July 31, 1934. J. E. ELMS 1,968,640

PACKING RING TOOL

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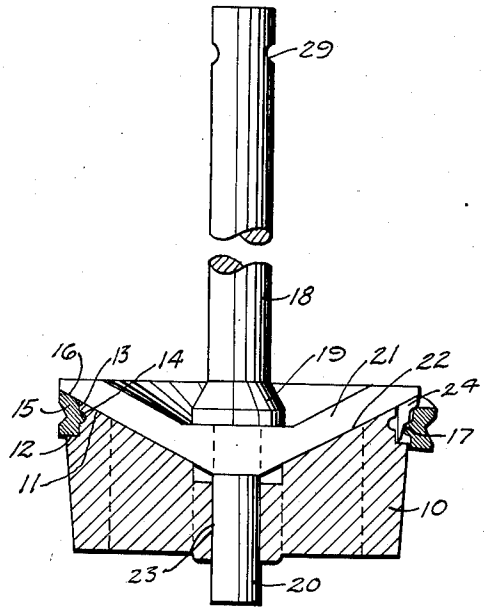


Fig. 1

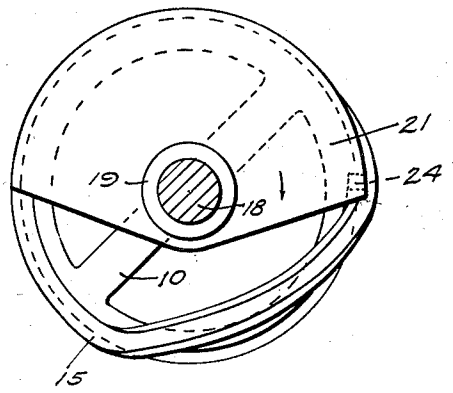


Fig. 2

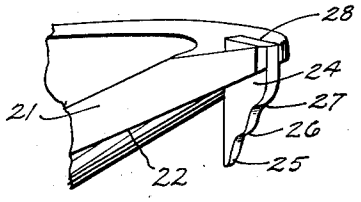


Fig. 4

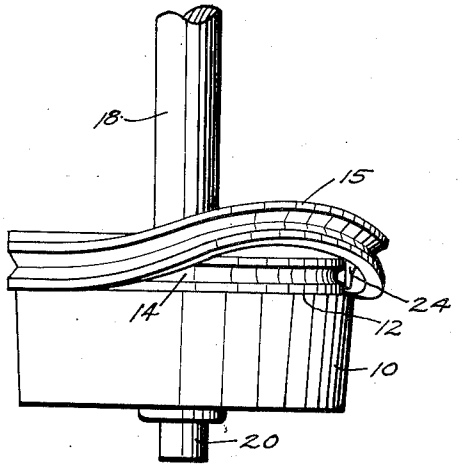


Fig. 3

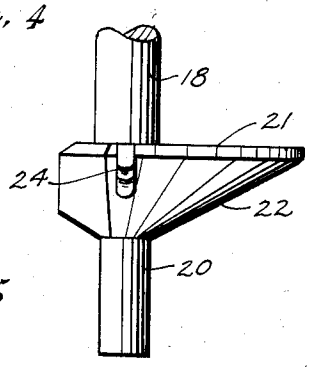


Fig. 5

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PACKING RING TOOL

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4 Claims. (Cl. 29—88.2)

This invention relates to new and useful improvements in packing ring tools.

One object of the invention is to provide an improved tool for applying an elastic packing ring to a valve seat.

Another object of the invention is to provide a tool for applying an elastic packing ring to a valve seat so arranged as to stretch the ring and at the same time crowd it into the seat by a simple rotary movement.

Still another object of the invention is to provide a tool for applying an elastic ring which has an internal bead to its seat in an easy and convenient manner.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing in which an example of the invention is shown, and wherein:

Figure 1 is a view showing a tool constructed in accordance with the invention and in position on a valve seat in engagement with a packing ring, the seat and ring being illustrated in section,

Figure 2 is a plan view of the same showing the ring partly applied,

Figure 3 is an elevation of the part shown in Figure 2,

Figure 4 is a detail of the tool, and

Figure 5 is a side elevation of the tool.

In the drawing the numeral 10 designates a valve spider such as is used in pumps and other devices and which includes an inclined annular seat 11 which is adapted to receive a complementary valve (not shown). The seat is provided with an annular horizontal shoulder 12 and an upright circular wall 13 provided with an annular groove 14.

An elastic packing ring 15 is adapted to engage around the wall 13 and rest upon the shoulder 12. This ring has an inclined upper face 16 conforming to the seat 11. The ring also has an internal bead 17 engaging in the groove 14, whereby the ring is held against upward displacement. In applying the ring 15, which is made of rubber, rubber compound, or any other elastic material, it is necessary to engage one side of the ring against the wall 13 and stretch the diametrically opposite side so that the bead 17 will pass over the upper edge of the wall.

It is obvious that if the ring is to have a tight fit the stretching and applying by hand or even with the aid of a small bar would be difficult and would probably consume extra time with more or less uncertain results. It is also advantageous not to unduly stretch the ring or otherwise injure it.

I have provided a tool comprising an upright central shaft 18 having an annular boss 19 at its lower end from which a reduced axial stem 20 extends. The stem penetrates a dished sector or plate 21 which is suitably fastened on the stem against the under side of the boss 19.

This sector has an inclined bottom 22 conforming to the inclination of the spider, its seat and the upper face 16 of the ring. The outer edge portion of the sector is concentric to the stem and its radius is substantially the same as that of the ring 15. The spider 10 has a central guide collar 23 which receives the valve stem (not shown), and when the stem 20 of the tool is inserted in this collar the under side of the sector will rest upon the spider and may be freely rotated.

As is shown in Figure 2 the sector has sufficient amplitude to overhang a goodly portion of the ring 15. At one side of the sector a depending lug or finger 24 is provided at the outer edge but is positioned within the margin of the sector. This finger as is best shown in Figure 4 is provided with a wedge-shaped tip 25 at its lower end and a curved shoulder 26 overhangs the tip. A second shoulder 27 overhangs the first shoulder. It is preferable to fit this finger into a slot 28 in the edge of the sector and secure it by welding or otherwise so that it may be replaced when worn, but it can be made otherwise.

In using the tool the ring 15 is engaged over the spider with one side in place on the shoulder 12 and the diametrically opposite side resting on the seat 11 as is shown in Figures 2 and 3. The stem 20 is inserted in the collar 23 so that the sector 21 will rest upon the seat 11 and the ring 15 and the tip 25 of the finger is inserted between the ring and the wall 13. By rotating the shaft 18 the sector is turned and the finger 24 stretches the ring while the overhanging face 22 of the sector forces the ring downward onto the shoulder 12, thus permitting the bead 17 to engage in the groove 14 as the rotating proceeds.

When the finger 24 is inserted between the wall 13 and the ring 15 the lower shoulder 26 will engage over the bead 17 and the upper shoulder 27 will engage over the inner upper edge of the ring. By this contact the ring is guided into place and is prevented from riding upwardly on the finger. The finger 24 has such a length as to

easily ride on the shoulder 12 when the face 22 of the sector is riding on the seat 11. This permits the ring to be held in place while it is being applied because nearly half of it is covered by the sector.

It is obvious that when the tool is once in place a quick rotation will immediately apply the ring thus making the operation simple, easy and expeditious. After the ring is applied the tool is withdrawn and that portion of the ring which was opposite the finger will readily spring into place. A transverse opening 29 may be made in the upper end of the shaft for receiving a suitable cross bar or other tool (not shown), or any other means may be provided for rotating the shaft 18.

While I have shown and described the tool in connection with a particular packing, it is not to be limited to use with such a ring and may be used wherever found suitable.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

Having illustrated and described a preferred form of the invention, what I claim, is:

1. A packing-ring applying tool comprising, a sector member having a substantial peripheral length for overhanging and contacting a portion of a ring which has been previously applied for holding it in place while the remainder of said ring is forced into place, a depending pivot element attached to the sector, a ring stretching element carried by the sector and offset from the pivot element, and an upright handle co-extensive with the pivot element and extending from the sector for manually rotating the same to force the entire ring down around the valve seat.

2. A packing-ring applying tool comprising, a sector member having a substantial peripheral length for overhanging and contacting a portion of a ring which has been previously applied for holding it in place while the remainder of said ring is forced into place, a pivot element depending from the sector, a ring stretching and guiding element carried by the sector adapted to engage between the ring and its support, and means for rotating the sector.

3. A packing-ring applying tool comprising, a sector having an inclined bottom for fitting in a valve seat, said sector having a substantial peripheral length for overhanging and contacting a portion of a ring which has been previously applied for holding it in place while the remainder of said ring is forced into place a concentric stem depending from the sector for rotatively engaging in the stem guide of the valve seat, a finger depending from the sector for engaging the ring, and an upright handle extending from the sector co-extensive with the stem for manually rotating the sector to force the entire ring down around the valve seat.

4. A packing-ring applying tool comprising, a sector having an inclined bottom for fitting in a valve seat, said sector having a substantial peripheral length for overhanging and contacting a portion of a ring which has been previously applied for holding it in place while the remainder of said ring is forced into place, a concentric stem depending from the sector for rotatively engaging in the stem guide of the valve seat, a finger depending from the sector for engaging the ring, and an upright handle extending from the sector co-extensive with the stem for manually rotating the sector, the finger having an upright inner side for engaging the ring support and a stepped outer side for engaging the inner periphery of the ring to force the entire ring down around the valve seat.

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