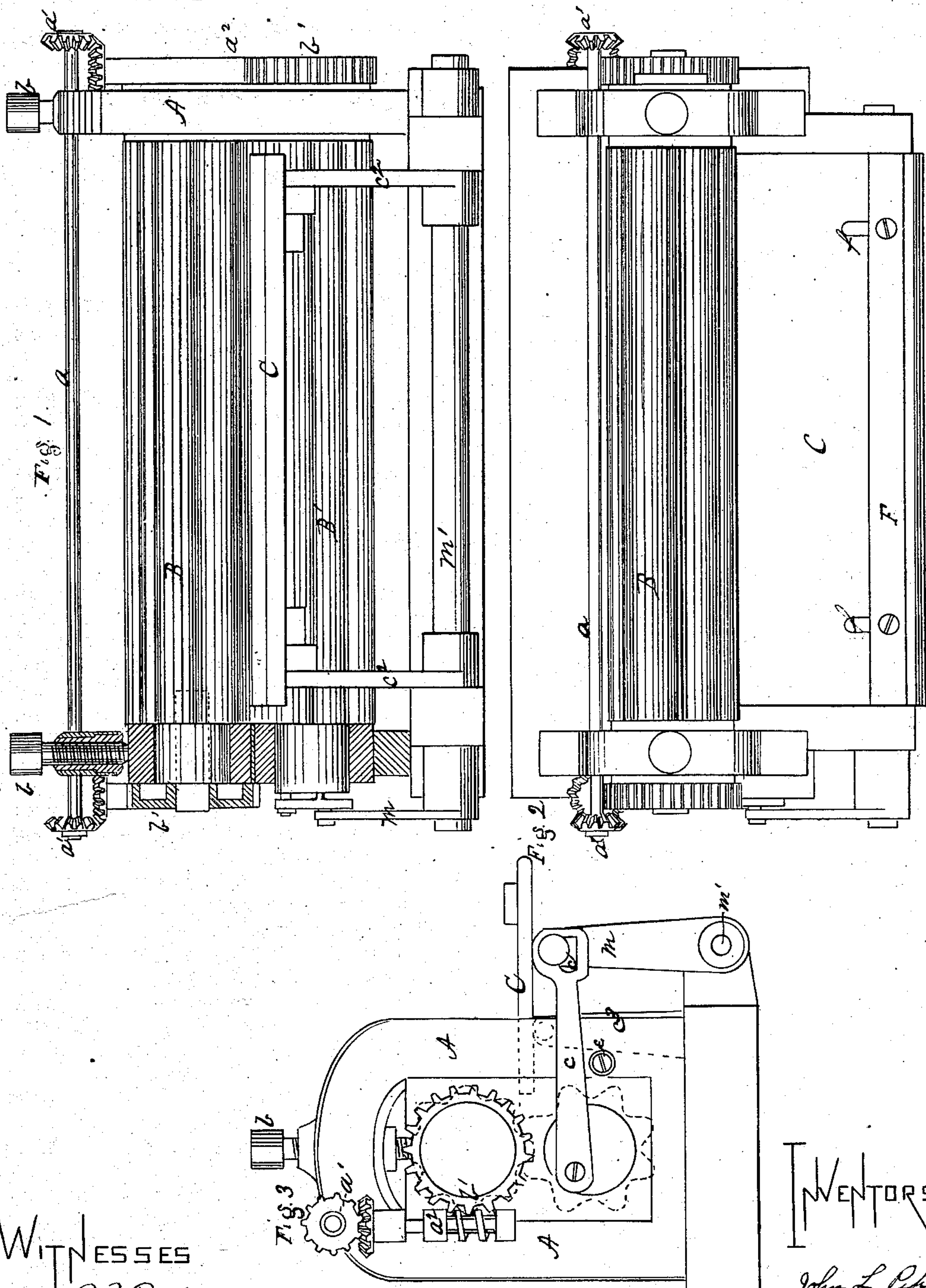


J. L. PIPER & J. A. NICHOLS.  
Machine for Corrugating Sheet-Metal.

No. 161,152.

Patented March 23, 1875.



WITNESSES  
R. R. Baetz  
James L. Kay

INVENTORS

John L. Piper  
John A. Nichols  
By  
Bakewell & Kerr  
Attys



# UNITED STATES PATENT OFFICE

JOHN L. PIPER AND JOHN A. NICHOLS, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN MACHINES FOR CORRUGATING SHEET-METAL.

Specification forming part of Letters Patent No. **161,152**, dated March 23, 1875; application filed November 3, 1874.

*To all whom it may concern:*

Be it known that we, JOHN L. PIPER and JOHN A. NICHOLS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Corrugating Sheet Metal; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation, Fig. 2 is a plan view, and Fig. 3 is an end view, of a machine embodying our invention.

Like letters refer to like parts in the several figures.

Our invention relates to apparatus for bending and corrugating sheet metal, and belongs to that class in which the metal is corrugated by passing it between a pair or series of grooved rolls.

Our invention consists in a feed-table having pivoted supports, and operated from the rolls by a slotted link and arm, and having an adjustable gage, so as to gage the distance each sheet shall be made to enter before being seized by the rolls.

In the drawings referred to, A represents the housings, which may be of any form suitable to support the operative parts. B is the upper roll, and B' the lower, journaled in the housings A; the upper roll being adjusted by means of the usual housing-screws *b*, and driven from the power-shaft *a* through the bevel-gearing *a*<sup>1</sup> *a*<sup>1</sup>, worm *a*<sup>2</sup>, and worm-wheel *b'*, or similar devices. The lower roll B' may be driven by friction or geared to be driven from and move with the upper roll B. The rolls B and B' are grooved longitudinally or parallel to their axes, the size and depth of the grooving corresponding to the size of the corrugations to be formed on the sheet metal, and they are so arranged that the projections or elevations upon one roll coincide with the depressions or grooves in the other, and, as a consequence, any substance passed between the rolls will be gripped along one line only at any given time, the same as if a pair of plain rolls were used. Pivoted to the jour-

nal of the lower roll B' is a lever, *c*, slotted at *c*<sup>1</sup>, so as to move upon the pin connecting it to arm *m* of rock-shaft *m'* working over pin *e*, so as to raise the lever on part of its stroke, so that during a part of the travel of lever *c* it ceases to operate the rock-shaft *m'*, and the table C is at rest. The table C is supported in front by standards *c*<sup>2</sup> attached to the rock-shaft *m'*, and at the rear or near the rolls by standards *c*<sup>3</sup>, pivoted to the base supporting the housings. By this means the lower roll in its revolution imparts vibratory motion to the feed-table. Upon the feed-table is arranged a gage-bar, F, adjustable by means of slots *f* and set-screws, or other suitable devices. This gage is altered to accord with the width of the metal sheet, and is adjusted to regulate the distance the sheet is to be fed between the corrugated rolls, and will preserve the parallelism of the sheet and the grooves of the rolls.

The operation of these devices is as follows: The rolls, of a size adapted to the work to be performed, and properly adjusted by means of the housing-screws, receive motion from the power-shaft, and, through the medium of the rock-shaft pivoted to the lower roll, impart a vibratory motion to the feed-table, which carries forward the sheet resting thereon so as to cause the sheet to enter the rolls to a greater or less extent according to the manner in which the first corrugation is to be turned on the edge of the sheet.

The instant the sheet is fed between the rolls it is seized along one line only, the bite advancing along the sheet in a given line, causing the metal to conform to the corrugations of the rolls by a bending or folding motion without drawing or thinning it, and avoiding any tendency to crimp or buckle it.

It is evident that the length of the sheet passed through the rolls will be limited only by the length which it is possible to make the rolls, the extreme usual length of the sheets heretofore corrugated being about nine or ten feet, which is fully within the scope of rolls which it is practicable to construct as above described.

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

The combination of the rolls B B', feed-table C, pivoted supports  $c^2$   $c^3$ , rock-shaft  $m$ , slotted link  $e$ , and pin  $e$ , substantially as and for the purpose specified.

In testimony whereof we, the said JOHN L.

PIPER and JOHN A. NICHOLS, hereunto set our hands.

JOHN L. PIPER,  
JOHN A. NICHOLS.

Witnesses:

T. B. KERR,  
F. W. RITTER, Jr.