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BY A. P. C.

H. GRÄBENER
CLOSURES FOR CONTAINERS
Filed July 30, 1940

Serial No.
348,520
2 Sheets-Sheet 1

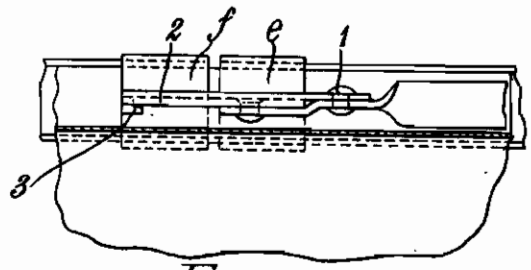

Fig. 1

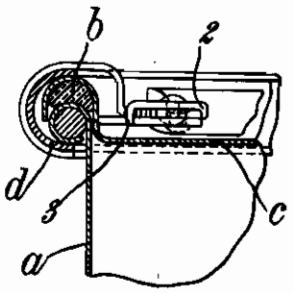

Fig. 2

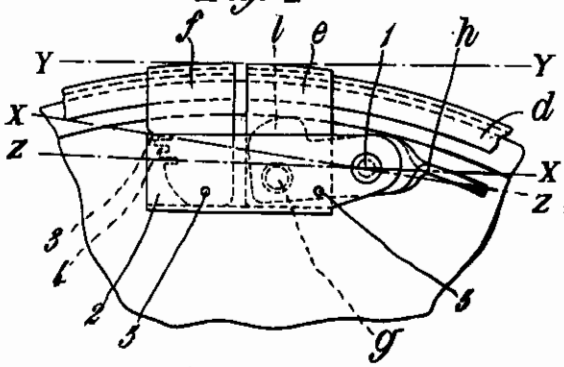

Fig. 3

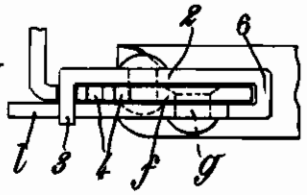

Fig. 4

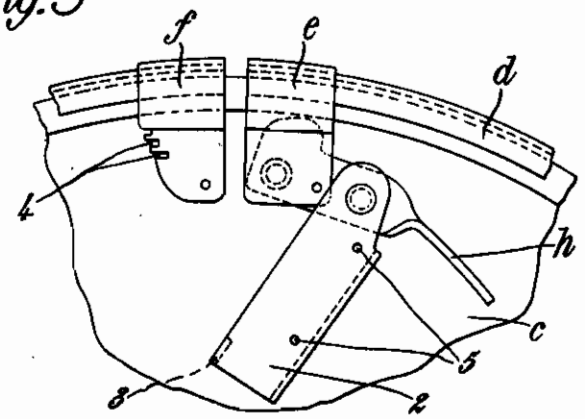

Fig. 5

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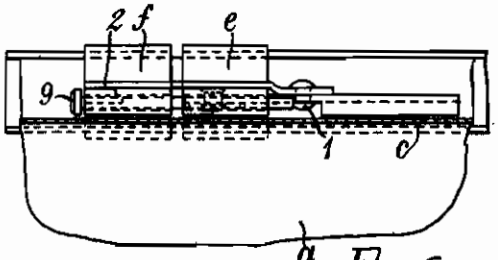

Fig. 6

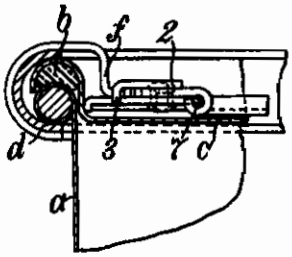

Fig. 8

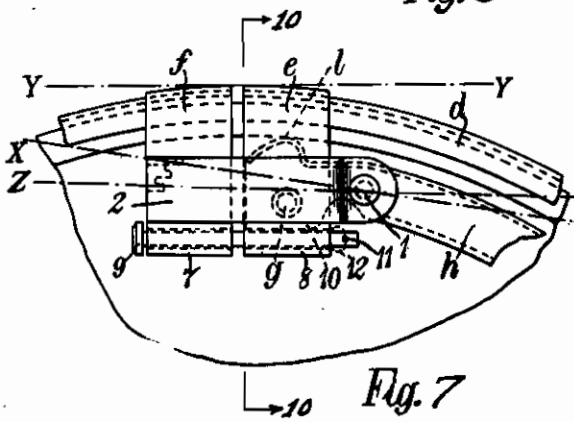

Fig. 7

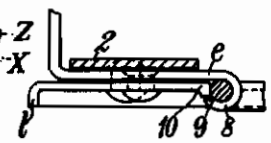

Fig. 10

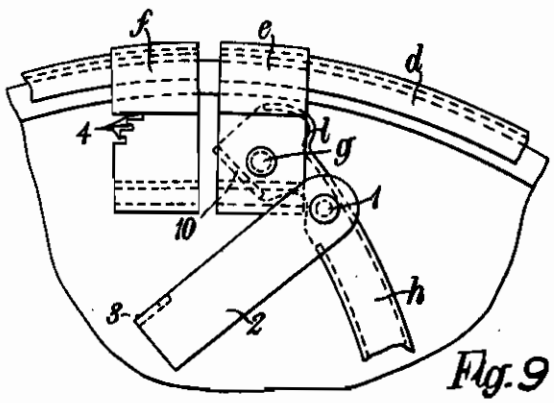

Fig. 9

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ALIEN PROPERTY CUSTODIAN

CLOSURES FOR CONTAINERS

Heinz Gräbener, Koln-Ehrenfeld, Germany;
vested in the Alien Property Custodian

Application filed July 30, 1940

This is a division of application Serial No. 82,979, filed June 1, 1936.

The invention relates to improvements in fluid-tight tension ring closures for metal packing vessels and has for its object to provide a simplified device of this character affording a reliably tight fit of the ends of the tension ring and the possibility of adjustment thereof.

In the accompanying drawings:

Fig. 1 is a sectional view through the cover of a container, illustrating the invention applied to use;

Fig. 2 is a sectional view through the rim of the cover and the tension ring;

Fig. 3 is a fragmentary plan view of the closure;

Fig. 4 is a view similar to Fig. 2 on an enlarged scale;

Fig. 5 is a plan view similar to Fig. 3 showing the tension lever or inoperative position;

Fig. 6 is a fragmentary section through the cover of a container illustrating a modified form of the invention;

Fig. 7 is a fragmentary top plan view of the modified construction;

Fig. 8 is a transverse sectional view through the rim of the cover and the tension ring;

Fig. 9 is a view similar to Fig. 7 showing the tension lever in open or inoperative position;

Fig. 10 is a transverse sectional view on the line 10—10 of Fig. 7.

On the edge of the vessel *a* and enclosing the packing *b*, is located the cover *c* of the vessel, provided with a hollow edge, the tension ring *d* embracing the cover and edge of the vessel. On the ends of the tension ring are secured the closure parts *e*, *f*.

On the closure part *e*, of one end of the ring, the tension lever *h* is pivotally mounted at point *g* with the extension *l*, which bears against the edge of the cover *c*. The extension *l* carries the tightening member **2**, which is pivotally mounted at point *i*. The lever *h* is bent off to the thickness of the closure parts *e*, *f*, so that the tightening member **2** slides closely over the same. Towards the middle of the cover the tightening member is chamfered in a downward direction over the whole length and the chamfered edge bears tightly against the closure parts *e*, *f*. The engagement projection **3**, which is provided at the freely projecting end of the member **2**, and is also made by bending round or turning down the corner, engages selectively in the engaging slots **4** of the closure part *f* and at the same time, owing to its hook-like structure grips under the closure part *f* in such a way that any pressing downward is prevented. When engaging in the slot **4**, selected in accordance with the desired degree of tension, the engaging projection **3** fits into the whole length of the slot. It is thus made difficult for the tightening member **2** to be swung down and thus the tension lever *h* is effectively secured against snapping back into the open position. The holes **5** are intended to receive a sealing wire, (Fig. 3). Fig. 3 also shows that in the case of both the largest as well as in the smallest tension position the axes of pull *x*—*x* and *z*—*z* form an acute angle with the tangent *y*—*y* on the side opposite the tension lever *h*. Fig. 4 shows a partial side view of the tightening member **2**, to an enlarged scale, the said member being bent at the portion **6** disposed towards the center of the cover, in such a way that it also embraces the closure parts *e*, *f*, from below. As a result the stability of the closure is increased to a further extent. Fig. 5 shows the tension ring closure according to the invention in the open condition. The surface of the tension member **2** is provided with advertising matter.

In the modification shown in Figs. 6 to 10, the tensioning of the closure is effected by swinging the lever *h* towards the edge of the cover, in which case through the bearing of the widened part *l* of the lever *h* against the edge of the cover, one end of the ring is drawn toward the vessel edge. At the same time the closure part *f* is gripped by the tightening member **2** and the other end of the ring is also tightened. The axes of pull *x*—*x* and Z—Z, which correspond to the smallest and largest tension position of the tightening member **2**, form an acute angle with the tangent *y*—*y*, applied to the junction point of the ring, in the same manner as described previously, the apex of this angle lying opposite the tension lever.

The closure parts *e* and *f* are provided with the longitudinal eyes **7** and **8** arranged towards the middle of the cover and through which the securing pin **9** is inserted in the closed position. The longitudinal eye **8** of the closure part *e* is open at the side towards the edge of the cover, so that when the lever *h* swings into the open position the limiting part **10** of the tension lever projects into the open side of the longitudinal eye **8** (Fig. 9). On the other hand, the part **10**, when the securing pin **9** is inserted, presses against the latter, so that it is not possible to open the closure (Fig. 10). The projecting end of the securing pin **9** has a hole **11** for receiving the sealing wire or the end, if the pin consists of soft metal, may be flattened to form a seal head **12**.

In storing and for transport, the operative position of the lever *h* and engagement in the longitudinal slots **4** is sufficient to secure the tension lever against snapping back. The securing of the closure by means of the pin **9**, however, affords absolute guarantee against tampering by unauthorized persons.

HEINZ GRÄBENER.