No. 624,882. Patented May 9, 1899.

F. UNKRICH.

SPOKE FINISHING MACHINE.

(Application filed Apr. 4, 1898.)

(No Model.) 2 Sheets—Sheet 1.

FIG. I.

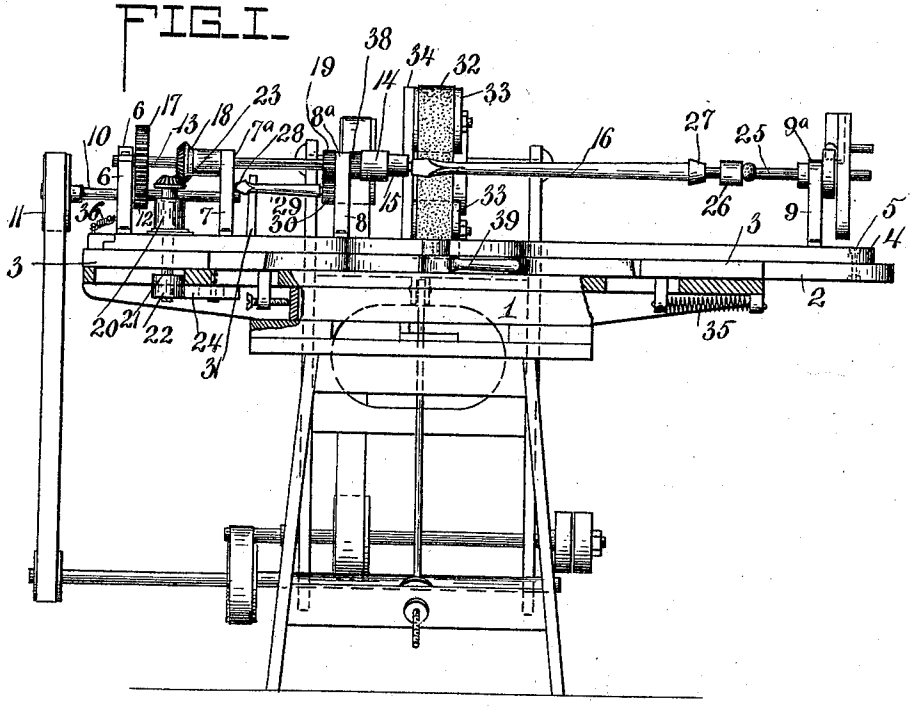


FIG. IV.

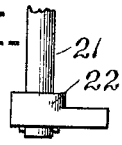


FIG. VI.



FIG. V.

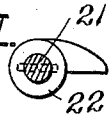


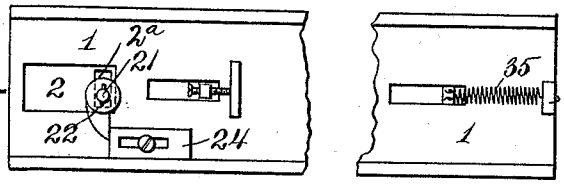
FIG. VII.



FIG. VIII.



FIG. IX.



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FIG. II.

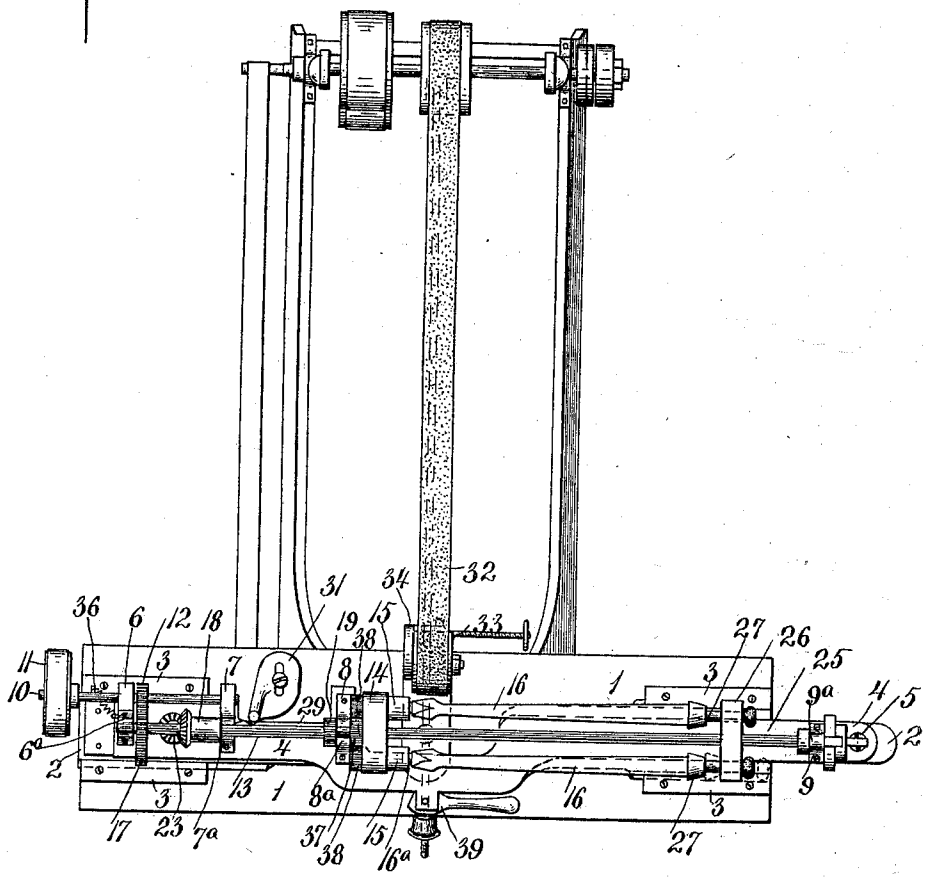
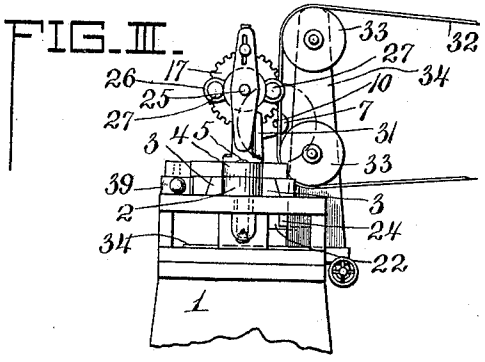


FIG. III.



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UNITED STATES PATENT OFFICE.

FREDERICK UNKRICH, OF GALION, OHIO, ASSIGNOR OF ONE-HALF TO FRANK FLICKINGER, OF SAME PLACE.

SPOKE-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 624,882, dated May 9, 1899.

Application filed April 4, 1898. Serial No. 676,499. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK UNKRICH, a citizen of the United States, and a resident of Galion, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Spoke-Finishing Machines, of which the following is a specification.

My invention consists in features of novel construction, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a front elevation of my improved spoke-finishing machine. Fig. II is a top view thereof. Fig. III is a detail end elevation of the same. Fig. IV is a detail side elevation of the operating-cam. Fig. V is a detail bottom view of the same. Fig. VI is a side view of a spoke, showing the V-shaped face at the throat imparted to it by my machine. Fig. VII is a sectional end view of the throat of the spoke. Fig. VIII is a sectional end view of the throat of a spoke as previously constructed. Fig. IX is a detail bottom view of the table.

Vehicle-spokes are now turned out with great rapidity by machines which produce complete spokes, with this exception that the throat and face of the spoke or the last three or four inches of the spoke next to the miter or tenon are not finished. This finishing is necessitated for the reason that one of the sides of the throat, called the "face," in the finished condition being V-shaped and left flat or square on the face has heretofore always had to be done by hand, as it required skilled workmanship to hold the spoke on the sand-belt in such manner as to form the face correctly. Even in the hands of the most skilled workman it has been found difficult to form the face of a number of spokes uniform, and the appearance of the wheel is accordingly marred more or less by the unevenness of the shape or size of the face. My invention is designed to make the face of the spokes uniform and to expedite the handling or finishing of spokes as they come from the spoke-machine; and my device consists of a movable pattern and spoke carrying frame having an endwise and sidewise movement that oscillate the revolving spoke in such manner as to finish three-fourths of the circumference of the spoke, then move the spoke endwise the length of the face, and then back, finishing the other fourth or face of the spoke-head and giving its V shape with a motion similar to that produced in finishing by hand.

1 is the table, 2 is a sliding plate dovetailed to the table 1 by strips 3, and 4 is a swinging or vibrating plate carried by the sliding plate 2 and pivoted at one end to the latter by means of a pivot 5. On this swinging or vibrating plate are mounted the pattern, spoke, and gearing frames or standards 6, 7, 8, and 9.

Journaled in the frames or standards 6 and 7 is a main shaft 10, on which are mounted a driving-pulley 11 and a gear-wheel 12. The upper ends of the frames or standards 6, 7, and 8 are provided with bearings 6^a, 7^a, and 8^a, respectively, for a counter-shaft 13, provided with an inner cross-head 14 at its inner end, having rotary spoke-sockets 15, adapted to receive the tenons 16^a of the spokes 16 to be finished. Mounted on this counter-shaft 13 are a large gear-wheel 17, a bevel gear-wheel 18, and a gear-wheel 19, located on the outer side of the standard 8, the large gear-wheel 17 being meshed by the gear-wheel 12 on the main shaft 10.

20 is a boxing secured to the swinging or vibrating plate 4 between the standards 6 and 7, in which is mounted a vertical shaft 21, carrying at its lower end a horizontal cam 22 and at its upper end a bevel gear-wheel 23, meshed by the bevel gear-wheel 18 on the counter-shaft 13. The sliding plate 2 is provided with a transverse slot 2^a to permit of the required lateral movement of the vertical shaft 20 with the swinging or vibrating plate 4.

24 is a block secured to the table, against which the cam 22 acts to impart endwise movement to the sliding plate 2 and to the parts carried by the latter.

The frame or standard 9 is provided at its upper end with a bearing 9^a, in which is mounted the outer end of the shaft 25, extending from the cross-head 14 and carrying an outer cross-head 26, having rotary spring spoke-holders 27 for supporting the outer ends of the spokes 16.

28 is a pattern-shaft journaled in the frames or standards 7 and 8 and provided with a pattern 29 and with a gear-wheel 30, meshed by the gear-wheel 19.

31 is a stop movable on the table 1, against which the pattern 29 bears to gage the contact of the spoke 16 with the usual sand-belt 32.

33 are pulleys journaled to a standard 34 and around which the sand-belt 32 runs.

35 is a spring attached to the sliding plate 2 to return the latter to normal position.

36 is a spring connecting the swinging or vibrating plate 4 with the sliding plate 2, whereby the pattern is caused to bear against the stop 31.

On the inner end of the counter-shaft 13, between the inner cross-head 14 and the standard 8, is a gear-wheel 37, meshing with the gear-wheels 38 on the rotary spoke-sockets 15.

39 is a cam-lever fulcrumed to the sliding plate 2, connected with the swinging or vibrating plate 4 for holding the latter in its outer position.

The cam 22 is so shaped and formed as to give just the proper movement to the spoke endwise, timed with the revolution of the spoke, so as to cause the sand-belt 32 to travel down the edge of the face without rounding it and after passing the end or point of the face to return down the other side, smoothing the face without spoiling the edge of the same.

The operation of my machine is as follows: The swinging or vibrating plate 4 being in position for inserting a spoke 16, with its ends and sides parallel with the end and the sides of the sliding plate 2, is held by the cam-lever 39 in its outer position. The operator places the butt-end of the spoke in a spring spoke-holder 27 of the outer cross-head 26 and pushes the spoke-holder back until the tenon 16^a on the other end of the spoke is placed in a spoke-socket 15 in the inner cross-head 14. The spoke-socket 15 is made to fit the miter or tenon 16^a. The spring spoke-holder 27 forces the tenon 16^a into position, so that the spoke 16 is ready for finishing. The swinging or vibrating plate is released by the cam-lever 39, and the spring 36 causes the pattern 29 to bear against the stop 31, which is mounted on the table 1, and the spoke 16 to bear against the sand-belt 32. The spoke 16 when fixed in the inner spoke-socket 15 is placed so that the sand-belt 32 begins finishing at one edge of the face of the throat 16^b, and the spoke is rotated about three-fourths of a revolution, reaching the other edge of the face of the spoke. The cam 22 on the vertical shaft 21 engages the block 24, which moves the sliding plate 2 and the swinging or vibrating plate 4 endwise, while the spoke is rotating, tapering the face until it reaches the end of the face on the round part of the spoke, when the motion is reversed and the spoke as it rotates travels back, forming a V-shaped face 16^c on the spoke, finishing it smoothly and leaving its edges sharp and well defined. When a spoke is finished, the operator draws the spoke 16 away from the belt 32 by the cam-lever 39, connecting with the swinging or vibrating plate 4, and the operator takes the spoke out while the carrier is in its normal position, so that the next spoke will touch the belt 32 at one edge of the face again.

I do not confine myself to the particular form of mechanism shown, as I can use any of the equivalent operating mechanisms, my invention consisting in giving to the spoke a necessary rotary motion, combined with a back-and-forth endwise movement, to finish and shape the throat and face.

In practice I have two sets of spoke-holders opposite one another, and the same operating mechanism does the work for both.

I do not describe the power mechanism or the sand-belt support in detail, as they are of common form and their use easily understood by the drawings.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A spoke-finishing machine comprising a table, a sliding plate movable endwise on the table, a swinging or vibrating plate, pivoted to the sliding plate, means secured to the swinging or vibrating plate, for supporting a pattern-shaft and a spoke, means for rotating the pattern-shaft and spoke in unison, a standard, provided with sand-belt pulleys, adapted to hold the sand-belt adjacent to the spoke, a stop against which the pattern bears, for controlling the bearing of the spoke against the sand-belt, means for imparting an endwise movement to the sliding plate, and means for operating the swinging or vibrating plate; substantially as described.

2. A spoke-finishing machine comprising a table having a block, a sliding plate, a swinging plate pivoted to the sliding plate, a bearing-box secured to the swinging plate, a vertical shaft extending through said bearing-box, having a cam at its lower end adapted to engage the block, the frames, the counter-shaft, the pattern-shaft, the main shaft, the gearing connecting the counter-shaft with the vertical shaft, the gearing connecting the pattern-shaft with the counter-shaft, the gearing connecting the main shaft with the counter-shaft, the sockets for supporting a spoke, a stop, and means connected with the swinging plate, whereby the pattern-shaft is caused to bear against the stop; substantially as described.

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