

Jan. 6, 1970

R. E. BARTH ETAL

3,487,921

CONTAINER

Filed Aug. 14, 1968

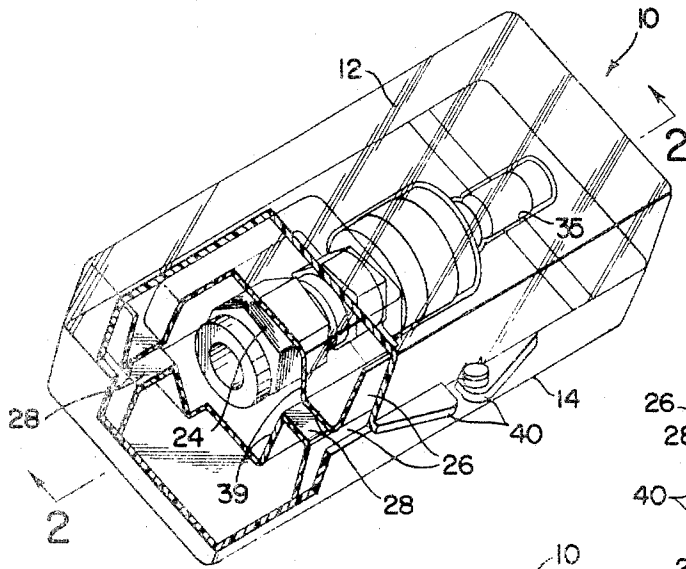


FIG. 1

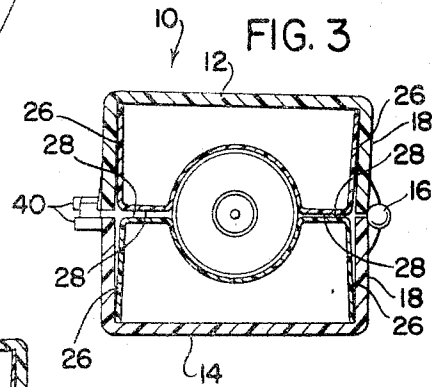


FIG. 3

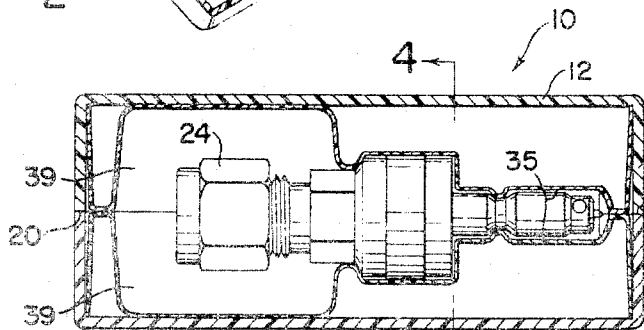


FIG. 2

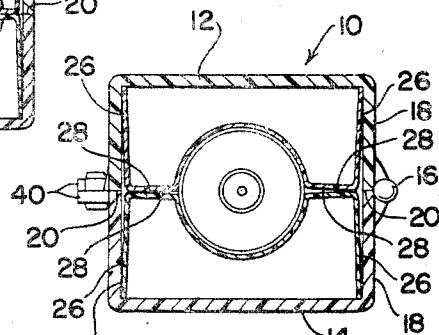


FIG. 4

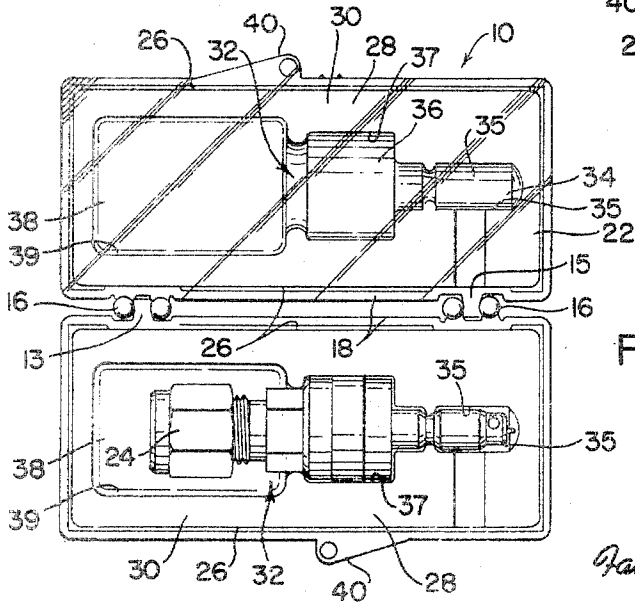


FIG. 5

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3,487,921
CONTAINER

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Filed Aug. 14, 1968, Ser. No. 752,585
Int. Cl. B65d 85/62

U.S. Cl. 206—65

7 Claims

ABSTRACT OF THE DISCLOSURE

This invention relates to a container for housing a precision instrument or apparatus of delicate construction. The container has upper and lower portions and disposed in each portion is shell means which is shaped to surround the instrument and hold it cushioned in place, immovably spaced from the upper and lower portions of the container. The shell may be molded to any desired shape to encompass any particular instrument.

BACKGROUND OF THE INVENTION

Packages for instruments of the type with which this invention is particularly concerned, quick connect couplings, are intended to cushion the closely machined coupling component in a substantially fixed position, thus to prevent impact damage, contamination by dust or disengagement of the coupling nut under the influence of vibration during shipping. Also, it is desirable that the container be partially transparent to allow a prospective purchaser to observe the fitting on display and to permit ready inspection of the fitting for inventory purposes. Additionally, it is important that the package be designed to be as universally applicable as possible, such that it may accommodate quick connect components having any one of a number of different sized coupling nuts.

The particular combination of features required to meet these parameters is not to be found in the prior art, which contains various kinds of specialized packages, particularly packages of a general type which are adapted to contain vials of medicines, delicate instruments such as relays, stabilizers or surveying equipment, or various vibration sensitive electron tubes. Thus, a definite need has been met by this invention.

BRIEF DESCRIPTION OF THE INVENTION

This invention comprises a container for packaging a coupling component and includes a box having two halves hinged together along one edge. Snap lock latching means are provided on an opposite side or edge of the box for the purpose of locking the two halves together at desired times.

Disposed within the box are two substantially identical shell means, one in each half, and each of which substantially fills the half in which it lies. Depressions or hollows are formed in each shell means and oppose or face one another when the box is closed so as together to form a multi-chambered recess adapted to hold a coupling component.

A plurality of the chambers are adapted to surround the component rather closely and cushion it in place. The third chamber, which is relatively larger than the others, is adapted to envelop a portion of the component which may, from piece to piece, vary substantially in dimension. The box includes at least one half which is transparent, and the shell means disposed in that half is of similar properties. This construction is intended to permit one to observe the coupling component on display and, for inventory purposes particularly to ascertain its size and character without the necessity for unpackaging the component.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a container which incorporates the principles of this invention and having a coupling component received therein;

FIG. 2 is an elevational view, partially in section, of the container of FIG. 1 broken along lines 2—2;

FIG. 3 is an elevational view of the container as it is about to be closed, broken along lines 4—4 of FIG. 2;

FIG. 4 is an elevational view similar to FIG. 3, but showing the container closed, and again broken along lines 4—4 of FIG. 2; and

FIG. 5 is a plan view of the container in open position.

PREFERRED EMBODIMENT

This invention comprises a container for packaging a coupling device and more particularly a quick connect component. The container includes a box 10 having an upper portion or half 12 and a lower portion or half 14. The two portions are hinged together at 16 and this connection may be accomplished by the use of one or a plurality of hinges as desired. A satisfactory arrangement, as shown in FIG. 5, incorporates complimentary ball and socket type hinges 13 and 15 at two locations along adjacent edges of the box portions 12 and 14.

In this respect, each of the substantially identically shaped portions 12 and 14 has side walls 18 which project one toward the other when the portions are in closed position, as seen in FIG. 4. Each side wall terminates in an edge 20 which abuts a corresponding seat of the other portion when the container is closed. As can be seen, the edges 20 on each portion terminate, in the illustrated embodiment substantially within the same plane, though this need not be the case. Also, while the upper and lower portions are identical in this embodiment, it is contemplated that the portions 12 and 14 could be of diverse depths.

Disposed within each portion of the box is a shell means 22. The shell means serves the function of encompassing the coupling component 24 and of cushioning it tightly in place within the closed container. In shipping, it is not desirable to permit the component to bounce unrestrainedly since its parts may as a result become disassembled or damaged.

Each shell means 22 substantially fills the portion 12 or 14 in which it is respectively disposed and includes a bracing section 26 and a facing section 28. Each bracing section 26 comprises semi-rigid legs or walls which extend substantially the depth of the portion in which the shell means is received. Each leg is disposed in substantially parallel juxtaposition with a corresponding side wall 18 of the portion in which the shell means is carried. The facing section 28 of each shell means includes a planar extension 30 which is substantially co-planar with edge 20 of the box portion within which such shell means is disposed.

A depression or hollow 32 is provided substantially in the center of each of the planar extensions 30. This hollow 32 comprises multiple chambers in interconnecting relationship as best seen in FIG. 5. In the illustrated form, the several chambers are annular and proportioned such that they are of progressively increasing size from smallest chamber 34 to intermediate chamber 36 to largest chamber 38.

The smallest chamber 34 is defined by a pair of semi-cylindrical surfaces 35, one provided in each of the shell means 22. These surfaces oppose or face one another when the container is closed, and thus together form a cylindrical surface which is adapted to receive the stem of the coupling component in a rather close surrounding relationship.

Turning now to chamber 38 (which is formed by a pair

of cooperating surfaces 39 in the same manner as previous chambers) it will be noted that this depression is of a size considerably larger than the coupling nut which it is adapted to receive. To understand the significance of this arrangement, one must first recognize that the stem of this type of coupling component is of uniform dimension throughout a range of coupling sizes. This is also true of the section which is intermediate the stem and the coupling nut of the component. The coupling nut itself, however, will vary in size from component to component depending upon the diameter of the fluid line with which the particular component is adapted to be used.

Intermediate chamber 36 is much like chamber 34, but somewhat larger. A pair of semi-cylindrical surfaces 37, one in each shell means, cooperate to form with one another a cylindrical chamber 36 which intimately surrounds the intermediate section of component 24 when the container is closed.

By use of the construction described, it is possible to use a single container for shipping components having any one of a number of different sized coupling nuts. This plural nut size accommodation feature produces a universality which permits the shipper to purchase but one size container for use with a plurality of different sized coupling components of the general type for which the container was designed. The result is a significant saving in terms of money, stocking space and inventory control.

The shell means 22 as shown is very light in weight and inexpensive to manufacture. The space between the various bracing sections 26 is shown as being completely void but, for specific applications, a foamed plastic of some sort could be deposited in the void for additional strength. However, this would add to the cost, and unless a heavy component is to be shipped, the shell means illustrated will ordinarily be adequate. By constructing the chamber 38 such that it measures up to approximately 25% greater in span than chamber 36, adequate clearance for a plurality of nut sizes will be available.

The fact that at least one of the box portions (as well as its corresponding shell means) is transparent produces an important advantage because this allows the seller of the coupling component to place the component on display without additional operations and this results in a relatively significant saving in labor cost. Moreover, this feature is also important from an inventory control standpoint since the characteristics of the component may readily be ascertained without the necessity of opening the container.

Another significant economy factor in this very competitive field is that the identical portions of the box allow for identical portions of a shell means 22. In other words, there is no way for the assembler to become confused and mismatch a specific shell means and box portion. Each shell means will fit each box portion and this interchangeability allows for greater speed in assembly.

The latch means 40 (shown best in FIGS. 1 and 5) is illustrated as a snap lock, a pair of complementary locking members being provided, one on each portion of the box. This is shown merely by way of illustration and any particular type of latch means found to be convenient may be used.

In order best to hold and cushion the coupling 24 in position within the container, it has been found that chambers 34 and 36 respectively, must be made slightly under size relative to the sections of the component with which they are to mate. This structure is illustrated in FIGS. 3 and 4. In FIG. 4, the planar extensions 30 are shown

angled slightly inward. The fitting component 24, being rigid and slightly larger than the chambers 34 and 36, flexes or deforms the shell means 22 and the result is that shell means 22 resiliently grips the component, exerting thereupon a peripheral tension.

While the principles of the invention have been disclosed in but a single preferred embodiment, it will be understood by those having ordinary skill in the art that many modifications and changes may be made in that embodiment without departing from the true spirit of the invention. It is therefore not intended that the terms used in the specification nor the single illustrated preferred embodiment be considered limiting. Rather, it is intended that the invention be limited only by the scope of the appended claims.

The invention claimed is:

1. A container for packaging a part comprising:

a box with upper and lower portions, each portion having side walls terminating in edges, said portions being connected by hinge means;

latch means for locking said portions closed with the edges of one portion proximate the edges of the other portion; and

shell means within said portions having bracing sections and facing sections, said bracing sections being juxtaposed substantially parallel to the side walls of said box, said facing sections forming planar extensions and hollows, said hollows substantially conforming to the shape of a part which said container is adapted to receive; each shell means substantially filling the portion in which it is received, the planar extension of each shell means lying substantially in a plane passing through the edge portion it fills, the hollow being dimensioned smaller than a section of said part whereby the portions encompass the part under peripheral tension when the container is closed, thus substantially to prevent movement of the part relative to said portions and hold it spaced from contact with said box.

2. The container of claim 1 wherein one portion of said box is transparent and the shell and attendant bracing section disposed in that portion are also transparent.

3. The container of claim 1 wherein the hollows of the shell means together form multiple connecting chambers.

4. The container of claim 3 wherein one of said multiple chambers is approximately 25 percent larger than another.

5. The container of claim 4 wherein at least one of said multiple chambers is of annular shape, and further wherein the largest chamber is of a substantially rectangular shape.

6. The container of claim 5 wherein one portion of said box is transparent and the shell means and attendant bracing sections disposed in that portion are also transparent.

7. The container of claim 1 wherein the shell means are each of substantially identical shape.

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