March 15, 1938. C. H. ROLLASON 2,111,372

HEAD RETAINER FOR SHIPPING AND STORAGE VESSELS

Original Filed July 28, 1932

Fig. 1.

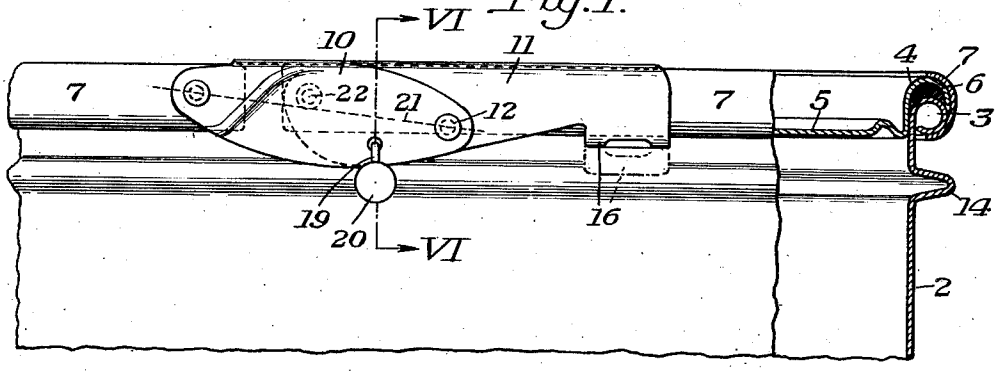



Fig. 2.

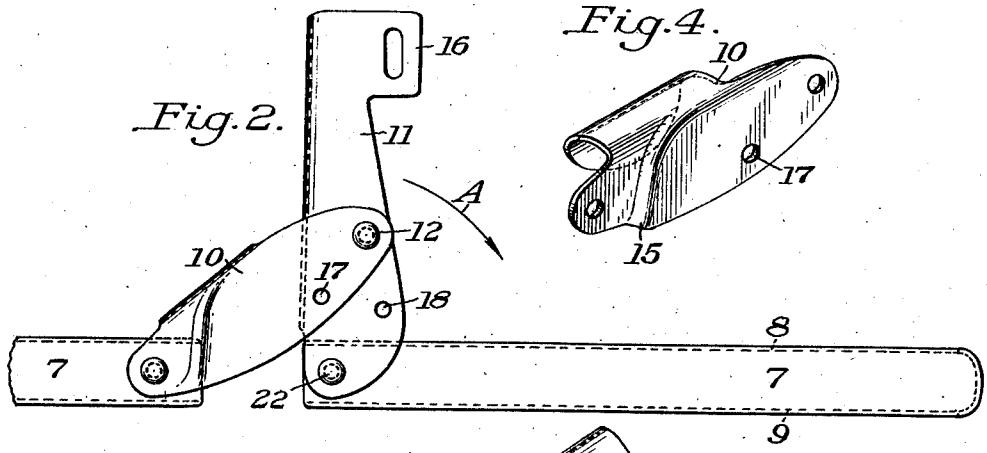



Fig. 4.




Fig. 3.

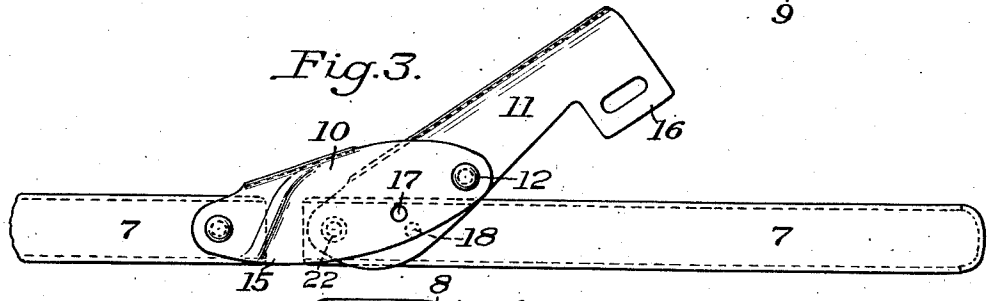



Fig. 6.

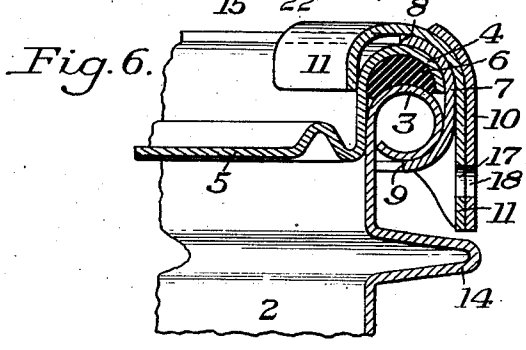
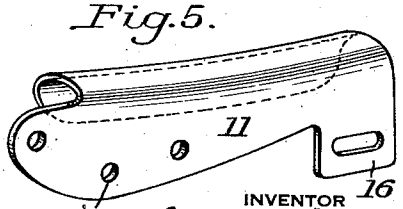



Fig. 5.




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## HEAD RETAINER FOR SHIPPING AND STORAGE VESSELS

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7 Claims. (Cl. 220—61)

The present invention relates broadly to the art of shipping and storage containers, and more specifically to means for securely fastening a detachable head to such containers.

It is customary in the art to which the present invention relates to provide receptacles of such construction as to afford a seating surface at one end thereof adapted to cooperate with a detachable head through the inter-positioning of a sealing gasket. In order to seal such heads in position, there is usually utilized a spring ring of such construction that the ends thereof may be drawn together or separated. This contracting or expanding operation is obtained through the medium of levers, cams and threads cooperating with suitable nuts. The threaded structures are open to the objection that their complete operation requires a considerable period of time and usually the use of some auxiliary tool. Furthermore, with both the threaded type of closure and the cam type, it is usually necessary to make some special provision for offsetting the same in such manner that they will not be exposed to injury during the handling of the container. For these reasons, the lever type of closure has met with considerable favor.

In many cases, however, a container is provided with a rolling ring or projection adjacent the cover, which interferes with the free movement of the levers as required. It is one of the objects of the present invention to provide an improved system of levers which are so constructed that they may project from one side only of the clamping ring in such manner as to enable application of the ring with the levers away from any interfering obstruction.

In the accompanying drawing there is shown for purposes of illustration only, a preferred embodiment of the invention. In the drawing—

Figure 1 is a view, partly in side elevation and partly in section, of a portion of a container illustrating my invention applied thereto;

Figure 2 is a side elevational view of the ring detached from the container and in expanded position;

Figure 3 is a view similar to Figure 2, illustrating the levers in partly closed position;

Figure 4 is a perspective view of the saddle lever;

Figure 5 is a perspective view of the clamping lever;

Figure 6 is a detail sectional view, on an enlarged scale, along the line VI—VI of Figure 1.

In the accompanying drawing there is illustrated, partly in section and partly in side elevation, the upper portion of a sheet metal container or drum 2 of any usual construction having a terminal roll 3 at its upper end with which is adapted to cooperate an outwardly curled rim 4 on a removable cover 5. Interposed between the roll 3 and the rim 4 is a compressible sealing gasket 6.

While the roll and rim on the body and cover respectively may be of any desired contour, they are herein illustrated as being of curved cross section and adapted to receive thereover a clamping ring 7 which is of similarly curved section to provide outwardly converging clamping edges 8 and 9 adapted to overlie the rim and underlie the downwardly facing shoulder provided by the roll 3, respectively. The ring, which is split to provide separable end portions, is of such dimensions that when the end portions are drawn together, the cover will be securely clamped in position, while when the end portions are separated the cover is released for removal.

For effecting the desired clamping and releasing, or contracting and expanding movements of the ends of the ring, one of the ends has pivotally mounted thereon a saddle 10, while the opposite end has pivotally secured thereto a clamping lever 11. As will be apparent more particularly from Figure 2 of the drawing, the saddle 10 and clamping lever 11 are provided with an interconnecting pivot 12, the mounting of the levers being such that they project entirely on one side of the clamping ring, leaving the other side entirely unobstructed. Thus, in case the container 2 is provided with a rolling ring 14 adjacent the roll 3, the clamping ring will be applied in the position illustrated in Figure 1, wherein the saddle and clamping lever may be swung upwardly from the head of the container without interference by reason of the contour or construction of the container itself.

As will be apparent more particularly from Figure 6 of the drawing, the saddle 10 is generally of U-shaped cross section adapted to partially straddle one end of the ring 7, and has a pocket or recess 15 formed in one of the side walls thereof adapted to receive a portion of the clamping lever 11 lying between the pivotal mounting 12 and the point of connection of the clamping lever to the clamping ring. This nested relationship of the parts is clearly indicated in Figure 1 of the drawing, wherein the clamping lever has been swung in the direction of the arrow A from its position shown in Figure 2 through the intermediate position of Figure 3 and into nested relationship with the clamping

ring 7. In this position the saddle 10 bridges the gap between the slightly spaced ends of the clamping ring, and partially houses the clamping lever, the projecting end of the clamping lever, which is also of generally U-shaped cross section embracing one end portion of the clamping ring and constituting a continuation of the saddle 10.

Formed on the clamping lever is a deformable lug 16 adapted to be bent inwardly so as to underlie the clamping ring and prevent accidental release thereof. If desired, the saddle and lever may each be provided with cooperating openings 17 and 18 respectively, so positioned as to come into registration with the parts in the position of Figure 1 to receive a sealing wire 19 secured by a seal 20.

In Figure 1 there is shown a dotted line 21 extending between the pivotal mountings for the saddle and clamping lever respectively, the pivot 22 being shown as located at one side of this dotted line. By reason of this relationship of the parts, as the levers are moved to contract the clamping ring, the pivot 12 will first move into and then across the line of the other pivots, thus exerting a holding action in the nature of a toggle which prevents accidental displacement of the parts.

A comparison of Figures 2 and 3 will show that the arrangement of the clamping lever and saddle is such that the end portions of the clamping ring may be drawn toward each other in a straight line movement, the saddle and clamping lever both moving in a clockwise direction about their respective pivotal mountings during the contracting operation, the clamping lever constituting a lever of the second class in which the load is applied at a point intermediate its fulcrum on the clamping ring and the free outer end thereof. This enables the saddle and clamping lever to be so mounted as to always occupy a position entirely on one side of the general plane of the clamping ring, and enables the entire structure to be utilized in the position shown in Figure 1, or bodily inverted so that the saddle and clamping lever both underlie the clamping ring, although it is normally contemplated that the parts will be utilized in the manner first described.

Certain advantages of the invention arise from the provision of a shifting system of parts, preferably including a saddle and a clamping lever which both extend on one side of the clamping ring to be operated thereby.

Further advantages arise from the provision of a structure of the character referred to including a saddle and clamping lever adapted to occupy a nested relationship, and particularly wherein the clamping lever constitutes a lever of the second class with the portion thereof between its own fulcrum and its point of attachment to the saddle in nested relationship with the saddle.

Still further advantages arise from the provision of a structure of the character described including a clamping lever of the second class the fulcrum point of which is adapted, with the clamping ring contracted, to lie off-center with respect to the other pivot points whereby a self-locking action in the nature of a toggle is obtained.

While I have herein illustrated and described a preferred embodiment of the present invention, it will be understood that changes in the construction and operation of the parts herein disclosed may be made without departing either from the spirit of my invention or the scope of my broader claims.

I claim:

1. A head retaining device for containers, comprising a clamping ring having end portions adapted to move toward and from each other, a saddle pivotally connected to one of said end portions, a lever pivotally connected to the other of said end portions, a pivotal connection between said saddle and lever at a point between the free end of said lever and its pivotal mounting on the clamping ring, said lever being movable generally in a plane transverse to the plane of said ring, said pivotal connection being adapted upon movement of the parts to clamping position to cross the line of the pivots connecting the saddle and lever, respectively, to said end portions, and means to positively maintain the end portion of the lever in place when the parts are in clamping position.

2. A head retaining device for containers, comprising a clamping ring having end portions adapted to move toward and from each other, a saddle pivotally connected to one of said end portions, a lever pivotally connected to the other of said end portions, and a pivotal connection between said saddle and lever at a point between the free end of said lever and its pivotal connection with the clamping ring, said lever being movable generally in a plane transverse to the plane of said ring, said pivotal connection being adapted upon movement of the parts to clamping position to cross the line of the pivots connecting the saddle and lever, respectively, to said end portions, at least one of said saddle, lever and clamping ring having a portion adapted, when the retaining device is in operative position, to extend into interengaging relationship with a portion of another of such parts in such manner as to positively maintain the device in said position.

3. A head retaining device for containers, comprising a clamping ring having end portions adapted to move toward and from each other, a link pivotally connected to one of said end portions, a lever pivotally connected to the other of said end portions, and a pivotal connection between said link and lever at a point between the free end of said lever and its pivotal connection with the clamping ring, said lever being movable generally in a plane transverse to the plane of said ring, at least one of said link, lever and clamping ring having a portion adapted, when the retaining device is in operative position, to extend into interengaging relationship with a portion of another of such parts in such manner as to positively maintain the device in said position.

4. A retaining device for application to containers and the like, comprising expansible and contractible retaining means and shiftable means for effecting expansion and contraction of said retaining means and adapted in one position of the device to lie against the retaining means, at least one of said means having a bendable portion adapted, when the parts are in said position, to be bent into interengaging relationship with a portion of the other of said means in such manner as to positively maintain the device in said position.

5. A retaining device for securing heads to containers and the like, comprising expansible and contractible retaining means and means shiftable transversely of the plane of the head for ef-

fecting expansion and contraction of said retaining means and adapted when in operative position to lie against the retaining means, at least one of said means having a bendable portion adapted, when the parts are in said position, to be bent into interlocking engagement with a portion of the other of said means whereby to positively fasten the device in said position.

6. A retaining device for securing heads to containers and the like, comprising expansible and contractible retaining means and means shiftable transversely of the plane of the head for effecting contraction of said retaining means and adapted when in operative position to lie against the retaining means, said shiftable means being at least in part disposed peripherally outside the retaining means so as to be readily susceptible of being shifted accidentally upon handling of the container, at least one of said means having a portion adapted, when the parts are in said position, to interlock with a portion of the other of said means whereby to positively hold said respective means against substantial relative movement in any direction.

7. A retaining device for securing heads to containers and the like, comprising a contractible clamping ring and means for effecting contraction of said ring comprising a lever pivotally mounted on the ring and shiftable transversely of the plane of the ring and adapted when in operative position to lie against the ring and at least in part disposed peripherally outside of the ring so as to be readily susceptible of being shifted accidentally upon handling of the container, one of said parts being provided with a portion adapted, when the parts are in operative position, to interlock with a portion of the other of said parts positively to lock the lever against accidental shifting from its operative position.

CHARLES H. ROLLASON.