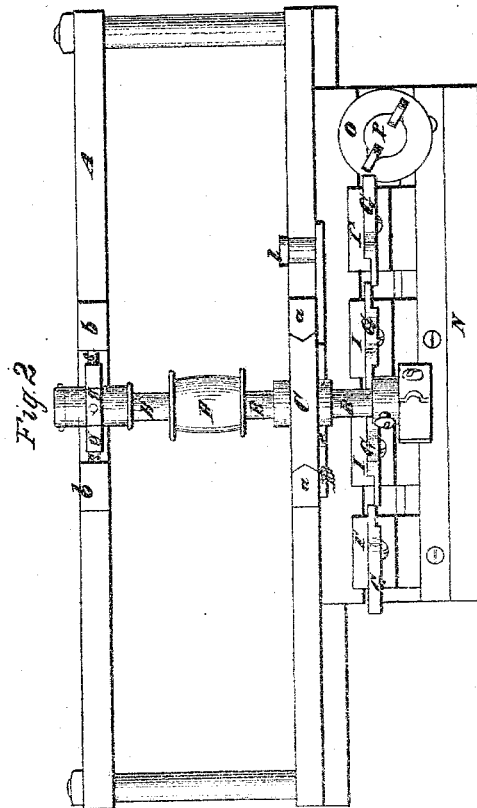
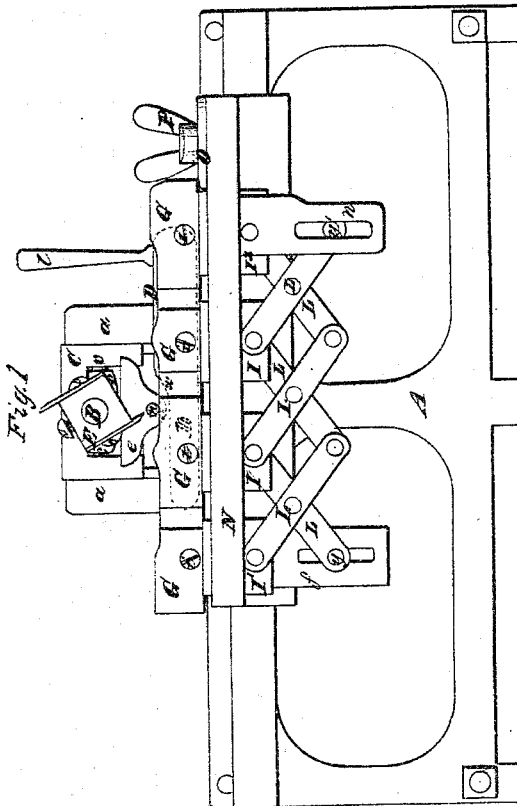
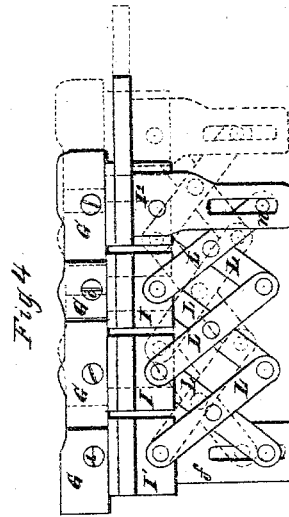
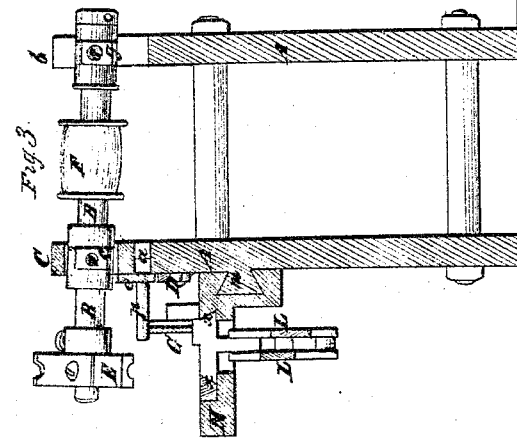


JAMES W. CAMPBELL.

Improvement in Machines for Cutting Irregular Forms.

No. 115,820.

Patented June 13, 1871.



Witnesses  
Fred Haymes  
R. A. Raben

J. W. Campbell

# UNITED STATES PATENT OFFICE.

JAMES W. CAMPBELL, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR CUTTING IRREGULAR FORMS.

Specification forming part of Letters Patent No. 115,820, dated June 13, 1871.

*To all whom it may concern:*

Be it known that I, JAMES W. CAMPBELL, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Cutting Irregular Forms; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification.

This invention consists in an expanding and contracting pattern, composed of a series of plates or sections so combined as to be capable of adjustment toward and from each other; also, in the combination of said plates or sections with a series of "lazy-tongs" levers, whereby all are moved simultaneously and uniformly to expand and contract the pattern uniformly throughout its whole length.

In the accompanying drawing, Figure 1 is a front elevation of a machine having my pattern applied. Fig. 2 is a plan of the same. Fig. 3 is a transverse section thereof; and Fig. 4 is a detached view of the pattern and its operating levers, showing it contracted to its shortest length in bold outline and expanded to its greatest in dotted outline.

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

A is the framing of the machine, consisting of two side frames connected by stretchers. Formed on the middle portions of these side pieces are standards *b b* and *a a*, which extend upwardly from the frame for the reception of the bearings of the cutter-shaft B of the machine, which carries the cutters E. The standards *b b* on the rear side frame support the rear journal-box *g* of the shaft, said box being so pivoted by center screws *s s* to the standards as to allow the shaft to swing vertically. The standards *a a* on the front side frame of the machine have their opposite faces of V-form to serve as vertical guides for a frame, C, into the sides or ends of which the front journal-box *e* of the shaft B is pivoted by center screws *v v*. Secured to and projecting beyond the face of this frame C is a plate, *e*, the middle portion of which projects below the rest, and has secured to it a pin, *p*, which bears on the face of the pattern, and by the motion of the latter is raised and dropped, thereby producing the vibratory motion of the cutter-

shaft, by which the irregularity of form is produced. D is a sliding plate, which is attached, under the plate *e*, to the front of the standards *a a*, by screws whose shanks pass through slots formed in the said plate and screw into the said standards. A portion of the upper edge of this plate is made with a slope, *w*, (see Fig. 1,) to act as a wedge. The said plate is connected with a hand-lever, *l*, pivoted to the inner side of the front side piece of the frame; and when slid forward by the operation of this lever it will wedge under the plate *e* on the block C, and thereby raise the pin *p* from the face of the pattern and the cutter from the work. The bed or work-carriage N of the machine has a dovetail groove formed in its back to fit and slide on a dovetail slide, *m*, provided on the front of the frame A. G G are the plates of which the expanding-and-contracting pattern is composed. These plates are set up edgewise, and their upper edges are waved or curved and constitute the face of the pattern. The adjacent ends of the said plates overlap each other, and are rabbeted or recessed to fit into each other, so that they may be moved longitudinally without breaking the continuity of the pattern formed by their upper edges. The said plates are secured firmly by screws *i i*, one to each of a series of blocks, I I<sup>1</sup> I<sup>2</sup>, which are dovetailed, as shown at *x x* in Fig. 3, to slide in the bed N of the machine, which is slotted for the passage through it of lugs which are formed on the bottoms of the blocks to provide for their attachment to operating-gear. L L is a series of lazy-tongs levers by which the blocks are connected and uniformly operated, the series of levers being connected at one end with the block I<sup>1</sup> at one end of the series of plates G G, and with a slotted plate, *f*, which is rigidly secured to the bed N, and connected at the other end with the block I<sup>2</sup> at the other end of the series, and with a slotted plate, *n*, rigidly secured to the said block, the connections with the slotted plates *f* and *n* being made by pins *y y'*, which will slide up and down freely in their slots. The end block I<sup>2</sup> is provided with a clamp, O, and screw P, to clamp its dovetail within the bed N and so secure it thereto. The connection of the several blocks I I<sup>1</sup> I<sup>2</sup> enables all but the end one, I<sup>1</sup>, to slide within the bed when the clamp O

is unscrewed, and compels all, when moving, to move together in the same direction a greater or lesser distance, in proportion to their distance from the end block P, but always preserves uniform distances between the blocks, as the distances which the next neighbors approach and recede from each other are all uniform. The pattern-plates or sections G G, moving with the blocks in this way, combine to form a pattern which expands and contracts, and the expansion and contraction of which are uniform throughout its whole length.

To effect the expanding-and-contracting movement, it is only necessary to take hold of the clamp-screw P when unscrewed sufficiently to liberate the clamp, and to push or pull its attached block P<sup>2</sup> toward or from the other end of the series; and when the pattern is adjust-

ed the adjustment is secured by screwing up the clamp.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The expanding pattern, composed of a series of plates or sections, arranged to move toward and from each other, substantially as and for the purpose herein described.

2. The combination, substantially as described, with such series of plates or sections, of a system of "lazy-tongs" levers, L L, operating to produce and regulate the uniformity of the expansion and contraction of the pattern, substantially as herein set forth.

J. W. CAMPBELL.

Witnesses:

FRED. HAYNES,  
R. E. RABEAU.