

(No Model.)

2 Sheets—Sheet 1.

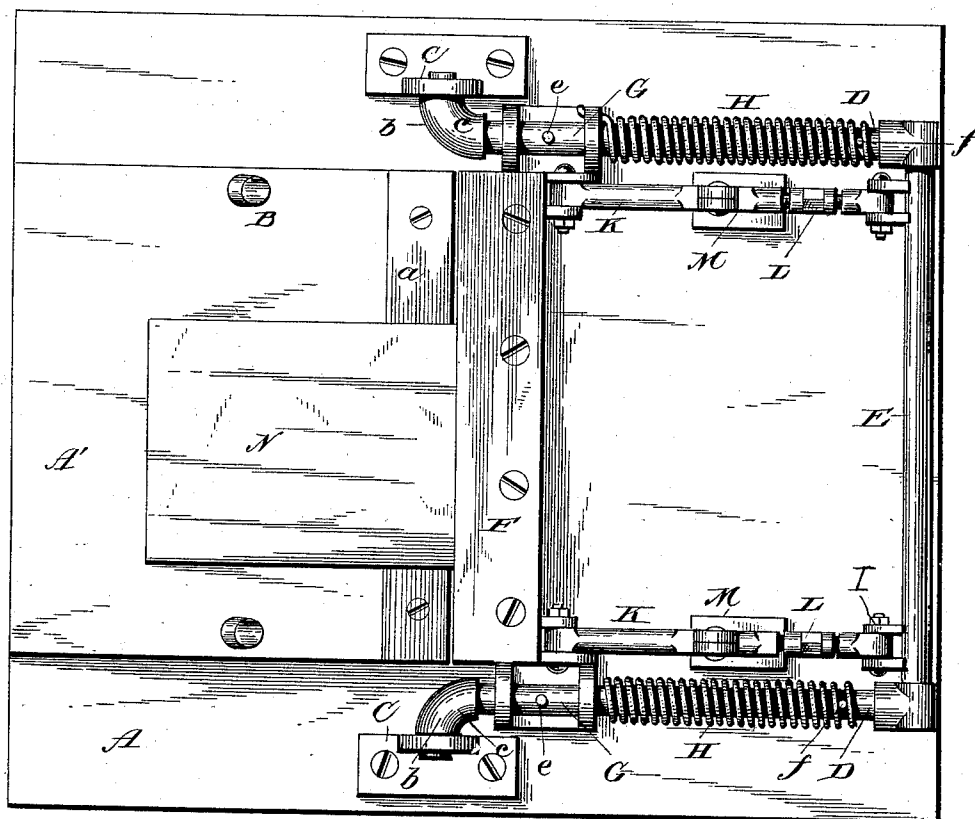
W. G. HYNDMAN.

DEVICE FOR FOLDING SHEET METAL PLATES.

No. 422,944.

Patented Mar. 11, 1890.

Fig. 1.



WITNESSES:

L. C. Hills.
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William G. Hyndman, INVENTOR

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(No Model.)

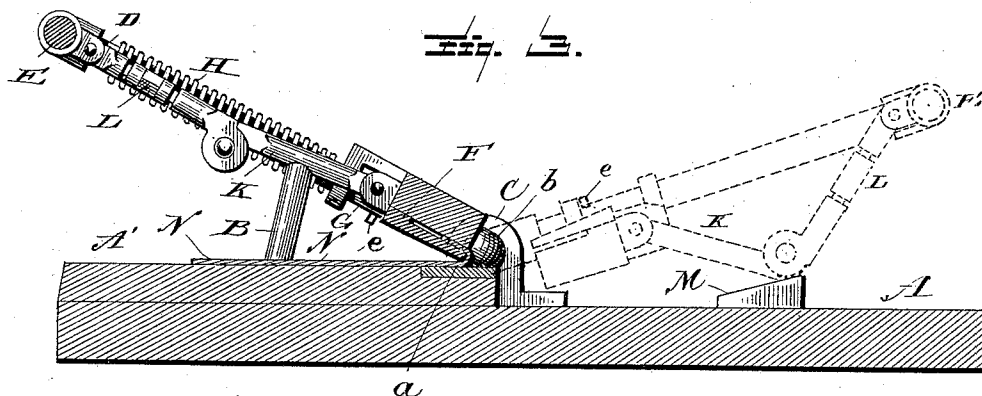
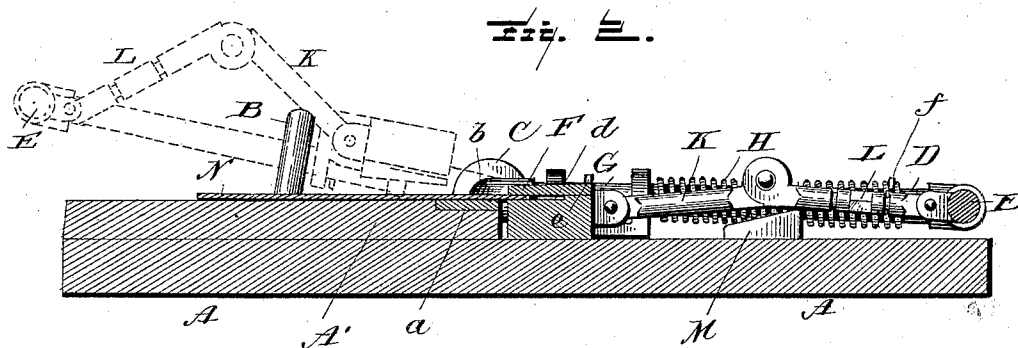
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM GRAVES HYNDMAN, OF CINCINNATI, OHIO.

DEVICE FOR FOLDING SHEET-METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 422,944, dated March 11, 1890.

Application filed December 26, 1889. Serial No. 335,008. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GRAVES HYNDMAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Devices for Folding Sheet-Metal Plates; 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, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in machines for folding or bending sheet-metal plates; and it has for its object, among others, to provide a machine of this character which, after making the fold, will be turned back into its original position ready for more work, releasing itself from the metal sheet or plate, clearing the fold made without moving the sheet or plate and without turning the same.

It aims also in novel features of construction, which will be hereinafter described more fully, shown in the drawings, and then particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan of my improved machine. Fig. 2 is a side elevation or longitudinal section through the same, with the parts shown in full lines in the position they assume before bending the sheet or plate. Fig. 3 is a like view showing in full lines the position the parts assume after bending the sheet or plate.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a suitable bed-plate for supporting the various parts of the machine. This may be of any suitable material and of a size adapted for the purpose. Upon this bed-plate at one side is a raised bed A', upon which the sheet or plate is designed to rest while being bent. It is provided upon its acting edge with a metal plate a, set in a recess in the raised bed, so as to be flush with the upper face thereof, as shown in Figs. 2 and 3. Upon opposite sides of this raised

bed, near the longitudinal center thereof, are the raised stops B, the object of which will be hereinafter described.

C are suitable ears or brackets secured to the bed A, and in these ears or brackets are journaled the ends of the trunnions b, formed upon curved lines, as shown at c, and which carry the parallel arms D, the outer ends of which are connected by a cross-bar E, preferably round, and which serves as a handle by which the device is operated. The trunnions are preferably formed of a hollow pipe, to which the parallel arms are secured by a screw-thread engagement, so that they may be readily connected or detached when desired, and the end of the curved portion forms a convenient stop for the sliding bracket hereinafter described.

F is the bending-bar, provided along its acting edge with a recess d, to receive and hold the edge of the sheet or plate to be bent, as shown best in Figs. 2 and 3. This recess is preferably formed between the bar and a metal plate secured to the upper face thereof, as shown; but it may otherwise be formed, if desired. Upon the ends of this bending-bar are cast or rigidly secured the brackets G, in apertures in the ears of which the parallel arms D are designed to loosely work, the said arms being provided between the ears with a stop-pin e, as shown in Fig. 1.

H are coiled springs around the arms D, between the outer ears on the brackets G and a retaining pin f on the said arms.

I are lugs on the cross-bar E, one near each end thereof, and J are corresponding lugs on the bending-bar F. K are toggle-levers pivotally connecting the said lugs, and one arm of the toggle is made adjustable by means of a turn-buckle L.

M are cam-plates on the upper face of the bed A, as shown in all the figures of the drawings, and the object of which will soon appear.

In operation the parts are normally in the position in which they are shown in Fig. 1 and in full lines in Fig. 2. The sheet or plate N to be bent is then placed upon the raised bed with its edge entered in the recess in the bending-bar, as shown in Fig. 2. The toggle-levers are at this time straightened. The bending-bar is then brought over into

the position shown by full lines in Fig. 3, the metal being bent as indicated in said Fig. 3. In the further movement of the parts the toggles come in contact with the tops of the stops B, and the toggles are thus raised, allowing the springs to draw the bending-bar away from the bent end of the sheet or plate. The parts are then thrown over into their normal position, and when thus thrown the toggle-levers come in contact at their joints with the cam-plates M on the bed-plate, as shown by dotted lines in Fig. 3, and the toggles are straightened in the further movement of the parts and the springs on the arms D are compressed. The stop-pin e limits the movement of the arms in the direction of their length.

It will thus be seen that the device is automatic in its action. As soon as the sheet is bent the toggles are raised, the springs draw the bending-bar away from the bent sheet, and as the parts are thrown back away from the sheet the toggles are again automatically straightened ready for work, and, the bent sheet having been removed and another placed in position, the operation may be repeated.

Various modifications in detail may be resorted to without departing from the spirit of the invention.

What I claim as new is—

1. The combination, with the bending-bar

and the operating-arms, of toggle-levers connecting the bar and arms and stops for breaking the levers after bending the metal, as set forth.

2. The combination, with the bending-bar and the operating-arms, of toggle-levers connecting the bar and arms, stops for breaking the devices after forming the fold, and cams for straightening the levers when the parts are returned to their normal position, as set forth.

3. The combination, with the bending-bar and the spring-actuated arms connected therewith, of the toggle-levers connecting the bar and arms and stops for automatically raising and straightening the levers, as set forth.

4. The combination, with the bending-bar and the spring-actuated arms connected therewith, of the toggle-levers pivotally connected to the bar and arms, the stops B, engaging said levers to break them after forming the fold, and a cam arranged to straighten the toggles as the parts are thrown into their normal position, as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WM. GRAVES HYNDMAN.

Witnesses:

OLIVER B. JONES,
JOHN J. SULLIVAN.