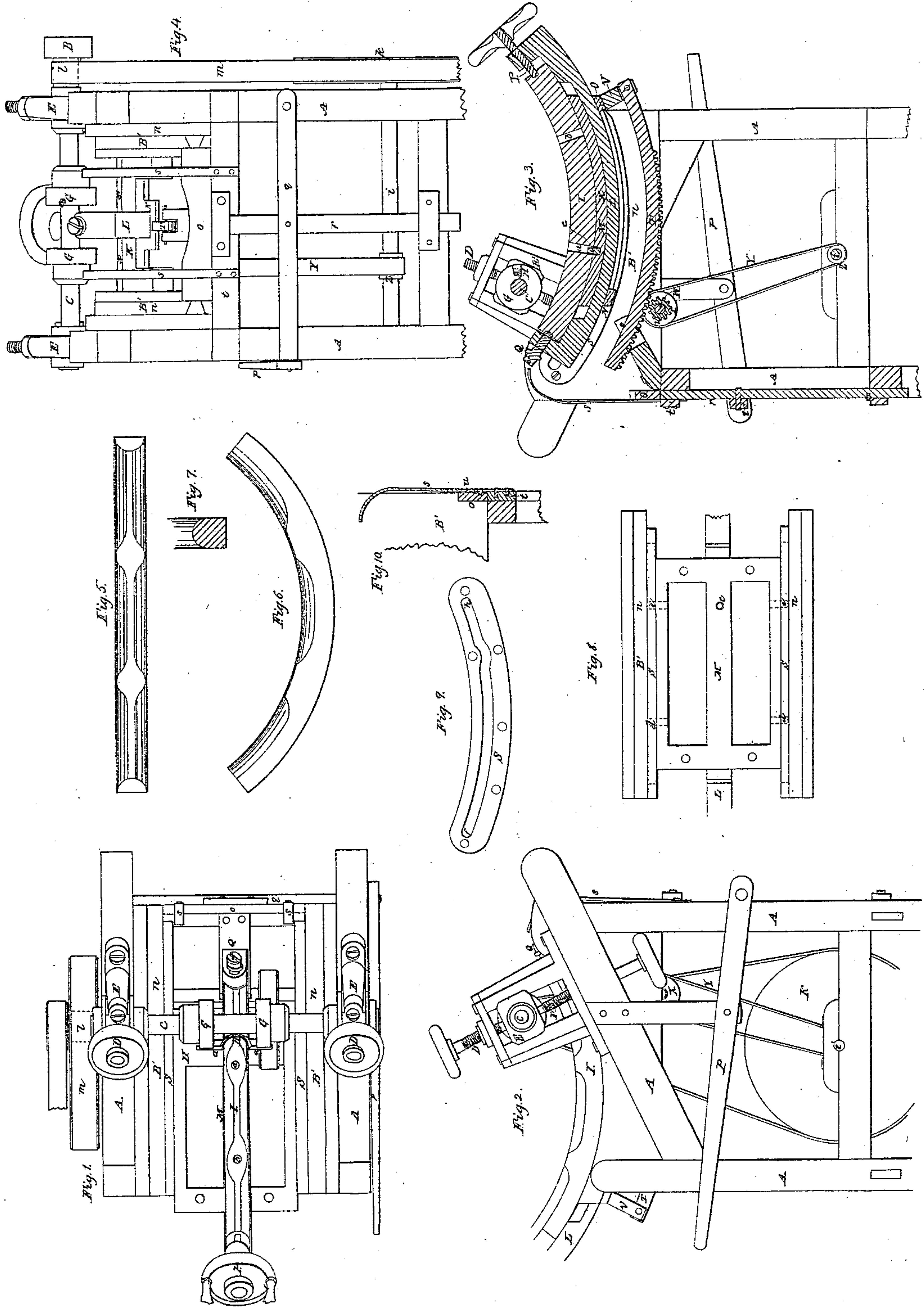


*R. H. Henry,
Making Fellies.*

N^o 2,860.

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UNITED STATES PATENT OFFICE.

ROBERT H. HENRY, OF BARRE, MASSACHUSETTS.

MACHINE FOR SHAPING THE INNER SIDE OR PERIPHERY OF FELLIES OF CARRIAGE-WHEELS.

Specification of Letters Patent No. 2,860, dated November 21, 1842.

To all whom it may concern:

Be it known that I, ROBERT HUGH HENRY, of Barre, in the county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Machinery for Giving the Requisite Form or Shape to the Inner Sides or Circumferences of Fellies of Wheels for Carriages, of which the following description, taken in connection with the accompanying drawings, forms a full and exact specification, the nature and principles of my improvements, by which they may be distinguished from others of like character, together with such parts thereof as I consider new and claim as my invention being therein duly represented.

Figure 1 of the drawings above mentioned exhibits a top view of my improved machine. Fig. 2, an elevation of one side or that on the right of the operative who attends the machine. Fig. 3, is a vertical central and longitudinal section of the machine, and Fig. 4, is an elevation of the end opposite to that at which the attendant usually stands.

Such other figures or drawings as may be necessary to a full description and understanding of the several parts or details, will be hereinafter referred to and explained.

The operative parts of the machine are supported and retained in their relative positions to each other by a suitable framework A constructed of wood or metal, the power which gives the requisite motion to them, being applied by means of a belt to a driving pulley B arranged upon one extremity of the cutting shaft C (see Fig. 1).

The shaft C is supported and revolves in suitable composition boxes E, E, as seen in the drawings, the same being so constructed, as to admit of a movement upward or downward by means of screws D, D, F, F, in order that the cutter or cutters of the shaft may be adapted to drop fellies of different depths. The cutting shaft C has two strong circular heads G G Figs. 1, 3, fixed upon it, (one of the said heads being arranged at a suitable distance, on each side of the center of the shaft) so as to admit between them and sustain the semi-circular or other proper shaped cutting knife H, which gives the necessary shape or form to the inner side of the felly section I.

At each extremity of the curve or semi-circle of the knife H an arm *a'* extends lat-

erally therefrom, (as seen in Fig. 1) and is secured or connected to one of the circular heads G, G; the cutting knife being thus held in position during its revolutions.

The section I of the felly to be dressed, is secured upon a curved carriage K by means of a curved bar L, which is suitably supported directly beneath the center bar M of the carriage, and slides freely to and fro, in the direction of its length, in its supports N, O, its ends being bent or turned upward at right angles to the bar, and having a screw P or Q passing through each, which screw being turned against the extremities of the felly section, confines the same between said ends. Previous to the felly section being arranged upon the carriage two holes *a, b*, Fig. 3, are bored through it, each being at the center of the mortises, for the reception of tenons upon the extremities of the spokes; the position of said holes being previously ascertained by applying the felly section upon two adjacent spokes as they extend from the hub. The holes *a, b*, serve to obtain the true position of the felly upon the carriage K, as when the felly section is applied to the carriage one of the holes receives a projection or metallic point *c* Fig. 3, extending perpendicularly from the top surface of the center bar M of the sliding carriage. As the carriage is moved under the cutting knife, all that part of the top of the felly section, extending a distance, on each side of the hole which receives the point *c*, equal to half of that between the centers of the two holes *a, b*, is dressed or shaped. This being accomplished, the position of the felly section is reversed upon the carriage that is to say, the other hole is placed over the point *c* and the opposite half of the said section is dressed or cut down in a similar manner to the first.

It is well known to wheelwrights that the portion of the interior of the felly against which the spoke abuts should be flattened or have a cylindrical surface (the axis of said cylindrical surface corresponding with the axis of the hub of the wheel), for the shoulders of the tenon to rest upon, while all that part between any two of the spokes is curved or rounded so as gradually to approach a semicircular form in the cross section at the center of the distance between the spokes. Fig. 5, is a top view and Fig. 6, is a side view of a felly section. Fig. 7, is a trans-

verse section of the felly taken centrally between the spokes.

At each spoke or in the center of the mortise thereof, the felly in its transverse section is square or rectangular, and from this rectangular shape at the spoke, the inner part of the felly is to be dressed down or made gradually to approximate toward the curve of Fig. 7, until it reaches the center of the distance between the two mortises of two adjacent spokes. In order that the cutting tool may impart the requisite shape to the felly as herein above defined each of the sides of the sustaining carriage K, should have two pins *d*, *e*, (see Fig. 8, which is a top view of the carriage K), extending therefrom, and which enter or are received into and move to and fro in a groove *f h* of one of two guiding plates S S (see Fig. 9, which is a side view of the plate S), which are applied or secured fast to the inner sides of the cheeks of a movable frame B', (to be hereinafter described), as seen in Fig. 1.

The groove *f h* of each plate should be so shaped as, when the carriage is impelled forward, to cause the front part of the carriage K to descend or fall away from the cutting knife when the knife approaches the hole in the felly over the projection *c*, and also to permit the carriage to rise, as the knife departs from the said hole—during the further progressive movement of the carriage. The shape of the groove calculated to produce the requisite effect is shown in Fig. 9.

The carriage is impelled forward by means of a curved toothed segment or rack T Fig. 3, connected to the lower side of the carriage by being hinged to a stud U projecting therefrom. The teeth of the segment T engage with those of a pinion V arranged upon a horizontal shaft W of the movable frame B' the said shaft having a pulley X upon it which receives motion by means of a band Y, from another pulley Z fixed upon another horizontal shaft *i*. This shaft *i* has a large pulley *k* on its extremity around which and a small pulley *l*, on the cutter shaft C, a belt *m* passes, so that the carriage K is moved forward by means of the rotation of the cutter shaft.

The frame B' before mentioned, consists of two planks or cheeks *n*, *n*, connected at their front ends by a cross bar *o* Figs. 1, 4. Each of the cheeks at its rear end is supported and turns upon a center pin or any other suitable device, applied to the frame A. The front end of the frame B' is free to be elevated and depressed, the object of raising it being to throw the pinion V into gear with the toothed segment, T, in order at the proper time, to cause the advance or forward movement of the carriage K. The

elevation of the front end of the frame B' is effected by a series of levers *p*, *q*, which raise an upright bar or rod *r*, whose top or upper end is in contact with the underside of the cross bar, *o*.

There are two vertical springs S, S, Figs. 1, 3, whose lowest ends are screwed or otherwise properly fixed to a cross bar 4 of the frame A, their upper ends being bent rearward as seen in Fig. 3. Each of these springs has a small stud or pin *u*, projecting from its rear side and when the frame B' is elevated by the levers before described, the studs by the action of the springs are forced into corresponding holes, or indentations formed in the front side of the cross bar *o*, and thus the frame B' is held by the studs in its elevated position, which position is maintained until the dressing of the felly is effected. This being accomplished, the front of the carriage K coming into contact with the tops of the springs S, S, bends them forward and removes the stud from the holes of the cross bar, and permits the frame B' to fall downward to its lowest position thus removing the felly from the action of the cutting knife. A vertical section of one of the springs S S together with the stud *u* and hole in the cross bar *o* is exhibited by Fig. 10.

By an arrangement of machinery substantially similar to the above, the cutting knife may be made to move back and forth or from the end toward the middle of the felly section, and be raised and depressed over a stationary bench or holder of the felly section, so as to give the requisite form or shape to the inner surface of said felly, but this I conceive to be only a vice versa application of my improved mechanism.

Having thus explained my invention I shall claim—

The above specified method of presenting the inner surface of the felly section to the proper operation of the rotary curved knife, that is to say, by raising and depressing the curved carriage K during its progressive motion forward or under the cutting knife, by means of the projections *d*, *e*, *d*, *e*, from the sides of said carriage, and grooves in the stationary side guiding plates S S in which said projections move, the whole being arranged and operating substantially as herein before described.

In testimony that the foregoing is a true description of my said invention and improvement I have hereto set my signature this sixth day of October in the year eighteen hundred and forty-two.

ROBERT HUGH HENRY.

Witnesses:

ELISHA NYE,
EZRA LINCOLN, Jr.