June 12, 1951 W. C. RENDALL ET AL 2,556,661

CONVERTIBLE SHIPPING CARTON AND SELF-FEEDER

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FIG. 1.

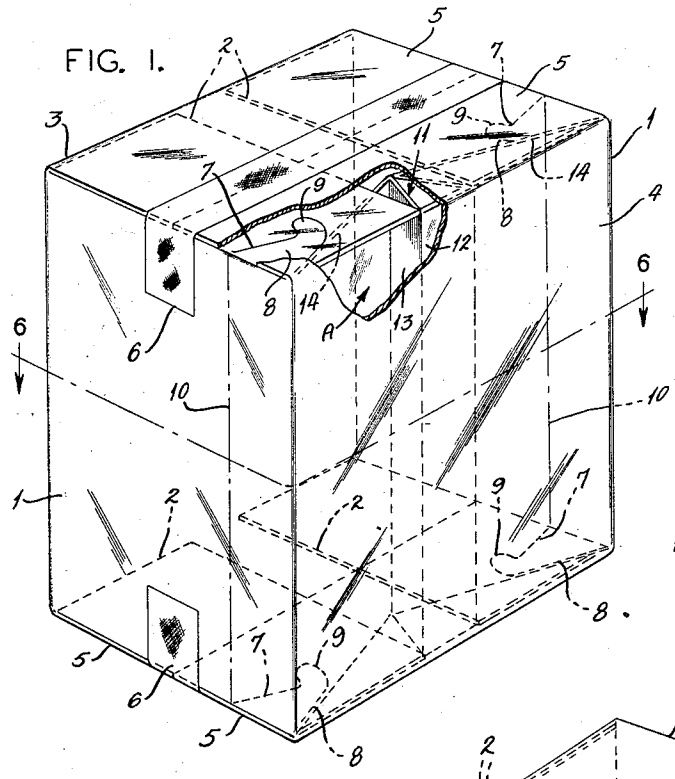


FIG. 3.

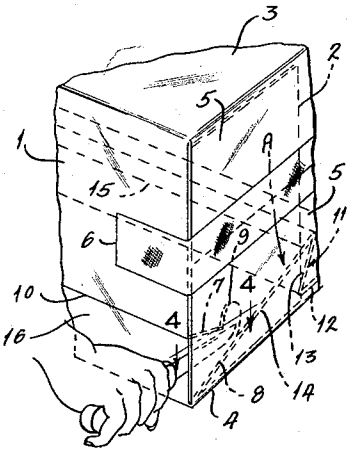


FIG. 2.

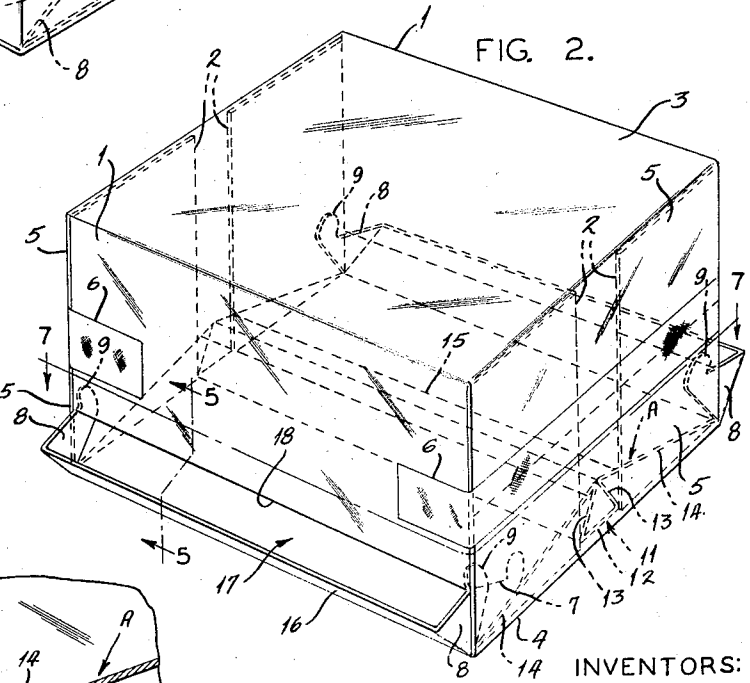


FIG. 4.

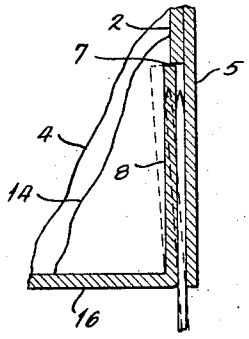
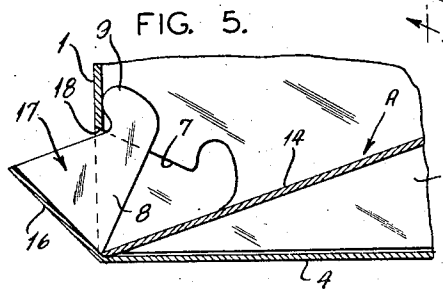


FIG. 5.



INVENTORS:
Warren C. Rendall, and
Fred L. Rushing
by Carr & Carr & Kennedy,
THEIR ATTORNEYS.

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CONVERTIBLE SHIPPING CARTON AND SELF-FEEDER

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FIG. 6.

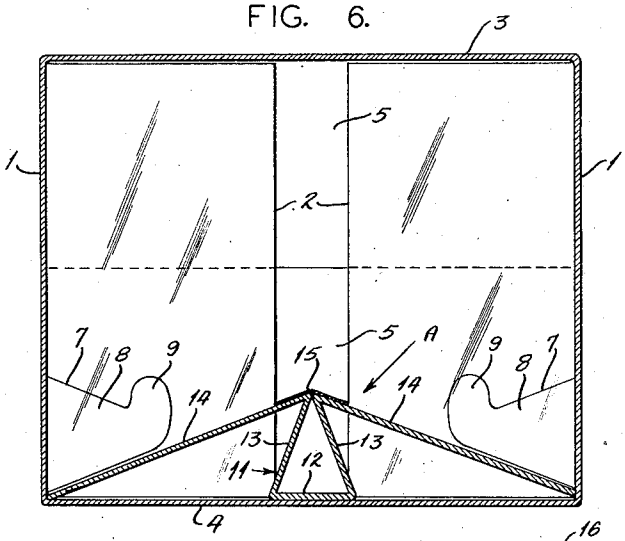


FIG. 8.

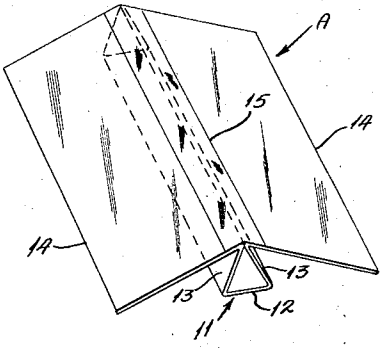


FIG. 7.

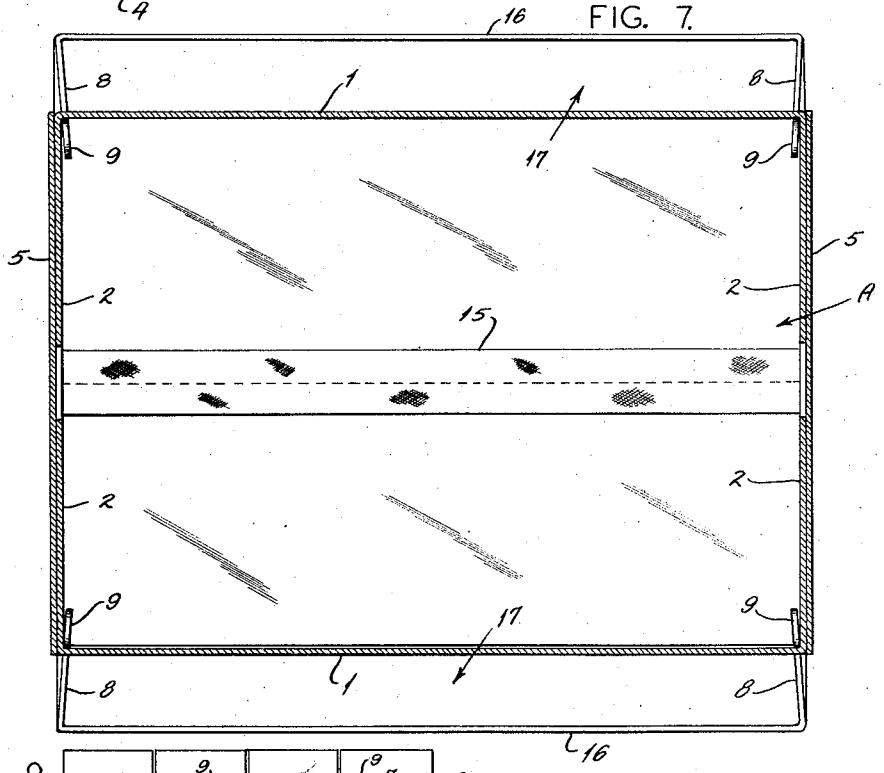
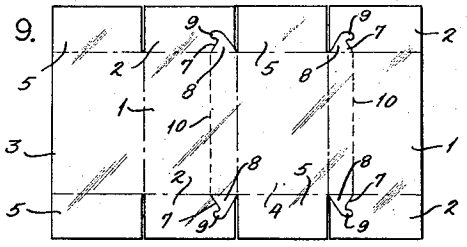


FIG. 9.



INVENTORS:
Warren C. Rendall and
Fred L. Rushing,
by Carr & Carr & Peabody,
THEIR ATTORNEYS.

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CONVERTIBLE SHIPPING CARTON AND SELF-FEEDER

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FIG. 10.

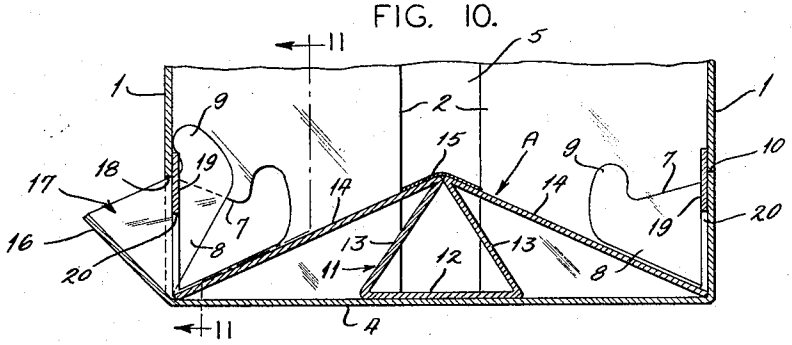


FIG. 11.

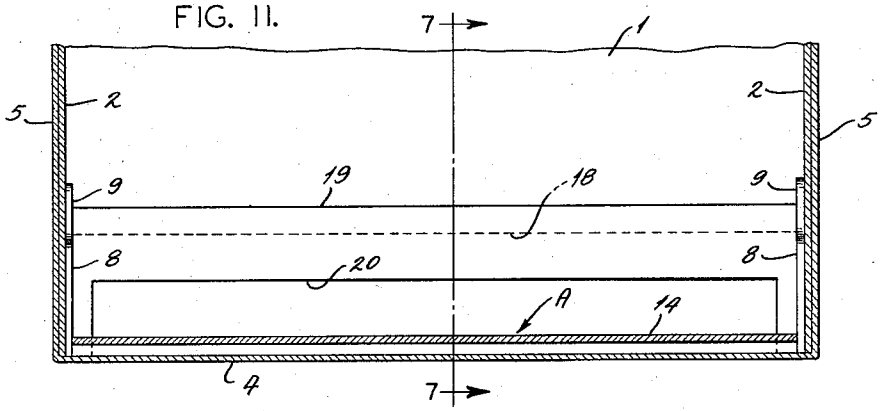
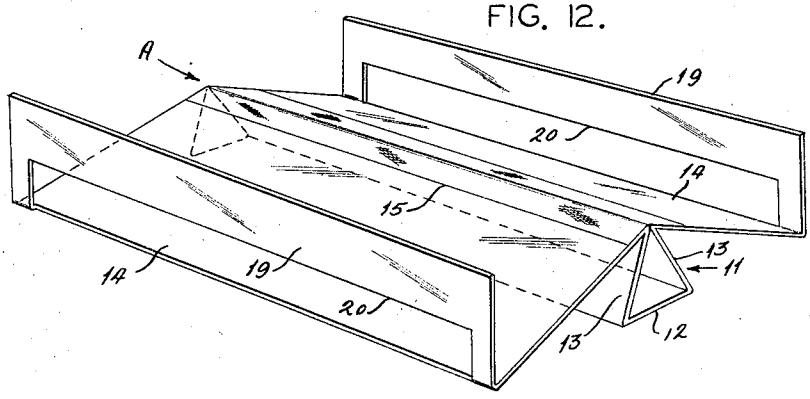


FIG. 12.



INVENTORS

Warren C. Rendall and
Fred L. Rushing,
by Cass & Cass & Gravely,
THEIR ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,556,661

CONVERTIBLE SHIPPING CARTON AND SELF-FEEDER

Warren C. Rendall and Fred L. Rushing, Tampa, Fla., assignors to Gaylord Container Corporation, St. Louis, Mo., a corporation of Maryland

Application January 10, 1949, Serial No. 70,066

5 Claims. (Cl. 229—7)

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This invention relates to containers, particularly cartons of the kind used for shipping poultry feed. It has for its principal object to provide a strong and durable, simple and economical, feed shipping carton which can be quickly and easily converted into an efficient trough type self-feeder. Another object is to provide for cutting said carton to form a flap adapted to be swung outwardly and provide an exposed feed trough and a communicating opening between the latter and the interior of the carton. Another object is to provide a folded-blank insert which is snugly held inside the sealed carton during shipment and is adapted to provide a false bottom which slopes downwardly to the bottom of the said trough and includes means for maintaining the feed in the trough at a level below the top thereof. The invention consists in the convertible shipping carton and self-feeder and in the parts and combinations and arrangements of parts hereinafter described and claimed.

The accompanying drawings, which form part of the specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a perspective view of a combination shipping and self-feeder carton embodying my invention, the overlapping end closure flap thereof being shown broken away to disclose the liner insert and the stop lug in the underlying end closure flap,

Fig. 2 is a perspective view showing the carton laid on its side and converted into a self-feeder,

Fig. 3 is a fragmentary perspective view similar to Fig. 2 showing the manner in which the stop lugs are bent inwardly from the underlying end closure flaps into operative position,

Fig. 4 is a fragmentary horizontal sectional view on the line 4—4 in Fig. 3,

Fig. 5 is a fragmentary vertical cross-sectional view on line 5—5 in Fig. 2,

Fig. 6 is a horizontal cross-sectional view of the carton taken on the line 6—6 in Fig. 1,

Fig. 7, is a horizontal cross-sectional view on line 7—7 in Fig. 2,

Fig. 8 is a perspective view of the liner insert,

Fig. 9 is a plan view of the blank from which the carton body is formed,

Fig. 10 is a view similar to Fig. 5 showing a modified form of the invention.

Fig. 11 is a vertical longitudinal sectional view on the line 11—11 in Fig. 10; and

Fig. 12 is a perspective view of the modified form of liner insert shown in Figs. 10 and 11.

In the accompanying drawings, our invention is shown embodied in a conventional one-piece,

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folded-blank shipping carton comprising two opsite side walls 1 provided with half end closure flaps 2 and two opposite side walls 3 and 4, provided with half end closure flaps 5. At each end of the carton, the half closure flaps 2 of the two opposite side walls 1 are folded inwardly towards each other into substantially edgewise abutting relation and the half closure flaps 5 of the two other opposite side walls 3 and 4 are folded over upon the closure flaps 2 and are secured together along their abutting edges by a strip of adhesive tape 6. The overlapped closure flaps may also be adhesively secured together flat-wise.

Each end closure flap 2 of each of the two opposite side walls 1 is slit or cut, as at 7, to form therein a displaceable tab 8 which is entirely separate from said end closure flap but remains hingedly attached to said side wall along the line of fold of said end closure flap. The tab 8 of each end closure flap 2 is of substantially V-shape and is located next to the side wall 4 with its wide end at the fold line of said end closure flap. Each tab 8 terminates at its free narrow end in a laterally extending stop lug 9 which extends in the direction of the side wall 3. Each of the two opposing side walls 1 has a line of severance 10 marked on the outer surface thereof which extends the full length of said wall and connects the tab forming slits 7 on the sides thereof located remote from the side wall 4.

The above carton is provided with a separate, one-piece, folded-blank liner insert A which is formed midway between two opposite side margins thereof into a tubular supporting rib 11 that extends from one to the other of two opposite side margins of said insert and has a flat bottom 12 and upwardly converging side walls 13 that meet along their upper edges. The insert also includes two half-bottom panels 14 that slope downwardly and outwardly from the meeting upper edges of the upwardly converging side walls 13 of the hollow rib 11. The meeting edges of the half-bottom panels 14 are preferably covered by a strip of adhesive tape 15 that seals and prevents spreading of the joint between said edges. The self-feeder insert A is positioned within the carton and snugly fits therein with its hollow supporting rib seated against the side wall 4 of the carton midway of the two opposite side walls 1 thereof and with its half-bottom panels 14 sloping to the corners formed by the side walls 1 and the side wall 4.

The carton with the insert A positioned therein is filled with the poultry feed or other material

that is to be dispensed therefrom and is sealed in the manner hereinbefore described for shipment to the ultimate purchaser.

Upon receiving the sealed carton, the feeder places the carton with its side wall 4 down where the poultry is to be fed and slits the two side walls 1 from end to end along the lines of severance 10, thereby forming flaps 16 that are hinged to the side wall 4. A knife or other suitable implement is then slipped between each overlying end closure flap 5, and the tab 8 cut in the underlying end closure flap 2 and pressed against said end tab to bend the latter inwardly out of the plane of the end flap 2. The flaps 16 formed by cutting the side walls 1 along the lines 10 are then bent outwardly and downwardly out of the planes of said walls to form the upwardly and outwardly inclined outer side walls of outstanding feed troughs 17 that extend along the lower portions of said side walls. The displaced trough forming flaps 16 also provide in the side walls 1 openings 18 which establish communication between the interior of the carton and the exteriorly located feed troughs 17 thereof. At the same time, the tabs 8 which have been displaced from the end closure flaps 2 and are integrally attached to the trough flaps 16 move outwardly with the latter through the openings 18 and form the end walls of the troughs 17, the stop lugs 9 of said tabs abutting against the side walls 1 above said openings and thus limiting the outward movement of said trough forming flaps and tabs. The half-bottom panels 14 of the self-feeder insert A slope downwardly to the openings 18, which establish communication between the interior of the carton and the feed troughs 17, and cause the feed to flow by gravity into said troughs. When it is desired to discontinue the feeding, the trough flaps 16 may be swung back into the plane of the side walls 1 and the end tabs 8 slid inwardly into the carton. If desired, the flaps may be secured in inoperative position by means of adhesive tape (not shown).

The foregoing arrangement provides a strong, durable, simple and economical, feed carton which may be quickly and easily converted into an efficient trough type self-feeder, whose feeding troughs may be readily returned to inoperative position when it is desired to render the feed inaccessible. The self-feeder insert A serves to stiffen and strengthen the carton and provides a false bottom therefor which protects the feed from floor moisture and facilitates movement of feed by gravity into the trough. The insert has a snug fit in the carton and thus prevents sifting of the feed around the edges of the insert, and the joint between the meeting edges of the half-bottom panels 14 of said insert is covered by the adhesive sealing strip 15 which prevents sifting of the feed through said joint and side-wise spreading of the rib 11.

In the modified construction shown in Figs. 10, 11 and 12, the insert is provided at the outer side edges of its sloping half-bottom panels 14 with upstanding flanges 19 which seat against the inner faces of the side walls 1 of the carton and are provided opposite the openings 18 in said walls with openings 20 which extend substantially from end to end of said flanges. The upper edges of the openings 20 are located below the level of the upper edge of the openings 18 thereby reducing the effective height thereof and maintaining the level of the feed in the troughs 17 below the upper edges thereof.

Obviously, the heretofore described convertible shipping carton and self-feeder admits of considerable modification without departing from the invention. Therefore, we do not wish to be limited to precise construction shown and described.

What we claim is:

1. A convertible shipping carton and self-feeder comprising two integrally connected angularly disposed walls, one of said walls forming the bottom of said carton in the feeding position thereof and the other of said walls extending upwardly in such position of said carton and forming one side wall thereof, said upright side wall being adapted to be cut along a line located above said bottom forming wall to provide a flap constructed and arranged to be swung from the plane of said upright wall at an upwardly and outwardly inclined angle to said wall to form the outer side wall of a feed trough and to provide in said upright wall a communicating opening between the interior of said carton and said feed trough, said flap having tabs extending from the ends thereof through said opening and forming the ends of said feed trough, a liner insert seated against the bottom forming wall of said carton and having an upstanding flange seated flat-wise against the inner face of said upright side wall and having an opening constructed and arranged to communicate with the opening formed in said upright wall when the flap cut therein is swung outwardly into trough forming position, and the upper edge of said opening in said flange being disposed below the upper edge of the opening in said upright wall so as to decrease the effective height of said last mentioned opening.

2. A convertible shipping carton and self-feeder comprising two integrally connected angularly disposed walls, one of said walls forming the bottom of said carton in the feeding position thereof and the other of said walls extending upwardly in such position of said carton and forming one side wall thereof, said upright side wall being adapted to be cut along a line located above said bottom forming wall to provide a flap constructed and arranged to be swung from the plane of said upright wall at an upwardly and outwardly inclined angle to said wall to form the outer side wall of a feed trough and to provide in said upright wall a communicating opening between the interior of said carton and said feed trough, said flap having tabs extending from the ends thereof through said opening and forming the ends of said feed trough, an insert entirely enclosed within the carton and seating against the bottom forming wall thereof and having a panel which slopes downwardly toward the lower edge of the opening formed in said upright wall when the flap cut therein is swung outwardly into trough forming position, said insert being provided at the lower edge of its sloping panel with an upstanding flange seated flat-wise against the inner face of said upright side wall and having an opening adapted to communicate with the opening formed in said upright wall when the flap cut therein is swung outwardly into trough forming position, and the upper edge of said opening in said flange being disposed below the upper edge of the opening in said upright wall so as to decrease the effective height of said last mentioned opening.

3. A convertible shipping carton and self-feeder comprising four permanently connected side walls having end flaps that are overlapped to close the

ends of said carton, one of two opposite side walls forming the bottom of the carton in the feeding position thereof and the other two opposite side walls being adapted to be cut along lines of severance marked thereon adjacent to and parallel with said bottom forming wall thereon to provide flaps constructed and arranged to be swung from the planes of said two other opposite side walls at an upwardly and outwardly inclined angle to said walls to form the outer side walls of feed troughs and to provide openings in said other two opposite side walls for establishing communication between the interior of said carton and said feed troughs, said flaps having tabs extending from the ends thereof through said opening and forming the ends of said feed troughs, and the end flaps of said other two opposite side walls being overlapped by the end flaps of said first mentioned two opposite side walls and pre-cut to form said end tabs so constructed and arranged that said end tabs are normally disposed in the plane of said overlapped end flaps but are displaceable therefrom for movement with the trough forming flaps into position to form the ends of said troughs.

4. A convertible shipping carton and self-feeder comprising four permanently connected side walls having end flaps that are overlapped to close the ends of said carton, one of two opposite side walls forming the bottom of the carton in the feeding position thereof and the other two opposite side walls being adapted to be cut along lines of severance marked thereon adjacent to and parallel with said bottom forming wall thereon to provide flaps constructed and arranged to be swung from the planes of said two other opposite side walls at an upwardly and outwardly inclined angle to said walls to form the outer side walls of feed troughs and to provide openings in said other two opposite side walls for establishing communication between the interior of said carton and said feed troughs, said flaps having tabs extending from the ends thereof through said opening and forming the ends of said feed troughs, the carton being provided with a liner insert seated against said bottom forming wall and having upstanding marginal flanges seated flat-wise against the inner face of said other two opposite side walls and each flange having an opening therein to communicate respectively with the openings formed in said last mentioned walls when the flaps cut therein are swung outwardly into trough forming position, and the upper edges of said openings in said flanges being disposed below the upper edges of the openings in said other two opposite side walls so as to decrease the effective height of said last mentioned openings.

5. A convertible shipping carton and self-feeder comprising four permanently connected side walls having end flaps that are overlapped to close the ends of said carton, one of two opposite side walls forming the bottom of the carton in the feeding position thereof and the other two opposite side walls being adapted to be cut along lines of severance marked thereon adjacent to and parallel with said bottom forming wall thereon to provide flaps constructed and arranged to be swung out of the planes of said two other opposite side walls at an upwardly and outwardly inclined angle to said side walls to form the outer side walls of feed troughs and to provide openings in said other two opposite side walls for establishing communication between the interior of said carton and said feed troughs, said flaps having tabs extending from the ends thereof through said openings and forming the ends of said feed troughs, a liner insert entirely enclosed within the carton and seated against the bottom forming wall thereof and having half-bottom panels sloping downwardly toward the lower edges of said openings when the trough forming flaps are swung into trough forming position, said insert being formed with a hollow rib seated against said bottom forming wall and supporting the inner margins of said sloping panels, said insert being provided at the lower edges of its sloping half-bottom panels with upstanding flanges seated flat-wise against the inner faces of said other two opposite side walls and having openings constructed and arranged to communicate with the openings formed in said last mentioned walls when the flaps cut therein are swung outwardly into trough forming position, and the upper edges of said openings in said flanges being disposed below the upper edge of the openings in said other two opposite side walls so as to decrease the effective height of said last mentioned openings.

WARREN C. RENDALL.
FRED L. RUSHING.

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