Nov. 30, 1948. J. W. GARRETT 2,454,867

BUS BAR BENDER

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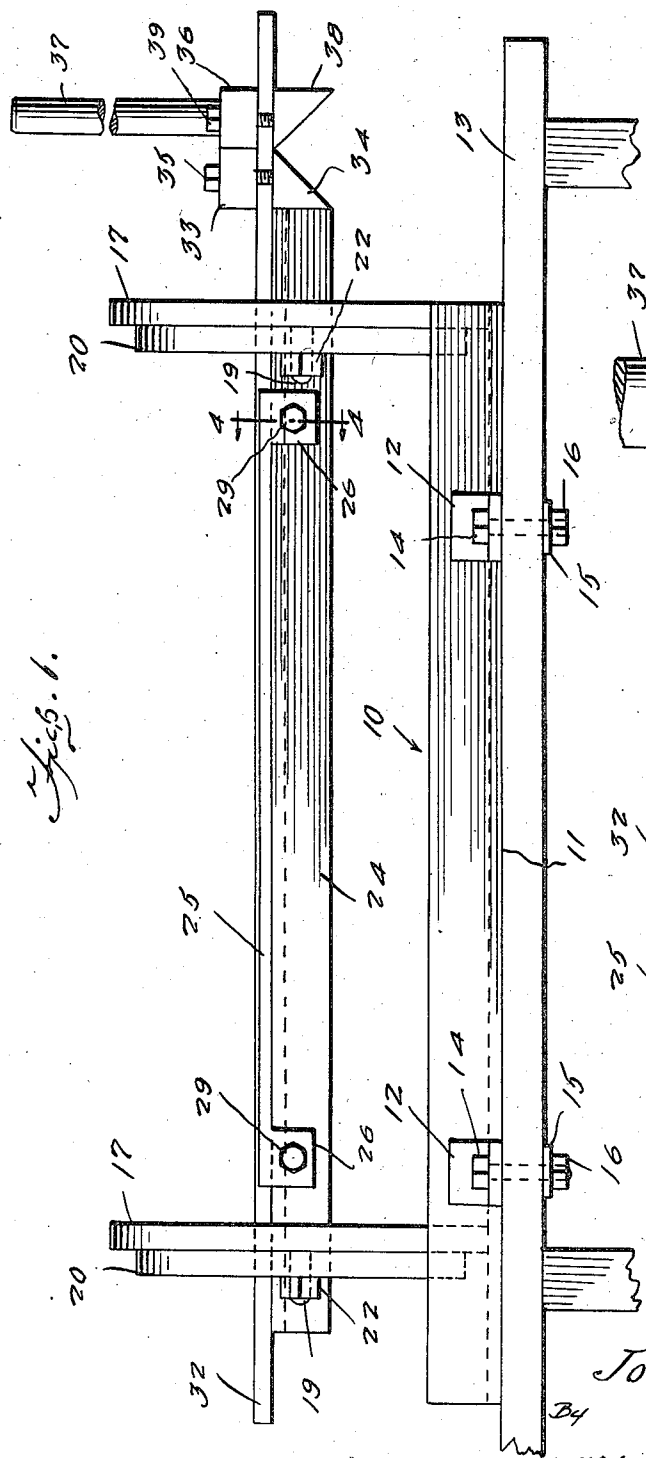


Fig. 1.

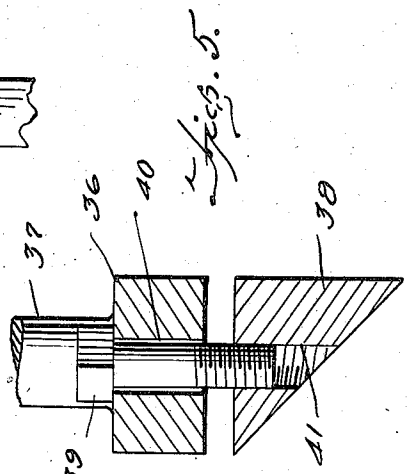


Fig. 3.

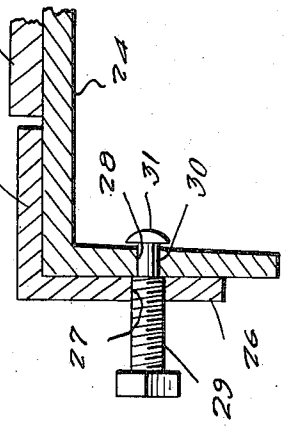


Fig. 4.

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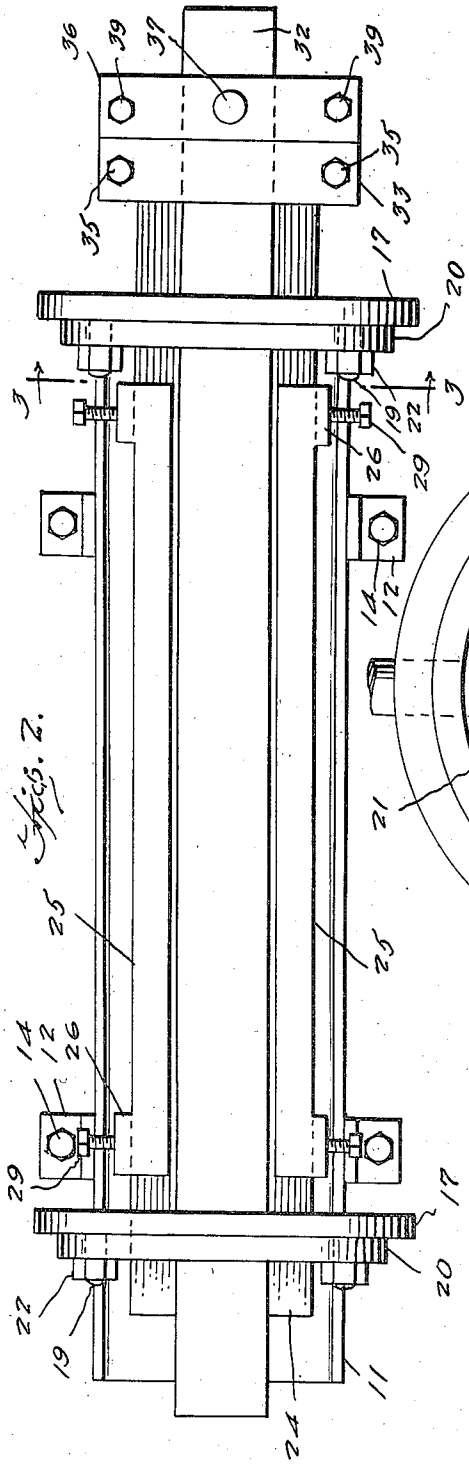


Fig. 2.

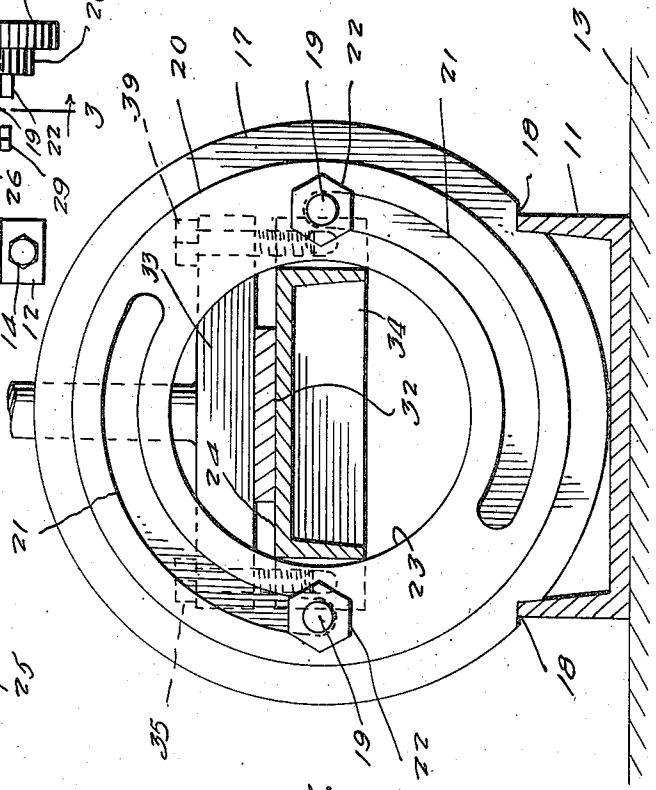


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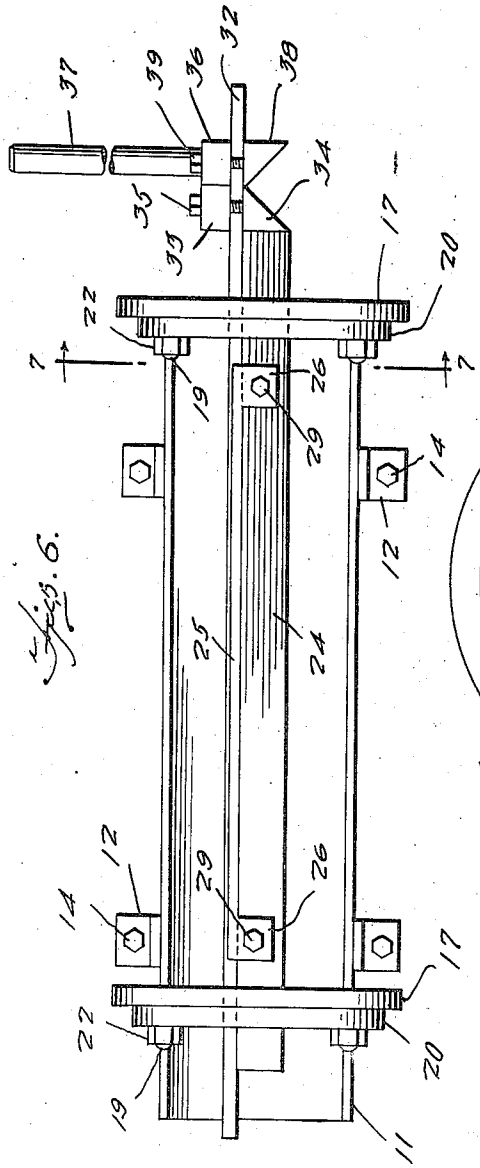


Fig. 6.

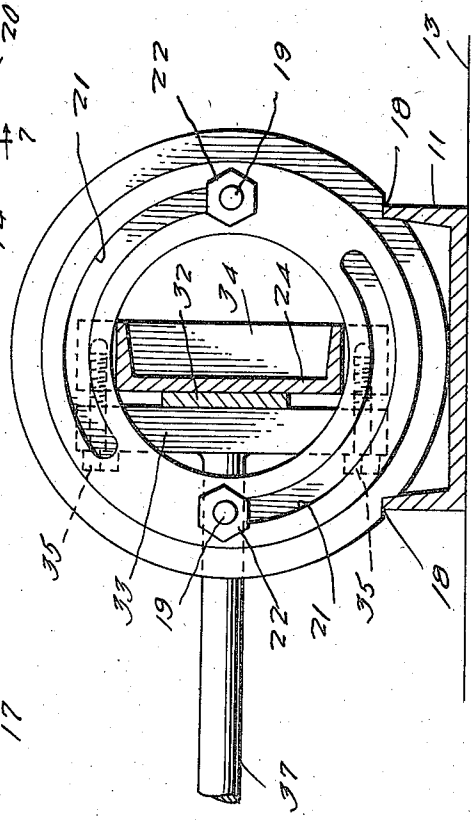


Fig. 7.

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UNITED STATES PATENT OFFICE

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BUS BAR BENDER

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Application November 29, 1946, Serial No. 713,173

6 Claims. (Cl. 153—20)

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My invention relates to tools and more particularly to bar bending tools.

The object of my invention is to provide a bar bending tool adapted to receive and hold a bar and to facilitate the bending of said bar at a perfect ninety degree angle.

Another object of my invention is to provide a bar bending machine of the character indicated above adapted to be positioned, so that a bar arranged in said bending machine can be bent downwardly or sidewardly at a perfect ninety degree angle.

Other objects of my invention may appear in the following specification describing my invention with reference to the accompanying drawings illustrating a preferred embodiment of my invention.

It is, however, to be understood that my invention is not to be limited and restricted to the exact construction and combination of parts described in the specification and shown in the drawings, but that such changes and modifications can be made, which fall within the scope of the claims.

In the drawings:

Figure 1 is an elevational side view of a bar bending machine according to my invention.

Figure 2 is a top plan view of Figure 1 showing the supporting channel and bus bar in horizontal position.

Figure 3 is a sectional view taken on line 3—3 in Figure 2.

Figure 4 is a fragmentary sectional view taken on line 4—4 in Figure 1, and

Figure 5 is a vertical sectional view through the bending lock-bars.

Figure 6 is a top plan view of Figure 1 showing the supporting channel and bus bar in vertical position.

Figure 7 is a sectional view taken on the line 7—7 of Figure 6.

Referring now in detail to the drawings, the bar bending machine forming the subject matter of my invention comprises a base 10 preferably made from an eight inch channel 11. On the outside of each flange of this channel 11 a clip angle 12 is secured adjacent each end thereof for instance by welding one leg of the clip angle onto the channel flange, so that the outside surfaces of the other angle leg and the channel web are located in the same plane. The base 10 is arranged on a bench or work table 13 and is fastened thereon by means of bolts 14 extending through the outwardly extending legs of the clip

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angles 12 and the work table 13 and secured in position by washers 15 and nut 16 thereon.

Two annular base plates 17 are provided in their circumferences with two angular notches 18 adapted to receive the edges of the flanges of the base channel 11 therein. The annular base plates 17 are arranged adjacent the ends of the base channel 11 and are welded thereon.

One the left hand surface of each base plate 17 two threaded studs 19 are secured and arranged diametrically opposite to each other at equal distances from the center of the annular base plates 17.

An annular positioning plate or rotary annulus 20 is adjustably mounted on each base plate 17 in the following manner: Two slots 21 are provided in each positioning plate 20. Each slot 21 is shaped like a quarter of a circle and is of such size and arranged, so that the two studs 19 on each of the base plates 17 are adapted to extend through the slots 21 in one of the positioning plates 20. This arrangement permits each positioning plate 20 to be rotated on the corresponding base plate 17 to the extent of ninety degrees. A nut 22 on each stud 19 is adapted to secure the positioning plates 20 in adjusted position.

In the bores 23 of the positioning plates 20 a supporting channel 24 is secured by welding and is arranged therein, so that its web extends horizontally or vertically, when the positioning plates 20 are rotated relative to the base plates 17, so that the studs 19 are located at either end of the quarter-circular slots, and the flanges thereof extend either downwardly or toward the right, when the bending machine is assembled. Preferably, the supporting channel is a six inch channel.

Two guide bars 25 are arranged on top of the supporting channel 24 and extend alongside the edges thereof between the left hand base plate 17 and the right hand positioning plate 20.

Each guide bar 25 has on each end of its outer edge a fastening lug 26 extending at right angles to the corresponding bar 25 and parallel to the adjacent flange of the supporting channel 24. In each fastening lug 26 a tapped hole 27 is provided and in the adjacent support channel flange a plain hole 28 is arranged coaxially with the tapped hole 27.

A bolt 29 has a reduced end 30 rotatably extending through the hole 28 in the supporting channel flange and on this reduced end a round head 31 is formed permitting rotary movement of the bolt 29 but preventing axial movement thereof relative to the supporting channel 24.

The bolts 29 threadedly engage the threaded holes 27 in adjusting lugs 26 on the guide bars 25, so that the guide bars can be adjusted to engage the edges of a bus bar 32 laid on the channel 24, so as to position the bus bar correctly for a bending operation.

When a bus bar 32 is to be bent, the machine is arranged, so that the supporting channel flange is positioned horizontally by loosening the nuts 22 on the studs 19 and adjusting the positioning plates 20 on the base plates 17 and then fastening the nuts 22 again.

The bus bar 32 is marked at the place where it is to be bent, and a set of clamp bars is secured on the bus bar, so that the outer edges of the clamp bars are located on the marked place.

One set of clamp bars consists of a rectangular top bar 33 having a substantially square cross section and a bottom bar 34 having a triangular cross section of right angled isosceles shape. These two clamp bars are secured onto the bus bar 32 by means of bolts 35 extending through the top bar 33 and being screwed into the bottom bar 34.

A second set of clamp bars consists of a top clamp bar 36 shaped like the first mentioned top clamp bar 33 but being equipped centrally on its top surface with a handle bar 37 and a bottom clamp bar 38 shaped like the first named bottom clamp bar 34. The second set of clamp bars is adjustably assembled by means of bolts 39 extending through holes 40 in the top bar 36 and threadedly engaging tapped holes 41 in the bottom bar 38.

The two sets of clamp bars are arranged on the bus bar so that the hypotenuses of the two triangular bottom bars 34 and 38 form a right angle with each other, the apex whereof is located on the mark on the bus bar 32 and the bus bar 32 is located on the support channel 24 between the guides 25. By pulling the handle bar 37 downwardly until the two bottom bars 34 and 38 abut each other the bus bar 32 is bent at a perfect ninety degree angle.

In case the portion of the bus bar which extends beyond the second set is so long, that it contacts the work table 13 or the floor before the bus bar is bent at ninety degrees, the nuts 22 on the studs 19 are loosened and the adjusting plates 20 are rotated on the base plates 17 until the support channel 24 is arranged vertically. Then the nuts 22 are tightened again. The handle bar 37 then occupies a horizontal instead of a vertical position, and is swung in a horizontal plane to bend the bus bar 32.

Having described my invention I claim as new and desire to secure by Letters Patent:

1. A bus bar bending machine comprising an elongated base arranged to be secured to a supporting surface, a pair of plates secured to extend at right angles from said base at longitudinally spaced points, said plates being provided with aligned circular openings, rotary annuli mounted on said plates with their openings aligned with the circular plate openings, means for limiting rotation of said annuli to predetermined arcs and for locking said annuli in selected positions of rotation relative to said plates, an elongated bus bar support extending through the openings of said annuli and fixed to said annuli, guide bars extending along opposite sides of said support, means affording lateral adjustment of said guide bars to engage the opposite side edges of a bus bar positioned lengthwise on said support for positioning said bus bar relative to the sides of said support with one end of the bus bar projecting longitudinally beyond the adjacent end of said support, bending means arranged to be secured to the bus bar comprising a first pair of bending bars secured at opposite sides of said end of the bus bar with one of said bending bars engaged with the adjacent end of the support, and a second pair of bending bars to be secured at opposite sides of the bus bar outwardly of said first pair of bending bars, and a handle on one of said second pair of bending bars for swinging said second pair of bending bars relative to said first pair of bending bars so as to bend the bus bar at a point between said pairs of bending bars.

2. The bus bar bending machine according to claim 1 wherein the means for limiting the rotation of said annuli comprises studs projecting from said plates through arcuate slots formed in said annuli, and nuts on said studs for locking said annuli in a selected position of rotation relative to said plates.

3. The bus bar bending machine according to claim 1 wherein the means for limiting the rotation of said annuli comprises studs projecting from said plates through arcuate slots formed in said annuli, and nuts on said studs for locking said annuli in a selected position of rotation relative to said plates, and wherein the means affording lateral adjustment of said guide bars comprises screws secured to the sides of said bus bar support for rotation on their axes, said screws being threaded in portions of said guide bars whereby rotation of the screws in one direction withdraws said guide bars laterally outwardly and rotation of said screws in the opposite direction moves said guide bars laterally inwardly with respect to the sides of said support.

4. The bus bar bending machine according to claim 1 wherein the said bending bars are elongated transversely with respect to the length of the bus bar and have bolts traversing the ends of each pair of said bars at points laterally outward of the side edges of the bus bar and securing the bending bars at opposite sides of the bus bar.

5. The bus bar bending machine according to claim 1 wherein the annuli are positioned on the same sides of the related plates.

6. The bus bar bending machine according to claim 1 wherein the annuli are positioned on the sides of said plates remote from said bending means.

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