

[54] **ADJUSTABLE LABORATORY GLASSWARE FUNNEL SUPPORT**

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[52] **U.S. Cl.**..... **248/94, 23/292, 211/74, 211/181**

[51] **Int. Cl.**..... **B011 9/00**

[58] **Field of Search** **248/94, 249; 211/74, 181; 23/292**

[56]

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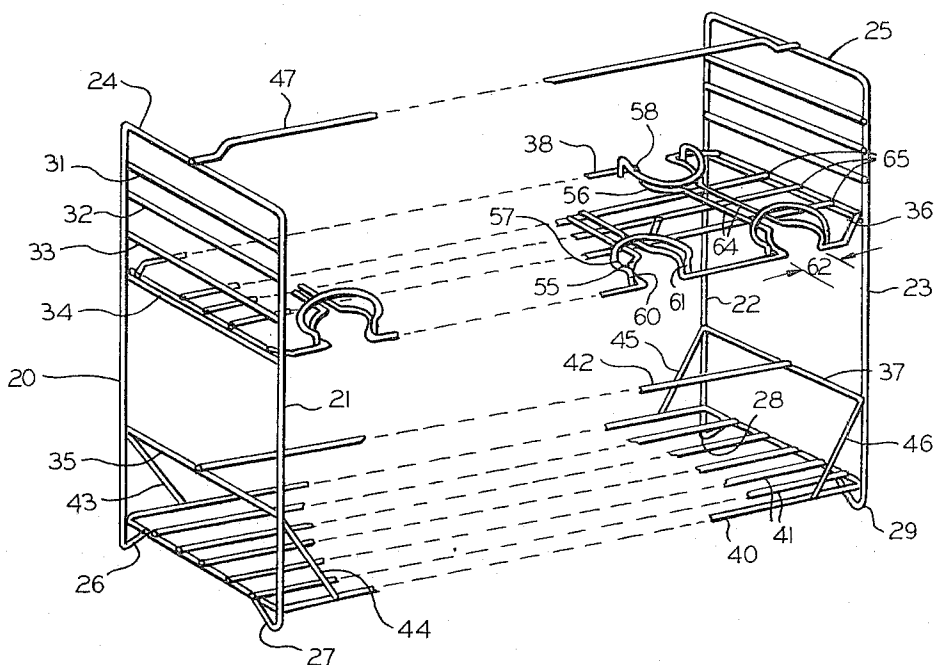
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[57]

ABSTRACT

A wire basket-like stand has a vertically adjustable rack shelf with longitudinally displaced pairs of spaced parallel, vertically disposed, coaxial, round funnel openings with front slots on each funnel opening. The upper funnel openings are sufficiently larger than the lower funnel openings to receive and embrace a tapered glassware device at two axially displaced circumferential positions. Thus, the openings provide the glassware device with not only horizontal support, but also vertical stability.

3 Claims, 4 Drawing Figures



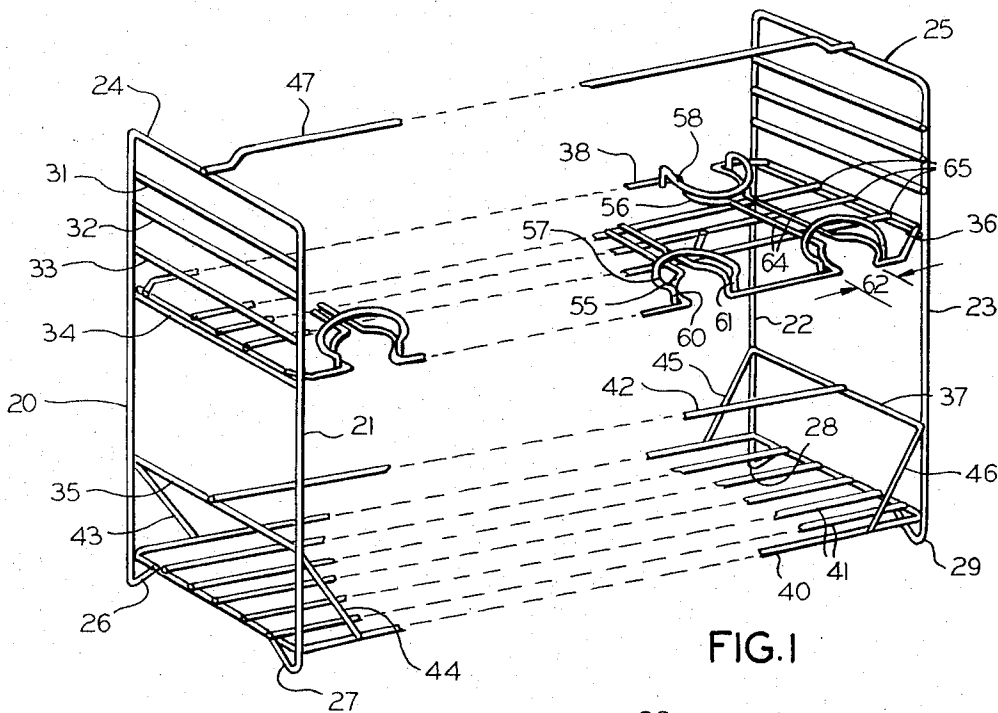


FIG. 1

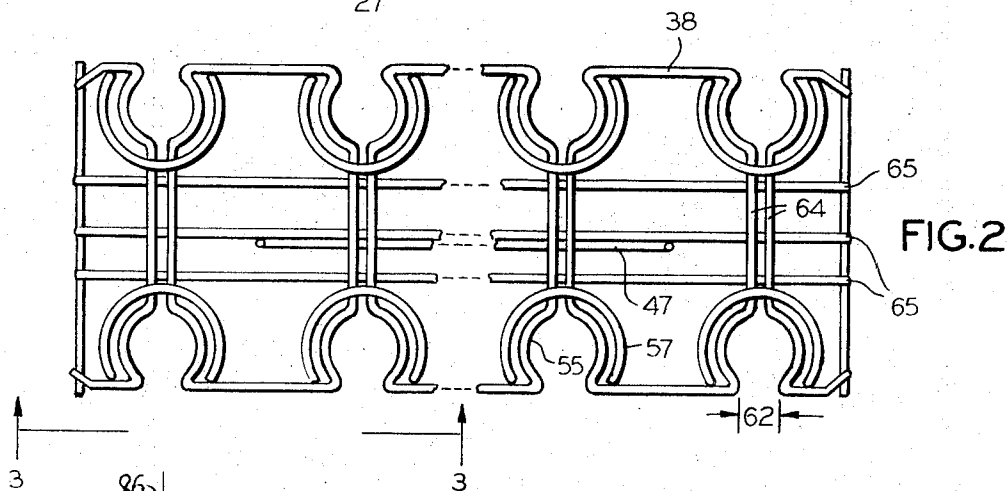


FIG. 2

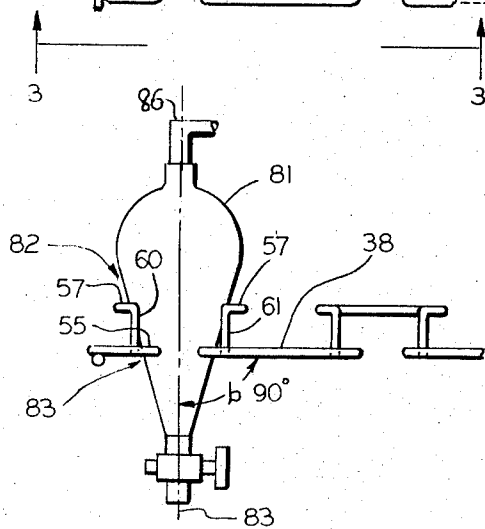


FIG. 3

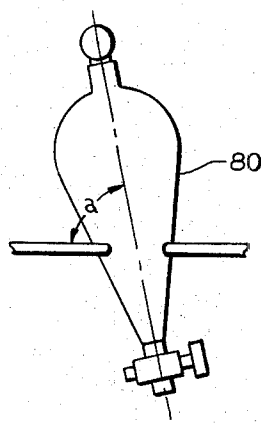


FIG. 4
(PRIOR ART)

ADJUSTABLE LABORATORY GLASSWARE FUNNEL SUPPORT

This invention relates to racks and stands and, more particularly -- although not exclusively -- to racks and stands for laboratory glassware, especially those with funnel-shaped lower surfaces.

Laboratory glassware is a distinctive type of product exemplified by test tubes, beakers, flasks, dishes, separators, and the like. The characteristics of most laboratory glassware devices make them relatively expensive, easily broken, and sometimes hard to handle. The nature of their use requires them to be washed, sterilized, dried, transported, and stored. These and other characteristics make it desirable to provide specialized racks and stands for such glassware.

The term "glassware" is used herein because it is a widely recognized term signifying a class of products used primarily in laboratories. However, it should be understood that, as used therein, the term is also broad enough to include all similar products regardless of the material used to make them, for example, such as plastics, stainless steel, and the like.

The term "funnel" is used herein to describe any and all laboratory glassware or similar products which have a tapered bottom or sidewall. In particular, the term includes products of the described type which cannot conveniently stand alone. Also, this type of glassware requires a great variety of vertical height adjustments. Some funnels have long stems, some have short stems, some are relatively wide, and some are relatively narrow. Thus, a rack or stand for this type of glassware should have great flexibility.

Accordingly, an object of this invention is to provide new and improved racks and stands, especially -- although not exclusively -- for laboratory glassware. Here, an object is to provide racks or stands adapted for use with any of many different types or sizes of funnel glasswares. In this connection, an object is to provide fully adjustable racks and stands which may be easily adjustable to accommodate glassware having virtually any stem length.

Another object is to provide an easily transportable rack or stand. Here, an object is to provide funnel racks or stands which withstand high sterilization temperatures, low refrigerator temperatures, and avoid damage from virtually all liquids, oils, chemicals, and other attacking agents.

Yet another object is to provide sturdy low cost easy draining, chip-proof, and convenient racks and stands. Still other objects will readily occur to those skilled in the art.

In keeping with an aspect of the invention, these and other objects are accomplished by a wire, basket-like stand including an elongated rack shelf having on either side thereof longitudinally displaced pairs of spaced parallel, vertically disposed, coaxial, round funnel openings. The upper funnel openings are sufficiently larger than the lower funnel openings to receive and embrace a tapered glassware device at two axially displaced circumferential positions. Front slots are formed on each funnel opening to facilitate insertion or removal of funnel-shaped glassware. Thus, the openings provide not only horizontal support, but also vertical stability.

The nature of a preferred embodiment will be understood best from a study of the attached drawing wherein:

FIG. 1 is a schematic perspective view of a funnel stand showing a preferred embodiment incorporating the principles of the invention;

FIG. 2 is a plan view of a movable shelf or rack used in the stand of FIG. 1;

FIG. 3 is a vertical elevational view of the stand taken along line 3--3 of FIG. 2; and

FIG. 4 shows how the prior art stands lack the facility required to give vertical stability to funnel-shaped objects supported on the stands.

The rack or stand of FIG. 1 is made primarily of spot-welded heavy gauge steel wire. The stand includes four vertical members 20-23, preferably made from two rods which are twice bent near their midpoints to provide a somewhat U-shape with the bottom of the U 24, 25 at the top. Two reverse bends 26-29 are formed on either end of the rods and placed at the bottom of the stand to provide feet therefor. A plurality of horizontal stringers 31-37 are welded, or otherwise attached, at their ends to the U-shaped vertical rod members 20-23. These stringers are vertically distributed along the length of members 20-23 to provide alternative height positions for supporting one or more separate piece-parts forming at least one shelf 38.

The bottom shelf 40 of the rack comprises a rectangular frame-like member welded to the bottom ends of verticals 20-23 and to the free ends of the reverse bends 26-29, whereby the reverse bends form 4 feet for supporting the rack with the shelf raised off the floor. A plurality of longitudinal stringers 41 run across the entire length of frame 40 where they are spot-welded thereto at their ends. Also, a longitudinal stringer 42 may be welded at either end to a central position on any of the horizontal stringers, as at 35, 37, for example. A longitudinal rod handle 47 for carrying the rack is welded to the center of each of the U-shaped ends 24, 25 on the rack. Diagonal corner bracing struts 43-46 are welded between the verticals 20-23 and the lower shelf rectangular frame 40, thereby making a strong and rigid structure.

In keeping with an aspect of the invention, the shelf 38 includes a plurality of round funnel openings 55, 56 longitudinally displaced along either side thereof. Paired with each round funnel opening is a second spaced parallel vertically disposed, and coaxially aligned, round openings 57, 58. The second opening is preferably formed from a single piece of wire having a circular bight terminating in downwardly extending support legs 60, 61 formed at either end of the bight. The legs 60, 61 are spot welded or otherwise attached to the frame member 38 on each side of the lower openings. The front of each of the round funnel openings has a slot 62 formed therein. Any suitable number of orthogonally positioned stringers 64, 65 may be welded to the frame 38 in order to give rigidity to the shelf.

The length and width of the shelf 38 are such that it may rest on any selected ones of the horizontal stringers welded between verticals 20, 21 and 22, 23. Thus, the shelf 38 may be raised or lowered simply by resting it at either end on two different horizontal stringers in matching positions at opposite rack ends. For example, shelf 38 is here shown as resting on stringers 34, 36.

The nature of the inventive concept may become apparent from a comparison of FIGS. 3 and 4. As shown in the prior art FIG. 4 device, a funnel-shaped glassware 80 is shown as tipped off vertical by an unknown

angle a, formed with respect to the horizontal. There is no easy and convenient method of or means for selecting a perfectly vertical position in this prior art device.

As shown in FIG. 3, the round funnel openings 55, 57 are shaped and proportioned to receive and embrace a tapered funnel-shaped glassware object 81 nested at two axially displaced circumferential positions 82, 83. Thus, as the funnel nests in openings 55, 57, the vertical axis 83 of the glassware funnel object 81 always forms a right angle b which is perpendicular to the horizontal.

There are many reasons why the vertical alignment of FIG. 3 is important. Here, by way of example only, FIG. 3 has been drawn with an angular connecting tube 86 attached to the top of the glassware 81 in any suitable manner. It is apparent that tube 86 leads to other laboratory equipment, probably with a rigid attachment. Therefore, if the funnel-shaped object 81 tips or is stressed to tip, there are forces likely to break the tube or to produce an adverse effect upon the entire laboratory set up. However, with the invention such a change in stress is not possible. The glassware 81 is securely held in a single, vertical position.

All of the wire rack and stand members are preferably dipped in a plastic material which covers sharp points and edges and protects all metal parts. While any suitable plastic material may be used, a chemically resistant neoprene rubber is preferred.

The appended claims are to be construed to cover all equivalent structures falling within the scope and spirit of the invention.

I claim:

1. A funnel stand for laboratory glassware comprising a stand and shelf made of rods or wires fastened together, plastic neoprene rubber material covering all of said

stand and shelf,

said stand comprising spaced apart inverted U-shaped vertical end members with displaced horizontal stringers attached in matched pairs across the closed end of said U-shaped members,

the ends of said shelf being shaped to be supported on oppositely disposed matched pairs of said stringers,

said shelf ends and said pairs of stringers making contact in only one horizontal plane,

said shelf comprising an elongated device with first openings distributed along the length of each side of the shelf in said one horizontal plane,

a second opening coaxial with said first opening to form coaxial pairs of openings,

said pairs of openings being spaced parallel and vertically disposed to form coaxial round funnel openings,

each of said funnel openings having front slots,

one of said openings of each coaxial pair being formed by a wire having a circular bight terminating in downwardly extending leg supports attached adjacent the front slot in the other of said coaxial pair of openings, and

each pair of coaxial openings including an upper opening having a diameter which is sufficiently larger than the diameter of the lower paired openings to nestingly receive and embrace a tapered glassware device at two axially displaced circumferential positions.

2. The funnel stand of claim 1 wherein said second opening is above said first openings,

3. The funnel stand of claim 1 wherein said second openings are below said first openings.

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