Dec. 27, 1960 N. CHENEY 2,966,083

CONNECTOR WRENCH

Filed Aug. 2, 1957

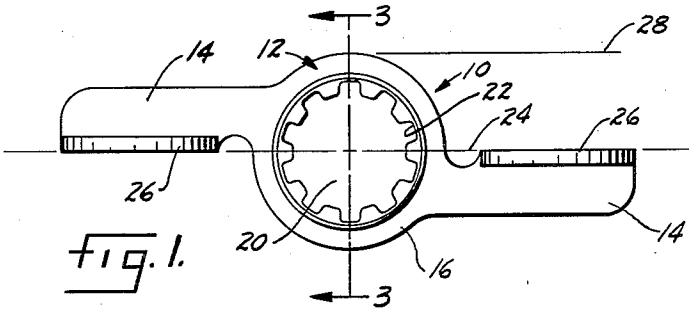


Fig. 1.

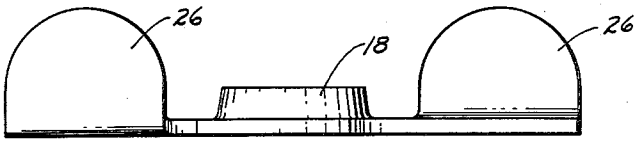


Fig. 2.



Fig. 3.

INVENTOR.
NORTH CHENEY.
BY
Parker and Carter
ATTORNEYS.

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CONNECTOR WRENCH

North Cheney, Petersburg, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill., a corporation of Delaware

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8 Claims. (Cl. 81—90)

This invention is in the field of connectors, broadly, or appliances or attachments for connectors, and relates to a wrench or attachment for use generally with screw-on connectors of the so-called pigtail type.

A primary object of this invention is an easily attachable and detachable wrench for use with screw-on type connectors or the like.

Another object is an inexpensive but reliable wrench of the above type which is easy to manufacture.

Another object is a wrench for use with pigtail connectors that is constructed to take a firm bit or interlock with the connector.

Another object is a manually operable wrench which provides greatly increased leverage for screwing pigtail connectors on the stripped ends of electric wires.

Another object is a wrench of the above type which is quite low in cost.

Another object is a wrench which insures a firm grip on pigtail connectors but does not damage or mar their appearance in any way.

Another object is a wrench of the above type which requires a minimum of material and results in a minimum of scrap.

Other objects will appear from time to time in the ensuing specification and drawings in which:

Figure 1 is a plan view of this new and improved wrench:

Figure 2 is a side view of the wrench; and

Figure 3 is a section along line 3—3 of Figure 1, on an enlarged scale.

In Figure 1, the wrench is indicated generally at 10 and includes a main base or body portion, designated generally at 12, with two outstanding arms 14. The body portion includes an annular flange or ring 16 with an upwardly truncated annulus 18. The annulus is somewhat tapered and is provided with a generally central open bore 20.

The inner somewhat conic or tapered surface of the bore has a plurality of axially disposed, correspondingly tapered flutes, grooves or teeth, as at 22. While these teeth or flutes have been shown as continuous and extending all the way around the inside of the bore, they could be in disconnected segments or at spaced intervals, if desired. However, preferably, for better gripping purposes, they extend all the way around. These teeth or grooves correspond roughly to the tapered flutes found on the tapered exterior surface of conventional screw-on type pigtail connectors, such as shown in United States Patent No. 2,749,384, isued June 5, 1956.

The arms 14 are integral with and outstand from the ring 12 to provide leverage. It should be noted that the arms are not radially disposed but rather are somewhat skewed. For example, in Figure 1, the arms 14 lie on opposite sides of the center line or an axial median plane which is indicated in Figure 1 by a line 24.

An upstruck tab 26 is provided on each arm and it should be noticed that the leading or forward edge or

surface of each of these tabs lies generally on the center or median line or plane 24. At the present this relationship is not considered critical and the two tabs 26 could be aligned, both lying on the center line 24 or containing the axial median plane 24.

One of the important points of this wrench is that it may be stamped from sheet metal. The upstruck tabs 26 are merely bent up to an approximately 90 degree angle relative to the arm 14, and in a flattened condition the tabs 26 would extend roughly to the line 28 in Figure 1. Visualize the two tabs 26 flattened and lying in the same plane as the arms 14 and the annular ring or flange 12. The wrench would take on a rectangular appearance with the width being the diameter of the ring or flange 12 and the length being the distance from the tip of one arm to the tip of the other measured along line or plane 24.

The upstanding and somewhat tapered annulus 18 may also be stamped and the material forming the flutes or teeth and the annulus of the body portion is derived or comes from the generally open central bore. Thus, the entire wrench may be stamped from a small rectangular piece of sheet metal. This means that a large number of such wrenches may be made from a single sheet of metal and waste material is reduced to a minimum.

Another important point is that in the stamping operation, where the somewhat tapered, toothed central bore is formed, the lower edges of the lands or raised projections that form the teeth or flutes may be well rounded and smooth, as at 30 in Figure 3. Thus, the wrench will fit smoothly down on the tapered fluted exterior of a pigtail connector and may be easily withdrawn and will not stick after the connector has been fully screwed down on the stripped ends of the wires. Nor will the exterior of the connector be scratched or damaged.

The use, operation and function of this invention are as follows:

This wrench is very easy to manufacture, very inexpensive and satisfactory in use. The wrench may be stamped from a small rectangular sheet of metal. In fact, multiple dies can be used for producing a number of the wrenches at each stroke of the press.

The well-rounded smooth formation at the large end of the body portion on the flutes or teeth in the central bore provides a smooth aperture for accepting the top of the connector.

Such connectors vary in size and this wrench may be designed with a bore diameter that will accept a large number of different sizes.

The tooth formation in the bore provides a firm interlock with the fluted exterior of the connector and the leverage gained by the extending arms and ears or tabs insures a firm full mounting of the connector on the stripped ends of the wires.

It should also be noted that the tabs or ears and the truncated or tapered body portion 18 both extend in the same axial direction. In other words, in Figure 2, all three of them rise above the general plane of the arms 14 and flange 12. This means that the truncated body portion with its fluted or toothed interior and the ears can all be formed at one time, thereby avoiding separate die operations.

While the preferred form of this invention has been shown and described, it should be apparent that numerous additional modifications, changes, substitutions and alterations may be made without departing from the invention's fundamental theme. It is, therefore, wished that the invention be unrestricted except as by the appended claims.

I claim:

1. In a wrench for use with wire connectors of the pigtail type or the like, a tapered body portion, arms outstanding from the large end of the body portion, manually operable tabs upstanding on the arms, and a central, tapered fluted cavity open at both ends in the body portion constructed to rotatively and releasably interlock with the exterior of such a connector, the individual flutes in the cavity being rectilinear.

2. The structure of claim 1 further characterized in that the arms lie on opposite sides of a median plane through the center of the body portion.

3. The structure of claim 2 further characterized in that the tabs and body portion are disposed in the same axial direction from the general plane of the arms, the tabs being upstruck from that side of the arms adjacent to the median plane.

4. In a wrench for use with an externally fluted connector, a tapered internally fluted annulus for rotatively and releasably interlocking with the flutes on such a connector, outstanding manually operable arms integral with the annulus and providing leverage, the individual flutes in the annulus being rectilinear and tabs on the extremities of the arms disposed generally at right angles thereto.

5. The structure of claim 4 further characterized by and including a tapered body portion of definite but limited axial extent.

6. For use with wire connectors of the pigtail type or the like which have a generally tapered, fluted, frustum-shaped exterior, the improvement comprising a wrench having a tapered, frustum-shaped, annular body portion, flutes on the inner periphery of the annular body portion, said flutes being formed integral with the body portion and tapering therewith, a continuous flange formed integrally with the body portion, arms integral with and outstanding from said continuous flange, the flange being generally coplanar with the arms and with the large end of the tapered body portion, and manually operable integral tabs upstanding on the arms, said body portion defining a central, fluted, tapered, frustum-shaped cavity open at both ends said body portion being upstruck from the flange, the fluted interior surface of the cavity being constructed to rotatably and releasably interlock with the fluted exterior of such a connector, the arms and tabs being disposed on opposite sides of an axial plane through the center of the cavity, and the tabs being upstruck from the arms in the same axial direction as the upstruck body portion.

7. For use with wire connectors of the pigtail type or the like which have a generally tapered, fluted, frustum-shaped exterior, the improvement comprising a wrench having an annular body portion, flutes on the inner periphery of the annular body portion, said flutes being formed integral with the body portion and conforming thereto, a continuous flange formed integrally with the body portion, arms integral with and outstanding from the continuous flange, the flange being generally coplanar with the arms and with the large end of the body portion, and manually operable integral tabs upstanding on the arms, said body portion defining a central fluted cavity open at both ends, said body portion being upstruck from the flange, the fluted interior surface of the cavity being constructed to rotatably and releasably interlock with the fluted exterior of such a connector, and the tabs being upstruck from the arms in the same axial direction as the upstruck body portion.

8. The structure of claim 1 further characterized in that the tabs extend from the arms in the same general direction as the body portion.

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