

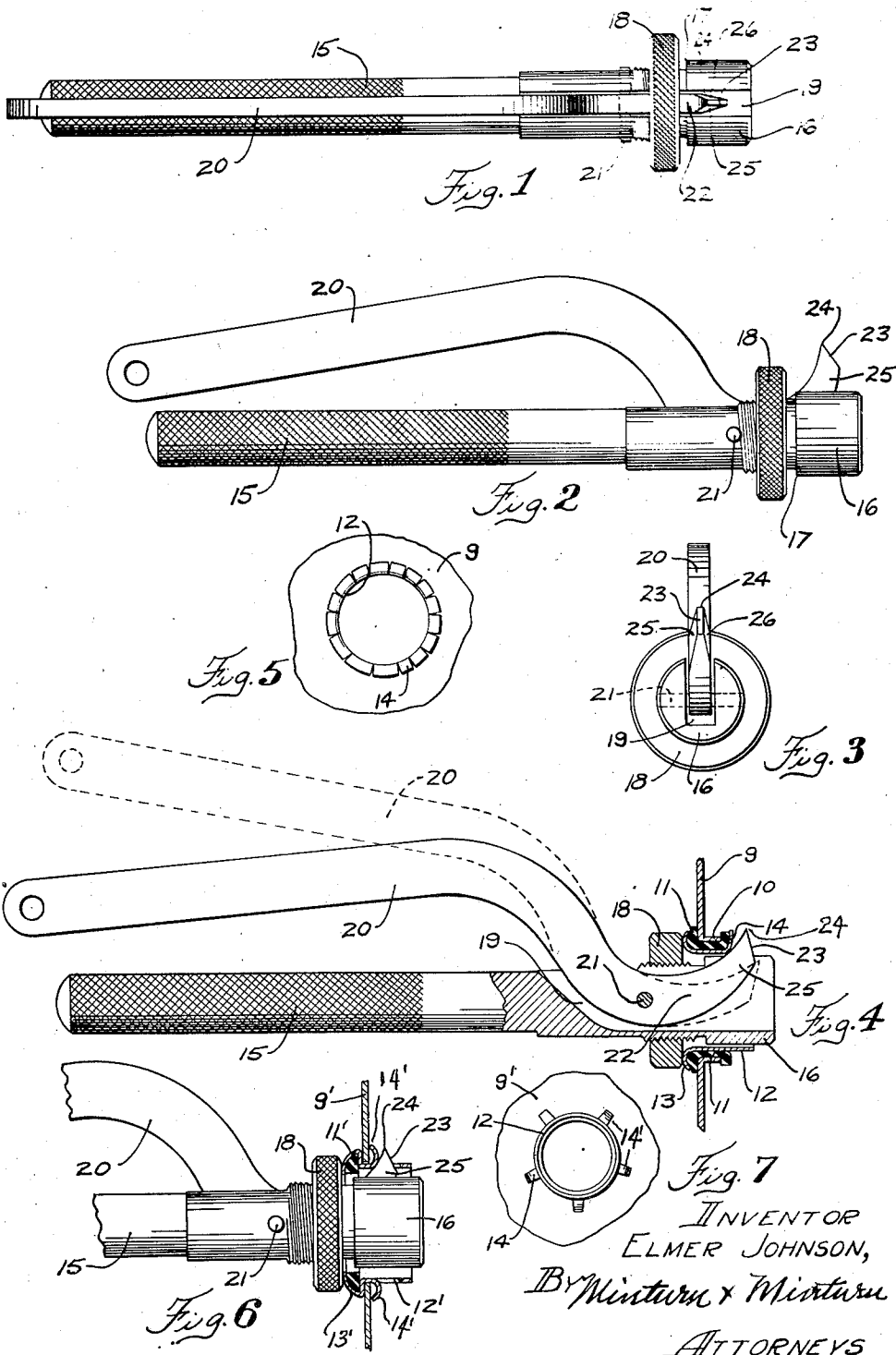
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DOOR HANDLE FERRULE INSERTER

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DOOR HANDLE FERRULE INSERTER

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5 Claims. (Cl. 81-3)

Handles for doors at the sides of automobiles and also to carryalls and rumble seats at the rear are passed through holes in the material, usually sheet metal, from which the doors are made, and these holes are lined with ferrules, limited in their insertion from the outside by a preformed bead or flange. Direct contact of the ferrule and bead with the sheet metal is avoided by the introduction of lining of rubber or the like to prevent rattling, and the assembly is retained in the door by forming tongues out of the wall of a suitably extended end of the ferrule and by bending the tongues out and back into contact with the metal sheet of the door.

These ferrules, by reason of the location of handles in exposed positions outside of the car, are frequently so damaged as to require replacement, and the object of this invention, primarily, is to provide a hand tool by which the tongues in the new ferrule may be readily formed and bent against the inner side of the door to firmly clamp the ferrule to the door.

A further object is to provide a tongue forming and crimping lever having a forming jaw adapted to cut and bend the tongues starting from the inner end of the ferrule, or pierce the walls of the ferrule inwardly of the end and bend these outwardly of the ferrule and against the door, depending upon the length of the ferrule or distance between its outside bead and member to be contacted by the tongues.

As the distance varies in cars of different manufacture, another object of my invention is to provide an adjustable shoulder to contact the outside bead on the ferrule at the right distance from the forming jaw to cause the jaw to function properly in forming the tongues and clamping them to tightly attach the ferrule to the door.

I accomplish the above and other objects which will hereinafter appear, by the means illustrated in the accompanying drawing, in which

Fig. 1 is a top plan view of my handle ferrule inserter;

Fig. 2 is a side elevation of same;

Fig. 3 is an end view looking at the forming jaw end of the tool;

Fig. 4 is a side elevation similar to Fig. 2, of the tool applied to a ferrule covered with a double beaded rubber to prevent rattling. The door plate, ferrule and adjacent end of the tool handle being in section;

Fig. 5 is a view in elevation on the inside of the door of a clamped ferrule such as is being clamped in Fig. 4;

Fig. 6 is a detail showing the jaw-end of the tool forming and clamping tongues remote from the adjacent end of the ferrule; and

Fig. 7 is a view similar to Fig. 5, of the ferrule of Fig. 6.

Like characters of reference indicate like parts in the several views in the drawing.

Referring now to Fig. 4, the metal sheet 9 of the door has an inturned flange 10 around a hole for the passage of a handle therethrough. A rubber anti-rattling sleeve 11 has a circumferential outside channel forming a rib on each side of the channel and is assembled in the hole as shown, and a metal ferrule 12 makes a tight fit with and through the sleeve 11. The ferrule has a preformed bead 13 on its outer end bent out of the material of the ferrule, which contacts the adjacent end of the rubber sleeve 11 and its bead.

The inner end of the ferrule projects sufficiently beyond the inner end of the sleeve to be formed into enough tongues 14 to clamp the ferrule to the sheet 9 and flange 10 through the inner bead on sleeve 11.

The forming and clamping of the tongues 14 is accomplished by the manipulation of the tool, Figs. 1, 2 and 3, forming the subject matter of this patent. This tool comprises a handle 15, here shown as round in cross section, and knurled for hand gripping to prevent rotation. On an end of the handle is a cylindrical head 16 of a diameter to permit of loose insertion in the ferrule 12. The handle 15 is of less diameter than the head 16, thereby forming a shoulder 17 at their junction and as here shown a portion of the handle near the head is provided with screw threads upon which a threaded nut or collar 18 is screwed adjustably toward or from the shoulder 17. The shoulder limits the movement of the collar in the direction of the head.

Formed in the head 16 and continued through the threaded portion and for a suitable distance along the rest of the handle is a slot 19, see Figs. 1, 3 and 4, extending diametrically of but not quite through that end of the tool. In this slot 19 the curved end of a lever 20 is assembled and secured by a pivot pin 21. The long arm of the lever extends sufficiently to insure ample power for operating the opposite jaw-end 22 of the lever.

The jaw-end 22 of the lever 20 curves upwardly from pivot 21. Its end is beveled at 23, from the curve to a chisel edge 24 at its inner curve and both sides 25 and 26 of the jaw are beveled toward and to the bevel 23. The edge 24 and the

oblique edges of the bevels 25 and 26 at the inner curve of the jaw form cutters for making the tongues out of the ferrule by pressing the long arm of the lever 20 toward the handle 15.

5 In the operation of my invention after the ferrule is assembled as shown and above described, the collar or nut 18 is so adjusted by means of the threads that it will bear against the outer rib on ferrule 12 when the cutting jaw 22 is in right insertion to cut a tongue in the projecting end of the ferrule and clamp it into position. This proper adjustment of the collar is readily learned by trial. The entire ferrule extension need not be tongued as shown in Fig. 5.

15 In the form shown in Figs. 6 and 7 the door sheet 9' has no flange such as 10 in Fig. 4 and the ferrule extending further has the tongues punched through the wall of the ferrule in from its end and bent into direct contact with the door sheet.

20 While I have herein shown and described my invention in the best form as now known to me, it is obvious that structural changes may be employed without departing from the spirit of the invention and I, therefore, do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. In a tool for fastening a door handle ferrule to a door, a handle having a cylindrical head for insertion in the ferrule, means for varying the distance of the insertion, and a lever operated jaw carried by the handle formed to cut a tongue from the ferrule and bend the tongue to clamp the ferrule to the door by the manipulation of the lever.

2. In a tool for fastening a door handle ferrule to a door, a handle having a cylindrical head adapted to fit loosely in the ferrule, adjustable

means to vary the insertion, and a lever pivoted to the handle having a jaw formed to cut a tongue from the ferrule and bend the tongue to clamp the ferrule to the door by the manipulation of the lever.

3. In a tool for fastening a door handle ferrule to a door, a handle having a head adapted to fit loosely in the ferrule, a collar mounted on the handle and adjustable longitudinally of the handle to regulate and vary the insertion of the head in the ferrule, and a lever operated jaw carried by the handle formed to cut a tongue from the ferrule and bend the tongue to clamp the ferrule to the door by the manipulation of the lever.

4. In a tool for fastening a door handle ferrule to a door, a handle having a head adapted to fit loosely in the ferrule and having screw threads adjacent the head, a collar screwing on the threads of the handle to regulate the insertion of the head in the ferrule, and a lever pivoted to the handle having a jaw formed to cut a tongue from the ferrule and bend the tongue to clamp the ferrule to the door by the manipulation of the lever.

5. In a tool for fastening a door handle ferrule to a door, a knurled handle having a head adapted to fit loosely in the ferrule and having screw threads adjacent the head, said head and handle having a slot, a collar screwing on the threads of the handle to regulate the insertion of the head in the ferrule, and a lever bent to enter the slot and pivoted therein, said lever having a jaw formed on its short end terminating with a metal cutting chisel and oblique side corners to cut a tongue from the ferrule and bend the tongue to clamp the ferrule to the door by the manipulation of the lever.

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