

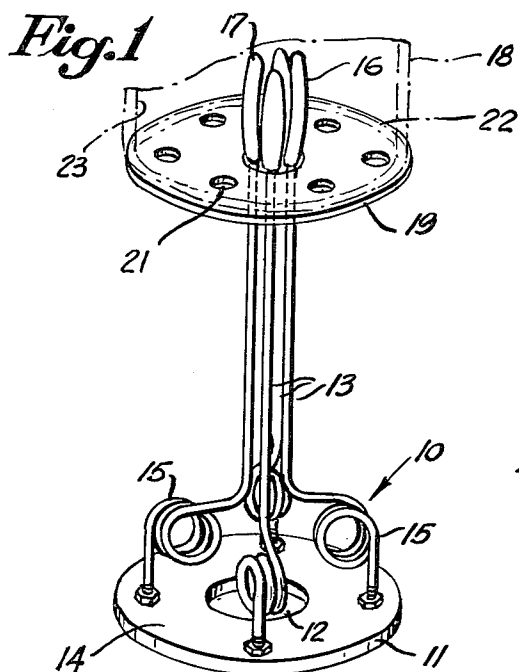
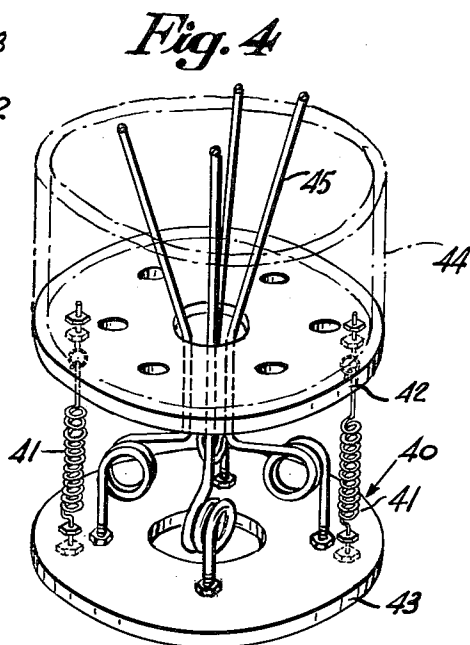
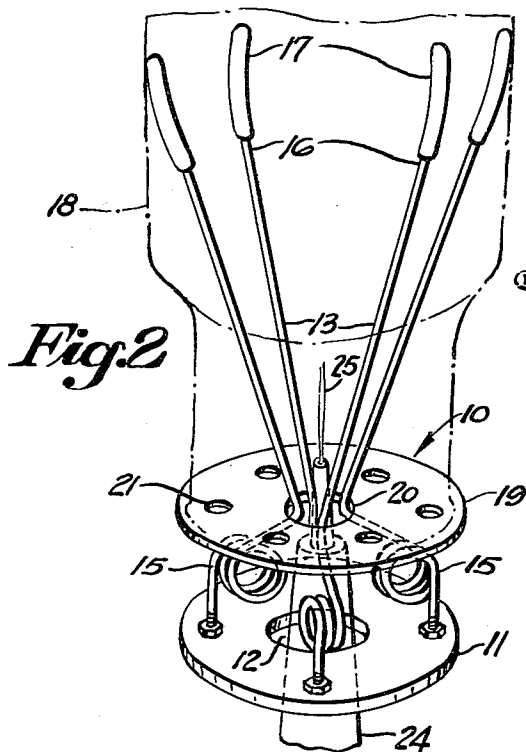
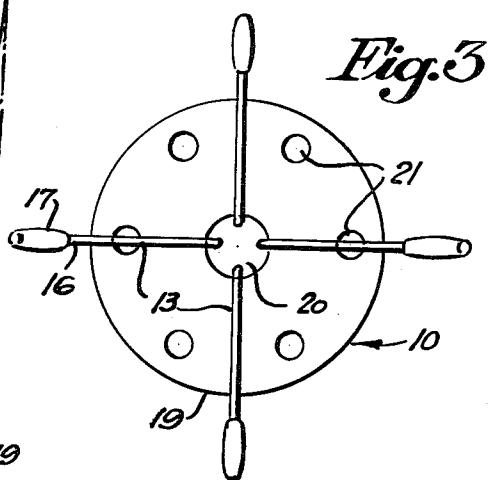
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CONTAINER-HOLDING DEVICE

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CONTAINER-HOLDING DEVICE

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2 Claims. (Cl. 134—152)

This invention relates to a holding device, and refers, more particularly, to a device for holding and conveying containers, bottles and the like.

In prior art, when containers were undergoing various operations, such as cleaning, washing or polishing, they were held on either the outside or were supported on a conveyor, stand, or platform. One disadvantage in holding the container on the outside is that different size holding arms, and different arm pressures, are required to hold different size containers. Also the external holding arms interfere with the operation and movement of the containers, and may damage labels carried by outer surfaces of the containers. On a conveyor or assembly line extra space is required between containers to allow for the movement of the arms. In the stand or platform type device the container is held in a vertical position and must be supported from beneath. Thus, in this system it is not possible to support the containers in an upside down position.

An object of the present invention is to provide a device not having the disadvantages of prior art holding devices.

Another object is to provide a device which can hold any size container without the necessity of adjustment.

Another object is to provide a holding device which automatically adjusts itself to the size requirements of the container to be held.

Another object is to provide a holding device whereby containers can be held internally, thereby eliminating the need for holding the container on its external surface.

Still another object is to provide a holding device whereby the containers can be held upside down or in any orientation.

Yet another object is to provide a holding device which enables the container to be cleaned by a liquid while the device holds the container internally.

Another object is to provide a device for holding containers internally which does not interfere with the flow of liquid used in cleaning said container.

Yet another object is to provide a holding device having a plurality of equal-tension arms which serve to center a container over a jet of cleaning liquid.

A further object is to provide a holding device for internally holding containers which is easy and inexpensive to manufacture.

Other objects of the present invention will become apparent in the course of the following specification.

The objects of the present invention may be realized through the provision of a holding device comprising a base to which is attached a plurality of uniformly spaced arms. These arms have a tendency to move to an unrestrained outwardly flaring position, wherein the free ends of the arms are spread apart. A restraining means keeps the free ends of the arms close together until the arms are disposed within the container, and then the arms are allowed to assume their unrestrained position whereby they securely hold said container internally.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing showing, by way of example, preferred embodiments of the inventive idea.

In the drawing:

FIGURE 1 is a perspective view of a holding device of the present invention in its restrained position;

FIGURE 2 is a perspective view of the holding device of the present invention in its unrestrained position;

FIGURE 3 is a top view of the holding device in its unrestrained position;

FIGURE 4 is a perspective view of a somewhat different embodiment of the present invention and shows the holding device in an intermediate position of restraint.

The holding device 10 of the present invention, which is shown in FIGURES 1, 2 and 3, comprises an annular base portion 11 having a centrally disposed hole 12, and a plurality of arms 13 connected to the upper surface 14 of base portion 11 and uniformly disposed adjacent to the hole 12. The arms 13 are resilient members, preferably made of heavy gauge wire. The arms 13 may each be an integral member having a spring coil 15 formed just above the point of connection of said base portion 11.

It should be noted, however, that any resilient means integral with, or not integral with, the arms 13 may be utilized to give a resilient effect to said arms 13. The resilient means may be utilized to connect arms 13 to base portion 11. The arms 13 can also be directly interconnected at one end of each arm.

The free end 16 of each arm 13 may be covered by a soft covering 17, of nylon or other suitable fiber or plastic, in order to avoid any scratching or marring of the container 18.

A restraining means such as a disc or spacer member 19, having a large centrally disposed hole 20 and a series of smaller holes 21 uniformly placed about the central hole 20, is utilized for actuating the plurality of arms 13. For that purpose, the arms 13 extend through the central hole 20 of spacer member 19.

While the holding device 10 has many varied uses, the manner of use and operation of the holding device 10 as a means of holding a bottle or container 18 while the bottle is moved through a bottle-washing machine, is as follows:

The holding device 10 has a restrained position shown in FIGURE 1. In this restrained position the spacer member 19 is disposed at the free ends 16 of the arms 13. The hole 20 is of such a size that since the arms are supported very close together at the base portion 11, in the restrained position the arms 13 extend substantially parallel to each other and the free ends 16 are disposed close to one another. If an open end 22 of a container 18 is brought down into contact with the spacer member 19, the spacer member 19 will be forced downward. When the spacer member 19 reaches the vicinity of the base portion 11, the holding device 10 is in its completely unrestrained position shown in FIGURE 2. Since the open end 22 of container 18 is narrow, as the spacer member moves downward on the arms 13 the arms flare outwardly and contact the inner surface 23 of container 18, whereby said container is securely held in place.

A device 24 emitting a jet of cleansing liquid 25 is centrally disposed beneath the base portion 11 as shown in FIGURE 2, and this jet 25 is directed through a central hole 20 in base portion 11, and into the open end 22 of container 18 unhampered by the resilient arms 13. Since the arms 13 are uniformly disposed about the central axis of base portion 11 and since each arm 13 is in equal tension and is equally resilient, the open end 22 of the container 18, regardless of its size, will always be centrally disposed directly over the jet of cleansing liquid 25. It should be noted that regardless of the size of the container 18, or the size of the container opening 22, the holding device 10 will always securely hold the container, since the arms will automatically open to whatever position is required to hold the container 18. When the container 18 is completely clean it can be removed while the spacer member 19 is returned from its lower unrestraining position to its upper restraining position; then the device 10 is ready to secure another

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container. The holes 21 in spacer member 19 serve to allow drainage of the cleansing liquid as the liquid flows out of the container 18.

The means for transporting the holding device 10 are not illustrated since they may be of any standard make.

Another holding device 40 is shown in FIGURE 4 and comprises an automatic return member 41 which is connected to the spacer member 42 and the base portion 43. In this embodiment the container 44 when brought down on the device 40 will force the spacer member 42 down only so far as is necessary to allow the arms 45 to securely hold the container 44. As the spacer member 42 is forced downward the automatic return member 41 becomes compressed. When the container is removed from the device 40 the automatic return member 41 forces the spacer member 42 to assume the restraining position wherein the arms 45 are ready to receive and secure another container.

Among the advantages of the holding device of the present invention are the following:

The holding device can hold any size container; the device automatically adjusts itself to the size of the container; containers can be held upside down or in any orientation; the holding device requires no adjustment; the holding device holds the bottles internally, eliminating the disadvantages of having external arms interfere with the various operations; the container is always held directly over the jet of the cleansing liquid since the arms are in equal tension and flare outwardly an equal amount; and the holding device of the present invention is easy and inexpensive to manufacture.

It is apparent that the described examples are capable of many variations and modifications within the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A device for centering a container relatively to a jet of liquid for internally washing the container, said device comprising a disc-shaped base having a central opening for the passage of said jet, a plurality of con-

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tainer-holding elements, each of said container-holding elements having a base portion, an elongated straight arm, a spring portion between one end of said arm and said base portion and a container-engaging portion at the other end of said arm; the base portions of said container-holding elements being connected to said base and being equidistantly circumferentially disposed relatively to said central opening, said arms when pressed toward each other being adapted to extend parallel to each other and parallel to and uniformly disposed about an axis extending through the center of said central opening perpendicularly to said base, said spring portions pressing said arms outwardly to extend at acute angles to said axis, said container-engaging portions being curved for engagement with the inner walls of a container placed over said arms, and a restraining disc having a central opening co-axial with the first-mentioned central opening, and a plurality of liquid-draining holes, said arms extending through the last-mentioned central opening and engaging the edges thereof, said restraining disc being adapted to support the mouth of a container and being slidable from a position adjacent said container-engaging portions to a position adjacent said spring portions and vice versa, said arms extending substantially parallel to each other when said restraining disc is adjacent said container-engaging portions and said arms flaring outwardly away from each other when said restraining disc is adjacent said spring portions.

2. A device in accordance with claim 1, further comprising a resilient return member connecting said restraining disc with said base for automatically returning said restraining disc to a position adjacent said container-engaging portions.

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