A hand-operated, small washing machine with an improved lid is disclosed. The lid has a seal-creating (and seal-breaking) mechanism as part of a locking handle. When the locking handle is in a locked position, a seal-creating bulb portion of the locking handle is pressed against a seal plate center, thereby driving air out from the barrel of the washing machine.
SMALL, PORTABLE, HAND-OPERATED WASHING MACHINE WITH AN IMPROVED CONTAINER TOP.

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] None.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] This invention was not federally sponsored.

INVENTOR

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BACKGROUND OF THE INVENTION

[0004] Field of the invention: This invention relates to the general field of small, portable washing machines with container tops, and more specifically toward a container top suitable for a portable washing machine, such as the Wonder Wash®. To this end, a container top is provided that creates a very strong, waterproof seal quickly and easily, and just as easily allows the user to break and seal and open the machine to remove clothes after they have been washed.

[0005] There are a number of electric and gas washing machines generally designed for large quantities of clothes. However, there are some groups of people who require a portable, smaller washing machine that does not require electricity to operate. For example, people on camping trips may wish to wash clothes but not have access to electricity. Single people may not have the need for a full size washing machine. Environmentally conscious people may not want to use a full size machine in all washing situations because of the waste of water occasioned by using a full sized washing machine to wash less than a full load. In other situations, a user may want to “hand wash” a delicate item but either not trust the “delicate” setting on the regular washing machine, or not want to use a full tank of water on one item. Thus, there has been a recognized need for a small, portable, hand-operated washing machine.

[0006] That need has been filled by the Wonder Wash® machine. Wonder Wash® is a small, portable washing machine that contains a sealable barrel suspended from two support arms with a handle for turning. To use the machine, a user puts dirty clothes, water, and detergent into the barrel, and then seals the barrel with a top. The user then rotates the barrel using the handle for several minutes, and then drains the water from the barrel. The user then adds fresh water to the barrel, re-seals the lid, and rotates the barrel again before draining the barrel again. The Wonder Wash® uses 90% less water than a traditional washing machine, has no motor or internal parts, and because of its simple construction, outlasts traditional washing machines.

[0007] For the Wonder Wash® to work effectively, it is obviously very important that the lid or top create a waterproof seal, but also have the ability to break the seal quickly and easily when adding or removing clothes, and adding or draining water. Should the top leak, the user’s floor could be flooded with dirty, soapy water. At the same time, if the lid is difficult to open because it is sealed very strongly to the drum containing the clothes, water and detergent, the user will become discouraged at how difficult the machine is to operate.

[0008] Thus there has existed a long-felt need for a hand-operated, small washing machine with a top or lid that creates a waterproof seal, and yet has the capacity to have the seal broken quickly and easily when the user desires access to the barrel or drum portion of the washing machine.

SUMMARY OF THE INVENTION

[0009] The current invention provides just such a solution by having a waterproof container into which clothes, water and detergent can be placed, and a lid device that forms a waterproof seal over the opening to the drum such that the washing machine can be rotated without danger of the water/detergent mixture spilling out on the floor.

[0010] It is a principal object of the invention to provide a container lid that forms a waterproof seal such that the contents of the container do not spill as the container is being rotated.

[0011] It is another object of the invention to provide a container lid that has a mechanism of breaking the seal when the user desires to open the lid.

[0012] There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto. The features listed herein and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims.

BRIEF DESCRIPTION OF THE FIGURES

[0013] The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments of the invention and together with the description, serve to explain the principles of this invention.

[0014] FIG. 1 is an exploded view of the container lid and part of the barrel, or drum, over which the lid fits.

[0015] FIG. 2 is a perspective view of the container lid attached to the drum.

[0016] FIG. 3 is two perspective views of the container lid in “open” and “locked” position while attached to the drum.

[0017] FIG. 4 is two cross sectional views of the container lid in “open” and “locked” position while attached to the drum, emphasizing the role that the handle plays in creating a seal.

[0018] FIG. 5 is a cut-away view of the invention in its “closed” position, where the handle has been rotated to a “closed” position, the excess air expelled, and the seal created.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Many aspects of the invention can be better understood with the references made to the drawings below. The components in the drawings are not necessarily drawn to scale. Instead, emphasis is placed upon clearly illustrating the components of the present invention. Moreover, like reference numerals designate corresponding parts through the several views in the drawings.
REFERENCE NUMBERS USED

10. locking handle (generally)
11. locking handle tip
12. seal-creating bulb
13. locking handle projectors
14. locking handle cavity
15. locking handle receptors
16. locking handle snap
20. lid (generally)
21. lid side
22. lid bevel
30. seal plate (generally)
31. seal plate top
32. ridges
33. seal plate edge
34. seal plate center
36. seal (generally)
41. seal top
42. seal side
43. seal opening
50. drum (generally)
51. drum side
52. drum bevel
53. drum top
54. drum tab
55. drum neck
56. drum lip

FIG. 1 is an exploded view of the container lid and part of the barrel, or drum, over which the lid fits. A drum portion 50 has a round drum side portion 51, a drum bevel 52, a drum top 53, a drum neck 55 culminating in a drum lip 56, drum tabs 54 and a central drum opening 57. The drum tabs 54 mate with corresponding lid tabs on the inner surface of the lid 20 (lid tabs are not shown in this figure). Resting on top of the drum tabs 54 is a seal 40. The seal 40 has a seal edge 42, a seal top 41, and a central seal opening 43. Above the seal 40 is a seal plate 30. The seal plate 30 has a seal plate edge 33, a seal plate top 31, ridges 32, and a seal plate center 34. Above the seal plate 30 is the lid 20. The lid has a round lid side 21, a lid bevel 22, a lid top 23, a locking handle cavity 14, locking handle receptors 15, and a locking handle snap 16. Fitting into the locking handle cavity 14 is a locking handle 10. The locking handle 10 has a locking handle tip 11, a seal-creating bulb 12, locking handle projectors 13 and a locking handle clip (not shown in this portion).

The invention works as follows. The lid portion is inserted over the drum portion of a Wonder Wash® machine, and secured in place by drum tabs. Once the seal between the drum 50 and the lid 20 has been made, the locking handle 10 is pushed down, forcing air out and creating a tight seal as the seal-creating bulb 12 is pushed against the seal plate center 34. The seal 40 and seal plate 30 work together to prevent water from leaking out. After the wash is done, the user pulls up on the locking handle 10, thereby breaking the seal created by the seal-creating bulb 12. With the seal broken, the user can push down on the lid, twist the lid to the side, and disengage the drum tabs from the tabs on the barrel, making it easy to remove the lid from the barrel.

FIG. 2 is a perspective view of the container lid attached to the drum. The drum 50 is the container into which the dirty clothes, water, and detergent are added. The lid 20 fits over the upper portion of the drum 50, and is secured through mating tabs on both the inner surface of the lid (not shown in this figure) and the upper portion of the drum (also not shown in this figure).

FIG. 3 is two perspective views of the container lid in “open” and “locked” position while attached to the drum. In the “open” position, the locking handle 10 is in an upright position, and there is no seal established between the lid and the drum. This allows the user to easily and quickly remove the lid and add items to the drum, or remove items from the drum. In the “locked” or “closed” position, the locking handle 10 has been rotated down, so it sits in the locking handle cavity 14. In the “locked” position, a seal is created that prevents water from escaping the drum during the manual rotation of the washing machine.

FIG. 4 is two cross-sectional views of the container lid in “open” and “locked” position while attached to the drum, emphasizing the role that the handle plays in creating a seal. In the “open” position, the locking handle 10 is upright, and the seal-creating bulb 12 is oriented horizontally, and is not pressing down on the seal plate center 34. Without a seal being created, it is very easy for the user to remove the lid. When the locking handle 10 is in a “locked” position, it fits into the locking handle cavity of the lid 20. By rotating the locking handle to a horizontal position, the seal-creating bulb 12 is pressed down upon the seal plate center 34, creating a strong seal between the lid and the drum, thereby preventing water from escaping from the drum during the time is a manually turned to wash the clothes.

FIG. 5 is a cut-away view of the invention in its “closed” position, where the handle has been rotated to a “closed” position, the excess air expelled, and the seal created. This illustration has cut away one entire side of the lid to show how the seal plate 30 has been bent at the seal plate center 34 by the seal-creating bulb 12 of the locking handle 10. The bend in the seal plate center 34 creates the pressure necessary to expel excess air and create the seal necessary for the lid and the barrel to remain “waterproof” while the water and detergent are rotated with the dirty clothes.

It should be understood that while the preferred embodiments of the invention are described in some detail herein, the present disclosure is made by way of example only and that variations and changes thereto are possible without departing from the subject matter coming within the scope of the following claims, and a reasonable equivalency thereof, which claims I regard as my invention.

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That which is claimed:

1. A portable, hand-operated washing machine, with a drum and a lid portion where the lid portion fits over an opening in the drum portion of the small, portable, hand-operated washing machine, where the lid portion comprises: a locking handle, a lid, a seal plate, and a seal, where, the drum comprises a circular drum side portion, and additionally comprising a drum top, where the drum top is perpendicular to the drum side portion, and where the drum side portion is connected to the drum top by a drum bevel, where the drum bevel is approximately
and additionally comprising a drum neck, where the drum neck is a cylindrical member with a top end, called a drum lip, and a bottom end, where the bottom end is attached to the drum top, and additionally comprising two or more drum tabs, where the two or more drum tabs extend laterally from the drum lip, and where the drum side portions and the drum lip define a drum opening, with a drum opening diameter, and where the seal comprises a seal edge, a seal top and a central seal opening, where the seal rests upon the drum lip and the drum tabs, and where the seal has a seal diameter, and where the seal diameter is larger than the drum diameter by approximately \( \frac{1}{4} \)", and where the seal opening is approximately \( \frac{1}{2} \)" less than the drum diameter, and where the seal plate comprises a seal plate edge, a seal plate top, two or more ridges, and a seal plate center, where the seal plate has a seal plate diameter, and where the seal plate diameter is approximately equal to the seal diameter, and where the lid comprises a round lid side with an lid inner surface and a lid outer surface, where the lid inner surface additionally comprises two or more lid tabs, which mate with the two or more drum tabs to secure the lid to the drum, a lid bevel, a lid top, a locking handle cavity, two locking handle receptors, and a lock handle snap, where the lid outer surface is cylindrical, the lid top is flat, 90 degrees perpendicular to the lid outer surface, and the lid top is connected to the lid side by a lid bevel, where the lid bevel is approximately 45 degrees off the lid side and approximately 45 degrees off the lid top, and where the locking handle cavity is roughly rectangular an inner end, which is located at a center of the lid top, and an outer end, which is located at the lid bevel, or where the inner end is deeper than the outer end, and where the inner end additionally comprises two locking handle receptors and a snap, and where the locking handle comprises a roughly rectangular body with a proximate end, defined as that intended to be situated in the center of the lid top, and a distal end, defined as that intended to be situated near the lid bevel, and where the proximate end additionally comprises a locking handle tip, a seal-creating bulb, and two locking handle projectors, where the two locking handle projectors mate with the two lock handle receptors, and the proximate end additionally comprises a locking handle clip, which mates with the snap such that when the locking handle is pressed down, the locking handle clip is removably retained by the locking handle snap, where, then the locking handle is pushed in a downward position, a quantity of air from the barrel is forced out, and as the seal-creating bulb is rotated against the seal plate center, a vacuum is created, thereby forcing the seal and seal plate in between the lid and the drum, and creating a watertight seal between the top and the barrel.

2. A small, portable, hand-operated washing machine, with a drum and a lid portion where the lid portion fits over an opening in the drum portion of the small, portable, hand-operated washing machine, where the lid portion comprises: the locking handle, the lid, the seal plate, and the seal, where, the drum comprises the circular drum side portion, and additionally comprising the drum top, where the drum top is perpendicular to the drum side portion, and additionally comprising two or more drum tabs, where the two or more drum tabs extend laterally from the drum lip, and where the drum side portions and the drum lip define the drum opening, with the drum opening diameter, and where the seal comprises the seal edge, the seal top and the central seal opening, where the seal rests upon the drum lip and the drum tabs, and where the seal plate comprises the seal plate edge, the seal plate top, and the seal plate center, where the seal plate has the seal plate diameter, and where the seal plate diameter is approximately equal to the seal diameter, and where the lid comprises the round lid side with an lid inner surface and the lid outer surface, where the lid inner surface additionally comprises two or more lid tabs, which mate with the two or more drum tabs to secure the lid to the drum, the lid bevel, the lid top, the locking handle cavity and the locking handle, where, then the locking handle is pushed in the downward position, the quantity of air from the barrel is forced out, and as the seal-creating bulb is rotated against the seal plate center, the vacuum is created, thereby forcing the seal and seal plate in between the lid and the drum, and creating the watertight seal between the top and the barrel.

3. The small, portable, hand-operated washing machine of claim 2, where the drum portion is connected to the drum top by the drum bevel, where the drum bevel is approximately 45 degrees off the drum side portion and the drum top, and additionally comprising the drum neck, where the drum neck is the cylindrical member with the top end, called the drum lip, and the bottom end, where the bottom end is attached to the drum top.

4. The small, portable, hand-operated washing machine of claim 3, where the seal has the seal diameter, and where the seal diameter is larger than the drum diameter by approximately \( \frac{1}{4} \)", and where the seal opening is approximately \( \frac{1}{2} \)" less than the drum diameter.

5. The small, portable, hand-operated washing machine of claim 4, where the seal plate additionally comprises two or more ridges.

6. The small, portable, hand-operated washing machine of claim 5, where the lid additionally comprises two locking handle receptors, and the lock handle snap, where the lid outer surface is cylindrical, the lid top is flat, 90 degrees perpendicular to the lid outer surface, and the lid top is connected to the lid side by a lid bevel, where the lid bevel is approximately 45 degrees off the lid side and approximately 45 degrees off the lid top, and where the locking handle cavity is roughly rectangular an inner end, which is located at a center of the lid top, and an outer end, which is located at the lid bevel, where the inner end is deeper than the outer end, and where the inner end additionally comprises two locking handle receptors and a snap.

7. The small, portable hand-operated washing machine of claim 2, where the locking handle comprises the roughly rectangular body with the proximate end, defined as that intended to be situated in the center of the lid top, and the distal end, defined as that intended to be situated near the lid bevel, and where the proximate end additionally comprises...
the locking handle tip, the seal-creating bulb, and two locking handle projectors, where the two locking handle projectors mate with the two lock handle receptors, and the proximate end additionally comprises the locking handle clip, which mates with the snap such that when the locking handle is pressed down, the locking handle clip is removably retained by the locking handle snap.

8. The small, portable hand-operated washing machine of claim 7 where the seal plate additionally comprises two or more ridges.

9. The small, portable hand-operated washing machine of claim 7 where the seal has a seal diameter, and where the seal diameter is larger than the drum diameter by approximately 1/4", and where the seal opening is approximately 1/2" less than the drum diameter.

10. The small, portable hand-operated washing machine of claim 7 where the lid additionally comprises two locking handle receptors, and the lock handle snap, where the lid outer surface is cylindrical, the lid top is flat, 90 degrees perpendicular to the lid outer surface, and the lid top is connected to the lid side by a lid bevel, where the lid bevel is approximately 45 degrees off the lid side and approximately 45 degrees off the lid top, and where the locking handle cavity is roughly rectangular an inner end, which is located at the center of the lid top, and an outer end, which is located at the lid bevel, where the inner end is deeper than the outer end, and where the inner end additionally comprises two locking handle receptors and the snap.

11. The small, portable hand-operated washing machine of claim 7 where the drum side portion is connected to the drum top by the drum bevel, where the drum bevel is approximately 45 degrees off the drum side portion and the drum top, and additionally comprising the drum neck, where the drum neck is the cylindrical member with the top end, called the drum lip, and the bottom end, where the bottom end is attached to the drum top.

12. A lid device for a small, portable, hand-operated washing machine, where the lid device fits over an opening in the drum of the small, portable, hand-operated washing machine, where the lid device comprises: the locking handle, the lid, the seal plate, the seal, where, then, the locking handle is pushed in a downward position, the quantity of air from the barrel is forced out, and as the seal-creating bulb is rotated against the seal plate center, a vacuum is created, thereby forcing the seal and seal plate in between the lid and the drum, and creating the watertight seal between the top and the barrel.

13. The lid of claim 12, where the seal comprises the seal edge, the seal top and the central seal opening, where the seal rests upon the drum lip and the drum tabs, and where the seal has the seal diameter, and where the seal diameter is larger than the drum diameter.

14. The lid of claim 13, where the seal diameter is larger than the drum diameter by approximately 1/4", and where the seal opening is approximately 1/2" less than the drum diameter.

15. The lid of claim 14, where the seal plate comprises the seal plate edge, the seal plate top, two or more ridges, and the seal plate center, where the seal plate has a seal plate diameter, and where the seal plate diameter is approximately equal to the seal diameter.

16. The lid of claim 15, where the lid comprises the round lid side with an lid inner surface and the lid outer surface, where the lid inner surface additionally comprises two or more lid tabs, which mate with the two or more drum tabs to secure the lid to the drum, the lid bevel, the lid top, the locking handle cavity, two locking handle receptors, and the lock handle snap.

17. The lid of claim 16, where the lid outer surface is cylindrical, the lid top is flat, 90 degrees perpendicular to the lid outer surface, and the lid top is connected to the lid side by a lid bevel, where the lid bevel is approximately 45 degrees off the lid side and approximately 45 degrees off the lid top, and where the locking handle cavity is roughly rectangular an inner end, which is located at the center of the lid top, and an outer end, which is located at the lid bevel, where the inner end is deeper than the outer end, and where the inner end additionally comprises two locking handle receptors and the snap.

18. The lid of claim 17, where the locking handle comprises the roughly rectangular body with the proximate end, defined as that intended to be situated in the center of the lid top, and a distal end, defined as that intended to be situated near the lid bevel, and where the proximate end additionally comprises the locking handle tip, the seal-creating bulb, and two locking handle projectors, where the two locking handle projectors mate with the two lock handle receptors, and the proximate end additionally comprises a locking handle clip, which mates with the snap such that when the locking handle is pressed down, the locking handle clip is removably retained by the locking handle snap.

19. The lid of claim 12, where the lid outer surface is cylindrical, the lid top is flat, 90 degrees perpendicular to the lid outer surface, and the lid top is connected to the lid side by a lid bevel, where the lid bevel is approximately 45 degrees off the lid side and approximately 45 degrees off the lid top, and where the locking handle cavity is roughly rectangular an inner end, which is located at the center of the lid top, and the outer end, which is located at the lid bevel, where the inner end is deeper than the outer end, and where the inner end additionally comprises two locking handle receptors and the snap.

20. The lid of claim 19, where the seal plate comprises the seal plate edge, the seal plate top, two or more ridges, and the seal plate center, where the seal plate has a seal plate diameter, and where the seal plate diameter is approximately equal to the seal diameter, where the lid comprises the round lid side with an lid inner surface and the lid outer surface, where the lid inner surface additionally comprises two or more lid tabs, which mate with the two or more drum tabs to secure the lid to the drum, the lid bevel, the lid top, the locking handle cavity, two locking handle receptors, and the lock handle snap.

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