PIPE CUTTING ATTACHMENTS FOR TOGGLE-ACTUATED PLIERS

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This invention relates to wrenches of the toggle-actuated plier-type and more particularly to pipe cutting attachments therefor.

It is an object of the present invention to provide pipe cutting attachments for toggle-actuated plier-type wrenches. It is another object of the present invention to provide a novel container adapted to be snapped on to one of the handles of the wrench and into which the aforesaid pipe cutting attachments may be retained when not in use.

Other objects of the present invention are to provide pipe cutting attachments for toggle-actuated plier-type wrenches bearing the above objects in mind which are of simple construction, inexpensive to manufacture, have a minimum number of parts, are easy to use and efficient in operation.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

On the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a view partly in section and partly in elevation illustrating a toggle-actuated plier-type wrench prior to attachment of the parts forming the present invention.

Fig. 2 is a perspective view thereof showing the attachment of the pipe cutting units and the container therefor.

Fig. 3 is a fragmentary side elevational view of the assembly of Fig. 2 and shown in operative use for cutting a pipe.

Fig. 4 is a perspective view of one of the attachments shown alone.

Fig. 5 is a longitudinal sectional view of the other attachment.

Fig. 6 is a longitudinal sectional view through the container.

Fig. 7 is a perspective view of one of the attachments embodying a modified form of the present invention.

Fig. 8 is a vertical sectional view taken along the line 8--8 of Fig. 7.

Fig. 9 is a perspective view of the other attachment embodying the modified form of the invention of Figs. 7 and 8.

Fig. 10 is a longitudinal sectional view showing the modified attachments of Figs. 7 through 9 in operative position.

Fig. 11 is a side elevational view of a still further modified form of attachment.

Fig. 12 is a perspective view of a still further modified form of attachment.

Fig. 13 is a vertical sectional view taken along the line 13--13 of Fig. 12.

Referring now to the figures, there is shown a toggle-actuated plier-type wrench of well known construction adapted to be used with the pipe cutting attachments comprising the present invention. The wrench includes an elongated handle member 18 of channel formation but having its outer end portion 11 closed and formed to provide a sleeve 12 through which threads a shank 13.

The outer end portion of shank 13 is provided with a head 14 to facilitate rotation of the shank to effect the adjustment desired in a well known manner. The opposed, or outer end, portion of the handle 18 is provided with a stationary jaw 15 and inwardly of the jaw 15 and particularly the serrated working jaw face 16 thereof, the handle 10 is open.

A movable jaw 17 has its rear portion pivotally mounted as at 18 within the forward portion of the handle 10. The pivotal mounting includes an arm or puller 29. The said arm or puller 29 comprises the present invention. The wrench includes a pair of puller or flange 19 at the inner portion of the jaw 17. The inner end portion of the jaw 17 has pivotally engaged therewith as at 20 a section 21 of an articulated lever 22. This lever 22 comprises two sections 21 and 23, the section 22 of which extends within the handle 10 and has direct contact with the inner, or inserted, end of the shank 13. The section 21 extends beyond the pivotal connection 24 between the sections 21 and 23 and said extended portion constitutes a hand grasp 25 whereby the jaw 17 may be readily moved toward the jaw 15 to clamp an article between the jaws 15 and 17 in a well known manner. Engaged with the inner or rear end portion of the jaw 17 as at 26 is an end portion of a retactable member 27, the opposite end portion of which is anchored or operatively engaged as at 28 to the handle member 10.

The retactable member 27 provides means whereby the jaw 17 is automatically moved to open position. The operation of the tool as a wrench is believed to be readily apparent from the foregoing description in connection with the accompanying drawings, it being noted that adjustment of the shank 13 permits the jaws 15 and 17 to be brought closer together when in the closed position.

In the practice of my invention, a pair of puller or flanges 29 and 30 are provided for permitting the wrench to be used for cutting pipes 31. The attachment 29 is of substantially U-shaped cross section and is adapted to slide downwardly on to the toothed upper portion of the jaw 17, the edges of the sides of the attachment being integrally formed with inwardly extending flanges 32 which fit under the shouldered portion 33 of jaw 17 (Fig. 1), preventing upward displacement of the attachment from the jaw. The attachment is locked longitudinally by means of a leaf spring 34 secured on its upper surface by means of a rivet 35, the free outer end of leaf spring 34 mounting a detent 36 which engages the toothed portion of the jaw. The forward upper portion of the attachment 29 is integrally formed with a right angle support 37 in which the pipe 31 is placed. The detent 36 and spring 34 will lock the attachment 29 longitudinally on jaw 17, while at the same time permitting the attachment to be pulled off or adjusted longitudinally when sufficient force is applied thereto.

The attachment 30 is of substantially U-shaped cross section and is integrally formed along its upper longitudinal edges with inwardly extending flanges 38 which engage the shouldered portion 39 of jaw 15 (Fig. 1), preventing downward displacement of the attachment from the jaw. The attachment 30 is locked longitudinally on the jaw 15 by means of a leaf spring 40 secured in position by a rivet 41 and provided at its free end with a detent 42 adapted to engage the teeth 16 in a manner similar to the detent 36. The forward undersurface of attachment 30 is integrally formed with brackets 43 between which is rotatably mounted a cutting disc 44 by means of a shaft 45.

When the jaws 15 and 17 are brought together, as shown in Fig. 3, with a pipe 31 supported on the angle
support 37, the cutting edge of disc 44 will cut the pipe 31 upon manual rotation of the latter.

A container 46 is provided of substantially U-shaped cross section and adapted to slide upwardly onto the handle 25. The outer end of the container 46 is integrally formed with an extension 47 upon which is secured a leaf spring 48 by means of a rivet 49, spacers 50 being provided intermediate the leaf spring 48 and extension 47 whereby to freely space the spring from the container. The central back portion of handle 25 slides intermediate the spring 48 and the container (Fig. 6), the forward portion of the container being further resiliently secured to the handle by means of leaf spring 51. Thus, the container 46 may be readily snapped on and off the handle. When the tool is not being used as a pipe cutter, the attachments 29 and 30 may be pulled off the jaws and retained in the container 46, the flanges 38 and 32 being retained intermediate the spring 49 and the central wall of the container (Fig. 6).

Referring now particularly to Figs. 7 through 10, there is shown a modified form of the present invention differing from the previous form in the manner of securing the attachments 52 and 53 to the jaws of the wrench.

In a preferred embodiment the attachment 52 comprises a top wall 54 integrally formed on its under surface with teeth 55 adapted to mesh with the teeth of jaw 17, a side wall 56 and a curved bottom wall 57, all adapted to snugly receive therebetween the jaw 17, as shown in Fig. 10. Longitudinal displacement of the attachment 52 will thus be prevented by the meshing of the teeth 55 with the teeth of the jaw. Lateral displacement will be prevented by a spring clip 58 pivotally mounted in the outer face of bottom wall 57 by means of a rivet 59, the free end of the spring clip 58 being provided with a lug 60 adapted to engage the side of jaw 17 remote from side wall 56.

The spring clip 58 on the face remote from the lug 60 is formed with a knurled portion 61 to facilitate rotation of the spring clip and lug into the closed or locking position of Fig. 8.

The forward portion of the bottom wall 57 is integrally formed with a nose 62 provided on its upper surface with a right angle support 63 similar to the support 37 of the first form.

The attachment 53 comprises a bottom wall 64 integrally formed on its upper surface with teeth 65 adapted to mesh with the teeth 16 of jaw 15, a side wall 66 and a curved top wall 67, all adapted to receive snugly therebetween the jaw 15, as shown in Fig. 10. Thus, the teeth 65 prevent longitudinal displacement of the attachment. Lateral displacement is prevented by means of a spring clip 68 pivotally mounted on the outer face of top wall 67 by means of a rivet 69 and provided on its free end with a stop or lug 70 adapted to engage the face of jaw 15 remote from side wall 66. The spring clip 68 on the face remote from stopper 70 is provided with a knurled extension 71 to facilitate the rotation of the spring clip into the locking position.

The attachment 53 is integrally formed at its forward portion with a pair of brackets 72 laterally spaced apart (Fig. 8) and provided with transversely aligned openings in which is positioned a set screw 73, the openings in one of the brackets 72 being threaded, as at 74. A cutting disc 75 is rotatably mounted on the set screw 73. In this form the attachments 52 and 53 may be snapped on from the sides of the jaws and retained thereon by means of the spring clip locking arrangement. These attachments are particularly adapted for thin jaws.

Referring now particularly to Fig. 11, there is shown a still further modified form of the invention, and differing from the attachment shown in Fig. 9 in the provision of auxiliary rollers 76 and 77 rotatably mounted in brackets 76a and 76b provided on the upper surface of the angle support 63. This modified attachment 52a is particularly adapted for cutting heavy pipe.

In other respects the form of the invention shown in Fig. 11 is the same as that shown in Figs. 9 and 10 and like reference numerals identify like parts throughout the several views.

Referring now particularly to Figs. 12 and 13, there is shown a still further modified form of attachment comprising a bottom wall 80 and side walls 81 and 82 having arcuately shaped upper edges. The jaw 15 is adapted to be received downwardly between the side walls 81 and 82, the upper surface of bottom wall 80 being provided with teeth 83 adapted to mesh with the teeth 16 of the jaw 15 whereby to prevent longitudinal displacement. The attachment is retained against downward displacement from the jaw by means of a set screw 84 and a wing headed screw 85, each adapted to engage a side of the jaw 15 above the shoulders 39.

It will be noted that the side wall 82 is provided with an elongated opening 86 within which the wing screw 85 moves. Thus, the attachment is adjustable along the jaw. The front of the attachment is provided with a nose 87 which rotatably mounts the cutting disc 88 by means of the shaft 89.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Haven this described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a tool having a pair of jaws, a first attachment for one of the jaws, means for releasably securing said first attachment to said jaw, a cutting wheel rotatably mounted at the forward bottom portion of said attachment, a second attachment for the other jaw, means for releasably securing said second attachment to the other jaw, said second attachment at the forward upper portion thereof having an angle support, said means for releasably securing said first and second attachments to the jaws comprising said attachments being substantially U-shaped in cross section and adapted to fit on to the serrated portion of the jaws, the open edges of said attachments being inwardly bent whereby to slide over the enlarged portions of the jaws adjacent the serrations, and a spring detent carried by the central portion of each of said attachments and adapted to resiliently engage the serrations of the jaws.

2. In a tool having a pair of jaws, a first attachment for one of the jaws, means for releasably securing said first attachment to said jaw, a cutting wheel rotatably mounted at the forward bottom portion of said attachment, a second attachment for the other jaw, means for releasably securing said second attachment to the other jaw, said second attachment at the forward upper portion thereof having an angle support, said means for releasably securing said first and second attachments to the jaws comprising said first and second attachments having bottom walls adapted to abut the serrated portions of the jaws, said bottom walls being correspondingly serrated on the sides adjacent the serrations of the jaws, a curved outer wall connected at its forward edge to each of said bottom walls adapted to fit on to the outer portion of each of the jaws, and a side wall connecting each of said bottom and outer walls, the other sides of said attachments being open and adapted to fit laterally on to the jaws, each of said outer walls at their inner ends being provided with a pivotally mounted, spring pressed detent adapted to engage the side face of the jaws whereby to lock said attachments on the jaws.

3. In a tool having a pair of jaws, a first attachment for one of the jaws, means for releasably securing said first attachment to said jaw, a cutting wheel rotatably mounted at the forward bottom portion of said attachment, a second attachment for the other jaw, means for releasably securing said second attachment to the other
jaw, said second attachment at the forward upper portion thereof having an angle support, said means for releasably securing said first and second attachments to the jaws comprising said first and second attachments having bottom walls adapted to abut the serrated portions of the jaws, said bottom walls being correspondingly serrated on the sides adjacent the serrations of the jaws, a curved outer wall connected at its forward edge to each of said bottom walls adapted to fit on to the outer portion of each of the jaws, and a side wall connecting each of said bottom and outer walls, the other sides of said attachments being open and adapted to fit laterally on to the jaws, each of said outer walls at their inner ends being provided with a pivotally mounted, spring pressed detent adapted to engage the side face of the jaws whereby to lock said attachments on the jaws, said angle support of said second attachment being provided on the upper surfaces thereof with a pair of rollers.

4. In a tool having a pair of jaws, a first attachment for one of the jaws, means for releasably securing said first attachment to said jaw, a cutting wheel rotatably mounted at the forward bottom portion of said attachment, a second attachment for the other jaw, means for releasably securing said second attachment to the other jaw, said second attachment at the forward upper portion thereof having an angle support, said means for releasably securing said first attachment comprising said first attachment being of substantially U-shaped cross section and adapted to fit upwardly onto the jaw with the central bottom portion of said attachment being correspondingly serrated and adapted to mesh with the serrations of the jaw, one of the side portions of said attachments having an elongated opening, a wing screw passing inwardly through said opening and adapted to engage the jaw, and a set screw threaded into the other side portion of said attachment and adapted to engage the other side of the jaw.

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