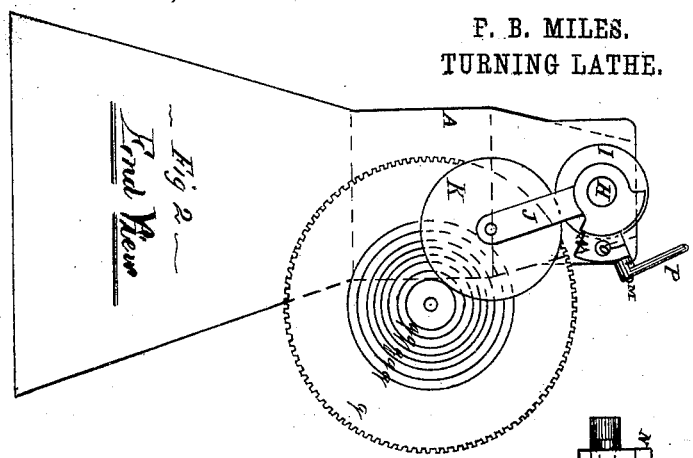

Fig 2
End View

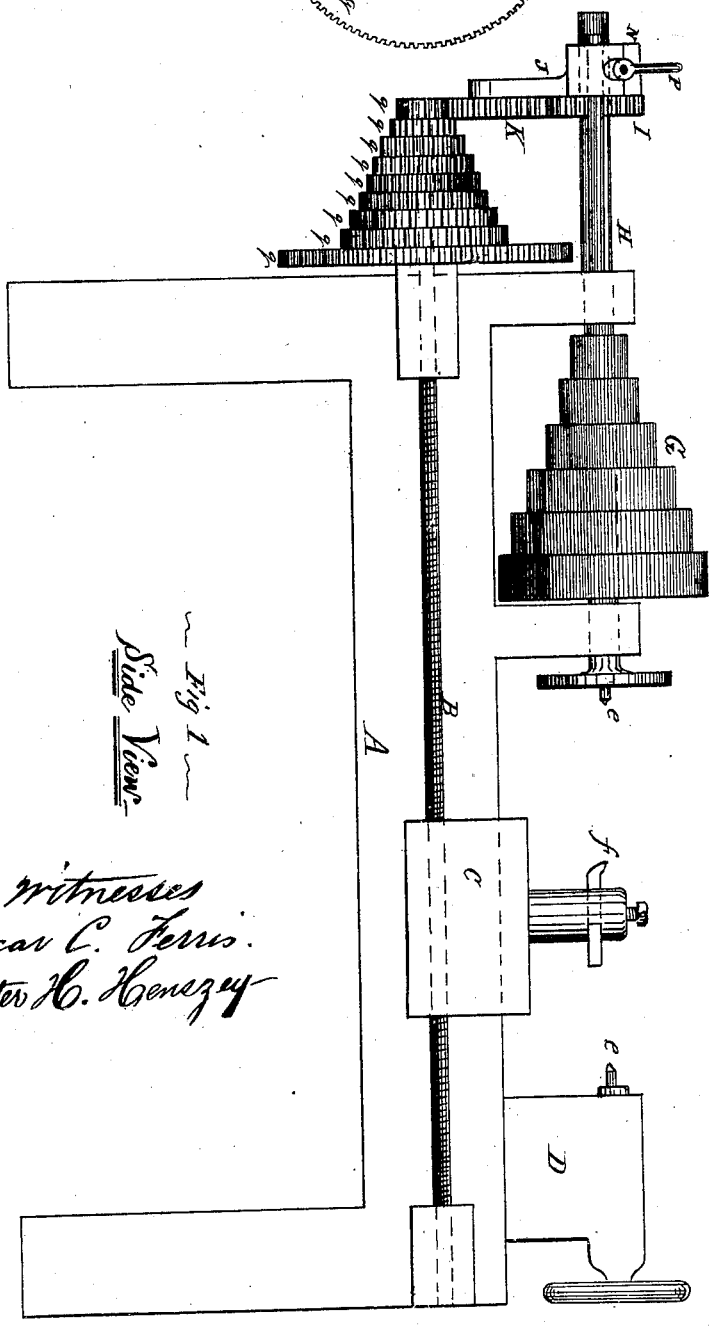

Fig 1
Side View

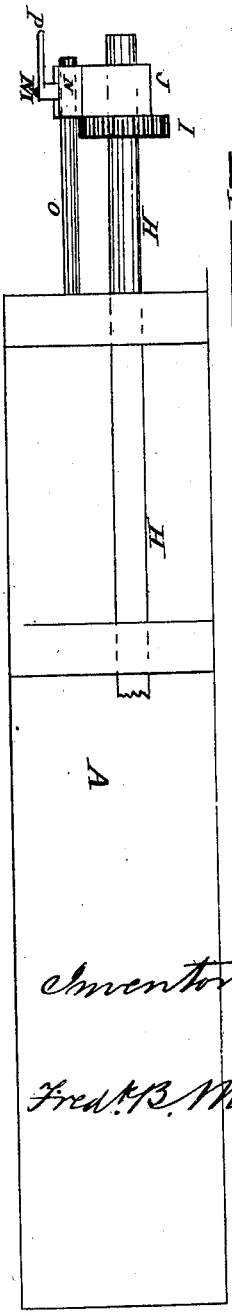

Fig 3
Top View

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TURNING LATHE.

2 SHEETS—SHEET 2.

TOP VIEW

Fig 6.

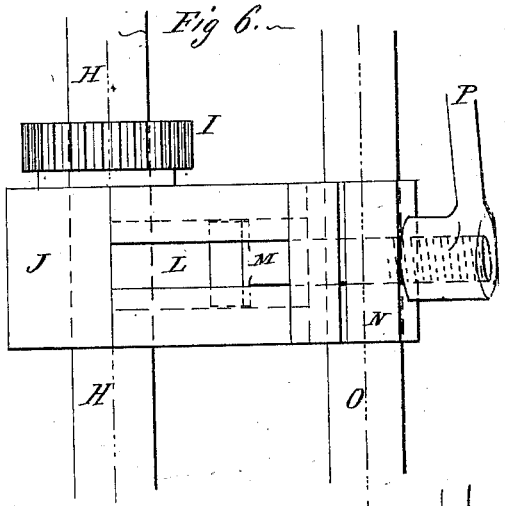
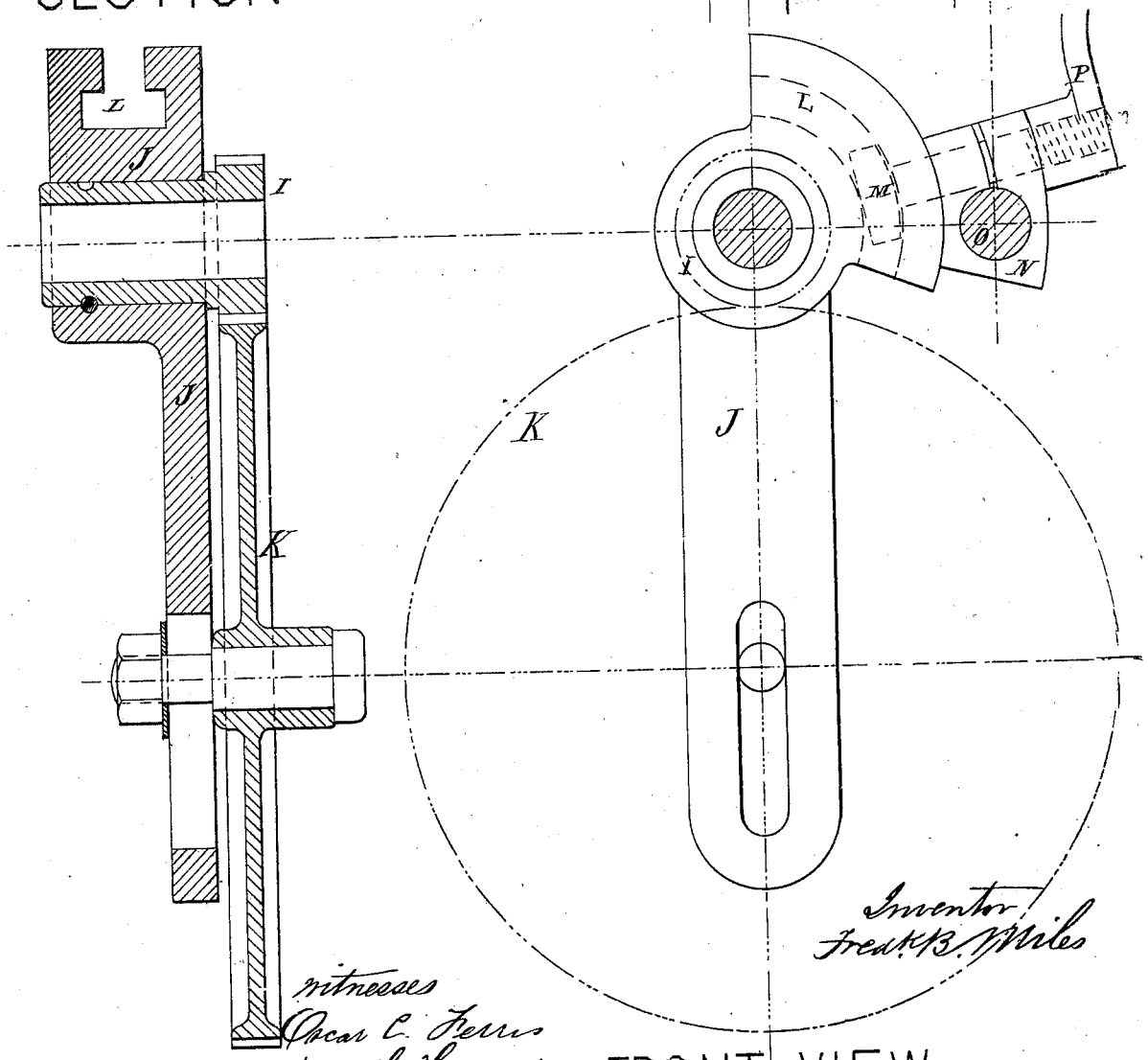


Fig 4.

SECTION



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FRONT VIEW

Fig 5.

United States Patent Office.

FREDERICK B. MILES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO FERRIS & MILES, OF SAME PLACE.

Letters Patent No. 111,859, dated February 14, 1871.

IMPROVEMENT IN TURNING-LATHES.

The Schedule referred to in these Letters Patent and making part of the same.

I, FREDERICK B. MILES, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain improvements in Turning-Lathes, of which the following is a specification.

This invention relates to engine-lathes for turning metals.

It consists in a new and improved arrangement of the feeding and screw-cutting gearing, whereby the various changes for cutting screw-threads and effecting different degrees of feed can be made without adding or removing any gear-wheels or any other parts or pieces.

By its means the operator can, at pleasure and without loss of time, convert the lathe from turning to screw-cutting, and also can instantly change from a thread of one pitch to one of another pitch, and is also saved from any mistakes in compounding gear.

The object of this invention is to economize time and to simplify the operation of said engine-lathes, as will be hereinafter explained.

Description of the Accompanying Drawing.

Figure 1 is a side elevation.

Figure 2 is an elevation, showing that end of the machine which is at the left in fig. 1.

Figure 3 is a plan or top view of the "shifting-clamp."

Figure 4 is a vertical section of the "movable swinging arm."

Figure 5 is an elevation of same with shifting-clamp.

Figure 6 is a plan or top view of same.

General Description.

A is the frame of the machine.

B is the lead-screw.

C, the carriage.

D, the sliding head.

e e, the centers between which the work is held while being cut by the tool *f*.

G is the driving-cone, which is hung upon the main spindle H, and operated by a belt in the usual manner.

The carriage C is operated automatically by the lead-screw B, and by hand with any appropriate device, such as rack and pinion, &c., all in the usual manner.

So far all these are common to engine-lathes in general, and form no part of my invention, which I will now proceed to describe in detail.

A pinion, I, of any convenient number of teeth, which turns freely in the hub of the movable swinging arm J, is made to slide lengthwise on the main spindle H, which projects beyond the frame of the machine, as seen in figs. 1 and 3.

This pinion is made to revolve with said spindle by a slot and feather, and drives a spur-wheel, K, which is hung upon a stud on the movable swinging arm J.

The lead-screw B also projects beyond the frame of the machine, and has upon it certain gear-wheels, *q q q q*, whose diameters bear a proportionate ratio to that of the pinion I.

The movable swinging arm J has, at its upper end, a segmental slot, L, in which plays the head of a bolt, M, that passes through a split clamp, N, on the stud O.

The movable swinging arm can, therefore, be placed opposite any one of the group of gear-wheels on the lead-screw B, and, by means of the intermediate spur-wheel K, the pinion I can be brought "in gear" with it. Then, as the spindle revolves, driving the pinion I, and, through the wheels in contact, the screw B, the carriage will be drawn forward, so as to produce upon the work either a screw-thread or ordinary feed-motion, whose pitch will depend upon the relative diameters of the pinion I, and the wheel with which it is placed in gear.

It will be readily seen that, by means of the split shifting-clamp N and the bolt M, with its nut-handle P, the swinging arm can be held firmly at any point along the stud O, and, by means of the segmental slot L, can be placed at any angle required to throw the wheels in or out of gear.

When the operator, therefore, wishes to produce a different feed or cut a screw of different pitch, it is only necessary for him to slacken the shifting-clamp by unscrewing the nut-handle P; then, to move the swinging arm J, with its pinion I, opposite the proper wheel on the screw, swing the arm to such an angle that the intermediate spur-wheel K will gear with it, and then screw up the clamp.

Opposite each wheel on the screw a mark is made on the stud O, which indicates the exact position for the split clamp, in order to make that wheel gear correctly with the pinion I, and also a number, which expresses the threads per inch, or the degree of feed produced on the article to be turned or screwed when that wheel is so placed in gear.

The wheels on the screw B are so arranged as to suffice for the different degrees of feed and the various threads it is desired the lathe should cut.

Another intermediate may be added for a left-hand screw, or any other of the usual devices for reversing the motion may be employed that are used on ordinary lathes for cutting left-hand screws.

I claim as my invention—

The combination of cone-shaft H, gear-wheel I, series of gear-wheels q on screw-shaft B, with the adjustable segmental arm J, carrying the intermediate gear K, clamp N, bolt M, nut-handle P, and graduated stud O, substantially as and for the purpose described.

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Witnesses:

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R. P. MCCALL.