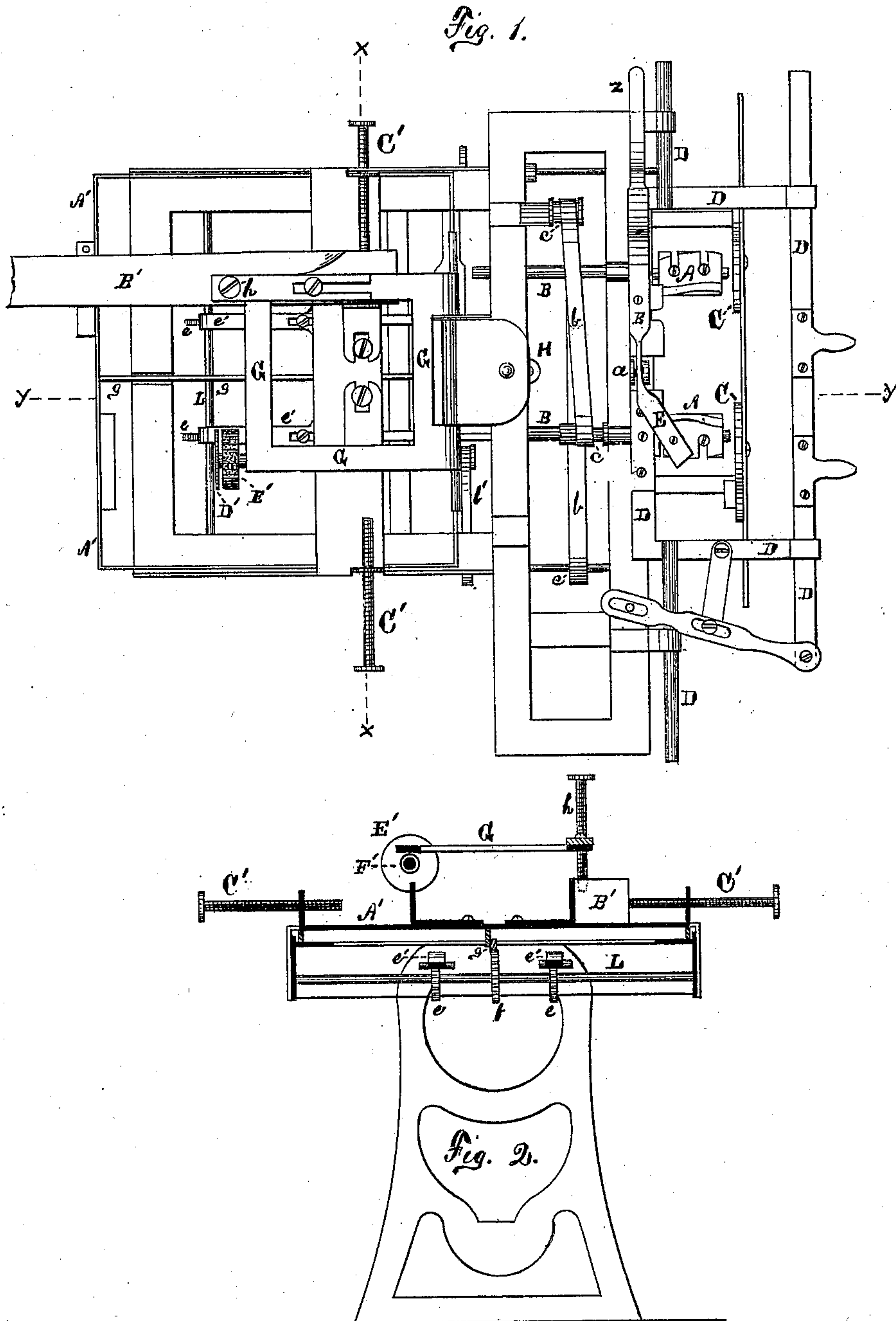


W. GALLAN.

MACHINE FOR THROATING AND FINISHING SPOKES.

No. 177,497.

Patented May 16, 1876.



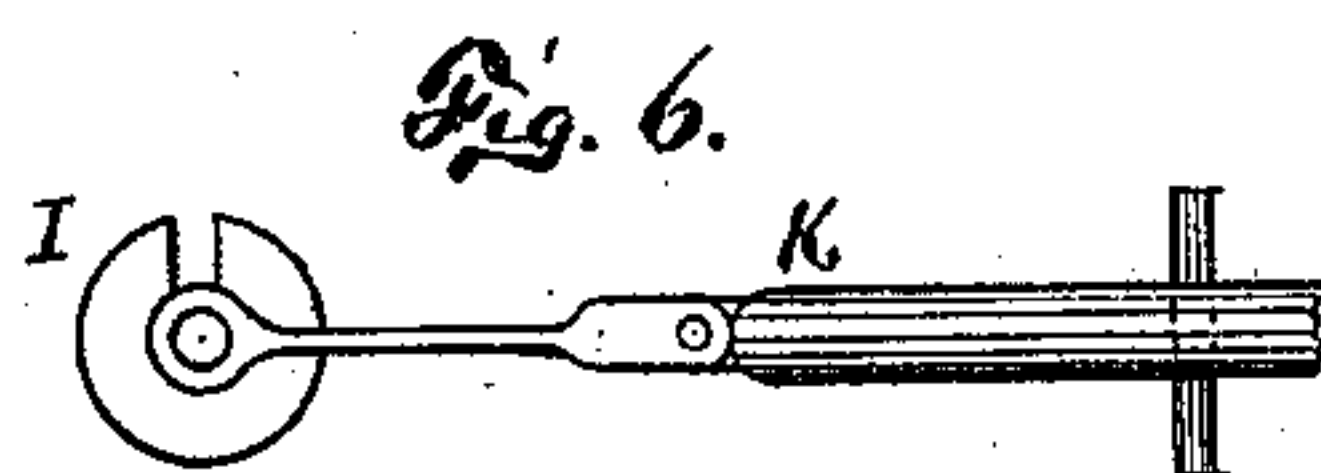
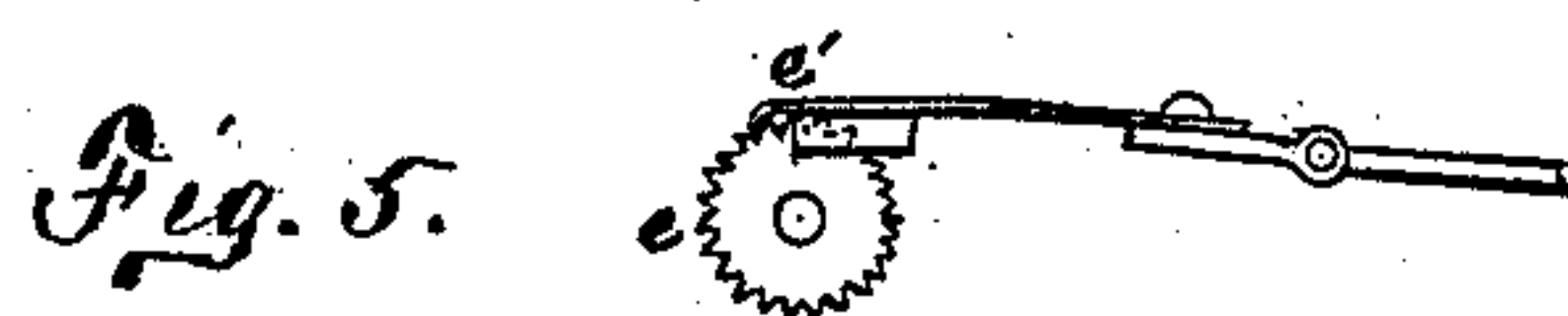
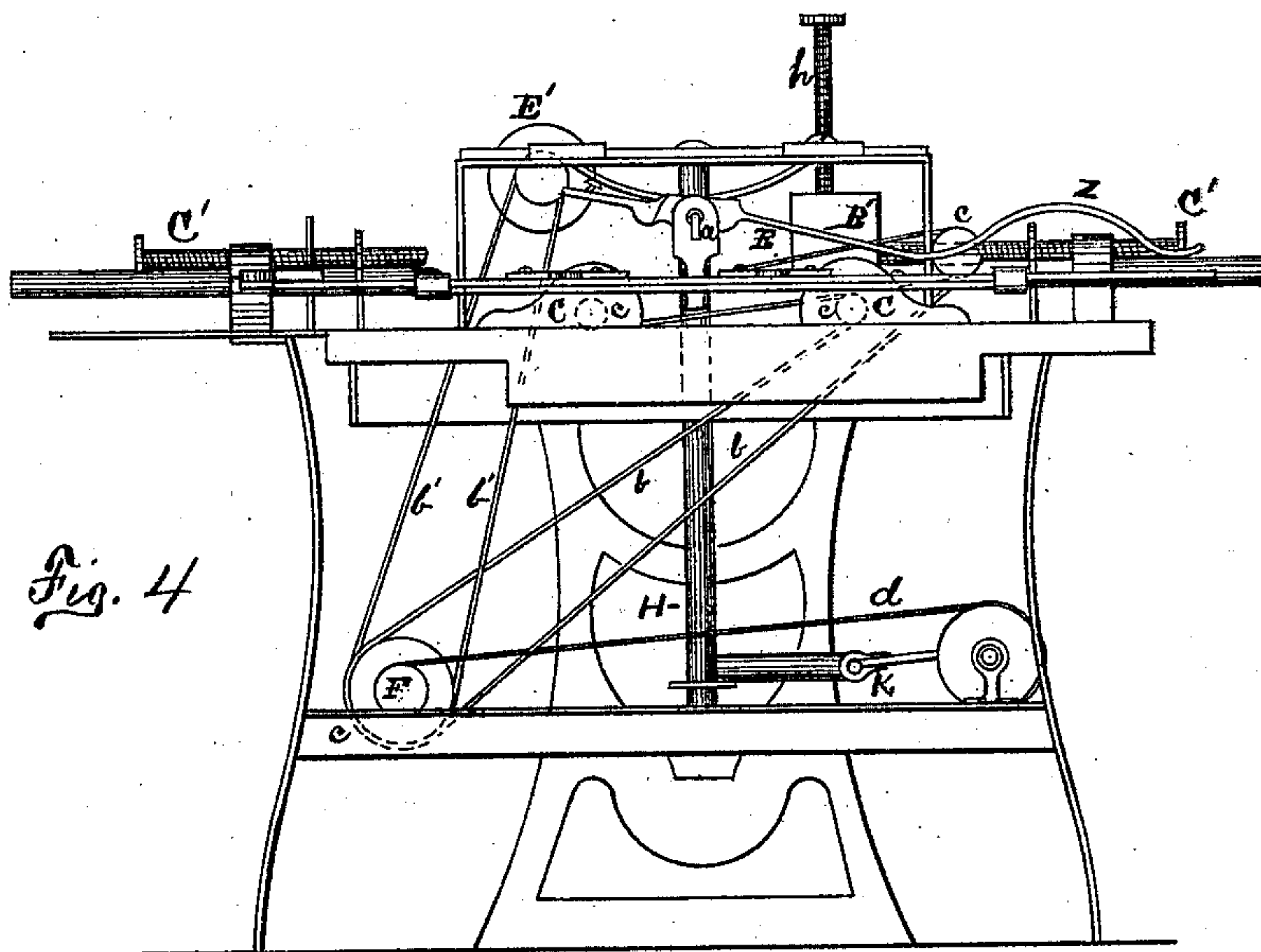
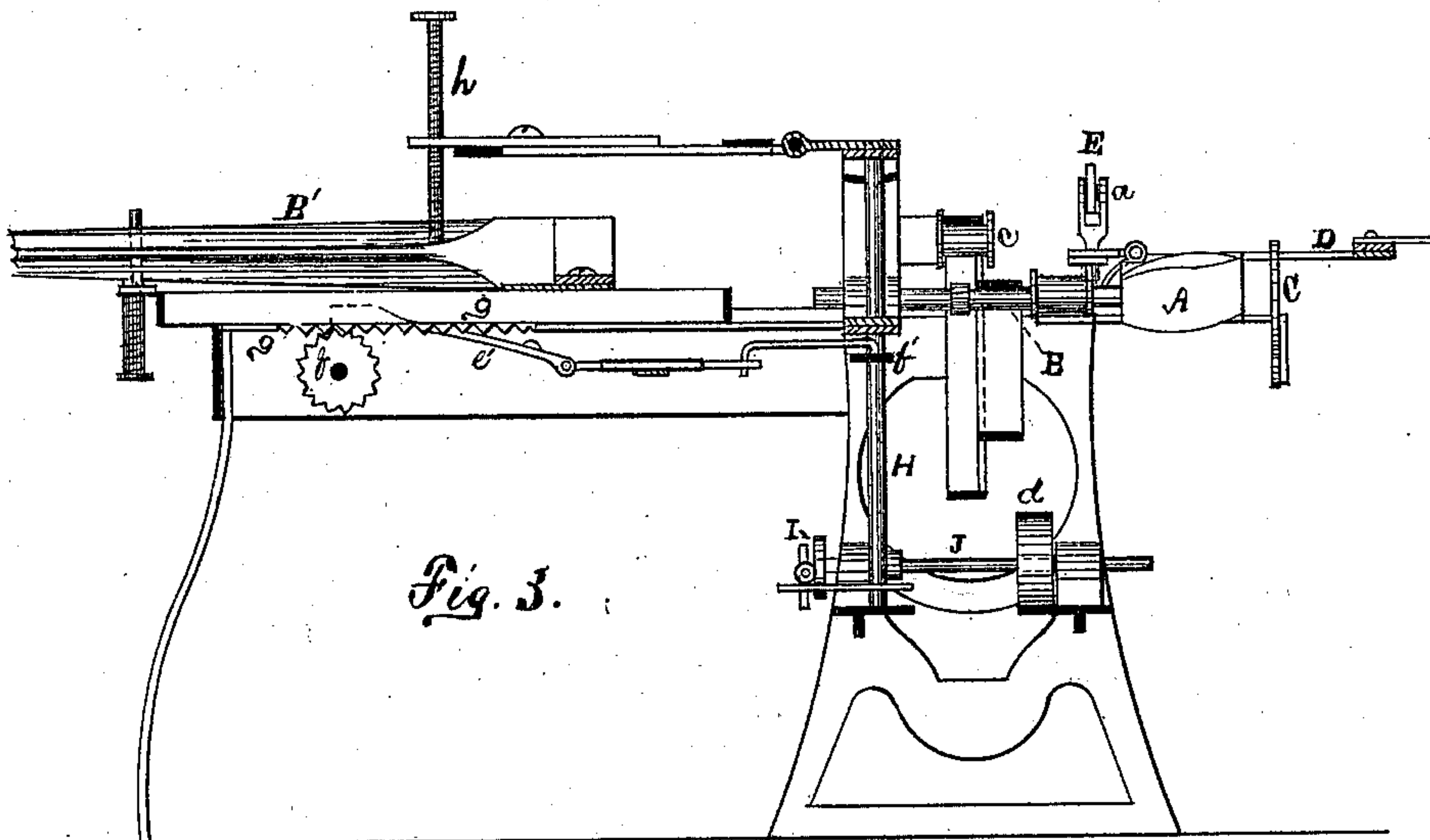
Witnesses  
Oliver Drake  
J. C. Tunbridge.

William Gallan

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# UNITED STATES PATENT OFFICE.

WILLIAM GALLAN, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN MACHINES FOR THROATING AND FINISHING SPOKES.

Specification forming part of Letters Patent No. **177,497**, dated May 16, 1876; application filed October 19, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM GALLAN, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machines for Throating and Finishing Spokes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in machines for throating and finishing spokes for road wagons and carriages, the object of which is the construction of a machine which will perform the work referred to in a more perfect and satisfactory manner, and in less time.

My invention consists, first, in constructing and arranging the cutters so as to revolve in opposite directions, thereby enabling the operator to cut both sides of the throat of a spoke from the face edge, the advantage of which will be readily seen and understood when it is known that heretofore the cutters have been constructed and arranged to cut but one way, and consequently a very large percentage of the spokes are spoiled in cutting, as one side must of necessity be cut from the back edge, and in cutting thus from the back to the front, if the knives be dull or the wood brittle, or even if these conditions do not exist, the peculiar form given to the face-edge of a spoke at this point is such that the wood is often torn away therefrom, and thus, as above stated, a great many spokes are spoiled in this operation of throating, thereby entailing a great loss both in labor and material.

My invention consists, second, in having a circular saw and sand or emery wheel, (both should be adjusted upon the same shaft,) and certain feed attachments so arranged and operated as that the throat of a spoke, which on either side is both concave and convex, can be completely, perfectly, and automatically finished by and exactly to any desired pattern, though reference is had more particularly to what is known as the "Brewster" pattern or finish.

The accompanying drawings illustrate the nature and object of my invention, in which Figure 1 is a top or plan view of a machine combining my improvements; Fig. 2, a sectional view of the same, taken through the lines *x*; Fig. 3, a section through the lines *y*; Fig. 4, an end view; and Figs. 5 and 6, detail views.

Similar letters of reference indicate corresponding parts in the several figures.

In carrying out my invention I, in the first place, provide the machine with two sets of knives or cutters, A, (see Figs. 1 and 3,) which are each adjusted and secured upon separate shafts B, (though this is not essentially necessary, as both may be secured upon one and the same shaft and the same result obtained,) which are made to revolve in opposite directions, so that a spoke may be presented with the face edge to the knives upon either or both sides, the formers C, (see Figs. 1, 3, and 4,) in this case being made stationary instead of adjustable, as heretofore. The spoke is held in position on a sliding frame, D, (see Fig. 1,) by means of a clamp or lever, E, which is pivoted upon said frame D at *a*, so that it will hold a spoke to either set of cutters by pressing down or elevating the handle Z, as occasion may require. Power and speed are communicated to the cutters A from the main or driving shaft F by means of a suitable belt, *b*, and pulleys *c*, all as shown and indicated in the several figures above referred to.

In carrying out the second part of my invention, which relates, as above set forth, to finishing the throat of a spoke ready for use subsequent to its having been turned or throated, I construct a sliding frame, A', upon which the pattern B' and spoke are secured by means of suitable set-screws C' or other convenient device, as shown and indicated in Figs. 1, 2, and 3. A fine-toothed circular saw, D', and polishing-wheel E', the diameters of which are about equal, are adjusted in close proximity to each other upon a shaft, F', having its bearings on a vertically and laterally adjustable frame, G, which is secured upon the end of a vertical oscillating shaft, H, to which such oscillating motion is imparted by means of a cam or crank, I, secured to a shaft, J, driven by a belt, *d*, extending therefrom to the main shaft F, said



vertical shaft and crank being connected by means of a suitable coupling arm or rod, K, all as shown and indicated in Figs. 1, 2, 3, 4, and 6.

A forward and backward motion is imparted to the sliding frame A' in the following manner: Upon a shaft, L, having its bearings in the frame-work of the machine, are secured three ratchet or cog wheels, *e*, *e*, and *f*, the latter engaging with a central bar, *g*, in said sliding frame, which is notched and provided for the purpose, all as shown in Figs. 1, 2, and 3. Engaging with the former are dogs or clutches *e'* *e'*, which are connected to a cross-beam, *f'*, rigidly secured to the vertical shaft H, which, being caused to oscillate, as above set forth, acts upon the dogs or clutches *e'*, which engage alternately with the cog-wheels *e* *e*, thereby feeding or drawing the sliding frame A' inward little by little, as required, while, at the same time, and by the same oscillating motion of the shaft H, an alternating lateral motion is imparted to the frame G, from one side of which (opposite the saw and emery wheel) projects vertically a set-screw or guide-pin, *h*, far enough below said frame to have its point level with the lower periphery of said saw and emery-wheel, as shown and indicated in Figs. 2, 3, and 4. The pattern B' and the spoke, being each secured in its proper position on the sliding frame A', the former beneath the set-screw or guide-pin *h*, and the latter beneath the saw and emery-wheel, the result will be obvious. The set-screw or guide-pin resting upon the pattern, and the saw, &c., upon the spoke, and moving from side to side as the frame is drawn inward, the spoke will of necessity be finished to correspond exactly with the pattern, and, by means of the emery or polishing wheel, will at the same time be made perfectly smooth, and require no further dressing.

The saw-shaft is driven by a belt, *b'*, which connects with the main shaft F, as shown and indicated in the drawing. (See Fig. 4.)

Suitable provision is made for increasing and diminishing the feed-motion to the sliding frame A', and also the lateral movement of the frame

G, carrying the saw and polishing-wheel, for the purpose of adapting the machine to finish spokes of various sizes.

Having thus described my invention, I do not claim the combination of a single cutter and a carriage for presenting the spoke to the cutter, as this has been used before; but

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a spoke-cutting machine, of two cutters and devices for rotating them in respect to the spoke-carrier, as described, whereby the opposite sides of the spoke are reduced by the cutters successively, each operating from the front toward the rear edge of the spoke, as set forth.

2. The combination of the cutters, rotating in respect to the carriage, as set forth, and two independent formers, arranged as specified.

3. The combination of a circular saw, D', and emery-wheel E', so arranged and adjusted in relation to a spoke and pattern, B', as to finish and polish said spoke in conformity with said pattern, substantially as set forth.

4. The combination, with said saw D' and wheel E', of the shaft F', frame G, and oscillating shaft H, arranged and operating substantially as and for the purposes set forth and shown.

5. The combination of the frame G, carrying the saw D', wheel E', and set-screw or guide-pin *h*, with the sliding frame A', carrying the spoke, and pattern B', when operating substantially as and for the purposes set forth.

6. The combination, with the sliding frame A', carrying a spoke, and pattern B', of the shaft L, ratchet or cog-wheels *e*, *e*, and *f*, bar *g*, dogs or clutches *e'* *e'*, cross-beam *f'*, and shaft H, when operating substantially as and for the purposes set forth and described.

In testimony that I claim the foregoing as my own invention I affix hereto my signature in presence of two witnesses.

WILLIAM GALLAN.

Witnesses:

OLIVER DRAKE,  
J. C. TUNBRIDGE.