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R. VONTOBEL
PROCEDURE AND CONTRIVANCE FOR FIRMLY ATTACHING A METAL
CASE WITH A NIPPLE ADJUSTED IN THE SAME
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Fig. 1

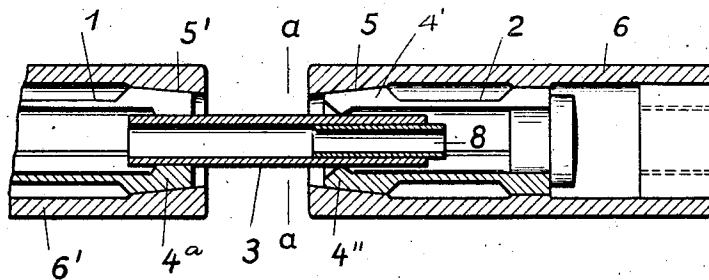


Fig. 2

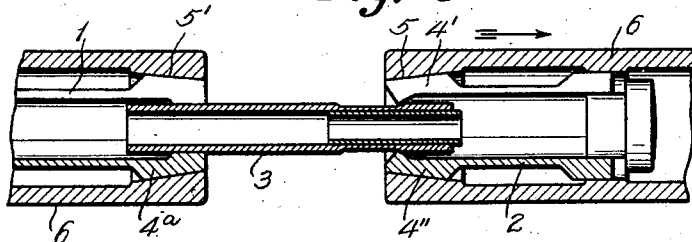


Fig. 3

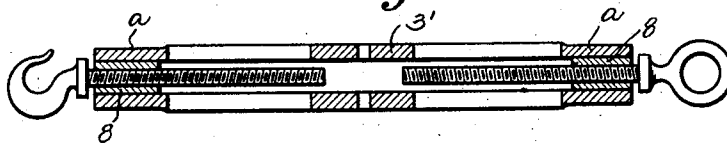
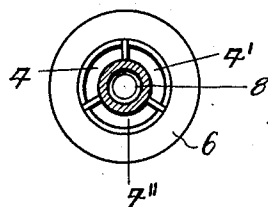


Fig. 4



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UNITED STATES PATENT OFFICE.

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PROCEDURE AND CONTRIVANCE FOR FIRMLY ATTACHING A METAL CASE WITH A NIPPLE ADJUSTED IN THE SAME.

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This invention refers to a procedure and a contrivance for the firm attachment of a metal tube or case with a nipple positioned in the same.

5 The procedure, according to the invention, consists in subjecting the metal tube or case to the action of a tightening or drawing operation at the place where the metal case grasps the nipple.

10 The drawing shows an example of the manner in which the procedure is carried out.

Figure 1 shows a longitudinal section of the plier or drawing tool at the commencement of the securing process for obtaining the connection of a metal case with a nipple; Fig. 2 shows the position of the plier or drawing tool during the tightening process (longitudinal section); Fig. 3 shows turnbuckle, in longitudinal section, made by this process, in which the nipple is secured in the case by reducing the case diameter by a drawing operation. The nipple is provided with an inner thread. Fig. 4 is a transverse section on line *a—*a** of Fig. 1 seen from the left.

1 are the chuck jaws, three jaws 4^a being used, and 2 are the plier or drawing dies similar in number, whose extremities 4', 4'', 4''' grasping the case or tube have external conical faces. These conical faces cooperate with corresponding or complementary cones 5, 5' of the casings 6, 6' of the caliper or chuck and pliers or drawing tool respectively: 8 is the nipple, which is placed into the one end of the case or tube 3 and is to be firmly connected with the same by tightening or drawing a portion of the tube. As seen in Fig. 1 the calipers or chuck and the pliers or drawing tool at the commencement of the process are in the complementary cones 5, 5' of the cases or bodies 6, 6' and somewhat withdrawn into the same.

As soon as the tightening process begins, the cases or bodies containing the complementary cones of the cases are drawn back over the cones of the caliper or chuck and

plier or drawing tool, so that these are pressed against the case or tube 3, whereby the case 3 is held immovably fast by the chuck, whilst the pliers or drawing tool is thrust or bites as far into the case 3 until the caliper parts 4, 4', 4'' touch one another (Fig. 4). Thereupon the pliers 2 with their case 6 move in the direction of the arrow (Fig. 2) till the tightening process is completed. The diameter of the end of the case 3 is reduced as the plier or drawing head is pulled to the extreme end of the case 3. In so doing the metal of the case 3 flows in the direction of pull and covers the slightly protruding end on the nipple 8. Only that portion of the case surrounding the nipple is reduced and drawn. In Fig. 3 the executory example of this process is a turnbuckle. This turnbuckle comprises the case or tube 3' having nipples 8 secured in the ends by having the end portions of the case or tube drawn onto them, in the manner above described, the metal of the tube or case being reduced in diameter and caused to flow to the ends of the nipples as at *a*.

The pliers or drawing tool may have more than three jaws, if desired.

The bore of the nipple 8 may be of any shape, either cylindrical with or without thread, or prismatic, conical or pyramidal. The exterior surface of the nipple may be smooth or rough, or provided with grooves, flat cuts or a screw-thread.

I claim—

In apparatus for drawing tubes onto nipples, a tubular die holder having an internal conical face with its smaller end toward one end of the holder and a plurality of die members forming a die therein and having external faces complementary to the conical face in the holder, said members adapted to slide on the conical face of the holder to constrict the die opening.

In testimony that I claim the foregoing as my invention, I have signed my name.

ROBERT VONTOBEL.