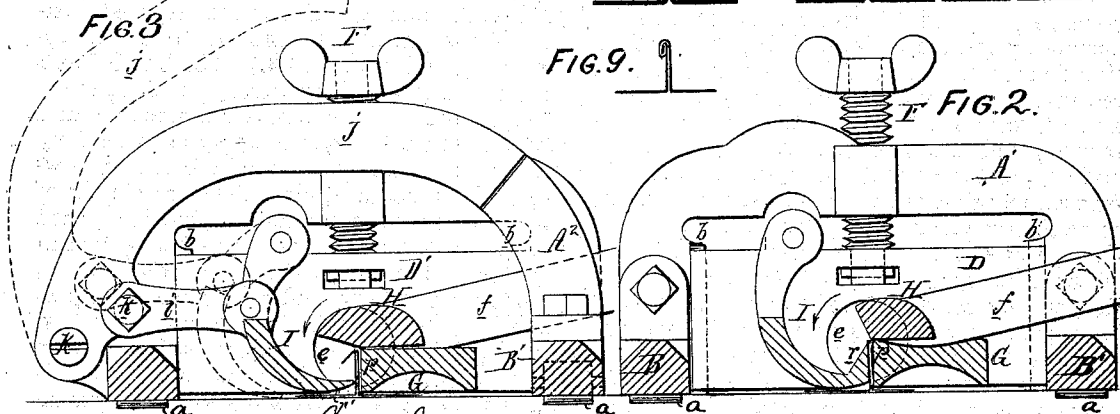
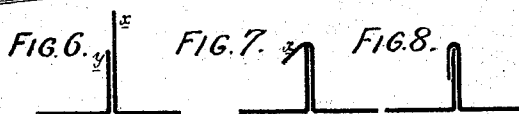
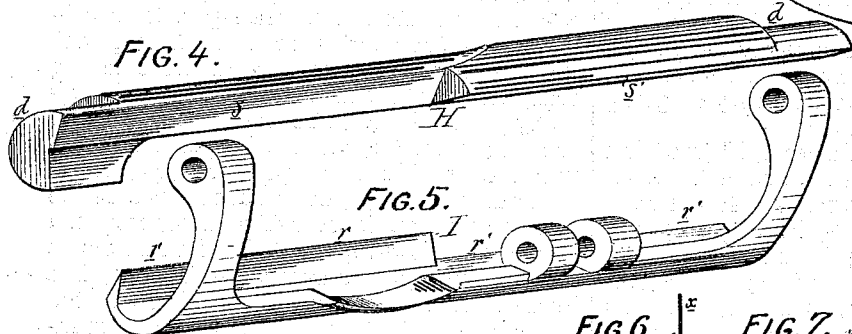
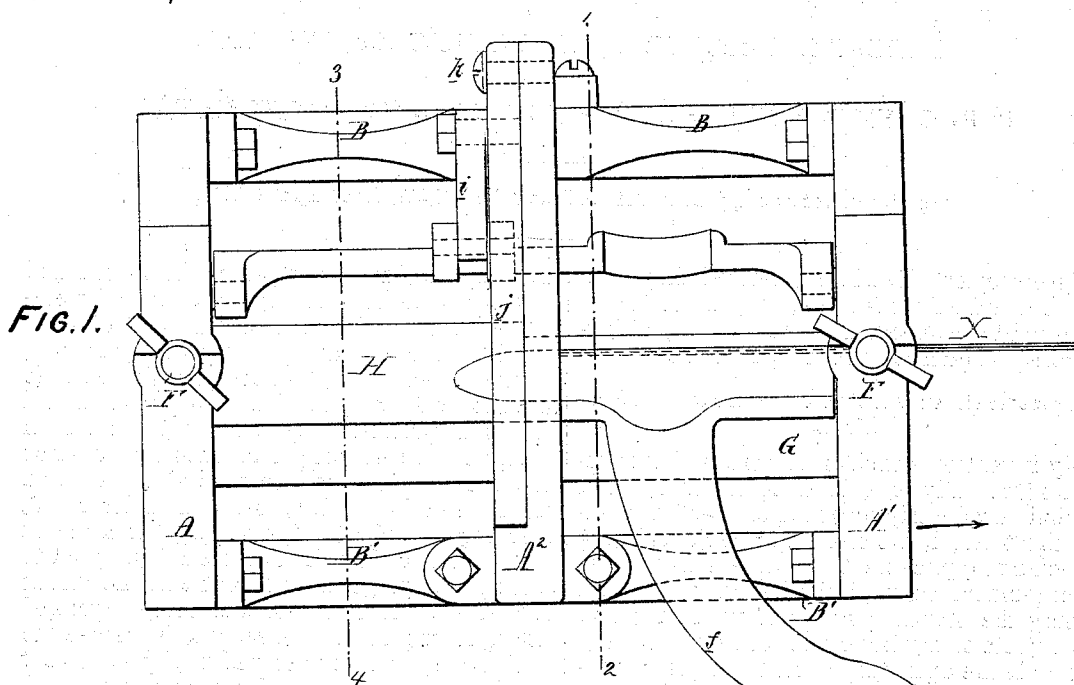


ROBERT B. McCONNELL.
Machines for Bending Sheet Metal.

No. 125,317.

Patented April 2, 1872.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MACHINES FOR BENDING SHEET METAL.

Specification forming part of Letters Patent No. 125,317, dated April 2, 1872.

Specification describing certain Improvements in Machines for Bending Sheet Metal, invented by ROBERT B. McCONNELL, of Evansville, Vanderburg county, Indiana.

Improvements in Machines for Bending Sheet Metal.

My invention consists of certain improvements (too fully explained hereafter to need preliminary description) in machines for bending sheet metal, the said improvements being especially applicable to what are known as roofing-machines, used for bending over and closing the standing seams of tin roofs; and the objects of my invention being principally to enable the operating parts to be quickly adjusted so as to suit seams of different heights, and to enable the operations of bending over and of closing or panning to be performed during the first passage of the machine over the seam, so as to avoid the necessity of going over the work a second time.

In the accompanying drawing, Figure 1 is a plan view of my improved machine for bending sheet metal; Fig. 2, a transverse section of the same on the line 1 2, Fig. 1; Fig. 3, a transverse section on the line 3 4, Fig. 1; Figs. 4 and 5, perspective views of the folding bar and clamp; and Figs. 6, 7, 8, and 9, diagrams illustrative of the work to be performed by the machine.

The frame of the machine consists of three yokes, A, A¹, and A², secured together at the bottom by two cross-pieces, B B'; the yokes or side frames A and A¹ being adapted for the reception and retention of sliding blocks D and D', to which the operating parts are attached; and the yoke A², which is situated midway, or thereabout, between the said side frames, being curved and rounded at the edges, so as to serve as a handle for sliding the machine along the standing seam X, (Fig. 1,) which is to be operated upon. To facilitate this sliding movement of the machine it is supported by and runs upon small wheels or rollers *a a* contained within recesses formed for their reception in the under side of the cross-pieces B and B', (see Figs. 2 and 3.) The sliding blocks D D', above referred to, are contained within the recessed under portions of the side frames A and A¹; are adapted at their opposite edges to guides *b b* of the said

frames; and are arranged to be raised and lowered upon the said guides, and to be sustained after such adjustment by set-screws F F. The main operating parts consist of a bar, G, permanently fixed at its opposite ends to the blocks D D', and of a folding bar, H, and clamp I, parallel with the bar G, and both hung to the said blocks in such a manner as to have a movement around and toward and from the said fixed bar, as hereafter described, (see Figs. 2 and 3.) The folding bar H has at its opposite ends half journals *d d*, adapted to circular bearings or openings *e* in the blocks D and D'; the said journals being arranged at right angles, or thereabout, in respect to each other, as best observed in Fig. 4, so that the bar may be turned, by means of the arm *f*, to either of its two extreme positions without closing the apertures communicating with the openings *e*, through which the standing seam must project in order to be operated upon by the machine. The clamp I is hinged to the blocks D D' by means of lugs *h h* at its opposite ends; and it is operated, through the medium of a link, *i*, and in such a manner as to be moved up to or drawn away from the bar G, by a lever, *j*, which has its fulcrum at *k* on the yoke or handle A², (see Fig. 3.) The lever *j* is of the same shape as, and is adapted to a recess in the side of, the handle A², it fitting snugly to the latter, and forming, in effect, a part of the same when the clamp is held against the bar G, which is the required position of the parts when the machine is in operation, (see Figs. 1 and 3.) The bar G has a continuous vertical, or nearly vertical, edge, *p*, extending entirely across the machine, and against which the standing seam is held by the clamp I. The portion of the latter, however, which bears against the bar G is not of the same character throughout, but is divided longitudinally in the manner best observed in Fig. 5, so as to form a V-shaped projection, *r*, extending from one end of the said clamp to about the center of its length, and a narrow tongue, *r'*, extending from the said projection to the opposite end of the clamp. The folding bar H, Fig. 4, is cut away so as to form an edge, *s*, at a point opposite the projection *r* of the clamp; and it has a projection, *s'*, at a point opposite the tongue *r'* of the said clamp. These parts, at one end of the machine are so

arranged in respect to each other and to the bar G that the front edge of the projection *r* of the clamp shall be parallel with and fit closely against the edge *p* of the bar, while the edge *s* of the folding bar H shall, when the latter is turned over, coincide with the rear edge of the said projection *r*, (see Fig. 2.) At the opposite end of the machine, however, the projection *s'* of the folding bar extends over the tongue *r'* of the clamp, and bears simultaneously with the latter against the edge *p* of the fixed bar.

The operation of the machine is as follows: The clamp having been drawn back to the position indicated by dotted lines, Fig. 3, and the folding bar turned to the position shown, the machine is fitted to the standing seam to be folded and closed, and is first slid over the same in the direction of the arrow, Fig. 1, until the end of the seam coincides with the inner end of the projection *r* of the clamp. The latter is then turned to the position shown in Fig. 2, in order to firmly hold the seam, after which the projecting flange *x* of the seam is folded over the lower flange *y* by a movement of the folding bar in the direction of the arrow, Fig. 2, the fold assuming the same angle as the inner edge of the projection *r* of the clamp against which it is forced by the folding bar. (See Figs. 6 and 7.) The folding bar is next turned back to its original position, and the machine is moved along the seam to the extent of half a length in order that the partially-folded portion of the seam may be acted on by the projection *s'* of the folding bar and be completely closed or panned by the same, as shown in Figs. 3 and 8, simultaneously with the partial folding of a fresh portion of the seam by the pressure against the same of the edge *s* of the folding bar. In this way the machine is moved along the seam to the extent of a half a length at a time; each movement of the lever *f* and its folding bar partially folding one portion of the seam and finishing another portion, so that there is no necessity of going over the same seam a second time, except for the purpose of making the double fold, shown in Fig. 9, to accomplish which merely requires a repetition of the operation already described and the lowering of the operating parts and blocks D D by means of the set-screws.

This vertical adjusting of the operating parts with the blocks D D is one of the most important features of my invention, as it enables the fold to be made at any part of the seam and the machine to be used for seams of any height.

The fact that the clamp exerts a pressure against the seam throughout the whole of the length of the bar G during the simultaneous folding and panning operations upon different portions of the said seam is also an important feature; as is also the arranging of the clamp-lever *j* in such a manner that it can be held by the same hand by which the handle A² is grasped. This latter feature enables one hand to perform double duty, and will, therefore, much facilitate the operation of the machine upon steep roofs.

I claim as my invention—

1. A machine for bending sheet metal in which the clamps and folding bar are attached to blocks D D', adapted to and rendered vertically adjustable in the side frames, substantially in the manner described.

2. The clamp I, arranged to bear against the bar G throughout the whole of its length, as described, and having a projection, *r*, and tongue *r'* adapted to and operating in conjunction with the edge *s* and projection *s'* of the folding bar, as specified.

3. The combination, with the adjustable blocks D D', of the said clamp I, the link *i*, and the operating lever *j*, hung to the fixed frame, all substantially as specified.

4. The clamp-lever *j*, hung to and forming a part of the yoke or handle A² by which the machine is moved along the seam, all substantially as and for the purpose specified.

5. The frame of the machine, consisting of yokes or side frames A A' connected together by bars B B' and adapted for the reception and retention of the blocks D D', and of a central yoke or handle, A², secured to the said bars B.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

R. B. McCONNELL.

Witnesses:

WM. H. WOODS,
AS. McCONNELL.