

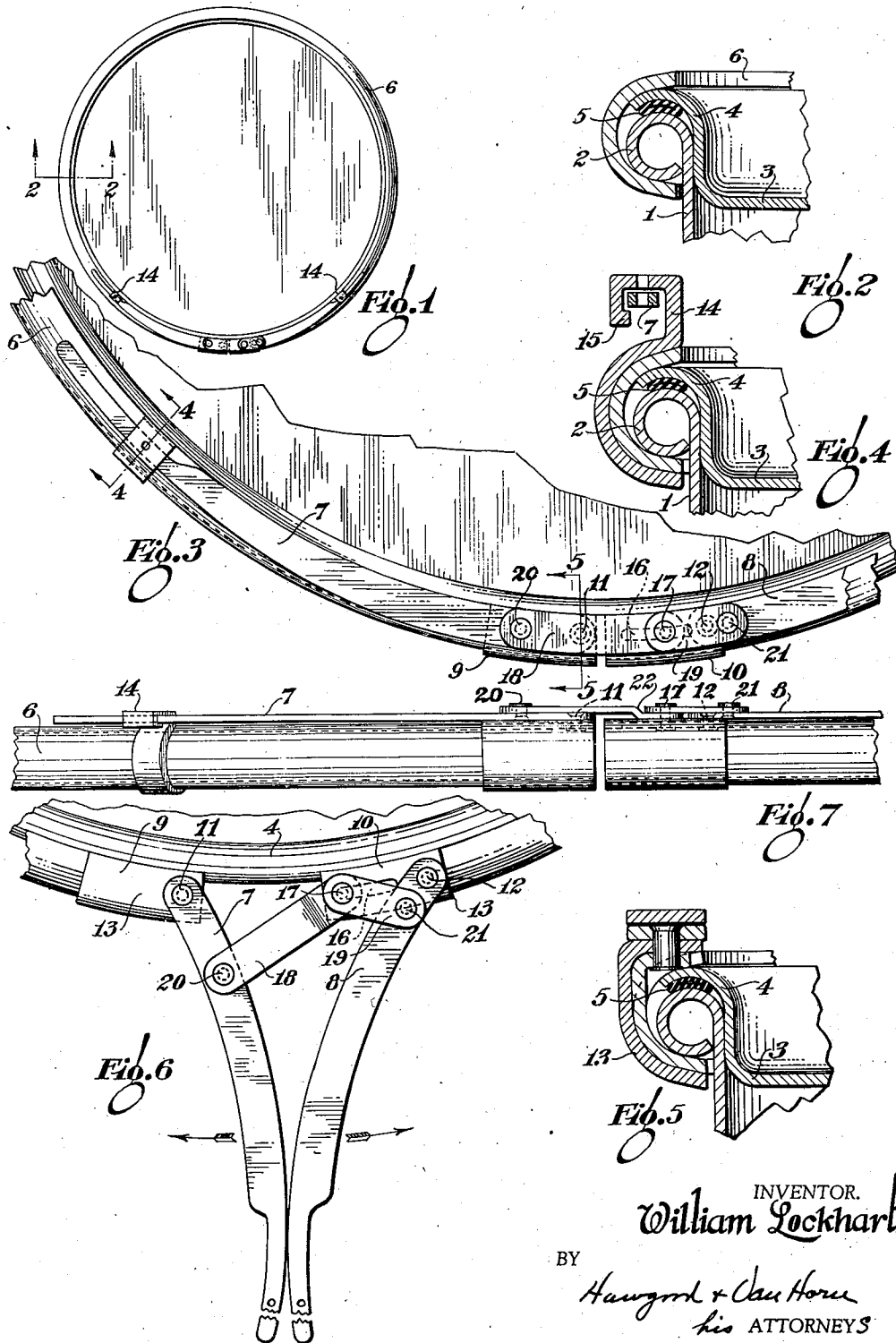
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RECEPTACLE AND CLOSURE

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RECEPTACLE AND CLOSURE

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My invention is an improvement in metallic receptacles and closures therefor and relates more particularly to a clamping ring for removably clamping the cover on the receptacle in fluid tight sealed relation.

One of the objects of the invention resides in a split clamping ring expanded or contracted by means of a link and lever mechanism connecting the ends of the ring and by which the closing pressure on the drum cover may be applied first to fix the cover in place and subsequently to seal the cover by additional pressure in fluid tight sealed relation to the drum.

Another object of the invention is to provide a device of this kind employing separate operating levers to apply different degrees of closing pressure to the cover.

A further object is to provide a link and lever operating mechanism connecting the ends of the ring for applying a predetermined closing pressure uniformly around the ring and a supplemental lever connected with one of said ring ends and with said other link to apply an additional closing pressure on the ring when the supplemental lever is operated.

Another object of my invention consists in a compound link and lever closing mechanism for a split channeled clamping ring of the class described, which is simple of construction, low in cost of manufacture and which operates externally of the ring.

A still further object is such a clamping mechanism which, when the ring is operated to exert a closing pressure on the cover, offers substantially no external obstructions which, if present, might interfere with the storage of the drums.

Other objects and advantages of my invention will become apparent as the following description of an embodiment thereof progresses, reference being made to the accompanying drawing in which like reference characters are employed to designate like parts throughout the same.

In the drawing:—

Figure 1 is a top plan view of a covered drum showing an embodiment of my invention applied in use;

Figure 2 is an enlarged section taken on line 2—2 of Figure 1;

Figure 3 is a fragmentary view of an embodiment of my invention, showing the parts in position for fully contracting the ring;

Figure 4 is a section taken on line 4—4 of Figure 3;

Figure 5 is a section taken on line 5—5 of Figure 3;

Figure 6 is a view similar to Figure 3 but shows the ring expanded and the operating mechanism in open position; and,

Figure 7 is a side elevation of the parts shown in Figure 3.

Referring now more particularly to the drawing, the barrel or drum is indicated at 1. The upper open end of the container is formed with a peripheral bead 2. A cover 3 comprising a cupped or depressed head, having a peripheral upwardly and outwardly extending flange 4, is supported by the bead 2 in such a manner that the cupped portion of the head or cover may be telescoped for a short distance within the open end of the drum, as illustrated in Figure 2. It will be noted that a portion of the flange 4 is of substantially arcuate cross section to conform with the approximate curvature of the upper surface of the bead. A packing 5 consisting of an annulus of any suitable packing material, such as flexible rubber tubing or cork, is interposed between the flange 4 and the bead 2.

According to the present invention, I have provided an improved means for removably securing the cover on the drum or receptacle to effect a fluid tight seal therebetween by exerting a substantially uniform and firm pressure along the cover flange and bead in a direction substantially parallel to the longitudinal axis of the drum.

Such means preferably includes a transversely split, channeled clamping ring 6 of substantially U-shaped cross section and which is capable of being expanded and contracted by suitable means. In the form illustrated the upper and lower flange and bead engaging walls respectively of the ring converge slightly toward the outer diameter of the ring and engage the cover flange and bead of the container to press the same together tightly when the ring is contracted. However, it is to be understood that the ring and receptacle open end may be so designed that the cover will be pressed into a tight seal with a shoulder formed at the receptacle open end when the ring is expanded. That is, instead of the receptacle being formed with a rolled bead 2, the open end may be formed with an annular shoulder and an annular channel for receiving an expander type ring, a packing ring and the cover.

By contracting the type of clamping ring herein illustrated, the cover flange will be pressed tightly against the packing 5 and the supporting bead 2 under a substantially vertical pressure.

In further carrying out my invention I have provided means connecting the ends of the split ring for contracting and/or expanding the ring as in locking cover in place or in removing the same. Such means includes preferably a link and lever connection such for instance as is illustrated in Figures 1, 3, 6 and 7. A pair of operating levers 7 and 8 are pivotally connected with the respective ends 9 and 10 of the ring defining the split therein. Pins or rivets 11 and 12 provide these pivotal connections and the ring ends 9 and 10 are preferably reinforced by welding an additional thickness of metal 13 thereto, as shown. When the levers 7 and 8 are in ring contracted position as shown in Figures 3 and 7 they are caused to lie within the outer diameter of the ring and close to the top surface thereof, thus eliminating obstructions which might otherwise interfere with storing the receptacles. Suitable retainers 14 for receiving and holding the outer ends of the respective levers when the ring is fully contracted, may be fixed to the ring by welding or otherwise. To release one of the levers from a retainer 14 it is merely necessary to depress the end of the lever until it will clear the latch 15, and then swing the lever outwardly of the ring.

One end of the ring is slotted as at 16 to slidably receive the pin 17. A pair of links 18 and 19 of different lengths are pivotally connected at 20 and 21 at one end respectively to the levers 7 and 8, and are connected together at their other ends by means of the pin 17 operating in the slot 16. In the embodiment shown the link 18 is the longer and is offset out of its longitudinal plane at 22 to underlie the shorter link 19.

In removably clamping a cover on the open end of a metallic receptacle of the type described, the cover is placed within the open end and the flange 4 rests upon the packing ring 5 and the supporting bead 2. The ring 6 is expanded by throwing the levers 7 and 8 to the position shown in Figure 6. The ring is then placed over the cover flange and bead until they lie in the channel as shown in Figure 2. In order to close or contract the ring 6 the operator grasps the lever 7 and swings it to the left in Figure 6. This causes the ends of the ring to curve toward each other and when the lever 7 has reached its limit of movement as defined by its retainer 14, a sufficient closing or vertical pressure will be exerted uniformly around the ring to clamp the cover securely in place upon the open end of the receptacle. This pressure may not be sufficient to effect a fluid tight seal between the cover and the receptacle, but it is sufficient for shipping the receptacles empty to the user. In this movement of lever 7 the pin 17 slides to the extreme left in the slot 16 and engages the end of the slot to complete the driving connection between the ring ends. The lever 8 will not be thus swung to the left but will remain in the position shown in Figure 6. In order to more fully contract the ring and bring its end closure together and thereby exert an even greater closing pressure upon the cover and bead, the operator swings the lever 8 to the right in Figure 6 to its limit of movement in this direction as defined by the other retainer 14. During this movement of lever 8 a driving connection is made through the shorter link 19, the pin 17, the link 18 and the lever 7 to the opposite end of the ring, and the pin 17 then travels to the right in the slot 16 to the approximate position shown in Figures 3 and 7. When each of the levers 7 and 8 reaches its retainer 14

the lever end is slipped up under the latch 15 and is thereby retained in place.

Contraction of the ring to its fully closed position may also be accomplished by closing the levers 7 and 8 simultaneously, or by closing lever 8 and then closing lever 7, but I have found that the first method is preferable because it requires less effort and because the cover can first be clamped accurately and then the ring further contracted to apply the sealing pressure to the cover.

It will be noted that by mounting the operating levers and links upon the upper surface of the ring and permitting the levers to swing outwardly thereof, they are more conveniently reached and handled by the operator. The operator may stand diametrically opposite of the ring ends and reach over the top of the drum to grasp the levers 7 and 8 and pull them toward him in clockwise and counter-clockwise movements.

While I have described the illustrated embodiment of my invention in some particularity, obviously many others will readily occur to those skilled in this art, and I do not, therefore, limit myself to the precise details shown and described but claim as my invention all embodiments, variations and modifications thereof coming within the scope of the appended claims.

I claim:

1. A device for removably clamping a cover on the open end of a receptacle including a split locking ring engaging the cover and a portion of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected with each end of said split ring and operable in opposite directions to contract said ring, and a pair of links pivotally connected together at adjacent ends with an end of the ring and with said levers at their respective other ends.
2. The combination with a metallic receptacle having a bead around its open end and a cover for said open end having a flange fitting over the bead, and a packing member between the flange and bead, of a split locking ring to press the cover flange and bead together in sealing relation, and means for contracting or expanding the ring including a lever pivotally connected with each end of said split ring and a pair of links pivotally connected together at adjacent ends with an end of the ring and with said levers at their respective other ends, said levers being operable independently of each other to apply independent closing pressures to the cover and receptacle.
3. A device for removably clamping a cover on the open end of a receptacle including a split locking ring engaging the cover and a portion of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected with each end of said split ring and operable in opposite directions to contract said ring, and a pivoted member connecting said levers, said pivoted member comprising a pair of links pivotally connected together at their adjacent ends with an end of the ring and with the respective levers at their opposite ends.
4. A device for removably clamping a cover on the open end of a receptacle including a split locking ring engaging the cover and a portion of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected with each end of said split ring and oper-

able in opposite directions to contract said ring, and a pair of links pivotally connected together at adjacent ends and with said levers at their respective other ends, one end of said ring having a slot therein and a projection carried by said links and slidable in said slot.

5 5. A device for removably clamping a cover on the open end of a receptacle including a split locking ring engaging the cover and a portion
10 of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected with each end of said split ring and operable in opposite directions to contract said
15 ring, and a pair of links pivotally connected together at their adjacent ends with an end of the ring and with said respective levers at their other ends, one of said links being of greater length than the other link whereby an initial closing
20 pressure may be applied to the cover and receptacle prior to a subsequent additional closing pressure.

6. A device for removably clamping a cover on the open end of a receptacle including a split

locking ring engaging the cover and a portion of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected with each end of said split ring and operable in
5 opposite directions to contract the ring, and pivoted members connecting said levers and having a sliding driving engagement with an end of the ring.

7. A device for removably clamping a cover on
10 the open end of a receptacle including a split locking ring engaging the cover and a portion of the receptacle to press the same together when the ring is contracted, and means for contracting said ring including a lever pivotally connected
15 with each end of said split ring and operable in opposite directions to contract the ring, and pivoted members connecting said levers and having a sliding driving engagement with an end of the ring, said ring end having a guide and a
20 member carried by the pivoted members slidable along said guide.

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