

Nov. 15, 1966

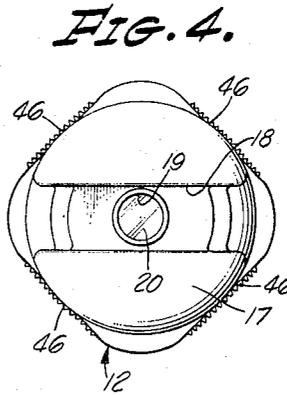
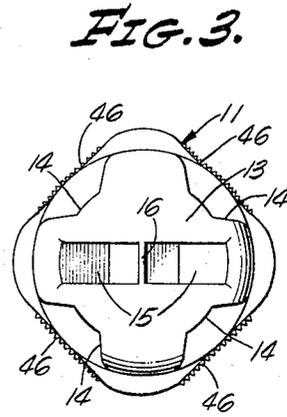
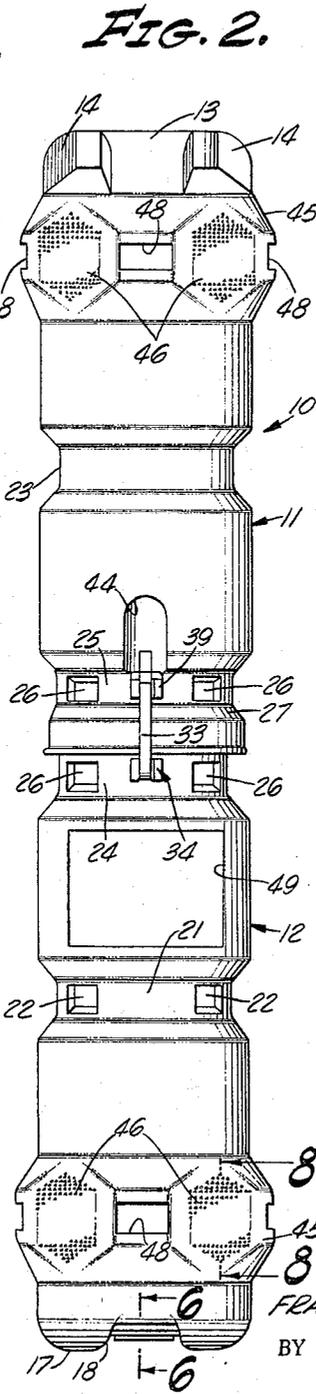
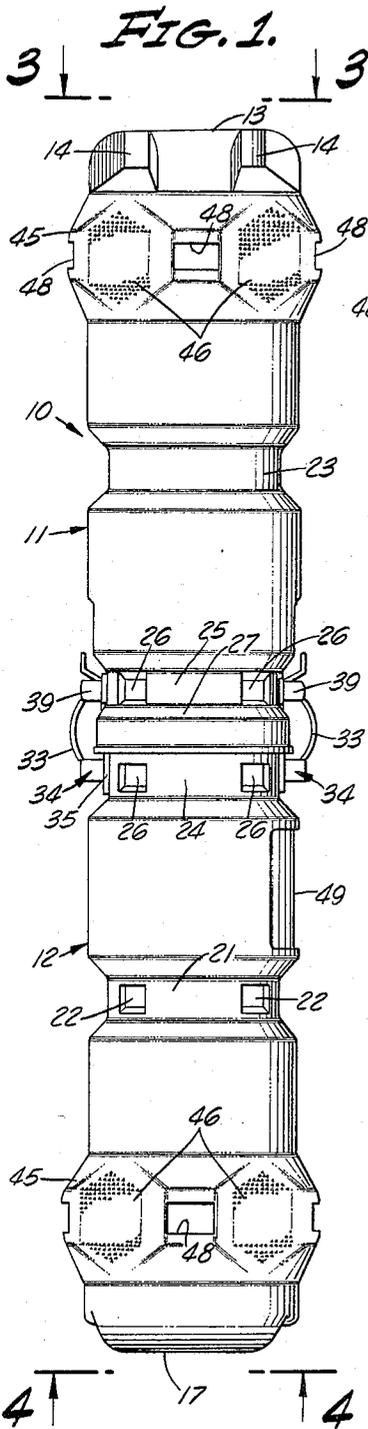
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3,285,458

PLASTIC CONTAINER FOR ELECTRONIC DEVICES

Filed May 22, 1964

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

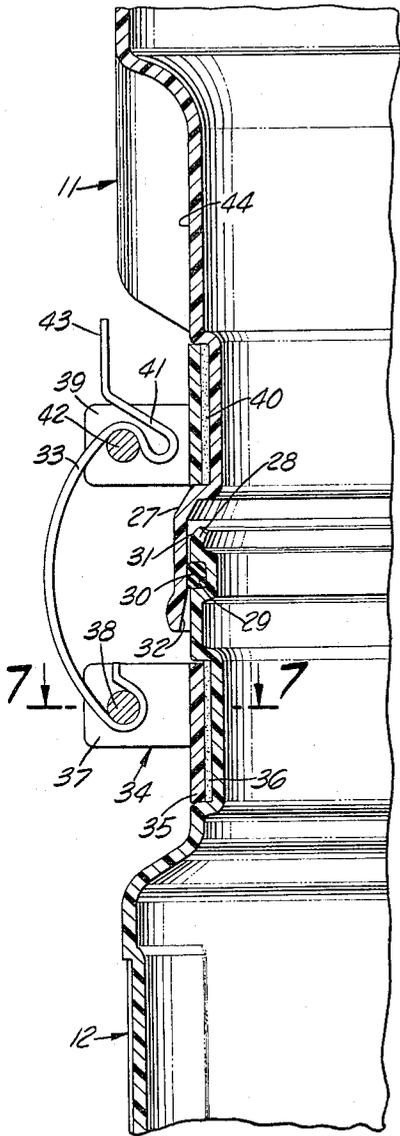


FIG. 5.

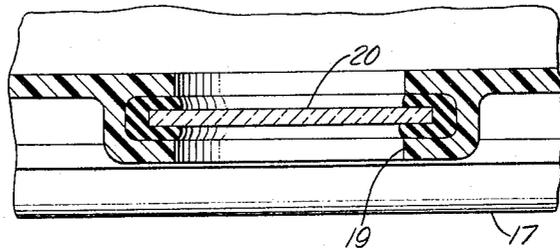


FIG. 6.

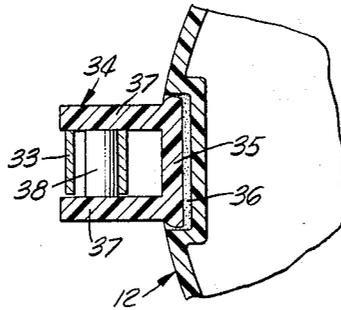


FIG. 7.

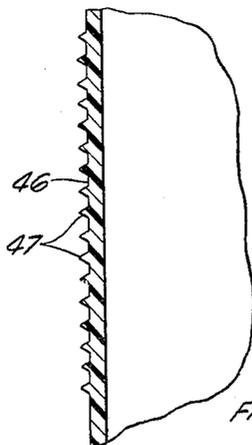


FIG. 8.

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PLASTIC CONTAINER FOR ELECTRONIC DEVICES

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7 Claims. (Cl. 220-4)

This invention relates generally to a plastic container for the storage and shipping of electronic devices. More specifically this invention contemplates the construction of a blown-plastic container having a specific configuration designed to provide protection for relatively fragile electronic devices.

It is a further object of this invention to provide a container for a device of generally cylindrical configuration wherein the interior of the container is moisture-proof.

Further objects and advantages will become apparent upon reading the accompanying specification which will become more clear when read in light of the drawings in which:

FIGURE 1 is a side elevation of a container made in accordance with this invention.

FIGURE 2 is a front elevation of the container.

FIGURE 3 is an end view of the container taken along line 3-3 of FIGURE 1.

FIGURE 4 is an end view of the container taken along line 4-4 of FIGURE 1 showing the inspection window.

FIGURE 5 is an enlarged partial sectional view showing the details of the sealing mechanism.

FIGURE 6 is an enlarged partial view taken substantially along line 6-6 of FIGURE 2 showing the details of the inspection window.

FIGURE 7 is a partial sectional view taken along lines 7-7 of FIGURE 5.

FIGURE 8 is a partial elevational view taken along lines 8-8 of FIGURE 2.

Referring now to FIGURES 1 and 2 a container having substantially cylindrical configuration is generally designated 10. Container 10 consists of two sections, a base section 11 and an upper section 12. Base section 11 has a substantially cylindrical configuration throughout its entire length but is provided with a number of depressions designed to provide support bosses for the contained device. At the end 13 of base section 11 the exterior diameter is reduced at four points forming the depressions 14. The depth of these depressions is governed by the outer diameter of the device to be contained. In the interior of the container, the device will be in contact with all four depressions 14, thereby providing a tight packaging means supporting the device and protecting it from shock.

Referring to FIGURE 3, end 13 of base section 11 is provided with two depressed sections 15 separated by a rib 16, the combination of which provides rigidity to the end wall 13 and in addition provide support bosses for the contained device.

The end 17 of top section 12 is not provided with supporting bosses of the type used at end 13, but instead, is substantially rounded and provided with a transverse slot 18, as shown in FIGURES 2 and 4. Situated in the center of this slot 18 is an aperture 19 closed by a transparent material 20 such as glass or plastic as may be seen in FIGURE 6. This window is provided in order to have a means of inspecting the interior of the container for damages to the electronic device due to shock or moisture.

While the container described herein is useful for storage or shipping of any generally cylindrical device, it is particularly adapted for the storage and shipping of a

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radiosonic buoy known as the sonobuoy which is a device containing a sonar detecting system and a transmitter. The device is used for spotting and tracking submarines. The delicate electronic gear contained in this buoy is subject to deterioration if allowed to come in contact with moisture for any substantial period of time. However, a large number of these devices must be stored on board ship where the likelihood of moisture contamination is quite high. By using containers which provide shock resistance together with moisture proofing, a large number of these devices can be stored without harmful results. A desiccant is kept inside the container to absorb any moisture which may seep in. It is the purpose of the inspection window 20 to provide a means of examining the desiccant to assure that the interior of the container is dry.

Since the end 17 of upper section 12 does not provide a support for that end of the electronic device, another support must be provided. The diameter of section 12 is restricted at 21 to closely approximate the exterior diameter of the device. Support points are provided by four rectangular bosses 22. If additional support is required in the base section 11, restricted portion 23 of section 11 may also be provided with support bosses.

At the center of container 10, near the open ends of sections 11 and 12, the diameter of each section is again restricted at 24 and 25 respectively, and each said restrictions are provided with depressed support bosses 26.

It is necessary that tight seal be maintained between the two sections 11 and 12 in order that the interior be moisture-proof. It is contemplated that the container be manufactured of high density polyethylene and the separate sections formed by blow-molding. This results in a container which is considerably less expensive to manufacture than any comparable shipping and storage container made by any other process. The problem with using the blow-molding process is obtaining mating surfaces which will seal properly, since precision is not acquired by this molding. This problem was obviated by the use of an O-ring seal as may best be shown in FIGURE 5. In FIGURES 1 and 2 the open end of section 11 is flared outwardly at 27 to form a tapering closure. The mating end 28 of section 12 is provided with an annular groove 29, in which an O-ring 30 is seated. O-ring 30 is of sufficient size to bear against the interior of the tapered section 27 in order to form a tight seal thereon. To facilitate the ease of opening and closing the container, the end section 28 is flared at 31. Likewise, the extreme edge of the opening on section 11 is flared outwardly at 32.

In order to effect a tight seal, but still have a container which is easily opened, the spring tension clip 33 is used. Lug 34 mounted upon flat plate 35 is rigidly attached to the body of section 12 at 36. Lug 34 consists of two upright posts 37 with a horizontal rod 38 extending therebetween. See FIGURE 7. Spring clip 33 is rotatably mounted on rod 38. On section 11, a lug 39 is attached at 40. Spring clip 33 is looped to form an S-shape at 41 so that it will snap around the horizontal shaft 42, placing the spring clip 33 in tension, and thereby compressing sections 11 and 12 together to insure a tight seal therebetween. A finger lift tab 43 is provided on spring clip 33 to facilitate removal of the clip. The body of base section 11 is provided with finger depressions 44 so that one may easily grasp the finger lift tap 43.

In use, these containers are usually stored in groups of four or more. In order that a group of four containers may be assembled into a compact package and easily handled and stored, each end of container 10 has a widened portion 45 forming four flattened surfaces at right angles to one another, as can be seen in FIGURES 3 and 4. On each flat surface is an embossed area 46,

which consists of a multitude of conical projections 47, as can best be seen in FIGURE 8. This embossed section prevents one container from sliding relative to another when a group of four is assembled. Notches 48 are depressed into the corners of the widened portion 45 to provide a means by which the group of four containers can be attached in a tight package by passing a band around the group through the notches 48.

On the top section 12 on the enlarged cylindrical area there is provided an inset portion 49 upon which indicia can be attached to indicate the nature of the contents of the container. As an alternative to attaching a label or the like, this area may be embossed with the name and other designations for the contents. This could be done as a part of the molding procedure.

While there has been described what is at present considered preferred embodiment of the present invention, it will be apparent to those skilled in the art that various modifications and changes may be made without departing from the essence of the invention, and it is intended to cover herein all such modifications and changes as come within the true scope and spirit of the appended claims.

I claim:

1. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; each of said sections having a plurality of internal support bosses integrally formed therein.

2. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; each of said sections having a plurality of internal support bosses integrally formed therein; one of said sections having a vapor-tight window portion therein.

3. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of

said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; both sections having a widened portion, said widened portion having four flattened surfaces disposed at right angles to one another; each of said sections having a plurality of internal support bosses integrally formed therein.

4. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; both sections having a widened portion, said widened portion having four flattened surfaces disposed at right angles to one another, each said surface being roughened, the areas of said widened portion between said flattened surfaces having notches formed therein for receiving binding straps; each of said sections having a plurality of internal support bosses integrally formed therein.

5. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; both sections having a widened portion, said widened portion having four flattened surfaces disposed at right angles to one another, each said surface being roughened, the areas of said widened portion between said flattened surfaces having notches formed therein for receiving binding straps; each of said sections having a plurality of internal support bosses integrally formed therein; one of said sections having a vapor-tight window portion therein.

6. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of

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spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; both sections having a widened portion, said widened portion having four flattened surfaces disposed at right angles to one another, each said surface being roughened, the areas of said widened portion between said flattened surfaces having notches formed therein for receiving binding straps; each of said sections having a plurality of integrally formed circumferential depressions positioned along the length thereof, said circumferential depressions having inwardly extending support bosses integrally formed therein, one of said sections having a support boss integrally formed at the closed end thereof.

7. A vapor-tight container for a generally cylindrical radiosonic buoy comprising first and second generally cylindrical blow-molded plastic sections, each of said sections having a closed end and an open end, said first section having an annular sealing member positioned on its periphery adjacent the open end thereof, the inner surface of said second member having an outwardly tapering portion adjacent the open end thereof, said tapered portion receiving said sealing member; a plurality of spring clips rotatably mounted on one of said sections, each of said spring clips having a looped portion at the outer end thereof, a plurality of lugs mounted on the other of said sections, the looped portion of each of said

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spring clips cooperating with one of said lugs to force the open end of said first section into the open end of said second section whereby the tapered portion of said second section compresses the sealing member of said first section to form a vapor-tight connection between said sections; both sections having a widened portion, said widened portion having four flattened surfaces disposed at right angles to one another, each said surface being roughened, the areas of said widened portion between said flattened surfaces having notches formed therein for receiving binding straps; each of said sections having a plurality of integrally formed circumferential depressions positioned along the length thereof, said circumferential depressions having inwardly extending support bosses integrally formed therein at least one of said sections having a support boss integrally formed at the closed end thereof, at least one of said sections having a vapor-tight window portion therein.

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