Dec. 25, 1951 H. A. SCOTT ET AL 2,579,975

LEVER LOCK

Filed Sept. 20, 1948

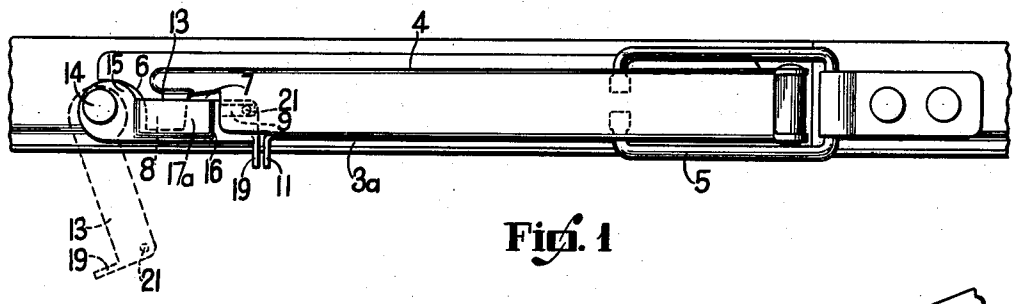


Fig. 1

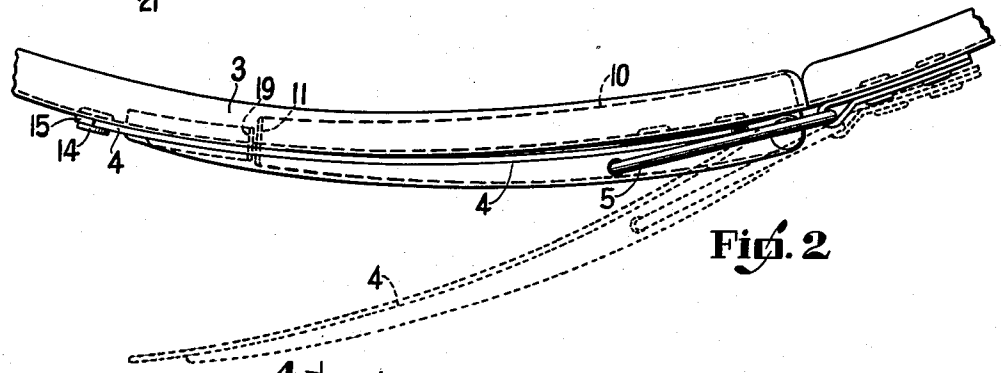


Fig. 2

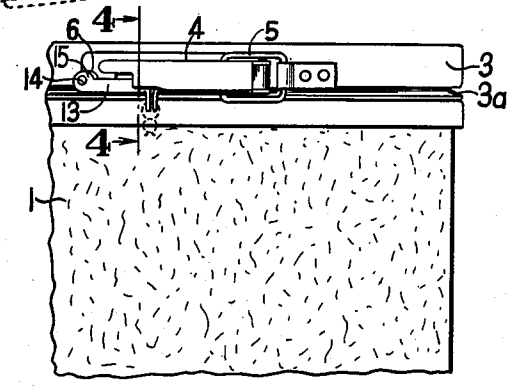


Fig. 3

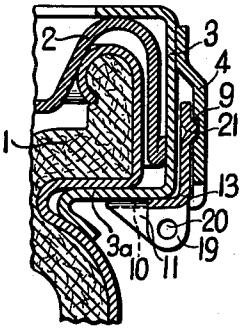


Fig. 4

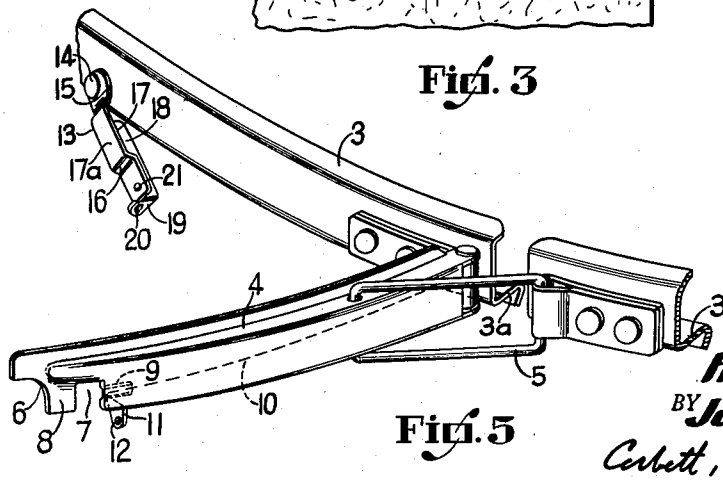


Fig. 5

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Patented Dec. 25, 1951 2,579,975

# UNITED STATES PATENT OFFICE

2,579,975

## LEVER LOCK

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Application September 20, 1948, Serial No. 50,134

3 Claims. (Cl. 220—61)

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Our invention relates to a lever lock. It has to do, more particularly, with a lock for use in connection with a lever of the type disclosed in our co-pending application, Serial No. 782,864, which lever is used as a means for expanding and contracting a split clamping ring which holds a closure member on a container.

In our co-pending application, we disclose a split clamping ring for holding a closure member on a container. This clamping ring is operated by means of a lever-actuated mechanism which includes a lever pivotally connected to one end of the ring and a link pivotally connected to the opposite end of the ring, the link being connected to the lever intermediate its ends. When the ring is in contracted condition in order to hold the closure member on the container, the lever is swung inwardly into contact with the outer face of the ring. It is necessary to provide a locking means to keep the lever in such position.

The present invention relates to locking means for maintaining the lever in the position it occupies after the split ring has been contracted. This locking means has certain advantages over the locking means disclosed in our copending application.

One of the objects of our invention is to provide a locking means of the type indicated associated with a lever for maintaining it in position against the split locking band or ring, such locking means being so designed and so located that it will not be subject to damage by other similar containers especially when they are arranged in cars or trucks side-by-side for shipment.

Another object of our invention is to provide a locking means which is of such a nature that when in locking position it is disposed within the outer face of the lever and, therefore, will be so located that it will not be subject to forces tending to disengage it from the lever.

Still another object of our invention is to provide a locking means of the type indicated which will not only hold the actuating lever in its final position but will also aid in bringing the lever into its final position.

Various other objects will be apparent.

The preferred embodiment of our invention is illustrated in the accompanying drawing wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a side elevtaional view of an actuating lever on a split ring or band and illustrating how the locking means of this invention is associated with the lever.

Figure 2 is a top view of the structure shown in Figure 1.

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Figure 3 is a side elevational view of the actuating lever and associated locking means and illustrating this mechanism associated with a closure and a container.

Figure 4 is a transverse vertical sectional view taken along line 4—4 of Figure 3.

Figure 5 is a perspective view of the lever and lock mechanism.

With reference to the drawing, in Figures 3 and 4 I have illustrated a container 1 of fiberboard or similar material which is of cylindrical form and which is provided with a cap or closure 2. A retaining ring or band 3 is applied to the container and is provided with portions for locking the closure on the container when the ring 3 is contracted.

The means for contracting and expanding the ring 3 is similar to that disclosed in our copending application and includes a lever 4 and a link 5 which are pivotally connected to opposite ends of the split ring for movement inwardly and outwardly in a horizontal plane, as shown in Figure 5. When the lever is swung inwardly against the face of the ring 3, the ring is contracted and the lever will lie closely adjacent the ring as shown by the full lines in Figure 2. The dotted lines indicate how it is swung outwardly to expand the ring. When in the position shown by the full line in Figure 2, it is desirable to lock it in such position to prevent outward swinging of the lever and release of the closure. This is accomplished by locking means which we shall now describe and which has a number of important advantages over the locking means disclosed in our copending application.

For this purpose, the outer or free end of the lever 4 is of special formation. Referring to Figure 5, the extreme outer end of the lever is provided with an arcuate cam edge 6. Spaced inwardly from the edge 6 is a notch 7 and between the edge 6 and notch 7 is a depending tongue 8. On the inner face of the lever 4 and extending from the inner vertical edge of notch 7 is a narrow indentation or groove 9. Depending from the lower flange 10 of the lever 4 just inwardly of the notch 7 is a small lug 11 with a hole 12 therein.

For cooperation with the end of the lever just described, a pivoted latch arm 13 is provided. This arm is pivoted for vertical swinging movement by a rivet 14 to the ring 3 adjacent the point where the end of lever 4 will be disposed when it is swung inwardly. The pivoted end of the lever is so shaped that a circular cam portion 15 is formed thereon which is eccentric relative to the rivet 14. This portion 15 is so shaped

and located that when the latch arm 13 is swung upwardly, the cam portion 15 thereof engages and exerts pressure against the cam edge 6 of the lever 4.

The latch arm 13 is bent outwardly at a point 15 spaced from the rivet and then inwardly at a point 16 spaced from its outer end in order to produce a bent-out section 17a which provides at its inner side a tongue-receiving socket or space 17 in which the tongue 8 of lever 4 will be received when the arm 13 is swung upwardly. To reinforce the arm 13 it is provided with an inwardly directed flange 18 on its outer end. This flange has a depending lug 19 on its outer end which has an opening 20 formed therein. On the vertical part of the arm 13 adjacent its outer extremity is a small projection 21 which is adapted to snap into the indentation 9 in the lever when the arm 13 is swung upwardly.

In the operation of this latch means, the arm 13 will initially be in its inoperative position shown by the dotted lines in Figure 1 and the lever 4 will be in the position shown by the dotted lines in Figure 2. When the lever 4 is swung inwardly into contact with the ring 3 as shown by the full lines in Figure 2, the arm 13 is then swung upwardly into locking position to retain the lever against the face of the ring. When the lever 4 is swung inwardly, its outer end will pass over the pivot 14 of the arm 13. The cam portion 15 of arm 13 will now be so located that as the arm 13 is swung upwardly, the cam 15 engages the cam edge 6 on the lever and will gradually force the lever upwardly to cause the flange 10 thereof to tightly engage the lower flange 3a of the ring 3. As the arm 13 swings upwardly, the tongue 8 on the lever is received into the space 17 provided at the inner side of the arm 13. The tongue 8 is of such extent that it will not contact with the flange 18 of arm 13 by the time the cam portion 15 forces the lever 4 upwardly so that its flange 10 contacts with the flange 3a. The projection 21 disposed on the outer end of the vertical part of arm 13 will move up to a position where it snaps into indentation 9, since the end of the arm is so located that it passes behind the main part of the lever 4. It will be noted from Figure 1 that the tongue 8 is in a plane spaced inwardly slightly behind the plane of the vertical part of the lever 4. The face of the outwardly bent part 17a of the arm 13 is substantially flush with the face of the lever. The notch 7 permits downward movement of the tongue 8 into the space 17 without interfering with the outwardly bent part 17a of the arm. The raised portion 21 of arm 13 will snap into the indentation 9 before the flange 18 of arm 13 contacts the lower flange 3a of the locking ring. The flange 10 of the lever is cut away so that the flange 18 of the arm will not contact with it. Also, the tongue 8 on the lever is of insufficient length to contact the flange 18 of the arm 13. Thus, flange 18 of arm 13 will not contact either the locking ring or the lever. The lugs 11 and 19 will now be adjacent and a wire seal may be passed through the aligning openings 11 and 20.

It will be apparent from the above description, that the latch arm will effectively hold the lever in its final position and will, in fact, aid in moving the lever into final position so that the lower flange on the lever will snugly contact the lower flange on the ring. The greater part of the latch arm will be disposed beneath or spaced within the outer face of the lever. Consequently, it will not be subjected to forces acting downwardly



thereon which would tend to move it into unlocking position. Furthermore, since the free end of the latch arm will swing upwardly behind the face of the lever, there will be no tendency for such free end to be bent outwardly. In other words, it will be protected by the lever and there will be little outward force thereon which will be transmitted to the rivet 14. Any outward force on the free end of the latch arm will be taken by the lever since it is disposed behind the lever. The latch arm is held down by the rivet at one end and by the lever at the other end and does not depend on its own strength for maintaining it snugly against the lever and ring. The outer extremity of the lever engages the cam portion on the latch arm and, consequently, downward movement of the lever which might disengage the lock will be precluded inasmuch as any downward force applied to the lever will merely be transferred through the cam action as direct shear on the rivet.

Many other advantages will be apparent from the preceding description, the drawing, and the following claims.

Having thus described our invention, what we claim is:

1. In combination with a band having an actuating lever associated therewith for expanding and contracting it, said lever being movable to a position in association with the face of the band, latching means for holding the lever in such position, said latching means comprising a latch arm pivoted to the band adjacent the end of the lever for movement in a plane at right angles to the plane of movement of the lever, the end of the lever being provided with a depending tongue and a notch adjacent the tongue and inwardly thereof, said latch arm having an outwardly bent part to form a socket for receiving the tongue and having its outer end spaced inwardly of the plane of the lever so that it will pass behind said lever as the arm is swung upwardly with the tongue passing into the socket and the arm passing into said notch.

2. In combination with a band having an actuating lever associated therewith for expanding and contracting it, said lever being movable in the plane of the band to a position in contact with the face of the band and having a flange adapted to extend along one edge of the band, latching means for holding the lever in such position, said latching means comprising a latch arm pivoted to the band adjacent the end of the lever for movement in a plane at right angles to the plane of movement of said lever, said pivoted end of the arm being provided with a circular cam portion eccentrically disposed relative to the pivot of the arm, said arm having an outwardly bowed portion intermediate its ends to form a socket at the inner side thereof, said lever being provided at its outer end with an extension having a cam edge adapted to be engaged by the cam portion of the arm, a depending tongue formed on said lever and adapted to extend into the socket in said arm, said lever being provided with a notch directly adjacent said tongue through which a portion of the arm may swing so that its free end can move behind the lever, said tongue and said end of the arm being in substantially the same plane which is behind the plane of the face of the lever.

3. In combination with a band having an actuating lever associated therewith for expanding and contracting it, said lever being movable in the plane of the band to a position in contact

with the face of the band and having a lower flange which is disposed beneath the lower edge of the band when the lever is in contact with the face of the band, latching means for holding the lever in such position, said latching means comprising a latch arm pivoted at its one end to the band adjacent the end of the lever for movement in a plane at right angles to the plane of movement of said lever, said latch arm being provided with an eccentric cam portion around its pivot which engages a cam edge on the end of the lever for forcing the lever upwardly so that the flange thereof snugly engages the lower edge of the band, the end of the lever and the latch being provided with interfitting portions which prevent outward movement of the end of the lever, the extremity of the free end of the latch arm passing behind the lever so that it is completely covered by the lever to prevent outward movement of said end of the arm.



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## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,681,150 | Vischer | Aug. 14, 1928 |
| 1,901,699 | Burpee | Mar. 4, 1933 |
| 2,216,480 | Severy | Oct. 11, 1940 |
| 2,236,302 | Scott | Mar. 25, 1941 |
| 2,299,616 | Eggers | Oct. 20, 1942 |
| 2,304,911 | Harpold | Dec. 15, 1942 |