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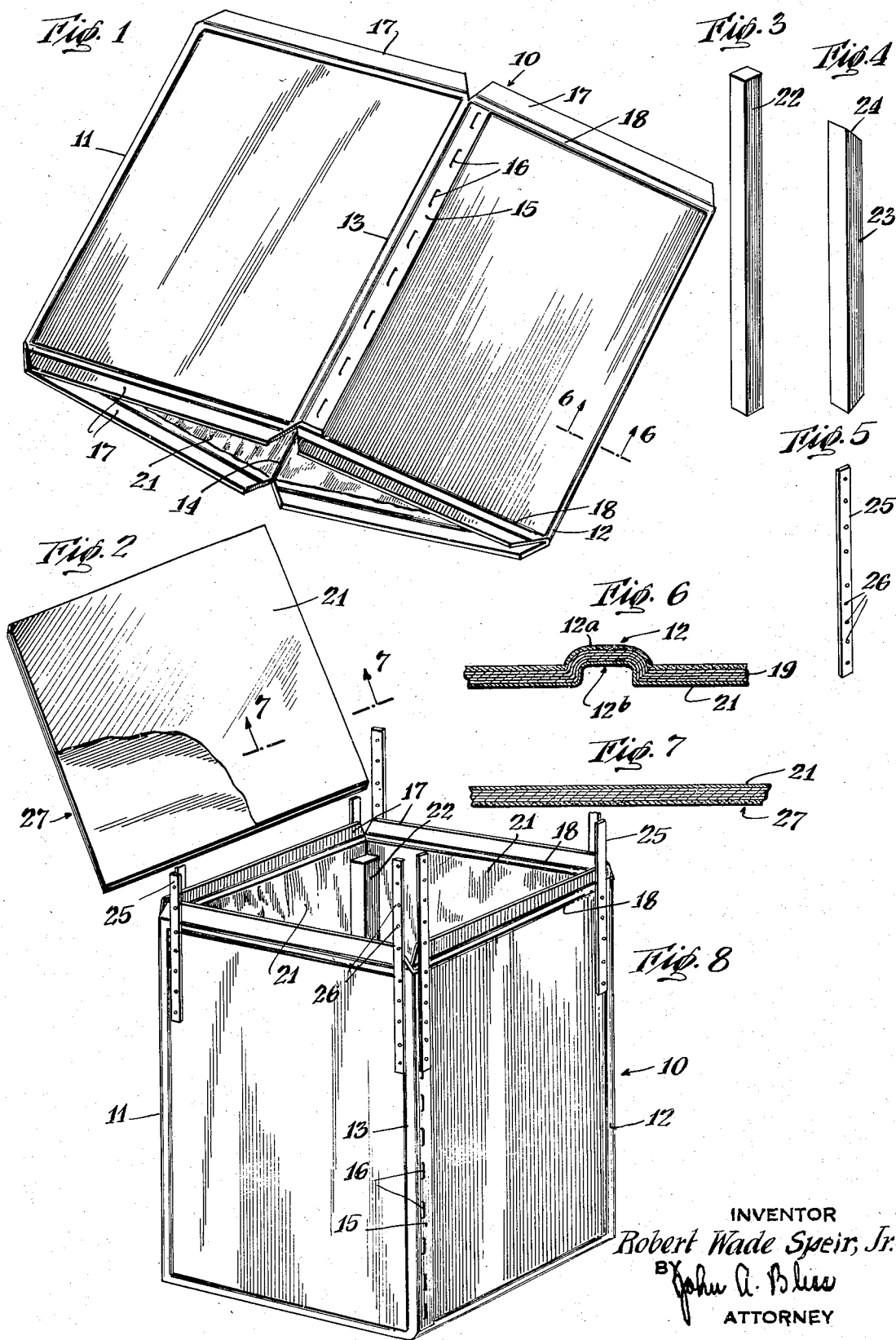
R. W. SPEIR, JR

2,319,641

CARTON

Filed April 29, 1941

2 Sheets-Sheet 1



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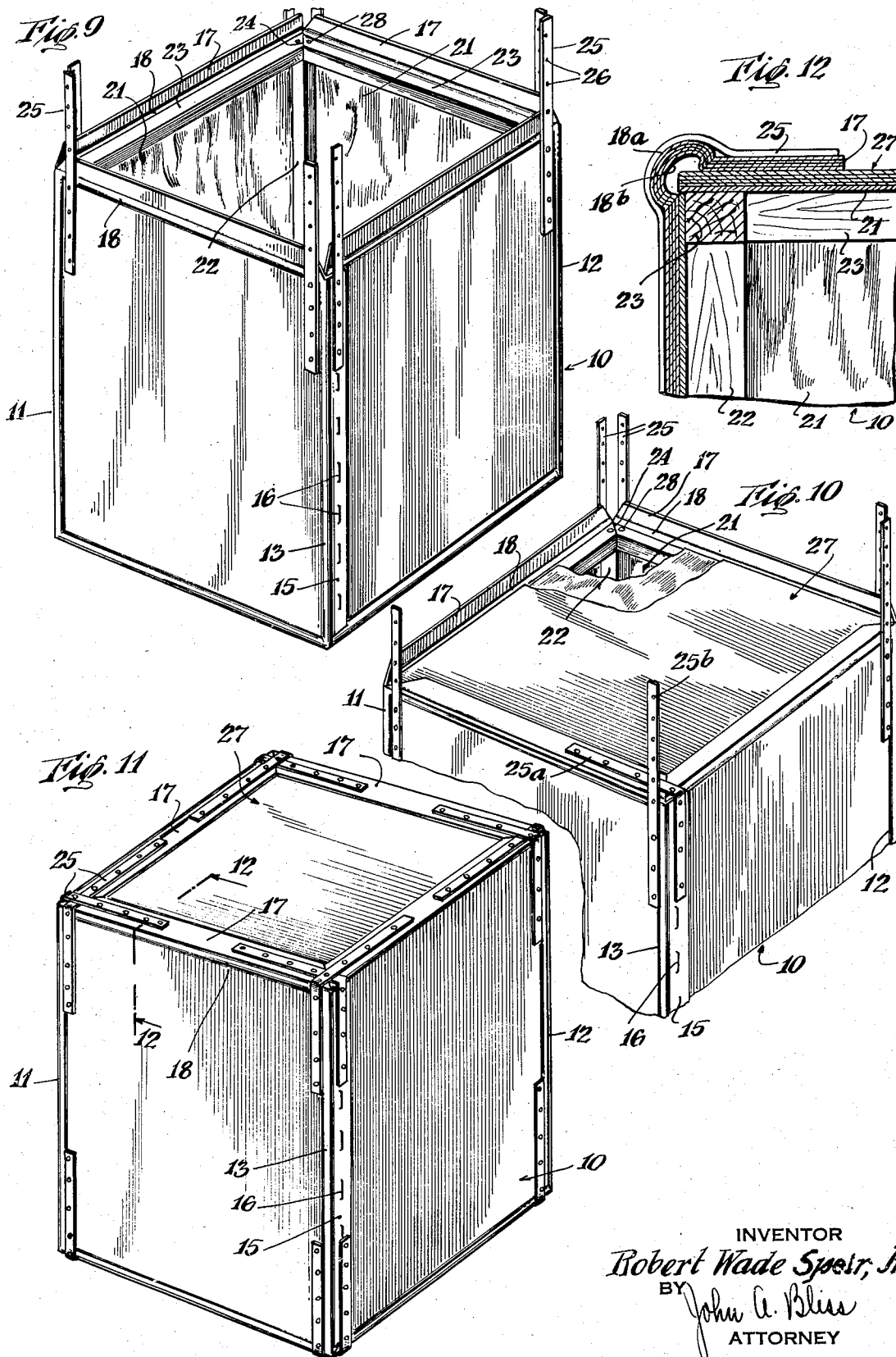
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2,319,641

CARTON

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Application April 29, 1941, Serial No. 390,882

3 Claims. (Cl. 229—23)

This invention relates to a new and improved collapsible carton possessing high qualities of strength and being exceedingly impervious to moisture and odors.

An important object of this invention is the provision of such a carton capable of being shipped in a flat, collapsible position and rapidly and simply assembled by unskilled labor.

A further object is that of providing a shipping carton having special adaptability for rough cargo handling, in that it is exceedingly strong, having great durability when subjected to either concussions or compressions.

It is a further object to provide such a carton having an integral, continuous foil lining whereby upon the sealing of the carton, the inner contents are protected against infiltration of shipping and cargo odors. Numerous other objects achieved by the construction will be apparent from the accompanying specification and drawings, in which:

Fig. 1 is a perspective view of the continuous tube of four sides and shown in a partly collapsed position;

Fig. 2 is a perspective view of one foil lined end board;

Fig. 3 is a perspective of one of the inside corner battens;

Fig. 4 is a perspective of one of the mitered end battens;

Fig. 5 is a perspective of one of the corner strappings, preferably formed from light gauge steel;

Fig. 6 is a cross section taken through lines 6—6 of Fig. 1 and looking in the direction of the arrows and showing the special resilient edge cushion when this edge is opened and flat;

Fig. 7 is a cross section taken along lines 7—7 of Fig. 2 and looking in the direction of the arrows;

Fig. 8 is a perspective view of the tube showing the metal straps in place on the corners of the tube;

Fig. 9 is a perspective of the tube with all corner battens and mitered battens in place on one end of the carton, and showing all the corner strappings in place;

Fig. 10 is a perspective of the same carton as illustrated in Fig. 9, after an end board has been put in place and showing a cut-a-way section of the end board for better illustration purposes, and additionally illustrating the manner in which the corner strapping is secured in place;

Fig. 11 shows a perspective view of the carton in complete closed form; and

Fig. 12 is a section taken along the line 12—12 of Fig. 11 and showing the cushioning effects of the special die-scoring.

Referring to Fig. 1, it will be observed that there is provided a flat-foldable continuous tube 10 having four sides. This tube is formed from a single blank of specially prepared fiber-board or other suitable material having secured integrally therewith a foil lining. This board is specially die-scored along its edges 11, 12 and 13 and 14 to permit the carton to be readily opened from its folded position and also to form a tough resilient cushion along each edge of the carton to make a completed structure capable of taking severe tumbling and dropping without damage. The one-piece blank is formed into the carton-shape technically known as a "square tube" and secured along the overlap 15 which joins the first and fourth sides by a strong seam-stitching 16. The seam-stitching is preferably metal, although hemp, nails or brads may be used with or without stitching. This blank may also be provided with small end flaps 17 which are likewise scored along the lines 18 to enable these end flaps to be readily folded inward when the "tube" is placed in open position and also to furnish the resilient edge cushion.

The die-scoring between each of the sides (see Fig. 6) and between the sides and the end flaps (see Fig. 12) provides a wide resilient cushion at each edge. In Fig. 6 the cushion 12a is shown as it would look in opened position, and in Fig. 12 the flap die-scoring is shown at 18a as it looks on an edge of the carton with the top end board 27 in place. This special method of scoring eliminates any tendency of the edges to crack or break when bent. As the bending occurs, a compression of the material in the inner edges such as 12b and 18b results. This compression gives added strength and resistance to the scored edge.

As will be observed by referring to Fig. 12, a space is left between the inner compression edge 18b and the supporting structure of the carton. This space enables the cushioned edge to be bent inward due to concussions, without contacting the supporting structure. This provides a structure having great shock absorption.

The fiber-board 19 used in the construction of the tube 10 and of the end pieces shown in Fig. 2, preferably consists of four plies, more or less of heavy cylinder paper stock or other suitable material each ply being approximately .022" thick. To the surface of the fiber-board, which will be the inside of the carton, a thin foil 21, preferably aluminum foil or coating is secured by

means of any suitable adhesive or coated in any other suitable manner. It has been found that with this foil lining, the ability to keep out all outside odors and to conserve or retain the desirable aroma of products to be shipped in the cartons, is greatly enhanced. Additionally, since the foil is directly mounted during fabrication of the carton, it is not necessary to add a separate lining member after the carton is set up, although if desired, a separate liner may be used. The outside of the fiber-board may be preferably surfaced with a compound of paraffin in a suitable vehicle such as oil and applied at a temperature of approximately 270° F. or greater or coated with any suitable lacquer or other material. This surfacing serves to impregnate the outer portion of the fiber-board surface with a water-proof and substantially melt-proof material.

The interior supporting members are preferably wood battens, while metal strapping is used on all corners. The utilizing of wood battens serves to provide a strong carton and enables the person setting up the carton to utilize nails to secure the corner strapping place.

Fig. 3 shows one of the four corner battens 22, preferably formed from hard wood and made of sufficient length to permit of its insertion into one corner of the tube with a space over it sufficient to accommodate the end battens and yet permit the small end flaps to be folded inwardly.

Fig. 4 shows the hard wood top and bottom battens 23, of which there are eight, each having mitered ends 24. If desired, the mitered ends can additionally be tongued so as to form a recess on their underside to receive the corner battens. This latter structure provides a slightly more rigid structure. Metal end strapping 25 is shown in Fig. 5. This metal strapping is preferably .010 gauge steel. In preferred form, this strapping is used without pre-punching nail holes, however, if desired, pre-punched holes 26 of sufficient size to receive nails or other fastening means may be used.

The gauge of the strapping should be light enough to permit its ready bending around the end corners, and heavy enough to withstand rough cargo handling. As previously mentioned, these cartons are most frequently shipped in a flat knocked-down condition, and the person setting them up is provided with the four-sided tube of Fig. 1, battens of Figs. 3 and 4, corner strapping shown in Fig. 5, two end boards 27 shown in Fig. 2, and suitable sized fastening nails. In setting up the carton, first the tube is opened up and stood on end. Due to the scoring, this is easily done. One corner post is then placed in position inside of the box as is shown at 22 of Fig. 8. It will be observed that a space is left between scoring line 18 and the top of post 22 sufficient to accommodate the end batten 23. Then one of the metal straps 25 is placed along a vertical side edge as is shown in the same figure. Nails are now driven through the metal strap through the fiber-board and directly into the corner posts. Another metal strap is then laid adjacent the same vertical edge and nailed into the same vertical edge, and same corner post. This operation is then completed on each of the four corners on one end of the tube. Thereafter end battens 23 are placed in position on top of the corner battens and secured as is shown in Fig. 9 by means of nails 28 driven through the end battens into the corner post or by glue or other suitable means.

With the flap 17 in an upright position, one

end board 27 is placed in the end of the carton directly upon the end battens 23. The positioning of this end board is shown in Fig. 10 where a corner has been cut away to more clearly show the structure. End flap 17 are then folded inward and the metal straps 25 are folded downward over the end flaps. In Fig. 10 one of such metal straps 25a is shown bent over in final position. Nails or other fastening means are then placed in position being secured through the metal strap, the flap, the end board and into the underlying batten. The end strap 25b which is secured to the same corner as the end strap 25a, is then bent inward to lie along the other side of the carton. In so doing, it criss-crosses strap 25a. This strap is then secured in the same manner as the previous strap. The securing means for all of the straps as well as the end battens are preferably nails of uniform size with corrugated sides for secure holding into the wooden battens. By the use of this uniform sized nail to achieve all the fastening, speed and economy of packaging results. Each of the straps are then fastened in similar manner. It will be observed that the metal straps are not of sufficient length to enable the straps coming from opposite sides to meet. The portions of the flaps and end boards which are not directly overlaid by the metal straps, may if desired, be secured by fastening means being driven through them and into the battens.

When all of the fastening has been completed on one end of the carton, the carton or chest is turned upsidedown. The end on top is now open and the carton is ready for filling. The integral foil lining which formed a part of the square tube as well as the end boards, has resulted in a complete foil lined carton ready for use without the insertion of any additional lining.

When the carton is filled, the remaining end board 27 is placed in position, the end flaps and corner strapping bent in position and secured as previously described. The completed carton ready for shipping is shown in Fig. 11.

Cartons or chests constructed in accordance with the above have been found to be extremely durable under actual conditions of shipment and have been able to withstand severe amounts of tumbling, dropping and compression. The particular formation of the scoring and corner structure such as shown in cross section in Fig. 12, results in a unit in which the edges upon being subjected to severe droppings, have great shock resistance. Due to the fact that the sides are formed of a continuous piece of board with no open side edges, and additionally, due to the fact that these sides as well as the end boards are formed with an integral foil lining, complete protection against infiltration of shipping or cargo odors is provided. While the chest or carton has proved extremely useful in the shipping of bulk products which require the retention of their aroma, such as tea or the like, it is to be recognized that its utilization for other purposes is within the scope of the invention.

It is of course to be understood that the foil lining mentioned herein may include any lining capable of the necessary sealing and protective qualities, and coated paper stock or other lining compositions as well as other rearrangements of the parts, may be resorted to without departing from the spirit hereof.

I claim:

1. A container comprising a continuous square tube body portion having vertical side edges,

flaps integral with said body portion, vertical corner battens secured inside each vertical side edge, horizontal end battens secured to said vertical battens, two metal straps secured to said body along each vertical side edge, said straps extending in unfolded position above the end of said body and adapted to fold criss-cross and be secured along the top of said flaps, and means to close the ends of said body.

2. A container as defined in claim 1 in which the body and end portions are formed with integral and securely mounted foil interior linings

and the exterior is impregnated with a moisture resistant coating.

3. A container comprising a continuous square tube body portion having vertical side edges, flaps integral with said body portion, vertical corner battens secured inside each vertical side edge, horizontal end battens secured to said vertical battens, straps secured to said body along vertical side edges, said straps being adapted to fold over upon and be secured along the top of said flaps, and means to close the ends of said body.

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