March 24, 1942. W. MEDVED 2,277,343

WIRE BENDING, CLINCHING, AND CUTTING TOOL

Filed Feb. 8, 1940 2 Sheets-Sheet 1

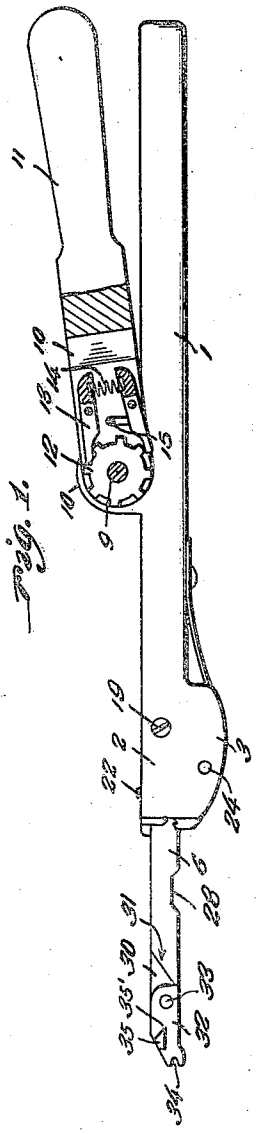


Fig. 1.

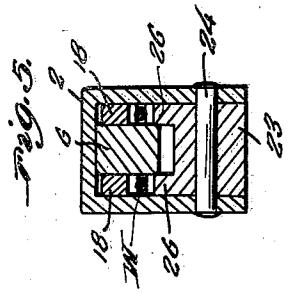


Fig. 5.



Fig. 7.

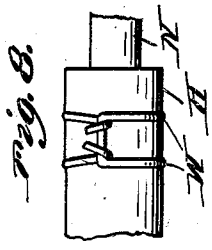


Fig. 8.

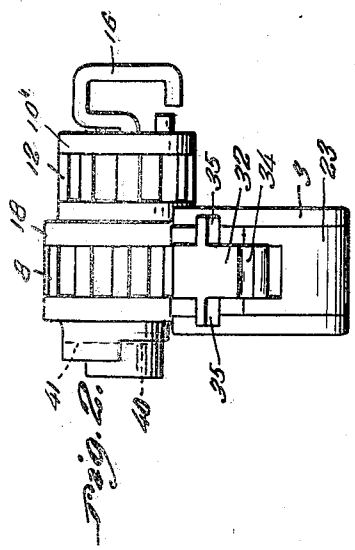


Fig. 4.

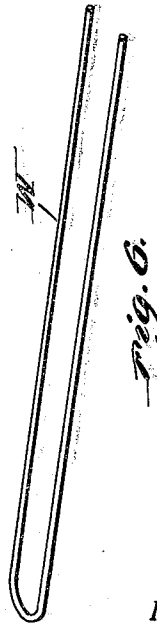


Fig. 6.

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WIRE BENDING, CLINCHING, AND CUTTING TOOL

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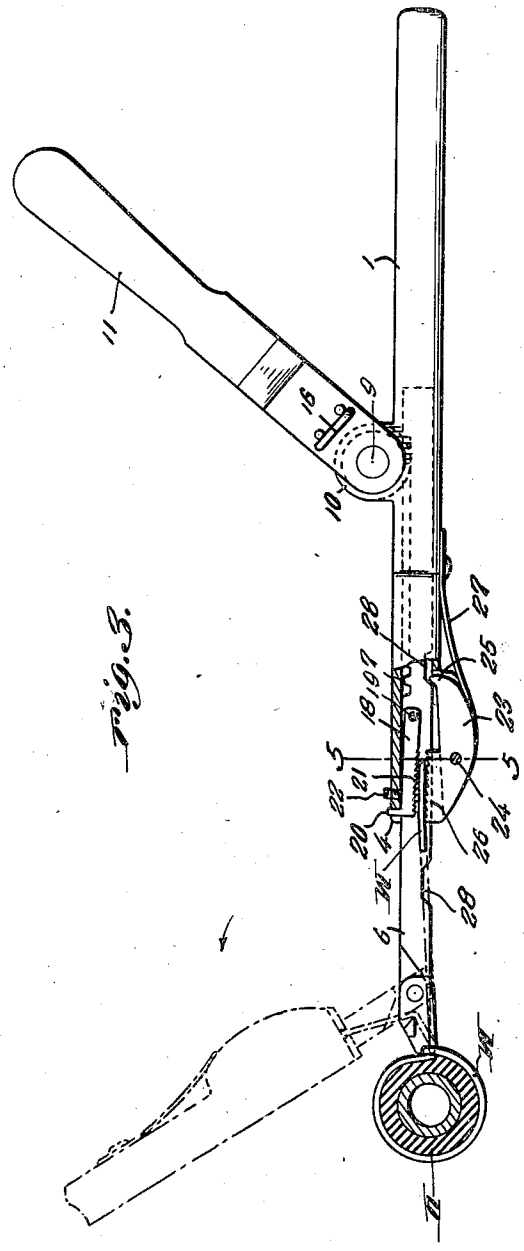


Fig. 3.

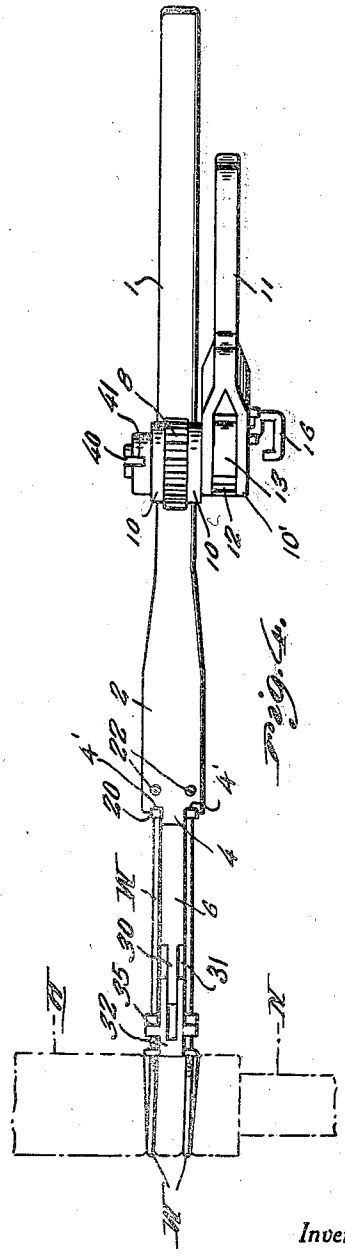


Fig. 4.

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UNITED STATES PATENT OFFICE

2,277,343

WIRE BENDING, CLINCHING, AND CUTTING TOOL

William Medved, Fairbanks, Territory of Alaska

Application February 8, 1940, Serial No. 317,939

4 Claims. (Cl. 81—9.3)

This invention relates to a tool for handling wire, the present invention being an improvement over that forming the subject matter of a patent granted to me on April 25, 1939, Number 2,156,187.

The general object of this invention is to provide means whereby the device can be adjusted for handling different sizes of wire and also used for bending, clinching and cutting the wire and with a ratchet handle for facilitating operation of the tool.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a side view of the tool with parts of the handle in section.

Figure 2 is a view looking toward the front end of the tool.

Figure 3 is a view similar to Figure 1 but showing the parts in a different position and the parts in section and also showing the tool in use.

Figure 4 is a top plan view of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 3.

Figure 6 is a view of the U-shaped wire which is to be bent around a hose by the device.

Figure 7 is a view showing how the wire is bent to place a part thereof around the hose.

Figure 8 is a view showing how the tool fastens the wire around a hose.

In these views the numeral 1 indicates a tubular handle which has an enlarged part 2 at one end thereof, the end of this enlarged part being open and the bottom is also open and the sides of the enlarged part extend downwardly below the opening to form the ears 3. At the top the enlarged part 2 is extended to provide the tongue 4 with notches 4' at the sides of the tongue. A bar 6 is slidably arranged in the handle 2 and extends through the open front end of the enlarged part 2 and said bar is formed with the rack teeth 7, see Figure 3, which are engaged by the toothed wheel 8 on a shaft 9 journaled in the ears 10 projecting from the handle 1. One end of the shaft is extended and the forked end 10' of a ratchet handle 11 is pivoted on the extended part and a toothed wheel 12 is fastened to the extended part between the prongs of the fork and oppositely arranged toothed members 13 engage the teeth of the wheel 12 under the action of a spring 14 as shown in Figure 1. A dog 15 is pivotally arranged in the prongs for engaging either one of the members 13 to move the members out of engagement with the teeth of the wheel 12 and said dog is provided with a handle 16 for actuating the same so that either one of the teeth 13 can be moved to inoperated position. As will be seen this is the well known ratchet means whereby the shaft 9 can be turned in either direction by the handle 11 and when so turned the toothed wheel 8 will be caused to move the bar 6 to project the same or to retract the same.

A pair of short bars 18 is pivoted in the enlarged part 2 of the handle member 1 by the screws 19, one for each part and the outer ends of these bars are formed with projections 20 which slidably fit in the notches 4' at the sides of the tongue 4 for guiding the bars in a swinging movement. These bars are toothed as shown at 21 and form gripping jaws one on each side of the rack bar 6, and these jaws can be adjusted by means of the screws 22 to suit wires of different gauges. A large jaw member 23 of substantially arcuate-shape is pivoted between the ears 3 by the pivot pin 24 and at its inner end this member is formed with a lip 25 and at its other end is formed with the spaced jaw forming parts 26 which are toothed and cooperate with the toothed parts of the jaws 18 as shown more clearly in Figure 5. This member is engaged by a leaf spring 27 attached to the handle 1 and engaging the inner end of the member 23 and this spring tends to move the lip carrying end 25 upwardly and the jaw carrying part downwardly or outwardly. Notches 28 are formed in the bar 6 and when one of these notches comes opposite the lip 25 the spring 27 will move the jaw member 23 to place the lip in the notch and this action will separate the jaws 26 from the jaws 18 but as soon as the bar 6 is moved to place the notch 28 out of engagement with the lip 25 said bar 6 causes the jaw 23 to swing on its pivot so that the jaw parts 26 will grip an object between themselves and the jaws 18.

The outer end of the bar 6 is formed with a reduced part 30 and sloping shoulders 31 are formed at the junction of this part 30 with the major part of the bar 6 and a tip member 32 has its inner end forked and fitting over the part 30 to which it is pivoted by a pin 33. This pivot pin permits the bar 6 to be swung to wire bending position as will be hereinafter described.

The parts are so formed that when the member 32 is in a straight position forming an extension of the bar 6 it cannot swing beyond this position downwardly as shown in Figure 1 but it may swing upwardly until it strikes the sloping shoulders 31. This tip member is formed with a groove 34 at its front end which end slopes downwardly and forwardly at its top and said member 32 is formed with the wedge-shaped projections 35 at its sides, the inner edges 35' of which form cutting edges. These members 35 form wings which project from the sides of the member 32 and have their outer portions forming continuations of the sloping front top part of the member 32.

As described in the before-mentioned patent this device is mainly intended for fastening U-shaped wires W, see Figure 6, around a hose H. As shown in Figures 7 and 8 this U-shaped wire has its limbs placed through the bight portion thereof with the looped part of the wire encircling the hose for connecting the hose to a nipple N or other member. After the wire has been loosely placed around the hose with the parts in the position shown in Figure 7 the limbs of the wire are placed between the jaws 26 and 18 as shown in Figure 3. This is done when the bar 6 has been moved to a position to place one of the notches 28 opposite the tongue 25 so that the jaw parts will be apart or in position so that they will readily receive the ends of the wires between them. The groove 34 of the tip member 32 is placed against the bight of the wire on the hose, as shown in Figure 3, and then the ratchet handle 11 is manipulated to back off the handle 1 from the bar 6 so as to stretch the wires for as this is done the pressure of the member 32 on the end of the rod 6 against the bight of the wire will hold the parts from moving and as the handle part 1 moves rearwardly the ends of the wire gripped by the jaw members will be forced rearwardly so that the wire is tightened around the hose. Then the device is swung upwardly with the rod 6 pivoting on the pivot 33 so as to bend the limbs of the wire around the wings or projections 35 and across the cutting edges 35', as shown in dotted lines in Figure 3 and when this is accompanied by a slight and sharp racking movement the wire is not only bent but it is cut at the same time. Then the ends can be flattened against the hose or other object as shown in Figure 8 with a hammer or by a part of the tool. Then by moving the sliding bar either way the ends of the wires held by the jaw members will be released.

I may provide a groove 40 in a projecting end of the shaft 9 and notches 41 in the adjacent ear so that by placing a wire through this groove and the notches and then turning the shaft by the ratchet assembly the wire will be cut.

Instead of placing the parts shown in Figure 3 so that it will be necessary to move the tool upwardly as shown in dotted lines in this figure the parts can be reversed so that a downward movement of the tool can take place to bend and cut the wire.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a tool of the class described, an elongated body having a passage therethrough, a bar slidably arranged in the passage, manually operated means for moving the bar for retracting and projecting the same, a member pivoted intermediate its ends to an end portion of the body and having longitudinally extending jaw forming parts at the front portions of the sides and between which jaw forming portions the bar passes, a projection at the inner end of the member engaged by portions of the bar for moving the member on its pivot, said bar having a recess therein for receiving the projection, spring means engaging the pivoted member and acting to move the projection into the recess when the recess comes opposite the projection, a pair of jaw members carried by the body and cooperating with the jaw parts of the pivoted member to hold objects between said jaw members and jaw parts when the pivoted member has been moved by the bar, said bar passing between the jaw members of the body and means for adjusting the jaw members toward and away from the jaw parts of the pivoted member.

2. A tool of the class described comprising an elongated handle member having one end open, a bar slidably arranged in the handle member and having an end projecting therefrom, manually operated means for moving the bar in the handle member, short bars pivotally arranged in the open end of the handle member, one on each side of the bar, portions of said short bars forming jaws, means for adjusting the said short bars on their pivots, said open end of the handle member having an opening in its bottom with ears projecting downwardly therefrom, a long jaw forming member pivoted between the ears and having upwardly extending jaw forming parts at its outer end for cooperating with the jaws of the short bars for holding an object between them, spring means engaging the jaw forming member for normally holding its jaw parts away from the jaw forming part of the short bars, a lip on the inner end of the jaw forming member and said bar having notches therein for receiving the lip under the action of the spring for permitting movement of the jaw forming member to separate the jaw parts from the jaw forming parts of the short bars, portions of the unnotched part of the bar when engaging the lip moving the jaw forming member to cause the jaw parts to grip objects placed between them.

3. A tool for bending a U-shaped wire around an object with portions of the limbs of the U-shaped wire bent around the bight of the wire, said tool comprising a handle, a bar slidably arranged in the handle and having one end projecting from one end of the handle, operating means for sliding the bar in the handle, means carried by the handle for holding the ends of the limbs of the wire, a short member pivotally connected to the outer end of the bar and having a groove in its front end for engaging the bight of the wire for holding the bar relatively stationary when the operating means are actuated, to cause outward movement of the handle to apply tension to the limbs of the wire and wings projecting from side portions of the short member and around which intermediate portions of the limbs of the wire are bent when the handle is moved in a direction to cause the bar to swing on the pivot, this bending of the limbs of the wire also bending portions of the limbs over the bight, said wings having bevelled

edges around which the limbs of the wire are bent when the handle is swung to move the bar on the pivot.

4. In a tool for bending a U-shaped wire around an object with portions of the limbs of the wire bent over the bight thereof, said tool comprising a short bar having a groove in its front end for engaging the bight of the wire, after the wire has been passed around the object with its limbs passing through the loop, wings extending from opposite sides of the bar, intermediate the ends of the bar, said wings having beveled edges and a member having a part pivoted to the opposite end of the bar and having means for gripping the ends of the limbs of the wire, said member when moving on the pivot bending the limbs around the wings to cause portions of the limbs to bend around the bight of the wire and then to cause the beveled edges of the wings to cut the wire.

WILLIAM MEDVED.