Nov. 3, 1953 G. E. BALCH 2,657,809

CONTAINER STAND

Filed June 13, 1949 2 Sheets-Sheet 1

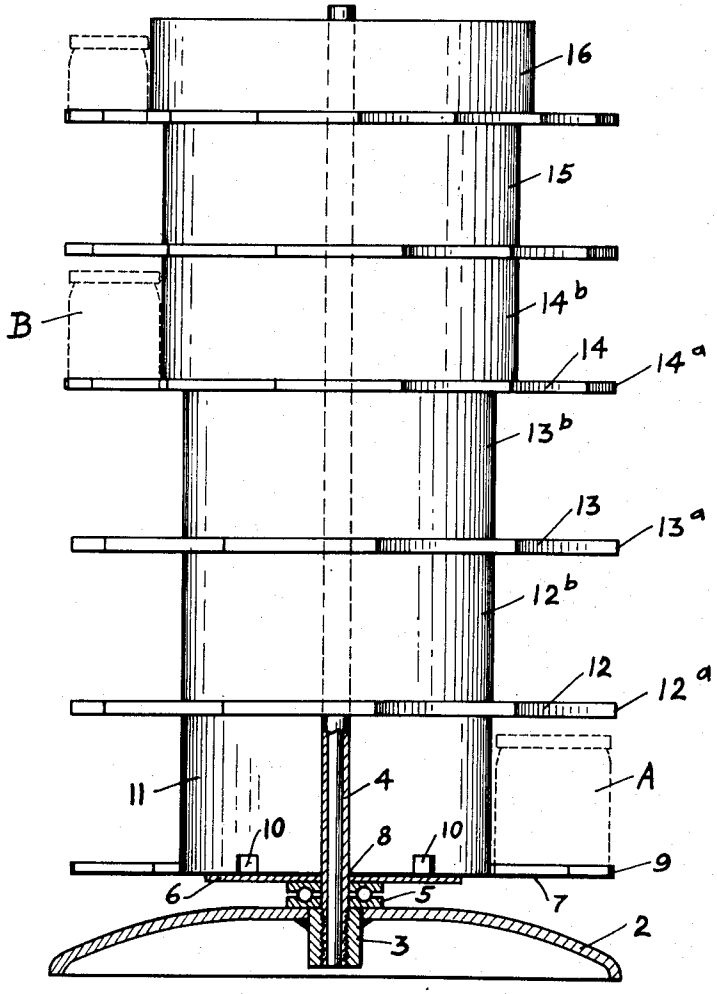



Fig. 1.

INVENTOR.
GEORGE E. BALCH.
BY
Christy, Parmelee & Strickland
ATTORNEYS.

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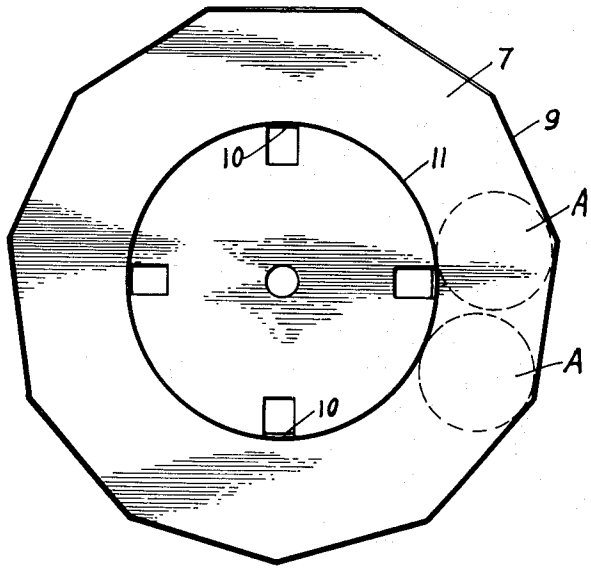



Fig. 2.

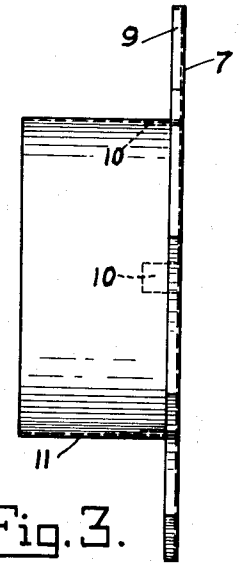



Fig. 3.

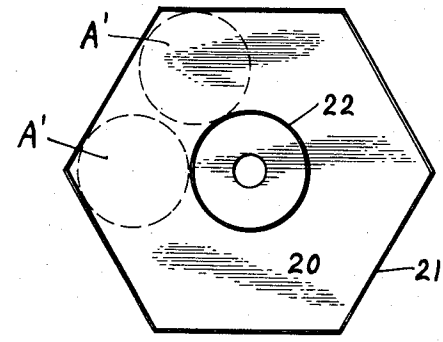



Fig. 5.

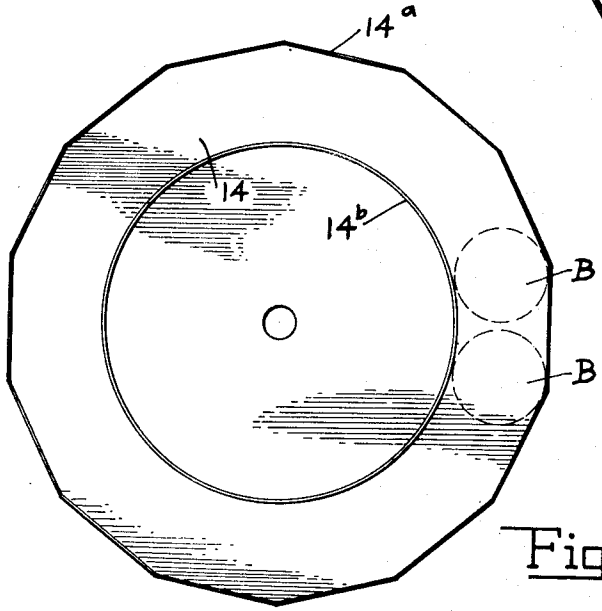



Fig. 4.

INVENTOR.
GEORGE E. BALCH.

BY Christy, Parmelee & Strickland

ATTORNEYS.

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# UNITED STATES PATENT OFFICE

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## CONTAINER STAND

George E. Balch, Pittsburgh, Pa.

Application June 13, 1949, Serial No. 98,704

4 Claims. (Cl. 211—77)

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This invention is for a multiple tray stand for holding a large number of containers, especially glass jars.

Many industries and shops find it necessary to keep on hand a supply of a large variety of small parts, bolts, screws, or other supplies. Glass jars with screw caps are commonly used for this purpose. Depending on the size of the parts, relative demand and other factors, jars of a range of sizes are often used. Typically they may use 4 oz., 8 oz., and 16 oz. jars. Even operators of small home work shops find this to be a convenient practice. Difficulty is encountered in providing adequate convenient shelf space for a large number of jars.

My invention is for a stand which will conveniently accommodate a large number of jars, either of one size, or of a range of sizes, and wherein all of the jars are easily accessible, but are restrained from shifting or upsetting, and if one jar is removed the others cannot move into its space. Moreover the invention provides a stand of economical, unique and inexpensive construction.

While the invention is especially applicable for use for jars which are used in the manner above described for small hardware, parts or supplies, the invention is also applicable to other uses, including storage or display of goods in cans or jars, and for various other purposes, and while I shall describe my invention particularly with reference to the specific use above noted, it will be understood that this is by way of illustration and not by way of limitation.

My invention may be more fully understood by reference to the accompanying drawings in which:

Fig. 1 is a side elevation, with parts thereof in vertical section, of a stand made in accordance with my invention, some of the jars being shown in place thereon;

Fig. 2 is a top plan view of one of the trays for holding eleven 16 oz. jars;

Fig. 3 is a side elevation of the tray shown in Fig. 2;

Fig. 4 is a view similar to Fig. 2, showing a tray of the same size as in Fig. 2, but arranged to hold fourteen 8 oz. jars; and

Fig. 5 is a plan view similar to Fig. 2, showing a smaller size tray, such as might be used in a stand for accommodating a fewer number of jars, the tray in Fig. 5 being adapted to hold only six 16 oz. jars.

Referring to the drawings, 2 designates a base which may be formed of sheet metal, or which may be cast. It is preferably square, but may be of any desired shape. It is provided with a threaded socket 3 at the center. If the base is pressed from metal plate or heavy sheet metal, the socket 3 may be formed as shown by welding

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an ordinary pipe coupling into a central hole in the base. Screwed into the socket 3 is a central shaft or post 4 which may be a piece of iron or other pipe. Resting on top of the base is a thrust bearing designated generally as 5, and which may comprise upper and lower members with ball bearings therebetween.

A circular metal plate 6 of heavy gauge is set on top of the thrust bearing 5. It has a central opening through which the post 4 passes, and its purpose is merely to give rigidity to the superimposed tray.

Resting on the plate 6 is the lowermost tray. It is preferably formed from flat sheet metal and has a flat bottom portion 7 with a central opening 8 through which the post 4 passes. It has an upturned lip 9 on its periphery, and it is polygonal in shape. The particular tray illustrated as the lowermost tray in Fig. 1 is shown in Figs. 2 and 3, and it will be seen that in this particular instance it is an eleven-sided polygon. The bottom of the tray has several ears or lugs 10 struck or punched upwardly therefrom, and around these lugs 10 is fitted a central collar 11. The collar 11 may be welded or otherwise secured to the lugs 10, or it may be otherwise fixed to the tray. The collar 11 is also formed of sheet metal, and it is concentric to the post 4. It is spaced inwardly from the peripheral flange 9, and the distance between the flange 9 and the outside of the collar 11 is just slightly larger than the maximum diameter of the jar which is adapted to be received on this tray. The height of the collar is somewhat greater than the height of the jar, plus the height of the peripheral flange 9.

For example, a standard 16 oz. jar has a 3⅝ inch maximum outside diameter, and is 4⅜ inches high. The peripheral flange 9 may conveniently be ⅜ of an inch high, so that the collar 11 in this instance may be 5 inches high.

The collar 11 may be either a polygon or circular, and as shown in Fig. 2 I have illustrated it as being fully circular. Its maximum diameter is such that the distance from any corner of the polygon radially to the outer surface of the collar 11 is only slightly greater than the maximum outside diameter of the jar. Because of this arrangement the jars fit into the trays as shown by the dotted lines in Fig. 2, the diameter of each jar coinciding with the radius drawn from a corner of the polygon to the center of the tray. Thus there is adequate room for each jar to be set into place, but the jars are restrained from shifting around. With the tray having eleven sides as shown in Fig. 2, eleven 16 oz. jars can thus be accommodated. If any one jar is taken out of place, the adjacent jars cannot shift into its location. This is quite important for the storage of parts of graduated sizes, as it aids in preventing the jars from getting mixed up, and keeping each jar

in its proper position with reference to the jars containing the smaller or larger parts. It also contributes to convenience in use, because the jars do not have to be pushed around after a jar has been removed, in order to make room for it to be replaced. This also contributes to neatness of appearance, since the jars are all uniformly spaced one from another, and aids in a more balanced loading of the stand.

The height of the collar is thus related to the overall height of the jar to be supported on the tray, and the diameter of the tray, the number of sides to the polygon, and the diameter of the collar 11 are all proportioned with respect to the jar.

In the particular assembly shown in Fig. 1, a second tray, designated generally as 12, is placed on top of the collar 11. This tray is here shown to be of identical size and construction to the lowermost tray, and it has an outer flange 12*a* corresponding to the flange 9, and a central portion or collar 12*b* corresponding to the collar 11. The collar 11 of the lowermost tray and of each succeeding tray therefore not only serves a function in keeping the jars properly located on the tray as above described, but it serves as a column for supporting the tray immediately below it, and for maintaining a proper spacing needed for removing and replacing the jars. In Fig. 1 a 16 oz. jar on the lowermost tray is indicated at A, and the letter A has likewise been used to designate each of the jars in Fig. 2. It will be seen that to remove the jar A from its position on the shelf in Fig. 1, it need only be lifted until the bottom of the jar clears the top edge of the flange 9, and then the jar may be lifted away horizontally. However if the jar be tilted out from the center of the stand, the clearance between the bottom of the tray 12 immediately above and the top of the jar is insufficient to let the jar fall out. The jar can only be removed by lifting it vertically, and then moving it horizontally.

In Fig. 1 I have shown a third tray designated 13, which is supported on the collar 12*b* of the tray immediately below it, and it has a peripheral flange 13*a* similar to the flange 9, and a collar part 13*b* similar to the collar part 11. In the particular assembly shown in Fig. 1, the lowermost three trays therefore are of like dimensions. Each is supported in proper spaced relation to the preceding one by the collar part 11, and the collar 11 is of sufficient diameter so as to reinforce the bottom of the tray above it, and even though the trays are made of light sheet metal, these collars, acting as circular columns, prevent the trays from sagging.

A stand may thus be constructed with as many similar trays as desired, or it may be constructed to have several similar trays, but which are proportioned to receive jars of different sizes. This is illustrated in Fig. 1 where the fourth tray from the bottom, designated generally as 14, is of like construction to the three previously described, except that it is a polygon having fourteen sides. It has a peripheral flange 14*a* and it has the central column or collar portion 14*b* similar to the part 11 of the lowermost tray. However the standard 8 oz. jar has a maximum outside diameter of 2⅞ inches, and is 3½ inches high. Therefore in order to confine each jar to its position at a corner of the polygon, the collar 14*b* is of larger diameter than the collar 11 of the lowermost tray, or the collars 12*b* and 13*b* of the similar trays above the lowermost one. Also since the height of the 8 oz. jar is less than that



of the 16 oz. jar, the height of the collar 14*b* would in this instance be 4⅛ inches from the bottom of the tray to the top edge of the collar. This again would provide a proper clearance between the tray and the next one above it, so that the jars could not fall out, but can be easily removed by lifting them and then moving them horizontally. In Figs. 1 and 4 the 8 oz. jars have been designated as B. With the tray 14, as with the tray previously described, the diameter of each jar accommodated by the tray coincides with a radius drawn from the collar of the polygon to the center of the tray, so that the jars can only be set at the corners of the polygons, and the jars cannot shift out of position. Thus each tray has at the base of the collar an annular shelf with means, preferably the flange of polygonal form, for restraining the individual jars from shifting out of their respective stations or positions.

While the tray 14 has a greater number of sides than the trays under it, its overall diameter is the same as the overall diameter of the trays under it, and the overall diameter of all of the trays in the stand is preferably the same, and preferably slightly less than the width and length of the base, so that when two stands are set side by side with their bases in contact, the edges of their respective trays will not interfere with one another.

In Fig. 1 I have shown a fifth tray designated 15, and it is of identical construction and size to the tray 14. I have shown still an uppermost tray 16 which, although not shown in plan, would have seventeen sides, and would accommodate seventeen standard 4 oz. jars which are 2½ inches of maximum outside diameter, and 2½ inches high. In this case the central collar 16 is of even greater diameter, although the overall diameter of the tray is the same.

In the stand as thus constructed, any number of trays may be set one upon the other, and they may be set in any desired order. In other words, the trays for the largest size jars could be at the top instead of at the bottom as shown, and as previously indicated, all trays could be selected to accommodate the same size jars, but in most instances it is desirable to have graduated trays for accepting jars over a range of sizes. In each case the central collar or column portion serves to maintain the proper spacing between it and the tray immediately above for the size of jar which is to be carried on the tray and supports or reinforces the superimposed tray. Since each tray rests upon the one immediately under it, the whole stand of trays will rotate as a unit. Hence only the single ball bearing immediately above the base is necessary to permit the ready turning of the stand. By using a piece of pipe as the center post, it is only necessary to substitute a longer piece of pipe in the event that more trays are to be used.

The display stand as thus constructed is simple and inexpensive to manufacture. By using polygonal trays and a properly dimensioned central collar portion, each jar or container is confined to a given position on the tray, it cannot fall off, and the containers are all uniformly spaced. Access to any given container may be had simply by rotating the whole stand, which rotates freely and with little effort. By proper selection of the trays which can be made in a range of polygons, each user may select a set of trays which are most adaptable for the particular use which he has in mind. A radio repair shop, for example, might

require a greater number of jars of small size, whereas some plant for assembling or repairing larger machines might require a predominance of jars of larger sizes. Thus by providing a prospective customer with a selection of trays, he can readily provide a stand which is best adapted for his particular purposes.

Not only does the invention lend itself particularly to the storage of small parts for use in shops, but it can be adapted to the display or storage of canned goods, baby foods, paint cans, and the like.

In the views so far described, I have shown trays of relatively large diameter adapted to receive quite a large number of containers. The invention, however, is not confined to any particular size of tray. As shown for example in Fig. 5, it may be a polygon of a substantially lesser number of sides and still be adapted to receive and retain in position jars of a given size. Fig. 5 shows a hexagon adapted to receive and contain six 16 oz. jars. The tray in this case has a bottom 20, an upturned peripheral flange 21, a central collar 22, and the 16 oz. jars are designated A'. As a matter of actual example, the tray in Fig. 5 has a maximum overall dimension of less than 12 inches, whereas the tray in Fig. 2, which accommodates the same size jar has an overall dimension of less than 12 inches, whereas the tray in Fig. 2, which accommodates the same size jar has an overall dimension of slightly over 17 inches. The smaller size trays may be found useful where the stands are to be placed in standard size 12-inch storage bins. Aside from the dimensions, however, there is no difference in principle. In some instances the central post or pipe 4 may have its upper end screwed into an overhead coupling or socket similar to socket 3, in which case the base 2 need not be provided, but the coupling 3 at the bottom retains the thrust bearing 5 in place. Thus the stand may be suspended from an overhead fixture or bracket without alteration of its construction.

While I have shown and described a preferred embodiment of my invention, it will be understood that the invention is not limited to the particular construction therein described, or to the particular uses mentioned, and may be otherwise embodied within the contemplation of the following claims.

I claim:

1. A multiple tray holder for containers comprising a central supporting post, a plurality of polygon-shaped trays set one above the other on the post, a narrow upturned peripheral flange on each polygonal edge of the tray for retaining containers on the tray, each tray also having a round collar element fixed thereon concentric with the post and on which the superimposed tray rests, the height of the collar being greater than the height of the container which the tray will accommodate, plus the height of said flange, the diameter of the collar element being such that the radial distance from any corner of the polygon to the outside of said element is just slightly larger than the diameter of the container to be placed on the tray, and a plurality of containers on the tray corresponding in number to the number of corners on the tray, the diameter of the containers being such that they will be received on the tray at the corners but not intermediate the corners of the polygon-shaped trays, the height of the containers being slightly less than the height of the collar element but sufficiently high that it must be lifted vertically and then removed horizontally to clear the flange.

2. A multiple tray holder comprising a central supporting post, a stack of polygon-shaped trays set one above the other on the post, a narrow upturned peripheral flange on each polygon edge of the trays, the tray corners being arranged an equal radial distance from the center of the post, containers positioned on the trays at the polygon corners, each tray having a circular collar fixed concentrically thereon, said collars acting to support superimposed trays of the stack, the height of the collars being greater than the height of the containers supported on the trays plus the width of the up-turned flanges, the diameter of the collar being such that the radial distance from an inside corner of a polygon to the outside of the collar is slightly greater than the diameter of the container supported thereon, whereby such containers when positioned on a tray at the inside of a polygon corner cannot shift its position on the tray.

3. A multiple tray holder as defined in claim 2 wherein a plurality of trays have substantially the same overall diameter with the polygon trays having a different number of sides and the circular collars of the different trays being spaced from the flanges on the edges of the trays so that circular containers of different diameters will fit into the corners of the different trays between the flanges and the outside of the collars with a fit that prevents the containers from shifting position on the trays.

4. A multiple tray holder for holding a plurality of individual removable containers and designed to prevent accidental removal of the containers comprising a base, a post rotatably mounted in the base, a series of trays centered in the post, all trays being of equal diameter whereby each one overhangs the one beneath to the same extent, each tray having a narrow peripheral flange thereon, a collar on each tray spaced inwardly from the flange a distance equal to the diameter of each container and spaced outwardly from the post to support the superimposed tray between its center and its periphery, the height of the collar being slightly greater than the height of the container plus the height of the peripheral flange whereby each container is retained on its tray by cooperation of the flange, overhang of the tray above, and width of the tray between the flange and collar and cannot be removed accidentally by tilting, it being necessary to lift each container vertically and then shift it horizontally to remove it, and the configuration of each tray providing means to keep each individual container on a tray spaced from adjacent containers on the same tray so that the containers may be grasped and lifted for removal without interference from other containers on the same tray.

GEORGE E. BALCH.

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