June 16, 1964 W. D. TAYLOR 3,137,408

PAIL WITH LID AND LATCHING MECHANISM

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FIG. 1

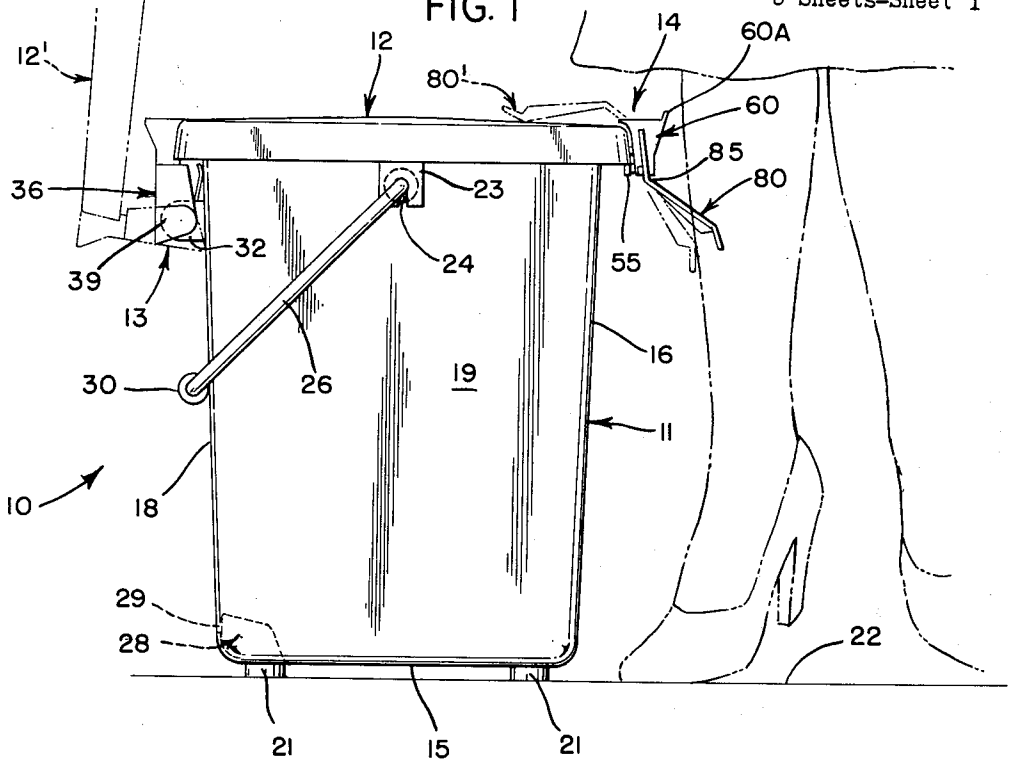

FIG. 2

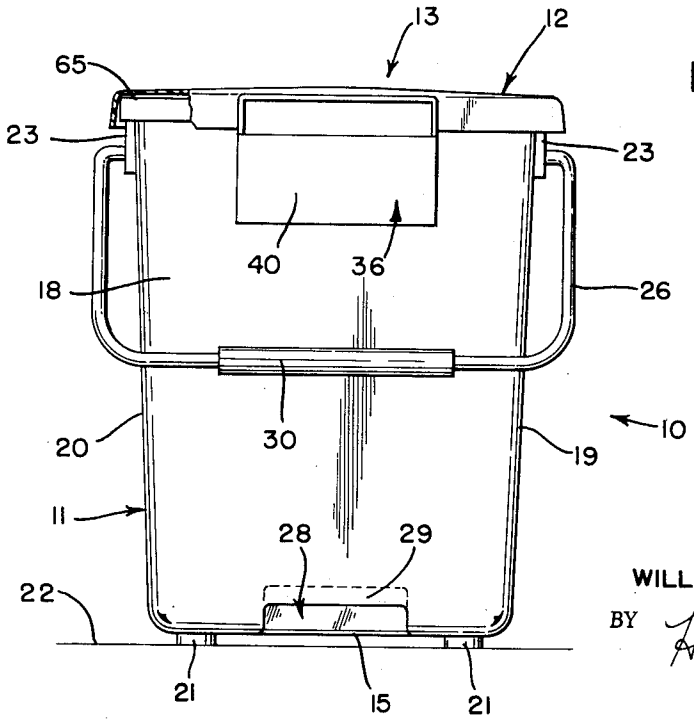

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FIG. 3

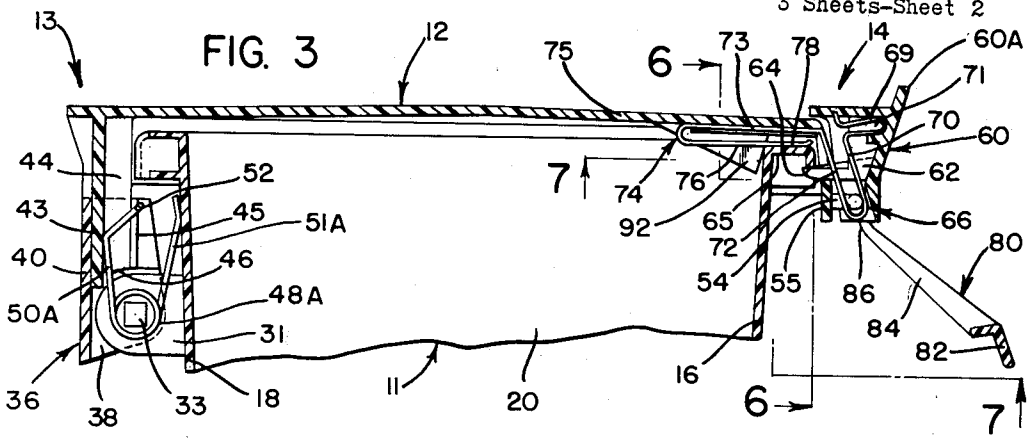
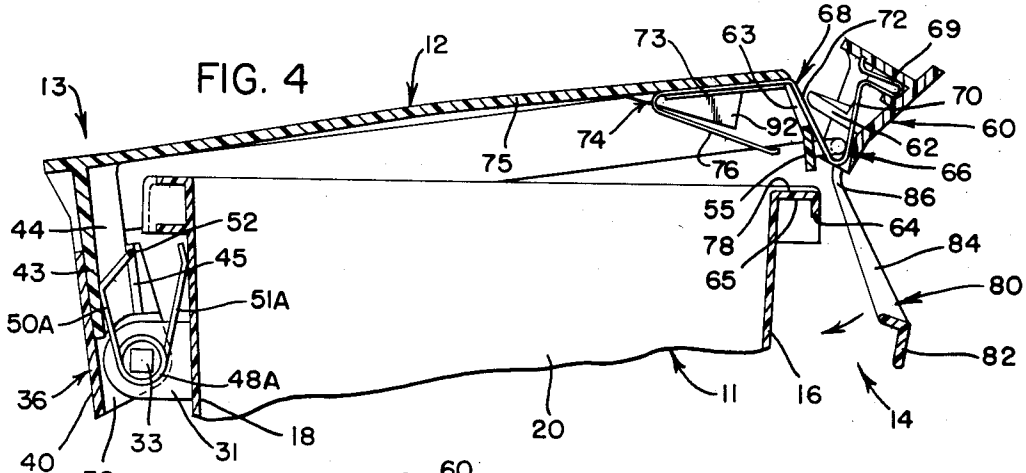


FIG. 4



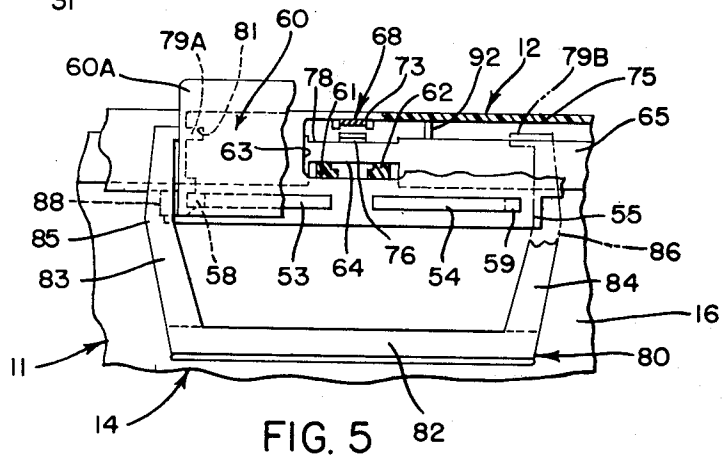


FIG. 5

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FIG. 6

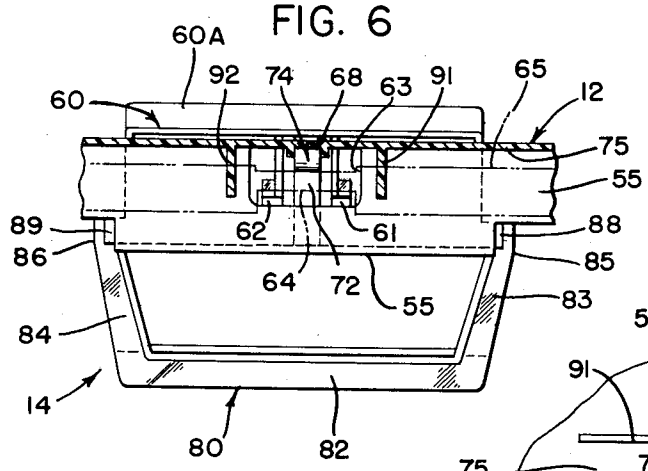
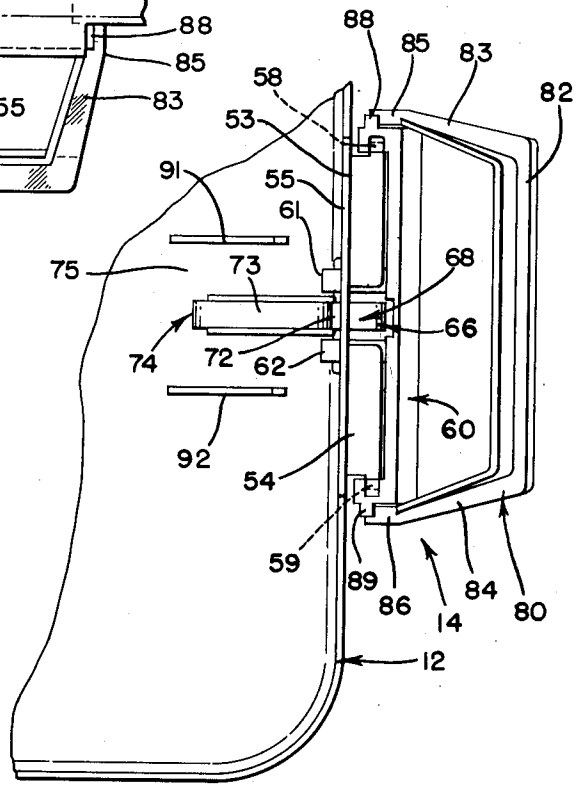


FIG. 7



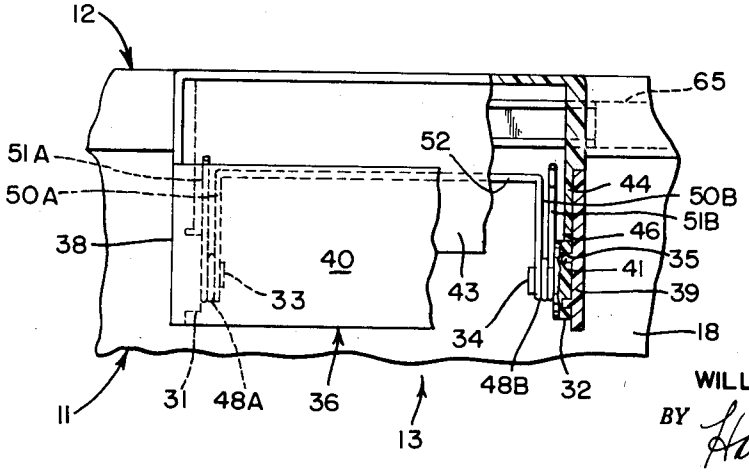


FIG. 8

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3,137,408

PAIL WITH LID AND LATCHING MECHANISM

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Filed July 9, 1962, Ser. No. 208,468
10 Claims. (Cl. 220—35)

The present invention relates generally to a pail with a lid and latching mechanism. More particularly, the present invention relates to a pail having a hinged self-opening lid and a novel latching mechanism that will maintain the lid in closed position and which can be selectively operated to release the lid by slight external pressure applied by contact with any part of the body.

A pail embodying the concept of the present invention is especially suited as a diaper receptacle and will be so described, although it will be apparent that such a pail could be readily adapted to many other uses, such as an ice or refreshment bucket.

A diaper pail, for obvious reasons, is preferably supplied with a lid which is normally latched in closed position. It is necessary, therefore, to unlatch and open the lid prior to depositing soiled diapers into the pail, and this can be difficult if the person's hands are full—as would be the situation if, for example, the parent were holding the infant with one arm and carrying the soiled diaper in the other hand.

Prior known diaper pails have been provided with foot pedals operable through a linkage arrangement to raise the lid when the foot pedal is depressed and lower the lid when the foot pedal is released. These diaper pails are generally quite heavy, cumbersome and lacking in aesthetic appearance. The excessive weight of such prior known diaper pails was required to render the stability necessary to permit operation of the foot actuated lid without inadvertently tipping the pail. Moreover, the lid itself was required to be relatively heavy to assure that it would readily return to fully closed position when the pressure on the foot pedal was released.

This weight, though contributing to the successful functional operation of the diaper pail, was detrimental to facile handling or carrying of the bucket from one spot to another.

It is therefore an object of the present invention to provide a latch mechanism that can be operated by mere leg or arm pressure contact.

It is a further object of the present invention to provide a pail with a hinge and latch mechanism adapted for raising the lid to open position upon actuation of the latching mechanism.

It is a still further object of the present invention to provide a pail, lid and latch assembly which is low in cost, light in weight, rustproof and has an aesthetic appearance.

These and other objects which will become apparent from the following specification are accomplished by means hereinafter described and claimed.

One preferred embodiment is shown by way of example in the accompanying drawings and described in detail without attempting to show all the various forms and modifications in which the invention might be embodied; the invention being measured by the appended claims and not by the details of the specification.

In the drawings:

FIG. 1 is a side elevation of a pail, lid and latch assembly according to the present invention and showing, in phantom, the operation of the latch mechanism by the application of leg pressure at the front to open the lid to the phantom position;

FIG. 2 is a rear elevation thereof, partially broken away;

FIG. 3 is an enlarged fragmentary area of FIG. 1 in cross section showing the details of the lid hinge and the latching mechanism with the lid closed and latched;

FIG. 4 is a view similar to FIG. 3 depicting the releasing position of the latch mechanism and showing the lid beginning to raise to open position;

FIG. 5 is a fragmentary frontal elevation of the latch mechanism partially broken away;

FIG. 6 is a cross sectional view taken substantially on line 6—6 of FIG. 3;

FIG. 7 is a cross sectional view taken substantially on line 7—7 of FIG. 3; and

FIG. 8 is a fragmentary rear elevation, partially broken away, showing the details of the hinge.

In general, the receptacle assembly disclosed herein comprises a pail, a lid and latching mechanism. The lid is pivotally attached to the pail by a hinge means and is continually urged toward the open position by a biasing means incorporated within the hinge means.

The unique latch mechanism is carried on the lid and comprises a pivotal latch block mounted on the lid with dogs for engaging a keeper seat on the pail. The latch block is pivotally actuated by applying pressure to an operating or release handle. The latching mechanism incorporates a flat spring which is contoured to perform three distinct functions: it is self retaining; it continually biases the latch block toward the locked position; and, it provides an initial impetus to raise the lid upon release actuation of the latching mechanism.

Referring to the drawings, the receptacle assembly, indicated generally by the numeral **10**, has a pail or bucket portion **11** to which is pivotally attached a lid **12**, as by the hinge means **13**. The latching mechanism **14** is carried on the lid **12**. From the detailed description that follows, it will be apparent that, except for the springs, practically every component of the assembly can be inexpensively molded or cast from a sturdy lightweight material, such as styrene, and then suitably decorated.

The pail or bucket portion **11** has a base **15** from which extend four integral wall members—i.e., the front wall **16**, rear wall **18** and two side walls **19** and **20**. Feet **21** may be provided on the under side of the base **15** to raise the pail above the level of the floor or surface **22** upon which the assembly is placed.

Near the top of each of the two side walls **19** and **20** is a bracket lug **23** having a keyhole slot **24** for pivotally receiving and retaining each end of the pail bail **26**.

At the juncture of the rear wall **18** and the base **15** is an exterior recess **28**. A skirt **29**, coplanar with the rear wall **18**, extends across the recess **28** and provides a gripping means so that the contents within the pail may be easily dumped by holding the handle **30** on bail **26** with one hand and the recess **28** with the other hand.

Near the top of the rear wall **18** are two outwardly directed, spaced apart, hinge flanges **31** and **32**.

Extending toward each other in opposed relation, one from each of the facing surfaces of flanges **31** and **32**, are lugs **33** and **34**, respectively. On the opposite face of each flange **31** and **32** is an annular recess **35** as shown on flange **32** in FIG. 8.

A hinge bracket **36** spans the spaced apart flanges and embraces them with arms **38** and **39** extending inwardly from the spanning member **40**. An annular, raised slip ring **41** is embossed on each of the opposed faces of arms **38** and **39** for sliding engagement within the annular recess **35** on each flange **31** and **32** to permit pivotal rotation of bracket **36**.

As best shown in FIGS. 3 and 4, a bayonet flange **43** extends downwardly from lid **12** and is provided with ribs

44 for added strength. The bayonet 43 is slidably insertable within hinge bracket 36 with the bayonet 43 engaging the spanning member 40 and the ribs 44 on each edge of the bayonet 43 engaging the arms 38 and 39. A ridged projection 45 on the opposed face of each arm 38 and 39 is spaced part from the spanning member 40 and forms therewith a trackway for receiving the ribs 44. The ends of ribs 44 most remote from lid 12 are arcuately formed, as at 46, to clear the rounded ends of flanges 31 and 32.

To assist in retaining the bayonet 43 within bracket 36 and also to open the lid 12, helical torsion springs 48A and 48B are positioned around lugs 33 and 34, respectively. The outwardly extending legs 50A and 51A of spring 48A, respectively, engage the bayonet 43 and the rear wall 18. The legs 50B and 51B of spring 48B similarly engage the bayonet and rear wall. The two springs 48A and 48B are maintained in their spaced apart position and thus retained by lugs 33 and 34, as, for example, by a connecting rod 52 extending between legs 50A and 50B (FIG. 8). The lid is easily removed when in open position by withdrawing the bayonet 43 from its sliding engagement with web 40 and arms 38 and 39.

On the opposite side of lid 12 from the hinge means 13 is a latching mechanism 14. Two ribbed projections 53 and 54 extend outwardly from the skirt flange 55 of lid 12. On the ends of said ribbed projections 53 and 54 most remote from each other are axially aligned pintles 58 and 59 upon which the end flanges of a latch block 60 are pivotally mounted. Preferably, an upwardly projecting lip is provided at the top outer edge of latch block 60, for a purpose to be described. Latch dogs 61 and 62 are carried on latch block 60 and extend inwardly therefrom through an aperture 63 in the skirt flange 55 and sufficiently therebeyond to engage a keeper seat 64 on the rim 65 of the pail.

U-shaped portion 66 of a compound flat closure spring, indicated generally by the numeral 68, continually biases the latch block 60 to the locking position depicted in FIG. 3—i.e., in a position such that the latch dogs 61 and 62 can engage the keeper seat 64.

A folded crimp 69 on one leg 70 of the U-shaped portion 66 is wedgingly engaged within a niche 71 in latch block 60 to retain the spring 68 in operative position. The other leg 72 of the U-shaped portion 68 lies along the outer face of skirt flange 55 and terminates in proximity to aperture 63 in leg 73 of a V-shaped portion 74 which is positioned on the opposite side of skirt flange 55 and oriented at an obtuse angularity therefrom. Leg 73 of the V-shaped portion 74 lies along the under side of the top panel 75 of lid 12. The return or second leg 76 of the V-shaped portion 74 lies below the first leg 73 and engages the upper surface 78 of the rim 65 when the lid is in the closed position depicted in FIG. 3.

It should be noted that the U and V designations for the two portions 66 and 74, respectively, of the compound flat spring, are representative of their unbiased shapes. That is, the U-shaped portion 66 is represented in its unbiased position in FIG. 3, and the V-shaped portion 74 is represented in its unbiased position in FIG. 4.

Tangs 79A and 79B on an actuating lever 80 are preferably pivotally engaged in bores, as at 81 in FIG. 5, in each end of latch block 60. This permits the actuating lever 80 to be rotated to the out-of-the-way position 80' shown in FIG. 1. The contact bar 82 of the actuating lever 80 is connected to the tangs 79A and 79B by dog leg lever arms 83 and 84, respectively. The knees 85 and 86 of the respective dog leg lever arms 83 and 84 are swingable against respective fulcrum blocks 88 and 89 extending outwardly from the opposite ends of the latch block 60.

To unlock the latching mechanism 14 and open the lid 12 from the closed position of FIG. 3, contact pressure is exerted against contact bar 82. This moves the releasing handle 80 in the direction of the arrow in FIG. 4. The lever arms 83 and 84 of releasing handle 80 acting on latch block 60 through the engagement of tangs 79A and 79B within block 60 and the engagement of the lever arms against the fulcrum blocks 88 and 89, cause the latch block to rotate clockwise on pintles 58 and 59 to withdraw the latch dogs 61 and 62 from engagement with the keeper seat 64. The latching mechanism may also be unlocked by pressing the lip 60A outwardly with a finger to rotate the latch block. Once the latch dogs are so withdrawn, the return leg 76 of the V-shaped portion 74 of latch spring 68 provides the initial impetus to pivot lid 12 on the hinge means 13, as shown in FIG. 4. The lid 12 is then pivoted to the 12' position, as shown in phantom in FIG. 1, by the biasing pressure of torsion springs 48A and 48B.

To close and latch the lid, a downward pressure is applied to the lid itself. When the lid is pivoted sufficiently toward closed position, the under side of the latch dogs 61 and 62 engage the rim 65 and the latch block 60 rotates outwardly to permit the dogs to slide past the rim until they reach the keeper seat 64. The biasing pressure of the U-shaped portion 66 of flat spring 68 then causes the block 60 to rotate inwardly, seating the latch dogs 61 and 62 on keeper seat 64.

To assure that the front wall 16 does not flex inwardly to prevent seating of the latch dogs 61 and 62 on keeper seat 64, both during the latching operation and subsequently thereto, buttressing backing plates 91 and 92 depend from the top panel 75 of lid 12 and engage the upper edge of front wall 16 where it intersects the rim 65.

The novel latch is easily released by a slight pressure on the handle by a person's leg or any convenient part of the body, and once released the lid automatically swings to the full open position. When the lid is closed the novel latch automatically engages and holds it closed without requiring any manipulation whatever of the latch mechanism. Since practically all parts of the pail and lid are molded out of plastic the pail and lid assembly is light in weight, inexpensive, and adapted to be made in aesthetically pleasing design.

It is thus readily apparent that the assembly of a pail, lid and latching mechanism according to the concepts disclosed herein, accomplishes the objects of the invention.

What is claimed is:

1. In combination, a pail, a lid, and latching mechanism, hinge means connecting said lid to said pail, pivotal latching mechanism to latch said lid in a closed position, release means for pivoting said latch mechanism to unlatch said lid from said pail, and spring means incorporated in said latch mechanism to initiate opening of said lid upon actuation of said release means to unlock said lid.

2. In combination, a pail, a lid, and latching mechanism, hinge means connecting said lid to said pail, pivotal latching mechanism to latch said lid in a closed position, release means for pivoting said latch mechanism to unlatch said lid from said pail, first spring means incorporated in said latch mechanism and a second spring means incorporated in said hinge means, said first and second spring means opening said lid upon actuation of said release means to unlatch said lid.

3. In combination, a pail, a lid, and latching mechanism, said lid pivotally mounted on said pail, said latching mechanism carried on said lid, said latching mechanism having a latch block pivotally mounted on said lid, latch dogs on said latch block for engaging a keeper seat on said pail when said lid is closed, a flat spring on said lid having a U-shaped portion to bias said latch dogs into engagement with said keeper seat, and release means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

4. In combination, a pail, a lid, and latching mechanism, said lid pivotally mounted on said pail, said latching mechanism carried on said lid, said latching mechanism having a latch block pivotally mounted on said lid, latch dogs on said latch block for engaging a keeper seat on said pail when said lid is closed, a flat spring having a U-shaped portion and a V-shaped portion, said

U-shaped portion carried by said latch block for rotation thereof to seat said latch dogs on said keeper seat when said lid is closed, said V-shaped portion biasingly interposed between said lid and said pail when the lid is closed, and release means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

5. In combination, a pail, a lid and latching mechanism, said lid pivotally mounted on said pail, said latching mechanism carried on said lid, said latching mechanism having a latch block pivotally mounted on said lid, latch dogs on said latch block for engaging a keeper seat on said pail when said lid is closed, a flat spring having a U-shaped portion and a V-shaped portion, said U-shaped portion carried by said latch block for rotation thereof to seat said latch dogs on said keeper seat when said lid is closed, said V-shaped portion biasingly interposed between said lid and said pail when the lid is closed, and a release handle, said handle having a touch bar and lever arms, said lever arms constructed and arranged to pivot said latch block and disengage said latch dogs from said keeper seats when contact pressure is applied to said touch bar.

6. In combination, a pail, a lid, and latching mechanism, said pail having a keeper seat, said lid pivotally mounted on said pail and having a skirt flange, an aperture in said skirt flange, a latch block pivotally carried on said skirt flange, latch dogs on said latch block, said latch dogs extending through said aperture for engaging said keeper seat when said lid is closed, a flat spring carried by said latch block having a U-shaped portion to bias said latch dogs toward engagement with said keeper seat, means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

7. In combination, a pail, a lid, and latching mechanism, said pail having a keeper seat, said lid pivotally mounted on said pail and having a skirt flange, an aperture in said skirt flange, a latch block pivotally carried on said skirt flange, latch dogs on said latch block, said latch dogs extending through said aperture for engaging said keeper seat when said lid is closed, a flat spring having a U-shaped portion and a V-shaped portion, said U-shaped portion carried by said latch block for rotatably biasing the block to seat said latch dogs on said keeper seat when said lid is closed, said V-shaped portion biasingly interposed between said lid and said pail when said lid is closed, and means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

8. In combination, a pail, a lid, and latching mechanism, said pail having a keeper seat, said lid pivotally

mounted on said pail and having a skirt flange, an aperture in said skirt flange, a latch block pivotally carried on said skirt flange, latch dogs on said latch block, said latch dogs extending through said aperture for engaging said keeper seat when said lid is closed, a flat spring having a U-shaped portion and a V-shaped portion, said U-shaped portion carried by said latch block for rotatably biasing the block to seat said latch dogs on said keeper seat when said lid is closed, said V-shaped portion biasingly interposed between said lid and said pail when the lid is closed, a release handle, said handle having a touch bar and lever arms, said lever arms constructed and arranged to pivot said latch block and disengage said latch dogs from said keeper seat when contact pressure is applied to said touch bar.

9. In combination, a pail, a lid, and latching mechanism, said pail having a rim, a keeper seat on the outer side of said rim, said lid pivotally attached to said pail and having a skirt flange, a latch block pivotally carried on said skirt flange, latch dogs on said latch block for engaging said keeper seat when said lid is closed, a flat spring carried by said latch block having a U-shaped portion to bias said latch dogs toward engagement with said keeper seat, buttressing backing plates depending from said lid to engage the inner side of said rim when said lid is closed, and releasing means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

10. In combination, a pail, a lid, and latching mechanism, hinge means pivotally connecting said lid to said pail, spring means on said hinge means biasing said lid to an open position with respect to said pail, said latching mechanism carried on said lid, said latching mechanism having a latch block pivotally mounted on said lid, latch dogs on said latch block for engaging a keeper seat on said pail when said lid is closed, a flat spring having a U-shaped portion and a V-shaped portion, said U-shaped portion carried by said latch block for rotation thereof to seat said latch dogs on said keeper seat, said V-shaped portion biasingly interposed between said lid and said pail when the lid is closed, release means for selectively pivoting said latch block to disengage said latch dogs from said keeper seat.

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