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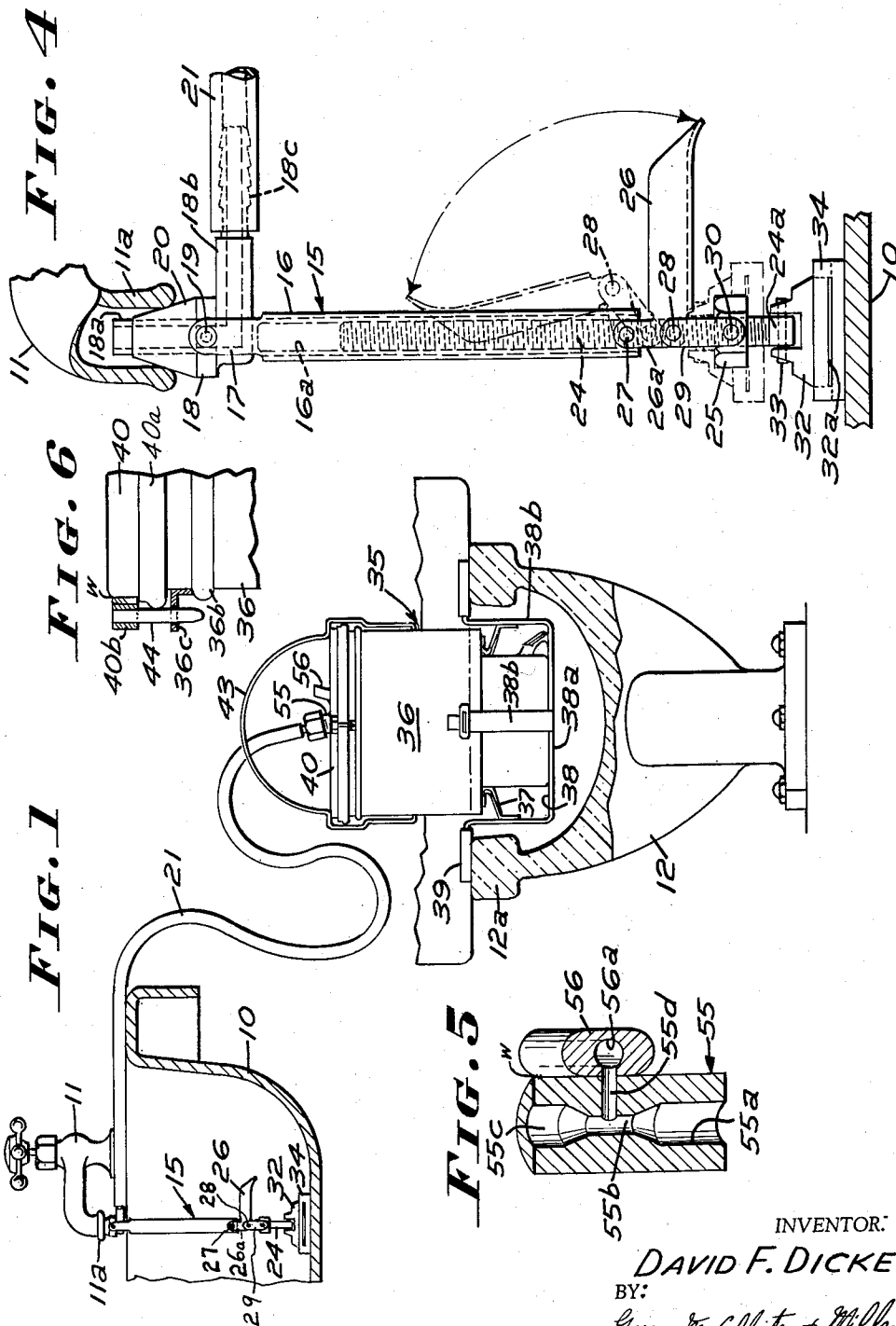
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2,972,878

PORTABLE WASHER FOR DIAPERS

Filed Nov. 12, 1957

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

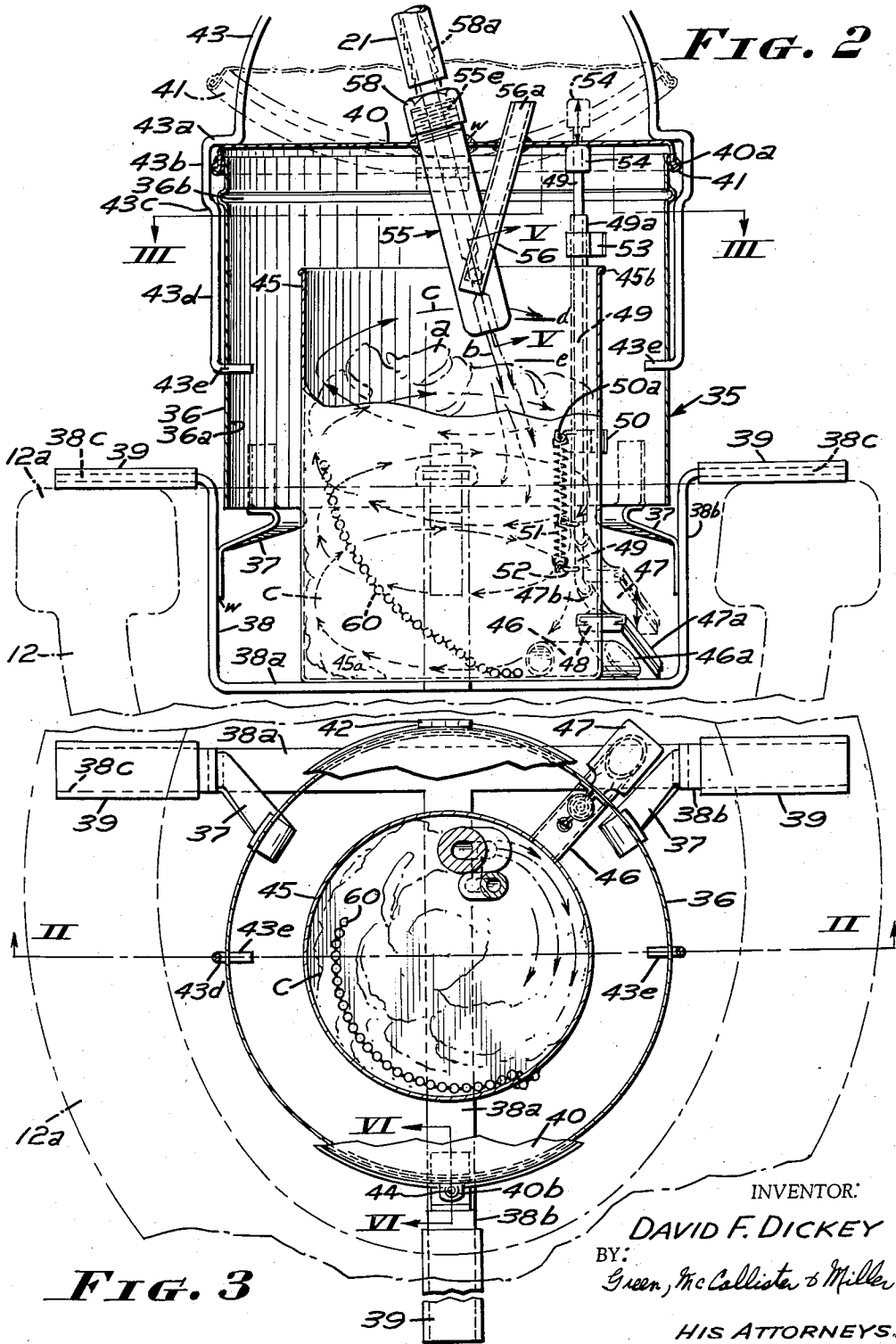


FIG. 2

FIG. 3

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PORTABLE WASHER FOR DIAPERS

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9 Claims. (Cl. 68—181)

This invention relates to a new and improved washing apparatus or device in the nature of a detachable, portable device that will be practical of installation and efficient in use. An important phase of the invention relates to a washing device having an adaptable and quickly mounted and dismantled positive-attaching or connector means.

I have found that there is an urgent need for a suitable household type of washing device or apparatus that will be practical in all phases of its utilization. This need has arisen irrespective of the growing importance of servicing agencies for infant's wear such as diapers. Such agencies customarily provide the housewife with a bundle of clean diapers or other infant clothing and a suitable dirty clothing container from which collections are made periodically, for example, weekly. Even if the housewife customarily chooses to herself wash the infant's clothing, she wishes to, as far as possible, accumulate a bundle of dirty clothing over a period of days.

When the infant's clothing or wear is dirtied by offal or dirty solids, it is imperative that prompt action be taken to remove them and, as a result, it is customary for the housewife to employ a rough washing-out operation at the time of occurrence, and to then store the diaper or other article of clothing until the usual washing time.

Although others have provided washing devices devised for a similar purpose, none of them have been practical, as I have determined, for one essential reason. That is, a quick but highly positive and effective attachment must be made with a conventional water spout or faucet and without the need for especially threaded or other types of connections or nipple ends on the faucet. That is, from the standpoint of prior art devices, I found the key or crux of the problem must deal with the provision of an effective holding and sealing type of connection that may be conveniently connected to any water faucet throughout the household, and that may be taken on a trip and connected to any conventional faucet encountered.

Briefly stated, I determined that various wash bowls and their fixtures have different shapes and sizes of bowl walls and mounting of their faucets or spouts. For example, some ceramic wash bowls have a water outlet that is formed integrally therewith, while other bowls have a metal spout that projects inwardly from and is mounted thereon. Some bowls have relatively flat bottoms or sides or back wall portions while others are more curved or of irregular shape. This complicates the problem of an adaptable type of mounting or connecting means.

I have determined that it is essential to provide a type of connection that will not leak, that will utilize full water pressure, and that will not blow-out or spray the user while it is in an attached relationship.

Another factor was the need for highly intense water action on the dirty wear, but automatically, without the necessity for manual operations of any kind and, in such

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a manner, that like an automatic clothes washer, the operator can use a time basis to judge whether or not the article is finished. The device should also be capable of being mounted at an appropriate location, such as over the mouth or lip edge portions of a toilet bowl, container or bucket. In this manner, soils can be directly discharged into or carried to a sewer-connected toilet bowl.

It has been an object of my invention to devise an efficient and effective washing device that is adaptable and will provide an improved washing action;

Another object has been to devise and provide a simple and quick-wash unit suitable for infant's wear;

Another object has been to determine and fully meet all the factors involved in providing a solution to the problem and incorporate such in a simple but effective form of portable apparatus or device;

A further object of my invention has been to provide a portable washing device whose housing may be mounted to discharge soil directly into a suitable agency;

A still further object of my invention has been to devise a new and improved portable washing device and particularly, a small adaptable, inexpensive and efficient device for removing or washing out soil from articles, such as infant diapers.

Figure 1 is a somewhat diagrammatic side view in elevation and partial section showing the construction of my invention and its utilization;

Figure 2 is an enlarged sectional view in elevation showing details of the washing means or apparatus of my construction and taken along the line II—II of Figure 3;

Figure 3 is a horizontal section on the scale of Figure 2 and taken along the line III—III of Figure 2;

Figure 4 is a vertical view in elevation showing details of the construction of the connector part of my construction and on substantially the same scale as Figures 2 and 3;

Figure 5 is an enlarged fragmental sectional detail in elevation taken along the line V—V of Figure 2;

And Figure 6 is a fragmental sectional detail in elevation taken along the line VI—VI of Figure 3.

In carrying out my invention, I determined that a device to solve the problem involved should: (1) essentially provide an adaptable, efficient connector to a conventional water faucet or outlet spout of a bowl or the like, that will be leak-proof under water pressure, and that will be adaptable to various types of installations; (2) for thorough cleaning, provide agitation of such a nature that there will be a pulsating as well as a swirling action upon the article of wear being washed; (3) provide a simple apparatus in which the washing action will be continued automatically as long as its lid is closed and will be discontinued and the water drained when the lid is opened; (4) provide a portable device that may be easily positioned or mounted to discharge directly into a suitable receiving agency, such as a toilet bowl. I have met all of these factors in my apparatus or combination which provides correlated and interdependent action of elements in its construction.

I cannot overemphasize the importance of a practical and suitable type of quickly-detachable water spout connecting means.

In carrying out my invention, I utilize a faucet attaching means or connector 15 that has a nozzle-fitting connecting portion or plug-like sealing head part 20 at one end thereof and a bowl-positioning portion tread, or clamping foot part 32 at the other end thereof, and with a suitable fluid connection leading from the sealing head 20. The sealing head 20 and the clamping foot 34 are pivotally mounted at 19 and 30 on cooperating barrel member 16 and an adjustable stem or rod 24 to provide

them with adaptability. A quick snap-out-and-in type of lever or latching mechanism is employed to expand or elongate the barrel and stem with respect to each other and provide a locking or positive holding position by applying a lengthwise-outward or spreading force between the oppositely-positioned head and foot portions. Conversely, the expandable lever or latching mechanism is moved or swung to a retracted, contracted, collapsed or lengthwise-shortened position to move the head and foot portions towards each other and detach or release the connector from a fluid outlet faucet 11.

A suitable flexible hose or other connecting means 21 is provided between the connector 15 and a washing means or apparatus 35. The washing means 35 has a pair of inner and outer container, housing body members or container walls 36 and 45, the outer of which has a closure or lid 40. The outer body 36 has open top and bottom end portions and extends upwardly beyond and defines an inner spillway chamber with and along the inner body 45. The inner housing body 45 is shown in a substantially radially-inwardly-spaced and concentric relationship with the outer housing body 36. The inner body 45 has a closed-off bottom or container wall 45a at its lower end portion, so that washing water leaving its inner or washing chamber must (during the washing cycle) rise or leave through or spill over lip edges 45b of its top end portion to flow out and fall downwardly along the spillway chamber or spacing between the inner and outer housing bodies.

The inner housing body 45 has a valve 47 that is normally resiliently urged to an open position by a spring 51 and is automatically moved to a closed position when the lid 40 of the outer housing body or container 36 is closed, as during a washing cycle. The valve 47 is connected to an outlet duct 46 leading from the lower end portion of the inner housing body 45 and below the outer body 36. As noted, the inner body 45 projects below the side walls of the outer body 36. Means is shown for latching or holding the lid 40 in a closed relationship during the washing operation and guiding it into such a position.

Brackets or offset arms of a positioning frame 38 are secured to both the inner and outer housing bodies to project from the apparatus to position it on or over the lips or edges 12a of a suitable toilet, water closet or flush bowl, container or bucket 12.

A water nozzle 55 is shown carried by the lid 40 to direct a stream of water at an angle or somewhat tangentially within the bounds or walls of the inner housing body or member 45 to provide a circular or swirling action of the water within its washing chamber.

The nozzle 55 has an aspirator tube 56 which is shown projecting downwardly or vertically through the lid 40 to supply air. Since the tube 56 projects outwardly of the lid, a connection may be made to a suitable liquid detergent or soap (cleansing agent) drip-feeding device, although ordinarily this is not necessary. Its primary purpose is to supply ambient air to an open portion or transverse or side passageway 55d that is connected to an aspirator bore portion or central chamber 55b of the nozzle (see Figure 5).

In accordance with the operation of my device, when water introduced through nozzle 55 under its normal swirling action reaches a near-top level as to the walls of the inner container or housing body 45 (see, for example, level *d* of Figure 2), the water backs up within an outlet bore portion 55a of the nozzle to close off its exit or open end, and thereby cause air to be drawn into chamber 55b through aspirator tube 56 and side passageway 55d. In this connection, the water level rising into bore 55d produces an effect like the vane usually permanently located in a similar position in an aspirator. As soon as air is drawn into chamber 55b and is entrained in the water jet being directed toward the bottom of container 45, the turbulence of the water contained in

container 45 is markedly increased, by virtue of the air which has been driven to the bottom of container 45, and which then rapidly rises as bubbles, seeking to escape from the water in container 45. This causes an aerating action as to the article or material being washed. The increased turbulent action of the water feed thus-produced tends to throw considerably more water from the inner container 45 over the spillway into the spillway chamber, so that within a short time the water level is lowered, until the exit or open end of bore 55a is uncovered (see, for example, level *e* of Figure 2). At this time, the aspirating action ceases and the water level again builds-up and the action is repeated. For example, for a normal city water pressure of about 55 to 70 pounds per square inch, this pulsating action may occur about every 0.5 to 2 seconds.

As to details of the construction employed to illustrate my invention, in Figure 1 the open end 11a of the conventional water faucet 11 (such as a hot water faucet or a combined faucet nozzle from a hot and cold mixer) is, as shown in Figure 4, engaged by the sealing head 20 of the connector 15. The head 20 is shown of cone-shaped construction and as having a sleeve layer of sealing material, such as of impregnated fabric or of rubber, to form a sealing engagement within bore walls of the open end 11a of the faucet. The gasket is preferably of a cone-shaped slip-on type for the cone-shaped head 20.

A fitting head 18 carries the cone-shaped head 20 and has a forwardly or upwardly-projecting cylindrical pipe or tube portion 18a provided with a water flow bore or passageway therethrough. The bore 18a is connected or open to the bore or passageway of a side arm portion 18b. A hose-mounting, serrated, reduced end portion projects from the side arm portion 18b and also has a hollow bore or passageway therethrough connecting with the bore of 18b. A flexible hose 21 of rubber, plastic or metal has one end portion securely mounted over the portion 18c to project therefrom.

The longitudinally-projecting hollow barrel member 16 has a pair of upper bifurcated portions or pivot ears 17 that employ a pair of pivot pins or set screws 19 to swingably or pivotally carry the head 18. The bore 16a of the barrel member 16 is preferably smooth and slidably receives one end portion of the adjustable stem 24 therein. To provide position-retaining action of stem 24 within the bore 16a, I have provided the stem with threads (as shown in Figure 4) which engage complementary threads in mounting head 25. This provides for adjustment of the overall extended length of stem 24 and barrel 16 to adapt the connector 15 to the varying distances between faucet and walls of different wash bowls.

An operating arm or lever 26 of half-cylindrical shape has a pair of bifurcated end portions or pivot ears 26a that project upwardly at substantially right angles thereto. A pair of pivot pins 27 operatively connect the ears 26a to opposite sides of the opposite or lower end portion of the barrel member 16, so that said operating lever 26 may be moved between a fully down or expanding position, as indicated by the full lines of Figure 4, and an upper, releasing or contracted position, as indicated by the dot and dash line position of the same figure. A nut-like threaded ring or enlarged mounting head portion 25 is secured on the lower end portion of the adjustable stem 24. A pair of connecting, operating links 29 are pivotally secured by rivet pins 28 to an inner end portion of the operating lever 26 at the base of the operating ears 26a. Pivot pins or rivets 30 operatively connect the other ends of the pair of links 29 to opposed sides of the mounting head 25.

As shown in Figures 1 and 4, the connector links 29 cooperate with the ears 26a to expand and contract the lever mechanism and to move the stem 24 inwardly and outwardly within the barrel member 16.

The lower end portion of the stem 24 has a mounting ring or head portion 24a on which is pivotally secured

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the clamping foot part 32. It will be noted that an upper shoulder portion of the foot 32 is bifurcated and is pivotally mounted on the ring or head 24a by a through-extending pivot pin 33. The lower portion of the foot part 32 has an integral foot plate portion 32a projecting transversely or at right angles thereto. A cut-out gasket 34 of a suitable material, such as rubber, is interlaced over the plate portion 32a to directly abut the wall of the bowl 10. The foot part 32 is indicated in a fully expanded position in Figure 4 by solid lines and in a fully retracted position by dot and dash lines of the same figures.

Means for securing or mounting the inner and outer container members 35 and 45 in their previously mentioned position consists, as shown particularly in Figures 2 and 3, of a positioning frame 38. The frame 38 is shown of T-shape and as having cross-horizontal portions 38a that are upwardly-bent at their outer ends to provide vertical or side portions 38b. The side portions 38b are bent at their upper ends to provide horizontal, outwardly-projecting mounting portions or arms 38c. As shown particularly in Figure 2, the portions 38c are provided with protective sleeves 39 of rubber or fabric, so as to rest upon the upper edges or lips 12a of the walls of the container or toilet bowl 12. In this way, the washer is mounted by means of three outwardly-projecting arms 38c over the open top portion of the container 12 and in a non-tilting relationship therewith.

Under-supporting metal strap members or pieces 37 are secured, as by weld metal or solder *w*, to mount side wall portions of the inner and outer housing members 45 and 35 in a spaced, spillway-chamber defining relationship with respect to each other, and to thus secure the outer housing member 35 directly to the supporting frame 38. The closed bottom wall 45a of the inner container member 45 is in a like manner soldered or welded to the horizontally projecting portions 38a.

The lid 40 may, like the inner and outer housing or container members 45 or 36, be of metal construction. The lid 40 is shown provided with a bottom rim edge 40a to receive an overlapping circular sealing gasket 41 of suitable resilient material, such as rubber or fabric. The lid 40 is shown swingably mounted or secured by a hinge 42 to the upper end portion of the outer container 36 (see Figure 3).

A bail 43 has its lower end portions 43e projecting through holes in opposite sides of the outer container 36 to pivotally mount it thereon. A pair of opposed or vertically-spaced-apart and horizontally-projecting opposed shoulders 43a and 43c are connected by a vertical portion 43b to hold the lid 40 in a securely clamped-down or latched, closed position on the outer container 36. It will be noted that the upper shoulder 43a abuts the lid 40 and that the lower shoulder abuts a circular rim 36b that projects from the side wall of the upper end portion of the outer container 36. The pivot ends 43e are connected by a vertical portion 43d to the shoulder portion 43c.

Referring particularly to Figure 6, the lid 40 and the outer container 36 have means for positively aligning and guiding them into a closed position with respect to each other. In this connection, the lid 40 has a side-projecting mounting lug portion 40b that carries a downwardly-projecting guide pin 44. The pin 44 is adapted to abut against the rim edge portion 40a of the lid and to project through a guide hole in an angle piece projection 36c. The angle piece 36c projects horizontally-outwardly and is secured to the outer container or body 36.

The wash water supply nozzle 55 is carried by the outer container 35 and is shown as mounted on and as projecting downwardly at an angle through the lid or top portion 40. As shown in Figure 2, it may be securely mounted by weld or solder metal *w*. The upper or water supply inlet end of the nozzle 55 is shown provided with a male, threaded end portion 55e. A connector part or nipple 58 is shown as having an internally-

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threaded nut collar portion that is adapted to be secured on the threads 55e and form a water-tight seal therewith. The connector part or nipple 58 is shown as having an upwardly-projecting reduced mounting portion 58a that is serrated to securely receive and mount the other end of the flexible hose 21.

As shown particularly in Figure 5, the nozzle 55 has an inlet bore portion or passageway 55c connected by an intermediate aspirator bore portion or intermediate passageway 55b of reduced diameter to an outlet or bottom end bore portion 55a. Thus, when there is no effective suction through side air connection 55d to the reduced or aspirator passageway 55b or chamber provided thereby, a jet-like pressure action will be effected on the delivery of water through the outlet bore 55a. As shown in Figure 5, side bore or transverse passageway 55d is connected centrally to an aspirator bore or passageway 56a, of the tube 56. The bore 56a extends longitudinally of the aspirator tube 56 and is closed at its bottom end and is open at its upper end, as shown in Figure 2, so that when the level of water within the outer container 45 is below the open end of bore 55a (see also Fig. 5), there will be a normal pressure flow of water from the nozzle 55. However, when, as before pointed out, the level of water within the washing chamber of the container 45 rises to close off the open end of the bore 55a, then a jet-like stream of high pressure water, with considerable entrained air, passes through and out of the nozzle.

The upper end of the aerator tube 56, as shown in Figure 2, is secured, as by weld or solder metal *w*, to project downwardly through the lid 40. The nozzle 55 projects into the washing chamber of the inner container or body 45 to supply washing water thereto. The water projection is indicated by arrows *b* and the direction of movement is indicated by the arrows *c*. To retard the diaper or other article of wear *a* from freely rotating or moving circularly with the circular agitation or movement of the water within the washing chamber and about the vertical or longitudinal axis of the inner container, I have provided a flexible metal link or chain 60 (see Figure 2) that may be secured at its lower end, as by weld metal or solder, to the bottom wall 45a of the inner container member 45 to engage with the article being washed.

The outlet valve 47 has a U or somewhat channel-shaped gasket-mounting seating portion 47a whose edges engage into side walls of a seating gasket 48 that is positioned in an inclined plane to abut against or seal with seating edges of an end portion 46a of the outlet duct 46. The outlet valve 47 has an upper mounting collar portion 47b to receive and to be securely mounted on an outwardly-bent or inclined lower end portion of a longitudinally-upwardly-projecting valve operating rod 49. As shown particularly in Figure 2, the rod 49 is slidably carried or positioned within a longitudinal mounting sleeve member 49a.

It will be noted that upper and lower brackets 53 and 50 carry the sleeve member 49a and secure it to project inwardly from the inner walls of the outer container member or housing body 36. The valve operating rod 49 extends slidably through the sleeve 49a upwardly towards the lid 40. A bumper or abutment end 54 is carried on the upper end portion of the rod 49 and, when the lid 40 is closed, is moved from the dot and dash line position of Figure 2 to the full line, due to its engagement with the under-side of the lid. This, in turn, expands a spring 51 and, against its resiliency, causes the valve 47 to move to and to be positively held in a closed position.

The lower bracket 50 is shown as carrying a hook portion 50a for the upper end of the resilient spring 51. A hook 52 is shown as projecting outwardly from a lower end portion of the rod 49 to carry the lower end of the spring. The spring 51 normally resiliently urges the valve 47 to the upper or dot and dash or open position of

Figure 2 and thus resists the closing movement induced by the bumper 54.

What I claim is:

1. A portable quick-washing device suitable for connection to the faucet of a wash bowl and for washing an article such as infant's wear which comprises, a pair of inner and outer housing members having wall portions in a spaced-apart relation with each other, said inner member having an open top end portion located below the top end portion of said outer member to define a lip spillway and having a closed bottom end portion to define a washing chamber therein, said outer housing member being open at its top and bottom end portions to define a vertical spillway chamber with said inner housing member and a bottom discharge outlet about the bottom end portion of said inner housing member, a closure adapted to cooperate with the top end portion of said outer member and close it off after an article has been introduced into the washing chamber of said inner member, a liquid-introducing nozzle carried by said closure for said outer member and having a lower portion positioned below said lip spillway to project liquid into the washing chamber of said inner member, and pulsatile means operatively associated with said nozzle for automatically lowering the level of liquid within said inner housing member from a pre-determined level along said lower portion of said nozzle to a level therebelow.

2. A washing device as defined in claim 1 wherein, said pulsatile means is an aspirator portion having an outwardly-open air tube connected thereto; and the lower portion of said nozzle has an outlet end extending downwardly within said washing chamber to effect an aspirator action on the washing liquid through said nozzle when the washing liquid rises above the level of the outlet end of said nozzle and until the level of washing liquid is lowered by overflow over the spillway of said inner member to a level below the outlet end of said nozzle.

3. A device as defined in claim 1 wherein, means hinges said closure to the upper open end portion of said outer member, and said nozzle, and said pulsatile means is securely mounted on said closure to project there-through.

4. A device as defined in claim 1 wherein, an outlet valve is positioned for intermittent sealing engagement with said bottom discharge outlet to selectively seal-off and drain the washing chamber, spring means is operatively connected to resiliently urge said outlet valve to an open position for draining the washing chamber, and rod means, is operatively positioned between said valve and said closure and is operatively activated by said closure to close said valve against the resiliency of said spring means when said closure is moved to close off said outer member.

5. A portable quick-washing device suitable for connection to a liquid supply faucet and for washing an article of infant's wear such as a diaper which comprises, a pair of vertically-projecting inner and outer housing members, said housing members having side walls in a spaced-apart relation with each other, said outer housing member being open at its top and bottom end portions, said inner housing member being open at its top end portion to provide a lip spillway and having a closure wall across its bottom end portion to define a washing chamber therein, said outer housing member projecting above said inner member to define a liquid spillway chamber therewith and downwardly therealong and a bottom discharge outlet along the outside of said inner housing for delivering the liquid downwardly past the bottom end portion of said inner housing member, a lid mounted for opening and closing movement with respect to the upper end portion of said outer housing member, means supporting said inner and outer housing members in the above-defined relationship with respect to each other and having means projecting radially-outwardly therefrom to position the device on the lip edges of a discharge vessel, a liquid supply nozzle mounted on and projecting through

said lid downwardly into an upper portion of the washing chamber of said inner housing member to substantially fill said chamber with washing liquid, said nozzle being positioned to direct the liquid in an inclined path and cause a circular agitation of the washing liquid within the washing chamber, and aspirator means within said nozzle for periodically entraining air in the liquid out-flow therefrom when the level of washing liquid within said inner housing member encompasses said nozzle to effect a higher pressure flow of liquid into the washing chamber and purge excess liquid over said lip spillway.

6. A device as defined in claim 5 wherein, said nozzle has a liquid supply bore portion, an intermediate aspirator bore portion of smaller diameter than said liquid supply bore portion, and an outlet bore portion of larger diameter than said aspirator bore portion; an aspirator tube is connected to said aspirator bore to normally supply air thereto, and said outlet bore portion is positioned to project downwardly within the washing chamber so as to be periodically immersed in washing liquid upon a rise of such liquid in said washing chamber, said aspirator bore portion being activated by the periodic immersion of said outlet bore portion to entrain air in the washing liquid passing through said nozzle into the washing chamber and purge the liquid over said lip spillway and out of the washing chamber to lower the level of liquid therein below said outlet bore portion.

7. A portable quick-washing device suitable for an article of infant's wear such as a diaper and which is to be connected to a source of washing water and to be positioned over a liquid-receiving container and which comprises, a pair of inner and outer housing members, said housing members having upright enclosing walls that are transversely spaced-apart with respect to each other, said outer housing member being open at its top and bottom end portions and projecting upwardly above and defining a vertical spillway chamber along said inner housing member, said inner housing member having an open top end portion and a closed-off bottom end portion and projecting downwardly below said outer housing member to define a washing chamber, means mounting said inner and outer housing members in their defined relationships and having outwardly-projecting arms to rest upon edges of and to position said members over the liquid-receiving container, a lid swingably mounted on the top end portion of said outer member to close it off after an article has been introduced within the washing chamber of said inner member, an outlet duct connected to the bottom end portion of said inner member to drain said inner member, a valve operatively associated with said duct, means normally urging said valve to an open position with respect to said duct, means operatively positioned between said valve and said lid to automatically close said valve when said lid is swung to a closed position with respect to said outer housing member, and a liquid supply nozzle carried by said lid and projecting downwardly towards the washing chamber to project liquid in a circulatory path into the washing chamber to wash the article positioned therein.

8. A device as defined in claim 7 wherein, said nozzle has an aspirator portion and an air supply means connected thereto and projecting upwardly through said lid, and means is carried by said outer housing member to latch said lid in a closed position with respect to the upper end portion of said outer housing member.

9. A device as defined in claim 5 wherein, said nozzle is positioned in an angular relationship with respect to a side wall of said inner housing member to effect a circular agitation of the washing fluid about the vertical axis of said inner housing member, and chain means is positioned within the washing chamber of and is secured to said inner housing member for engaging and retarding circular movement of the article being washed with respect to the circular agitation of the washing liquid.

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