G. L. ROUSE.

Spoke-Polishing Machines.

No. 140,732. Patented July 8, 1873.

Fig. 1.

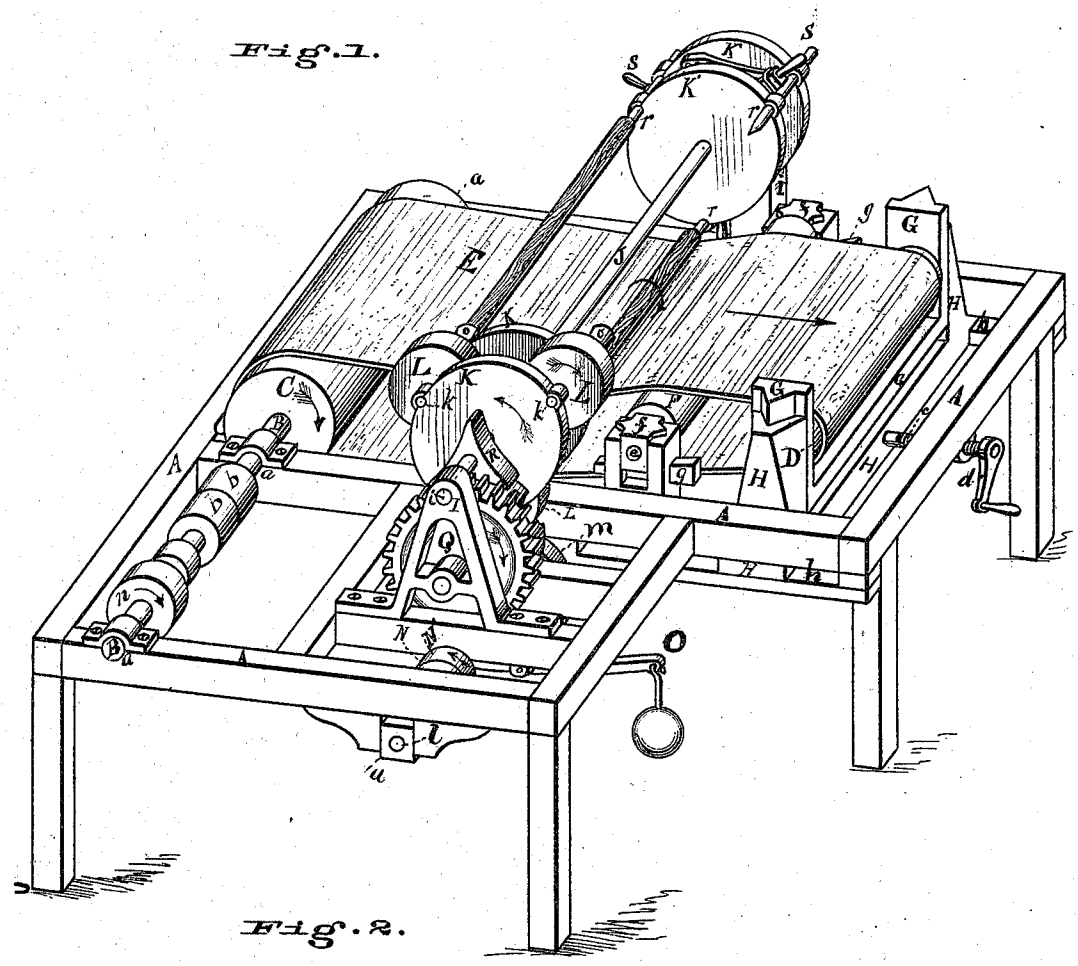


Fig. 2.

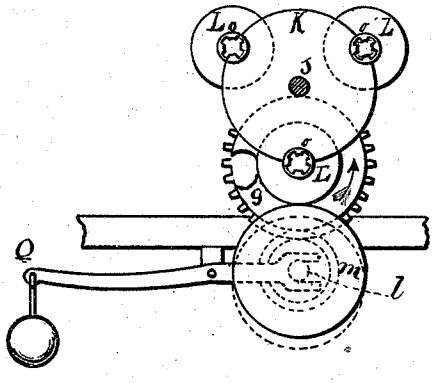


Fig. 3.

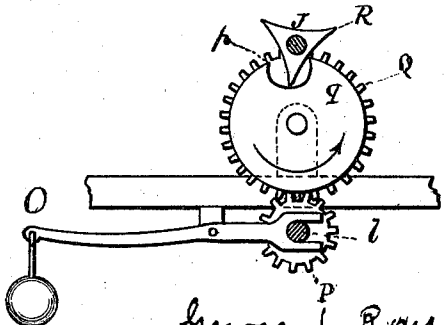
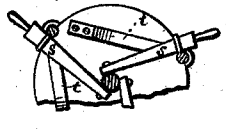


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE L. ROUSE, OF CINCINNATI, OHIO.

IMPROVEMENT IN SPOKE-POLISHING MACHINES.

Specification forming part of Letters Patent No. **140,732**, dated July 8, 1873; application filed February 21, 1873.

To all whom it may concern:

Be it known that I, GEORGE L. ROUSE, of Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in a Spoke-Polishing Machine, of which the following is a specification:

The general object of my invention is automatically to sand-paper or polish the spokes of wheels. It may, however, be used to polish any other similar pieces of wood; and by substituting a belt sprinkled with emery-powder for the one sprinkled with sand, it may be used for polishing metal.

When a spoke first comes from the lathe it is very rough and uneven, and bears the creases of the chisel. The task of polishing it by the methods heretofore in use is slow and laborious. To obviate this, and to produce a machine whereby the work can be done much more rapidly and much better, is what I have aimed to do by my invention.

In carrying out my invention I make use of a sand-belt carried upon three drums, in connection with mechanism for revolving the spoke in a direction opposite to the sand-belt, and mechanism for holding the spoke in contact with the sand-belt until it is polished, and then automatically substituting another, bringing the first up to be removed by the operator.

In the drawings, Figure 1 is a perspective view of my machine for spoke-polishing, showing, especially, the sand-belt and drums. Fig. 2 is a sectional view, designed to show more clearly the mechanism for revolving the spoke. Fig. 3 is a sectional view designed to show the mechanism for automatically bringing into position a second spoke when one has been polished. Fig. 4 is a view of a part of the mechanism for adjusting the spoke.

In the drawings, like letters refer to like parts.

A represents the frame, which may be made of wood or iron, and in any form, to support the various mechanical parts in their appropriate positions. Playing in the boxes *a a a* is the shaft B, which is driven by fast and loose pulleys *b b* connected by belt to the main shaft or other appropriate motive power. Carried on shaft B is drum C, which, in turn, drives the sand-belt E, as indicated by the arrow. Sand-belt E is made of heavy cloth or canvas, or other suitable material, and is sanded in the usual manner, and runs upon the driving-drum C, driven drum D, and supporting drum or roller F. Drum D turns upon a shaft which runs in boxes in sliding-frame G. Frame G is elevated or depressed in the slides in supporting-frame H by a screw beneath the frame. Frame H also slides in slots *h h*, and rectilinear motion of the frame is produced by the rotation of screw *c* by means of crank *d*, whereby the sand-belt E can be made as taut as is desired. Supporting drum or roller F is the smallest of the three, and is placed beneath the upper side of sand-belt E and near the point where the spoke is being polished. It turns on shaft *e* in boxes *f f*, which may be elevated or depressed by means of the wedges or keys *g g*, or by any other appropriate device. It is intended to press the sand-belt up against the spoke, so as make the polishing more rapid and complete, and secure an even surface at the point of contact with the spoke. Supported upon the frame-work I I, on opposite sides of sand-belt E, turning in boxes at *i*, is the shaft J. Turning with shaft J, at a little distance from either extremity, are four cylindrical disks, K K and K′ K′, two at each end. At equal distances, turning on shafts *k k* in boxes on the periphery of disks K K, are three friction-wheels, L L L, which are rotated in the direction indicated in the drawing by means of the large friction-wheel *m* on shaft *l*. Shaft *l* is moved by fast and loose pulleys N and N′, which are run by a belt from the main shaft the same as the pulleys *b b;* or by adding the pulley *n* to shaft B they may derive their power from that source by means of a cross-belt, in which case a piece of the frame shown in the drawing would have to be removed; or they may be driven by friction-pulleys from shaft B. One end of shaft *l* is in a movable bearing in pivot-box *u*, and friction-wheel *m* is pressed up firmly against friction-wheels L L L in succession by means of the lever and weight O. Pulleys N and friction-wheel *m* revolve in the opposite direction from drum C, and friction-wheels L L L in the same direction. To the ends of shafts *k k k* nearest the sand-

belt, rotated by friction-wheels L L L, are securely attached the cups *o o o*, the interior surfaces of which are conical and notched to firmly hold the square end of the spoke when it is introduced, and rotate it in a direction opposite to the sand-belt. On the shaft *l*, between the fast and loose pulleys and the lever, is gear-wheel P, gearing into wheel Q, and giving it a slow motion in the same direction as drum C. To the inside of this gear-wheel is firmly secured a cylindrical disk, *q*, having a notch, *p*, in its periphery. The disk and the gear-wheel may be made of one piece. Securely fastened to shaft J, outside of disk K, is the triangular tooth R, having concave sides, and so adjusted that its concavity just fits the convexity of disk *q*. While so adjusted it will be seen that shaft J, bearing its disks and the spokes, cannot move until the disk *q* has completed a revolution, when the next angle of tooth R entering notch *p* moves shaft J one-third of a revolution. It has already been seen how one end of the spoke is held and rotated. The mechanism for adjusting the spoke remains to be explained. Disks K′ K′ have on their periphery, loosely held in boxes at distances corresponding to shafts *k k k*, the centers *r r r*. To these are attached at the side the levers *s s*, Fig. 4, one end of which serve as handles, the other being attached to shaft J. The straight springs *t t*, made of wood or of metal, as is desired, pressing against these levers tend to force them forward, carrying also the centers *r r r* as far as possible toward the disks K K.

Power is applied to the machine at *b*, and also at N. By the power applied at *b*, the sand-belt is revolved rapidly in the direction indicated. It may, however, be rotated in the opposite direction, if desired, in which case the motions are all reversed. The operator standing beside the disks K′ K′, inserts the square end of the spoke in one of the cups *o*, and by the handle of lever *s* draws back spring *t* and center *r* until he can interpose the end of the spoke, having the cavity left in turning, before the point of *r*, when, the hand being removed, the spring acts and the spoke is firmly held. In a similar manner he inserts another spoke a little before the spoke first inserted, by the revolution of shaft J with disks, &c., attached, comes down so as to touch the sand-belt, the friction-wheel L connected with cup *o* comes in contact with friction-wheel *m*, (see Fig. 2,) which is pressed upward by weight and lever O. As wheel *m* is revolved by the power applied at N, it will be seen that at the moment of contact between the friction-wheels the spoke is rapidly revolving in a direction opposite to the belt, and as the belt is pressed upward against the spoke by properly adjusting the drum or roller F, the spoke, however rough, is quickly polished. The pressure of the sand-belt has a constant tendency to move the spoke forward and out of its way. But this tendency is counteracted by the triangular tooth R, one of whose concave sides is so adjusted to disk *q* that it serves as a lock, until the notch *p* comes around, when the tendency of the sand-belt to move the spoke forward takes effect, the tooth enters the notch, and, the disk revolving, brings the next side of triangle R down upon the disk, and the next spoke down against the sand-belt. While this is being polished, the operator takes out the polished spoke, and puts in its place one unpolished, the disks revolve, and another spoke is polished.

The disks K K and K′ K′ may be fitted with as many friction-wheels as desired, and so carry more spokes at the same time, in which case R would have more projections.

What I claim is—

1. The recessed cups for holding the ends of the spokes, substantially as set forth.

2. The combination of the recessed cups for holding the ends of the spokes, the wheels L L L mounted at intervals on the periphery of the disks K′ K′, and the friction-wheel *m*, arranged and operating substantially as described.

3. The combination of revolving detent R, and the gear-wheel Q, provided with a notched disk *q*, or its equivalent, substantially as described.

GEORGE L. ROUSE.

Witnesses:

CHARLES B. WILBY,

JOHN E. HATCH.