(No Model.)

P. KETTENRING.

LATHE FOR TURNING IRREGULAR FORMS.

No. 378,322. Patented Feb. 21, 1888.

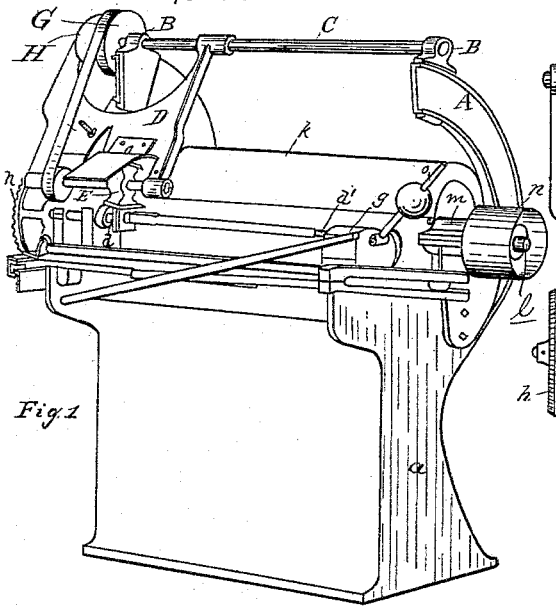

Fig. 1

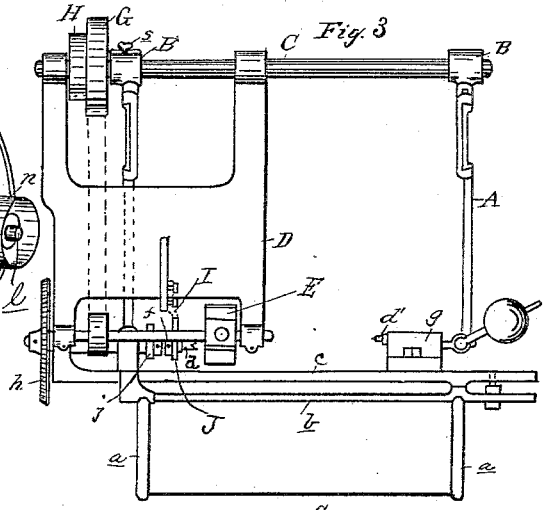

Fig. 3

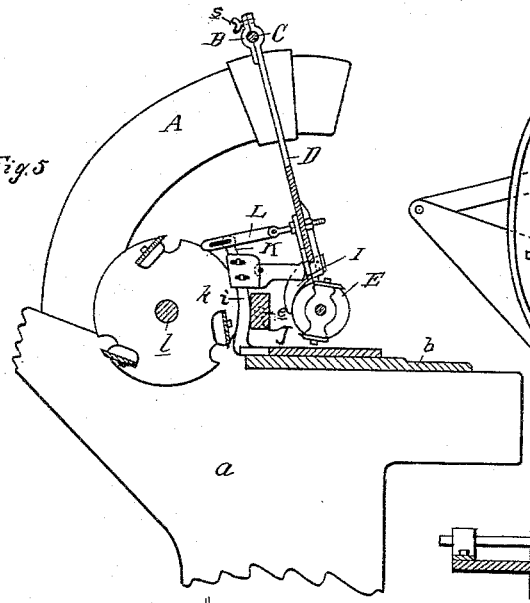

Fig. 5

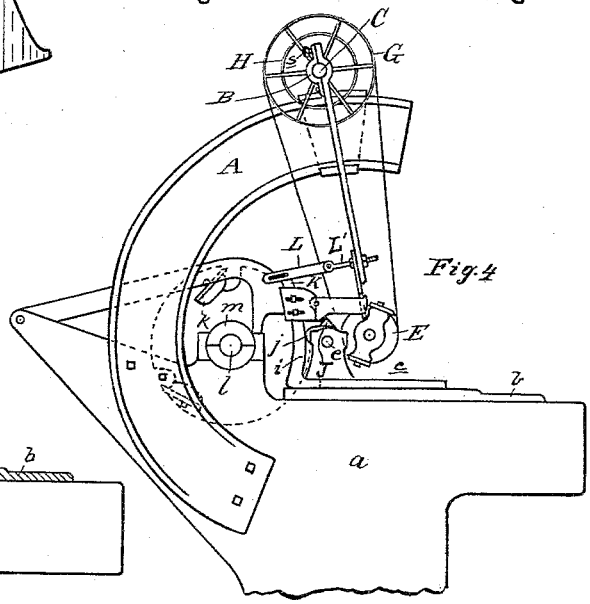

Fig. 4

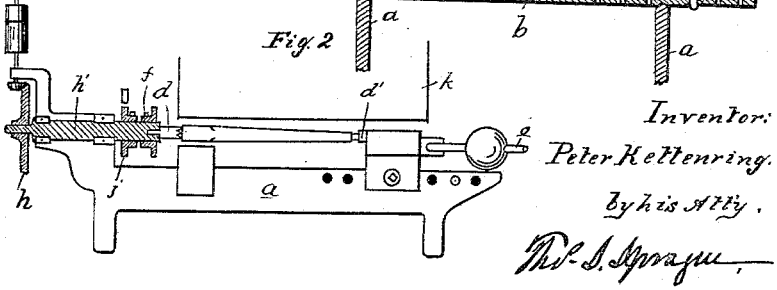

Fig. 6.

Fig. 2

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UNITED STATES PATENT OFFICE.

PETER KETTENRING, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE MACHINE WORKS, OF SAME PLACE.

LATHE FOR TURNING IRREGULAR FORMS.

SPECIFICATION forming part of Letters Patent No. 378,322, dated February 21, 1888.

Application filed March 17, 1887. Serial No. 231,227. (No model.)

To all whom it may concern:

Be it known that I, PETER KETTENRING, of Defiance, in the county of Defiance and State of Ohio, have invented new and useful Improvements in Lathes for Turning Irregular Forms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in lathes for cutting spokes and other irregular forms; and the object of the invention is to adapt a certain well-known kind of lathe, known in the spoke trade as the "Naugatuck Lathe" or "Ward's Lathe," to cut the butt-end of the stick to a square or other desired form, so that in cutting spokes with this lathe it is no more necessary, as at present, to submit the spoke to the operation of a second machine for the purpose of squaring the butt.

By the aid of my invention the square end of a spoke may be cut at the same operation with the rest of the spoke, and thus a great saving of time and labor be effected.

My invention consists in providing the lathe with an oscillating cutting attachment so constructed that it will in no way interfere with the usual arrangement and operation of the other parts, and which performs its work perfectly automatic and without entailing any additional work on the operator, all as hereinafter described.

Figure 1 is a perspective view of a lathe provided with my improvement, and is designed to merely show the relative positions of the two sets of rotary cutters. Fig. 2 is a plan of the spindles and the oscillating bed upon which they are secured. Fig. 3 is a front elevation showing the relative positions of the swinging frame and its attachments, the spindles, oscillating bed, and sliding table. Fig. 4 is a side elevation thereof, and Fig. 5 is a vertical cross-section of Fig. 4 through the swinging frame. Fig. 6 is a sectional detail showing the oscillating table.

In the drawings which accompany this specification, *a* is the frame of the lathe.

b is a sliding table secured in suitable guides in the frame.

c is an oscillating bed-plate supported by the sliding table and turning on the adjustable pivot *e*.

d is the live-spindle.

d' is the dead-spindle.

f and *g* are bearing-boxes secured upon the oscillating bed-plate, in which the spindles *d* and *d'* are respectively journaled.

h is a gear-wheel on the shaft *h'*, connected with the live-spindle, by means of which motion is imparted thereto.

i is a post secured on the sliding table.

j is an oval cam on the live-spindle and bearing against the post *i*.

k is a cutter-head carrying a series of rotary cutters, designed in the operation of the machine to form the oval or body of the spoke.

l is the shaft upon which these rotary cutters are secured.

m are the bearings of this shaft.

n is the drive-pulley of the shaft *l*, and *o* is a lever for drawing the sliding table *b* out or pushing it in.

So far the description refers only to parts which correspond substantially with the different parts of a well-known spoke-lathe in present use, and the operation of which is as follows: The sliding table is drawn out and a blank inserted between the spindles. Then the table is pushed in until the cam *j* bears against the post *i*, thereby compelling the oscillating table to oscillate on its pivot *e* in obedience to the cam *j*. The blank is thereby presented to the revolving cutters in the manner required to give it the desired oval cross-section. The spoke is then removed and submitted to the operation of another lathe of similar character, but which is provided with a squaring-cam instead of the oval cam, for the purpose of squaring the butt-end of the spoke.

My invention consists in providing a lathe substantially of the above description with an auxiliary cutter-head, by means of which I am enabled to form the square or butt of a spoke while the oval or body of the same is being formed, and by so doing avoid the necessity of employing a second machine for such purpose.

To the sides of the frame I secure the curved standards A A, to which the bearings B B are adjustably secured. These bearings B B are provided with flanges which embrace the upper and lower edges of the curved standards

A, and they are also provided with set-screws *s*, (shown in Figs. 4 and 5,) which are tapped through the upper flanges, and by means of which the bearings may be firmly clamped upon the standards after they have been properly adjusted. A shaft, C, is journaled in these bearings, and to this shaft is secured the swinging frame D. In suitable bearings of this swinging frame I journal the revolving cutter-head E, to which motion is carried by a belt from the pulley G, secured on the shaft C, which shaft is also provided with a pulley, H, for communicating power to it from any suitable counter-shaft.

The swinging frame has adjustably secured to it a shoe, I, which bears against a cam, J, secured on the live-spindle. The cam J is of the required shape to give to the butt-end of the spoke the desired form, which is ordinarily rectangular, but is commonly called the "squaring-cam."

K is a standard secured upon the sliding bed, and, as shown in the drawings, this standard may be formed integrally with the post *i*, above described.

L is a link, the slotted end of which engages with a pin in the upper end of the standard K, while its opposite end is pivotally secured to an arm, L′, which projects rearwardly from the swinging frame D. This arm L′ passes through the swinging frame, is threaded and provided with a nut upon each side of the frame, by means of which the length of the arm may be regulated as desired, so that when the said frame is in its normal position the shoe I will be positive in its contact with the squaring-cam J.

It will readily be seen that as the sliding table is drawn forward the pin in the upper end of the standard K slides to the forward end of the slot in the link and pushes the swinging frame radially forward and upward out of the way of the operator while engaged in removing a finished spoke and inserting a new blank, while at the same time the swinging frame D is free to vibrate under the action of the squaring-cam as it rotates in contact with the shoe projecting from the swinging frame.

The swinging frame, when in cutting position, rests with its shoe against the cam J, and is thereby compelled to swing in accordance with the shape of said cam and cut the butt-end of the spoke of a corresponding form.

It will be seen that the relative position and the arrangement of the swinging frame has particular advantages, among which may be mentioned that the working position of its cutter-head is opposite to the other cutter-heads; it does not require the slightest change in the construction and arrangement of the original machine, as it merely forms an attachment thereto which can be easily added; it is entirely out of the way of the operator, and, being automatic, does not add to his work in any particular.

If not required for a certain kind of work, it can be swung out of the way entirely, and all the parts are easily accessible for the purpose of adjustment or repair.

What I claim as my invention is—

1. The combination of a lathe for cutting irregular forms, a swinging frame carrying an auxiliary cutter-head and provided with a shoe, and an auxiliary cam upon the live-spindle of the lathe to govern the proximity of such auxiliary cutter-head to the blank to be operated upon, substantially as described.

2. The combination, in a lathe for cutting irregular forms wherein a templet or cam on the live-spindle governs the proximity of the work to the revolving cutter head or heads, of an auxiliary cutter-head, an auxiliary templet on the live-spindle to govern the proximity of the auxiliary cutter-head to the work, and a swinging frame in which the auxiliary cutter-head is journaled to swing it in and out of contact with the work, substantially as described.

3. The combination of a lathe for cutting irregular forms provided with a sliding bed, a swinging frame carrying an auxiliary cutter-head, an auxiliary cam upon the live-spindle of the lathe, and a standard rising from the sliding table and connected by means of a pivoted slotted link to the swinging frame, the parts being constructed, arranged, and operating substantially in the manner and for the purposes described.

4. The combination, with a spoke-lathe, substantially as described, of an attachment consisting of curved standards secured to the ends of the frame, a pendent swinging frame adjustably hinged to said standards, a revolving cutter-head journaled in said frame, and a cam or templet to govern the proximity of the cutter-head to the work, substantially as described.

5. In attachments for spoke-lathes of the kind described, and provided with a sliding table, *b*, the combination of the swinging frame A, the revolving cutter-head E, journaled in said swinging frame, the shoe I, secured to said swinging frame, the templet or cam J, to govern the proximity of the swinging frame to the work, and the standard K and slotted link L, arranged to form an automatically-operating connection between the swinging frame and the sliding table of the lathe, substantially as described.

6. The combination of the curved standards A, the shaft C, the adjustable bearings B, the swinging frame D, the cutter-head E, and the drive-pulleys F, G, and H, all arranged to operate substantially as described.

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Witnesses:
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