Dec. 18, 1923. 1,477,585

F. OWEN

CONTAINER LID

Filed Jan. 16, 1922

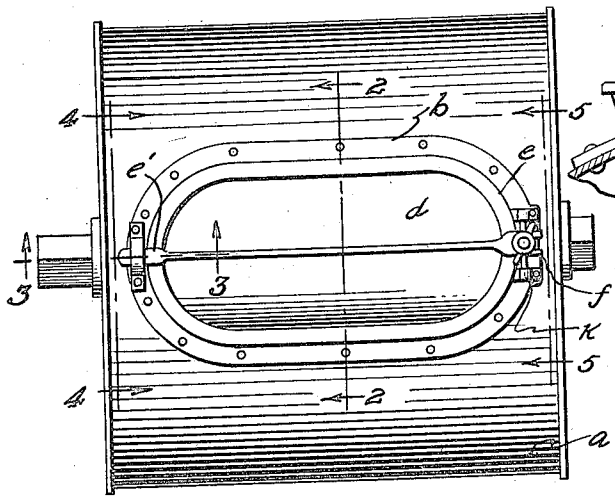


Fig. 1

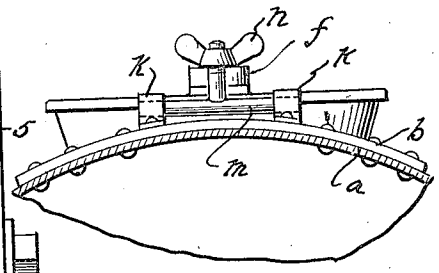


Fig. 5

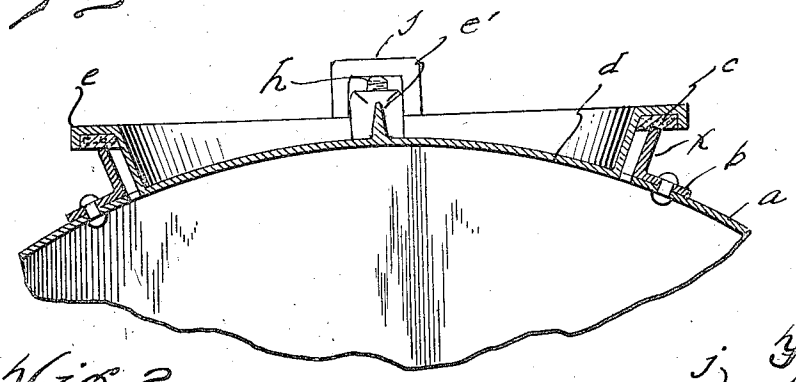


Fig. 2

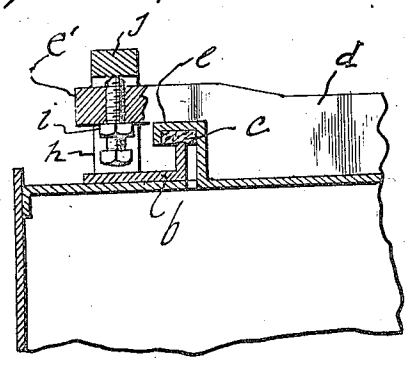


Fig. 3

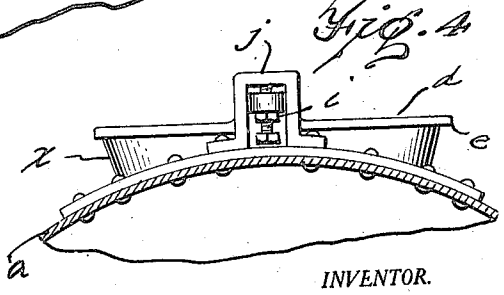


Fig. 4

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UNITED STATES PATENT OFFICE.

FREDERICK OWEN, OF DETROIT, MICHIGAN.

CONTAINER LID.

Application filed January 16, 1922. Serial No. 529,647.

To all whom it may concern:

Be it known that I, FREDERICK OWEN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Container Lids, of which the following is a specification.

This invention relates to a liquid-tight lid for containers. The lid is especially designed for use on washing machines where the rotating or oscillating drum acts also as a container for the washing fluid. It is desirable in a washing machine to provide a lid that can be quickly clamped down into liquid-tight relation with the container and yet which can be completely removed out of the way when it is desired to charge the container. Furthermore, it is highly necessary that a lid should be provided which can be adjusted to take up wear, warping or distortion of the parts so that in the course of usage the lid will not leak or lose its usefulness because the parts become slightly distorted. The objects outlined are accomplished by my improved lid construction, which will be more fully described in detail.

In the drawings,—

Fig. 1 is a plan view of a washing cylinder provided with my improved lid or cap.

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a section taken on the line 4—4 of Fig. 1.

Fig. 5 is a section taken on the line 5—5 of Fig. 1.

a designates a drum for containing a washing fluid and for containing the clothes to be washed. This drum is provided with an elliptical opening in its one side for charging the same. This elliptical opening is surrounded by an angle iron rim *b* riveted onto the drum. This affords not only a reinforcement for the opening but it also provides an upstanding flange adapted to drive into the distortable packing ring *c*, which is preferably cork. This packing ring is carried on the under side of the lid or cover *d*.

The cover is preferably a casting of some light metal such as aluminum alloy. It is elliptical in shape with a turned-out and turned-over outer flange *e* which forms a seat for the packing ring *c*. This lid curves along the minor axis of the ellipse to accord with the radius of the cylinder. Running along the major axis of the ellipse is a heavy rib or lever which continues on beyond the end of the cover to form an ear *e'*. At the opposite end of the cover the rib or lever projects beyond the body of the cover to form the bifucated ear *f*. The ear *e'* is drilled and tapped and into this can be run a cap screw *h* on which is a lock nut *i* to hold the cap screw in any position of adjustment. On one end of the charging opening is secured a heavy iron clip *j*, preferably by rivets, to the rim flange so as not to place any of the load upon the thin sheet metal that forms the body of the drum. At the opposite end of the elliptical charging opening is a pair of clips *k*, *k* which form journal bearings for the T-bolt *m* which has a wing nut *n* on its end.

From the foregoing description it will be easily understood how the lid can be quickly clamped in place. One simply has to push the cap screw end of the lever or rib under the clip *j* and the T-bolt clamp is then swung up into the bifurcated end of the lever at the opposite end and the wing nut turned down to clamp the lid in place. This action is a peculiar one. The lid becomes in effect a lever. The main stresses, of course, are taken by the thick reinforcing rib. The point of contact of the cap screw with the clip or fulcrum support becomes the fulcrum of the lever and the load is distributed all along the lever to where the power is applied, affording in effect a lever of the second order. Of course, the cap screw or fulcrum member has to be properly adjusted for if the set screw protrudes too far it will be impossible to clamp down the opposite end of the lid without bending the lever. On the other hand, if the cap screw or fulcrum point is adjusted too far in, then there will be no clamping action at all at the left hand side of the elliptical opening. In short, the fulcrum point has to be properly located so that all points on the rim are substantially in the plane of the packing ring of the lid at one point of its swinging arc. Of course, absolute precision is not required for the cork packing ring acts as a compensating factor, permitting a certain yield and indentation of the rim.

It will, therefore, be apparent that the packing ring performs not only the useful

function of forming a liquid-tight seal between the rim and the lid but it also is useful as a compensating element in the fashion already mentioned.

The lever mode of operation results in transferring the force applied at one end of the lid to the opposite end of the lid. Hence in a number of the claims I have spoken of means at one end of the lid re-acting through the engagement of the cap screw with the clip to press the lid down all along the rim. This is simply another and broader way of speaking of the lever action which has the point of power application where the wing nut engages the lid, the fulcrum, where the cap screw engages the clip and the load, all along the packing ring.

It will be noticed that the rim flange x is of varying height to compensate for the curvature of the cylinder and produce an upper edge which is in a single plane. This permits the flange e to be flat. I have found that with a curved rim flange and a curved contact surface for the cover that one cannot get a very effective clamping action.

What I claim is:

1. The combination of a container having an opening enclosed by a rim, a clip supported adjacent the rim, a detachable lid provided on one side with an integral ear interposed through said clip, an adjustable cap screw and lock nut screwing into the ear, and means for clamping down the opposite side of the lid, said means re-acting through the engagement of the screw with the clip to cause the lid to bear firmly against the rim all along the same.

2. The combination of a container provided with a rim and an opening enclosed thereby, a clip supported adjacent the rim, a detachable lid provided with an ear at one side provided with adjustable fulcrum means adapted to bear under the clip, and clamping means at the opposite side of the rim for clamping down the lid, said clamping means re-acting through the said fulcrum means and the clip to force the lid onto the rim all along the same, and an integral reinforcing rib connecting said clamping means with the ear to transmit the power stress thereto.

3. The combination of a container provided with a rim and an opening enclosed by the same, a detachable lid provided at one end with an ear, a clip supported adjacent the rim through which the ear is adapted to be passed, the said ear being provided with adjustable fulcrum means to engage the clip, a second integral bifurcated ear on the opposite end of the lid, and a clamping member that can be swung up into the slot in the bifurcated portion and forced down thereupon to hold the one end of the lid down upon the rim and which stress re-acts through the opposite ear and the clip to press the lid down at both ends.

4. The combination of a container provided with a rim and an opening enclosed thereby, a clip supported on one end of the container, a detachable lid having an ear provided with an adjustable fulcrum member adapted to be engaged under the clip, a second ear at the opposite side of the lid having a bifurcation, a rib connecting the two ears, and a clamping member adapted to be swung up in the slot of the second ear to force the one end of the lid to the rim and re-acting through the first ear fulcrum member and the clip to force the lid down against the rim all along the same.

5. The combination of a container provided with a rim and an opening enclosed thereby, a clip supported along the rim, a lid provided with an ear having a fulcrum member and adapted to be hooked under the clip and at the opposite end with a second bifurcated ear, and a T-bolt pivoted adjacent said bifurcated ear and adapted to be swung up into the slot, and a nut turned down against such ear to force one end of the lid against the rim and reacting through the adjustable fulcrum member at the opposite side to force the opposite side of the ear against the rim.

6. The combination of a container provided with an opening and a rim, a fulcrum support adjacent one side of the opening, a detachable lid provided with an adjustable fulcrum member for engaging the fulcrum support, and a clamping member at the opposite side of the opening for bearing against the lid to clamp the same down against the rim all along the same with the aid of the adjustable fulcrum member.

7. The combination of a container provided with an opening and a rim thereabout, a fulcrum support at one side of the opening, and a quickly detachable lid provided at one side with an ear having an adjustable screw and lock nut forming a fulcrum member adapted to detachably engage the fulcrum support, and means for clamping down the opposite end of the lid re-acting through the fulcrum and the fulcrum support to cause the lid to bear all along the rim.

8. The combination of a container provided with an opening and a rim thereabout, a fulcrum support at one side, a lid provided at one side with an adjustable integral fulcrum member adapted to engage the fulcrum support detachably, a packing and compensating ring supported on the lid for contacting the rim, and clamping means at the opposite side of the opening for engaging the lid and re-acting through the engagement of the fulcrum member and the fulcrum support to cause the packing and

equalizing ring to bear against the rim all along the same.

9. The combination of a container in the form of a cylinder and provided with a rim enclosing an opening in the side wall of the cylinder, said rim having its outer edge lying in a single plane, a clip secured to the cylinder adjacent to said rib, a lid in the form of a unit casting having a flange around its periphery located in substantially one plane, having a spine running across the lid from end to end and extending beyond each end and provided with an integrated intervening web lying below the rim and the spine and having a segmental conformation to complement the cylinder wall construction, one end of the said rib or spine arranged to engage under the clip and the other end of the spine or rib arranged to receive a clamp, and means adjacent to said rim on the side remote from the web for engaging the said last mentioned projecting end of the rib or spine to press the said lid toward the rim in a lever-like manner.

In testimony whereof I affix my signature.

FREDERICK OWEN.