

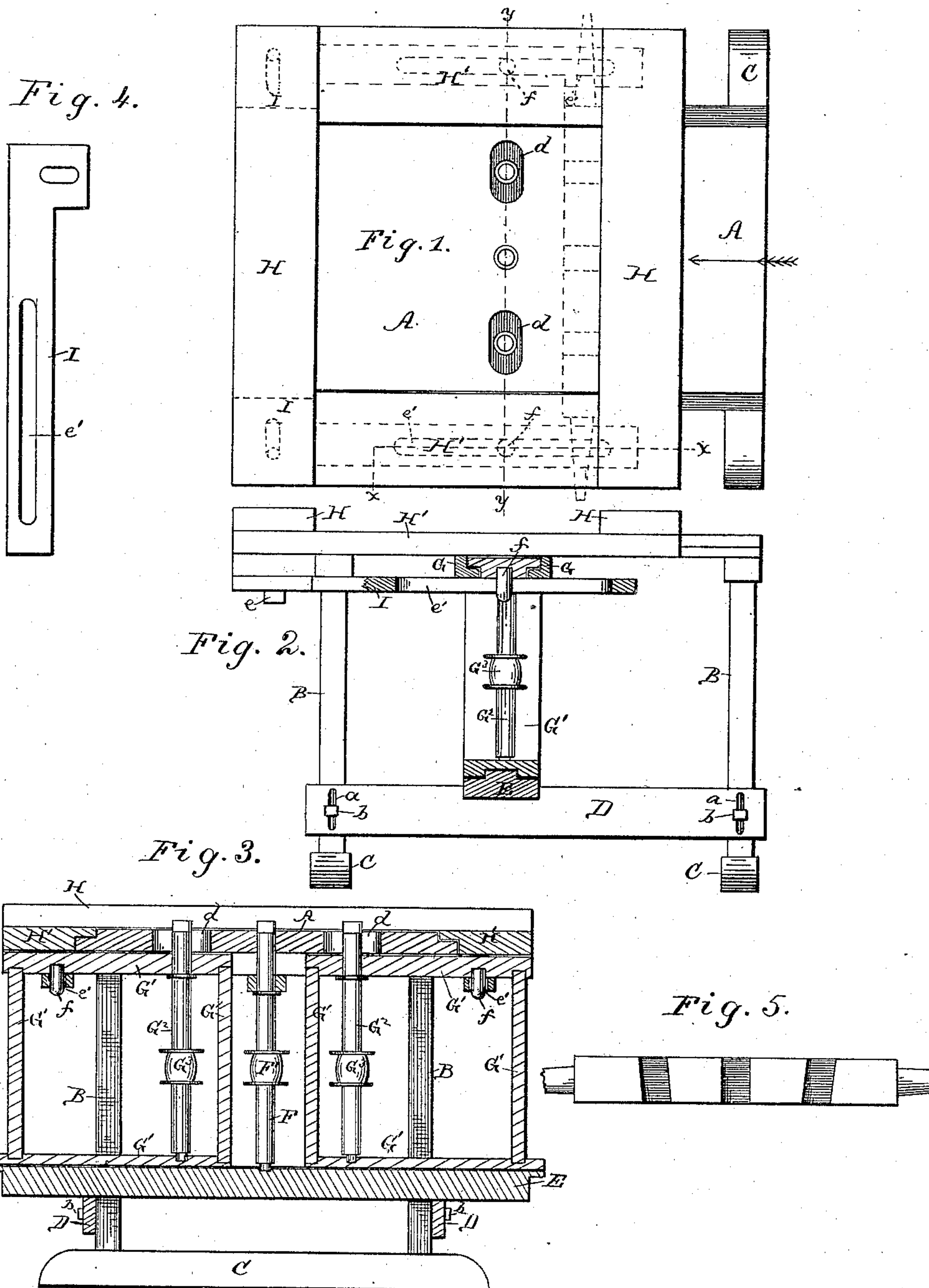
(No Model.)

G. WATSON.

# MACHINE FOR CROSS GROOVING AXLE TREES.

No. 319,361.

Patented June 2, 1885.



**WITNESSES:**

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# UNITED STATES PATENT OFFICE.

GEORGE WATSON, OF ST. CHARLES, MINNESOTA, ASSIGNOR TO HIMSELF  
AND ANDREW MILLER, OF SAME PLACE.

## MACHINE FOR CROSS-GROOVING AXLE-TREES.

SPECIFICATION forming part of Letters Patent No. 319,361, dated June 2, 1885.

Application filed March 3, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE WATSON, a citizen of the United States, residing at St. Charles, in the county of Winona and State of Minnesota, have invented a new and useful Improvement in Machines for Cross-Grooving Axle-Trees, Bolsters, &c., of which the following is a description.

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation of the same in section through the line *xx* of Fig. 1. Fig. 3 is a vertical section through the line *yy* of Fig. 1. Fig. 4 is a detail of one of the slotted arms for adjusting the frames of the side spindles; and Fig. 5 is a view of an axle, showing the character of the grooves or gains that my machine is designed to cut.

The object of my invention is to provide a machine for cross-grooving vehicle axle-trees, bolsters, sleigh-raves, &c.

The axle-trees and bolsters of wagons have usually three cross grooves or gains in them, the middle one of which is adapted to receive the longitudinal reach-bar, and the side ones adapted to receive the hounds of the wagon in fitting together the running-gear.

My invention consists in a machine for simultaneously cutting these three cross-grooves and giving to the side grooves either a straight transverse cut or an oblique cut, according to the lay of the hounds, as will be hereinafter fully described.

In the drawings, A represents the stationary table, which is supported at its four corners upon legs B, mounted upon base-bars C. To the lower ends of these legs are fastened horizontal longitudinal bars D, one on each side of the machine and supporting the cross-bar E. The horizontal bars D are connected to the legs by slots *a* and set-screws *b*, so as to permit a vertical adjustment of said bars, and the cross-bar carried by them has about its middle a bearing, in which is stepped a vertical spindle, F, Fig. 3, provided with a band-pulley, F', and journaled in a bearing above and passing through the stationary table, and having a revolving cutter made in the form of a hollow auger.

To the bottom of the table A are fastened transversely-arranged bars G, in which and on

the transverse bar E is arranged on each side a transversely-sliding side frame, G', which sliding frames are connected to the bars E and G by flanged and grooved guides, Fig. 2. In each of these sliding side frames is carried a vertical spindle, G<sup>2</sup>, having a band-pulley, G<sup>3</sup>, which spindles protrude through slots *d* in the table and carry on each side of the central spindle a revolving cutter or hollow auger.

On the top of the table is arranged a longitudinally-sliding rectangular frame, H H', of which the side bars, H', are matched to fit the sides of the table A, to form guides, and lie in the same plane as the table, and of which the end bars, H, are arranged transversely above the level of the table and serve to advance the axle-tree or other work to be acted upon by the cutters.

To the bottom part of this rectangular frame are adjustably fastened by a slot and set-screw, *e*, the slotted arms I, one on each side of the machine, which bars pass at right angles under the top section of the two side frames, G', and from which top section of each side frame a pin, *f*, depends into and passes through the slot of the arm. These arms are capable of being set straight with the table or slightly oblique to the same by these set-screws *e*, and may also be moved closer to or farther from the center by reason of their slots *e'*, for the purpose hereinafter described.

The operation of this machine is as follows: If an axle-tree is to be operated upon, the two side spindles are set a distance from the center spindle equal to the distance between the grooves or gains to be cut, and if these side gains are straight or right-angular the side arms, I, are adjusted parallel to the side bars, H', of the sliding frame, as shown in dotted line in Fig. 1. The spindles bearing the cutters now being set in motion by their respective belts, the axle-tree is laid on the table up against one of the bars H of the sliding frame, as in dotted lines, Fig. 1, and the latter is slowly advanced over the cutters, which cut the transverse grooves or gains in the axle-tree. If the two side grooves or gains are to be cut obliquely, as is frequently required for the accommodation of the hounds, as in Fig. 5, the arms I are set obliquely to the side bars,



H', of the table-frame, and fixed at the proper angle by the set-screws *e*. Then as the frame H H' is advanced with the axle-tree these oblique arms I exert a cam action on the pendent pins *f* of the side frames, G', carrying the side cutters, and a slight transverse motion is given the side cutters in the slots *d d*, sufficient to produce an oblique cut, the inclination of which may be varied by the adjustment of the arms I.

The machine can also be used as a tenoning-machine, and also as a shaper, by simply screwing different heads onto the tops of the spindles.

Having thus described my invention, what I claim as new is—

1. A machine for cutting cross grooves or gains, consisting of the combination of a table, a vertical central rotating spindle bearing a pulley below and a cutter at its upper end, and vertically-arranged frames disposed in guides upon opposite sides of the central spindle, and bearing each a vertical spindle having a pulley below and a cutter at its upper end, the said frames being made adjustable to or from the central spindle, substantially as shown and described.

2. A machine for cutting cross grooves or gains, consisting of the combination of a table,

a vertical central rotating spindle bearing a pulley below and a cutter at its upper end, vertically-arranged frames disposed in guides upon opposite sides of the central spindle, and bearing each a vertical spindle having a pulley below and a cutter at its upper end, the said frames being made adjustable to or from the central spindle, and a sliding frame, H H', arranged to move in guides across the table, and having one of its set of bars flush with the table and the other projecting above it, substantially as described.

3. A machine for cutting cross grooves or gains, consisting of the combination of a table having slots *d*, and a central vertical rotating spindle bearing a cutter, sliding side frames carrying vertical side cutters, and having a motion at right angles to the feed motion of the table, and a sliding feed-frame, H H', having adjustable arms I engaging with the side frames, and adapted to adjust the latter by the feed movement of the frame H H', as and for the purpose described.

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Witnesses:

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