

May 2, 1961

A. SHARP ET AL
COMBINATION REINFORCED BOX

2,982,462

Filed Oct. 30, 1957

2 Sheets-Sheet 1

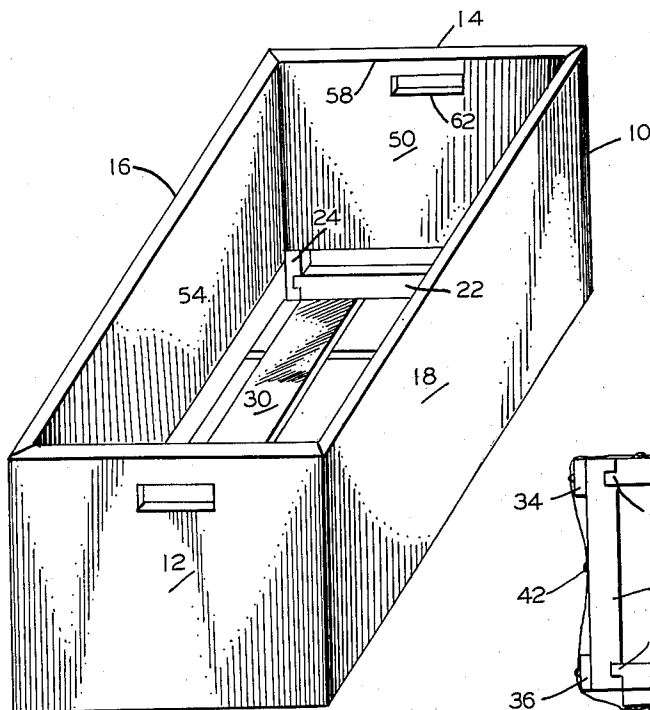


FIG. 1

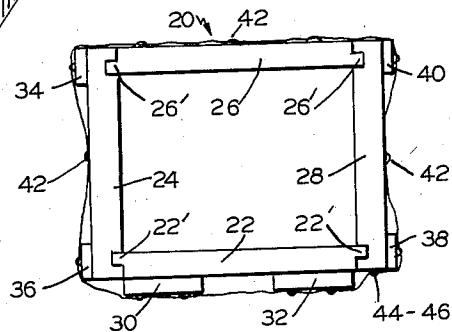


FIG. 3

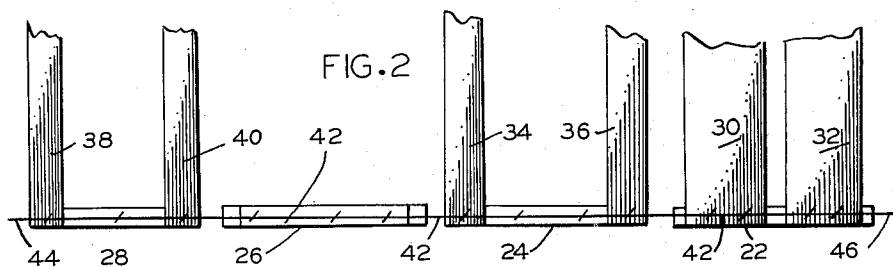
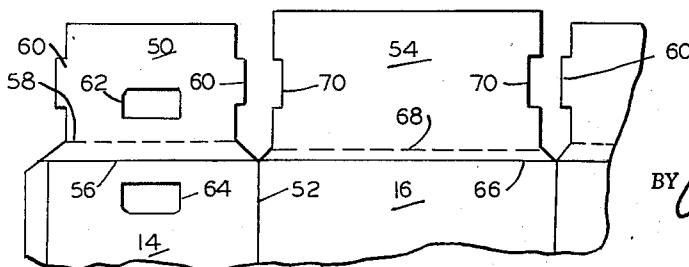


FIG. 2



ANDREW SHARP
SIDNEY T. BUTTERFILL
DOUGLAS T. CAMPBELL
INVENTOR.

BY *Ross Murray*

ATTORNEY

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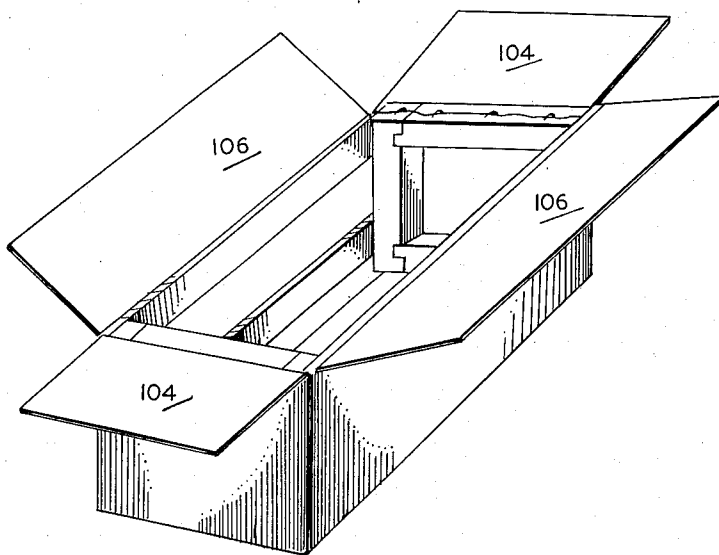


FIG. 5

ANDREW SHARP
SIDNEY T. BUTTERFILL
DOUGLAS T. CAMPBELL

INVENTORS

BY *Ross C. Hursey*

ATTORNEY

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2,982,462

COMBINATION REINFORCED BOX

Andrew Sharp, Baie d'Urfee, Quebec, and Sydney Thomas Butterfill and Douglas John Campbell, Dorval, Quebec, Canada, assignors to Bathurst Power & Paper Company Limited, Montreal, Quebec, Canada, a Canadian company

Filed Oct. 30, 1957, Ser. No. 693,393

1 Claim. (Cl. 229—23)

It is an object of this invention to provide a box formed preferably of corrugated board, having a pre-assembled reinforcing frame of wood or the like, preferably of the "wire bound" type.

It is a further object of this invention to provide a box as aforesaid which may have a smooth interior, including both side and end walls.

It is a further object of this invention to provide a box as aforesaid which presents an unrestricted mouth opening.

It is a further object of this invention to provide a box as aforesaid in which the wood reinforcing frame affords bottom support as well as edgewise reinforcement.

It is a further object of this invention alternately to provide a box as aforesaid closeable by conventional flaps or by such modification of said conventional flaps as may suit the exigencies of any particular need. All such closures, involving extensions of the side and/or end walls, will leave the reinforcing frame exposed on the interior of the box, but for many varieties of contents this is permissible.

The above and other objects will be made clear from the following, detailed description taken in connection with the annexed drawings, in which:

Figure 1 is a perspective view of the fully assembled box and frame;

Figure 2 is a plan view of the frame in flattened condition;

Figure 3 is an end elevation of the frame after the same has been set up;

Figure 4 is a plan view of a pertinent portion of the blank for the box; and

Figure 5 is a view similar to Figure 1 showing a conventional "flap closure" as applied to the improved, reinforced box.

Of late years, manufacturers of liner board and solid fibre have been offering highly ornamental one-side finishes. This in turn, has permitted the box makers greatly to improve and elaborate the printed matter on the box exterior. These new facilities have been well received by the box buyers, so that today enormous quantities of shipping containers have just as much exterior ornamentation as have retail packages. The present invention contemplates, in effect, the use of the outer box primarily as an expendable vehicle for ornamentation and informative printed matter, with dependence on the pre-assembled, reusable, fully separable frame for strength, rigidity and protection of the contents. It will be understood that the weight and strength of shipping containers is governed in minutiae by the Freight Classification Rules, and if these rules be not adhered to, the shipper ships at his own risk. The weight and strength requirements of an unreinforced box naturally exceed those of a reinforced box. Throughout this specification, reference to "greater" or "lesser" strength or weight has reference to the Freight Classification Rules as a datum.

The pre-assembled feature is of the greatest importance.

2

Labor costs are high and, for the foreseeable future, may be expected to go higher. It is not enough, therefore, to produce a box, the physical performance of which is satisfactory or even outstanding by all conventional standards. The "real" cost must be minimized. The term "real" cost represents a complex, of which the purchase price is only one factor. For example: it is an economic fact that it is impossible to ship fully erected empty containers from the box maker to the user. Therefore, any container, to have optimum practical value, should be shipped flat. This transfers to the user the cost of setting up the container, which must be added to the purchase price as an additional element of real cost. When the user ships the filled containers, the container takes the same freight rate as the contents, therefore the tare or net weight of the container is a further element of real cost.

This disclosure is based on an actual construction which has been well received in the trade and represents the best construction thus far produced. The details of construction, however, both of the box and of the frame, are susceptible of almost endless modification. The same must be said of the selection of materials for both the box and the frame. Indeed, within the basic concept of this invention, the outer container need not necessarily come within the technical term "box," since a "wrapper" or even a bag would serve certain purposes.

Referring now to Figure 1, there is shown a reinforced box 10, having end walls 12 and 14 and side walls 16 and 18. The lower portion of the reinforcing frame is shown in part and designated generally as 20.

Referring now to Figure 2, the frame 20 is shown flattened out in plan view. Only one end of the frame is illustrated, since the other end is identical. The frame is made up of a lower cross-member 22, a vertical side member 24, a top cross-member 26 and another side member 28. Bottom slats 30 and 32 are secured to the bottom cross-member 22. Slats 34 and 36 are secured to the vertical side member 24, while similar side slats 38 and 40 are secured to the opposite vertical side member 28. A strand of wire 42, having free ends 44 and 46 is secured to the several parts by staples 42' and provides a flexible connection with the severed parts.

The frame 20 is shipped pre-assembled in the condition shown in Figure 2. At the plant of the user, the frame is erected to the condition shown in Figure 3. It will be noted that the member 22 has tongues 22' formed at each end, while the member 26 has similar tongues 26' at its end. These tongues upon erection, engage mating grooves in the members 24 and 28 and the structure is made rigid by twisting together free ends 44 and 46 of the wire 42. This is conventional wire bound box practice.

It will be realized that both a wide variety of joints (e.g.: tongues 26) and of ultimate closures (e.g.: twisting ends 44 and 46) are available within conventional practice. Where the frames 20 are to be re-flattened, a "rock" or "loop" type of engagement of the wire ends 44—46 may be used. The tongues are a matter of preference, mitred or other construction may be used.

Referring now to Figure 4, there is illustrated the pertinent portions of the box construction. The box bottom may be of any conventional design. In Figure 4, there is shown an end panel 14, having a flap 50. The panel 14 is joined by score line 52 to a side wall 16, which carries a flap 54. The flap 50 is joined to the end wall 14 by a conventional score line 56. An auxiliary score line 58 runs parallel to the line 56 and is spaced therefrom a distance approximating the thickness of the frame member 26. Tongues 60 are formed at opposite sides of the panel 50, which also contains a fully died out hand hole 62. The panel 14 contains a similar hand hole 64, which is die cut around three of its edges and scored on the fourth

edge. Panel 16 is joined to the flap 54 by a conventional score line 66. An auxiliary score line 68 is formed in the flap 54. The space between the lines 66 and 68, however, is slightly less than the spacing between lines 56 and 58. Notches 70 are formed in opposite sides of the flap 54.

At the plant of the user, the box and the reinforcing frame may be erected along parallel assembly lines. Of course, if already erected, pre-assembled frames are being transferred from discardable ornamental enclosures to new ornamental enclosures, the make up of the lines will be different, but the potential advantage of parallelism will still be present. The frame is then inserted within the box and the flaps 50 and 54 are folded over the adjacent upper frame members to the position shown in Figure 1, in which condition the tongues 60 engage the notches 70 to form a self-locking structure. It will be understood that similar flaps, tongues and notches are provided for end panel 12 and side panel 18. The interior of the box is completely unobstructed and smooth. The hand holes 62 and 64 come into registry and the box is ready to receive the contents. Any number of lid structures are available if it is desired to close this type of box.

Referring now to Figure 5, there is shown a box 100 having therein pre-assembled frame 102, in all respects, preferably, similar to the frame 20 hereinabove discussed. The box 100 has conventional end closure flaps 104 and conventional side closure flaps 106. These are shown in solid lines in the open or contents-receiving positions. Closure is made to the dotted line positions shown in Figure 5. Naturally, considerable variation in the form and proportion of the flaps is permissible, depending on the use to which the combined package is to be put. It cannot be emphasized too strongly that, as regards the concept of this invention, structural details are immaterial.

In practice, the box, whether corrugated, solid fibre or

any other suitable material, is regarded as expendable. The reinforcing frame, however, may be reused many times. As thus far developed, this container has been used primarily for handling bottled goods in returnable bottles. For this use and for any analogous use, the container is returned in set-up condition. Upon its return, if the appearance has not been marred, it is ready for immediate reuse. If the appearance has been damaged, the outer shell is discarded and the frame is fitted into a new shell. Obviously, the lighter the surface color of the shell, the more likely it is to be damaged, so where the printing job calls for a bright base color and highly colored printing, the material of the shell should be made of minimum weight.

15 We claim:

A reinforced rectangular corrugated box comprising a knock-down rigid cratelike frame enclosed within the walls thereof, said enclosing walls being formed from a one piece blank, said cratelike frame comprising rectangular end frame members formed of end detachable interlocking cleats and spaced slats rigidly connecting opposed cleats of said end frames, each end frame with the slats connected thereto being encircled by a wire, said wire being in the plane of the respective end frame and being secured to the end of the cleats and ends of the slats thereof, said wire permitting the knock-down of said cratelike frame into planar form when removed from said box.

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