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FRUIT AND VEGETABLE WASHING DEVICE WITH VERTICAL CIRCULATIVE FLOW AND EXTENDABLE BODY

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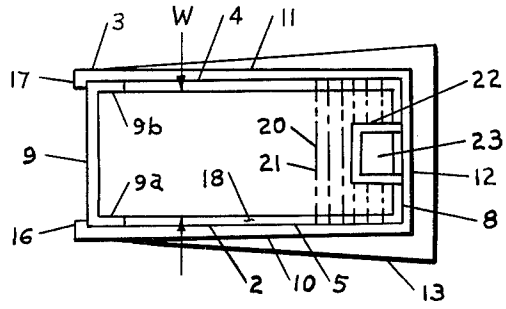

FIG. 2

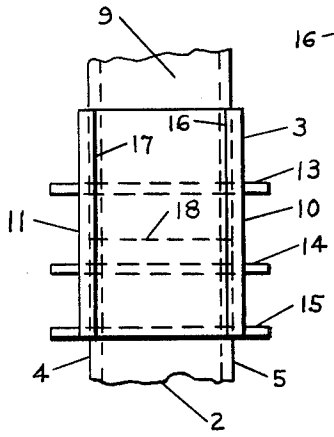

FIG. 3

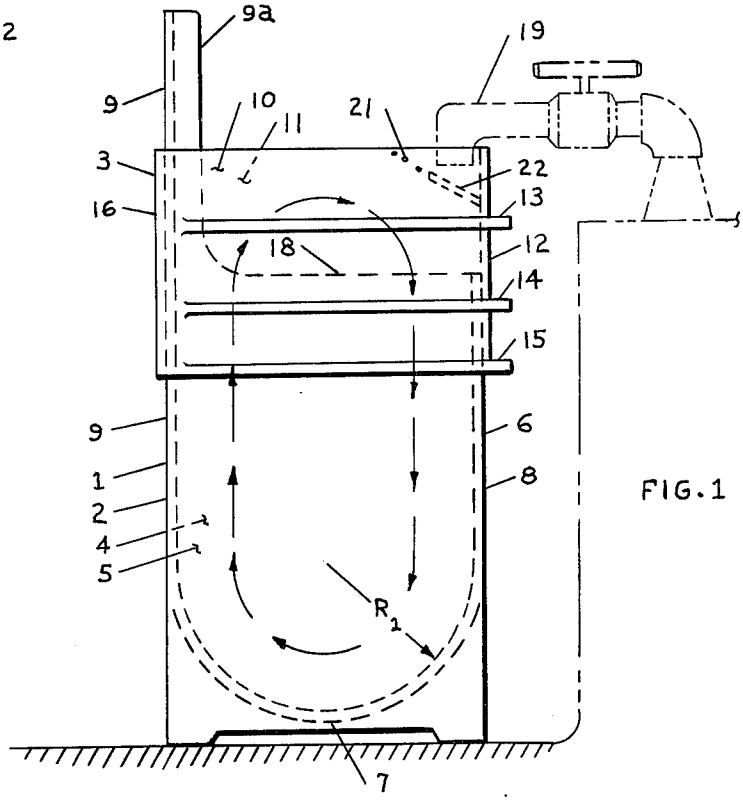

FIG. 1

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FRUIT AND VEGETABLE WASHING DEVICE WITH VERTICAL CIRCULATIVE FLOW AND EXTENDABLE BODY

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6 Claims. (Cl. 259—18)

The present invention relates to a washing device for fruits, vegetables, and other solid food units. The device provides for imparting to contained liquid a two dimensional circulative flow in a vertical plane. Provision is included for the circulative liquid flow to receive sufficient kinetic energy from tangential inlet liquid flow to effect continuous vertical circulative motion of the fruits or vegetables.

Objects of the invention are to provide for the thorough cleaning of all surface areas of fruits and vegetables in minimum time and without bruises or damage.

Other objects are to provide a simple cleaning device having no moving mechanical parts, and which can be used conveniently in household kitchen sinks, and which can utilize kinetic and pressure energy available from conventional household faucet water.

Other objects are to provide reduced kinetic energy losses by introducing faucet water flow directly into circulative washing water thereby allowing easier starting of circulative flow of a static food pile, larger load washing at low faucet water pressure, and larger load washing for a given size of washing device.

Another object is to eliminate the difficulty of providing an extension conduit requiring leak resistant end adapters for the faucet and washing device.

An object is to eliminate the inconvenience of installing an disconnecting an extension conduit at each use of the device.

Another object is to provide for preventing the intake of air at openings in faucet aerators during food unit washing and preventing a corresponding loss of inlet liquid momentum and kinetic energy.

An object is to prevent the wedging of circulating food units between the submerged faucet nozzle and the side walls of the device without reducing the augmentation of the inlet liquid jet by contained circulating liquid.

Another object is to provide for adaptation of the washing device to various heights of sink floor to faucet outlet combinations.

Another object is to provide a configuration having compact proportions for minimum required storage space.

An object is to eliminate the need for a separate liquid sealing element between moving parts, while providing for improved sealing.

An object is to provide a resilient telescoping part which will compensate for warpage of molded parts, and hence result in fewer production rejections and lower costs.

An object is to provide positive locking friction, and hence to eliminate the need for special locking devices between telescoping parts.

A number of other objects and advantages will become apparent as the description proceeds.

One form of the present invention is illustrated in the accompanying drawings wherein similar numerals refer to similar parts throughout the views.

FIGURE 1 is a side view of the fruit and vegetable washing device properly positioned beneath an open water faucet. The arrows indicate the flow path of the circulative liquid flow. The hatched base line represents the floor of a conventional household kitchen sink having a fixed distance relationship with overhead faucet **19**.

FIGURE 2 is a plan view of FIGURE 1 showing the comparatively narrow width W of the washing device.

FIGURE 3 is a fragmentary side view of FIGURE 1 to further illustrate construction details.

The prior art has provided various washing devices, including a narrow two dimensional flow washing device of the present type. That device is described in copending application of Serial No. 465,822, effective filing date Dec. 3, 1962. Said prior device sets on the floor of the sink, and an elastic liquid conduit is provided to extend from the faucet nozzle to the tangential inlet unit of the device. The present device provides comparable performance but without the problems, inconvenience and cost of the extension conduit and associated connectors.

The prior art has also provided a telescoping washing device which is a species of the type described herein. That device is described in copending application of Serial No. 254,323, filed Jan. 28, 1963, now Patent No. 3,207,483. Said device has an upper movable telescoping portion having the four full sides normally expected of a pressure resisting structure of rectangular cross section and that device also includes a sealing element between telescoping parts, and a special locking device. The present species of the invention eliminates the need for the sealing and locking elements, and provides other important advantages as listed above in the objects of the invention.

Referring to the several figures, washing device **1** includes a base portion **2** and an upper extension portion **3**. The base portion **2** includes side walls **4** and **5** extending longitudinally and vertically and spaced apart in relative proximity. A lateral wall **6** extends between side walls **4** and **5** to provide a bottom wall **7** and two opposite end walls **8** and **9**. The bottom wall **7** and end wall **8** are faired together by radius R_1 to provide a curved inner surface as shown. The internal surface of lateral wall **6** provides a smooth, curved perimeter flow path for contained liquid.

Upper extension portion **3** is moveably associated with base portion **2**. Extension portion **3** includes side walls **10** and **11** extending longitudinally and vertically and spaced apart in relative proximity. End wall **12** extends laterally to cooperate with side walls **10** and **11** in unitary relation. Extension portion **3** fits snugly over the base portion **2** with a slip fit so that relative motion can be achieved by hand pressure. Extension portion **3** is provided with ribs **13**, **14**, and **15** to provide a spring-like clamping action against base portion **2**. This clamping action provides adequate strength to resist internal liquid pressures when the device is filled to the top with liquid and also sufficient additional strength to prevent slippage of extension portion **3** downwardly or leakage of liquid between the two portions of the device.

Extension portion **3** is held in position partly by inwardly directed flanges **16** and **17** which fit adequately over end wall **9** of the base portion to provide fixity in a horizontal plane. End wall **9** extends to a higher elevation than the upper edge **18** of walls **4**, **5**, and **8** of the base portion. End wall **9** has inwardly directed flanges *9a* and *9b* for added strength and stiffness and to provide an improved liquid seal.

The liquid flow is introduced by faucet **19** which is positioned over end wall **12**. Extension portion **3** is moved upwardly by hand until the faucet exit port is submerged below the upper edge of extension portion **3** where liquid overflow occurs. This provides inlet flow which is tangential to radius R_1, and establishes circulative liquid flow. The discharge end of faucet **19** is submerged below the surface of the contained liquid. This provides for an efficient transfer of pressure energy and kinetic energy to the contained mass of revolving liquid and food units being cleaned.

A food unit deflector 20 is comprised of a thin nylon cord 21 which is threaded back and forth in parallel fashion as shown in FIGURES 1 and 2. Deflector 20 isolates the faucet from the food units preventing bruises and jamming of food units. Deflector 20 allows the contained liquid to flow freely around the faucet water jet being introduced and results in jet augmentation. A gross jet results having larger effective mass and lower velocity with reduced eddy losses and conservation of kinetic energy. Deflector 20 is of screen-like material wherein the ratio of space to solid material is large. The thin nylon cords may be in the form of a true screen mesh or a one dimensional arrangement as shown. Frame 22 is an insert in deflector 20 to support cord 21, where deflector 20 contains an opening 23 for the inlet jet from faucet 19.

During operation of the device, soil particles and other impurities are progressively removed from the contained food units by a continuously diluting liquid flow.

While one embodiment of the present invention has been illustrated it is to be understood that what is defined by Letters Patent is specified by the appended claims.

What is claimed is:

1. A washing device including two side walls extending longitudinally and vertically and spaced apart, a lateral wall extending between said side walls to provide a bottom wall and two opposite end walls and connecting with said side walls in unitary relation, and the inner surface of said bottom wall and the inner surface of at least one of said end walls substantially faired to provide a substantially curved inner surface at the region of juncture, and said walls terminating upwardly at an intermediate elevation generally except at least one wall portion which extends upwardly to a relatively high elevation generally, and a vertical extension portion, said extension portion including two walls extending vertically and spaced apart, and a wall extending between said two spaced vertically extending walls and connecting therewith in unitary relation, and said washing device and said extension portion operatively associated in a telescoping-like manner, and said upwardly extending wall portion of said washing device normally located opposite to said wall extending between said two spaced walls of said vertical extension portion, and said extension portion substantially excluding a structurally continuous wall opposite to said wall extending in unitary relation between said two spaced vertically extending walls.

2. A washing device and vertical extension portion as in claim 1, and at least one of said two spaced walls of said extension portion having an inwardly directed flange-like portion substantially at the free vertical edge thereof.

3. A washing device and vertical extension portion as in claim 1, and said wall portion of said washing device which extends upwardly to a relatively high elevation having at least one inwardly directed flange-like portion extending vertically along an edge thereof.

4. A washing device and vertical extension portion as in claim 1, and said extension portion having at least one substantially horizontally extending rib along the wall extending between said two spaced walls and along at least portions of each of said two spaced walls.

5. A washing device and vertical extension portion as in claim 1, and said extension portion including a deflector portion, said deflector portion positioned above said curved inner surface normally, and means for supporting said deflector portion with respect to said device.

6. A washing device and vertical extension portion as in claim 1, and said extension portion including a deflector portion, said deflector portion positioned above said curved inner surface normally, and said deflector portion including screen-like deflector material.

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