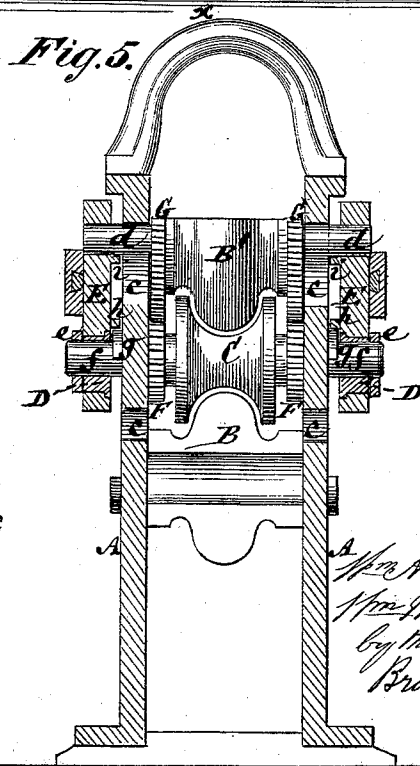
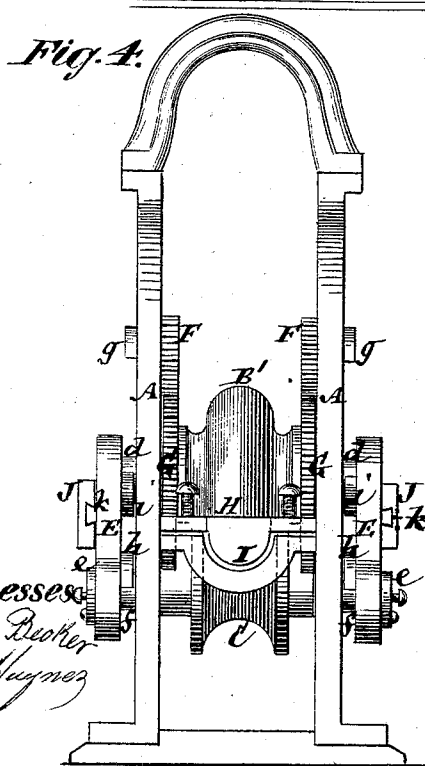
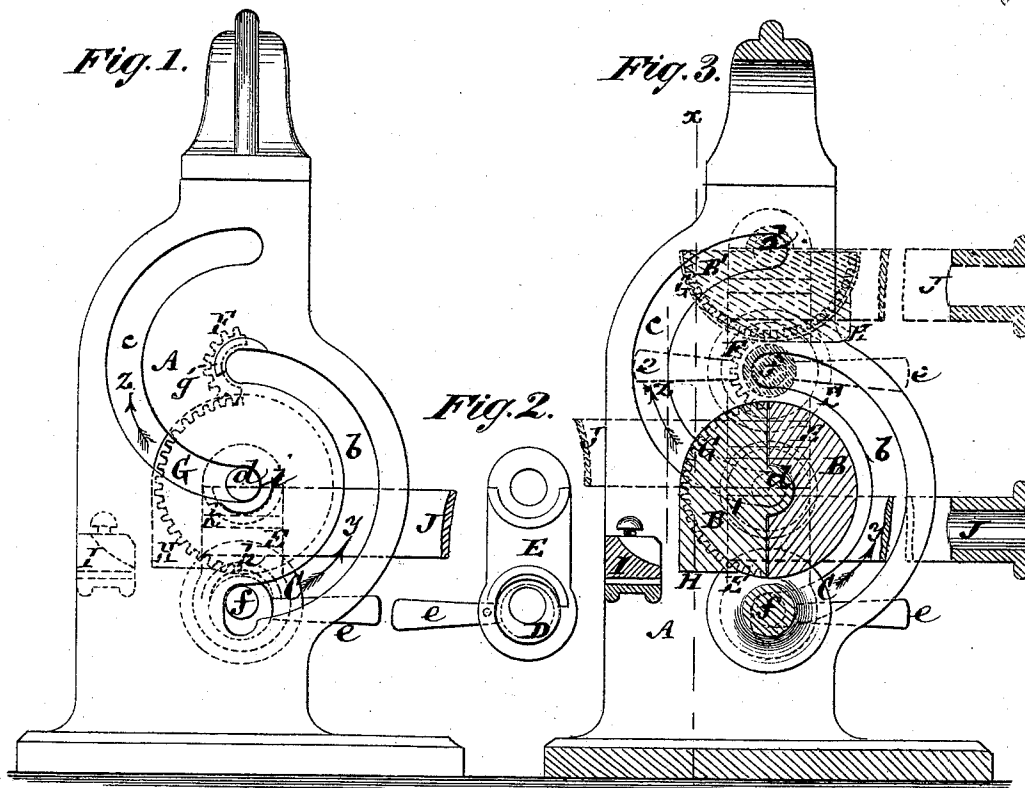


W. A. BUTLER & W. M. ELTON.
Machines for Making Water-Traps.

No. 151,088.

Patented May 19, 1874.



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UNITED STATES PATENT OFFICE.

WILLIAM A. BUTLER AND WILLIAM M. ELTON, OF NEW YORK, N. Y.,
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IMPROVEMENT IN MACHINES FOR MAKING WATER-TRAPS.

Specification forming part of Letters Patent No. 151,088, dated May 19, 1874; application filed March 17, 1874.

To all whom it may concern:

Be it known that we, WILLIAM A. BUTLER and WILLIAM M. ELTON, both of the city, county, and State of New York, have jointly invented certain Improvements in Machines for Making Water-Traps, of which the following is a specification:

This invention relates to machines for making water or stench traps, preferably of a full or complete S shape, but which may be only of a partial S shape, so as to form what are termed half or three-quarter traps, by giving to one terminal leg of the trap only a partial bend, or leaving it straight; and the invention in this connection more particularly relates to machines for said purpose which operate by bending the material over and between semicircular-grooved and rounded surfaces, the one traveling around the other by means of grooved and stationary gearing, similar, as regards general principles, to the machines described in Letters Patent Nos. 143,665 and 144,057, dated, respectively, October 14, 1873, and October 28, same year, and in which first the one longitudinal half of the trap is formed, and then the other, and the two halves afterward soldered together to make the complete trap.

The invention consists in certain combinations and arrangements of parts whereby each longitudinal half of the trap is formed in a continuous manner. These combinations include side arms or levers, which serve as bearings for the primary and grooved traveling roller or former, and which are provided with eccentrics for facilitating the entry and release of the metal to be bent, and half-trap, as formed; also which are provided with projections for operation in connection with or over fixed stops, to provide for the bending of the second or reverse half-leg of the trap, by means of the stationary and movable gearing, the side arms or levers in such action changing their fulcrums from one end to the other.

The invention also includes a transversely-divided internal former, the one division or half of which is stationary, and the other half movable, by the side arms or levers, around the primary and grooved traveling roller or former, that then is locked or held in a stationary position to form the second or reverse

half-leg of the trap, the primary and grooved former and the moving half of the other transversely-divided former moving successively to bend the material, as required.

In the accompanying drawing, Figure 1 represents a side elevation of the machine, with the parts in position, prior to their operation on the metal of which the trap is to be made, and with one of the side levers and its eccentric removed. Fig. 2 is an inside view of such lever and eccentric detached from the machine. Fig. 3 is a central vertical section in a plane parallel to Fig. 1. Fig. 4 is a rear-end view; Fig. 5, a vertical section on the line *x x* in Fig. 2.

A A are the side cheeks or uprights of the frame, each formed with reversely-shaped slots *b c*. B B' are what may be termed the internal former, mainly of annular form, and of convex shape on its periphery. C is the primary and semicircularly-grooved traveling former, having its bearings in eccentrics D, arranged within side arms or levers E, which, at their opposite ends, carry the shafts *d* of the moving and transversely-divided section B' of the internal former B B'. The object of the eccentrics D, which are provided with levers *e*, is to adjust the former C farther from or nearer to the former B B', when the first of these is in its lowermost position, to provide for the easy entry of the metal between said formers, or the removal of the half-trap when made, and the proper relation of the formers to or in proximity with each other when bending the metal to make the trap. On the inner sides of the cheeks A A are stationary toothed gears, or sections of gears F F', at the upper ends of the slots *b*, and with which toothed segments or sectors G G' on the shaft of the moving section B' of the former B B' gear. The shaft *d* of the former-section B' travels within the slots *c* of the frame, and the shaft *f* of the primary outside former C within the slots *b* thereof. On the outsides of the cheeks A A, at the upper ends of the slots *b*, are stationary curved locking supports or projections *g*; also, at the bottoms of the slots *c*, similar locking-projections *g'*, and on the inner sides of the side arms or levers E are reversely-curved or semicircular projections *h i* around the eyes or terminal centers of said levers, the projections

i serving, in connection with the stops *g'* when the levers are in their lowest position, and while being swung during the whole travel of the shaft *f* in the slots *b*, to keep the other shaft or fulcrum *d* from prematurely moving up the slots *c* to hold the former C in place, and the projections *h* at the opposite end of the levers operating, in connection with the fixed stops *g*, when the levers are elevated to move the section B of the former B B', to lock or keep the primary former C in its elevated position, and prevent the shaft *f* of the latter from working or slipping back down the slots *b* of the frame. H is a straight extension or arm-like projection on the moving section B' of the former B B', for the purpose of guiding or directing the metal at its upper or finishing end in the formation of a half-trap, and which may be differently shaped or altogether omitted when less than a full S-shaped trap is required—as, for instance, when making what are termed half or three-quarter traps—in which case the section B' of the former B B' has a diminished upward motion when bending the one leg of the trap, and a clamp, I, used to hold the one end of the strip to be bent is changed or removed; but it will suffice here to describe the machine as represented for constructing full S-shaped traps in longitudinal half-sections, which are afterward soldered together, each half-section being separately formed in the machine. Strips or keys *k* on the levers E serve to receive the grooved end of a lever or levers, preferably a single strap or forked lever or handle, J, for operating the machine by said levers E, which, in the course of their action, have interchangeable fulcrums, the shafts *d* and *f* successively operating as such.

To form either one longitudinal half-section of the trap, the strip of lead or other metal is first bent into gutter shape, and its one end or portion introduced over the one former C, which is lowered for the purpose, and the extremity of such portion secured within the clamp I. The eccentrics D are then turned up to pinch the strip between the formers C and B B', said formers then being in the position represented in Figs. 1, 4, and by full lines in Fig. 3. The operating lever or handle J is then fitted onto the keys *k* of the arms or levers E, and the primary traveling former C moved up and round the stationary portion B of the other former B B', as represented by arrows *y* in Figs. 1 and 3, the shaft *f* traveling in the slots *b* till it is stopped by the upper ends of the slots *b*, as shown by dotted outline in Fig. 3. To complete such longitudinal section or half-trap—that is, to form the other bend and leg of said section—the lever J, which has then been thrown to the opposite side of the machine, as shown by dotted outline at the left hand of Fig. 3, is next thrown up again and over to the side from which it started, as shown by dotted outline at the right hand of Fig. 3. This moves the section

B' of the former B B' in the direction indicated by the arrows *z*, from the position shown for said section by full lines in Fig. 3 to that represented for it by dotted lines in the same figure, and by full lines in Fig. 5, causing it to bend the remainder of the strip over or round the former C, which then remains in the elevated position shown for it by dotted lines in Fig. 3, also by full lines in Fig. 5, and in which latter position it is locked or held by the projections *h* on the side arms E, which projections *h* are arranged to travel around the fixed projections *g*. Toward the completion of this action, during which the levers E have changed their fulcrum from the shaft *d* to the shaft *f*, the shaft *d* traveling up and along the slots *c*, the extension or arm-like projection H of the former section B' bears down on the outer terminal portion of the strip to keep it straight, as required, to form the one leg of the strap corresponding to the straight portion of the other leg held between the clamp I and the formers.

To get the longitudinal half or section of the trap thus made out of the machine, the lever J is first thrown back from its elevated position at the right hand of Fig. 3 to the position represented for it by dotted lines at the left, and then over again to the right, as shown by full lines in Figs. 1 and 3, returning the formers to their original position. The eccentrics D are also lowered, and the clamp I released from its hold on the metal. The other longitudinal half of the trap is made in like manner, and the two halves afterward soldered together, reversing the legs of the two sections when putting them together.

If desired, knives or cutters may be attached to the formers, or either of them, to trim the edges of the strip as it is being bent.

We claim—

1. The combination of the side arms or levers E, having interchangeable fulcrums *d f*, with the slots *b c* of the frame, and formers, arranged to travel successively the one around the other, substantially as specified.
2. The former B B', constructed in sections, the one of which is stationary and the other made capable of traveling around the primary former C, essentially as described.
3. The eccentrics D, in combination with the levers E, the primary former C, and the additional former B B', substantially as described.
4. The projections *h i*, or either of them, on the levers E, having interchangeable fulcrums *d f*, in combination with the fixed locking stops or projections *g g'*, or either of them, substantially as and for the purposes herein set forth.

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