L. E. Porter,

Forming Seams of Sheet Metal Ware.

No. 19,152. Patented Jan. 19, 1858.

Fig 1.

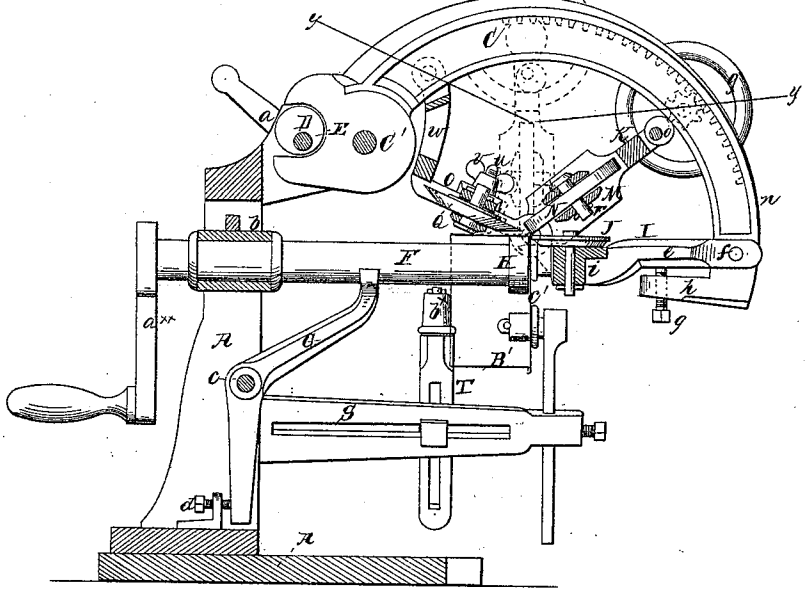


Fig 3.

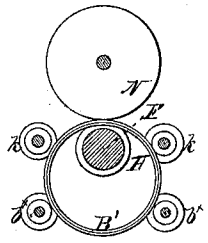


Fig 4. Fig 5. Fig 6.

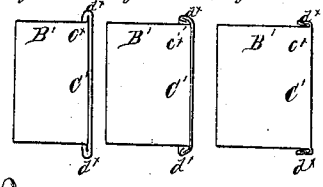
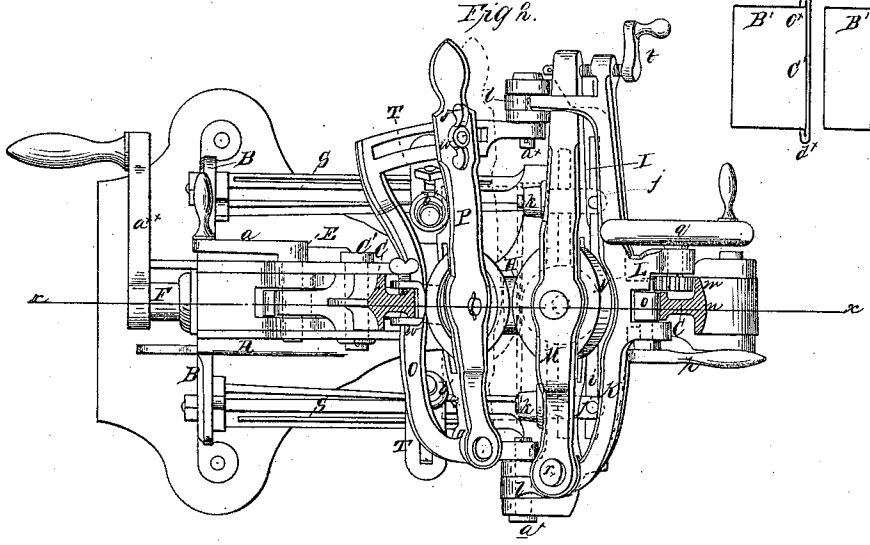


Fig 2.



UNITED STATES PATENT OFFICE.

LUTHER E. PORTER, OF LAKE MILLS, WISCONSIN.

IMPROVED DOUBLE-SEAMING MACHINE.

Specification forming part of Letters Patent No. **19,152**, dated January 19, 1858.

To all whom it may concern:

Be it known that I, LUTHER E. PORTER, of Lake Mills, in the county of Jefferson and State of Wisconsin, have invented a new and Improved Double-Seaming Machine for the Manufacture of Tinned and other Sheet-Metal Ware; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my improvement taken in the line *x x*, Fig. 2. Fig. 2 is a section of the same taken in the line *y y*, Fig. 1. Fig. 3 is a detached view of the driving-shaft and rollers, showing the manner in which the article or vessel is applied to the machine. Figs. 4, 5, and 6 show detached views of a vessel representing the different stages of the process of forming the seam or joint by which the bottom is connected to its body or sides.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a peculiar arrangement of frames which contain the rollers that perform the work—that is to say, the closing of the seam or joints—by which arrangement a double seam or locked joint is closed, the work being done with great facility and in a perfect manner.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a vertical support or framing, which is attached to a bench or base, A′.

C is a segment, which is attached to the upper end of the support or framing A by a joint, C′, and an eccentric, D, is fitted in the inner end of the segment, said eccentric being placed on a shaft, E, provided at one end with a crank, *a*. (See more particularly Fig. 1.)

F is a shaft the inner end of which is fitted in bearings *b* in the support or framing A. This shaft is supported at its outer end by a bar, G, which is secured in the support or framing A by pivots *c*, the pivots being near the center of the bar, as shown clearly in Fig. 1. A set-screw, *d*, bears against the lower end of the bar, by adjusting which the upper end of the bar may be made to bear with a greater or less degree of pressure against shaft F as occasion may require and serve as a firm support for its outer end, and also as a means to a certain extent for regulating its position as regards the height of its outer end.

To the outer end of shaft F a roller, H, is attached, the periphery of which is at right angles with its sides.

To the outer end of the segment C a T-shaped frame, I, is attached, one part, *e*, of said frame being connected by a joint, *f*, with the segment C, and the frame I may be adjusted by a set-screw, *g*, which passes vertically through the end of a bar, *h*, at the outer end of the segment. (See Fig. 1.) The part *i* of the frame I, which part is at right angles with part *e*, has a roller, J, attached to it, said roller having a portion of its periphery, about half of its width, formed of a flat surface, or a surface at right angles with its face, the other half being a curved surface, as shown clearly in Fig. 1.

To the part *i* of the frame I two adjustable bars, *j j*, are attached at right angles, and these bars have each a friction-roller, *k*, at their ends. (See Fig. 2.)

To the ends of the part *i* of the frame I a frame or bar, K, is connected by joints *l t*. The upper end of this frame or bar K has a pinion, L, attached, said pinion gearing into a rack, *m*, at the under side of a projecting flange, *n*, which forms the outer side of segment C. An eccentric, *o*, is fitted in the upper part of bar K, by turning which, by means of a lever or handle, *p*, attached to the axis of the eccentric, so that it may press or bind against the inner side of the segment, the bar may be secured at any desired point. The axis of the pinion L has a hand-wheel, *q*, attached, by which said pinion may be readily turned and the bar K moved to the desired point or angle of inclination.

To the frame or bar K an arm, M, is attached at one end of a joint or pivot, *r*. The opposite end has a screw-rod, *s*, passing through it, said rod also passing through the bar K. This screw-rod has a crank, *t*, on its upper end, by which the screw-rod may be readily turned and the arm M adjusted. In the arm M a roller, N, is placed, the periphery of which is at right angles with its sides.

To the ends of the part *i* of the frame I there is also connected, by the same pins, $a^{\times}$, of the joints *l*, a curved bar, O, which forms a frame, and has an arm, P, pivoted to it at

one end. The end of this arm opposite to that which is pivoted to the frame or bar O has a screw, *w*, passing through it, said screw also passing through one end of the frame or bar O, which is slotted to receive it. The screw *u* is provided with a thumb-nut, *v*. The arm P has a roller, Q, fitted in it, which roller has its under side beveled to form a sharp or feather-edged periphery. The frame or bar O has an arm, *w*, attached to one end, which arm is fitted on the inner edge of the segment C, and is secured to it at any desired point by a set-screw, *z*.

To the support or framing A two inclined bars, R R, are attached, one at each side. These bars are slotted longitudinally, and receive each a tenon on a horizontal bar, S, or screws may pass through the slots of these bars into the ends of bars S. To each bar S two adjustable upright bars, T T, are attached, each having a friction-roller, $b^{\times}$, on its upper end.

The body B′ of the vessel to be formed or operated upon has a flange, $c^{\times}$, turned up on its lower end at right angles with the body, as shown in Fig. 4. The bottom C′ also has its edge curved or bent, as shown at $d^{\times}$, Fig. 4. The flange $c^{\times}$ of the body B′, and also the bending of the edge $d^{\times}$ of the bottom C′, may be done by the usual or any suitable machine, and the flange $c^{\times}$ is placed within the curved or bent edge $d^{\times}$, as shown in Fig. 4. The body and bottom being thus placed or fitted together, the joint or seam is closed or locked by my improvement as follows: The body B′ is placed on the roller H of shaft F, and the bars *j j* on the frame or bar I, as well as the front bars, T T, on the bars S, are so adjusted that the exterior of the body bears against the rollers *k k* $b^{\times}$ $b^{\times}$. (See Fig. 3.) The segment C is raised or adjusted in an elevated position by turning the eccentric D so that the body B′ of the vessel may be adjusted as above described. The segment C is then depressed or allowed to descend to its lowest position, the eccentrics D and *o* securing it in proper position. The roller J bears against the bottom C′, which is pressed thereby snugly against the top edge of the face of roller H on shaft F. The frame or bar O is then adjusted at a proper angle, and the arm P is so adjusted that the edge of the roller Q will bear down or press against the body B′ of the vessel at the inner edge of flange $c^{\times}$, as shown in red, Fig. 1, the arm P being secured in proper position by the thumb-nut *v*. The operator then rotates the shaft F by means of a crank, $a^{\times\times}$, and at the same time gradually raises the frame K by turning the pinion L, and the roller N bends over the flange $c^{\times}$ of the body B′ and edge $d^{\times}$ of the bottom C′ to an inclined position, as shown in Fig. 5, said parts being bent over upon the roller Q. The roller Q is then moved back and the shaft F again turned, the frame or bar K further elevated until the roller N reaches a vertical position, or a position at right angles with roller K (see dotted lines Fig 1) and the flange $c^{\times}$, and bent or curved edge $d^{\times}$ will be bent over snugly upon the body B′, forming a double or locked seam. The roller Q, it will be seen, serves as a bearing when the flange $c^{\times}$ and the edge $d^{\times}$ are first bent, in order to insure a proper quick curve and an even and a perfect folding of the parts, so that they may be properly closed during the latter portion of the movement of the frame K, and the roller J also serves the same purpose by keeping the bottom C′ adjoining the roller N firmly against the face of roller H.

I would remark that the form of the rollers—that is to say, their peripheries—may be varied in form, according to the nature of the work to be done. In case where a vessel is of flaring form, or has inclined sides, the form of the rollers N H will require to have oblique or inclined peripheries. The other rollers, Q J, will also require to be of slightly different form to that herein shown. The proper form of rollers will suggest itself to any intelligent mechanic.

I do not claim, broadly, the employment or use of adjustable rollers for seaming or closing the joints of sheet-metal ware, for rollers variously arranged are in common use for such purpose; but,

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

The frames I K O, provided, respectively, with the rollers J N Q, in connection with the segment C, the whole being arranged, as shown, so that the rollers may be readily adjusted and the manipulation of the machine generally rendered comparatively easy.

LUTHER E. PORTER.

Witnesses:
ROBT. HOWELL,
ROBT. FARGO.