No. 704,521. Patented July 15, 1902.

J. J. DOLAN & E. ESTEP.

METAL BENDING TOOL.

(Application filed June 6, 1902.)

(No Model.) 2 Sheets—Sheet 1.

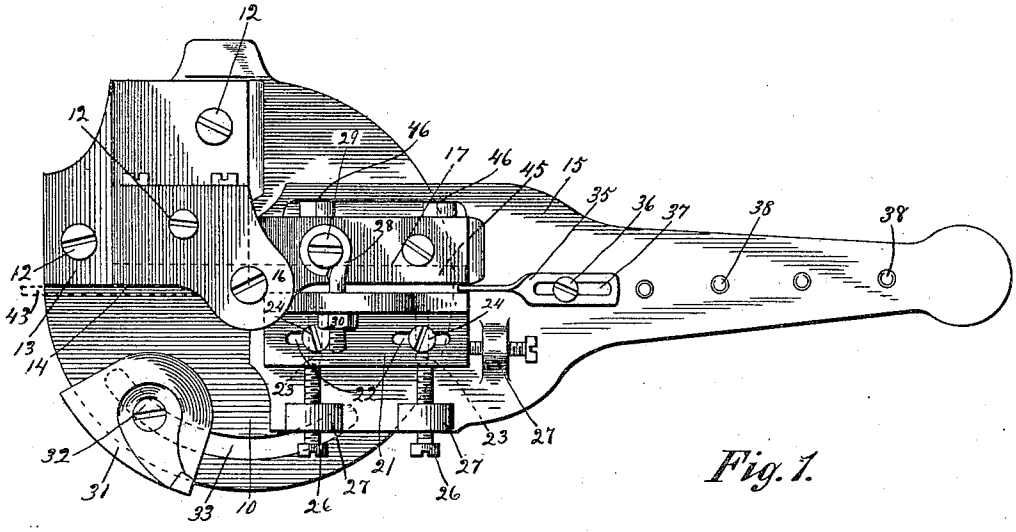


Fig. 1.

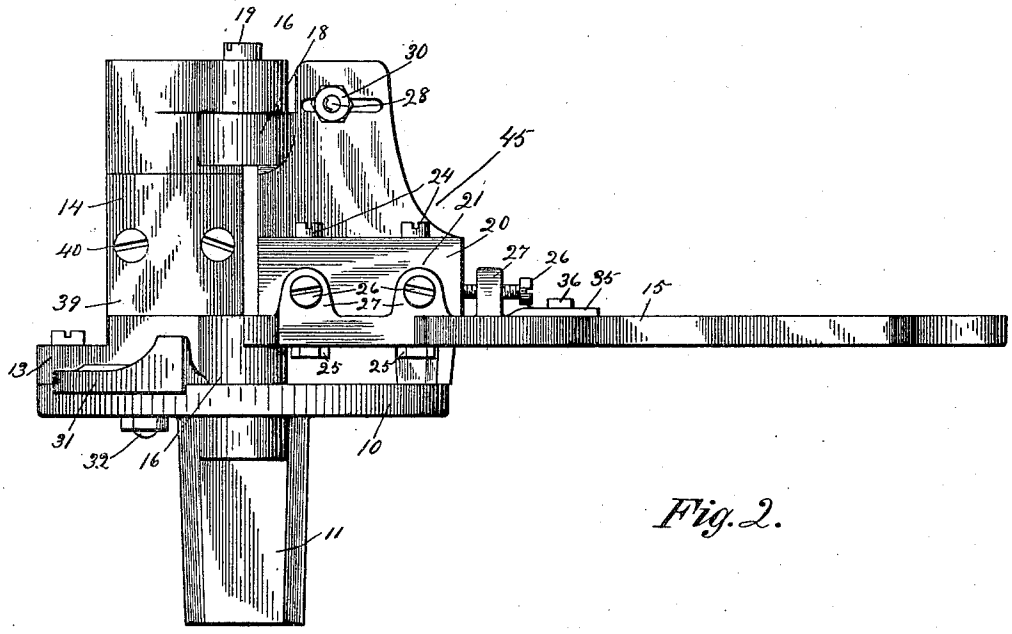


Fig. 2.

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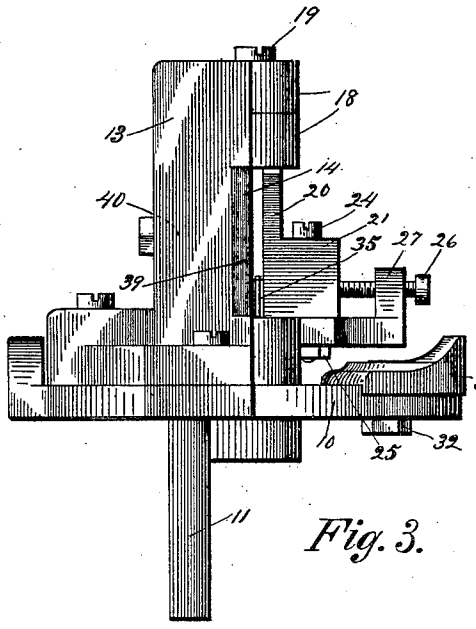


Fig. 3.

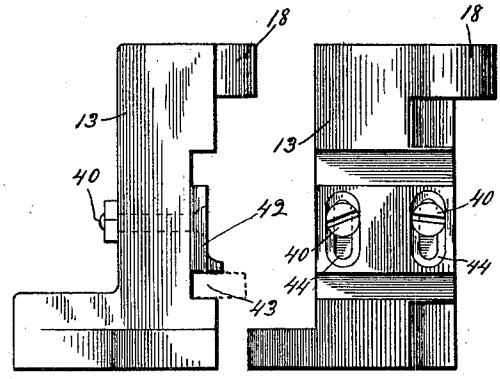


Fig. 4

Fig. 5.

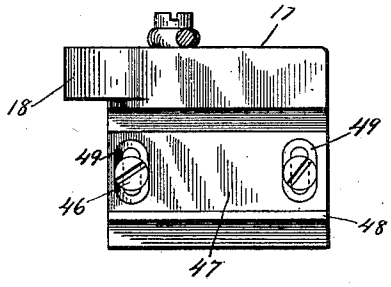


Fig. 6.

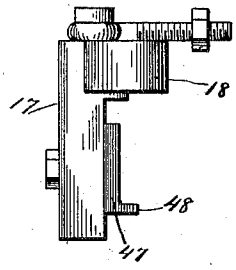


Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES J. DOLAN AND EZRA ESTEP, OF SANDWICH, ILLINOIS.

METAL-BENDING TOOL.

SPECIFICATION forming part of Letters Patent No. 704,521, dated July 15, 1902.

Application filed June 6, 1902. Serial No. 110,478. (No model.)

To all whom it may concern:

Be it known that we, JAMES J. DOLAN and EZRA ESTEP, citizens of the United States, and residents of Sandwich, county of Dekalb, and State of Illinois, have invented certain new and useful Improvements in Metal-Bending Tools, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to metal-bending tools, and has for its object to provide a device of this character which shall be simple in construction and adjustable through a wide range in order to adapt it to stock of different sizes.

A further object of the invention is to provide a tool which may be adapted to bending strips of metal either flat or edgewise.

The invention consists of the parts and arrangement of parts hereinafter particularly described, specifically designated in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan of the bending-tool. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation which, with Figs. 1 and 2, shows the tool as employed for bending metal stock flatwise. Fig. 4 illustrates a side elevation of the stationary base-block or abutment provided with the adjustable plate, which is substituted for the face-plate seen in Figs. 2 and 3 when it is desired to bend the strips edgewise. Fig. 5 is a front elevation of the construction illustrated in Fig. 4. Figs. 6 and 7 are a face and an end view, respectively, of the fixed jaw or block carried by the bending-lever and used with the adjustable plate shown in Figs. 4 and 5.

The base-plate 10, upon which the several parts of the tool are mounted, may be sustained in any suitable manner. In the construction illustrated it is provided with a plate 11, adapted to be seated in a socket (not shown) secured to a work-table or other support.

Fastened to the base-plate 10 by means of bolts 12 or other securing means is an abutment 13, having a flat face 14. This abutment coacts with a pair of clamping-jaws carried by a lever designed to accomplish the bending operation. The lever referred to, 15, is pivoted or hinged, as at 16, to the upper face of the base-plate and is movable in a horizontal direction. Secured thereto at the pivoted end is a jaw 17, the face of which is when the tool is in its open position, as shown in Fig. 1, a continuation of or in the same plane as the face of the abutment 13. The abutment 13 and jaw 17 at the upper end are provided each with an ear 18, through which passes a pintle 19 and by means of which the upper end of the jaw 17 is hinged to the abutment 13.

The hinged connections of the lever 15 to the base-plate and the jaw 17 to the abutment 13 are alined with the edge of the abutment 13 adjacent to the lever, so that when the latter is in any position other than its original or open position the faces of the said jaw and abutment will form a perfect angle.

Secured to the lever 15 and having its inner face parallel to the opposing face of the jaw 17 is the other jaw 20, between which and the former jaw the metal to be bent is placed. The jaw 20 is made laterally and longitudinally adjustable in order to adapt the tool to stock of different thicknesses, and such adjustment is attained by providing an offset 21 of the jaw 20 with longitudinal slots 22 and the lever 15 with transverse slots 23, (shown in dotted lines, Fig. 1,) through which bolts 24, secured by nuts 25, are passed for maintaining the jaw 20 in its adjusted positions. Positive adjustable stops, which may take the form of set-screws 26, passing through lugs 27, fixed to the lever 15 and bearing against the end and outer side of the jaw 20, furnish additional means for securing the latter.

In order to give greater rigidity to the jaws 17 and 20 and prevent their being forced apart or spread at the upper end, they may be secured together by an adjustable tie. Such tie may consist, as shown in Fig. 1, of a link 28, secured to one of the jaws, as 17, by a screw 29 and having its end projecting through a slot in the other jaw, (or 20,) threaded to receive a nut 30.

The movement of the lever, depending on the degree of the angle to be formed, is determined by an adjustable stop 31, provided with a securing-bolt 32, movable in a slot 33

in the base-plate concentric with the pivot of the lever 15, the said stop being engaged by the lever 15.

A gage 35, secured to the bending-lever by a screw 36, is designed to regulate the length of the ends to be bent and is provided with a slot 37, through which the screw passes. To secure an adjustment thereof for greater lengths than that attained by the slot, the screw 36 may be transferred to different positions on the lever, threaded apertures 38 being provided for the purpose.

Before beginning the bending operation the jaw 20 is moved from the jaw 17 and the abutment 13 a distance equal to the thickness of the stock being worked and secured, and the stop 31 and gage 35 are adjusted to provide for the required angle and the desired length of the end to be bent. The stock is then shoved in on its edge between the jaws, resting in the position shown in Figs. 1 and 3, where 43 indicates a flat metal strap. The lever 15 is now moved toward and against the stop 31. To permit of the removal of the stock, the lever is turned back to its original position. Provision is also made for bending flat-metal stock edgewise. In order to adapt the tool to this work, the flat face of the abutment 13 may be in the form of a plate 39, removably secured by bolts 40 in a recesss 41 in the said abutment. When it is desired to bend the stock edgewise, this plate 39 is removed and a plate 42, having an outstanding flange 43 at its lower edge, substituted therefor, as seen in Figs. 4 and 5. The plate 42 has vertical slots 44, through which the securing-bolts 40 are passed, permitting of a vertical adjustment of the same, the said slots being countersunk to receive the heads of said securing-bolts. The jaw 17 is also provided with a removable face-plate 45, secured by bolts 46, for which is substituted a plate 47, also having an outstanding flange 48 at its lower edge. This plate 47 is also provided with vertical slots 49, through which the securing-bolts 46 pass to permit of an adjustment of the said plate to correspond to the adjustment of the plate 42.

In bending metal edgewise the jaw 20 is adjusted in accordance with the width of the stock, which is placed between the jaws with one edge thereof under the flange 43 of the plate 42 and the flange 48 of the plate 47 and resting on the bottom wall of the recess 41 and the lever. The flanges when the plates of which they are a part are moved down against the stock prevent the outer edge of the metal buckling up during the bending operation. The operation of the device except in the particulars just noted is similar to that described in connection with bending stock flatwise.

We claim as our invention—

1. In a metal-bending tool, in combination, a base; a pair of gripping-jaws and an abutment, one of such elements being pivoted and the other being fixed to the base; and connection between the top of the abutment and the compressing member of the pair of jaws.

2. In a metal-bending tool, in combination, a base-plate, an abutment fixed thereto and having a pair of angularly-disposed faces; a lever pivoted upon the base-plate, its center of oscillation being alined with the angle of the abutment; a pair of clamping-jaws mounted upon the lever, the mouth between them being opposite the angle of the abutment; a hinge connection between the top of one of the jaws and the abutment; and a link connection between the two jaws.

3. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever pivoted to the base, a clamping-jaw secured on the lever, a hinge connection between the abutment and the jaw, a second jaw laterally and longitudinally adjustable on the lever, and an adjustable tie for securing the upper ends of the jaw together.

4. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever hinged to the base, a jaw secured thereon, a second jaw laterally and longitudinally adjustable on the lever and between which and the first-mentioned jaw the work is designed to be placed, and an adjustable tie for securing the upper ends of the jaws together.

5. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a vertically-adjustable plate secured to the said abutment, a lever hinged to the base, a jaw secured thereon, a vertically-adjustable plate secured to the said jaw, and a second jaw carried by the lever and being adjustable relatively to the first-mentioned jaw.

6. In a metal-bending tool, in combination, a base, an abutment fixed thereto and having a transverse recess, a plate located in the recess and having an outstanding flange at its lower edge and vertical slots, bolts passing through said slots for securing the plate, a lever pivoted to the base, a jaw secured thereon, a plate having vertical slots, bolts passing through said slots for securing the plate to the said jaw, and a second jaw secured to the lever and adjustable relatively to the first-mentioned jaw.

7. In a metal-bending tool, in combination, a base, an abutment fixed thereon, a lever hinged to the base, a jaw secured thereon, a hinge connection between the said abutment and jaw at the top thereof, a second jaw carried by the lever and being laterally and longitudinally adjustable thereon, adjustable positive stops for securing the latter jaw against movement, and an adjustable stop for limiting the movement of the lever.

8. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever hinged to the base, a jaw secured thereon, a hinge connection between the said abutment and jaw at the top thereof, a second jaw on the lever parallel with the first-mentioned jaw and having longitudinal slots therein, slots in the lever transverse to the longitudi-

nal slots, bolts passing through said longitudinal and transverse slots for securing the said jaw, set-screws forming positive stops for the jaws, an adjustable gage on the lever, a stop adjustable on the base for limiting the movement of the lever, a link secured at one end to one of the lever-jaws and having its other end threaded and passing through an aperture in the other lever-jaw, and a nut upon the said threaded end.

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