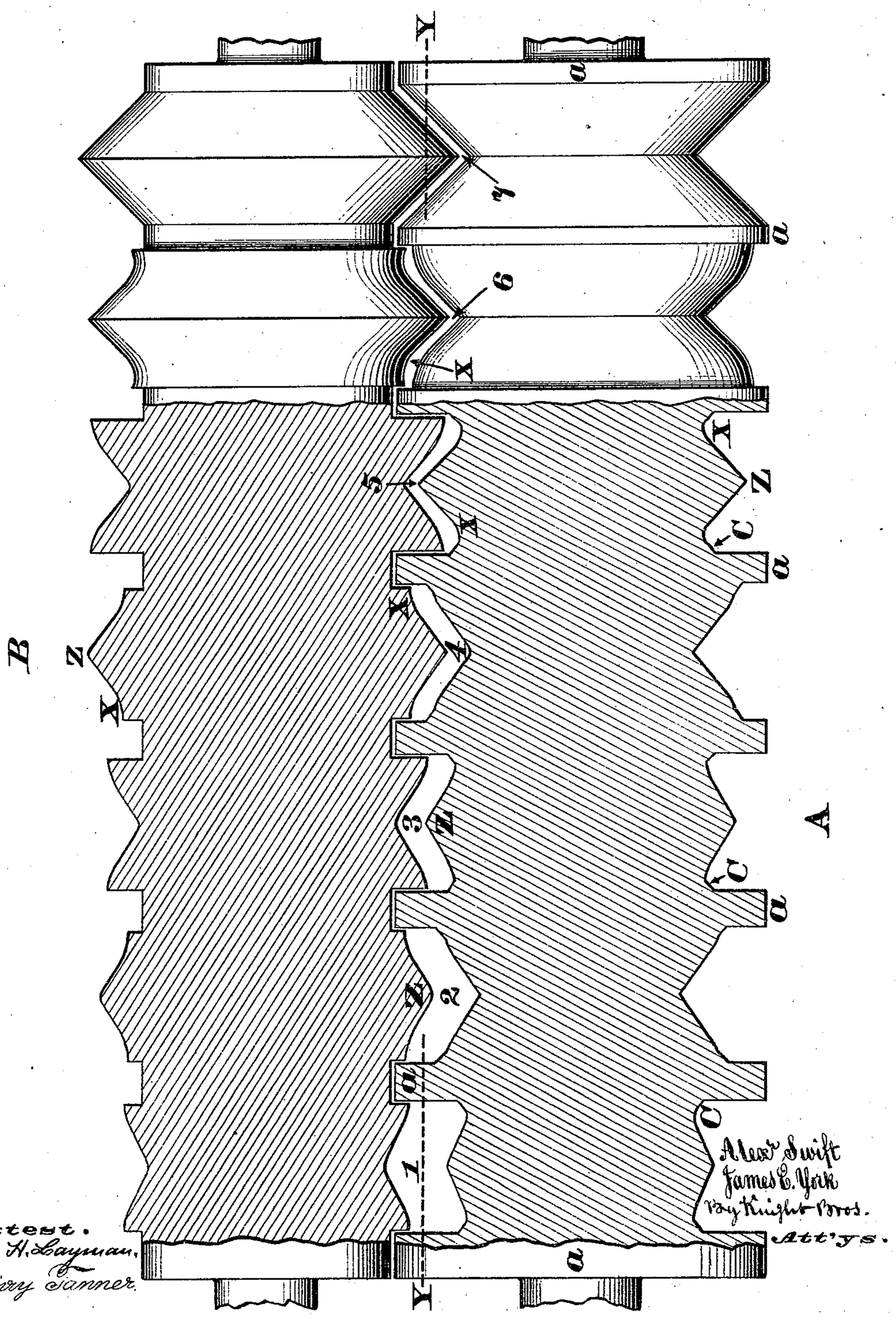
A. SWIFT & J. E. YORK.

Roll for Rolling Angle-Iron.

No. 159,978 Patented Feb. 16, 1875.



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UNITED STATES PATENT OFFICE.

ALEXANDER SWIFT, OF CINCINNATI, OHIO, AND JAMES E. YORK, OF NEWPORT, KENTUCKY.

IMPROVEMENT IN ROLLS FOR ROLLING ANGLE-IRON.

Specification forming part of Letters Patent No. **159,978**, dated February 16, 1875; application filed January 13, 1875.

To all whom it may concern:

Be it known that we, ALEXANDER SWIFT, of Cincinnati, Hamilton county, Ohio, and JAMES E. YORK, of Newport, Campbell county, Kentucky, have invented a new and useful Improvement in Rolls for the Manufacture of Angle-Iron, of which the following is a specification:

Our invention has especial reference to the rolls employed for making that kind of angle-iron whose transverse section is characterized by the symbols **L**, **V**, and **U**, respectively, according to whether its apex be a right or some other angle, or simply rounded; and our invention is designed to enable the workmen to produce angle-iron of uniform consistence, strength, and finish throughout, and free from cracks and fissures.

The accompanying drawing is a partially-sectioned elevation of a pair of rolls which embody our invention, portions of the necks being broken away and the housings being omitted.

A is the lower, and B the upper, member of a pair of rolls on our plan, adapted to produce what is known as **L** angle-iron, or, in other words, angle-iron whose two blades or webs meet each other at a right angle. The passes or forming-intervals between the rolls are all, except the final one, of the kind known as closed, or, in other words, are separated from one another by collars *a*, preferably on the lower roll. They are designated in the order of their use, from left to right, by the numerals 1, 2, 3, 4, 5, 6, and 7, respectively. The pass 1, which receives the rough pile, fagot, or billet, is relatively the most open, and bears the semblance of an inverted **V**, of rounded and very obtuse apex, preferably about one hundred and seventy degrees, and whose edges, as they approach the collars, are curved to horizontal, or nearly horizontal, position, the re-entrant angles C being filleted, as shown. The next pass, 2, presents the aspect of a less obtuse **V**, whose apex is presented downward, the bar being semi-rotated for insertion within it. It has, also, relatively to pass 1, greater horizontal, and less vertical, dimensions; and has, in common with all the succeeding passes, save the last, out-curved extremities. The fourth, fifth, and sixth passes are thickened, as at X, at or about the centers of their curved portions. The object of this thickening is to afford a preponderance of metal at those parts, in order to counteract the tendency to crack or separate along the web in the final pass. Each pass is of greater horizontal, and less vertical, dimensions than its predecessor, and each, except the last, presents the angle in the inverted position from that which precedes it.

In turning off the rolls the passes are formed at such relative radial distances as to give the preponderating draft to the portions Z, which form the inner angles of the iron.

The pile is, of course, presented in the first pass with its laminations horizontal, and so continued throughout the course, in the manner long customary in the manufacture of **U**-rails and other kindred forms.

We are aware that it has been proposed to roll angle-iron in passes, one-half of both sides of whose wings were to project, by an abrupt angle, in a horizontal direction from the apex; but such form would be manifestly impracticable, the re-entrant angle or crease formed thereby in that part of the web, otherwise most liable to separate in the act of rolling, tending to produce flaws and rifts, which destroy or impair the merchantable quality of the iron.

We claim as new and of our invention—

A pair of rolls for making angle-iron, whose several grooves are so formed as to successively impart to the pile or bar the forms, first, of an obtuse or flattened **V**, having rounded apex; second, the same, with outcurved edges; and, third, provision for excess of metal at the centers of the curves, as shown in fourth, fifth, and sixth passes, the passes being alternately inverted and successively less obtuse, terminating with the finishing-pass 7, substantially as and for the purpose set forth.

In testimony of which invention we hereunto set our hands.

ALEXANDER SWIFT.
JAMES EDWIN YORK.

Attest:
FLAMEN BALL, Jr.,
GEO. H. KNIGHT.