

## Forming Sheet-Metal.

No. 163,793.

Patented May 25, 1875.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DIES FOR FORMING SHEET METAL.

Specification forming part of Letters Patent No. **163,793**, dated May 25, 1875; application filed April 5, 1875.

*To all whom it may concern:*

Be it known that I, HENRY MARTYN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Dies for Forming Sheet-Metal Boxes, of which the following is a specification:

This invention relates to dies for the manufacture of a seamless sheet-metal box, the corners of which are closed and continuous with the sides and ends by folds of the sheet metal, which project equally each side of the corners, and lie against the sides and ends.

The improvement consists more especially in a novel construction of the female die, whereby, as the sheet-metal blank is forced through it by the male die or plunger, the sheet metal at the corners can fold equally each side thereof, and leave the box, when completed, free to be forced out and delivered from the die.

In the accompanying plate of drawings, Figure 1 is a plan view of a female die of the present novel construction, and shows the male die in horizontal section. Fig. 2 is a section along line *xx*, Fig. 1; Fig. 3, a plan view of the box; and Fig. 4, side or end view.

In the drawings, A represents the female die, and B the male die or plunger. The female die is adapted to receive the male die or plunger, and the dimensions of the working-faces C and D, respectively, of the two dies are such as to leave a space between them equal to the thickness of the sheet metal. Each corner E of the working-faces C of the female die A opens, as at *a*, to a space or opening, F, behind the working-faces at such corners. These spaces or openings F back of the working-faces of the female die are bounded by walls *b* and *c*, which incline toward the delivering-end G of the die, and thereat open to the working-faces C of the female die. The two walls *d* and *f* of the openings *a*, leading from the working-faces of the female die to the openings F back thereof, at the receiving end H of the die, are flaring, and incline toward each other, coming into lines parallel with each other, as at *h*, Fig. 2, which parallel lines terminate at the delivering end G of the working-faces C of the die. The receiving

end H of the female die is provided with guides or gages I, so as to insure the proper location of the sheet-metal blank before bringing the male die thereon.

The operation is as follows: The sheet-metal blank is laid on the receiving end of the female die within and between the guides or gages I thereof, and then the plunger or male die is brought against the sheet-metal blank and forced through the female die, carrying with it the sheet-metal blank, which, as it passes through, is turned up in lines parallel to the working-faces of the two dies, thus making the sides and ends of the box, and has its corners disposed equally each side of, and carried through, the openings F back of the working-faces of the female die, wherein, by the inclination thereof of its two walls, *d* and *f*, the said corners are folded against the sides and ends of the box at each corner, so that when the box escapes at the delivering end of the female die, by the continued forcing of the male die through it, the portion of the sheet-metal blank at each corner thereof is disposed in equal parts, each side of the corners to the box sides and ends.

By removing the working-faces D of the male die at and upon each corner thereof, as shown at *l*, Fig. 1, it allows the fold of the sheet metal at each corner, in the operation of the parts, to be made even with the outer surfaces of the sides and ends of the box, against which they lie when folded, as described.

The working-faces C of the female die are, by preference, made of steel and secured in position by a dovetail connection, K, between them and the holder or block, which dovetail connection is fastened by a set-screw, L. This allows the working-faces to be removed and new ones inserted at pleasure, should it be found necessary.

Lids to boxes may be made in the same manner as described above for the box proper.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

The female die A, constructed at its corners with the openings *a*, and spaces or openings F back of the working-faces of the die, said openings or spaces F having inclined walls *d*

and *f*, substantially as described, whereby, when the plunger forces the sheet metal into the female die to form the box, the corners of said metal are forced through the openings *F*, and by the inclined walls *d* and *f* the metal is folded against the sides and ends of the box, as set forth.

The above specification of my invention signed by me this 11th day of March, A. D. 1875.

HENRY MARTYN.

Witnesses:

EDWIN W. BROWN,  
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