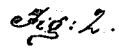
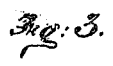


Machines for Turning Wagon-Axles.

Patented September 2, 1873.



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UNITED STATES PATENT OFFICE.

GEORGE A. BOLSER, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN MACHINES FOR TURNING WAGON-AXLES.

Specification forming part of Letters Patent No. **142,368**, dated September 2, 1873; application filed June 21, 1873.

To all whom it may concern:

Be it known that I, GEORGE A. BOLSER, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and Improved Machine for Turning Wagon-Axles, of which the following is a specification:

My invention consists of a novel arrangement of the tool-carrier, pattern, and feed-screw in a machine in which the stick to be turned is stationary and the cutter is revolved around and fed along the stick.

Figure 1 is a longitudinal sectional elevation of my improved machine. Fig. 2 is a transverse sectional elevation taken on the line *xx* of Fig. 1. Fig. 3 is a section of Fig. 1 on the line *yy*, and Fig. 4 is a section on the line *zz*.

Similar letters of reference indicate corresponding parts.

A represents the axle, the ends of which are to be turned, as represented at B. It is laid on the bench C, between the posts D, and centered by the adjusting-screws E, clamp F, and the center-screw H in the stock I. J is a large short tube bolted onto the posts D in the axis of the machine, so that the axle to be turned projects through it. K is a pulley revolving on this tube, and carrying the face-plate L, in front of which, at a suitable distance, is another face-plate, or the equivalent thereof, in four arms, M, arranged on the sleeve N of the tail-center H, and connected to face-plate M by a rod, O, feed-screw P, tool-supporting rod Q, and the pattern rod or centers R, all of which are arranged at equal distances apart around the axis, and at equal distances therefrom. The pattern T is a fac-simile of what is to be produced. It extends from the face-plate to one of the arms M, as aforesaid, and is fixed on them so that it can revolve, and is geared by a wheel, U, with a stationary toothed rim, V, having the same number of teeth on the end of the tube J, so that it turns the pattern one revolution on its axis during each revolution which it makes around the axle. The tool-holder S consists of a bar fitted at one end on the rod Q, so as to slide freely and also oscillate on it, and, at the other end, it rests on the pattern T by a friction-roller, W, and has a spring, X, bearing on the pattern opposite to the roller to keep the roller

in contact, but allow it to work over the high places of the pattern. At the middle this bar is bent, as shown at *y*, so as not to be obstructed by the axle in extending from its support Q to the pattern T, across the axis of the machine. Z is the cutter, which is attached to the bar S, just beyond this bend *y*, on the side next to the pattern. A' represents a clamp feed-nut, which is pivoted to the tool-bar S by the intermediate piece B', and held on the feed-screw by a spring, C', so as to move the tool-bar along slowly in the direction of the axis of the axle to carry the tool from one end to the other of the part to be turned. The intermediate piece B' is employed to allow the bar to swing forward and back, as required by the irregular shape of the pattern. The feed-screw extends through the arm M, in which it is mounted, and carries at the end a large wheel, D', which gears with a stationary pinion, E', on the sleeve N, by which it is slowly turned to feed the tool; it is carried around with the tool-carrier and pattern. The power is applied by a belt, F', from a driving-pulley, G', on the pulley K, which may be turned by hand or any competent power. The pinion E' slides on the sleeve N, and is provided with a shifting-lever, H', to throw it out and into gear with wheel D', as may be needed in the progress of the work.

It will be seen that the cutter will be controlled by the form of the pattern in its application to the work, making high places thereon whenever it is raised by a high part of the pattern, and low places when the pattern is low.

Both the rod V and the pattern T are adjustable laterally in the face-plates and arms M, as indicated by the slotted holes J', to adjust the tool for the size of the part to be turned. The holding-plates K' on the top of the frame O are to adjust the axle to give the set to the axle. *a* is a little rod with tappets *b* between the two members of the clamp-nut for opening it to slide the tool-carrier back to the place of beginning. *d* represents arms on the clamp-nut embracing the tool-bar to push it along with the nut.

I also propose to utilize this machine for making oval tenons on spokes upon the same plan; but I will dispense with the long feed-

screw and the arms M, and use only a short oval pattern projecting a short distance from the face-plate, and will employ a lever to feed up the cutter, instead of a screw.

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

1. The cutter feed-screw and pattern arranged to revolve around the work, and the pattern to revolve on its own axis, in combination with holders for the axle, substantially as specified.

2. The cutter-bar S, rod Q, spring X, and pattern T, combined and arranged substantially as specified.

3. The clamp-nut A', spring C', feed-screw

P, intermediate piece B', and the cutter-bar S, combined substantially as specified.

4. The tube J, pulley K, face-plate L, feed-screw P, pattern T, wheel U, wheel V, stationary wheel E', wheel D', and the cutter-bar, combined and arranged substantially as specified.

5. The combination of the adjusting holder-plates K', clamp-screws E, lever F, and the center H with the tool and pattern, arranged and operating substantially as specified.

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Witnesses:

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