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W. WALSH
INTERNAL FITTING FOR JARS, BOTTLES, CANS, BOXES, SHOWCASES,
AND OTHER HOLLOW CONTAINERS
Filed April 11, 1938

2,279,426

2 Sheets-Sheet 1

Fig. 1.

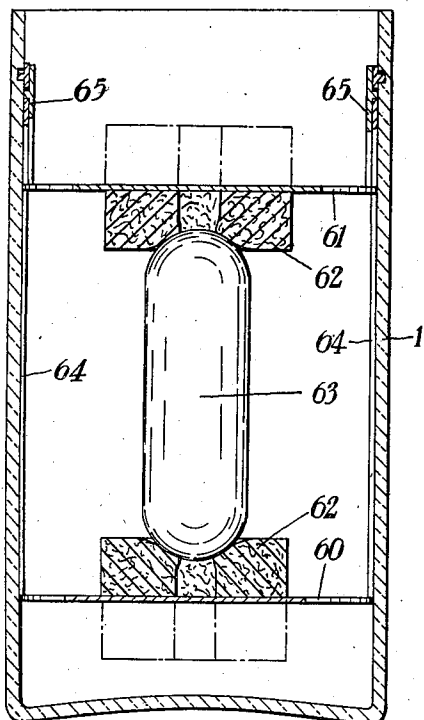


Fig. 2.

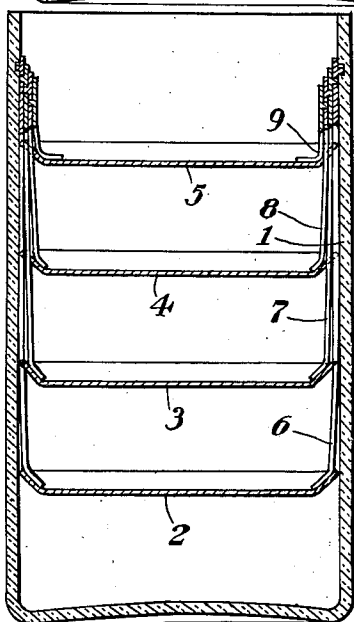
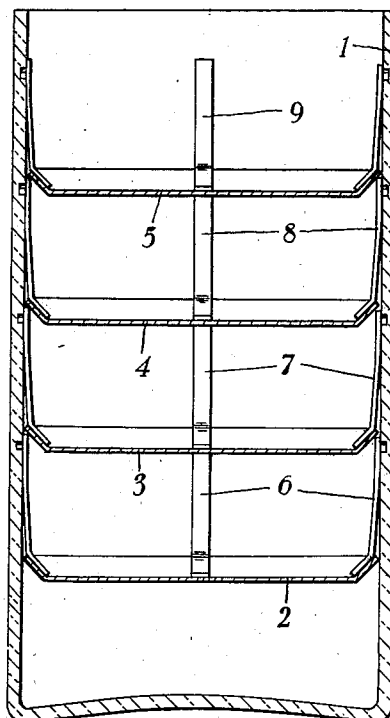
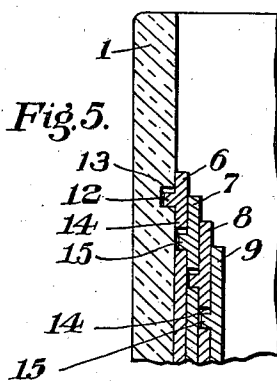


Fig. 4.

Fig. 5.



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2 Sheets-Sheet 2

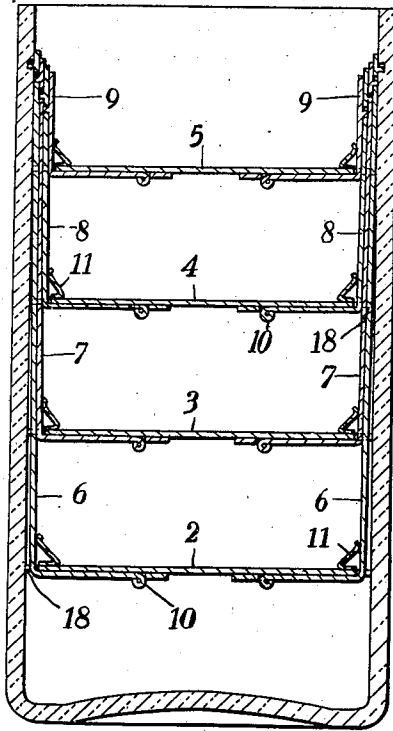


Fig. 3.

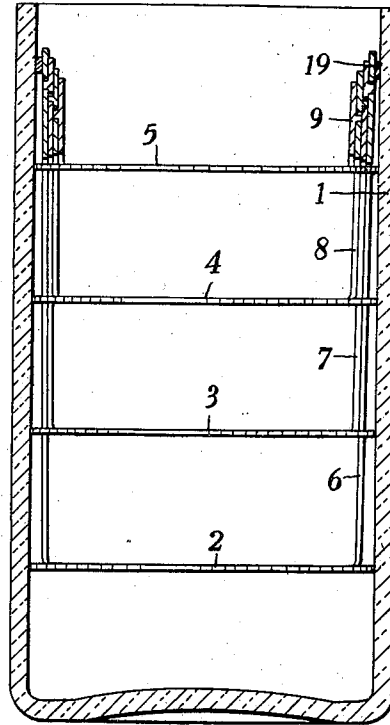


Fig. 6.

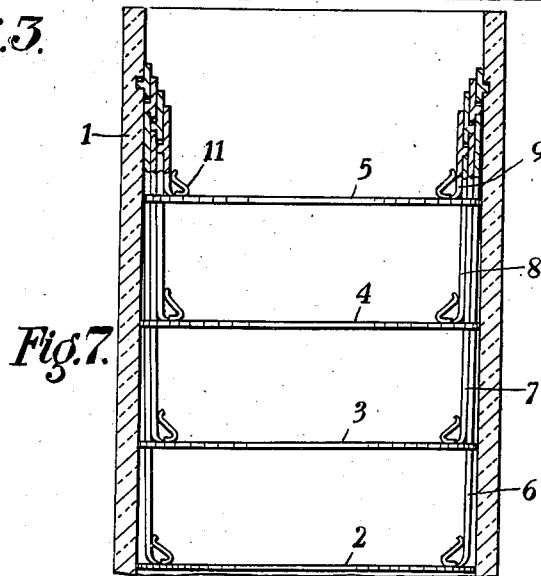


Fig. 7.

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UNITED STATES PATENT OFFICE

2,279,426

INTERNAL FITTING FOR JARS, BOTTLES, CANS, BOXES, SHOWCASES, AND OTHER HOLLOW CONTAINERS

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Application April 11, 1938, Serial No. 201,396
In Great Britain May 7, 1937

5 Claims. (Cl. 220—22)

This invention concerns an internal fitting for hollow containers, which expression is intended to include, where used in this specification and in the appended claims, containers such as jars, bottles, cans, boxes, show-cases, and the like.

It is an object of the present invention to provide means whereby a container can be divided into compartments by means of shelves or partitions which are readily removable and which enable the contents of the container in the various compartments to be kept separate and prevented from intermingling.

Another object of the invention is an internal fitting for containers which is suitable for use where the container is to be used for the transport, storage or display of chemicals such as crystalline minerals, and where it is desired to prevent contact between various layers of chemicals, or the settling down or gravitation of heavier materials to the bottom of the container.

A still further object of the invention is the provision of a fitting readily adaptable to various sizes of containers and by means of which the volumes of the compartments formed can quickly be changed and fragile articles can be safely packed.

With these objects in mind, my invention comprises in its broad aspects an internal fitting for hollow containers comprising, a plurality of shelves or partitions, each provided adjacent its periphery with a plurality of supporting members and adapted to extend upwardly of the shelf or partition to which it is attached when the member is inserted in the container and means for retaining the supporting members in position in the container, so that the shelves or partitions are held in spaced relationship one above the other.

The method of locating the fitting in position in the container may take a number of forms, for instance the supports themselves may be arranged to extend upwardly from the shelves or partitions and be of springy strip material so that they tend to spring outwards and thus hold or suspend the shelves or partitions in place at spaced distances in the container.

With such an arrangement, each upright support may be separately mounted on the container wall by means of a stud or projection engaging an indenture in the container wall, a plurality of such indentures being provided at predetermined intervals or alternatively the corresponding supports of the different shelves or partitions may be adjacently disposed and arranged to overlap one another and be provided with means

such as a pin and slot arrangement whereby each support is engaged with the next outer support, the outermost support being provided with means of attachment to the container wall.

5 If desired, in an arrangement in which two shelves or partitions are employed, the sides of the two shelves or partitions facing one another may be provided with a layer of resilient cushioning material, for example sponge rubber, so as to render the fitting suitable for packing fragile articles.

These and other features of the invention will be more completely understood from the following detailed description which is given in conjunction with the accompanying drawings, in which:

Figure 1 is a vertical section through a container having an internal fitting according to the invention and particularly adapted for use where fragile articles are concerned.

Figure 2 illustrates a modification of the invention wherein the supports for the shelves are independently mounted.

Figure 3 is a sectional view showing another method of attaching the supporting means to the shelves.

Figure 4 is a view similar to Figure 3 illustrating a modification in which shelves of dished formation are employed.

Figure 5 is an enlarged fragmentary view of a detail of Figure 4.

Figure 6 is a view similar to Figure 3 illustrating a modification in which a friction grip is employed to support the shelves.

Figure 7 illustrates a modification of the fitting shown in Figure 6 but in which the outermost supporting member is pressed outwards, so as to cause a projection at the upper end to engage with an indenture in the walls of the jar.

Referring to Figure 1 of the drawings, the reference 1 indicates a container of circular cylindrical form fitted with partitional means comprising a series of spaced shelves which are here in the form of flat circular discs 60 and 61.

Each of the discs 60, 61 is provided with a pair of supporting arms 64 and 65, respectively formed of strip material and arranged at diametrically opposite sides of the discs. The arms 64, 65 are attached to the peripheries of the shelves in a suitable manner, for example, by riveting, stapling or adhesion and the arms 64, 65 are of different lengths as shown and lie substantially parallel to the container wall.

The arms 64, 65 are, in this embodiment, provided of springy material and in the uncom-

pressed condition are splayed outwards from the shelf to which they are attached, so that when in position in the container they press outwardly, and are given lengths corresponding to the size of the compartment which the shelves are intended to define. At its upper end each of the arms 6 is provided on its outer side with an integral projection or stud 12 as shown in Figure 5 adapted to enter a recess or indenture 13 provided in the wall of the container. These projections or studs 12 rest in the indenture 13, a similar stud on each of the other arms 65 engaging with a corresponding indenture the arm 64. It is clear that, assuming the container to be empty and standing upright, when the disc 60 is inserted therein the arms 64 are brought into a substantially vertical position and therefore press apart due to their inherent springiness. The disc is then moved downwardly in the container until studs 12 snap into recesses 13, thus locating the disc in position.

In order that the container may be made suitable to contain fragile articles, such as glassware, the two partitions or shelves 60 and 61 illustrated in this case are each provided on the sides thereof facing one another with a cushion 62 of resilient material, for example sponge rubber, by which the fragile article, shown by way of example as a glass cylinder 63, is adapted to be resiliently supported and cushioned, whereby the article is prevented from moving into contact with the side of the container. Although only two shelves have been shown, it is to be understood that a larger number of shelves may be provided if desired in which case the rubber or like cushions 62 will be arranged on both sides of the shelves, or at least the intermediate shelves. In this arrangement a vertical series of indentures are provided of ladder formation in the jar so that the retaining uprights provided with studs will lock into an indenture according to the height of the article and thereby be firmly secured by pressure. In this case the outward flexible uprights should be of extra strength and to be provided with a snap clasp security grip. Any pair of indentures can be engaged by the studs on arms 65 to adjust the height of disc 61 above disc 60, so that the sizes of the compartments of the container can be varied and thus the container can be adapted for use with fragile articles of different sizes.

The resilient cushioning means described above, may be applied to any of the forms of shelves or uprights in any of the fittings previously or hereafter described.

The modification shown in Figure 1 is particularly useful for the packing and transit of fragile articles, such as delicate glass or porcelain articles since by means of the invention, they are retained in position between the two shelves or partitions without touching the inner wall of the container.

While the invention has been shown as applied to a container of circular cylindrical form in Fig. 1, it is to be understood, that the shape of the container may be readily modified, for example the internal fitting as shown in Figure 1 could be equally well applied to a parallel sided container having a square base, in which case, the shelves would be square instead of circular so as to conform with the inner walls of the container.

A modified form of fitting is shown in Fig. 2 wherein the shelves instead of being constructed of discs are of dished formation and in this ex-

ample the method of mounting the shelves is modified. Each of the shelves is provided with two pairs of oppositely disposed supports, which are attached at their lower ends to the inside of the inclined walls of the shelf, by riveting, stapling, or adhesion or by other suitable means.

The supports are in strip form but are each engaged with the wall of the container by the pin and slot connection, that is to say each shelf is independently supported at the height of each pair of strip uprights, whereby each shelf bevel rests on the top of the preceding support which with the flexible uprights and succeeding stud gives a double pressure security grip. The stops at the top of the container for the two highest flexible uprights form a double security lock for all the uprights if the container is tilted or jolted in transit.

Figure 3 illustrates a form of container wherein the shelves are in the form of flat discs 2, 3, 4 and 5 respectively provided with two arms 6, 7, 8 and 9 which extend upwardly from diametrically opposite points of each disc and the arms are preferably formed of rigid material, such as metal.

The arms 6, 7, 8 and 9 are each angled near their lower ends and the lower extremity of each is attached to the underside of the corresponding disc by a hinge as indicated at 10. A small blade spring 11 is provided on each disc adjacent each supporting arm and its free end is designed to exert a yielding pressure on this arm when the latter extends perpendicular or almost perpendicular to the disc. The springs 11 are attached to the corresponding discs by suitable means, such as by riveting.

The arms are supported by the pin and slot system described in connection with Figures 1, 2 and 5 and recesses 18 are provided in the discs to accommodate these arms, the recesses gradually increasing in depth from the disc 2 to the disc 5.

A further modification is shown in Fig. 4 wherein the shelves are also of dished formation but the supporting strips instead of being individually suspended on the container wall as in the case of Figure 2, are attached together by the pin and slot connection arrangement illustrated in Figure 5. The outermost support 6 is provided with a stud for engaging with a recess or indenture in the wall of the container as shown. The supporting strips for the different shelves in this case are of different lengths so as to cause the shelves to be spaced apart at predetermined intervals, and the strips of the different shelves are arranged to interlock with one another, the rims of the shelves 3, 4 and 5 being provided with recesses to accommodate the strips of the lower shelves so as to permit the peripheries of all the shelves to conform with the wall of the container.

The strips are formed of spring material, so that when they are secured to the inclined portions of the shelves they are splayed outwards, causing the strips of the different shelves to be interlocked with one another, and the outermost strips to engage in the recesses provided in the wall of the container.

Figures 6 and 7 illustrate modifications of the fitting of Figure 3. In Figures 6 and 7, however, flexible uprights are employed, and the supporting arms, although of strip form, are not hinged to the respective discs but are formed integrally therewith, each extending from the bottom of a

peripheral recess and increasing in depth from the disc 2 to the disc 5.

As regards the method of mounting the arms or supports 7, 8 and 9, the same pin and slot type of interconnection is employed as shown in Figure 5 but in Figure 6 the manner of retaining the outer arms 6 on or in association with the walls of the container is changed, the necessary support being obtained by frictional means, namely by a rubber banding 19 exerting a frictional force on the wall of the container. The flexible strips 6 are secured by pressure and overlapping.

It will however be apparent that the pin and slot method of retaining the outer arms 6 may be employed if desired, the necessary indenture being provided in the wall of the container as shown in Figure 3.

In Figure 3, the arms or supports 6, 7, 8 and 9 are of rigid construction while in Figures 5 and 6 they are flexible and although they are inset in the shelves they are splayed outwards.

In Figure 7 the outer arms 6 are shown supported in a manner similar to that employed in Figure 3 but it is to be understood that they may be equally well supported by means of a rubber banding such as that shown in Figure 6, or if desired, a spring ring of segmental form capable of conforming with the inner upright 9 of the container may be employed as a further support.

In the arrangement shown in Figures 6 and 7, it is preferred to make the supporting arms of the discs, and especially arms 6, of spring material, such as springy sheet metal strip, and to secure them to the discs in such a way as to ensure that when in position in the container they exert a resilient pressure on the walls of the latter or on the next strip, as the case may be.

If desired, in the case of Figure 7, the uprights of the opposite flexible supporting arm may be cased on the outer side with rubber and arranged to overlap the preceding arm, the second blade spring being eliminated.

The embodiment shown in Figure 7 is of advantage where narrow jars or like containers are concerned, as the uprights can be contracted by pressure acting on the blade springs.

The fitting according to any of the constructions illustrated can be utilised directly, or can be readily adapted for utilisation as the case may be, with containers of any shape in the horizontal or transverse section. The shapes of the shelves will, preferably, also be adapted to the form of the container and the shelves will preferably fit as closely as possible to the inner wall or walls of the container.

An internal fitting constructed according to the present invention has a wide field of utility. Such a fitting can be used in practically any container where it is desired to store or pack articles, substances, materials, and so on in compartments. For example, the fitting may be used in bottles for containing minerals of crystalline structure which are not homogeneous or vary in density or hardness. Where such crystalline bodies are massed together they tend to deteriorate, either by breaking up by impact with one another or by conglomeration into particles of larger size, or by deliquescence. By employing a fitting according to the invention and dividing the container into a plurality of compartments, the load on the material in the lower compartment or compartments is relieved of the weight of the material in the upper compartment or compartments.

Where the materials to be stored, packed or exhibited easily deliquesce, the shelves or partitions can be made of absorbent material or be coated or covered with an absorbent layer of moisture-absorbent material.

The fitting or the various elements thereof can be of any suitable material. For example the shelves or partitions may be of glass, light or heavy metal, iron, steel, wood, artificial resin, stout cardboard or millboard, depending on the use and strain to which the fitting is liable to be subjected and on the materials with which it is to come into contact.

The suspension strips or arms described above may also be of any convenient composition, and where springiness is required they might advantageously be made of strip metal, whalebone, cane or the like.

I claim:

1. An internal fitting for hollow containers, comprising a plurality of spaced superposed shelves, a plurality of supporting arms attached to each shelf and arranged longitudinally of the container and in overlapping relation with the arms on the adjacent shelves, said arms each being provided with a stud near the upper end thereof and being made of springy material, and corresponding indentures provided in the inner wall of the container and in each of the outer arms to receive the studs on the arms of adjacent shelves, whereby the shelves are secured and held in position.

2. An internal fitting for hollow containers, comprising a plurality of shelves each having spaced around its periphery a plurality of locating strips of spring material adapted to lie in alignment with the corresponding strips on the other shelves and to press outwardly towards the walls of the container when the fitting is in use, and co-operating pin and slot means between the contacting faces of the successive pairs of adjacent strips forming a positive connection between the strips, and means for retaining the outermost strips of each set of aligned strips in position adjacent the inner wall of the container.

3. An internal fitting for hollow containers, comprising a plurality of shelves, a plurality of supporting arms hingedly attached to each of said shelves, spring means on said shelves for pressing said arms outwardly toward the inner wall of the container when the fitting is in use, the arms on one shelf being arranged in overlapping relation with the arms on adjacent shelves and means for retaining said arms in releasable engagement with each other and in supporting position in the container.

4. An internal fitting for hollow containers comprising, a plurality of shelves, a plurality of supporting arms attached to each of said shelves and adapted to press outwardly towards the inner wall of the container when the fitting is in use, the corresponding arm of each shelf overlapping one another and being provided with means whereby the support of one shelf is secured to the support of the next shelf, and the outermost support being provided with means of attachment to the container wall.

5. An internal fitting as claimed in claim 1, in which cushioning means are provided on adjacent faces of adjacent shelves and adapted to be held in contact with an article supported between the shelves by the engagement of the studs and indentures on the arms.