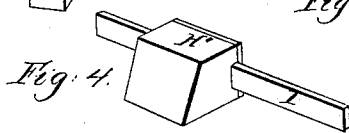
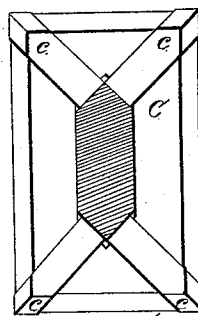
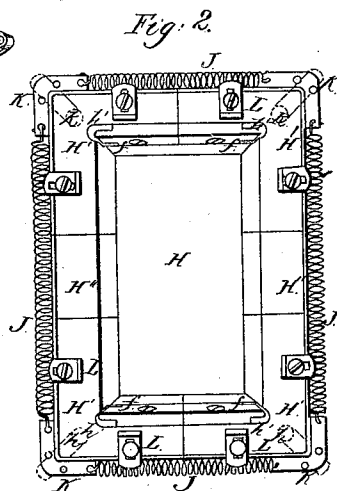
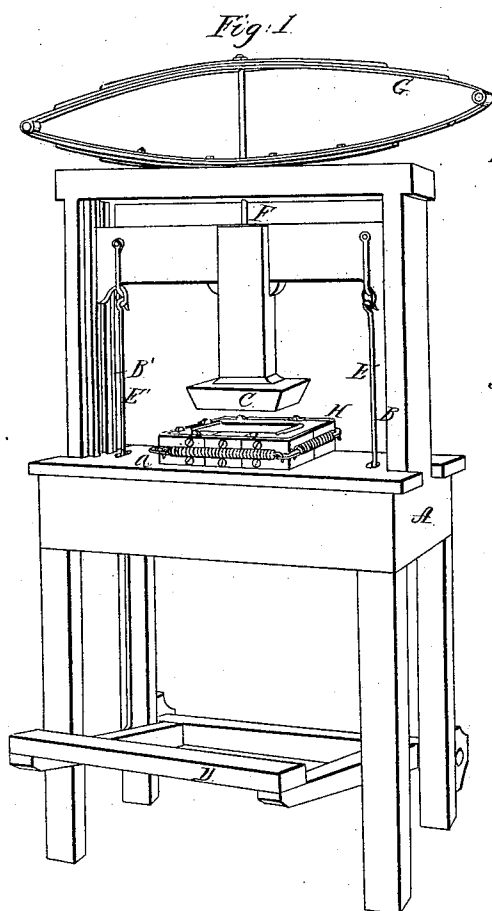


Goodin, Blair & Lyda,
Making Sheet-Metal Vessels.
N^o 67,109. Patented July 23, 1867.



Attest:
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J. E. M. Bowen.

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United States Patent Office.

JOHN GOODIN, ERASTUS F. BLAIR, AND JOHN LYDA, OF GEORGETOWN,
OHIO.

Letters Patent No. 67,109, dated July 23, 1867.

IMPROVEMENT IN MACHINE FOR MANUFACTURING SHEET-METAL PANS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that we, JOHN GOODIN, ERASTUS F. BLAIR, and JOHN LYDA, all of Georgetown, Brown county, Ohio, have invented certain new and useful Improvements in Machines for Making Sheet-Metal Pans; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The object of this invention is the stamping or pressing stove, bread, or other sheet-metal pans into shape at a single operation complete, with the corners lapped and bent round, the pans being ready when they leave the machine for the final operation of wiring the top edge. In the accompanying drawings—

Figure 1 is a perspective view of a machine embodying my invention in its most simple form for hand use.

Figure 2 is a plan of the expansion dies.

Figure 3 is a modification in construction of the follower or upper die, wherein expansive corners are fitted so as to be forced out when the pan is pressed, to keep the sides fully stretched at the end of the operation of pressing, when the pan corners have been released from the forming-grooves.

A is the frame of the machine; B B' the guides for the follower C, and D the treadle attached to the follower C by the rods or chains E E'. The follower is connected at top by rod F to a spring, G, which serves to return the follower to the upward direction after being depressed by the treadle. H is the lower die, having solid corner pieces H' and liners H'', the latter allowing of the size of the die being changed at will, the whole being connected (so as to allow only of expansion when a pan is being formed) by the slide-bars I and spiral springs J, the springs being connected to flanges K on the corners of the die. The table A of the machine is provided with slots *a* at angles of forty-five degrees, adapted to receive pins *h*, in the corner pieces of the die H, to guide the composite parts of the die to their true position under the follower after the formation of the pan. L are gauges, between and against which the plate is placed for pressing. The corners H' of the die H are grooved spirally at *h'*, to lap and turn the corners of the pan in the operation of pressing. The upper part of the die H, at its inner diameter, is the same size as the bottom of the follower C, (plus the thickness of the metal to be worked all round,) so that when the follower first touches the sheet in its descent, it shall make a clearly-defined corner. The separate pieces of the mould are forced apart as the follower descends, and are kept firmly against the follower by the springs J. Previous to the placing of the plate to be pressed on the die, a thin false bottom is inserted, of the size of the top of the die, against which the die acts when closing, to throw out the pressed pan.

In the operation of pressing the pan, the corners are folded as the follower is depressed, and go round the grooves *h'*, and are by them gradually curved round to the sides of the pan, when coming down below the ledges *f* they are pressed together firmly between the follower and the sides of the mould, the mould being at least the depth of the pan below the ledge *f*.

It may be found proper to provide adjustable abutments upon the table A, to limit the expansion of the mould when at the extreme desired. In fig. 3, the expansion of the corner pieces *c* for the purpose specified can be effected by any preferred mechanical device.

We claim herein as new, and of our invention—

The expansive die H H' H'', provided with curved corner grooves *h'*, and constructed and operated substantially in the manner and for the purpose specified.

In testimony of which invention we hereunto set our hands.

JOHN GOODIN,
ERASTUS F. BLAIR,
JOHN LYDA.

Witnesses:

GEO. H. KNIGHT,
JAS. H. KING.