March 22, 1938. H. G. WOEHLER 2,111,830

METALLIC BARREL AND MEANS FOR CLAMPING CLOSURES THEREON

Filed March 5, 1936 2 Sheets-Sheet 1

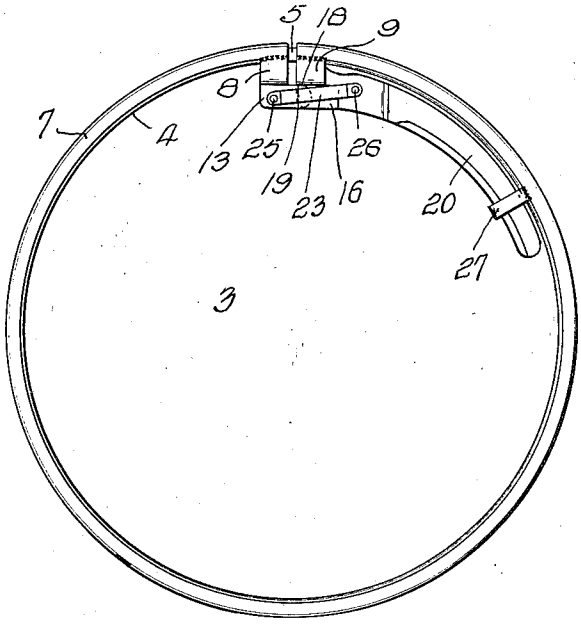


Fig. 1.

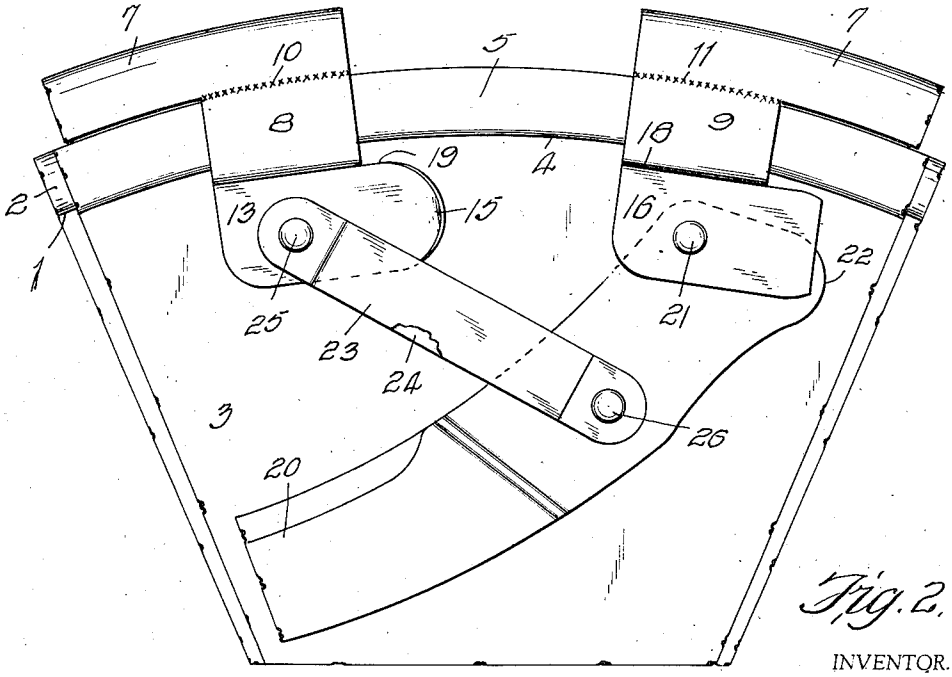


Fig. 2.

INVENTOR.

Henry G. Woehler.

BY

Fredk. G. Parsons

ATTORNEY.

March 22, 1938. H. G. WOEHLER 2,111,830

METALLIC BARREL AND MEANS FOR CLAMPING CLOSURES THEREON

Filed March 5, 1936 2 Sheets-Sheet 2

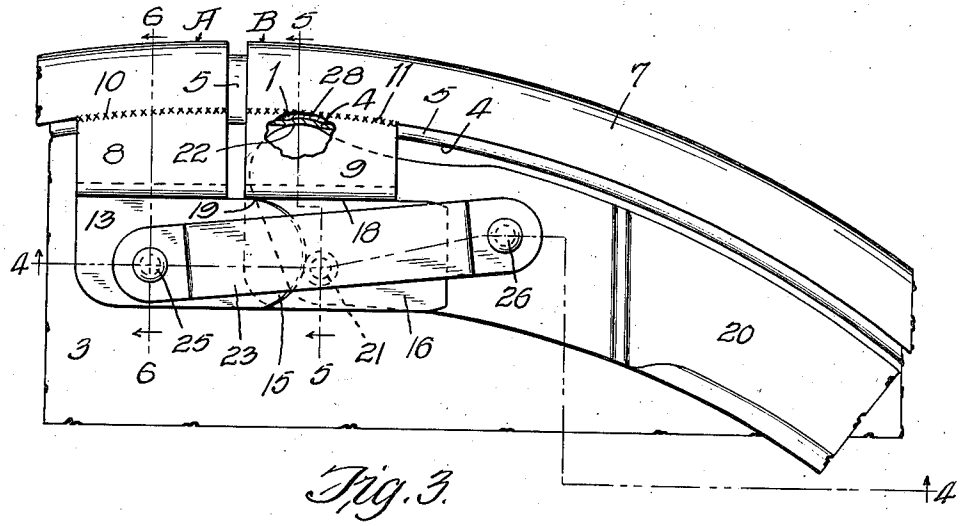


Fig. 3.

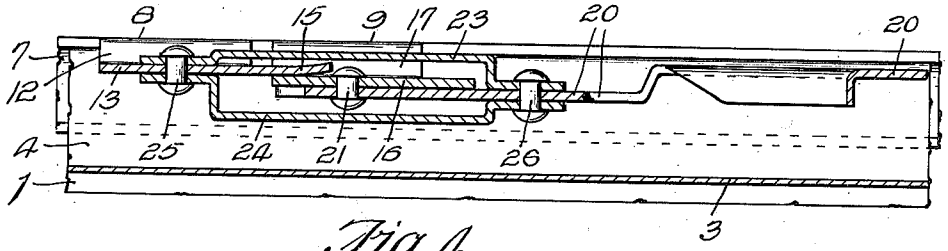


Fig. 4.

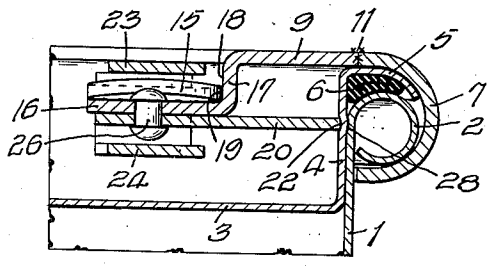


Fig. 5.

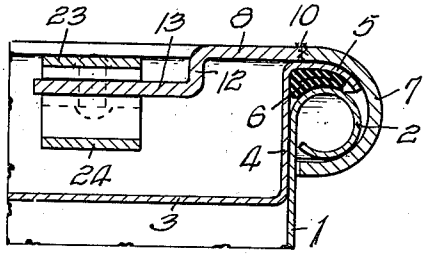


Fig. 6.

INVENTOR:
Henry G. Woehler.
BY
Fred'k J. Mason
ATTORNEY.

Patented Mar. 22, 1938

2,111,830

UNITED STATES PATENT OFFICE

2,111,830

METALLIC BARREL AND MEANS FOR CLAMPING CLOSURES THEREON

Henry G. Woehler, St. Louis, Mo., assignor to Niedringhaus, Inc., St. Louis, Mo., a corporation of Missouri

Application March 5, 1936, Serial No. 67,189

1 Claim. (Cl. 220—61)

This invention relates to metallic barrels and means for clamping closures thereon, and, it is a continuation, in part, of my co-pending application Serial Number 21,203.

An essential object of the present invention is the provision of a lever actuated cam to apply outward pressure against a barrel closure side wall below an outwardly projecting inverted channel shaped flange at the upper end of the closure wall to cause an indentation to be formed in the closure side wall providing a lateral protrusion pressing outwardly into contact with the barrel wall to tightly pull one end of a split contractible clamping ring, when contracted, into locked engagement with the closure flange and a barrel bead to prevent rotary displacement of the split clamping ring relative to the closure flange and barrel bead and the closure against displacement relative to the end of the barrel to which it is clamped. A further object of the invention is the provision of means, associated with both ends of the split clamping ring, to pull the end of the clamping ring opposite that referred to in the preceding paragraph, into tight engagement with the closure flange and barrel bead to circumferentially align said latter end of the split clamping ring with the other end thereof, and, in so doing, to cause uniform engagement of the entire split ring with the closure flange and barrel bead to press the closure into final closed position relative to the beaded end of the barrel.

A still further object of the invention is the provision of a metallic barrel and means for clamping a closure thereon, which possesses advantages in points of simplicity and efficiency, and, at the same time proves itself comparatively inexpensive in cost of manufacture.

With the above and other objects in view, the invention consists in the novel features of construction, arrangement and combination of parts hereinafter more fully described and finally pointed out in the claim hereto appended.

Referring to the accompanying drawings forming a part of this specification, wherein like characters of reference denote similar parts throughout the several views:

Fig. 1 is a top plan view of a metallic barrel, a top closure therefor and a clamping device embodying the features of my invention applied thereto.

Fig. 2 is a fragmentary plan view of the invention showing the split clamping ring expanded.

Fig. 3 is a fragmentary top plan view of a barrel, the closure therefor, and showing a split clamping ring in contracted position for clamping the closure to the barrel.

Fig. 4 is a sectional elevation taken on line 4—4 of Fig. 3.

Fig. 5 is an enlarged fragmentary sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is an enlarged fragmentary sectional view taken on line 6—6 of Fig. 3.

Referring to the drawings, a suitable metallic barrel wall is designated as 1, and it has its upper edge rolled outwardly to form a circumferential tubular bead 2 to reinforce the open end of the barrel and serve as a seat for a removable barrel closure and a portion of a split ring forming a part of a closure clamping device.

The removable barrel closure is designated 3 and is provided with an upstanding side wall 4 terminating at its upper edge in an inverted channel shaped flange 5 projecting outwardly a suitable distance from the side wall 4. The side wall 4 of the closure 3 is adapted to have a friction fit with the inner face of the wall 1 of the barrel adjacent the barrel bead 2 when the closure 3 is moved into closed position within the open end of the barrel.

A suitable flexibly resilient packing ring 6, such for instance, as rubber or similar material, is disposed between the top of the barrel bead 2 and the closure flange 5 to provide a liquid tight joint between the barrel bead 2 and the closure flange 5 when the barrel closure is clamped into home position, as hereinafter more fully described.

To secure and lock the removable closure 3 in position within the upper open end of barrel having the bead 2, I employ a suitable removable clamping device, which consists, in one embodiment thereof, of a channel shaped split contractible and expansible clamping ring 7 with the channel open to the inside of the ring. The upper and lower wall portions of the clamping ring 7 adjacent their free ends, are adapted to engage the outer face of the channeled closure flange 5, and the lower portion of the barrel bead 2, when it is expanded and applied thereto, and, when it is contracted, by means hereinafter described, it exerts a double cam pressure against the barrel bead 2 and the closure flange 5, thereby drawing the closure flange downwardly and tightly against the packing 6 for compressing same between the barrel bead 2 and the closure flange 5, as the closure flange 5 is clamped between the upper clamping ring wall and barrel bead 2.

A pair of inwardly projecting clamping ring ears designated 8 and 9 are secured, as by welding 10 and 11, respectively, to the upper wall of the split clamping ring at the free ends thereof. The ear 8 is bent downwardly a suitable distance to provide a vertical wall 12 which terminates at its lower end in an inwardly projecting horizontally disposed step-off section 13 disposed at a lower elevation than the ear 8 at its connection with the split ring.

The step-off section 13 of the ear 8 at its end adjacent the clamping ring ear 9, projects a suitable distance beyond the side edge 14 of the ear 8, as at 15, so as to overlie a step-off section 16, which is a horizontal and inward termination of a vertical wall 17 bent downwardly from the clamping ring ear 9 and which wall 17 serves to provide a shoulder 18. The outer edge 19 of the projecting end 15 of the step-off section 13 of the clamping ring ear 8, it will be observed, will when the split clamping ring 7 is contracted, be drawn into engagement with the shoulder 18 on the clamping ring ear 9, thereby drawing the free end A of the split clamping ring 7 into circumferential alignment with the free end B thereof to produce the proper and uniform clamping effect of the split clamping ring 7 against the closure flange 5 and barrel bead 2 for holding the closure in proper closed position relative to the top, or open end of the barrel. The free end of the projection 15 is shown in one embodiment thereof as slightly curved upwardly so as to easily slide into position above and in contact with the step-off section 16 of the clamping ring ear 9.

A suitable actuating lever 20 is pivotally connected as at 21 to the lower face of the step-off section 16 of the clamping ring ear 9, so as to be horizontally disposed approximately midway between the upper and lower walls of the split clamping ring 7. The outer corner of the lever 20 adjacent the pivot connection 21 is rounded off to form or provide a suitable cam face 22 disposed below the clamping ring ear 9 when the ring is contracted.

A pair of suitable links 23 and 24 provided with offset ends are pivotally connected as at 25 at their one end to the upper and lower faces, respectively, of the offset section 13 of clamping ring ear 8, and they are pivotally connected, as at 26 at their opposite ends to the upper and lower faces, respectively, of the actuating lever 20. The offsets at the ends of the upper and lower connecting links 23 and 24, it will be observed, permit free movement of the connecting links above and below the step-off sections 13 and 16 of the clamping ring ears 8 and 9 when expanding and contracting the split clamping ring 7 by movement of the lever 20. Movement of the lever 20 toward the edge of the barrel when contracting the split clamping ring 7, moves the pivot pin 26 to pass the dead center line of the pivot pins 25 and 21, thereby preventing any possible chance of accidental displacement of the actuating lever 20 from its closed and cam locked position with, and in relation to, the side wall of the closure 3. To further guard against displacement of the lever 20 from closed position, I provide an inwardly projecting hook shaped member 27 which is secured to the upper wall of the split ring 7 and behind the hooked end thereof the lever 20 rests. The free end of the lever 20 can be sprung downwardly sufficient to move it into and out of position behind the hook shaped member.

The essential feature of the invention, it will be understood, resides in causing the cam face 22 on the lever 20, when moved into closed position, to apply outward pressure against the closure wall 4 about midway the upper and lower ends of the wall with sufficient force to cause an indentation to provide a protuberance 28 to be formed on the closure wall material pressing outwardly into contact with the barrel wall 1 adjacent the axis of the barrel bead 2 so as to positively lock the split clamping ring 7 against any possible rotary displacement relative to the closure flange 5 and barrel bead 2, thereby assuring a very tight clamping fit of the split ring 7 about the beaded end of the barrel, due to the fact that the cam 22 on the lever 20 is very tightly wedged between a portion of the upright side wall 4 of the closure 3 and the lever pivot pin 21, thereby drawing the end B of the clamping ring 7 into very tight engagement with the closure flange 5 and barrel bead 2, and in so doing, drawing the opposite end A of the split clamping ring also into very tight engagement with the closure flange 5 and barrel bead 2, due to the step-off section projection 15 being forced toward the center of the barrel by the shoulder 18 of ear 9. Contracting the clamping ring in this manner effects circumferential alignment of the ends of the split clamping ring 7, causing a proper and clamping tight fit of the split ring from one end thereof to the other with the cover flange 5 and barrel bead 2 to effect a tight joint between the closure flange 5 and gasket 6 and a tight joint between the gasket 6 and the barrel bead 2.

The gauge of the cover and barrel material, for instance, from fourteen to twenty gauge, I find, permits of the effect which is found desirable. Positioning the lever 20, as shown, so that the cam face 22 presses the closure side wall material outwardly against the barrel wall opposite the barrel bead produces the desired results of positively locking the lever in closed position and locks the closure against displacement relative to the open end of the barrel even without the use of hooked member 27, which member is employed as a safety feature in transportation and handling of the barrel.

The pressing outwardly of a portion of the side wall material 4 of the barrel closure against the barrel wall is due to the fact that the distance between the lever pivot 21 and the cam face 22, when the split ring is contracted, is greater than the normal distance between the lever pivot 21 and inside face of the side wall 4 of the barrel closure 3.

It will be apparent from Figs. 4, 5 and 6 of the drawings, that step-off sections of the clamping ring ears 8 and 9, the operating lever 20 and the connecting links 23 and 24 are all disposed below the top plane of the split clamping ring 7.

The many advantages of the herein described invention will readily suggest themselves to those skilled in the art to which it appertains.

From the foregoing description, it is evident that a simple device for this purpose has been disclosed, but it is to be understood that I do not desire to restrict, or limit myself to the very details of the construction shown and described, which is merely illustrative, it being obvious that changes, not involving the exercise of invention, may be made without conflicting or departing from the spirit of the invention within the scope of the appended claim.

What I claim is:

Means for clamping a top closure having a vertical wall and an outstanding flange on the end of a barrel having a rolled edge and a compressible gasket between the top closure flange and the rolled edge, said means comprising a split clamping ring shaped to conform in cross-section to the contour of the top closure flange and the rolled edge of the barrel, angularly shaped ears secured to and projecting inwardly from the inner top edge of the ends of the split clamping ring, said members including vertically disposed intermediate portions with one of said portions of less height than the other, a lateral projection on one of said ears adapted to override a portion of the other angularly shaped ear when the clamping ring is closed and said lateral projection having its free end curved upwardly, a lever pivoted at one end to the angularly shaped member having the intermediate section of greatest height, a top closure wall engaging cam formed at one corner of the lever adjacent the pivot connection of the lever with the angularly shaped member, an upper link connecting said angularly shaped member and the lever by the same pivot connections, and the pivot connection of the lever with its respective angularly shaped member adapted to lie between the link pivot connections and to the inside of a straight line between said link pivot connections when the clamping ring is closed.

HENRY G. WOEHLER.