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C. E. LINNIT ET AL  
HOLLOW WARE WASHING APPARATUS

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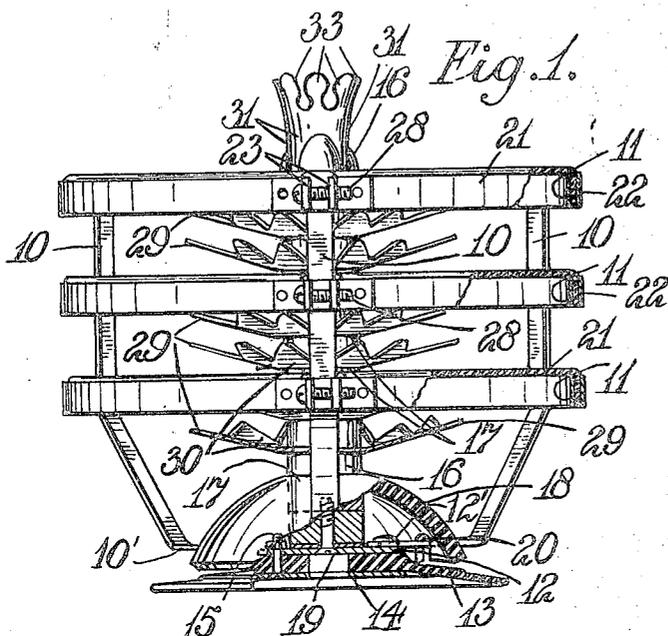
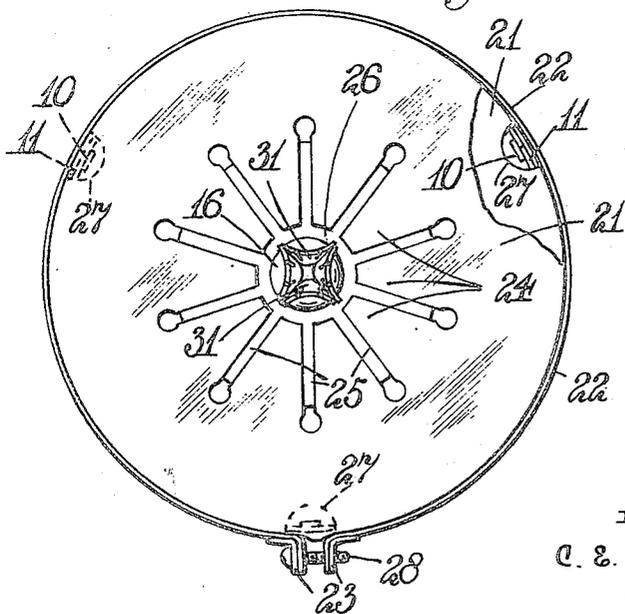


Fig. 2.



INVENTOR

C. E. Linnit +  
B. W. Deans

By Watson, Cole, Brindle & Watson

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## HOLLOW WARE WASHING APPARATUS

Christopher Edmund Linnit and Bernard  
William Downs, Hastings, England

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6 Claims. (Cl. 15—211)

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This invention relates to a washing apparatus particularly for hollow receptacles such as glasses, tankards, mugs, cups, milk bottles, jars and the like which washing apparatus is of the kind comprising an upright core having a number of flexible elements radiating from it along the length thereof and which co-operates with a number of inwardly-directed flexible elements supported at their outer ends.

According to this invention, a washing apparatus of the kind referred to is characterized in that said layers are separately and detachably mounted on a frame comprising a number of arms extending upwardly from and connected to a suction cup to which is also secured said upright core.

In one form of construction, each of said layers has its peripheral edge clamped to a rigid ring attached to said upwardly extending arms. For example, each of said layers has its peripheral edge bent over said rings and secured thereto by a contractible clamping ring.

The flexible elements on the core may be arranged to extend into the spaces between the aforesaid layers.

The flexible elements on the core may also be formed from a number of sheets of resilient material, each having an aperture the periphery of which is sprung into circumferential grooves formed in the core.

The core may be attached to the aforesaid frame and may be provided at its base with a buffer.

The following is a description of one form of the invention suitable for washing tumblers and tankards, reference being made to the accompanying drawings, in which:

Figure 1 is a part side elevation and part sectional view of the apparatus, and

Figure 2 is a plan view.

The frame of the apparatus comprises three metal uprights 10 which are encircled by three cylindrical metal rings 11 which are spaced apart and secured to the uprights as by welding, brazing or sweating. The lower ends 10' of the uprights are bent inwardly and secured at their extremities, as at 12', to a metal disc 12. A suction cup 13 is secured to the metal disc by a washer 14 and screws 15. A core 16 is provided with a number of circumferential grooves 17, the lowermost one of which accommodates a bell-shaped buffer 18. The core is secured to the aforesaid metal disc by a set-screw 19. The periphery of the bell-shaped buffer is provided with slots 20 through which the inwardly-bent ends of the uprights extend.

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Each of the aforesaid cylindrical rings 11 has bent over it the peripheries of a sheet of rubber 21 which is secured in position by a clamping ring 22 having lugs 23 at its end which is engaged by a clamping screw 28. As will be seen from Figure 2, each flexible disc is cut to provide a number of inwardly-directed wedge-shaped fingers 24 separated by slots 25, which fingers terminate to provide an aperture 26 through which the aforesaid core extends. The periphery of the discs may be provided with slots 27 through which the uprights extend.

As already indicated, the core is provided with a number of circumferential grooves and in each of the grooves is mounted a sheet of rubber 30 having a central aperture the marginal portions of which may be sprung into the groove and each having outwardly-directed resilient fingers 29. Certain of these grooves in the core are so disposed that the outwardly-radiating fingers are located between the aforesaid resilient discs.

The uppermost groove has slots extending axially from its upper wall out through the end of the core, and the groove in addition to accommodating one of the aforesaid sheets of material 30 also accommodates a number of resilient elements 31 which have apertures therein which encircle the sector formed between the grooves and the axially-extending slots, which resilient elements extend above the top of the core and are shaped to provide a number of fingers 33.

We claim:

1. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core all secured to said suction cup, a number of flexible elements at different levels on said core, a number of discs of flexible material encircling said core and having flexible elements directed towards said core, a rigid ring clamping substantially the whole periphery of each said disc and means for detachably securing said rings to said arms, each said disc at its periphery being folded over a rigid ring.

2. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core all secured to said suction cup, a number of flexible elements at different levels on said core, a number of discs of flexible material encircling said core and having flexible elements directed towards said core, a number of rigid rings secured to said upright arms, one for each said disc, substantially the whole peripheries of which discs

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are folded over the edges of said rings and are cut away opposite said arms, and clamping rings for securing the whole of said folded-over portions to said rigid rings.

3. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core all secured to said suction cup, a number of rigid rings secured to said arms at different levels, a number of flexible elements at different levels on said core, a number of separate discs of flexible material encircling said core secured around the whole of their peripheries to said rings and having flexible fingers extending towards said core, each said disc at its periphery being folded over a rigid ring, and means for detachably securing said rings to said upright arms, which flexible elements on said core are arranged to extend into the spaces between the discs.

4. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core all secured to said suction cup, a number of rigid rings detachably secured to said arms at different levels, which core is provided with a number of circumferential grooves spaced apart along it, a number of sheets of flexible material having apertures the edges of which are accommodated in said grooves, a number of separate discs of flexible material encircling said core secured around the whole of their peripheries to said rings and having flexible fingers directed towards said core, each said disc at its periphery being folded over a rigid ring.

5. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core and having inwardly-directed portions at

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their lower ends, which portions and core are all secured to said suction cup, a number of flexible elements at different levels on said core, a number of discs of flexible material encircling said core and having flexible elements directed towards said core, a rigid ring clamping the periphery of each said disc and means for detachably securing said rings to said arms, each said disc at its periphery being folded over a rigid ring.

6. A washing apparatus comprising a suction cup adapted to cling to the vessel in which washing is to be carried out, an upright core and a number of upright arms spaced away from the core all secured to said suction cup, a number of flexible elements at different levels on said core, a number of rigid rings supported at different levels by said arms, a number of separate layers of flexible material encircling said core and having flexible elements directed towards said core, said layers at their peripheries being folded over said rigid rings, and means clamping said layers around the whole of their peripheries to said rigid rings.

CHRISTOPHER EDMUND LINNIT.  
BERNARD WILLIAM DOWNS.

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