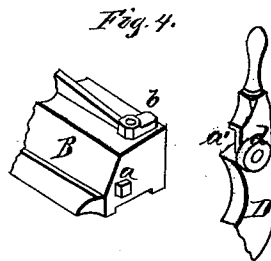
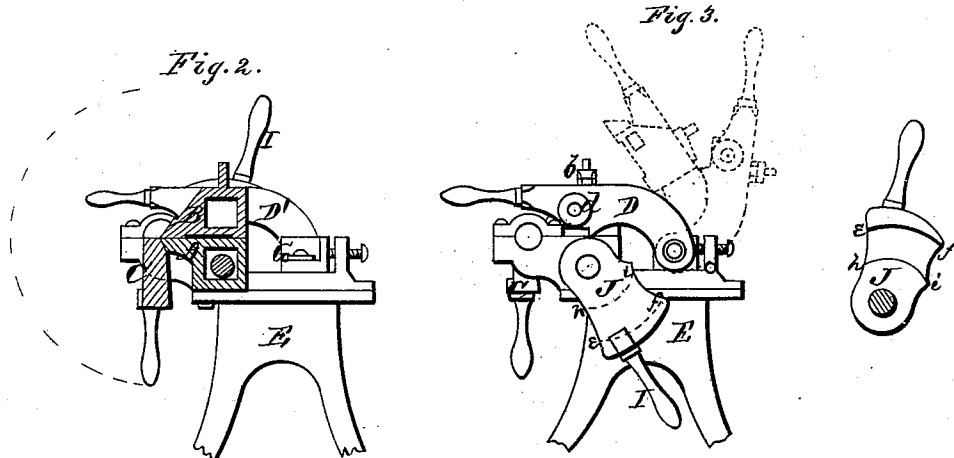
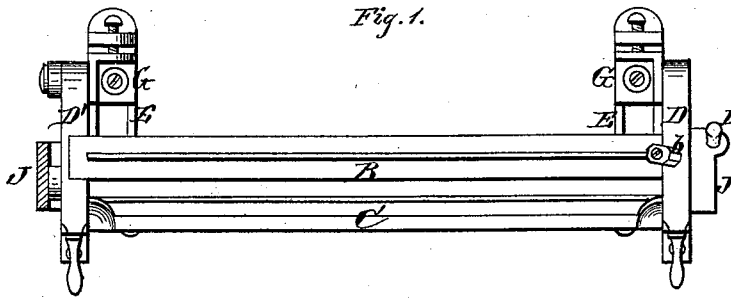


**W. F. KISTLER.**  
**Sheet-Metal Bending-Machines.**

No. 142,921.

Patented September 16, 1873.



Witnesses:

*Henry N. Miller*  
*C. L. Evert.*

Inventor.

*Willoughby F. Kistler,*  
*per Alexander Watson*

Attorneys.

# UNITED STATES PATENT OFFICE.

WILLOUGHBY F. KISTLER, OF CINCINNATI, OHIO, ASSIGNOR TO THOMAS & ROBINSON, OF SAME PLACE.

## IMPROVEMENT IN SHEET-METAL-BENDING MACHINES.

Specification forming part of Letters Patent No. **142,921**, dated September 16, 1873; application filed May 21, 1873.

*To all whom it may concern:*

Be it known that I, WILLOUGHBY F. KISTLER, of Cincinnati, in the county of Hamilton and in the State of Ohio, have invented certain new and useful Improvements in Machine for Folding Sheet Metal; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to machines for bending sheet metal in which are two hinged bending-bars operating in connection with a stationary bed; and the nature of my invention consists in the construction and arrangement of the several parts, as more fully hereinafter set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view of a machine for bending sheet metal embodying my invention. Fig. 2 is a transverse vertical section, and Fig. 3 an end elevation, of the same. Fig. 4 shows, in perspective, the devices for releasing one end of the upper bending-bar.

A represents the stationary bed, supported on a suitable frame, E. B is the upper bending-bar, around which the sheet metal is to be bent, and C is the bar by which the metal is bent around the bar B. D D' represent two levers, which are hinged or pivoted to adjustable boxes or slides G G, one at each end of the machine. One end of the upper bending-bar B is firmly attached to the lever D', while the other end is loose or detached from the lever D. Upon this end of the bending-bar B is a lug or projection, *a*, and a corresponding recess, *a'*, is made in the lever D for the lug *a* to enter, the lever D being then held by a button, *b*, as shown. At each end of the bed A is pivoted a cam, J, to operate upon a friction-roller, *d*, on the side of the lever D or D'. The cams J J may be either rigidly or loosely attached to the ends of a shaft passing through the machine; or they may have separate and independent journals upon which to

turn, as may be most advantageous in manufacturing. Each cam J has on its inner side a groove, forming an upper cam-surface from *e* to *f*, and a lower cam-surface from *h* to *i*, and each cam is provided with a handle, I, by means of which it is turned.

The metal to be bent is passed in between the bending-bar B and bed A to the point where the fold is desired. The cams J J are then, by means of their handles I I, brought forward over the rollers *d d*, the cam-surface from *f* to *e* pressing down upon the same, giving an equal and even pressure and holding the sheet metal. By now raising the folder or bending-bar C, the metal is bent over the bar B. When the metal is bent the folder is let down, and the cams J J turned backward until the points *i* of their lower cam-surfaces, operating on the under sides of the rollers *d d*, have raised the bending-bar B sufficiently to release the metal and move it to the next point where it is to be bent. If the metal, by similar successive operations, is bent around the bar B in the form of a box, the metal could not be removed until one of the levers D or D' were detachable from the bending-bar. By turning the button *b* the lever D may be raised independent of the bar B, and the metal drawn out.

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

1. The bending-bar B, attached at one end to the lever D', and provided at the other end with a lug, *a*, and button *b*, in combination with the lever D, as and for the purposes herein set forth.

2. The combination, with the frame E, of the bed A, cams J J, bending-bar B, with projection *a*, bar C, hinged or pivoted lever D, with friction-roller *d* and recess *a'*, lever D', and the adjustable boxes G G, all constructed substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 18th day of April, 1873.

W. F. KISTLER. [L. s.]

Witnesses:

A. W. FRANCIS,  
WILLIAM WINTERS.