Aug. 10, 1937. R. HORTON 2,089,698

REFRIGERATED CAN COMPARTMENT

Filed April 26, 1935 2 Sheets-Sheet 1

Fig. 1.

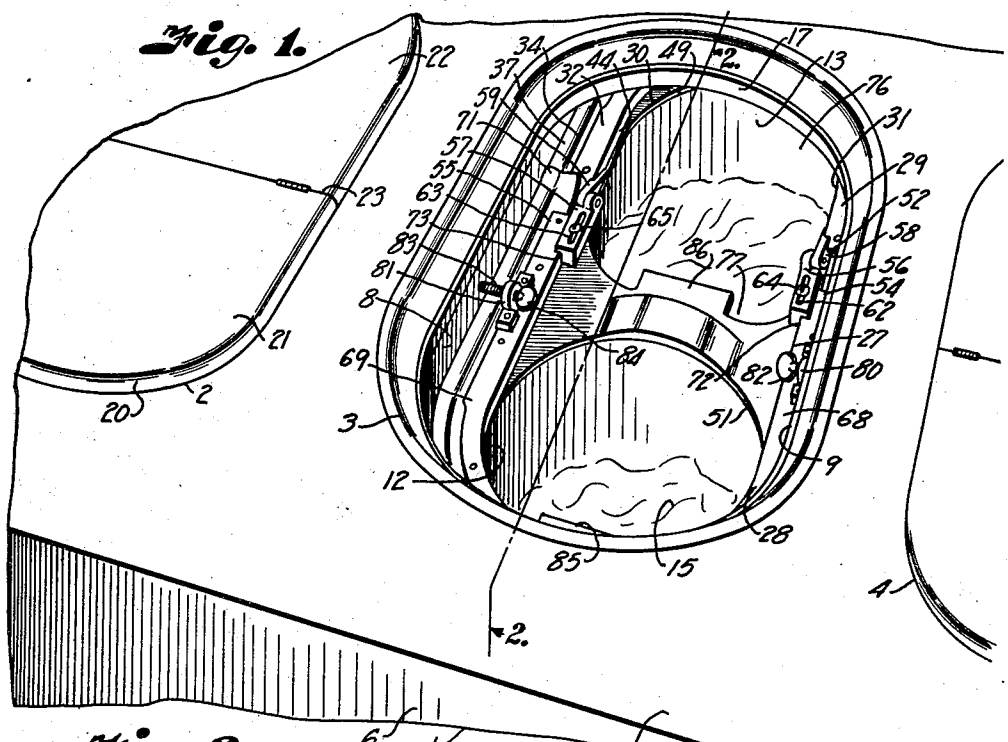
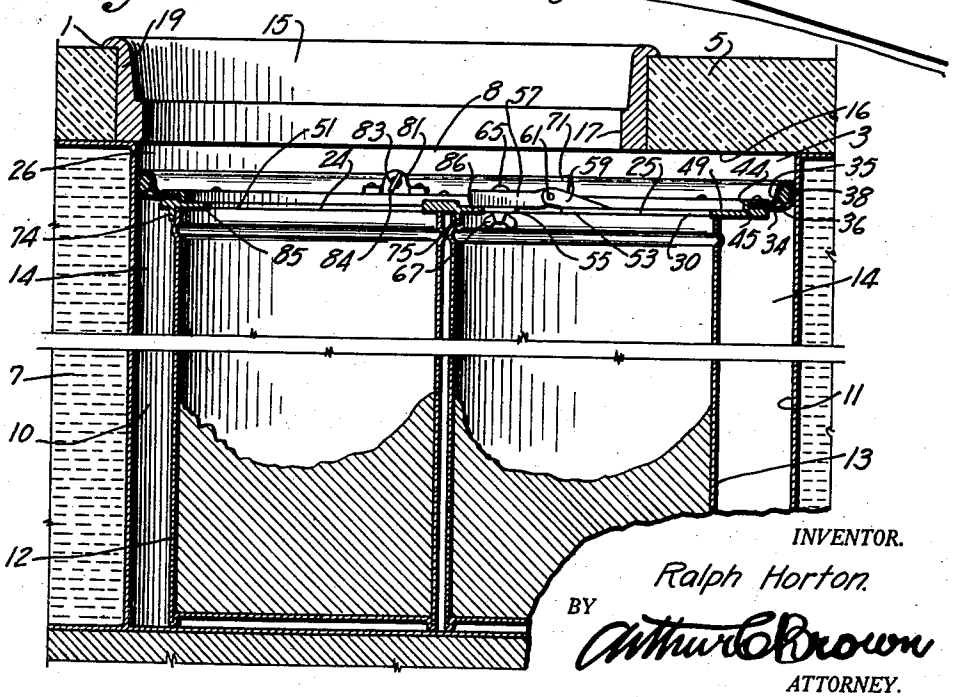


Fig. 2.



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Fig. 3.

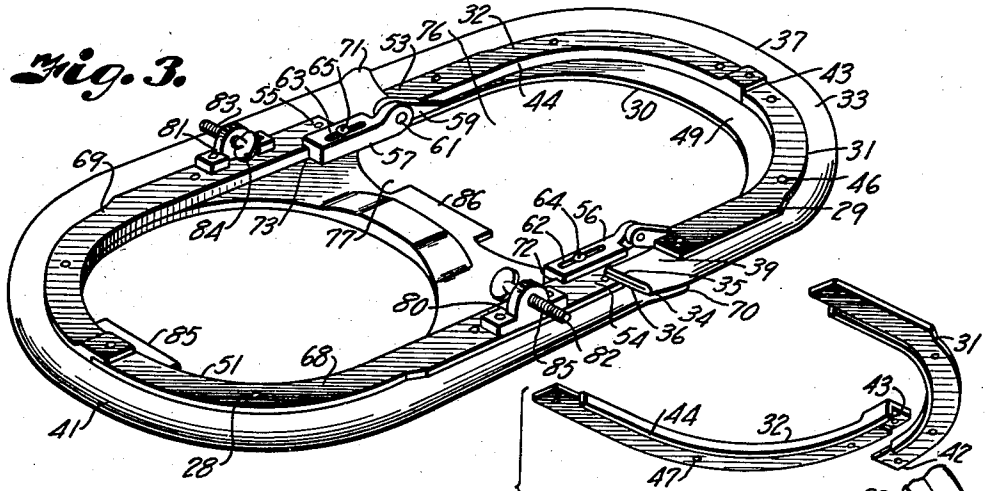


Fig. 4.

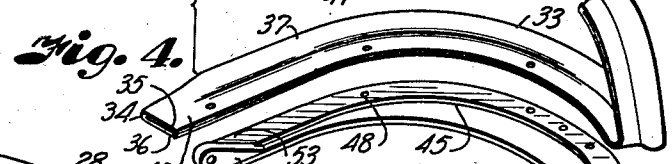


Fig. 5.

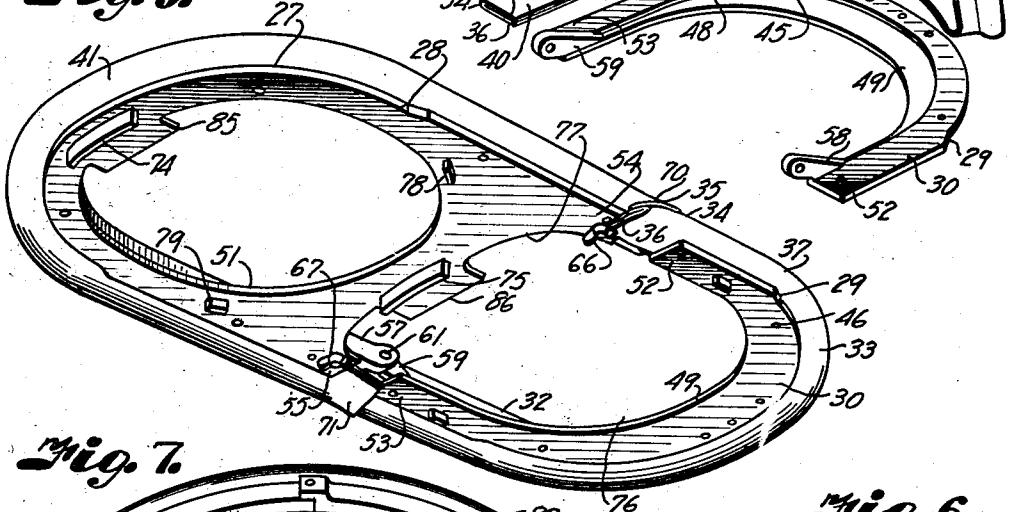


Fig. 7.

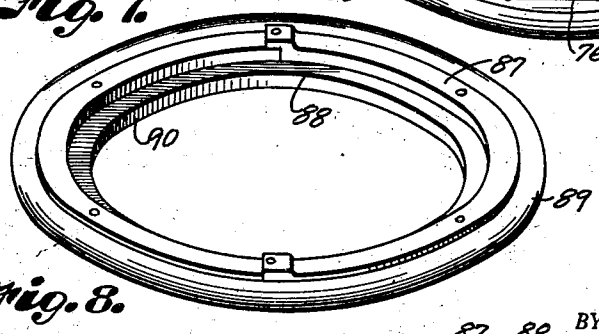


Fig. 6.

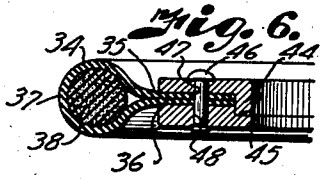


Fig. 8.



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REFRIGERATED CAN COMPARTMENT

Ralph Horton, Kansas City, Mo., assignor of forty-nine per cent to R. J. Potts and J. B. Woodbury, both of Kansas City, Mo.

Application April 26, 1935, Serial No. 18,301

4 Claims. (Cl. 220—14)

This invention relates to refrigerated can compartments such as employed in soda fountains, ice cream cabinets and like fixtures wherein open top cans are placed in storage compartments that are surrounded by a body of refrigerating medium.

In compartments of this character, variation in the temperature between the inner and outer surfaces thereof causes moisture in the air within the compartment to collect on the walls thereof in the form of frost. When the compartment is frequently opened, this frost accumulates to such an extent that it acts as an insulator and interferes with efficiency of the refrigerant. The frost must, therefore, be scraped off or melted with hot water, which process interferes with use of the cabinet and interferes with efficient operation of the refrigerating unit. When defrosting is neglected, the frost often accumulates to such an extent that the cans become so wedged that they cannot be removed without damage to the cans or the walls of the compartment.

It is, therefore, a principal object of the present invention to provide a compartment of this character with an auxiliary cover for sealing the space between the walls of the compartments and the tops of the cans, thereby preventing movement of moisture laden air into the compartment and preventing the accumulation of frost.

Other important objects of the invention are to provide an auxiliary cover that is of simple and lasting construction, that is readily applied and removed and which may be adjusted in sealing relation to the size of the compartment, to provide a cover formed of an alloy metal wherein the pores close when subjected to the cold air of a compartment, to provide for adjustability to height of the cans, and to provide the cover with means for leveling off the contents of a dipper with which the contents of the cans is removed.

Additional objects of the invention are to permit reduction in the amount of refrigerant required to maintain the contents of the cans at the desired temperature and to eliminate wastage of contents of the cans when being dispensed therefrom.

In cabinets of the character described, the walls become distorted because of changes in refrigerant temperatures and pressures, and it is, therefore, an object of the invention to provide the auxiliary cover with a flexible rim element to compensate for such distortions.

In accomplishing these and other objects of the invention, as hereinafter pointed out, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of a portion of an ice cream cabinet illustrating a can compartment equipped with an auxiliary cover in accordance with the present invention.

Fig. 2 is a cross section through the cabinet and auxiliary cover on the line 2—2, Fig. 1.

Fig. 3 is a detail perspective view of the auxiliary cover as viewed from above.

Fig. 4 is a perspective view of the parts composing one of the frame sections of the cover shown in disassembled spaced relation.

Fig. 5 is a perspective view of the cover as viewed from below.

Fig. 6 is a cross section through one of the frame sections of the cover particularly illustrating the sealing element.

Fig. 7 is a perspective view of a cover as employed in a single can compartment.

Fig. 8 is a diametric section through the form of invention illustrated in Fig. 7.

Referring more in detail to the drawings:

1 designates a cabinet particularly designed for storing cans of ice cream in a convenient manner so that the contents thereof may be maintained at the required temperature while being dispensed therefrom.

In the illustrated instance the cabinet includes a series of can compartments 2, 3 and 4 inset from the top 5 and spaced from the walls of the cabinet to provide passage ways 6 for the circulation of a cool transfer medium such as chilled brine or the like as indicated at 7. Each compartment includes side walls 8 and 9 connected by substantially semi-cylindrical end walls 10 and 11 that are spaced apart a suitable distance to house a pair of ice cream cans 12 and 13 in such a manner that there is material space about the sides of the cans as indicated at 14.

This space is required in order to allow for the frost which accumulates on the inner walls of the compartments incidental to the entrance of moisture laden air through the door opening 15 in the top 5 of the cabinet.

If this space were not provided, the cans would become so wedged by the frost accumulations that they would be difficult to remove. The space is also essential to accommodate cans of different diameters. The openings 15 through which the cans are inserted conform in shape to the cross section of the compartments, but in order to reduce the volume of air passing into the compartments, the openings are made as small as possible to permit insertion of the cans and

ready removal of the contents therethrough. The top 5, therefore, overlaps the wall of the compartment and particularly that end which accommodates the rear container as indicated at 16, in Fig. 2, only sufficient space being left between the edge 17 of the opening and the forward edge of the can 13 so as to permit removal of the can's contents.

The openings 15 are provided with a suitable frame 19 which carries a removable cover 20 comprising end sections 21 and 22 hinged together at substantially the transverse center of the frame as indicated at 23 so that one of the cover sections may be raised to allow access to one of the cans while the other cover section remains closed to protect the contents of the other can.

In the construction thus far described, whenever the cover 20 is removed or one of the door sections raised, warm air rushes through the openings and into the compartment incidental to suction created by opening thereof since the air in the compartment is contracted because of its drop in temperature.

This movement of warm air carries a large amount of moisture into the compartment which condenses and collects on the walls of the compartments in the form of frost, forming in effect an insulation, which interferes with efficient transfer of heat from the cans to the refrigerating medium.

As above pointed out, this frost may accumulate to such an extent that the cans are difficult to remove and require periodic removal of the frost. This interferes with efficient operation and often causes loss in both contents of the cans as well as investment due to the time that the compartment is out of service. When the compartment is equipped with an auxiliary cover in accordance with the present invention, movement of air is blocked from entering the spaces in and around the cans and the air in the compartment is maintained at a substantially constant temperature which more nearly approaches the temperature of the exterior sides of the compartment, thereby alleviating the frost formation.

In actual practice, the rims 24 and 25 of the respective cans are spaced from the lower face of the overlying top 5 as indicated at 26 which provide ample room for accommodating the auxiliary cover, as now to be described.

In the preferred form of the invention, the auxiliary cover includes a frame 27 conforming in shape to the horizontal cross section of the compartment and of sufficient width to pass through the opening 15 to seat upon the rims 24 and 25 of the cans.

Owing to the fact that the length of the compartment is substantially greater than the length of the opening, it is necessary to construct the frame in sections 28 and 29 hinged together in such a manner that the section 29 may be moved through the opening 15 and slid in the space 26 between the overlapping portion 16 and the rim 25 of the rear can while the other section is supported in substantially vertical position. When the section 29 is in place the section 28 may then be moved through the opening to rest on the rim of the can 12.

In the illustrated instance, the section 29 includes a lower U-shaped clamping member 30 which cooperates with upper clamping members 31 and 32 to retain a sealing or gasket element 33 therebetween. The gasket element 33 comprises a strip 34 of flexible material such as rubber folded intermediate its width so that the side edges 35 and 36 are brought into juxtaposition to overlie each other and be clamped between the lower clamping member 30 and the upper clamping members 31 and 32 as best illustrated in Fig. 6.

The extending or loose part of the gasket thus forms a tubular wing 37 in which is inserted a strip of sponge rubber 38 to retain the shape thereof when the gasket element is pressed into sealing engagement with the walls of the compartment as later described

The gasket element extends about the outer edge of the section 29 and has ends 39 and 40 projecting beyond the ends of the clamping sections to provide an overlapping seal with a similar gasket element 41 on the section 28. The sponge rubber strip, however, terminates short of the ends of the gasket strip so that the ends thereof may be sealed in face to face contact.

The clamping members 31 and 32 conform to the contour of the lower clamping member and the member 31 has a tongue shaped end 42 received in a socket 43 that is formed on the end of the member 32 for convenience in casting.

The members 31 and 32 are also provided with downwardly extending flanges 44 to engage in a recessed portion 45 formed in the inner periphery of the member 30 so as to cover the ends 35 and 36 of the gasket strip as best illustrated in Fig. 6.

After the clamping sections have been placed in superimposed position with the sealing element therebetween, rivets or other suitable fastening devices 46 are extended through aligning openings 47 and 48 in the respective upper and lower clamping members to secure the parts together and the gasket element in firmly clamped position. In order to supplement the clamping engagement of the gasket or seating element, the edges of the strip may be cemented to the clamping portions of the frame by a suitable cement.

The sealing material thus positively closes the interior of the tubular wing 37 to form a dead air space therein that serves as insulation to retard the transfer of heat and cold about the periphery of the frame.

The lower clamping member 30 has an inwardly extending web portion 49 which substantially conforms in radius to that of the can rim 25 as shown in Figs. 1 and 2.

The section 28 of the frame includes a flat plate portion 50 shaped to conform to that end of the compartment and having a circular opening 51 therein in alignment with the top of the can 12. The end of the plate adjacent the terminal ends 52 and 53 of the section 29 is provided with terminal portions 54 and 55 adjustably mounting ear members 56 and 57 that are connected to ears 58 and 59 rigidly attached to the terminal ends of the frame section 29. The ear members 56 and 57 overlap the ear portions 58 and 59 and are hingedly connected therewith by means of pins 60 and 61 extending therethrough as shown in Fig. 3.

In order to adjustably mount the ear members 56 and 57 on the body portion of the frame to compensate for length of the compartment they are provided with longitudinal slots 62 and 63 through which fastening devices 64 and 65 are extended and through openings formed in the extensions 54 and 55 of the frame. The fastening devices include threaded shanks which project from the lower face of the plate portion of the frame and are provided with wing nuts 66 and

67 whereby the ear members are adjustably clamped thereto.

The frame section 28 also includes a U-shaped clamp member formed in sections 68 and 69 similar to the members 31 and 32 of the other frame section and clamped thereby to the plate member is a gasket element 41 formed in exactly the same manner as the one described on the other section.

The gasket element 41 has projecting ends 70 and 71 under or overlying the projecting ends 39 and 40 of the other gasket as shown in Fig. 3 to close the space between hinging portions of the frame sections.

In order to guidingly support the ear members 56 and 57 the body portions thereof have longitudinal rabbet grooves 72 and 73 in the outer edges thereof to provide faces overlying the upper and inner side edges of the clamping members as shown in Fig. 3.

In order to retain the cans in their proper position and prevent shifting thereof under the auxiliary cover, the frame section 28 is provided with depending arcuate lugs 74 and 75 adapted to engage the forward portions of the rims of the respective cans as best illustrated in Fig. 2, the lug 75 engaging the inner side of the rim on the can 13 and the lug 74 the outer side of the rim on the can 12. The cans 12 and 13 are thus retained in contact with each other so that they cannot shift their position relatively to the opening 51 in the frame section 28 and the opening 76 that is provided in the other section incidental to the arcuate web 49 and an arcuate shaped cutout 77 in the plate portion 47 of the section 28.

The cans may be further supported by similarly depending pairs of lugs 78 and 79 engaging the sides of the cans opposite to the lugs 74 and 75; however, in ordinary instances these lugs are not necessarily required.

To retain the frame in position within the compartment the side portions of the frame section 28 are provided with lugs 80 and 81 that are attached thereto and carry adjusting screws 82 and 83 each including wing shaped heads 84 having shank portions 85 threadedly mounted in the ears and engaging against the opposite side walls of the compartment.

While the frame members thus described may be formed of various materials, they are preferably cast from an alloy metal having relatively low heat retaining capacity and of such a nature that the pores thereof will close under low temperatures to prevent leakage of air therethrough, and to prevent frosting thereof which would moisten and ruin any ice cream that might fall thereon.

In applying the frame constructed and assembled as described, the section 28 is moved on the hinge pins 60 and 61 so that it lies at substantially right angles to the section 29. The section 29 is then inserted through the opening 15 and into the space 26 so that the web portion thereof rests on the rim of the can 13.

The section 28 is then hinged backwardly so that the plate portion thereof is supported on the rim of the can 12. The frame may then be adjusted as to length by loosening the wing nuts 66 and 67 and sliding the sections apart until the gasket elements are in wedging relation with the end walls of the compartment. The wing nuts are then retightened to retain the gaskets in sealing relation.

After this adjustment has been made, the screws 82 and 83 are manipulated in the ears 80 and 81 so that the shanks thereof engage against the side walls of the compartment to retain the frame in seated relation on the cans when the dispensing dipper is scraped thereagainst as later described.

When in position within the compartments, the ends of the frame sections do not abut but the spaces therebetween are closed by the overlapping ends of the gasket elements as shown in Fig. 1.

When the frame is in position, the gasket element completely closes the space about the peripheries of the cans so as to retain dead air therein at a temperature substantially equivalent to the temperature of the refrigerating medium, thereby preventing the formation of frost between the walls of the cans and walls of the compartment. The hinging feature of the frame sections also compensates for cans of different height in the same compartment and allows a closer fit than would be otherwise possible. It is true that the cover sections will not fit tightly against the entire circumferences of the cans but they will still be effective for the purpose intended.

The frame thus described also forms a cover by which cream that may fall from the dipper is prevented from dropping into the compartment between the cans. Should any of the cream fall from the dipper it will strike the frame and drop back into the can and not be wasted as in present practice.

In order to provide the cover with scraping means so that each dipper full may be leveled off as it is withdrawn from the can, the plate portion of the section 28 has tongues 85 and 86 projecting inwardly over the tops of the respective cans so that as the filled dipper is removed from the can it may be wiped over the tongues to remove surplus cream which falls from the scrapers back into the can.

The form of the invention shown in Fig. 7 is adapted to single can compartments and the upper and lower clamping plates 87 and 88 are therefore of circular formation to carry a circular gasket element 89 that is constructed in the same manner as the gasket elements in the preferred form of the invention. The lower clamping ring 88 has a depending circular flange 90 adapted to engage within the rim of a can to retain it in centered position in the compartment.

From the foregoing it is apparent that I have provided an auxiliary cover which excludes movement of moisture laden air into the space surrounding the cans and therefore prevents formation of frost. It is also apparent that due to the sealing engagement of the cover with the walls of the compartments, a dead air space is formed to retain the cold admitted from the refrigerating medium so that the cans are retained at substantially the same temperature as that of the brine. It has been found that in most instances the refrigerating medium may be maintained at lower temperatures after installation of the auxiliary covers, thereby saving in the operating cost of the refrigerating unit.

It is also apparent that because of flexibility of the sealing element and the adjustability between the frame sections, the frame is readily accommodated to either one of the two present standard size compartments and if the walls of the compartments have been damaged, the gasket element will automatically fill irregularities caused by such damage as well as take care of

variation in size and shape due to expansion and contraction.

To remove the auxiliary cover, the screws 82 and 83 are loosened and the section 28 is then lifted upwardly hinging on the pins 60 and 61 after which the other section may be withdrawn so that the entire frame may be removed through the opening 15 in reverse order to its placement. After the auxiliary cover has been removed, the cans may be readily withdrawn from the compartment as there is no frost tending to seal them in as in the case of cabinets without the auxiliary covers.

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

1. In combination with a can compartment of the character described, an auxiliary cover for the compartment including interconnected frame members shaped to provide openings registering with open tops of cans supported in the compartment, pairs of aligning ears on the respective frame members, means connecting said ears for hinging the frame members together, sealing means carried by and projecting beyond outer edges of said frame members, and means for adjustably mounting one pair of said ears to move said frame members apart whereby the projecting portions of the sealing means are retained in sealing contact with the walls of the can compartment.

2. In combination with a can compartment of the character described, an auxiliary cover for the compartment including interconnected frame members shaped to provide openings registering with open tops of can supported in the compartment, pairs of aligning ears on the respective frame members, means connecting said ears for hinging the frame members together, sealing means carried by and projecting beyond outer edges of said frame members, means for adjustably mounting one pair of said ears to move said frame members apart whereby the projecting portions of the sealing means are retained in sealing contact with the walls of the can compartment, and means mounted on the frame members engageable with portions of said can compartment for retaining said cover in position.

3. In combination with a can compartment of the character described, an auxiliary cover for the compartment including interconnected frame members shaped to provide openings registering with open tops of cans supported in the compartment, pairs of aligning ears on the respective frame members, means connecting said ears for hinging the frame members together, sealing means carried by and projecting beyond outer edges of said frame members having overlapping projecting ends at the hinge points of said frame members to close the space therebetween when the frame members are moved apart, and means for adjustably mounting one pair of said ears to move said frame members apart whereby the projecting portions of the sealing means are retained in sealing contact with the walls of the can compartment.

4. In combination with a can compartment of the character described, an auxiliary cover for the compartment including interconnected frame members shaped to provide openings registering with open tops of cans supported in the compartment, pairs of aligning ears on the respective frame members, means connecting said ears for hinging the frame members together, sealing means carried by and projecting beyond outer edges of said frame members having overlapping projecting ends at the hinge points of said frame members to close the space therebetween when the frame members are moved apart, means for adjustably mounting one pair of said ears to move said frame members apart whereby the projecting portions of the sealing means are retained in sealing contact with the walls of the can compartment, and means mounted on the frame members engageable with portions of said can compartment for retaining said cover in position.

RALPH HORTON.