Nov. 15, 1966 R. E. DEMBY ETAL 3,285,492

SHIPPING CARTON

Filed Feb. 18, 1965 2 Sheets-Sheet 1

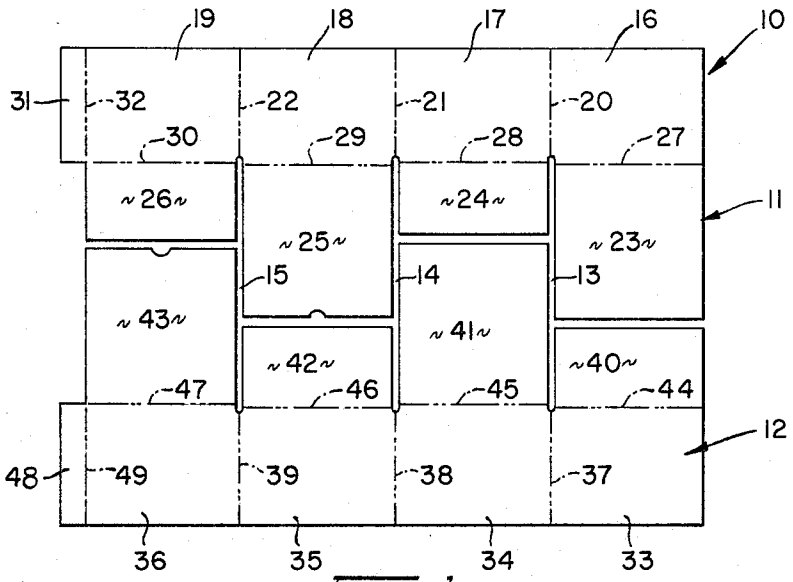



Fig. 1

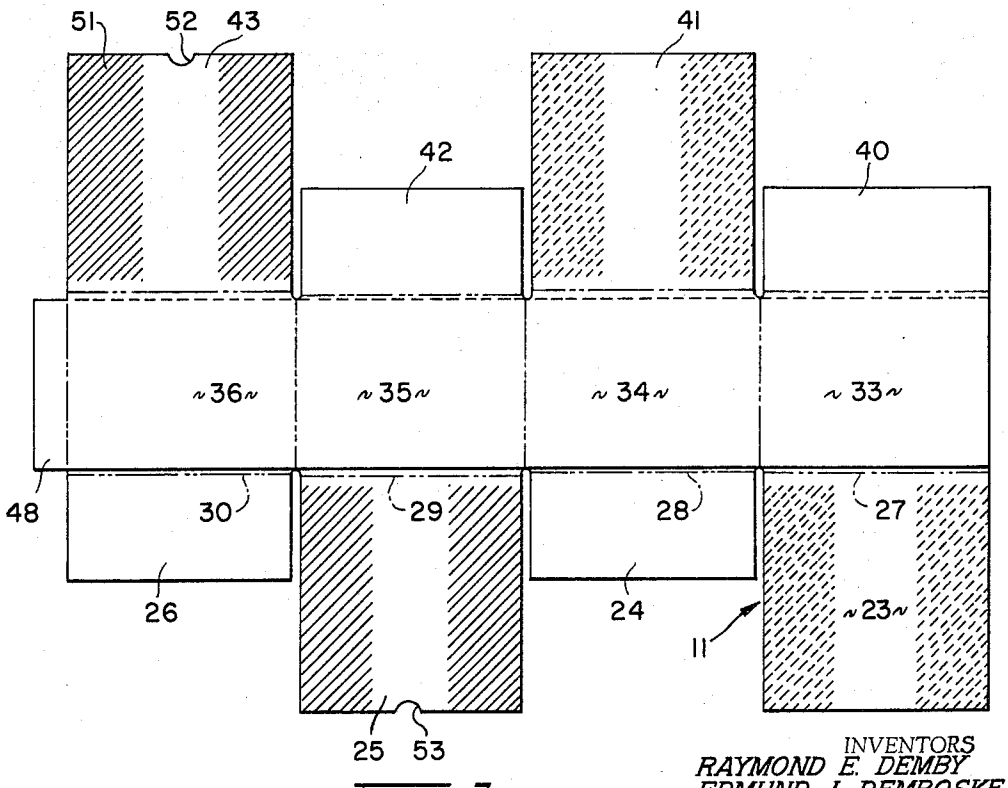



Fig. 2

INVENTORS
RAYMOND E. DEMBY
EDMUND J. DEMBOSKE
BY
Oberlin, Maky & Donnelly
ATTORNEYS

Nov. 15, 1966 R. E. DEMBY ETAL 3,285,492

SHIPPING CARTON

Filed Feb. 18, 1965 2 Sheets-Sheet 2

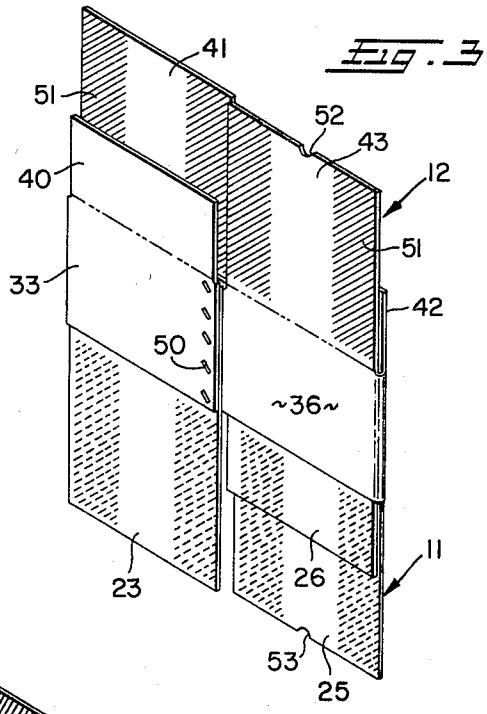



Fig. 3

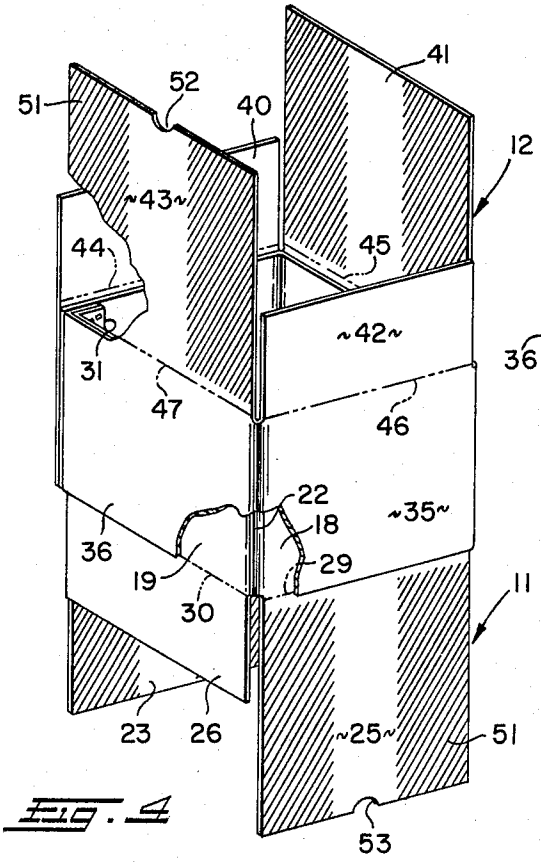



Fig. 4

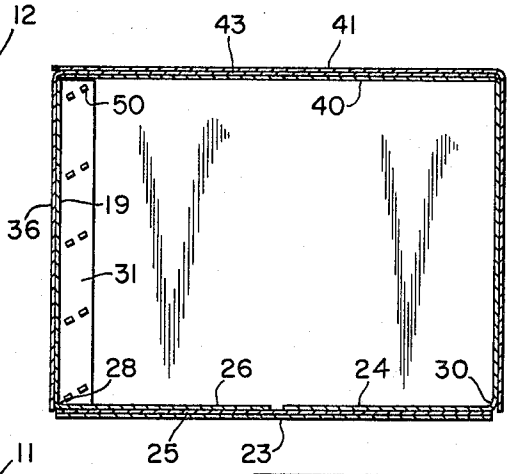



Fig. 5

INVENTORS.
RAYMOND E. DEMBY
EDMUND J. DEMBOSKE
BY
Oberlin, Maky & Donnelly
ATTORNEYS

United States Patent Office 3,285,492 Patented Nov. 15, 1966



3,285,492

# SHIPPING CARTON

Raymond E. Demby and Edmund J. Demboske, Berea, Ohio, assignors to Ohio Rod Products Company, Inc., Berea, Ohio, a corporation of Ohio

Filed Feb. 18, 1965, Ser. No. 433,596
2 Claims. (Cl. 229—23)

The present invention relates generally as indicated to a shipping carton and relates more particularly to a shipping carton of improved construction of fiberboard or like material finding particularly advantageous use in the handling and shipping of relatively heavy articles such as nails, fasteners, bolts, rods and the like.

In the past the handling and shipping of relatively heavy articles of the types mentioned have posed a significant problem to carton manufacturers and users alike. The cartons are desirably simple and economical in construction but must at the same time provide the requisite strength to permit shipping and storing, the latter normally entailing stacking of several of such cartons, without breaking or bulging of the side walls thereof to any appreciable degree.

In present carton constructions adapted to ship articles of the type mentioned, a carton type finding rather widespread use is the multi-section carton the sections of which are adapted to be telescoped by the user, with the sections as telescoped being banded or otherwise secured for shipping. A telescoping type carton with which applicants are familiar comprises three sections, a bottom section, a liner section telescoped within the bottom section, and a top section generally complementary to the bottom section and adapted to be telescoped over the liner.

The telescoping type carton of the type described has numerous, significant disadvantages. Initially, even though the various sections are delivered to the user in collapsed, flat form, three separate stacks of such sections must be provided, which necessitates use of an undesirably large storage area. Secondly, when the cartons are assembled, three separate sections must be folded and properly assembled, a time-consuming operation at best. Still further, even when assembled, additional means must normally be provided for retaining the sections in a telescoped position, with a common such retaining means comprising steel banding or the like which adds still further to the cost of assembling and shipping.

With the above in mind it is a primary object of the present invention to provide a shipping carton comprising two substantially complementary blank sections, portions of which sections are rigidly joined to provide in effect a carton of unitary construction which can be shipped and stacked before use in a flat, folded condition. A related object of the present invention is to provide such a carton which can be formed from a single flat sheet of fiberboard or the like into such complementary blank sections with essentially no waste involved.

A further object of the present invention is to provide a carton construction the assembling of which is completed when the carton is filled and the top closure flaps closed, thereby eliminating the necessity of additional retaining members such as steel bands and the like. More specifically, in accordance with the present invention, certain of the top and bottom closure flaps are partially or entirely covered with a preferably pressure-sensitive adhesive whereby sequential folding of such closure flaps automatically effects a bonding of the adhesive surfaces, thereby eliminating the need for additional retaining means.

A still further object of the present invention is to provide such a carton which, when assembled, comprises



side wall panels of double thickness and top and bottom wall sections of triple thickness thereby to provide a carton of requisite strength to satisfactorily receive for shipping and storing the relatively heavy articles mentioned.

Another object of the present invention is to provide such a carton the exterior wall surface of which, when the carton is assembled, is smooth and continuous better to accommodate the application of printed matter on the carton exterior wherever desired.

These and other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

FIG. 1 is a plan view of the sheet of fiberboard or the like from which the carton of the present invention is formed, with the essentially complementary blank sections being actually shown separated and the score lines being indicated in each of said blank sections;

FIG. 2 is a plan view of the thus formed blank sections showing one of such sections partially overlying and mounted on a complementary portion of the other of said blank sections;

FIG. 3 is a perspective view of the partially formed carton of FIG. 2, with the outer side panels being connected and the carton being shown in collapsed position for shipment;

FIG. 4 is a perspective view of the carton of FIG. 3 opened into generally rectangular form preparatory to closure of the respective closure flaps to permit sequential filling and sealing of the carton, and

FIG. 5 is a vertical sectional view taken on a vertical plane through a finally assembled carton.

Referring now in more detail to the drawings, wherein like parts are indicated by like reference numerals, and initially to FIGS. 1 and 2, an essentially rectangular sheet generally indicated at **10** is provided formed of fiberboard or similar material, with the sheet **10** being cut longitudinally in a transversely staggered manner in the areas shown to provide a pair of generally complementary blank sections **11** and **12**. Three transversely extending slots **13**, **14** and **15** are formed in the sheet **10** to define separate closure flap portions of the carton.

The blank section **11** comprises side panels **16**, **17**, **18** and **19**, with score lines **20**, **21** and **22** hingedly connecting adjacent panels in the usual manner. The blank section **11** further comprises closure flaps **23**, **24**, **25** and **26**, with the alternate flaps **23** and **25** being in the particular form shown approximately double the size of the alternate flaps **24** and **26**. The respective closure flaps are hingedly connected to the side panels **16–19** along score lines **27**, **28**, **29** and **30**, respectively, with the score lines **27** and **29** being slightly offset relative to the score lines **28** and **30** to permit folding of the closure flaps in the desired sequence. The blank section **11** further includes a connecting flap **31** at one side of the side panel **19** with the connecting flap **31** being foldable relative thereto along score line **32**.

As noted above, and as will be apparent from FIG. 1, the blank section **12** is substantially complementary to the blank section **11** just described, with slight differences in dimensions existing to facilitate proper folding and assembling of the carton. The blank section **12** thus comprises side panels **33**, **34**, **35** and **36** which are hingedly interconnected along score lines **37**, **38** and **39**. The sec-

tion 12 further includes closure flaps 40, 41, 42 and 43, with such closure flaps being integral with the side panels 33–36, respectively, and hingedly connected thereto along score lines 44, 45, 46 and 47. In the same manner as described above, the score lines 45 and 47 are slightly offset from the score lines 44 and 46 to permit sequential folding of the flaps. A connecting flap 48 completes the blank section 12, with the flap 48 being hinged to the side panel 36 along score line 49.

In the carton formation thus far described, the thus formed, scored and separated blank sections 11 and 12 are of single-wall construction throughout. In forming the carton, referring to FIG. 2, the side panels 33, 34, 35 and 36 of the blank section 12 are disposed generally directly over the side panel sections 16, 17, 18 and 19 of the blank section 11, with the continuous bottom wall of the respective side panels 16–19 being somewhat below the score lines 44 and 46 to permit unimpaired folding of the closure flaps. In such position the connecting flap 48 overlies the connecting flap 31. Prior to such disposition of the blank section 12 over the blank section 11, both contacting surfaces are preferably coated with a suitable adhesive whereby the subsequent adhesive bonding of the side panels of the sections 11 and 12 provides a carton side wall construction of double thickness. It should be noted that when the blank sections are so disposed and bonded, the score lines 20, 21 and 22 formed in the blank section 11 generally coincide with the score lines 37, 38 and 39 formed in the blank section 12. At this stage of carton formation, the joining of the respective side panels of the blank sections 11 and 12 provides in effect a carton blank of unitary construction.

The unitary blank is then folded downwardly, in the orientation of FIG. 2, along the aligned score lines 20, 37 and 22, 39, with the connecting flaps 31, 48 being positioned inside the thus folded side panels 16 and 33. The connecting flaps 31, 48 are then preferably stapled as indicated at 50 to the side panels 16, 33 in a conventional manner to complete the interconnecting of the side panels to provide, when the carton is opened, a rectangular-shaped opening. In FIG. 3, the thus connected carton has been rotated 180 degrees to expose the stapling of the connecting flaps to the side panels 16, 33. At this stage of carton formation, the aligned side panels 17, 34 and 18, 35 are preferably not folded about the aligned score lines 21, 38 thereby better to maintain the carton in flat condition for shipping.

Adhesive, preferably of a pressure-sensitive type, is applied to certain of the closure flaps either before or after the stapling of the connecting flaps as described. As shown in FIG. 2, the application of the adhesive is, however, preferably before the stapling step, with the adhesive, commonly designated at 51, being applied over substantial portions of one face of each of the closure flaps 23, 25, 41 and 43. As viewed in FIG. 2, the adhesive 51 is applied to the top faces of the closure flaps 43 and 25, and to the opposite faces of the closure flaps 23 and 41.

Finger holes 52 and 53 are preferably formed in the closure flaps 43 and 25, respectively, along the outer edges thereof to facilitate manipulation of the flaps during the closing and sealing of the carton.

When it is desired to use the carton, the same is folded from its generally flat, FIG. 3 condition of shipment to the open position of FIG. 4. The bottom of the carton is then formed by folding the relatively shorter closure flaps 24 and 26 inwardly about the score lines 28 and 30, respectively, with the closure flap 25 then being folded inwardly about score line 29 to a position overlying the respective closure flaps 24 and 26. In such position the adhesive 51 is exposed downwardly whereby folding of the fourth and final closure flap 23 to a position overlying the closure flap 25 will effect bonding of the respective closure flaps 23 and 25 immediately upon contact of the adhesive-coated surfaces, thereby readying the carton for filling.

Following filling of the carton, the carton top is folded in generally the same manner as the bottom. Thus, the relatively shorter closure flaps 40 and 42 are folded inwardly about their respective score lines 44 and 46 and the relatively longer closure flap 43 is folded downwardly to overlie the flaps 40 and 42, with the adhesive 51 on the flap 43 thus being exposed on the top surface thereof. The flap 41 is thereafter folded along score line 45 to overlie the flap 43, with the respective adhesive surfaces upon contact effectively bonding and thereby sealing the container in a closed condition. It has been our experience that the described adhesive sealing of the respective top and bottom closures completely eliminates the need for additional retaining means such as steel bands or the like, and the closure flaps remain sealed until the carton is desired to be opened following shipment thereof.

As clearly seen in FIG. 5, the carton when finally folded and assembled provides a side panel construction of double wall thickness and top and bottom closure flap construction of triple wall thickness thereby affording the strength and bulge-resistant characteristics necessary in carton constructions of this general type. The carton of the present invention is further advantageously characterized by the ease of assembling the same, thereby affording significant reductions in assembling time and costs. Further, the carton of the present invention eliminates the necessity for further retaining means following closing of the carton, thereby further enhancing carton assembly. Still further, the carton of the present invention provides a smooth, continuous wall at each exposed side and end of the carton. The latter feature is of significant importance in planned layout of printed matter on the carton walls, with printing layouts being made as desired and not dictated, as with many present carton constructions, by the relatively few flat, continuous walls provided following carton assembling.

It will be understood by those skilled in the art that although the application drawings illustrate a single carton the component sections of which are relatively dimensioned to produce when folded a carton shaped as shown in cross-section in FIG. 5. Cartons of varying shapes having rectangular cross-sections could be assembled in accordance with the principles of the present invention. For example, a carton of perfectly cubical form or of relatively elongated form can be manufactured and assembled merely by varying the dimensions of the side panels and closure flaps of the respective blank sections.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

We therefore particularly point out and distinctly claim as our invention:

1. A shipping carton formed of two substantially complementary blank sections, each of which comprises four side panel sections hingedly connected together, a connecting flap hingedly connected to one of said side panel sections, four closure flap sections each of which is hingedly connected to a respective side panel section and all of which extend from the side panel sections in the same direction, with said closure flaps comprising a pair of relatively short and a pair of relatively long flaps, means for adhesively securing together in overlying position the respective side panel sections of each blank section thereby to form a unitary carton having a side panel construction of double wall thickness, with the closure flaps when the side panel sections are so positioned and bonded extending to opposite sides of the double wall side panel construction to provide when folded top and bottom carton sections, means for connecting the thus overlying side connecting flaps to the side panels

remote therefrom to form a carton having a generally rectangular shaped opening when unfolded, adhesive means carried on the surface of certain of said closure flaps in a manner to provide face-to-face adhesive bonding of the respective certain closure flaps when folded about their hinged connections with the side panel sections, with the closure flaps being constructed and arranged when folded to provide a bottom wall of triple thickness and a top wall of similarly triple thickness, with the adhesive bonding of the closure flaps thus forming the top and bottom wall of the carton being the only means for sealing the same and retaining the carton in its thus folded condition.

**2.** The shipping carton of claim **1** wherein said adheisve



carried by certain of said closure flaps is pressure-sensitive and is applied at least to the relatively long closure flaps.

**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,007,622 | 11/1961 | George | 229—23 |
| 3,063,615 | 11/1962 | Bronte et al. | 229—23 |
| 3,116,008 | 12/1963 | Greene et al. | |
| 3,184,144 | 5/1965 | Greene et al. | |


JOSEPH R. LECLAIR, *Primary Examiner.*

D. T. MOORHEAD, *Assistant Examiner.*