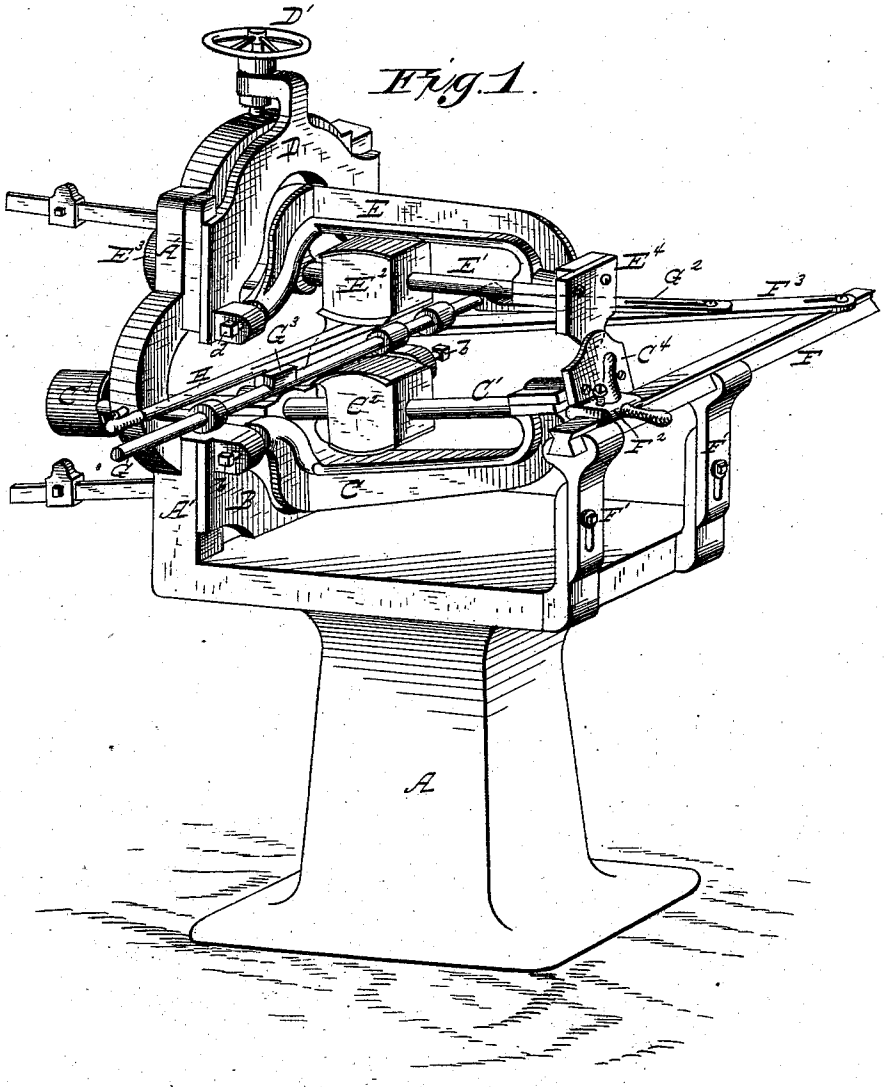
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W. H. DOANE & G. W. BUGBEE.

Spoke-Throating Machine.

No. 225,355. Patented Mar. 9, 1880.

Fig. 1.



Witnesses.
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Chas. A. Seale

Inventors
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George W. Bugbee
by their attorney
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N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

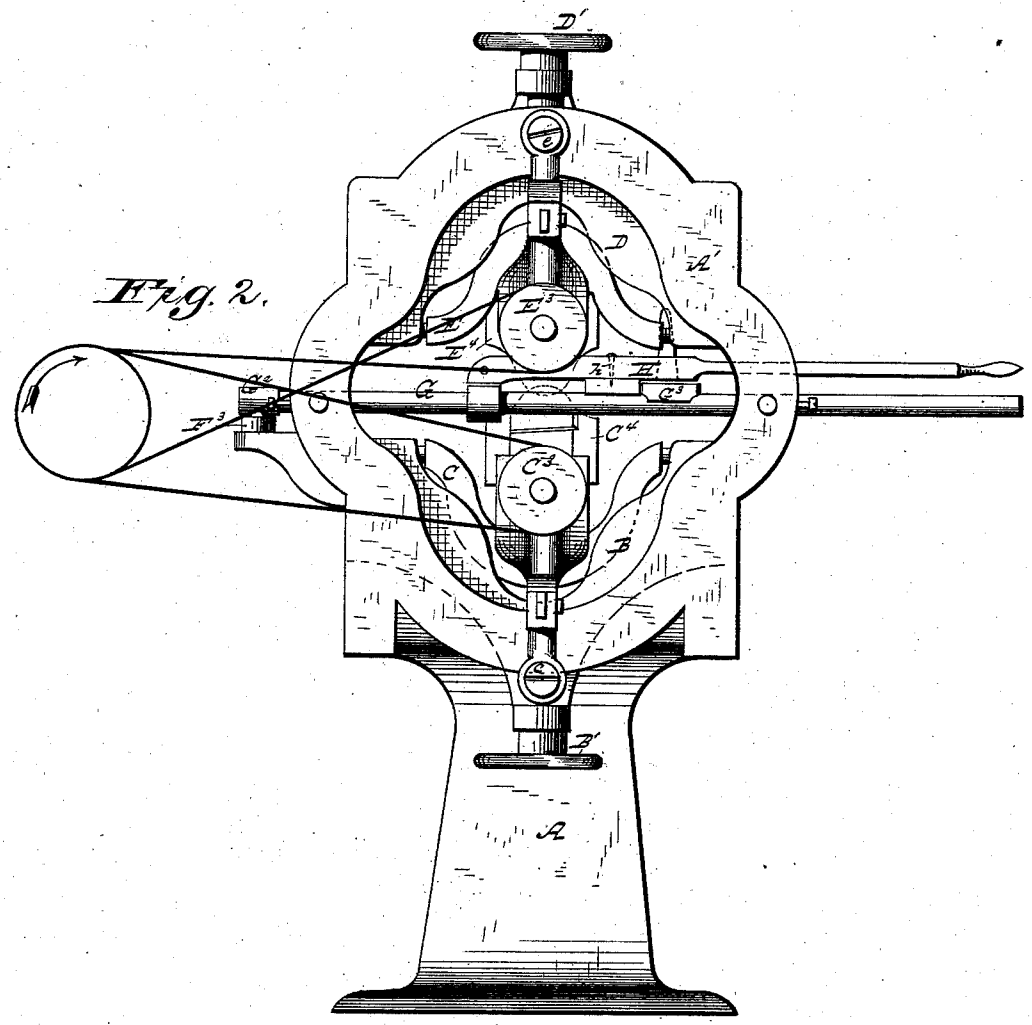
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Spoke-Throating Machine.

No. 225,355. Patented Mar. 9, 1880.

Fig. 2.



Witnesses.
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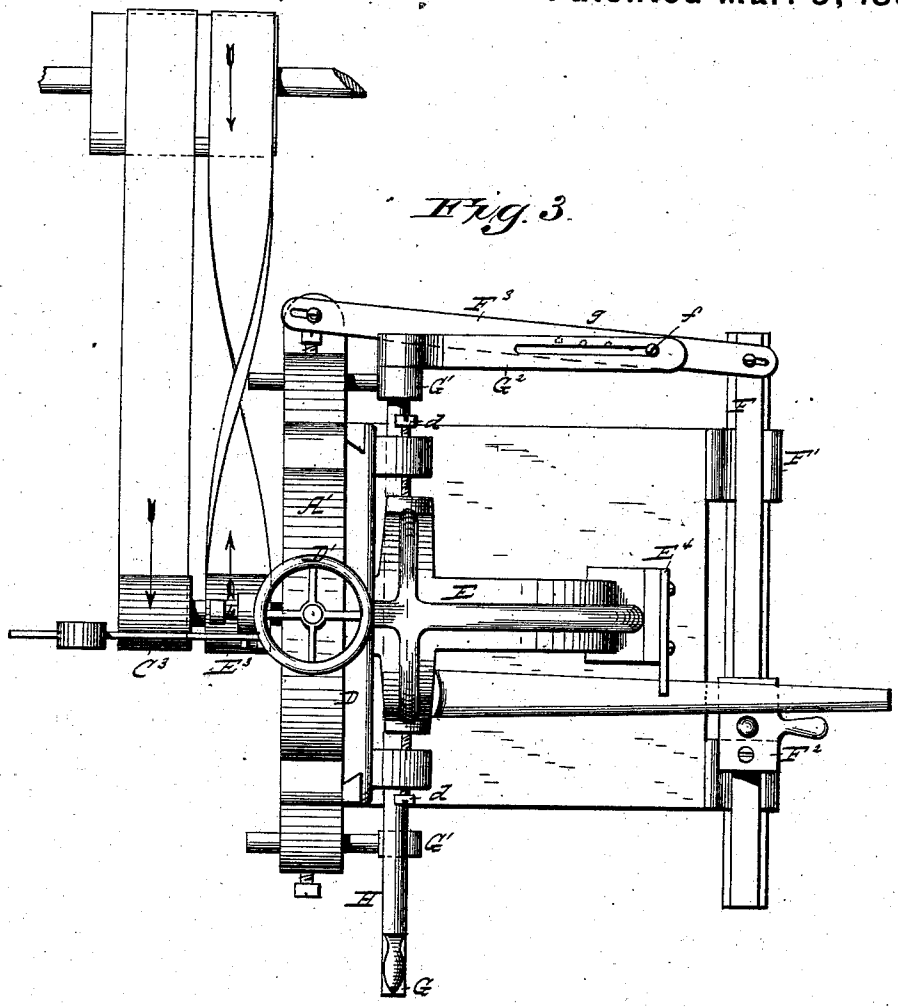
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W. H. DOANE & G. W. BUGBEE.

Spoke-Throating Machine.

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Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM H. DOANE AND GEORGE W. BUGBEE, OF CINCINNATI, OHIO, ASSIGNORS TO J. A. FAY & CO., OF SAME PLACE.

SPOKE-THROATING MACHINES.

SPECIFICATION forming part of Letters Patent No. 225,355, dated March 9, 1880.

Application filed January 20, 1880.

To all whom it may concern:

Be it known that we, WILLIAM H. DOANE and GEORGE W. BUGBEE, citizens of Ohio, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Spoke-Throating Machines; and we do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for throating spokes containing a pair of reversely-revolving cutter-heads mounted in pivoted hangers and a spoke-carrier, by means of which the spoke is fed in a defined plane through between the pair of cutter-heads and throated on both sides simultaneously by such cutter-heads.

The invention consists of various combinations of mechanical devices set forth in the claims.

The following are the principal devices out of which said combinations are made up: a pair of reversely-revolving cutter-heads; a pivoted hanger for each cutter-head; a pattern or guide on each pivoted hanger traversed by the spoke to determine the depth and contour of the cut across the spoke; an adjustable plate or bracket for each pivoted hanger to connect the latter adjustably with the main frame. Certain minor devices, hereinafter fully described, are also employed.

In order that the invention may be fully unstood, we have illustrated in the annexed drawings, and will proceed to describe, the best form thereof so far devised by us.

It should be understood, however, that we do not confine ourselves to the details of construction, as they may be greatly varied.

Figure 1 is a perspective view of the improved machine for throating spokes. Fig. 2 is a rear-side elevation of the same. Fig. 3 is a plan of the same.

The main frame or column A is, at the rear side of the machine, constructed with a housing, A′, a vertical stand with a large opening through it. On the lower portion of the housing is fitted, in vertical guides, an adjustable plate or bracket, B, from center screws, *b b*, of which is suspended the pivoted hanger C. The bracket B can be adjusted by a screw, B′, to raise or lower the hanger C. A similar plate or bracket, D, is fitted in vertical guides on the upper portion of housing A′, to carry the pivoted hanger E on center screws, *d d*. The bracket D can be adjusted by a screw, D′, to raise or lower the hanger E.

The cutter-head C^2 is fixed on the spindle C′ of hanger C, and a similar cutter-head, E^2, is fixed on the spindle E′ of hanger E. The rear ends of the spindles C′ and E′ carry pulleys C^3 and E^3, respectively, driven in opposite directions, preferably by horizontal belts from a single driving-pulley, one of the belts being straight and the other crossed, as indicated in Figs. 2 and 3.

The hangers should be so hung or balanced that normally they will have a tendency to move or swing toward each other. If necessary, weighted levers may be employed to effect the proper balance, as shown.

The hanger E has an arm projecting up behind the housing and provided with a set-screw, *e*, which, by striking against the housing, stops further downward swing of the front end of the hanger. The hanger C has a similar downwardly-projecting arm, which carries a set-screw, *c*, to strike the housing and stop further upward swing of the front end of said hanger. The front end of hanger C is provided with a detachable pattern or guide, C^4, and the front end of the hanger E carries a similar detachable pattern or guide, E^4. The guides are so placed that they may pass each other, and they may also be adjustably connected to the hangers.

The spoke is moved crosswise through between the cutter-heads and the patterns or guides by means of the slide-bars F and G. The slide-bar F moves in front of the guides in a pair of vertically-adjustable standards, F′ F′, and is provided with a rest, F^2, secured thereto by a set-screw, so as to be longitudinally adjustable on it, for supporting the outer or felly end of the spoke, said rest being constructed with an upright pin to serve

as an abutment for the spoke, and with a horizontal handle to enable the workman to grasp both the spoke and the rest with one hand in feeding a spoke through between the cutters. A cross-bar, F^3, is pivoted to the rear end of slide-bar F, and also pivoted to the housing A′, there being sufficient play in the pivot-connections to provide for free oscillations of said cross-bar under the rectilinear motions of the slide-bar.

The slide-bar G moves behind the rear ends of the cutter-heads in brackets G′ G′, adjustably secured to the housing A′, so that this slide may be adjusted horizontally toward or away from the ends of the cutter-heads. The rear end of the slide-bar G is provided with a laterally-projecting arm, G^2, by means of which it is connected with the oscillating cross-bar F^3. The arm has a long slot, *g*, which engages a pivot-pin, *f*, on the cross-bar. The position of pivot-pin *f* is between the pivots of the cross-bar, and the latter has a series of holes, in either of which said pivot-pin *f* may be inserted.

It will be observed that, while the slide-bars F and G always move together, the slide-bar F moves faster than the slide-bar G, and that the difference in their speed can be regulated by adjustment of pivot-pin *f*.

The slide-bar G has a permanent rest, G^3, against the forward rounded end of which the tenon of the inner or hub end of the spoke is to be placed. The tenon at the hub end of the spoke is clamped to the slide-bar G by a hand-lever, H, which is pivoted to said slide-bar some distance in advance of its rest G^3, and extends to that end of the slide-bar which is taken hold of by the workman in feeding a spoke through the machine. This clamping hand-lever lies close to the slide-bar G, so that both can be conveniently grasped with one hand.

The lever has a spur, *h*, to pinion the tenon of the spoke and prevent endwise motion under the operation of the cutter-heads, although it permits the horizontally-oscillating motion of the spoke due to the difference in the speeds with which the respective slide-bars F and G move. These slide-bars constitute the carrier for feeding the spoke through between the throating cutter-heads, and move the spoke in a defined plane, so that the spoke must operate on both patterns or guides, and thus govern the actions of both cutter-heads.

The spoke is to be placed with its face or front edge confronting the cutter-heads, and is in that position to be pushed through between the cutter-heads and the patterns or guides which govern them. The spoke will be throated simultaneously on both sides, and the cutting will begin at the front edge, where the cut is usually the deepest, and end at the rear edge, where the cut is usually more shallow. Both these features of the operation are very important.

The shape of the throats can be changed by substitution of different patterns or guides, as well as by adjustments of the various adjustable parts of the machine.

The machine might be used with a single cutter-head, pivoted hanger, and pattern to throat one side of a spoke only.

It will be observed that the shape of the spoke itself is a factor in determining the shape of the throat, so that the same guides may be used in cutting a round-like throat on a round spoke and a flat-like throat on a flat spoke.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, substantially as before set forth, of the pair of revolving cutter-heads, the pivoted hangers therefor, and the guides on the hangers in position to be traversed by the spoke.

2. The combination, substantially as before set forth, of a revolving cutter-head, the pivoted hanger therefor, and a guide fixed on the hanger in position to be traversed by the spoke.

3. The combination, substantially as before set forth, of the pivoted hanger of the revolving cutter-head, the guide on the hanger, and the adjustable bracket carrying the hanger.

4. The combination, substantially as before set forth, of the two slide-bars, the oscillating cross-bar connected to one of them, and the arm on the other pivoted on said cross-bar.

5. The combination, substantially as before set forth, of the two slide-bars, the oscillating cross-bar connected to one of them, the rigid arm on the other, and the shiftable pivot-pin for connecting said arm to the cross-bar.

In testimony whereof we affix our signatures in presence of two witnesses.

WM. H. DOANE.
G. W. BUGBEE.

Witnesses:
EDWARD GURNEY,
WILLIAM GUTHARDT.