Nov. 9, 1948. I. HILL 2,453,574

CONTROLLED VENTILATED CONTAINER

Filed May 13, 1946

Fig. 1.

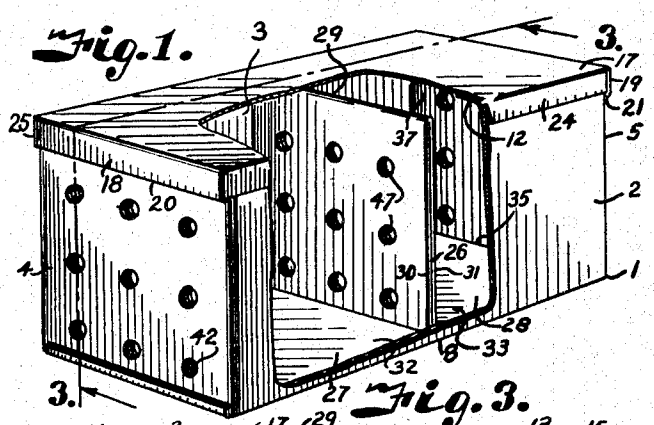


Fig. 2.

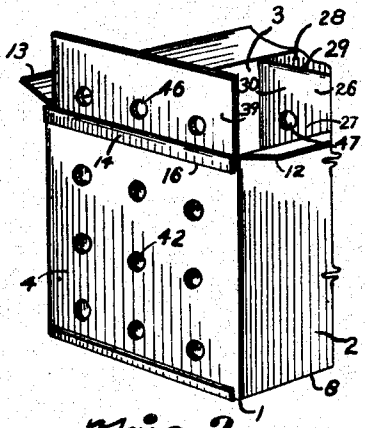


Fig. 3.

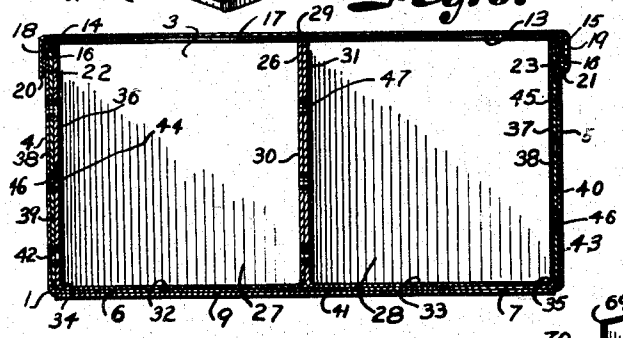


Fig. 4.

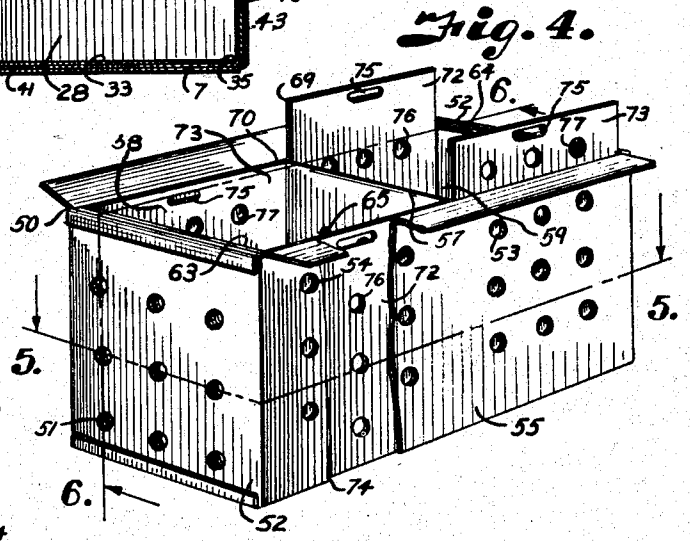


Fig. 5.

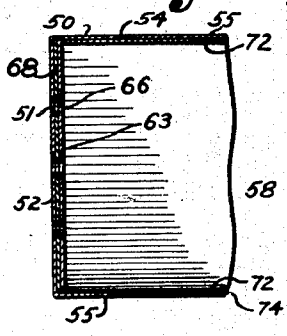


Fig. 6.

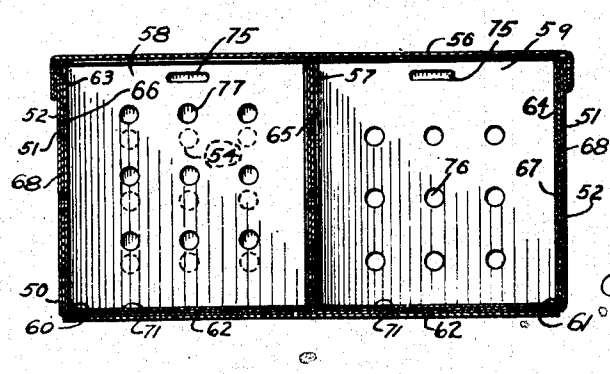


Fig. 6.

INVENTOR.
IRVING HILL
BY
Fishburn & Mullendore.
ATTORNEYS.

Patented Nov. 9, 1948

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UNITED STATES PATENT OFFICE

2,453,574

CONTROLLED VENTILATED CONTAINER

Irving Hill, Lawrence, Kans., assignor to The Lawrence Paper Company, Lawrence, Kans., a corporation of Kansas

Application May 13, 1946, Serial No. 669,406

8 Claims. (Cl. 229—42)

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This invention relates to containers, and more particularly to containers having controlled ventilation for commodities, such as eggs, meat and and the like, which require change in air circulation due to different temperature and humidity conditions during storage and shipping, and has for its principal object to provide a case which may be ventilated or not as the user desires.

This application is a continuation in part of my application on "Controlled ventilated containers," filed December 31, 1943, Serial No. 516,411, and issued as Patent No. 2,404,065, dated July 16, 1946.

In the shipping and storage of many commodities it is necessary that the container, therefore, be ventilated as, for instance, in the storage of eggs wherein they are maintained in spaced relation and when said commodities are removed from the moist storage, it is desirable to close the case and stop further ventilation whereby the interior moisture is retained. It is also common to provide ventilation openings in the side of containers requiring, when placed in stacks in a storage space, that the individual stacks be spaced to provide proper ventilation of the commodities. By providing correct ventilation openings in such containers the number of openings required to provide proper ventilation is reduced, providing a stronger container, and the stacks may be placed side by side, thereby decreasing the space required for the commodities.

Other objects of the present invention are, therefore, to provide side and end ventilation of containers and commodities therein; to provide a container adapted for ventilation of commodities, such as eggs, while in moist storage, and adapted to be closed to stop ventilation when removed from such storage; to provide for selective side and end ventilation of containers; to provide a panel adjacent the walls of a container having ventilated openings therein for controlling the ventilation of the commodities in the container; to provide a container with an inner liner having ventilated openings selectively registrable with openings in the sides and ends of the container to control ventilation of same; to provide a container with a plurality of inner liners adapted to separate the contained into compartments; to provide for removing selected inner liners together with the contents of the respective compartments; and to provide for reversing the inner lining for controlling ventilation of the respective compartments.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred arrangement of which is illustrated in the accompanying drawings wherein:

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Fig. 1 is a perspective view of the container embodying the present invention, portions being broken away to illustrate the structure thereof.

Fig. 2 is a partial perspective view of the container of Fig. 1 showing a ventilation control panel partially removed.

Fig. 3 is a detail sectional view of the container substantially on a line 3—3, Fig. 1.

Fig. 4 is a perspective view of another form of the container particularly illustrating the ventilated openings in the side walls thereof and portions being broken away to illustrate the structure thereof.

Fig. 5 is a detail sectional view taken on a line 5—5, Fig. 4.

Fig. 6 is a detail vertical sectional view of the container shown in Fig. 4 taken on a line 6—6, Fig. 4.

Referring more in detail to the drawings:

1 designates a container particularly adapted for shipping and storage of eggs and other commodities wherein due to variation in the shipping and storage conditions, it is desirable to control the ventilation of the commodities therein. The container preferably includes side walls 2 and 3 and end walls 4 and 5, inturned flaps 6 and 7 being provided on the lower edges of the end walls 4 and 5. Flaps 8 and 9 are provided on the lower edges of the side walls 2 and 3 and adapted to be folded inwardly under flaps 6 and 7 and glued or stapled thereto to form the bottom of the box. Sealing strips may be applied to the flaps for sealing the lower portions of the container if desired. Side flaps 12 and 13 may be provided on the upper edges of the side walls 2 and 3 if desired. The upper ends of the end walls of the container are preferably provided with flanges 14 and 15 which are folded outwardly and downwardly and, if desired, are secured to the end of the container to form a shoulder 16.

17 designates a cover preferably of the same material as the container and of suitable size and shape to fit over and close the container. The cover preferably consists of a body member preferably having end flanges 18 and 19 foldable over the container end wall flanges 14 and 15. The flanges 18 and 19 have fold lines 20 and 21 spaced from the end edges of the cover member to form outer end flanges 22 and 23 adapted for folding inwardly and upwardly to engage the ends of the flanges 14 and 15 of the container for retaining the cover in closed relation to the container as

illustrated in Fig. 3. Downwardly extending side flaps 24 and 25 may also be provided on the cover member and, if desired, said side flanges may be secured to the end flanges on the cover member in any suitable manner.

Due to the fact that containers in the shipping and storage of eggs and like commodities are stacked in tiers, it may be desirable to reinforce the bottom members of the container and also provide supports for the cover member to prevent collapse thereof. I, therefore, provide a container inner liner including a partition member 26 adapted to be inserted transversely in the container and midway between the ends thereof to separate the interior of the container into compartments 27 and 28.

The inner liner preferably is formed of an elongated blank of the same material as the container and is preferably of the same width as the spacing between the sides 2 and 3 thereof. The blank is preferably folded at a central point as at 29 forming overlying panel members 30 and 31 which are of substantially the same height as the ends 4 and 5 of the container. Flaps 32 and 33 are preferably provided on the lower ends of the panels 30 and 31 respectively and are of such length that they extend from the partition to adjacent the end walls 4 and 5 of the container. Said flaps 32 and 33 are provided with fold lines 34 and 35 spaced slightly from the end of the container to form upwardly extending panels 36 and 37 spaced from the end walls as at 38 to form recesses for the insertion of panels 39 and 40. In this construction an insert 41 may be placed over the upper faces of the bottom side flaps 8 and 9 of the container and extends substantially the distance between the container bottom end flaps 6 and 7.

The insert 41 and flaps 6, 7, 8 and 9 form a triple thickness at the bottom of the container and the panels 36 and 37 cooperate with the end walls 4 and 5 and the panels 39 and 40 to form tripled end wall thickness, thereby providing a container having great rigidity in the bottom and end wall structures as well as strength in the partion or midrib adjacent the middle portion of the cover.

In order to provide ventilation of the commodities in the container and also permit the tiers of said container to be stacked side by side, I preferably provide ventilation openings 42 and 43 in the end walls 4 and 5 in alignment with openings 44 and 45 in the panels 36 and 37 and openings 46 in the panels 39 and 40 adapted to be placed in alignment with the openings in the end walls and the upwardly extending panels 36 and 37 to provide ventilation through the ends of the container. Openings 47 may be provided in both panels of the midrib whereby ventilation may be had from end to end through the container. Since it is desirable that the ventilation be controlled, the panels 39 and 40 are removable and the openings in the respective panels so arranged that when said panels 39 and 40 are removed from the spaces 38 between the end walls and the upwardly extending members on the liner are inverted, the openings 46 will register with the openings 42, 44, 43 and 45 respectively. In this manner the ventilation of the container may be selectively controlled to provide ventilation for commodities under moist conditions and to provide a sealed container for commodities under other conditions.

If desired, a modified arrangement of the ventilation openings in the end walls, upwardly extending members on the liner and the panel members 39 and 40 may be used in which the ventilation openings are so arranged relative to each other that the panel member may be withdrawn in the same manner as in the preferred form and reversed from side to side, replaced in the space between the end wall and the upwardly extending liner member to arrange the ventilation openings in said panel out of registry with the openings in the end walls and the upwardly extending members on the liner.

A further form of container is shown in Figs. 4 to 6 inclusive, wherein the ventilation of the container and the respective compartments therein is controlled by transfer of the inner liner. The container 50 is substantially of the same structure shown in Figs. 1 to 3 inclusive, and is provided with ventilated openings 51 in the end walls 52 thereof. Ventilation openings 53 and 54 are provided in the side walls 55 of the container. It will be here noted that the openings 53 are out of alignment with the openings 54 for a purpose later described. A cover 56 is provided for closing of the container in the same manner as shown in Figs. 1 to 3 inclusive.

A container is preferably provided including a partition member 57 for dividing the container into compartments 58 and 59. The inner liner is formed of an elongated blank having transverse fold lines 60 and 61 to form a bottom member 62 of substantially the same length as the respective compartments, and upwardly extending panels 63 and 64 at each end thereof. The upwardly extending panels are preferably of such length that they extend to the top of the container walls and the panels adjacent the center of the container form the midrib or partition 57. The outer panels adjacent the ends of the container overlie the end walls.

The partition 57 is provided with ventilated openings 65 and the upwardly extending panels 63 and 64 are provided with ventilation openings 66 and 67 adapted to align with the openings 51 in the end walls of the container when desired. Panels 68 are provided for insertion in the recess between the end walls and panels 63 and 64, said panels having ventilation openings as in the form of invention shown in Figs. 1 to 3 and to provide a triple thickness at the ends of the container.

Removable inner liners 69 and 70 are provided and adapted to engage in the respective compartments 58 and 59 and are particularly adaptable for raising the commodities carried by the container and reversing the position of the liners as later described. Each of the inner liners 69 and 70 is formed of elongated blanks having transverse fold lines as provided with the container inner liner to form a bottom member 71 of substantially the same length as the respective compartments 58 and 59. The upwardly extending panels 72 and 73 of each liner preferably are of such length that they extend to the top of the container walls and are adapted to arrange either longitudinally or transversely of the container and the respective compartments thereof as will later be shown. When the inner liners 69 and 70 are transversely of the container as shown in Fig. 4, the panels 72 and 73 will form a double thickness for the side walls of the container as indicated at 74 (Fig. 5).

The upwardly extending panels 72 and 73 are provided with hand holes 75 adjacent the upper edges thereof to aid in grasping said panels for removing the respective liners from the container.

When the container is filled with commodities such as eggs, the hand holes in the liners for the respective compartments may be grasped and said liners lifted from the container together with the entire contents of the respective compartments. This structure is particularly advantageous in plants processing eggs with coatings or the like as the eggs can be removed, treated and replaced in the container with less labor and breakage. Even though the contents of the container are not removed for processing, there are times when it is desirable to transfer the contents from one container to another and in such transfers this structure saves time and labor and lessens the danger of damage to the commodities being handled.

The panels 72 and 73 are provided with ventilation openings 76 and 77. It will be noted that the openings 53 and 54 of the side walls of the respective compartments are in alignment. The openings 76 in the panel 72 are arranged so they will not align with the openings 54, but the openings 77 in the panel 73 are arranged so that they will register with the openings 53 in the side walls of the compartment as best illustrated in Fig. 6.

Ventilation of the respective compartments is controlled by the arrangement of the inner liners or panels 69 and 70 in the respective compartments. Should it be desired to have the container entirely closed, the end panels 68 may be inserted so that the openings 51 in the respective ends of the container will be closed. By inserting the inner panels 72 and 73 in the container so that the openings 76 and 77 will be out of alignment with the openings 53 and 54 in the respective compartments, the container will be entirely closed. Should it be desired to provide ventilation through the sides of the container, the inner panels 72 and 73 may be reversed by turning them transversely so that the openings 76 and 77 will align with openings 53 and 54 in the respective compartments. Ventilation may be provided through the openings 53 and 54 also by turning the inner panels 72 and 73 longitudinally of the container. Should it also be desired to provide ventilation through the ends of the container, the panels 68 may be transposed so that the openings therein will align with the openings 51 in the ends of the container, as described in the form of invention shown in Figs. 1 to 3.

From the foregoing it is believed apparent that I have provided a container adapted to take care of ventilated or not ventilated uses and that such container may be stacked wherein the tiers may be placed side by side reducing the space required for such container. It is also apparent that the liner provides control of ventilation and permits removal of the compartment contents. Said liner and partition structure also provides a very rigid container to protect the commodities therein from being crushed regardless of the manner of handling of said containers.

What I claim and desire to secure by Letters Patent is:

1. In a device of the character described, a container having side, end and bottom walls, a cover for closing said container, partitions mounted in the container adjacent the end walls and spaced therefrom to provide a recess therebetween, said end walls and partitions having ventilation openings therein, a panel member slidable into the recess between an end wall and the respective partition member, said panel having openings therein collectively registrable with the ventilation openings in the end wall and the partition

for selectively ventilating the interior of the container, the ventilation openings in the end wall and the partition being arranged relatively to the openings in the panel whereby reversal of the position of the panel controls the opening of the ventilation openings.

2. In a device of the character described, a substantially rectangular container having inwardly turned flaps on the lower edge of the side and ends walls thereof, means for securing the inturned flaps together to form the bottom of the container, a filler member lying on certain of the inturned flaps forming the container bottom and filling the space between the other inturned flaps, a liner for the container including a partition member, outwardly directed members on the lower edge of the partition member adapted to cover the bottom of the container, upwardly directed members on the outer ends of the bottom covering members adapted to overlie the ends of the container in spaced relation thereto, said ends and upwardly directed members having ventilation openings therein, and removable panels between the container ends and said upwardly directed members on the liner, said panels having ventilation openings adapted for registry with the openings in the end walls and upwardly directed members when in one position and out of registry therewith when reversed for controlling said ventilation of the container.

3. An egg case comprising, a container having bottom, side and end walls, said side and end walls of the container having ventilation openings therein, a liner removably mounted in the container, said liner having a fold line at substantially the center thereof and folded downwardly laterally and upwardly to form a partition, bottom and end panels for the container, said partition separating the container into compartments and being provided with ventilation openings and the end panel having ventilation openings registering with the ventilation openings in the end walls of the container, and a plurality of liners removably mounted in the container including bottom members and upwardly extending panels, the upwardly extending panels being provided with ventilation openings, the openings of one panel registering with the ventilation openings in one side wall of the container and the ventilation openings in the opposite panel being adapted for out-of-registry with the ventilation openings in the opposite side wall of the container, said liners being reversible for controlling ventilation of the respective compartments.

4. An egg case comprising, a container having bottom, side and end walls, said side and end walls of the container having ventilation openings therein, means for closing the ventilation openings in the end walls, a liner removably mounted in the container, said liner having a fold line at substantially the center thereof and folded downwardly laterally and upwardly to form a partition, bottom and end panels for the container, said partition separating the container into compartments and being provided with ventilation openings and the end panel having ventilation openings registering with the ventilation openings in the end walls of the container, and a plurality of liners removably mounted in the container including bottom members and upwardly extending panels, the upwardly extending panels being provided with ventilation openings, the openings of one panel registering with the ventilation openings in one side wall of the container and the ventilation openings in the opposite panel being

adapted for out-of-registry with the ventilation openings in the opposite side wall of the container.

5. An egg case comprising, a container having bottom, side and end walls, said side and end walls of the container having ventilation openings therein, means for closing the ventilation openings in the end walls, a liner removably mounted in the container, said liner having a fold line at substantially the center thereof and folded downwardly laterally and upwardly to form a partition, bottom and end panels for the container, said partition separating the container into compartments and being provided with ventilation openings and the end panel having ventilation openings registering with the ventilation openings in the end walls of the container, and a plurality of liners removably mounted in the container including bottom members and upwardly extending panels, the upwardly extending panels being provided with ventilation openings, the openings of one panel registering with the ventilation openings in one side wall of the container and the ventilation openings in the opposite panel being adapted for out-of-registry with the ventilation openings in the opposite side wall of the container, said liners being reversible for controlling ventilation of the respective compartments.

6. An egg case comprising, a container having bottom, side and end walls, said side and end walls of the container having ventilation openings therein, a liner removably mounted in the container, said liner having a fold line at substantially the center thereof and folded downwardly laterally and upwardly to form a partition, bottom and end panels for the container, said partition separating the container into compartments and being provided with ventilation openings and the end panel having ventilation openings registering with the ventilation openings in the end walls of the container, panels insertable in the end walls and partition for regulating ventilation therethrough, and a plurality of liners removably mounted in the container including bottom members and upwardly extending panels, the upwardly extending panels being provided with ventilation openings, the openings of

one panel registering with the ventilation openings in one side wall of the container and the ventilation openings in the opposite panel being adapted for out-of-registry with the ventilation openings in the opposite side wall of the container, said liners being reversible for controlling ventilation of the respective compartments.

7. An egg case comprising, a container having bottom and side walls, at least two of said side walls having ventilation openings therein, said opening being located differently in the respective side walls, and a liner removably mounted in the container including a bottom member and upwardly extending panels having ventilation openings therein adapted for registry with the openings in said side walls of the container, said liner being reversible so as to provide ventilation to the interior of the container when the liner is in one position and to close the ventilation openings when in reversed position.

8. An egg case comprising, a container having bottom, side and end walls, said side walls of the container having ventilation openings therein, and a liner removably mounted in the container including a bottom member and upwardly extending panels, the upwardly extending panels being provided with ventilation openings, the openings in one panel registering with the ventilation openings in one side wall and adapted for out of registry with the ventilation openings in the opposite side wall of the container, said liner being reversible for controlling ventilation of the container.

IRVING HILL.

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