2 Sheets-Sheet 1.

T. Derington,

Spoke Lathe.

No. 41,368. Patented Jan. 26, 1864.

Fig. 2.

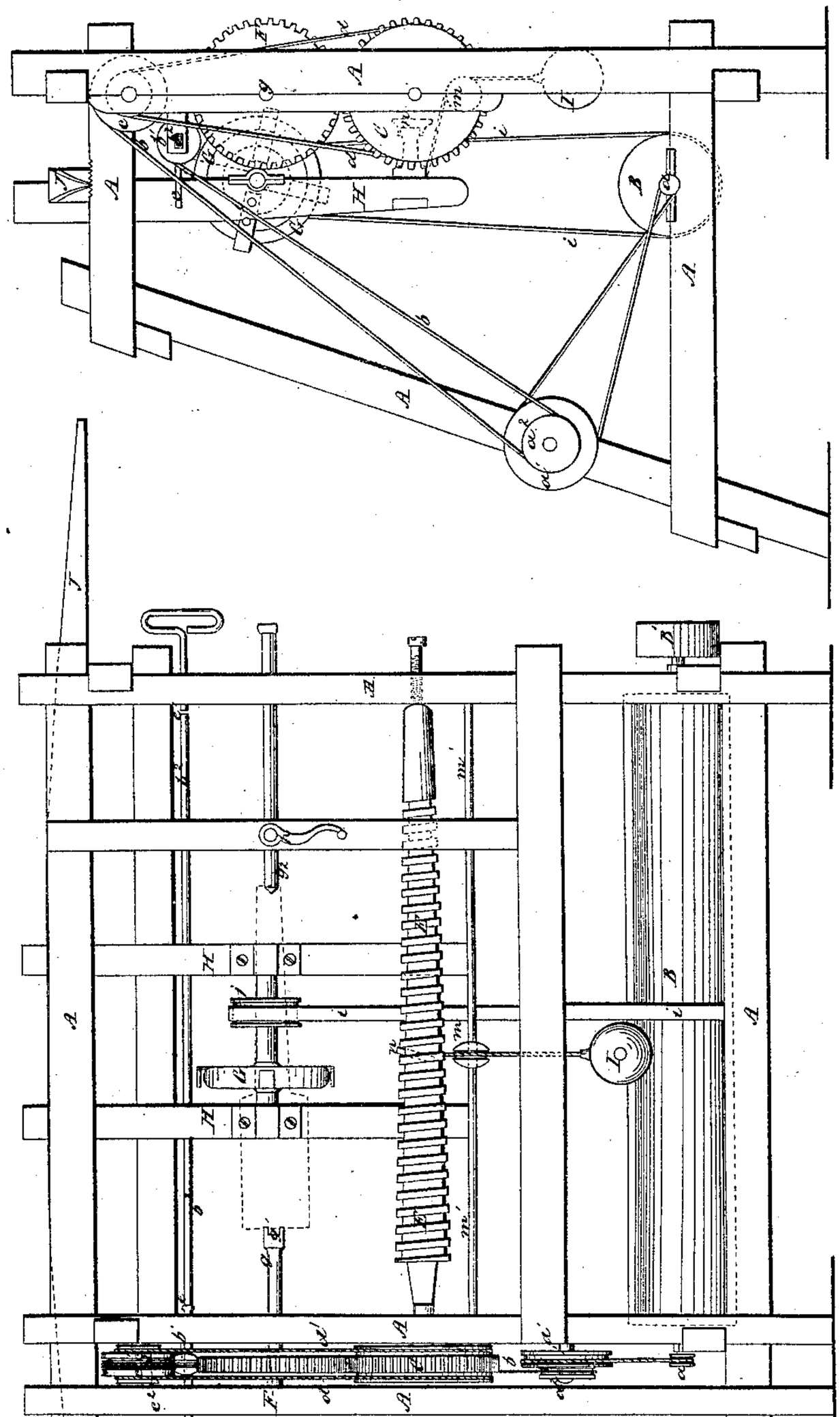

Fig. 1.

Witnesses.

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2 Sheets-Sheet 2.

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Fig. 4.

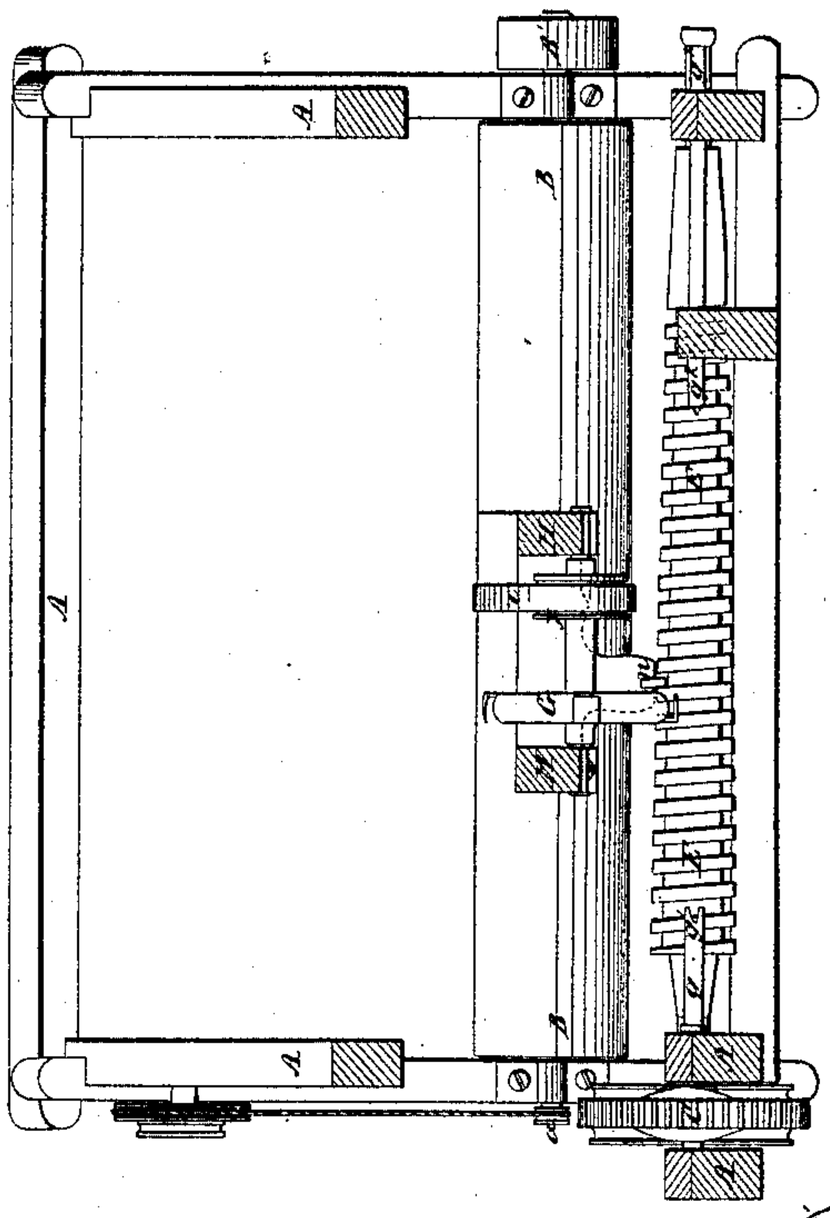
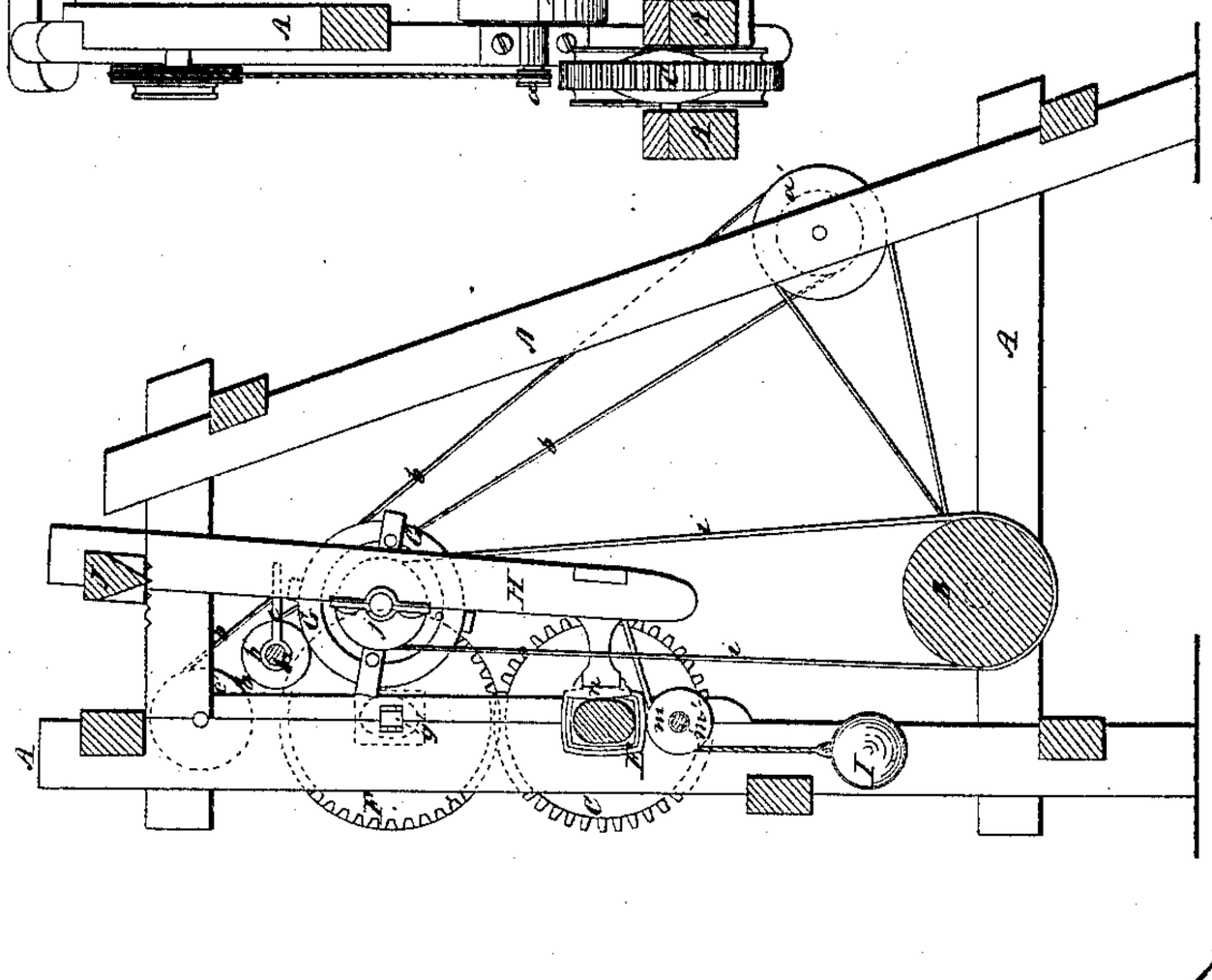


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

THEOPHILUS DERINGTON, OF DUQUOIN, ILLINOIS.

IMPROVEMENT IN LATHES FOR TURNING SPOKES.

Specification forming part of Letters Patent No. **41,368**, dated January 26, 1864.

To all whom it may concern:

Be it known that I, T. DERINGTON, of Duquoin, county of Perry, State of Illinois, have invented a new and Improved Spoke-Lathe; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the improved machine. Figs. 2 and 3 show side and sectional elevations of Fig. 1, and Fig. 4 is a horizontal section through the machine.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in turning spokes for wheels, whereby the cutters can be fed backward and forward in a direction with the length of the spoke to be formed, and at the same time guided and controlled for giving the required shape to the spokes, all by one and the same pattern.

My invention therefore consists in so constructing and applying the spoke-pattern that it will perform the twofold offices of a feeder and guide for the cutters, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the frame of the machine, which is constructed with a wide base for giving steadiness to it, and B is a long drum, which extends in a longitudinal direction across the frame A, and has its bearings in the two lowermost transverse bars of said frame. One end of the shaft of the drum B carries a pulley, B′, over which a belt passes that communicates with the driving-power. On the opposite end of the shaft of drum B is a small pulley, *a*, around which a belt passes that transmits a rotary motion to the double pulley *a′ a²*, and this double pulley in its turn communicates motion to the spurred belt-wheel C, through the medium of a belt, *b*, pulleys *c c′*, and belts *d d′*, as clearly shown in Figs. 1 and 2, Sheet 1. The belt *b* passes over a grooved pulley, *b′*, which is keyed to a longitudinally-movable rod, *b²*, which latter is operated upon by the cutter carriage H at the terminus of each stroke, and caused to shift the belt *b* from one pulley, *c*, to the other, *c′*, for reversing the motion of the spoke-pattern, as will be hereinafter further explained. Between the pulleys *c c′* is a loose pulley, *c²*, over which the operator of the machine can shift the belt *b* by giving the rod *b²* a slight endwise movement, and thus stop the motion of the spoke-pattern and spoke, at pleasure. The automatic shifting of the belt *b* from pulley *c* to pulley *c′*, or vice versa, is caused by the cutter-carriage striking the arms *e e′* at the terminus of each stroke. The reversing of the wheel C is effected by crossing the belt *d′*. The other belt, *d*, not being crossed, it will not be necessary, therefore, to stop the motion of the drum B when it is desired to reverse the movement of the cutter-carriage, or to remove a finished spoke and replace a stick in its stead.

The pattern E consists of a long tapering bar of the desired shape, having a spiral groove extending from one end to the other. The largest end of this pattern may be made nearly square in transverse section, gradually diminishing into an elliptical form, as shown in Figs. 1 and 3. To obtain a better idea of this pattern, take a finished spoke and wind around it a thread which will form a spiral groove extending from end to end. This pattern E is suitably centered in the machine, and secured at one end to the shaft of the belt-wheel C, as shown in Fig. 1. The wheel C has teeth around its circumference, which engage with a spur-wheel, F, of an equal diameter to wheel C. The spur-wheel F is keyed to a mandrel, *g*, having a forked holding end, *g′*, and coincident with the axis of this mandrel is an adjustable centering-point, *g²*, which can be moved in the direction of its length and secured in place by the crank-nut *h*, Fig. 1. Between the mandrel *g* and this centering-point *g²* the stuff which is to be formed into a spoke is secured, so that the axis of motion of the stuff or stick will be in a vertical plane with axis of the pattern.

The cutters which are used for making the spokes are right angular knives, secured at regular intervals apart to a wheel, G, as shown in Figs. 1 and 2. The rim of this wheel G may be made quite thick, so that its momentum will be increased, and the knives may be arranged so that they will project alternately from right to left, and vice versa. This cutter-wheel is keyed to a shaft which has its bearings in a pendent frame or car-

riage, H, which is secured at its upper end to a longitudinal bar, J. This bar has its lower edge beveled, as shown in Fig. 3, Sheet 2, and this edge rests in notches which are cut in the uppermost transverse bars of the frame A. The lower end of the cutter-frame H carries a tooth, *n*, which fits into the groove in the pattern E, and which is kept up against the surface of this pattern by means of a weight, I, that is attached by a cord to the lower end of frame H. This cord passes over a loose traveling pulley, *m*, which traverses the rod *m'* as the cutters are fed up to their work. The weight I rises and falls as it moves from one end of the machine to the other, and allows the cutters to accommodate themselves to the motions imparted to them by the tooth *n* acting upon the pattern E. The cutter-wheel is driven by a belt, *i*, which passes up from the driving-drum B, and around the pulley *j* on the shaft of the cutter-wheel. The large end of the pattern E has a tenon formed on its end, which fits into a square socket-piece on the shaft of wheel C, and the opposite end of this pattern is held by a centering-screw, on loosening which the pattern can be removed and another pattern of a smaller or larger size introduced in its stead.

From the above description it will be seen that I have a cutter frame or carriage, which is constructed and arranged so that while the cutter-wheel rotates it can be moved longitudinally from one end to the other of the frame of the machine, and at the same time made to oscillate and to follow the configuration of the pattern, against which the tooth *n* of the cutter-frame is constantly pressed by the traveling weight I, thus making a spoke which will be a counterpart of the pattern, but without the spiral thread. The tooth *n* is acted upon by the spiral thread on the pattern E, and thus the cutter-frame, with its beveled supporting-bar, is moved along either to the right or to the left the full length of a spoke, and upon reaching the end of the spoke the frame H will slide the bar b^2 and shift the belt *b* so as to reverse the feed of the pattern, and thereby move the cutter-frame back again. I am thus enabled to make a spoke at every stroke of the cutter-frame, and to feed the cutters to their work only just as fast as they can perform their cutting thoroughly.

By using patterns having fine or coarse threads cut on them the cutters will be fed along with greater or less rapidity, according to the fineness of the threads. Thus for some kinds of wood which are tougher than others a fine thread may be required on the pattern for giving a slow feeding movement to the cutters.

The oscillating cutter-frame, with its supporting-bar, may be adjusted laterally on the frame A, and thus adapted for spokes of different sizes, and the notches which are cut in the upper edges of the two supporting-bars of the frame A, as shown in Figs. 2 and 3, serve to keep the beveled bar J in place when properly adjusted.

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

1. Controlling the lateral motion of the cutters, and at the same time feeding them up to the work of making spokes, by means of a single pattern, constructed and operating substantially as described.

2. A spoke-pattern constructed with a spiral or screw thread on its surface, substantially as and for the purposes described.

3. The oscillating traveling carriage H J, in combination with a traveling weight, I, tooth *n*, and a spoke-pattern, operating substantially as described.

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Witnesses:
ENOS D. HOGE,
JAMES RITCHIE.