W. A. BUTLER.

MACHINE FOR MAKING SHEET METAL TRAPS OR BENDS.

No. 170,051. Patented Nov. 16, 1875.

Fig. 1.

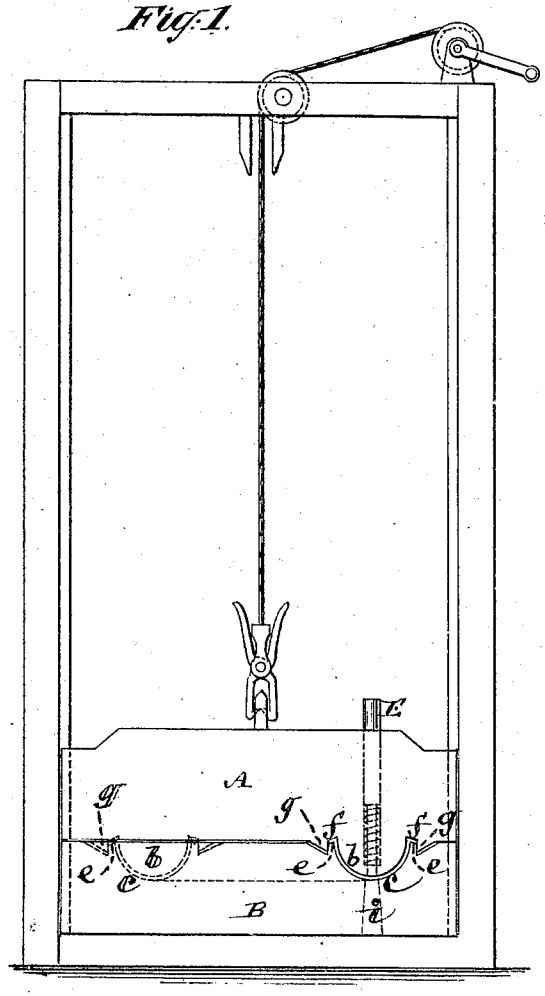


Fig. 2.

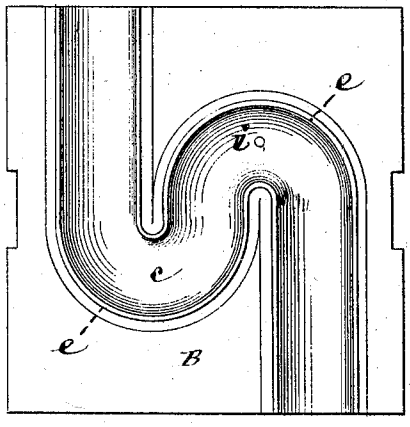


Fig. 3.

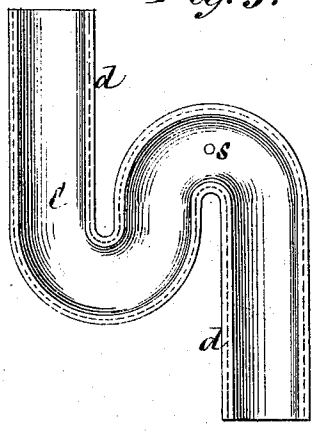
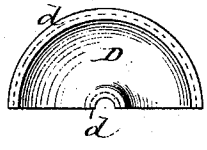


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM A. BUTLER, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR MAKING SHEET-METAL TRAPS OR BENDS.

Specification forming part of Letters Patent No. **170,051**, dated November 16, 1875; application filed July 24, 1875.

To all whom it may concern:

Be it known that I, WILLIAM A. BUTLER, of the city, county, and State of New York, have invented a new and useful Improvement in Presses for Making Sheet-Metal Traps or Bends; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to presses for making sheet-metal water-traps or bends in longitudinal halves, or similar sections, which are afterward united by soldering or burning, as described in Letters Patent for improvement in water-traps issued to me July 6, 1875, irrespective, however, of any particular direction for the seam, but the press will here be represented as constructed to form the seam so that it will run along the front or back, and in a plane running through the center of the trap or bend, and intersecting its curvature. The press may, however, be constructed to produce half-traps, or sections, with the seam or seams differently arranged, and the invention is not restricted to any form of trap or bend.

The invention consists in a novel construction of the dies for stamping out each longitudinal section of the trap or bend from the sheet metal introduced between the dies, whereby each of said longitudinal sections is formed by the stamping process, which gives to the trap or bend its required form, with a flange along its opposite edges, so that, on bringing the flanges thus produced of two matching trap or bend sections together, they may be readily united by burning by the aid of a blow-pipe, and the trap or bend is materially strengthened at its seam or seams.

Figure 1 represents an elevation of a drop-press, having dies for stamping the one longitudinal half-section of an S-shaped water-trap in accordance with my invention; Fig. 2, a face view of the bottom die used in making such half-trap sections; Fig. 3, a longitudinal view from the hollow or inner side of said trap-section after it is removed from the bottom die; and Fig. 4, a transverse section thereof. Fig. 5 is a view from the hollow inner side of a half-bend produced in like manner as the half-trap section.

A is the upper or operating die of the press, which may be actuated by any suitable means, and B the lower die thereof. The die A is what may be denominated the male die, and the die B the female one, the former having the swell or male former *b* on its face, and the latter the recess or female former *c* in its face, so that, on bringing the two dies together with a sheet of metal in between them, said metal will be pressed by the upper die into the lower one, and by the longitudinal and transverse contours of the formers *b* and *c* the required general configuration be given to the half-trap C. To stamp out, however, such half-trap from the sheet of metal introduced between the dies, and to form or provide each trap-section with a flange, *d*, along its edges, for uniting, as hereinbefore described, the two matching trap-sections together, the female former *c* of the die B is made with marginal ledges *e* throughout its length on both or opposite sides, and the male die A formed with corresponding recesses *f*, for the reception of said ledges with the metal being stamped in between them, and said male die further formed with cutters or cutting-projections *g*, extending down from the outside edges of the recesses *f*, on opposite sides of the former *b*, throughout the length of the latter. These cutters *g* are arranged so that when the die A is brought down or dropped they will pass in a shearing manner the outside edges of the ribs or ledges *e*, thus not only stamping out the half-trap to its required shape, but leaving it with flanges *d* along its two edges, said flanges corresponding with the upper faces of the ledges *e*. After two matching trap-sections have been thus produced and formed with edge flanges, as described, the same are placed with their flanges face to face, and the meeting flanges burned by the aid of a blow-pipe to unite the sections.

The same method of construction, as regards the dies, applies to the production of sheet-metal elbows or bends in two longitudinal halves or sections. Thus, Fig. 5 shows a longitudinal half-section of a bend, D, having longitudinal edge flanges *d*, which may be pro-

duced in like manner as the half-trap, and be united at its flanges, as hereinbefore described, with the flanges of a corresponding or matching half-bend to make the entire bend. A water-trap might be constructed of a series of such bends soldered together at their transverse junctions. It is preferred, however, to make it of two half-sections only, as described with reference to Figs. 1, 2, 3, and 4 of the drawing, and when the trap is designed to be provided with a tap-screw, then a hole, *s*, for the purpose, may be formed in its one half-section by striking on a spring-punch, E, which is carried by the die A, and faces a clearance-aperture, *i*, in the lower die. This is done after the metal has been stamped out to form the half-trap before the removal of the latter from the lower die and while the top die is down.

I claim—

The female die B, having ledges *e* along either edge of its forming chamber or cavity, in combination with the male die A, having cutters *g* correspondingly arranged on its face in relation with the former thereon, for operation in relation with each other, substantially as and for the purposes herein set forth.

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Witnesses:

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