This invention relates generally to attachments for acetylene cutting torches, and particularly to an attachment which facilitates the cutting of a piece of metal in a circle.

The principal object of the present invention is to provide a device for attachment to an acetylene cutting torch whereby the cutting of a circular piece of metal can be accomplished easily and quickly, and the diameter of the circle can be accurately controlled with a minimum of difficulty.

Another object of the invention is to provide a centering device in combination with a gauge adapted to be secured to an acetylene cutting torch, whereby when said torch is rotated on the centering device the flame from the torch will be moved along a circular path, to cut a circle of the diameter indicated by the position of the centering device upon the gauge.

A still further object is to provide a device of the above described character which can be applied to a torch easily and quickly, and which is automatically located in the proper relation with the flame nozzle, whereby no further adjustments are required other than to locate the centering device in the proper position, to cut a circle of the desired radius.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing, it being understood, however, that the invention is not to be considered as limited by the specific illustration or description, but that such illustration and description constitute a preferred embodiment of the invention.

In the drawing:

Figure 1 is a view in side elevation of a torch, showing the device embodying the present invention applied thereto.

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a plan view of the forward end of the radius bar.

Referring now more particularly to the drawing the numeral 1 generally designates an acetylene cutting torch, which comprises the usual body portion 2, which carries the control handle or lever 3, and to one end of which are attached the acetylene and oxygen hose 4 and 5 respectively, the flow of which gases into the body portion 2, being controlled by thumb screw valves 6. At the opposite end of the portion 2 are the longitudinally extending pipes 7 and 8, which are connected with the nozzle head 9, to which is attached the nozzle or cutting tip 10.

The device embodying the present invention comprises the straight radius or gauge bar 11, at the forward end of which there is carried the coupling ring 12, through which the cutting tip 10 of the torch is extended. This radius bar has a linear scale thereon, the same being preferably in inches, and the first one inch graduation is measured from the center of the ring 12, which would likewise be the axial center of the cutting tip 10, as illustrated.

The bar 11 may be of any suitable cross-sectional design, and it is here illustrated as being rectangular, so that it has a flat bottom side 13. This bottom side cooperates with the hereinafter described parts of the device, for maintaining an adjustable or sliding contact with such parts.

At its forward end the bar 11 is secured between the ends of the legs of a spring yoke, which is indicated generally by the numeral 14. The two side legs of this yoke are identified by the numeral 15, and the upper ends of the legs are connected by the loop 16, while the lower ends of the legs are connected by the straight portion 17', which passes transversely through the bar 11, as illustrated in Figure 4. The legs 16 intermediate their ends are called, as indicated at 17, so that each leg is divided into two portions, which due to the tension of the collared part 17, tend to move or swing together to sharpen the angle between the portions, as shown in Figure 1. Thus it will be seen that when the loop 16 is engaged over the top pipe 7, and the ring 12 has the cutting tip 10 extended therethrough, the legs of the spring clip will draw the ring up tightly against the head 9, so as to maintain a tight connection between the bar and the cutting tip. The legs 15 are laterally bowed, as shown in Figure 4, to facilitate passing the yoke over the head 9, when removing the device from the torch.

While the radius bar 11 may be of any suitable length, it is preferably about 24 or 26 inches long, and is disposed beneath and in parallel relation with the torch body 1 as illustrated.

The rear end of the radius bar is maintained in position relative to the torch, by means of the slip hose clip indicated generally by the numeral 18. This hose clip comprises a guide eye portion 19, through which the radius bar slides, and this eye is inferiorly of the same form as and corresponds with the radius bar. The upper part of
the hose clip and the major length thereof, comprises the two spaced resilient legs 26, between which the two hose 4 and 5 are yieldingly held as illustrated. It will be readily obvious from the illustration, that this hose clip may be easily slipped over the pair of hose, for applying and removing the device from the torch.

Adjustably mounted upon the radius bar, is a centering unit or head indicated generally by the numeral 21. This comprises an elongated body 22, having a channel formed lengthwise therein, as indicated at 23, to receive the bar 11. Extending across the top of this channel is a narrow bridge 24, which rests upon the top edge of the radius bar 11.

At the two ends of the body 22 are the downwardly extending interiorly threaded nipples 25 and 26, each of which at its upper end opens into the channel toward the lower edge 13 of the bar 11. In the nipple 26 which is at the forward end of the channel and nearest the ring 12, there is threaded the stylus or centering pin 27, which has threaded thereon the locking nut 28, which bears against the end of the adjacent nipple 25, so as to secure the stylus in adjusted position. Aligned with the center of this stylus is a gauge mark or line 29, which is carried by the body 22, and which cooperates with the graduations upon the radius bar, for locating the centering pin 27, the desired radial distance from the center of the ring 12.

The centering device or head 21 is locked in a desired position upon the radius bar by the locking screw 30, which is threaded into the rear nipple 26, and bears against the under side 13 of the radius bar. This locking screw carries a relatively large head 31, by which its rotation is facilitated for effecting quick securing or release of the centering unit. Due to the location of the bridge member 24 near the end carrying the stylus 27, and of the securing or locking screw 30 adjacent the opposite end of the channelled body, it will be seen that when the lock screw is tightened, there is a tendency for the body to rock on the bar, so that it will be very firmly secured against slipping.

The stylus or centering screw 27 is adjusted so that the flame issuing from the cutting tip, will be in proper relation to the underlying surface for best cutting action, and after such an adjustment of the centering screw has been made, its position will not have to be changed.

In the use of the device for the cutting of a circle in a piece of metal, the center of the circle is marked by a center punch with sufficient heavy punch, to allow for the setting of the point of the screw 27 securely in position. The operator then places the torch hose over his shoulder, so that it will be held clear of adjacent objects, and the cut in the plate is then started, and the torch and attached device are slowly swung on the pivotal center, until the complete circle has been outlined.

As will be readily apparent, by changing the position of the head 21, the radius of the circle or arc may be readily changed, and also the device can be used not only for cutting circular holes, but for cutting collars or annuli from a flat sheet of metal, and also for cutting pieces of metal along various arcuate paths.

What is claimed is:

1. An attachment for a cutting torch having a cutting tip, comprising a bar, means carried by one end of the bar for coupling the same with said tip, means carried at the other end of the bar for detachably coupling the same with the torch, the said means for maintaining the bar in parallel relation with the torch body, a centering unit slidably mounted upon the bar and including a pointed pivot element, means for securing the centering unit in adjusted position on the bar, and a resilient coupling carried by the first mentioned end of the bar, and adapted to engage over the adjacent end of the torch, for yieldingly drawing the first mentioned means into secure engagement with the cutting tip.

2. An attachment for a cutting torch having a cutting tip, comprising a bar, a ring carried by an end portion of the bar, and through which the cutting tip extends, an elongated body having a guide eye through which the bar extends, a pair of resilient legs between which the adjacent part of the torch is frictionally held, and a centering unit slidably supported on the bar and comprising an elongated body having a channel in which the bar engages, a bridge across the channel adjacent an end of the body to extend over the bar, a pointed screw carried by the body at the end adjacent the bridge, and directed away from the torch, and having a parallel relation with the tip, and a securing screw carried by the body adjacent to the other end of, and adapted for frictional engagement with the bar, for securing the latter and the unit in adjusted relation.

3. An attachment for a cutting torch having a cutting tip, comprising a bar, a ring carried by the bar to receive the tip, a clip member having a guide eye designed to receive the bar, a pair of spaced resilient legs for the reception of the adjacent portion of the torch, a spring clip attached to the end of the bar adjacent to the said ring, and constructed and arranged to engage over the adjacent end of the torch and draw the ring inwardly of the cutting tip, and a centering unit slidably supported on the bar and comprising an elongated body having a channel in which the bar engages, a bridge across the channel adjacent to an end of the body to extend over the bar, a pointed screw carried by the body at the end adjacent to the bridge, and directed away from the torch, and having a parallel relation with the tip, and a securing screw carried by the body adjacent to the other end thereof, and adapted for frictional engagement with the bar for securing the latter and the unit in adjusted relation.

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