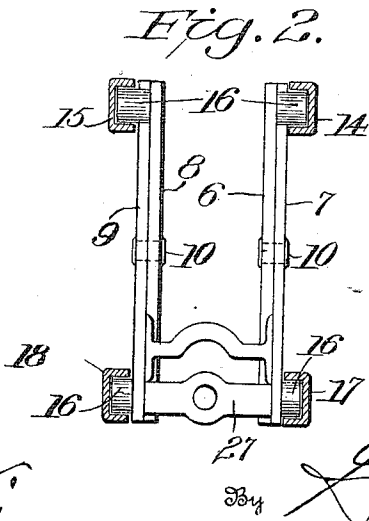
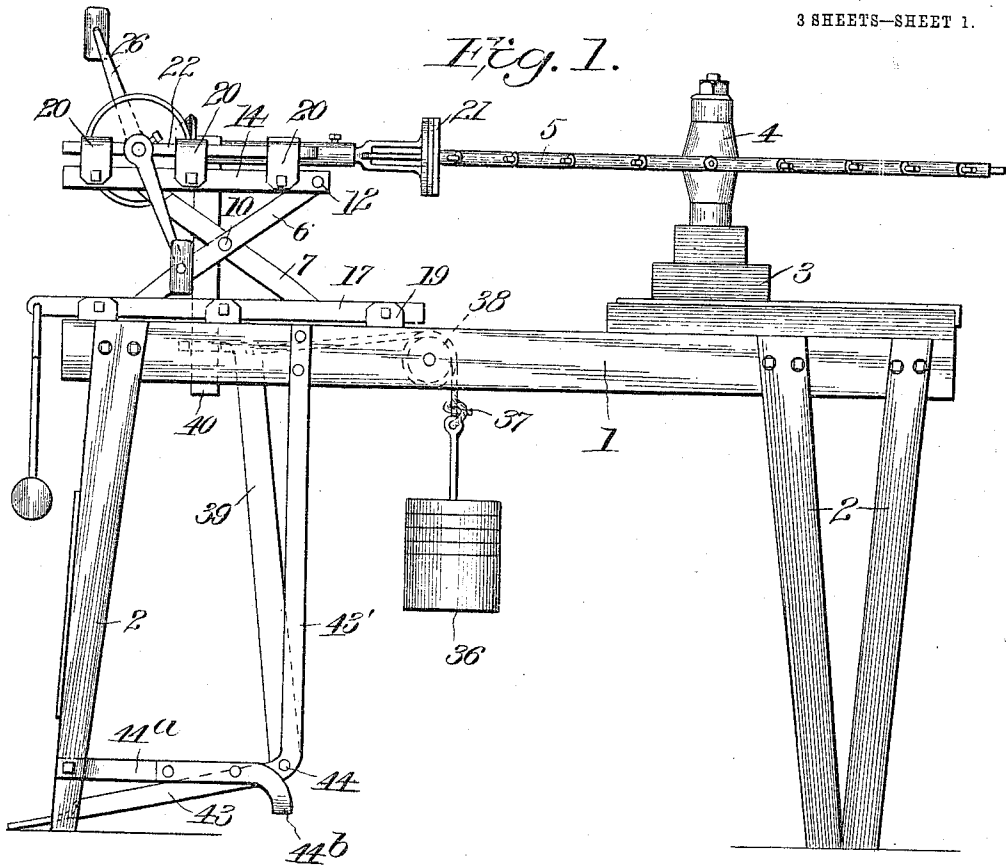


G. AVERY.
SPOKE TENONING MACHINE.
APPLICATION FILED AUG. 23, 1909.

964,738.

Patented July 19, 1910.

3 SHEETS—SHEET 1.



Witnesses
W. Walker
George Oltsch

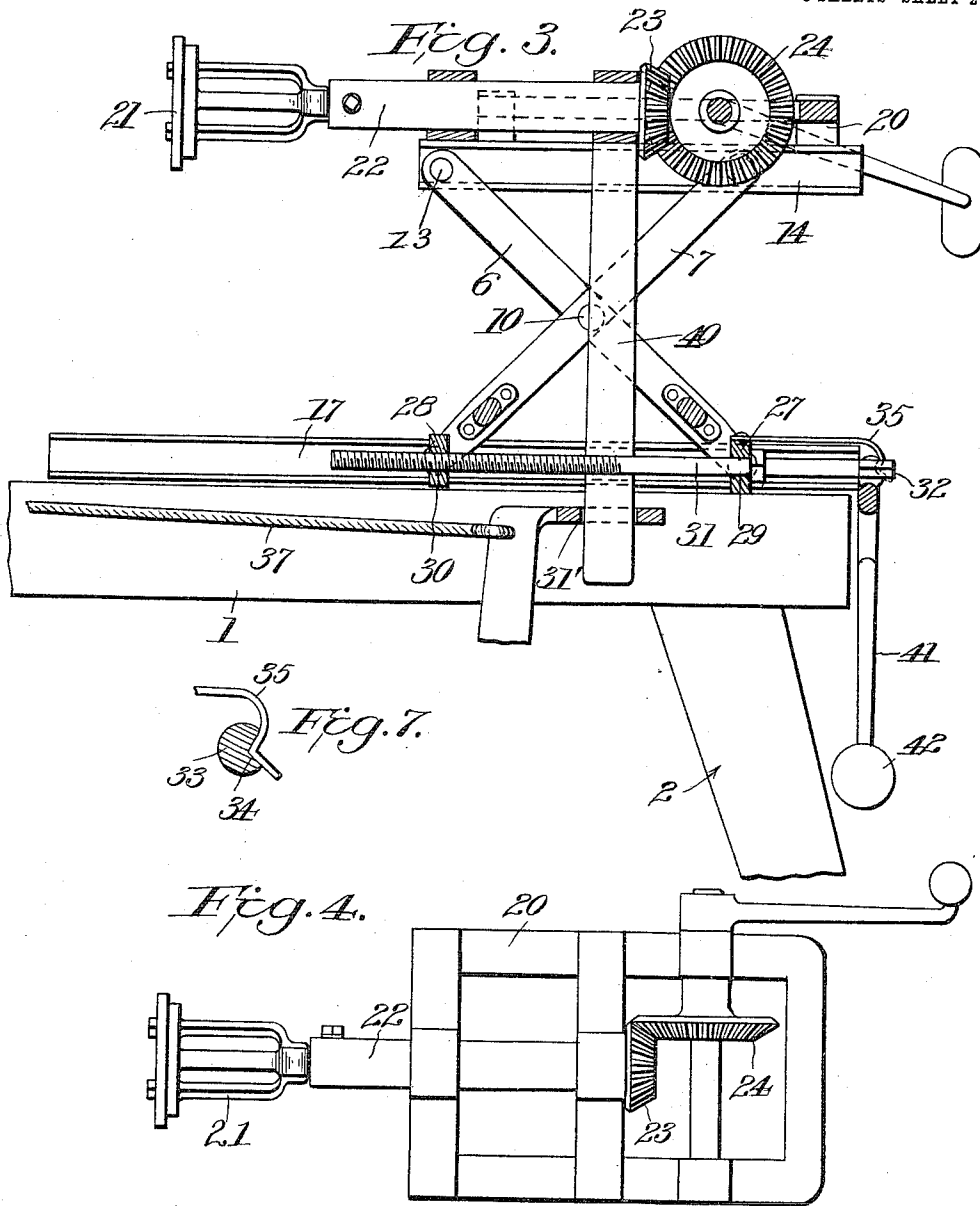
Inventor
Gus Avery
By *J. C. [Signature]*
Attorney

G. AVERY.
SPOKE TENONING MACHINE.
APPLICATION FILED AUG. 23, 1909.

964,738.

Patented July 19, 1910.

3 SHEETS—SHEET 2.



Witnesses
C. H. Walker
George Oltsch

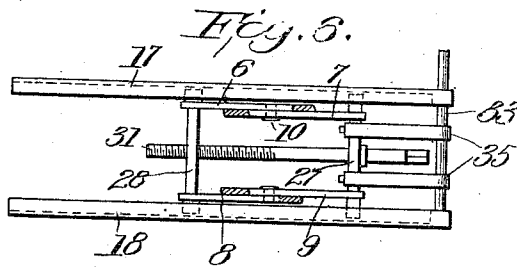
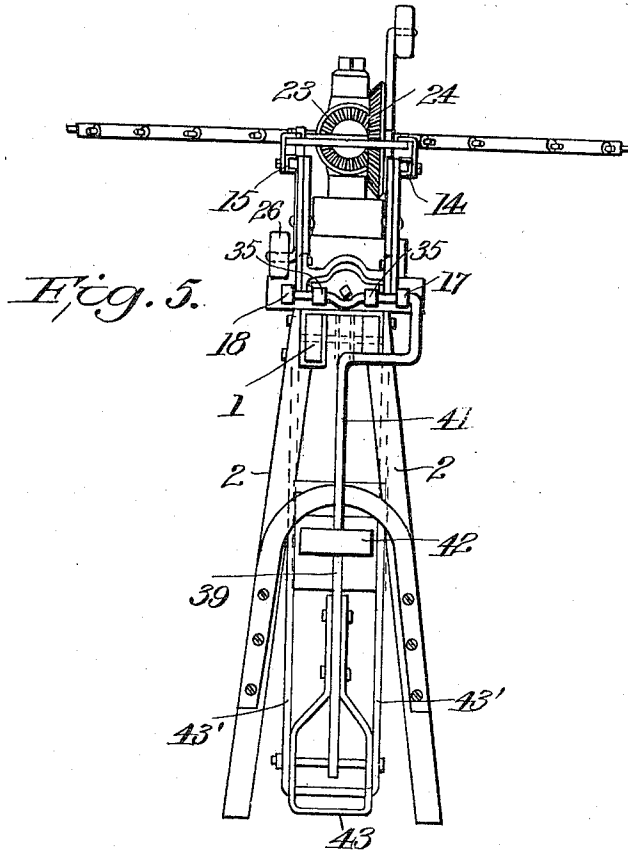
Inventor
Gus Avery
By *J. C. Holman*
Attorney

G. AVERY.
SPOKE TENONING MACHINE.
APPLICATION FILED AUG. 23, 1909.

964,738.

Patented July 19, 1910.

3 SHEETS—SHEET 3.



Witnesses
W. H. Baker,
George Oltsch.

Inventor
Gus Avery
By *J. H. [Signature]*
Attorney

UNITED STATES PATENT OFFICE.

GUS AVERY, OF SOUTH BEND, INDIANA, ASSIGNOR OF ONE-HALF TO WALTER DONOVAN, OF SOUTH BEND, INDIANA.

SPOKE-TENONING MACHINE.

964,738.

Specification of Letters Patent.

Patented July 19, 1910.

Application filed August 23, 1909. Serial No. 514,163.

To all whom it may concern:

Be it known that I, GUS AVERY, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Spoke-Tenoning Machines, of which the following is a specification.

This invention relates to spoke tenoning machines.

One object of the invention is to provide a spoke tenoning machine embodying such characteristics that the carriage which carries the mechanism for operating the tenoning tool may be raised and lowered, as desired, and wherein the carriage may have a forced feed in the direction of the wheel so that the operator of the machine has to pay attention only to the tenoning mechanism operating means.

Another object of the invention resides in the provision of a comparatively simple, inexpensive, durable and efficient machine for tenoning spokes of wheels and embodying among other characteristics means whereby the carriage and its tenoning element may have a forced feed operation and means whereby the carriage may be moved automatically against the forced feed movement.

A still further object of the invention is to simplify the construction and arrangement of the parts of the devices now commonly used for the purpose of tenoning spokes of wheels.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes may be made in the form, proportion, size and minor details without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of the invention. Fig. 2 is a sectional view through the upper and lower tracks upon which the carriage of the machine is operated, illustrating particularly the means for adjustably supporting the carriages to show their operative connection with the tracks. Fig. 3 is an enlarged longitudinal sectional view of the invention. Fig. 4 is a top plan view. Fig. 5 is an end

view. Fig. 6 is a plan view of the lower track upon which the carriage operates. Fig. 7 is an enlarged detail view illustrating the locking means to hold the carriage against the action of the force-feed for the carriage.

Referring now more particularly to the accompanying drawings, the reference character 1 indicates a frame provided with suitable supporting legs 2.

The character 3 indicates a base upon which the hub 4 of the wheel may be supported for the purpose of disposing the spokes 5 in proper position for tenoning purposes.

In the present invention there is employed a carriage which is movable backwardly and forwardly and which when released from its locked position is adapted to have a forced feed toward the wheel. The carriage embodies U-shaped or channeled sills 14 and 15, webs 27 and 28 and spaced links 6 and 7 and 8 and 9. The links 6 and 7 cross each other intermediate their ends and at their points of intersection they are pivotally connected together at 10, the links 8 and 9 being pivotally connected in the same manner. The links 6 and 8 are fixedly secured at 12 and 13, respectively, to the sills 14 and 15, with their free ends provided with lateral rounded offsets forming bearings 16 adapted to travel in the channeled or U-shaped tracks 17 and 18, fixedly secured to the frame 1 by means of metallic strips 19 or in any other suitable manner. The opposite ends of the links are also provided with lateral rounded offsets 16 adapted to slide in the sills and the tracks.

By virtue of the pivotal connection 10 between the arms 6 and 7 and 8 and 9, the carriage may be raised and lowered because of the lazy-tong-like connection between the sills and the track members, the track members being fixed against movement and the sills being permitted to move toward and away from the track members by reason of the link connections 6 and 7 and 8 and 9.

Mounted upon the vertically adjustable carriage is illustrated a tenoning bit 21 carried by a spindle 22 upon which latter is a beveled gear 23 designed to mesh with a beveled gear 24, mounted upon a shaft 25, upon the ends of which latter are secured the operating handles 26. The tenoning bit 21 may be readily removed and a boring or

rimming tool or any other tool may be substituted, and it will be understood that the spindle upon which the tool 22 is mounted, together with the beveled gears 23 and 24 and the operating handle 26 are immaterial as regards their construction and arrangement, the essential feature of the present invention residing in the carriage and the means for mounting the same for movement toward and away from the wheel.

Connecting the lower ends of the links 7 and 9 is a connecting web 28, while connecting the lower ends of the links 6 and 8 is a connecting web 27, these connecting webs 27 and 28 being provided with apertures 29 and 30, respectively, the aperture 30 of the connecting web 28 being screw threaded for a working fit with the screw threaded inner end of the operating screw 31, whose outer end is formed at 32 to receive a wrench to permit of rotation of the operating screw 31, the rotation of which will cause the connecting webs 27 and 28 to move toward and away from each other according to the direction of the rotation of the screw and accordingly raise and lower the carriage, that is, move said links on their pivots and raise and lower the sills 14 and 15 toward and away from the lower track sections 17 and 18 for the purpose of alining the tool 21 with the spokes 5 of the wheel, as will be readily understood.

Journalled in the outer ends of the track members 17 and 18 is a shaft 33 which is provided with a groove 34 adapted to receive the springs 35 secured to the carriage for the purpose of holding the latter outwardly away, from the spokes of the wheel against a forced forward feed superinduced by a weight 36 connected to which latter is a cable 37 passing over a pulley 38 and connected to the downwardly directed arm 39 which has connection with the depending arm 40 of the carriage, whereby, when the springs 35 are disengaged from the groove 34 of the shaft 33 by simply elevating the weighted arm 41 secured to one end of the aforesaid shaft 33 to turn the latter to throw the groove 34 out of coöperative relation with the springs 35, the carriage will move forwardly toward the wheel under what may be truly termed a forced feed, as hereinbefore stated. When the weighted arm 41 is released, its weighted end 42 will throw the same to its downward position by gravity and consequently revolve the shaft 33 to its normal position so that when the carriage is forced backwardly against the weight 36, the springs 35 will automatically engage in the groove 34 in the shaft 33.

The character 43 indicates a foot lever fulcrumed at 44 in the support 43', 44^a and 44^b and having its upper end 39 connected at 31' to the downwardly depending arm 40, which latter is fixed to the carriage, as

already stated, and by virtue of which connection and upon depression of the foot lever or treadle, the carriage will return to its normal position against the action of said weight 36 and cause the springs 35 to automatically engage in the groove 34 of the shaft 33, as already stated.

By virtue of the forced feed of the carriage all the operator has to do for tenoning or boring or other purposes, is to operate the handles 26 of the tenoning or boring mechanism.

What is claimed is:—

1. In a spoke tenoning machine, a frame, a carriage including sills and supporting links, a tenoning mechanism supported on the carriage, tracks upon which the carriage is movable, the ends of all of said links sliding on the tracks and the free ends of certain of the links being pivotally secured to the sills and the upper ends of the remaining links being free to move on the sills.

2. In a spoke tenoning machine, a frame, tracks secured to the frame, a carriage including sills and supporting links, all of the links having slidable engagement with the tracks, said links being arranged in sets with the links of each set pivotally connected together whereby the sills may be raised and lowered toward and away from the tracks and a tool carried by the sills.

3. In a spoke tenoning machine, a frame, tracks secured to the frame, a carriage including sills and links to support the sills, all of the links having slidable engagement with the tracks, said links being arranged in sets with the links of each set pivotally connected together whereby the sills may be raised and lowered toward and away from the tracks, an arm extending between the sills and the tracks, a treadle having connection with said arm, a weight having connection with the treadle and a tool carried by the sills.

4. In a spoke tenoning machine, a carriage including sills and foldable supporting links pivotally connected together, a weight having connection with the carriage to force the same normally forward, and spoke tenoning mechanism supported by the carriage.

5. In a spoke tenoning machine, a frame, spaced tracks secured to the frame, the tracks having upper and lower flanges, pairs of oppositely disposed links pivotally connected together and each link having a rounded projection at its lower end for engagement between the flanges of said tracks, web connections between the lower ends of opposite links, a screw operable in said web connections to draw the lower end of the links toward each other or force them away from each other, sills having connection with the upper ends of said links, the sills, the links and said web connections constituting a carriage, a tenoning mechanism carried by

the sills and movable upwardly and downwardly with the sills when said screw is operated to operate said links as aforesaid, and a weight having connection with the carriage to force the same normally in one direction.

6. In a spoke tenoning machine, a frame, spaced tracks secured to the frame, the tracks having upper and lower flanges, pairs of oppositely disposed links pivotally connected together and each link having a rounded projection at its lower end for engagement between the flanges of said tracks, web connections between the lower ends of the links of each track, a screw operable in said web connections to draw the lower ends of the links toward each other or force them away from each other, sills having connection with the upper ends of said links, the sills, the links and said web connections constituting a carriage, a tenoning mechanism carried by the sills and movable upwardly and downwardly with the sills when said screw is operated to operate said links as aforesaid, a weight having connection with the carriage to force the same normally in one direction, an arm depending from the carriage, a foot lever having connection with said arm to shift the carriage against said forced feed movement, a shaft journaled in said tracks and provided with a groove, springs having connection with the carriage and arranged for engagement in the groove of said shaft to lock the carriage against said forced feed movement, and a weighted arm having connection with said shaft to rotate the same to effect a release of said springs from the groove of said shaft to permit of the forced feed movement of the carriage.

7. In a spoke tenoning machine, a frame,

tracks secured to the frame, sills arranged above the tracks, link connections between the sills and tracks, all of the links having slidable engagement with the tracks, said links being so arranged, that the sills may be raised and lowered toward and away from the tracks, an arm extending between the sills and tracks, a treadle having connection with said arm, a weight having connection with the treadle, said weight being adapted to apply force-feed to the carriage, means constructed and arranged to lock the carriage against the action of the weight and a spoke tenoning mechanism carried by the sills.

8. In a spoke tenoning machine, a carriage having supporting links pivotally connected together, a weight having connection with the carriage to force the same normally forward and spoke tenoning mechanism supported by the carriage.

9. In a spoke tenoning machine, a frame, a carriage, a tenoning mechanism on the carriage, a weight having connection with the carriage to force the same normally forward, a shaft journaled in the frame and provided with a longitudinal groove, means carried by the carriage and having portions for engagement in the groove of said shaft to lock the carriage against the action of said weight, and a weighted arm secured to the shaft to operate it to disconnect the last mentioned means from the groove of the shaft to permit the force-feed of the carriage under the influence of said weight.

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

GUS AVERY.

Witnesses:

GEORGE OLTSCHE,
G. M. COLE.