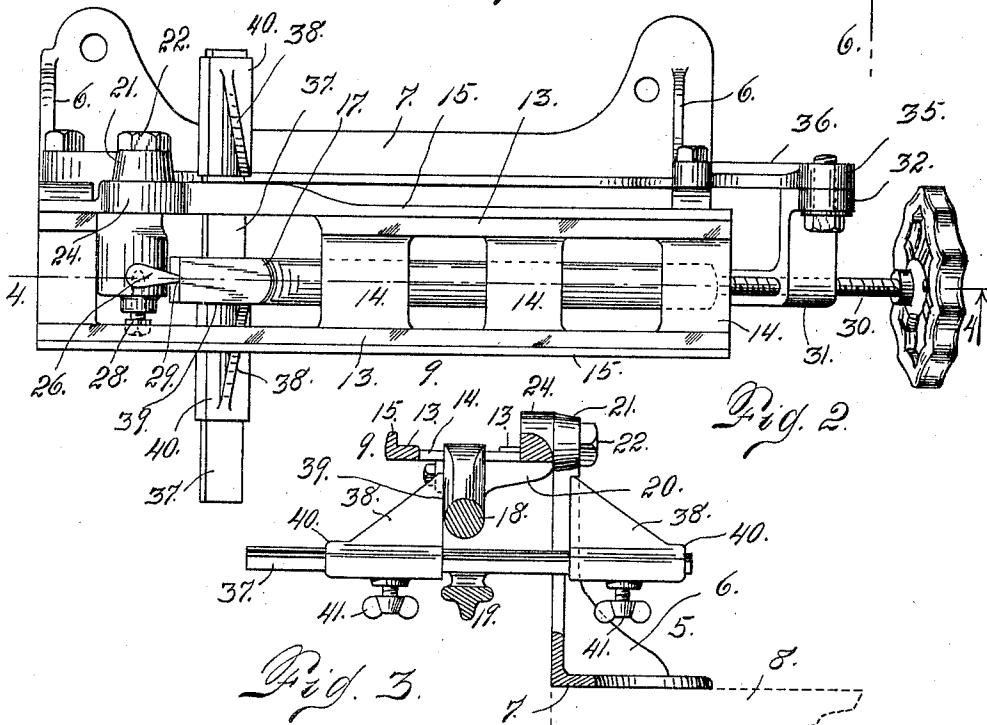
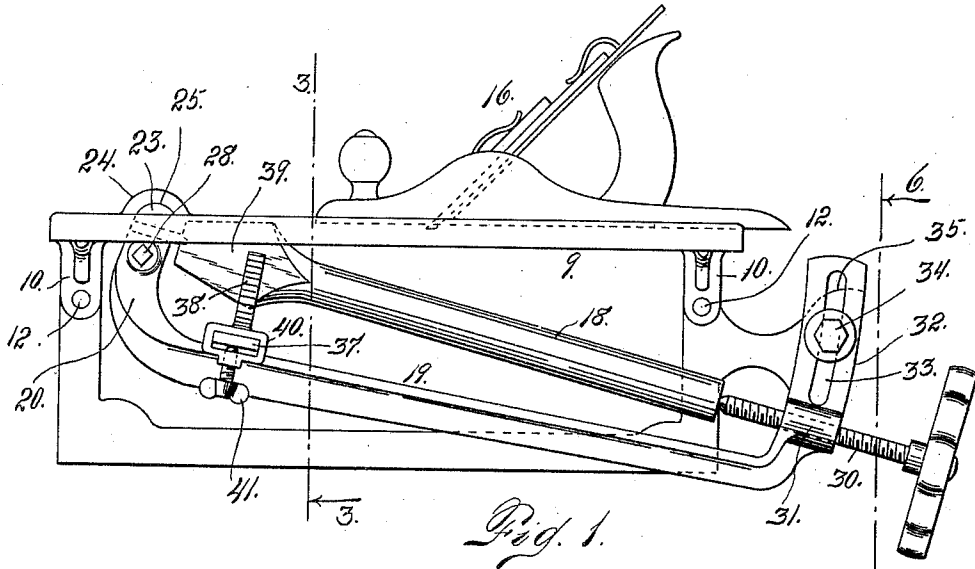


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SPOKE TENONING MACHINE.  
APPLICATION FILED AUG. 1, 1911.

1,044,477.

Patented Nov. 19, 1912.

2 SHEETS—SHEET 1.



Witnesses

Otto E. Haddick.  
C. H. Rosner.

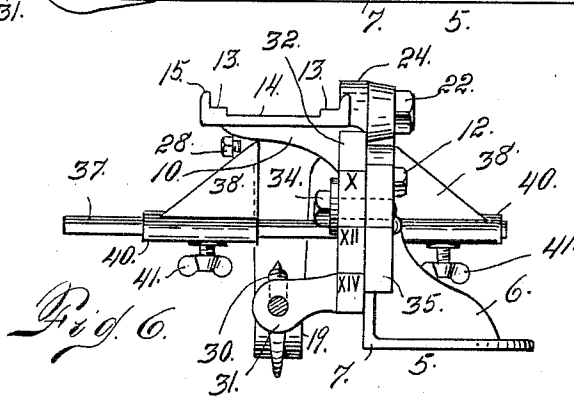
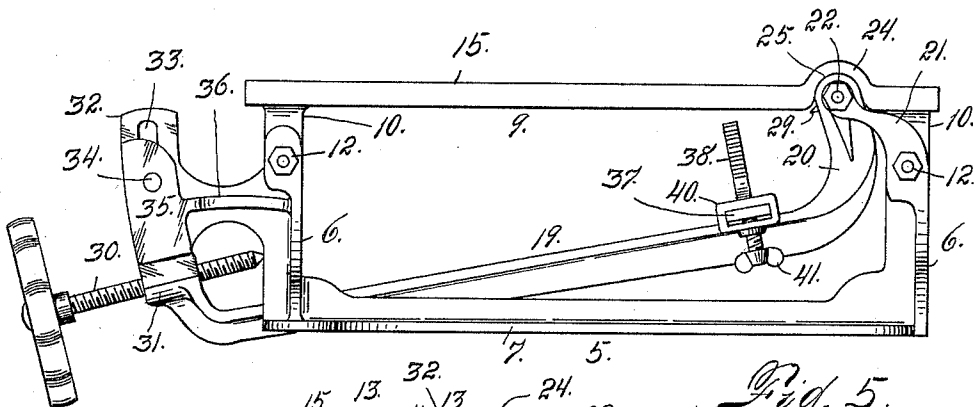
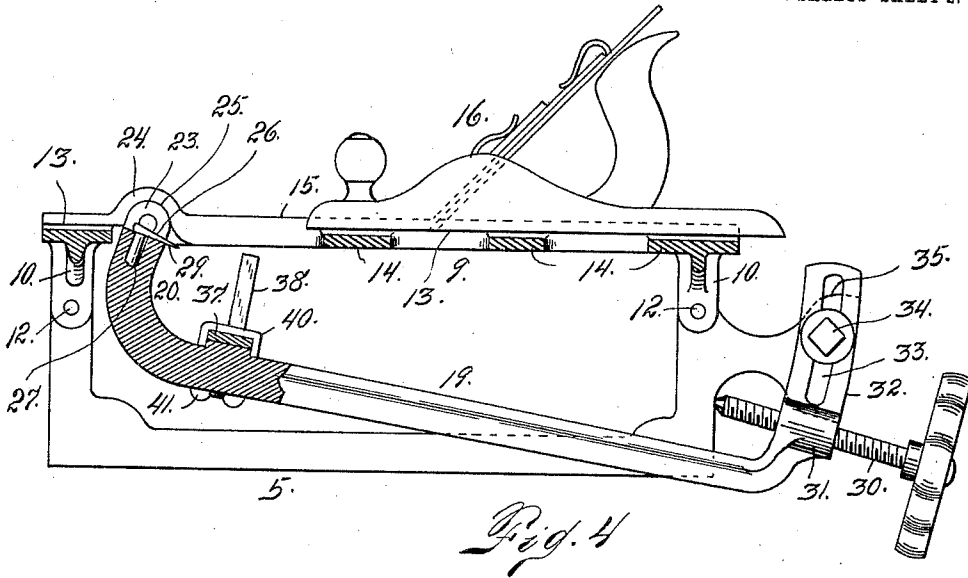
Inventor  
Christian Bergstrom  
By *A. J. O'Brien*  
Attorney

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Witnesses

Otto E. Hoddick.  
C. H. Rossmeyer.

Inventor  
Christian Bergstrom  
By A. J. Brien  
Attorney

# UNITED STATES PATENT OFFICE.

CHRISTIAN BERGSTROM, OF DENVER, COLORADO.

## SPOKE-TENONING MACHINE.

1,044,477.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed August 1, 1911. Serial No. 641,706.

*To all whom it may concern:*

Be it known that I, CHRISTIAN BERGSTROM, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Spoke-Tenoning Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in spoke-tenoning machines, the object of the machine being to facilitate the accurate formation of the hub extremities of spokes in the wheels of automobiles and other vehicles, in which wood spokes are employed and set into a hub in contiguous relation.

My improved machine is adjustable whereby the tenons may be so formed as to fit the hubs of wheels having spokes varying in number. The number of the spokes in wheels of the character above indicated is either 10, 12 or 14, and my improved machine is adjustable so that the tenons may be properly shaped to fit closely into hubs having any one of the said numbers of spokes.

The construction, generally speaking, consists of an oscillatory arm arranged to hold the spoke upon which the tenon is to be formed, the said arm being connected with a frame which is constructed to be secured to a bench or other stationary structure. The extremity of the spoke holding arm, remote from its pivotal extremity, is adapted to be raised or lowered as may be required, according to the number of spokes the wheel is to contain, and the arm is held in the adjusted position by means of a set bolt passing through a slot formed in an upwardly-projecting member of the oscillatory arm and entering an opening formed in the stationary framework of the machine. To the upper part of the stationary frame of the machine is secured a sort of table arranged to guide a plane with which the tenon extremity of the spoke is shaped.

Having briefly outlined my improved con-

struction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a side elevation of my improved machine, a spoke being shown mounted thereon. Fig. 2 is a top plan view of the same. Fig. 3 is a section, taken on the line 3—3 of Fig. 1, looking toward the left or in the direction of the arrow adjacent said line. Fig. 4 is a longitudinal section of the machine, taken on the line 4—4 of Fig. 2, the spoke being removed. Fig. 5 is a side elevation of the machine viewed, however, from the side opposite that shown in Fig. 1. Fig. 6 is a section, taken on the line 6—6 of Fig. 1, looking toward the left, the machine being shown for the most part in end elevation.

The same reference characters refer to the same parts in all the views.

Let the numeral 5 designate a framework having upright end parts 6 and a flat bottom part 7 extending at right angles to the upright parts and adapted to be secured to a bench 8, or other suitable stationary support. To the top part of the upright members 6 of this framework is secured a plate 9, which is provided at its edge, adjacent the frame, with depending lugs 10, which are secured to the parts 6 of the frame by bolts 12. This plate 9 is offset from the frame 5, and is composed of side members 13 connected by webs 14, said members having short upwardly-projecting longitudinally-disposed flanges 15, forming guides for a carpenter's plane 16, which is employed in performing the spoke-tenoning function. The plate 9 is cut away between the parts 13 at its forward extremity to expose the extremity 17 of the spoke 18 upon which the tenon is to be formed, in order to give the knife of the plane access thereto. The spoke is held in position for forming the tenon thereon by means of an arm 19, which occupies a position directly below the table plate 9, its forward extremity 20 being upturned and pivotally connected with a curved arm 21 of the forward parts 6 of the frame, this pivotal connection being made by means of a bolt 22, which is journaled in the arm 21 of the frame, and threaded into a boss 23

formed on the upper extremity of the part 20, one side of the plate 9 extending upwardly, as shown at 24, forming a curved recess 25 into which the boss projects, the said recess forming a bearing for the pivoted end of the spoke-carrying arm. This pivoted extremity of the arm is equipped with a brad or tool 26, which is provided with a pin 27 extending approximately at right angles to the brad part of the device and entering a recess formed in the pivoted extremity of the arm. This tool is held in operative relation with the arm by means of a set bolt 28, which is threaded into the arm at right angles to the pin 27, the inner extremity of the bolt engaging the pin. This device 26 has a pointed extremity 29 adapted to enter the center of the extremity of the spoke upon which the tenon is to be formed, the opposite extremity of the spoke being held in the proper position by means of a screw 30 threaded into the lower part 31 of an upwardly-projecting member 32 of the said arm. This member 32 is provided with a slot 33 through which a set bolt 34 is passed, the opposite extremity of the bolt being threaded into an opening formed in a cooperating part 35 of the frame, this part being connected with the body of the frame by means of a web 36. The slotted member 32 of the arm has characters formed upon its rear edge, indicating the number of spokes which is used in the various wheels for which the tenon spokes are required. As shown in the drawing, Roman characters are placed thereon to indicate the numbers 10, 12 and 14. These numbers serve as guides for the adjustment of the arm 19.

In order to adjust the arm for the tenoning of spokes for a wheel having either of the aforesaid numbers, it is only necessary to loosen the set bolt 34 and move the arm 19 either up or down, as may be required, after which the set-bolt is tightened to maintain the arm in the proper position. The spoke is then put in place, the extremity to be tenoned being shoved against the point 29 of the tool 26, while the inner extremity of the screw 30 is caused to engage the center of the opposite extremity of the spoke, the engaging extremity of the screw being sharpened or made conical for the purpose.

In order that the extremity of the spoke to be tenoned may be properly adjusted, preparatory to the performing of the tenoning function, I employ a cross bar 37, which is secured to the arm 19 just below the position of the extremity of the spoke to be tenoned when the latter is in place. This cross bar extends at right angles to the body of the spoke carrying arm, and I slidably mount upon each extremity thereof a gage-plate 38, the inner edge of the said plate extending at right angles to the cross bar.

Before commencing the tenoning operation, one side 39 of the end of the spoke to be tenoned should be finished to lie in a plane at right angles to the faces of the extremity of the spoke after the tenon is formed thereon. Hence, when the spoke is placed in position, it is so centered and adjusted upon the pointed tool 26 and the screw 30 that this finished surface of the extremity to be tenoned shall engage the adjacent extremity of the gage plate. The plate 16 is then employed, being supported by the table plate 9, to properly fashion the upper face of the tenon end of the spoke. The latter is then released by loosening the screw 30 and turned so as to bring the opposite side of the corresponding end of the spoke uppermost. The opposite gage plate is then run up against the finished vertical side of the tenon end of the spoke, which was previously engaged by the opposite gage plate. The spoke is then tightened in place, and its other surface finished by the use of the plane in the same manner as before. As shown in the drawing, the gage plates are provided at their lower extremities with cast portions 40, which are open to receive the cross bar, and are slidable freely thereon, set-bolts 41 being employed to lock them in the adjusted position.

Having thus described my invention, what I claim is:

1. In a spoke tenoning machine, the combination with a stationary frame and a tool, of a spoke holding arm, a supporting plate for the shaping tool, said plate being located above the spoke holding arm, and means mounted on the arm comprising gage plates adapted to alternately engage the opposite sides of the tenoned end of the spoke for securing the said spoke in place.

2. In a tenoning machine, the combination with a suitable frame and a tool, of a plate secured to the frame for supporting said tool, an arm arranged underneath the plate, a cross-bar mounted thereon, and means slidably mounted on the said cross-bar for holding the spoke in place during the tenon shaping act.

3. The combination with a stationary frame, and a tool, of a plate carried by the frame and offset therefrom, an arm arranged beneath the plate for holding the spoke in place and equipped with a brad, a cross-bar mounted upon the said arm, and a gage plate supported by the cross-bar and having its face extending at right angles to the tool-supporting plate for engagement with the finished vertical side of the tenon end of the spoke, substantially as described.

4. The combination with a frame including a body part adapted to be secured to a stationary frame, and a top plate offset from the body part for supporting a tool, of a spoke arm having an upturned forward ex-

5 tremity pivotally connected with the frame and a brad point mounted thereon, and an upturned rear extremity having a screw member journaled therein coöperating with the brad point, the said rear extremity being adjustably connected with the frame to change the position of the arm and cause the shaping of the tenon to conform to that re-

quired by wheels having spokes varying in number, substantially as described.

10 In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN BERGSTROM.

Witnesses:

CLARA E. BRADEN,  
F. E. BOWEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."