United States Patent

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[54] **CONTAINER FOR PACKING BAGS**
11 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **229/15,** 229/42, 229/14
[51] **Int. Cl.** **B65d 3/24,** B65d 5/48
[50] **Field of Search** 229/15, 42, 14; 217/3, 40

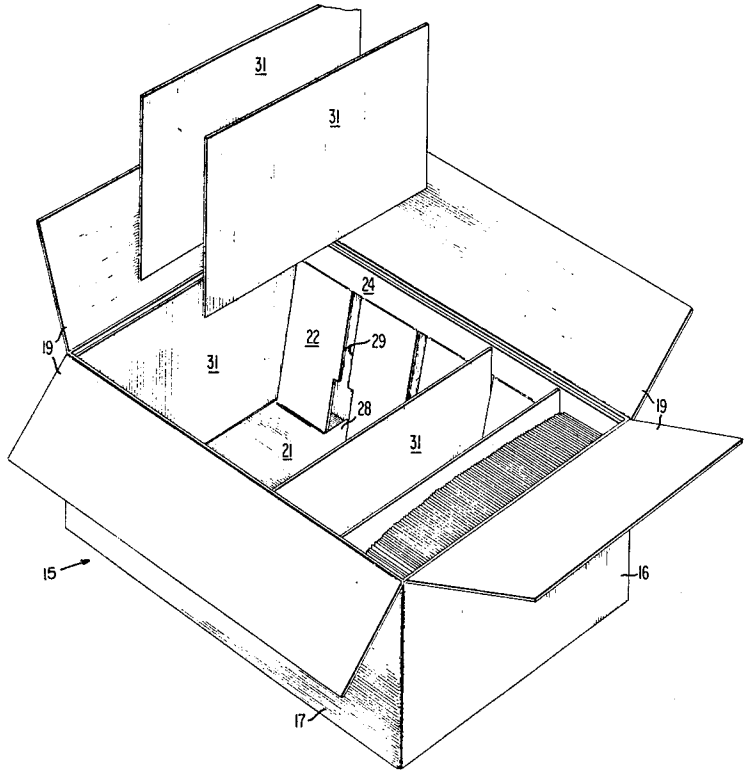
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Primary Examiner—David M. Bockenek
Attorney—Beveridge and De Grandi

ABSTRACT: The present invention involves a method of packaging flat bags for shipment and a shipping container for the bags. The bags have a folded bottom end which is substantially thicker than the open top end. In the disclosed method a number of bags are arranged flatwise into an elongated bundle with the thicker bottom ends of the bags at the top so that the longitudinal cross section of the bundle is a wedge shape that is narrower at the bottom, the bundles are arranged side-by-side in rows and inwardly directed forces are maintained on the supporting end surfaces of each row as well as against the sides of each row. The shipping container comprises an outer casing having end, side and bottom walls in which is inserted a packing insert having a pair of inclined wedging panels that extend between the casing end walls and are inclined outwardly and upwardly from a location on the casing bottom wall spaced inwardly from the bottom of the casing sidewalls. The upper portion of the wedging panels contact the upper portion of the casing sidewalls to form a wedgelike compartment for containing rows of bags stacked in fanlike bundles and locking tabs extend between the lower portion of the inclined wedging panels and the casing sidewalls.



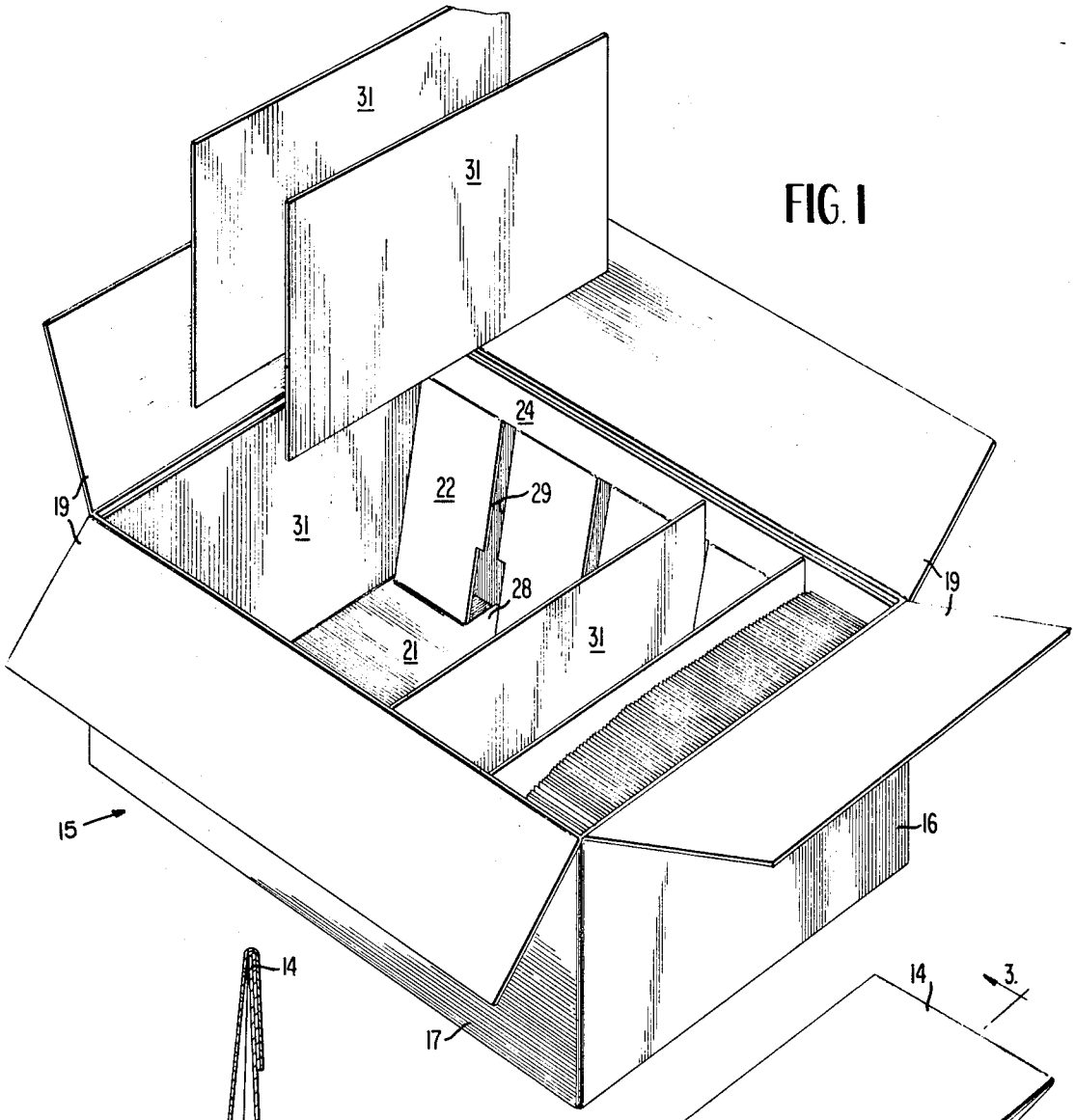


FIG. 1

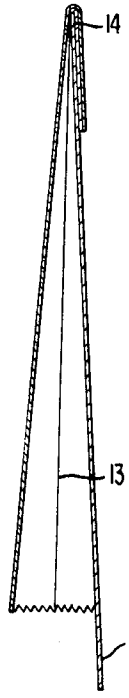


FIG. 3

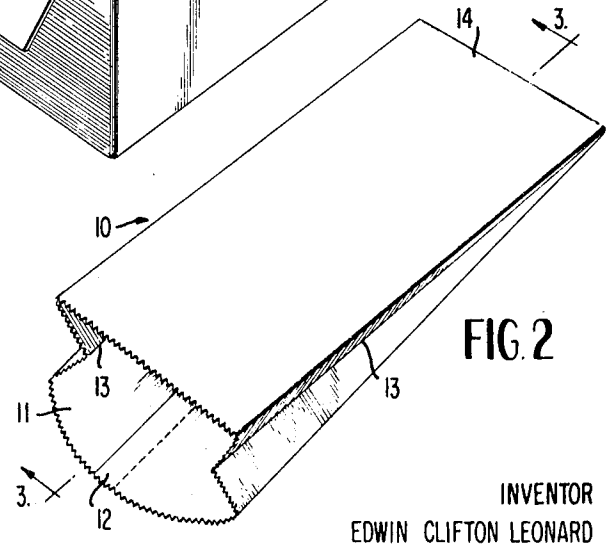
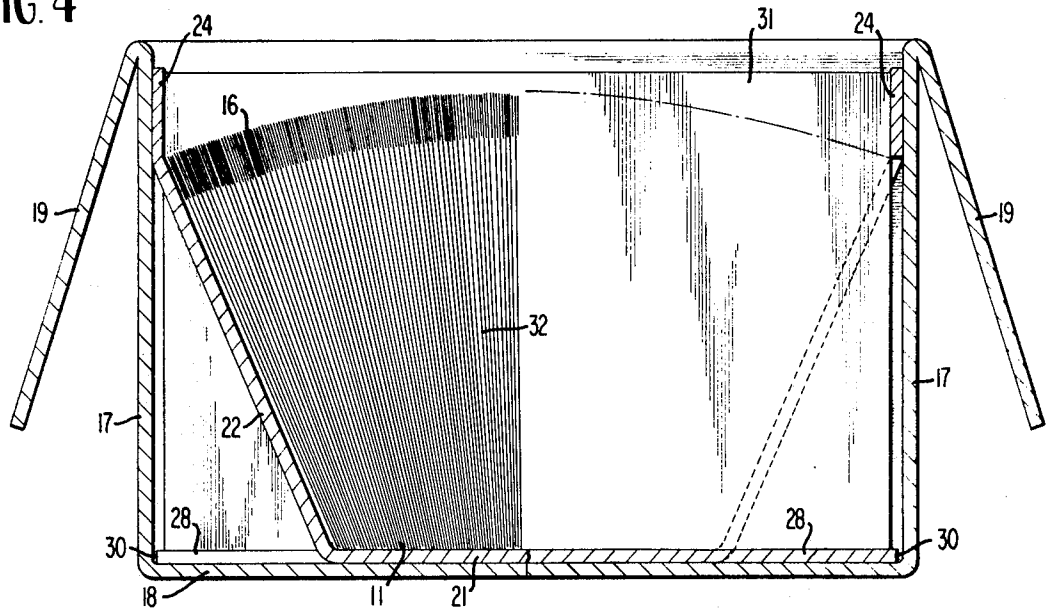


FIG. 2

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FIG. 4


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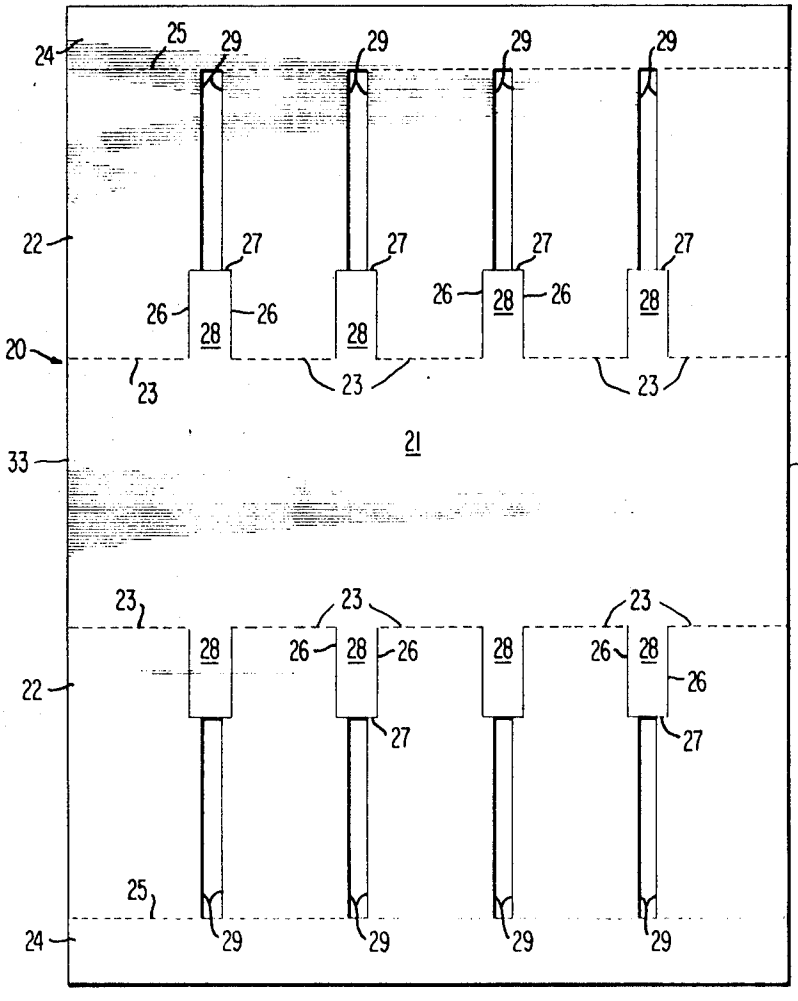

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FIG. 5

CONTAINER FOR PACKING BAGS

This invention relates to an improved method and container for packing for shipment and storage flat empty bags having a folded bottom which is substantially thicker than the open top to prevent deformation of the individual bags due to shifting and movement within the packing case, and is particularly well adapted for use with light and fragile bags used to package frozen confections, such as Eskimo Pie ice cream bars.

Confections and many other items are bagged by utilizing automatic bagging machines. The bags must be supplied in shipping containers in bundles or stacks containing a fixed number of bags, usually constituting whole even numbers such as 500. Furthermore, the stacks or bundles must be arranged in a manner such that the entire stack or a portion thereof can conveniently and quickly be removed from the container by the bagging machine operator and the bags placed in the feed hopper of the bagging machine.

The bagging machines operate at a very high rate of speed, typically at the rate of 120—288 per minute, so that a bag which is deformed or damaged through excessive bowing, warping, curling, particularly at the top open end or lip of the bag, will cause a malfunction of the bagging machine. This not only results in lost bags and products but more importantly interrupts production of the machine in order to clear the jam caused by the deformed bag. For this reason it is extremely important that the bags be packed for shipment in a manner to preclude damage to the bag during handling, shipping and storing.

The construction of flat folded bags is such that the shape of the bag poses a packing problem. A typical bag used for packing confections has eight plies of material in the thickest part of the bag which is at the outside edges on the bottom of the bag. At the opposite top open end of the bag, or the lip, there is but a single ply of material except at the center of the lip where the plies overlap to create a double ply. Between the bottom and the lip of the bag up to four plies are present. Thus when the bags are stacked face to face in a flatwise arrangement with the lips of all bags along one side of the bundle, the thickness of the stacked material on that side of the bundle constituting the bottom ends of the bags will be substantially greater than at the opposite side of the stack where the lips of the bags are located. In other words, if an evenly distributed pressure is placed against the opposite faces of the stack, that side of the stack constituting the bag edges, i.e., the side elevation, will assume a generally trapezoidal or wedgelike shape. This creates problems in packing the bags. Obviously if a stack of the bags is packed in a rectangular box, even if the side of the stack constituting the bottoms of the bag is moderately compressed, the other side of the stack at the lip end of the bags will be very loose and the stack will be easily disarranged. Any disarrangement of the bags in the stack quickly causes damage to the bags, particularly at the thin lip end where the lips are easily curled, torn or mutilated. Other arrangements have been utilized such as arranging the bags into small bundles and then stacking the bundles with alternate ends along one side of the stack so that the length of the stack will be equal at both ends. A rather exotic, although typical manner of packing the bags such that the thinner and thicker ends of the bundles alternate is disclosed in U.S. Pat. No. 2,659,187.

However, these arrangements of alternating the ends of small bundles of bags to equalize the dimensions for packing in rectangular boxes has been quite unsatisfactory. In the first place, it is difficult for the bagging machine operators to handle bags in which some of the bags are stacked with the lips facing in one direction and others with the lips facing in another direction. For convenience of loading into the bagging machine, the bags are preferably stacked flatwise along a row with the bottom end of the bags at the top of the row. In this arrangement an operator can reach into the top of the row with his thumb and fingers spread apart, grip the bottom ends of a number of bags between the thumb and forefinger, extract the gripped bags from the stack with the lips of the bags projecting downwardly and then transfer the gripped bags into the feed hopper of the bagging machine. Secondly, even if the bags are arranged in rows of alternatingly faced bundles so that the end faces of the rows are parallel, the bags in the central portion of the row that are inclined at an angle relative to the end of the row will tend to be forced in the direction of the top or bottom of the row due to the inclination of the bag when a compressive force is exerted against the ends of the row. Unless the bags are tightly held together within the container they will shift around in the container and become deformed and damaged. However, these centrally located bags will become damaged, particularly on the fragile lip ends, as they are pushed out of the edge of the row by the component of the compressive force that is in the plane of the bag which is inclined to the compressive force exerted on the bundle.

A primary object of this invention is to provide an improved method and container for packing empty, folded bags which will permit the bags to be shipped and stored without damage or mutilation to the bags.

A further object of the invention is to provide a method and container for packing empty, folded bags in a manner to stabilize the bags and prevent them from slipping or shifting in the shipping container while the containers are being handled for shipment and storage.

A still further object of the invention is to provide a container for empty, folded bags in which the bags are packed in an arrangement by which they can be conveniently extracted quickly and easily for loading into the hopper of a bagging machine.

Still another object of the invention is to provide a packing container for empty folded bags in which the container is of a shape that can be easily handled, stacked and stored.

The key to the applicants invention involves stabilizing the bags so that they remain together as a compact, unitized bundle and the shock forces from handling the containers tend to keep individual bags aligned within the bundle. This is accomplished by stacking the bags flatwise into an elongated bundle with the thicker bottom ends of the bags on one side to create a wedge-shaped bundle, establishing a compressive force lengthwise of the bundle by tightly supporting the ends of the bundle on inwardly inclined surfaces and establishing a compressive force transversely of the bundle by maintaining pressure against both sides of the bundle constituting the edges of the bags. In the disclosed embodiment of the invention a number of bundles are arranged side by side within a container such that a lengthwise compressive force is maintained on each row of bags and pressure is maintained against both sides of the outer rows of bags to establish the transverse compressive force, the two mutually perpendicularly applied compressive forces stabilizing the wedge-shaped bundles and maintaining the solidarity and unity of the bundles or rows of bags.

The shipping container involved in the invention utilizes a standard rectangular carton or casing having the usual end walls and sidewalls that extend vertically upwardly from the bottom of the carton. A pair of inclined panels are wedgingly locked inside the carton interior between the carton end walls with the bottom edge of each panel spaced inwardly from the carton sidewalls and extending upwardly and outwardly so that the top end of the panel is in contact with the adjacent carton sidewall. Locking tabs extend between the bottom of the inclined panel and the adjacent carton sidewall to prevent lateral side movement of the inclined panels. The inclined panels on which the faces of the bundles of bags are supported, or wedging panels, have a series of slots extending from adjacent the top of the panel to the bottom. Flat separator panels are inserted into these slots to extend across the space between the facing inclined panels and divide the carton interior into adjacent rows of wedge-shaped compartments having sloping end faces and parallel sides. The width of the slots is slightly greater than that of the separator panels so that the panels have some freedom of motion normal to their faces. The separator panels are spaced apart a distance which is sub-

stantially that of the width of a bundle of bags. Since the separator panels have a small degree of motion transversely of the wedge-shaped compartments, when the compartments are filled with rows of bags a compressive force transversely of the rows of bags may be maintained by wedging flat panels between the end walls of the carton and the outer rows of bags, the interior separator panels thus being tightly pressed against the adjacent sides of the bundles. A sufficient number of bags is contained in each bundle so that the bundle is tightly compressed lengthwise between the sloping end faces of the wedging panels at the opposite ends of each compartment.

The features and characteristics of the invention will become more fully apparent from the following description in the accompanying sheets of drawings which illustrate a preferred embodiment, and wherein:

FIG. 1 is a perspective view from one side and above of the packing container with some of the panels removed and the container partially filled.

FIG. 2 is a perspective view of a typical bag to be packed in the container, the top of the bag being shown in a semiopened condition so as to illustrate more clearly the construction of the bag.

FIG. 3 is a cross-sectional view of the bag of FIG. 2 taken along section line 3–3.

FIG. 4 is a transverse cross-sectional view of the container of FIG. 1 with the left half of the Figure representing a cross-sectional view within a packaging compartment and a right half illustrating a cross section exteriorly of the packaging compartment.

FIG. 5 is a plan view of the one piece blank employed for fabricating the packing insert contained within the packing carton to support the bundles of bags.

FIGS. 2 and 3 illustrate the typical construction of a bag 10 for which the disclosed shipping container was devised. Each bag is formed of a single ply of paper which is cut and folded in the usual manner. The top or lip 11 of the bag is single ply except in the seam area 12 where the single plies overlap. Both sides of the bag have folded pleats 13 extending lengthwise of the bag from the top to the bottom such that the seams have four plies of material when the bags are folded flat. The closed bottom portion 14 of the bag is formed by folding over the material of the bag hence it is twice as thick as the other portions of the bag and at the edges constitutes eight plies of material. Thus when the bag is in the completely flattened condition the bottom 14 is at least four times as thick as the top portion at the seam 12 or eight times as thick as the protruding lip 11 at the top of the bag. The paper from which the bag is made is very thin, and proportionately much thinner than indicated in FIG. 3 so that the upper lip 11 of the bag is quite fragile and easily distorted or bent.

The outer portion of the container in which the bags are packaged comprises a typical rectangular carton or outer casing 15, preferably of corrugated cardboard. The carton has facing end walls 16 and facing sidewalls 17 that extend vertically upwardly around the edges of the bottom wall 18 of the carton to define the interior of the carton. Lids 19 are hinged along the top edges of the end and sidewalls and are adapted to be folded inwardly to seal the top of the carton after it has been filled.

The packing insert 20 which is fabricated from the blank illustrated in FIG. 5 is inserted within the carton 15 to provide the support for the bags. Referring to FIG. 5, the packing insert has a centrally located, rectangular floor panel 21 along the opposite longitudinal edges of which are hinged a pair of rectangular wedging panels 22 that extend along the length of the floor panel 21 and separated from it by the interrupted common hinge lines 23. At the top of each wedging panel 22 and extending along its length is a rectangular stabilizing panel 24 that is integral with and connected to the wedging panel along the hinge line 25. At spaced intervals along their length, both wedging panels 22 contain pairs of parallel slits 26 extending away from the edges of the floor panel 21 into the wedging panel area from the common hinge line 23 and another slit 27 extends perpendicularly between each pair of slits 26 to define the perimeter of a series of locking tabs 28 that are integral with and extend outwardly from the floor panel 21 from the common hinge lines 23 that joins the floor panel to the wedging panels. A series of parallel slots 29 are spaced along the length of each of the wedging panels 22 to extend from the center of the cutout area defined by the slits 26 and 27 to the hinge line 25 connecting the stabilizer panel to the wedging panel. These slots 29 are somewhat narrower than the space left in the wedging panel by the locking tabs 28 and the slot 29 plus the cutout area of the wedging panel from which the locking tab 28 is formed create a series of spaced, parallel slots in the wedging panels that each extend from the hinge line 25 connecting the wedging panel to the stabilizer panel to the common hinge line 23 of the wedging panel and the floor panel. This insert may be conveniently formed of corrugated cardboard with the hinge lines defined by a crease extending along the surface of the corrugated material.

Referring to FIGS. 1 and 4, the packing insert 20 is placed within the carton 15 with the insert floor panel 21 overlying the central portion of the carton bottom 18 and extending along the length of the carton between the end walls 16. The width of the floor panel 21 being less than the width of the carton between the sidewalls 17, the two outer longitudinal edges of the floor panel 21 will be spaced inwardly from the sidewalls 17 of the carton. When the packing insert 20 is placed within the carton the wedging panels 22 are each bent upwardly from the plane of the floor panel 21 and the locking tabs 28 so as to extend upwardly and outwardly from the common hinge line 23 of the floor panel such that the top edge of the wedging panels along the hinge line 25 of the stabilizer panel rests against the upper portion of the carton sidewall 17. The stabilizer panels 24 extend vertically upwardly from their hinge line 25 with the back in contact with the vertical sidewalls 17 of the carton. Each locking tab 28 projects outwardly over the bottom of the carton in the plane of the floor panel 21 with the outer edge 30 either abutting or closely adjacent the lower edge of the carton sidewall 17. Thus the packing insert 20 is securely locked in position within the interior of the carton with the exterior edges 33 common to the floor, wedging and stabilizer panels in contact with the respective carton end walls 16 to prevent movement lengthwise within the carton interior and the stabilizer panels 24 and locking tabs 28 in contact with the carton sidewalls 17 to prevent transverse movement within the carton interior. Thus the packing insert 20 establishes a shipping space within the carton which is a wedge-shaped compartment extending lengthwise of the carton between the end walls 16. Rectangular separator panels 31 are positioned to extend transversely across the wedge-shaped compartment with the edges of the separator panels projecting into the slots 29 of the wedging panels to divide the wedgelike compartment into a series of smaller wedge-shaped compartments having sloping ends each defined by those portions of the inclined wedging panels 22 between adjacent slots 29.

As best seen in FIG. 4, the bags 10 in a flat folded condition are stacked flatwise in a face to face relation into an elongated bundle 32 with the thicker top end 16 of the bags along the top of the bundle. The bundle 32, which will be wedge-shaped due to the difference in thickness of the upper and lower ends of each bag is placed within a compartment defined between the separator panels 31 with the faces of the outermost end bags of the bundle supported by the inclined surfaces of the wedging panels 22. The width of the carton between the sidewalls 17 and the slope of the wedging panels 22 is such that a given number of stacked bags, such as 500, will completely fill the length of a wedge-shaped compartment with the bundle being subjected to an evenly applied compressive force lengthwise of the bundle due to the confining effect of the wedging panels 22 at either end of the bundle. Bundles of stacked bags with the thicker bottom ends of the bags uppermost are packed into each of the wedge-shaped compartments defined by the wedging panels 22, the floor panel 21

and the separator panels **31**. The separator panels **31** have a width which is somewhat narrower than that of the slots **29** so that the separator panels have a small degree of motion transversely of the bundles of bags **32**. After all compartments in the container are filled with bags that are compressed lengthwise of the bundles between the sloping faces of the wedging panels **22**, additional separator panels **31** are placed at each end of the carton interior against the carton end walls **16** in sufficient quantity to wedge the separator panels **31** and adjacent rows of bundles **32** together and establish a compressive force transversely of the bundles. The spacing between the slots **29**, the width of the slots **29** and the thickness of the separator panels **31** is such that the separator panels will float in the slots and avoid the transverse compressive forces being born by the packing insert **20**. Notwithstanding this provision for the separator panels to float, the separator panels are restrained sufficiently by the slots **29** such that the wedgelike compartments in which the bundles are packed will remain intact in the event that all or some of the bags are removed from a bundle by an operator loading a bagging machine. Thus the container is not only a medium by which the bags can be safely shipped damage free but provides a convenient and handy storage bin for the bags at the bagging machine. The arrangement of the bags in rows with the thick portion of the bag uppermost provides an arrangement whereby the bagging machine operator can very conveniently and quickly lift groups of bags with one hand from the packing container and place them into the loading hopper of the bagging machine. Since the thick portion of the bag is uppermost, the operator can easily grasp a number of the bags by the thicker bottom portion between thumb and fingers and in one motion place them in the bagging machine hopper.

While the above descriptions and illustrations show the preferred embodiment of a method of placing flat empty bags and a shipping container for the bags according to the present invention, it should be understood that this invention is not intended to be restricted solely to the specifically described subject matter but that it is intended that all modifications of the described embodiment be covered which would be apparent to one skilled in the art and which fall within the spirit and scope of the invention typified by the disclosed embodiment.

I claim:

1. A shipping container for empty bags wherein the folded bottom end of each bag is substantially thicker than the open top end, said container comprising:

an outer casing having facing end walls and facing sidewalls extending vertically from the outer edges of a bottom wall;

a pair of flat wedging panels each extending between said casing end walls in a facing, spaced apart relationship with their lower longitudinal edges spaced inwardly from said casing sidewall to extend upwardly and outwardly from said casing bottom wall to define a wedge-shaped compartment for containing at least one evenly compressed row of flatwise stacked bags with the bag on each end of the row flatly resting on said wedging panels and the thick top ends of the bags uppermost;

the top portion of each said wedging panel contacting the upper portion of a casing sidewall along its length with the bottom edge spaced inwardly from and parallel to the bottom edge of the sidewall; and

means in contact with the lower portion of each said wedging panel for locking each said panel against movement relative to said casing.

2. The shipping container defined in claim **1** wherein said locking means includes at least one locking member extending between the lower portion of each said wedging panel and the adjacent casing sidewall.

3. The container described in claim **1** wherein said wedging panels each have a plurality of narrow slots extending adjacent its top longitudinal edge to the bottom longitudinal edge spaced along the length of said wedging panels; and

flat separator panels extending across the space between opposite wedging panels with opposite edges contained in said slots, thereby dividing the space between said casing end panels into multiple wedge-shaped compartments for containing compressed bundles of bags.

4. A shipping container for empty bags wherein the folded bottom end of each bag is substantially thicker than the open top end, said container comprising:

an outer casing having facing end walls and facing sidewalls extending vertically from the edges of a bottom wall;

and a packing insert contained within said outer casing, said insert comprising:

a rectangular floor panel extending lengthwise between said casing end walls in an overlying relationship to the central portion of said casing bottom wall,

a pair of wedging panels integrally hinged to opposite longitudinal edges of said floor panel along common hinge lines parallel to and spaced from the bottom edge of said casing sidewalls,

each wedging panel extending upwardly and outwardly from said common hinge line with the upper portion of said wedging panel resting against the upper portion of a casing sidewall such that said panels define a wedge-shaped compartment with inclined ends for containing at least one evenly compressed row of flatwise stacked bags with the bags at each end of the row flatly resting on said wedging panels and the thick top ends of said bags uppermost; and

locking tabs extending between said wedging panels and the adjacent casing sidewalls to prevent relative motion therebetween.

5. The shipping container described in claim **4** wherein said wedged panels each have a series of narrow slots extending from the top to the bottom of the inclined portion and spaced oppositely along the length of said wedging panels between said casing end walls; and

separator panels extend upwardly from said bottom panel between said wedging panels with the separator panel ends contained within opposing slots in said wedging panels to define a plurality of juxtaposed wedge-shaped compartments extending between said casing end walls.

6. A shipping container described in claim **5** wherein each said locking tab comprises material separated from a wedging panel and having one end integral with said floor panel with the tab being an extension of said floor panel protruding beyond a said common hinge line to have the other end adjacent said casing sidewall, said tab being in an overlying relationship to said casing bottom wall.

7. The shipping container described in claim **6** wherein a locking tab is positioned below each said slot and each said tab is formed from a portion of said wedging panel separated therefrom by parallel slits extending upwardly from said common hinge line.

8. The shipping container described in claim **7** wherein the width of at least the top portion of said slots is sufficiently greater than the thickness of said separator panels that each separator panel can be placed in tight contact with the sides of the row of bags contained in the compartment defined by said separator panel.

9. The shipping container described in claim **5** wherein said insert additionally comprises stabilizer panels integrally hinged along the length of the upper end of each of said wedging panels between said casing end walls to extend vertically upwardly in an overlying relation against said casing sidewall.

10. A one piece blank for a packing insert positionable within a shipping container to support bundles of flatwise stacked, empty bags having substantially thicker bottom ends than open top ends, said blank comprising:

a rectangular floor panel;

a pair of rectangular wedging panels each integrally hinged by a common hinge line to said floor panel along opposite longitudinal edges thereof;

at least two locking tabs integral with and extending outwardly from said floor panel beyond said common hinge lines;

each said tab being formed from a portion of said wedging panel and separated therefrom along cleavage lines which terminate at spaced intervals on said common hinge line;

the top portion of each said wedging panel opposite said common hinge line having a stabilizing panel integrally hinged thereto along its length by a second hinge line parallel to said common hinge line; and

each said wedging panel having a narrow slot extending perpendicularly from said second hinge line to the top portion of a cleavage line that forms the top edge of each said tab opposite said common hinge line.

11. The blank described in claim **10** wherein each said tab is rectangular with three outer edges defined by lines of cleavage through said wedging panel of which two lines defining the sides of said tab are parallel and extend outwardly from said floor panel perpendicularly of said common hinge line and the top of said tab is defined by a cleavage line substantially parallel to said common hinge line.