(Model.)

N. R. DULL.

CLIP BENDER.

No. 274,741. Patented Mar. 27, 1883.

Fig. 1.

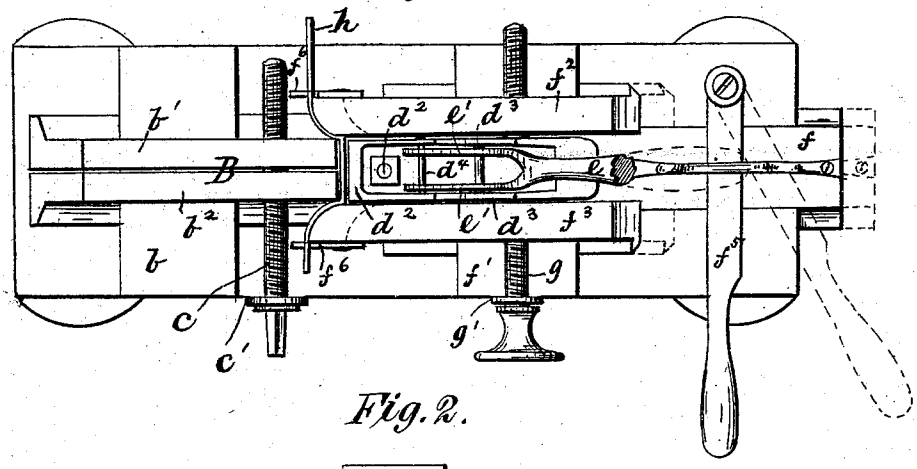


Fig. 2.

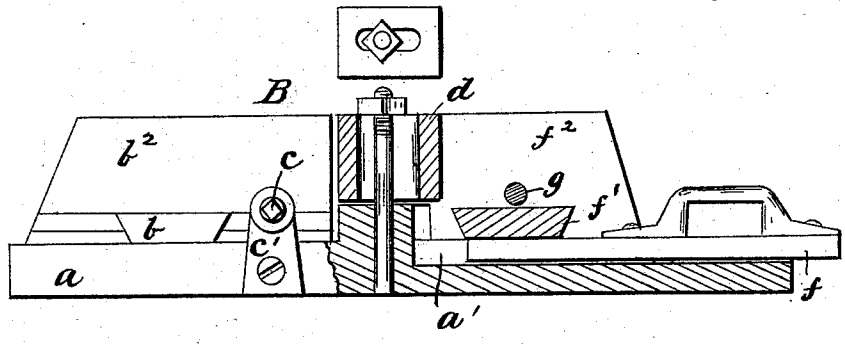


Fig. 3.

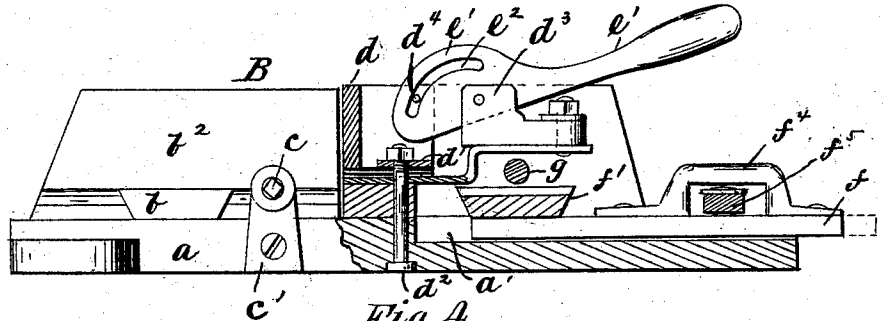
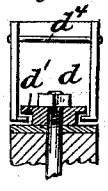


Fig. 4.



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UNITED STATES PATENT OFFICE.

NORMAN R. DULL, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO HENRY C. CANFIELD, OF SAME PLACE.

CLIP-BENDER.

SPECIFICATION forming part of Letters Patent No. 274,741, dated March 27, 1883.

Application filed September 30, 1882. (Model.)

To all whom it may concern:

Be it known that I, NORMAN R. DULL, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Clip-Benders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention has relation to improvements in clip-benders.

It consists in the construction, combination, and arrangement of the several parts, as will be hereinafter fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a plan view, and Fig. 3 is a side view, part in section, of a machine constructed according to my invention. Fig. 2 is a sectional view, showing a modification in the clamping-block; and Fig. 4 is a detail view, as will be described.

A represents the bed-plate. It is provided with a groove, *a*, extended from one end, and formed with inclined sides to correspond to the inclined sides of the slide, as shown in Fig. 1 and hereinafter described.

b is a rail, mounted on bed-plate *a* near the end opposite the slot *a'*, and extending transversely from side to side over the bed-plate, as shown. The sides of this rail are beveled inwardly from top to bottom, as shown.

B is the shaping-head, which may be made a solid block under certain circumstances, which I will hereinafter describe. I prefer, however, to construct it of two bars, b' b^2, provided in their edges with mortises made to fit and slide snugly on the rail *b*. The bar b' is provided with an opening, which is tapped with a female thread corresponding to the right-hand thread on the adjusting-screw *c*, hereinafter described. The bar b^2 is provided with an opening in line with the opening through bar b', and this opening is formed with a female thread corresponding to the left-hand thread on screw *c*.

c is the adjusting-screw. It is mounted in lug c' and provided at its outer end with an angular shank, so it may be turned. It is cut with a right-hand thread on its outer end, which works in the opening through bar b', and with a left-hand thread on its inner end, or end next the lug c', and this portion works in the opening through bar b^2, as shown. Thus by turning this screw the bars b' b^2 may be brought close together, as shown in Fig. 1, or may be set any suitable distance apart, thus regulating the size of the clip in the operation of the device, as will be described.

d is the clamping-block, arranged immediately in front of the inner ends of bars b' b^2, and of a width equal to these bars when closed, as shown in Fig. 1. In Fig. 2, I show this block provided with an elongated slot, through which is passed the bolt d^2, by which it is secured to the bed-plate by means of a nut screwed on said bolt and bearing on either side of the slot, as shown. This block, it will be seen, can be adjusted forward and backward to accommodate the machine to the various thicknesses of the iron desired to be bent, and also permit the easy removal of the bent clip. I regard this construction as a modification of my invention, and prefer the construction shown in Figs. 1, 3, and 4, and hereinafter described. In these figures, *d* is the clamping-block, bent from a metallic plate, and having the lower edges of its side portions bent to enter grooves in the sides of a guide-plate, d', as shown in Fig. 4. This guide-plate is secured to the bed-plate by bolt d^2, and is extended to provide support for the jaws d^3 d^3, in which the clamp-block-operating lever is pivoted.

d^4 represents a rod extending across between and connecting the side bars of the clamp-block at a point near its upper rear end.

e represents the clamp-block lever. Its forward end is bifurcated to provide the bars e' e', and it is pivoted on the lugs d^3, as shown.

e^2 are curved slots cut through the bars e' e', and arranged in line with each other, and eccentrically with reference to the pivotal point of the lever, as shown.

The forward end of the lever *e* rests between the side plates of the clamping-block, with the bars e' close to the plates d^3, as shown in Fig. 1. The rod d^4 passes through the slot e^2, and

the clamping-block *d* and its operating-lever *e* are thus connected, as shown.

f is a slide constructed to fit and placed and sliding in the groove *a'*, formed in the bed-plate *a*, as shown.

f' is a rail similar in shape to rail *b*, and secured on the slide *f*.

f^2 f^3 are bars provided in their lower edges with mortises, cut to fit on the rail *f'* as the bars b' b^2 do on rail *b*. These bars are provided with threaded sockets, in which works the right-and-left-hand adjusting-screw *g*, which is mounted on lug *g'*, and operates substantially like the adjusting-screw *c*, as has been described. The ends of the bars b' b^2 are rounded on their inner face, as a better action is thus secured on the iron being bent.

f^4 is a loop secured on the slide *f* near its end.

f^5 is a lever pivoted to the bed-plate *a* on one side of the slide *f*. It passes through the loop f^4, and is extended on the opposite side to provide a handle and give proper leverage in the operation of the machine.

f^6 f^6 are supports for the iron being bent. They are secured to the sides of bars f^2 f^3, and extend forward therefrom, as shown. I prefer to secure these supports to the bars by screws passed through elongated openings, so they may be adjusted up or down, as may be desired.

h represents the iron being bent.

In the operation of my invention the iron *h* is placed between the clamping-block and the ends of bars b' b^2, the said block being in the position shown in Figs. 1 and 3, and the slide *f* being in the position shown in dotted lines. The lever f^5 is then carried, with the slide *f* and bars f^2 f^3, into the position shown in full lines, bending the iron *h*, the operation being clearly illustrated in Fig. 1. It will be seen that by turning the adjusting-screws *c* and *g* the bars b' b^2 and f^2 f^3 may be set so as to bend clips of any desired width. When the iron is placed between the clamp-block and the bars b' b^2, and the bars f^2 f^3 are forced up, bending the clip, and withdrawn, the iron is often wedged in tightly between the bars b' b^2 and the clamp-block; and to obviate this difficulty I have provided the lever *e*, connected with and operating the clamp-block.

It will be seen that when the clamp-block and the lever are in the position shown in Fig. 1 the block is held firmly in position for the iron to be placed between it and the bars b' b^2 to be bent. When the iron has been bent, the end of the lever *e* is thrown up, drawing the clamp-block back away from the iron, which may then be easily removed.

It will be understood that the sliding clamp-block could be adjusted back and forth by other means than the lever with curved eccentric-slots. For instance, a lever might be secured to it and arranged to engage teeth of a ratchet-bar arranged alongside. I prefer, however, the construction shown and hereinbefore described.

The utility of my machine is not confined to the bending of clips; but it is of advantage in the manufacture of seat-hooks, stake-irons, double-tree irons—in fact, all irons requiring a square bend—and by changing the form of the ends of bars b' b^2, around which the iron is bent, a round or oval bend may be made.

Instead of using the bed-plate, the parts mounted thereon can be secured on the floor of the work-shop, though I prefer its use, as the machine is thus rendered portable.

When the clips to be bent are of a uniform size and the iron is of the same thickness, it will be understood that the shaping-head B could be constructed of a solid block, and that the bars f^2 f^3 need no lateral adjustment.

It will also be seen that when the inner size of the desired clips is uniform and the thickness of iron varies the shaping-head may be made of a single block; but it is necessary to make the bars f^2 f^3 adjustable laterally, so they may be conformed to the varying thickness of the iron; and when clips of different size are required it is necessary to make both the shaping-head, which I then construct of two bars, and the bars f^2 f^3 so that they may be adjusted laterally to the size of clips desired.

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

1. In a machine for bending iron, the combination, with the shaping-head B and the clamp-block *d*, arranged in line with and close to the end of the shaping-head B, of the clamping or bending bars f^2 f^3, placed on opposite sides of and sliding longitudinally close to the shaping-head and clamp-block *d*, and means for operating the clamping-bars f^2 f^3, substantially as and for the purposes set forth.

2. In a machine for bending iron, the combination, with a stationary clamp-block, *d*, of the bars f^2 f^3, placed on opposite sides of and detached from the block *d*, and adjustable laterally therefrom and movable longitudinally alongside thereof, and means for moving said bars f^2 f^3 longitudinally, substantially as and for the purposes set forth.

3. The combination, with the stationary clamp-block *d* and the side bars, f^2 f^3, placed on opposite sides of and detached from the clamp-block *d* and adjustable laterally therefrom, of the parallel bars b' b^2, composing the shaping-head B, placed with their ends in close proximity to the block *d* and adjustable laterally from each other, and means for giving the lateral adjustment to the bars b' b^2, substantially as and for the purpose set forth.

4. In a machine for bending iron, the combination, with the stationary clamp-block *d*, of the parallel bars b' b^2, adjustable laterally from each other, and having their ends in close proximity to the block *d*, the parallel bars f^2 f^3, placed on opposite sides of the clamp-block *d* and adjustable laterally therefrom, and movable longitudinally past the ends of the bars b' b^2, and means for giving the adjustment to the

said bars, substantially as and for the purposes set forth.

5. In a machine for shaping iron, the clamp-block *d*, placed between the parallel side bars, f^2 f^3, and in close proximity to the forming-head B, and movable to and from the said forming-head independently of the adjustment of the side bars, f^2 f^3, substantially as and for the purposes set forth.

6. In a machine for bending iron, the combination of the shaping-head B and bars f^2 f^3, the clamp-block *d*, placed between the bars f^2 f^3, the lever *e*, pivoted and provided in its forward end with the eccentric slot e^2, and rod d^4, passed through slot e^2 and connected with the clamp-block, substantially as and for the purposes set forth.

7. The machine for bending iron, substantially as described and shown, consisting of the bed-plate *a*, having rail *b* mounted on one end and provided in its other end with groove *a'*, the slide *f*, placed in groove *a'* and connected with lever f^5, the rail *f'*, mounted on slide *f*, the bars b' b^2 f^2 f^3, right-and-left-hand screws *c g*, and adjustable clamp-block *d*, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

NORMAN R. DULL.

Witnesses:
A. E. MACOMBE,
MOSES C. CANFIELD.