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G. D. IRWIN
WASHING APPARATUS

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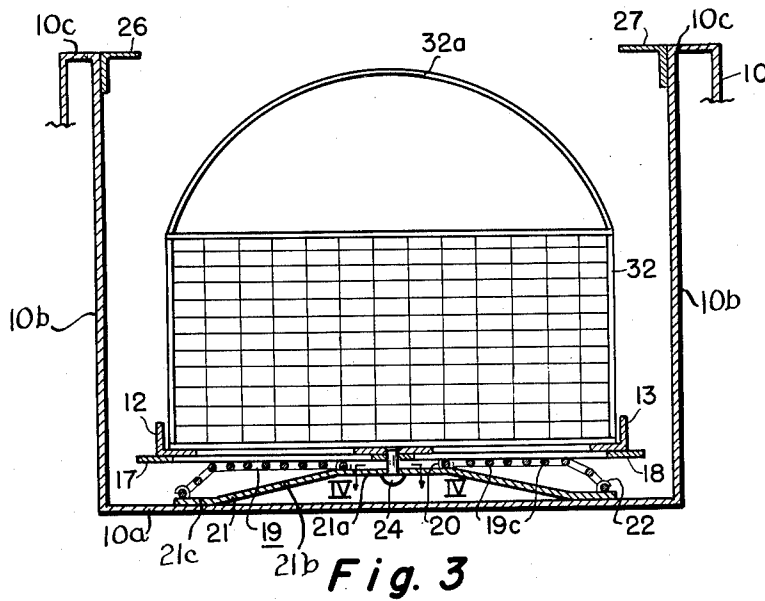
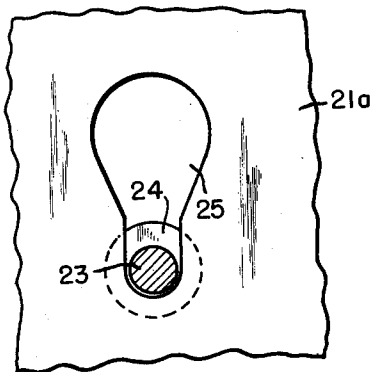
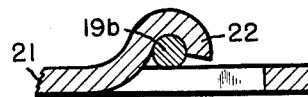


Fig. 4

Fig. 5

INVENTOR.
George D. Irwin
BY *Green, McCallister & Miller*
HIS ATTORNEYS

1

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WASHING APPARATUS

George D. Irwin, Pittsburgh, Pa.

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3 Claims. (Cl. 134—137)

The present invention relates to washing apparatus and, more particularly, to apparatus for washing dishes and the like wherein the insertion and especially the removal of such articles with respect to the apparatus are facilitated.

In one type of commercial apparatus for washing dishes, bowls, cups, eating utensil, and the like, such as may be employed by a restaurant, a basket containing such articles is passed from a container or wash basin to one or more other containers. For example, the dishes may be flooded with soapy water in one wash basin and rinsed with hot water in a second basin. Heretofore, the transferring of a basket from one basin to another has been performed manually.

In practice, because the basket is stationed fairly deeply within the basin and because of the need for relatively quick changes of the baskets, it has been found that operators tend merely to drop the baskets into the basins. The resulting sudden jarring of a basket as it strikes the bottom of a basin frequently breaks some of the dishes. Additionally, because of the weight of the basket, particularly in commercial installations, an appreciable pull is needed to lift a basket from a container or wash basin. Moreover, dishes, cups, and the like become filled with water which very appreciably increases the gross weight of the basket. Still further, repeated lifting of a basket from a basin, as in washing consecutive batches of dishes and the like, has been found to be fatiguing to the workers.

The present apparatus facilitates the insertion of a basket into a container or wash basin and, in particular, facilitates the removal of the basket so as to appreciably lessen or substantially eliminate the need for an upward pull on the basket. In my invention, the basket or a carrier for the basket is resiliently supported within a container to reciprocate between an operative position where the washing may be effected and an inoperative position where the basket may be loaded and unloaded with respect to the washing apparatus. The resilient support for the basket is energized by movement of the basket or its carrier toward the operative position to urge the basket back toward the inoperative position. My apparatus also includes locking means to hold the basket or its carrier at the operative position. By virtue of the resilient support for the basket, the latter or its carrier may be moved laterally of the container and advantage is taken of this to effect the locking action. A fluid is circulated through the container to wash the dishes and the like in the basket when it is at the operative position.

As shown, a frame or carrier for supporting the basket is mounted over a spring within the container. The spring is attached to a central portion of the underside of the carrier, so that it may be pivoted or tilted in all directions and also moved bodily in a lateral direction. These possible movements of the carrier are used to effect a locking action. To this end, the carrier has a locking pin and the container has a slot to receive and hold the pin upon moving the carrier laterally of the container. In the form shown, the spring is cone-shaped or upwardly

2

converges in a spiral path and has its smaller end attached to the underside of the carrier. Upon downward movement of the carrier, the coils of the spring are forced against the underside of the carrier in spaced apart relation with respect to each other to avoid overlapping or other interference between adjacent coils.

The accompanying drawings illustrate a presently preferred embodiment wherein:

Figure 1 is a plan view of my washing apparatus;

Figure 2 is a section of Figure 1 on the line II—II and illustrates a carrier in a loading and unloading position and a conduit system for circulating a fluid in a container of Figure 1;

Figure 3 is a section of Figure 1 on the line III—III and shows the carrier supporting a basket and locked in an operative or washing position;

Figure 4 is a fragmentary section of Figure 3 on the line IV—IV and illustrates a converging slot for engaging a locking pin on the carrier; and

Figure 5 is a section of Figure 1 on the line V—V and shows the manner of holding a spring of Figure 1 within the container.

Referring to the drawings, the embodiment disclosed includes a container or wash basin 10 having a support frame, platform, table or carrier, generally shown at 11, which supports dishes that include like articles to be washed. The carrier includes L-shaped supporting strips or opposed limit rails 12 and 13 which extend along opposite sides of the container 10 in parallel fashion and join members 14 and 15. Connecting diagonal, crossing members or strips 14 and 15 intersect each other substantially midway between the supporting strips to define a support frame or surface about the point of intersection. In the embodiment illustrated, either one of the connecting strips may be continuous in length with the other strip divided and having the adjacent ends of the divided portions contacting the edges of the continuous strip so that the strips 14 and 15 are substantially coplanar. The connecting strips are fixed with respect to each other by a disk or central support portion 16 which is welded or otherwise fixed to the strips. The divergent ends of the strips 14 and 15 are joined by a connector, such as the opposed abutment members or bars 17 and 18. These bars extend widthwise between the supporting strips 12 and 13 and the adjoining walls of the container 10.

The carrier 11 is flexibly and resiliently supported within the container so as to be readily reciprocated in a vertical direction and moved as well in a turning and a lateral direction with respect to the container. In the present embodiment, a spring member 19 supports the carrier and, as hereinafter described, is preferably spiral or cone-shaped. The smaller end portion or convolution of minimum diameter 19a of the spring is positioned (see Figure 2) at least partially about the under side of and upon the support portion 16, and is attached at the intersection of the connecting strips 14 and 15. For this purpose, cleats 20 may be struck downwardly from one or more of the strips 14 and 15 to engage and hold the upper coil 19a of the spring. A mounting and support plate member 21 rests on and is secured or fixed substantially centrally to a floor or bottom wall 10a of the container 10 and has cleats 22 struck upwardly therefrom to engage and hold the bottom coil 19b of the spring. As shown in Figure 2, the bottom support plate member 21 has a bottom bounding flange portion 21c that is secured to the inside of the bottom wall 10a and that is connected to an upper, central, substantially horizontal mount portion 21a by an upwardly-sloped and converging intermediate portion 21b. It will be noted that the largest diameter convolution 19b is positioned at least partially about the flange portion 10a.

As shown in Figures 1, 2 and 3, the container 10 has

enclosing bottom wall 10a, vertical side walls 10b, and an open top portion that is defined by outwardly-projecting flange portions 10c. The portions 10c lie on a common, substantially horizontal plane that corresponds to the upper plane of support by the table or frame 11 of a basket of dishes 32. The upper portion of the frame 11 is limited or controlled by the underneath-overlapping and engagement of horizontally-extending side abutment members 17 and 18 with side limit pieces or members 26 and 27. However, when the frame 11 is partially turned by rotating the basket 32 or by manually gripping the members 14 and 15, or is partially tilted vertically to clear one rail 17 and then the other 18, the frame may then be raised above its normal upper position of Figure 2. This is true, since the members 17 and 18 have been moved sufficiently to clear the limit members 26 and 27. This facilitates cleaning the container 10.

The carrier reciprocates vertically on the spring 19 between an operative or washing position shown in Figure 3 and an inoperative or loading and unloading position shown in Figure 2. In this regard, it will be noted that movement of the carrier 11 toward the washing position energizes the spring 19 to urge the carrier upwardly toward the loading and unloading position. Because of this function of the spring 19, locking means is employed to hold the carrier at the operative position. In the present embodiment a latch including a pin 23 having an enlarged head 24 projects downwardly from the underside of the central disk 16. The plate 21 tapers upwardly to form the raised central portion 21a. This portion has a converging slot 25, with the smaller end located substantially at the center of the portion, to receive and hold the pin 23.

Stop bars 26 and 27 define the inoperative or loading and unloading position of the carrier. These bars are fixed near the top of the container to engage the bars 17 and 18, respectively, and stop the upward movement of the carrier 11.

The container also has a conduit 28 communicating with the interior of the container at vertically spaced apart stations as indicated in Figure 2. When the container 10 has a fluid, such as a cleansing or rinsing fluid, a pump 29 driven by a motor 30 circulates the fluid through the container and conduit. The fluid circulates preferably in the direction of arrows 31, so that the flow within the container 10 is substantially in a vertical downward direction.

In practice, a wire basket 32 or other basket having open or foraminous sides, is placed across the supporting strips 12 and 13 as illustrated in Figure 3. The strength of the spring 19 is preferably somewhat greater than the combined weight of the carrier 11 and the average weight of the basket 32 when loaded with dishes which include bowls, cups, utensils and the like. Accordingly, only a relatively small additional force is needed on the basket to push it downwardly into the container. Since the descent of the basket 32 is much more gradual with the present apparatus, there is no danger of jarring the basket as upon reaching the bottom of the container with a resultant breakage of dishes and the like. At the same time, descent of the carrier 11 increasingly compresses the spring 19 to store energy therein which subsequently aids the return upward movement of the carrier and basket.

It is emphasized that when the spring 19 is cone-shaped as illustrated, the descent of the carrier and basket is more easily and readily effected. As shown in Figure 3, the coils 19c of the spring are forced against the underside of the connecting strips 14 and 15 in spaced apart relation with respect to each other. Accordingly, adjacent coils do not interfere with each other as by crossing or overlapping.

By flexibly and resiliently supporting the carrier at a central portion, the carrier is easily pivoted or tilted in all directions and moved bodily as well as in a lateral

direction with respect to the container 10. This resilient mounting enables the carrier to be locked at the bottom of the container. The carrier may be simply pivoted, or moved bodily in a lateral direction to one side, or both pivoted and moved laterally in order to be locked in position. It is preferred simply to reciprocally pivot the carrier about a horizontal axis, which passes through the disk 16 for example, since this provided an easy and fast locking engagement. In this case, when the carrier and basket are depressed within the container, the carrier is pivoted as by an operator pushing on a handle 32a of the basket. On the initial pivoting of the carrier, the enlarged head 24 of the pin 23 is placed somewhat beyond the larger end of the converging slot 25 and toward a wall of the container. The carrier is then depressed somewhat additionally, so that upon reciprocally pivoting the carrier back again, the head 24 passes through the larger end of the slot 25 which is of sufficient size to pass it and stops beneath the smaller end of the slot which is of insufficient size to pass it (Figure 4). This restrains the carrier from upward movement and thereby locks it in the operative or washing position.

Instead of pivoting the carrier, it may be bodily moved in a lateral direction toward a wall of the container while keeping the carrier substantially level, as when one side of the basket 32 is heavily weighted, until the head 24 is directly over the larger end of the slot 25. Then the head is pushed through the larger end, and the carrier returned toward the center of the container to place the head 24 beneath the smaller end of the slot 25 as before. Or the locking action may be a combination of both the pivoting and lateral movements of the carrier just described.

As used here and in the claims, the term "moving the carrier laterally" and similar expressions involving "lateral" with respect to this movement of the carrier, is taken to mean pivoting the carrier about a horizontal axis, bodily moving the carrier toward a wall of the container, or both combined.

Pump 29 now circulates a fluid within the container to perform a desired washing, rinsing, or other action. The open sides of the basket 32 allow the fluid to flow around and over the dishes and the like and then out such sides. Following this, the operator unlocks the carrier by again pivoting or laterally moving the basket and carrier to one side of the container, so that the head 24 may be lifted through the larger end of the slot 25. The compressed spring 19 now urges the carrier and basket upwardly and thereby considerably reduces or eliminates a need for an upward pull by the operator. When the carrier reaches the top of the container, bars 26 and 27 engage bars 17 and 18, respectively, and stop the upward movement of the carrier. The basket 32 is now removed and replaced by another, after which the cycle is repeated as described.

While the foregoing disclosure describes a presently preferred embodiment, it is understood that the invention may be practiced in other forms within the scope of the following claims.

I claim:

1. An improved washing apparatus of an immersion type for cleaning a basket of dishes which comprises, a container body having an enclosing bottom wall, vertical side walls, and an open top portion that is defined by outwardly-projecting flange portions lying on a common substantially horizontal plane; a bottom support plate member having a bounding flange portion that is secured on the inside of said bottom wall, having a central substantially horizontal mount portion, and having an upwardly-sloped intermediate portion connected between said flange portion and said mount portion; a vertically-upwardly-expanded spring member having convolutions normally projecting in a spaced relationship and an upwardly-converging spiral path with each other to said open top portion, said spring member having a bottom convolution of

5

maximum diameter positioned at least partially about said support plate and secured on said bounding flange portion, a pair of opposed limit pieces secured to project inwardly of said side walls on the common substantially horizontal plane of said flange portions, a support frame for vertical movement within said container between an upper and a lower position therein; said frame having a pair of opposite abutment members projecting horizontally therefrom, outwardly toward said side walls, and beneath said limit pieces to engage underneath said limit pieces when said frame is in its upper position; a central support portion on said frame, said spring member having an upper convolution of minimum diameter positioned at least partially about and underneath said support portion and secured thereto, limit rails on said frame to position the basket of dishes thereon, said frame being movable to its lower position to rest on said mount portion by compressing said spring member downwardly into a substantially horizontal lower plane on said mount portion, and means projecting from said central support portion to latch-engage said mount portion and hold said support frame in its lower position.

2. An improved washing apparatus as defined in claim

6

1 wherein said support frame has diagonal crossing members secured to and projecting horizontally from said central support portion to join and support said pair of abutment members.

3. An improved washing apparatus as defined in claim 1 wherein said support frame has cross members to flex said spring member and move said abutment members out of engagement with said limit pieces to facilitate cleaning out the container.

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