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PROTECTIVE CONTAINER

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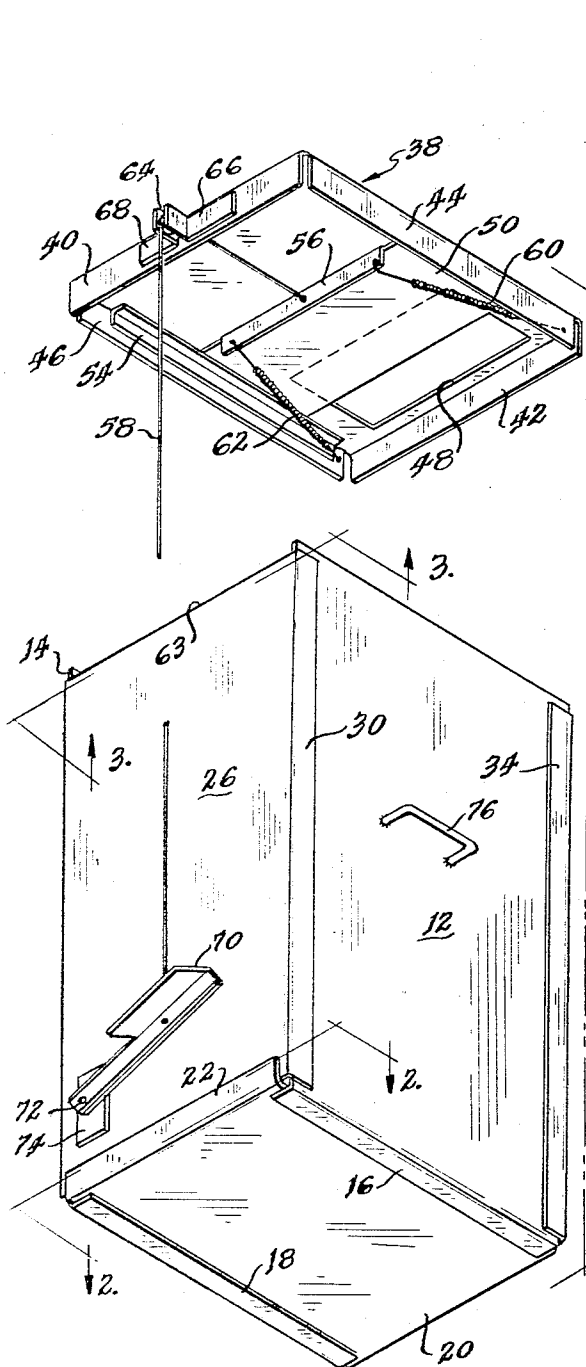


Fig. 1

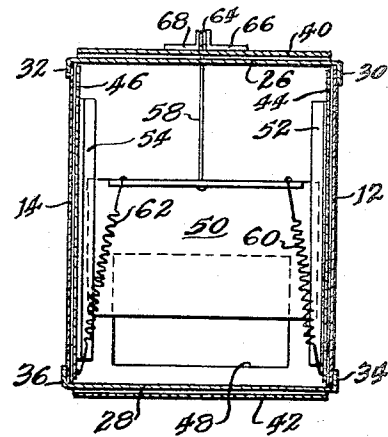


Fig. 3

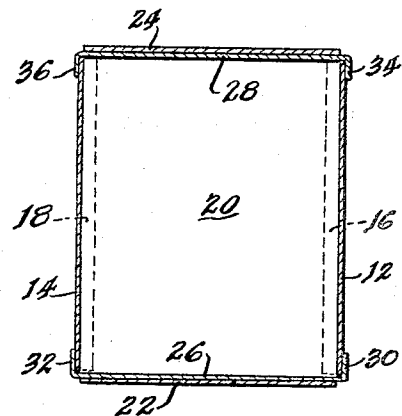


Fig. 2

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PROTECTIVE CONTAINER

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ABSTRACT OF THE DISCLOSURE

A container with simple-flanged self-interlocking side panels, end panels and bottom panel. A removable cover interlockable with the panels may have a door opening and a slidable door positioned under the cover. The door is moved by means of a cable which passes through the cover.

Contractual origin of the invention

The invention described herein was made in the course of, or under, a contract with the U.S. Atomic Energy Commission.

This invention relates to a protective container for waste disposal boxes, which container is formed of interlocking panels.

Combustible wastes such as papers and rags accumulate in the normal operation of facilities which handle low-level radioactive material. Such wastes are usually placed in inexpensive cardboard boxes which may be taped shut and shipped to suitable disposal grounds. Good fire preventative practice requires that such boxes be enclosed in a fire-retardant, metal container until filled and shipped out. Frequently the metal containers designed for this purpose are expensive and are of special shapes which require special cardboard liners.

The present invention eliminates much of the difficulty with former containers by providing a light-weight, economical container composed of interlocking panels which may be assembled or disassembled in a matter of seconds without tools. When stored, or when packaged for marketing these panels may be nested together to form a fairly compact package. This container may be manufactured in any of a number of sizes, but preferably is manufactured to receive standard sizes of cardboard boxes which are readily available at minimum expense.

It is an object of the present invention to provide a durable waste box container which will minimize fire hazards.

It is also an object of this invention to provide a self-supported container using interlocking panels.

A further object of this invention is to prevent the spread of dust which might contain radioactive material.

Another object is to provide an inexpensive container of which a part or all may be discarded if seriously contaminated with radioactive material.

Other objects and advantages will be apparent from the following description and from the drawings in which:

FIG. 1 is a view of a partially assembled container;

FIG. 2 is a section view near the bottom of the container looking downward taken along line 2-2 of FIG. 1; and

FIG. 3 is a section view near the top of the container looking upward as it would appear when assembled.

As shown in FIG. 1, side panels 12 and 14, respectively have bottom edges 16 and 18 extending inward under bottom panel 20. End edges 22 and 24 not shown of bottom panel 20 extend upward and over the outsides of end panels 26 and 28. These end panels have side edges 30, 32, 34 and 36 shown in part in FIGS. 2 and 3 extending inward and over the outsides of side panels 12 and 14.

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These panels which are all rectangular in shape form an unusual three-way interlock. The side panels 12 and 14 retain and support the bottom panel 20; the bottom panel 20 retains and supports the end panels 26 and 28 which in turn retain the side panels 12 and 14. The container at this stage needs no further support if a reasonably snug-fitting cardboard box is placed inside the container.

A cover assembly 38, as shown in FIG. 1 and FIG. 3, has downturned end edges 40 and 42 which fit on the outside of the end panels 26 and 28 respectively, and has downturned side edges 44 and 46 which fit on the inside of side panels 12 and 14 respectively. A door opening 48 in the cover assembly 38 provides access to the container. A slidable door 50 is held in place by support members 52 and 54 which are fastened to or are a part of the inner side of the downturned side edges 44 and 46 respectively.

The cover assembly combines its functions with those of the other interlocking panels to complete a self-locked container. The side edges 44 and 46 of the cover assembly limit the inward movement of the side panels 12 and 14, while the side edges of the end panels 26 and 28 limit the outward movement of the side panels. At the same time the outward movement of the end panels is limited by the end edges 40 and 42 of the cover assembly. All panels and the cover assembly interlock to form a container which will stand alone regardless of the condition of the contents.

As shown in FIG. 1, a downturned flange 56 on the door 50 serves to stiffen the door and at the same time provides for attachment of a door-opening cable 58 and door-closing springs 60 and 62. The springs 60 and 62 are anchored to the cover assembly 38, preferably inside the side edges 44 and 46 respectively. While a coil spring is shown, it is not intended that this door-closing means be limited thereto, nor that it be limited to metallic closing means.

The cable 58 passes over top edge 63 of end panel 26 which is somewhat shorter than side panels 12 and 14, through an opening (not shown) in the downturned end edge 40 of the cover assembly 38, then over a pulley wheel 64 which is attached by brackets 66 and 68 to the outside of end edge 40. By making the end panel 26 shorter than the side panels 12 and 14, the cable 58 is given clearance to pass over the top edge 63 without binding. If both end panels 26 and 28 are made the same height they will be interchangeable. The cable 58 is fastened at its lower end to a foot-pedal 70 which is rotatably fastened to the end panel 26 by a fastener 72. The latter may be a bolt, a rivet, or any of a number of suitable fasteners. When thin material such as .063 inch aluminum sheet is used to make the panels, it is advisable to reinforce the point of attachment of fastener 72 with a plate 74.

Handles such as shown at 76 in FIG. 1 are attached to side panels 12 and 14. As may be seen from the drawings and from the above description only the side panels are adapted to receive handles since only these panels have a bottom-retaining capacity. That is, the in-turned bottom edges 16 and 18 which are positioned under the bottom panel 20 enable the side panels 12 and 14 to be the key load-supporting structures in this interlocked construction by supporting the bottom panel 20, which supports end panels 26 and 28. The side panels 12 and 14 also support the cover assembly 38. All of the panels including the cover assembly interlock in such a way that the entire container with its contents may be lifted by these handles. The assembled container requires no fasteners and may be disassembled in a few moments for storage as a nearly flat package.

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It will be noted that a slidable door 50 is used in preference to a hinged cover in order to minimize the possibility of spreading contaminated dust which might result from air currents created by a hinged door.

This container may be assembled around a cardboard box, or the box may be inserted into the assembled container before the cover assembly is installed. In both cases it is preferable to keep the flaps of the box folded down against the outside of the box while it is inside the container. The box may be removed from the container or the container may be removed from the box when the box is ready to be sealed for disposal.

Considerable loss is incurred each year through fires started in waste containers. Fire inspectors recommend and often insist on the use of metal containers for combustible wastes. Such a container need not be air-tight, but needs the confining effect of a closed container to minimize the rate of burning and to allow a time margin for arrival of fire-fighting equipment. The interlocking panels of this container perform just such a function.

This invention is not limited to the above description but may be modified as set forth in the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a self-interlocking container comprising: a bottom panel having up-turned end edges; a pair of side panels each having in-turned bottom edges, said bottom edges being positioned under opposite side edges of said bottom panel; and a pair of end panels each having in-turned side edges, said side edges being positioned outside the respective side panels, said end panels each having a bottom edge positioned inside an up-turned end edge of the bottom panel; the combination with the side panels and the end panels, of a cover having down-turned side edges positioned inside the side panels, and having down-turned end edges positioned outside the end panels.

2. In a self-interlocking container comprising a rectangular bottom panel having up-turned end edges; a pair

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of rectangular side panels each having in-turned bottom edges, said bottom edges being positioned under opposite side edges of said bottom panel; and a pair of rectangular end panels each having in-turned side edges, said side edges being positioned outside the respective side panels, said end panels each having a bottom edge positioned inside an up-turned end edge of the bottom panel and having top edges somewhat below top edges of said side panels; the combination with the side panels and the end panels, of a cover assembly having down-turned side edges positioned inside the side panels, and having down-turned end edges positioned outside the end panels, said cover assembly having a door opening therein; a slidable door retained against the underside of said cover assembly by support members fastened to inner faces of said down-turned side edges of said cover assembly; spring means for positioning said door into registry with said door opening; a cable attached to said door, said cable adapted to pull said door in opposition to said spring means, said cable passing over the top edge of an end panel and through a hole in an end edge of said cover assembly; a pulley mounted on the outside of said end edge of said cover assembly in line with said hole; and a foot-pedal rotatably mounted on an end panel below said pulley, said cable passing over said pulley and attached to a free end of said foot-pedal.

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