March 22, 1932. P. R. SMYTHE 1,850,183

CARTON

Filed March 27, 1931

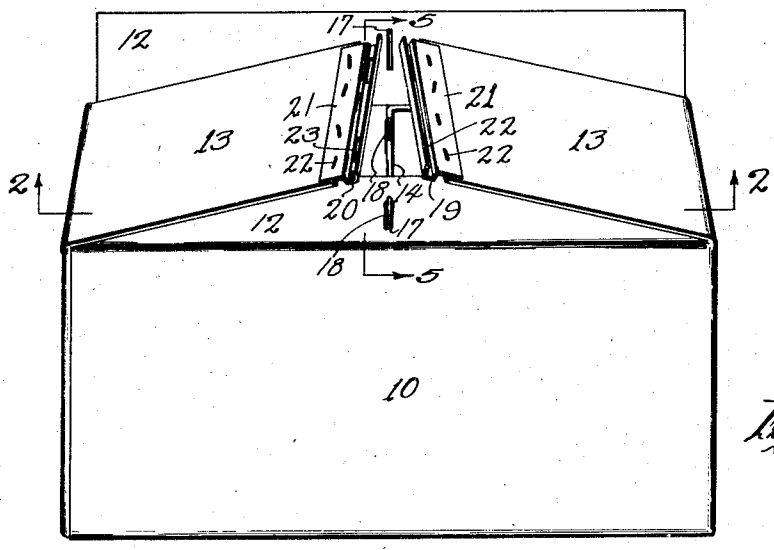

Fig. 1

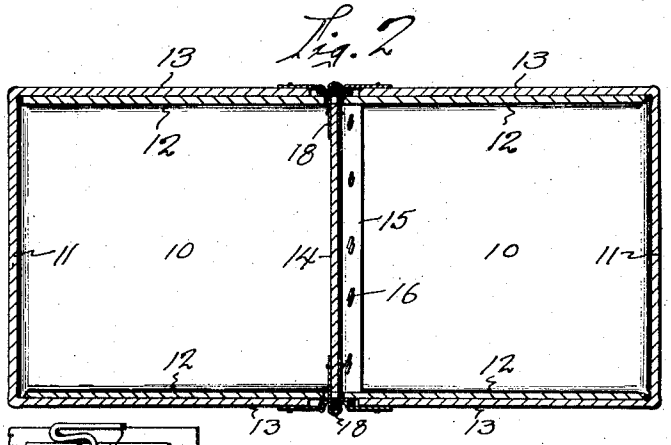

Fig. 2

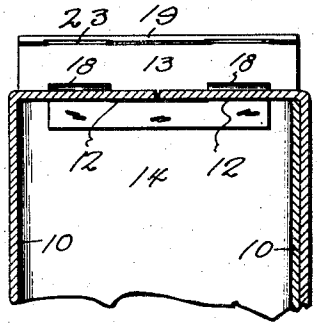

Fig. 5

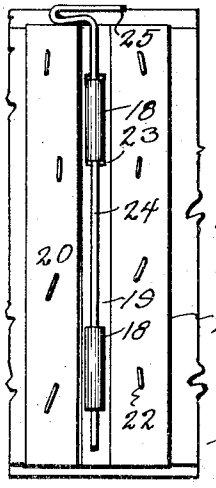

Fig. 6

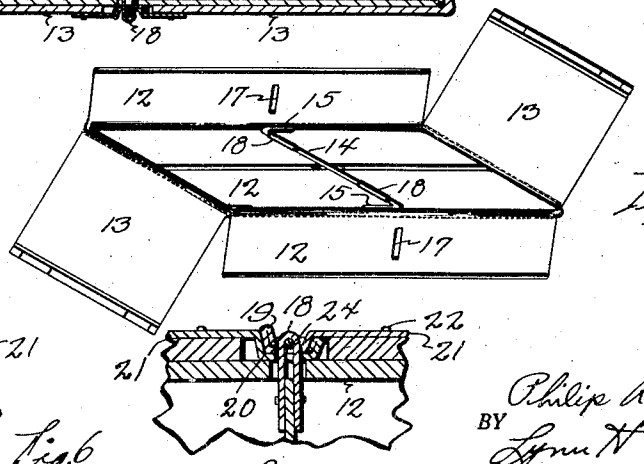

Fig. 4

Fig. 3

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CARTON

Application filed March 27, 1931. Serial No. 525,637.

My invention relates to cartons of the type having hinged flaps for closing the carton and more particularly to that type of carton which is made of heavy paper.

The basic object in my invention is to provide a foldable carton which is of very strong, durable, and comparatively inexpensive construction. The strength in the carton is attained by a novel construction wherein a partition member and the opening flaps of the carton are provided with means for interlocking when the carton is closed whereby the flaps and the partition serve to brace and rigidify the structure of the entire carton.

Another object of the invention is to provide a carton which is particularly adaptable for use in transporting eggs and which can be folded when not in use. This involves the problem of making a carton sufficiently strong so that it can be made large enough to accommodate a gross of eggs.

Another object of the invention is to provide a carton of the type mentioned above which can be very easily opened or locked into closed position.

Another object of the invention is to provide a carton which can be handled roughly without injuring the locking mechanism.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the carton, partly opened,

Figure 2 is a vertical, longitudinal, sectional view through the carton taken on the line 2—2 of Figure 1,

Figure 3 is a detailed enlargement of a portion of Figure 2,

Figure 4 is a plan view of the carton in partially folded position,

Figure 5 is a detail, sectional view taken on the line 5—5 of Figure 1, and

Figure 6 is a detail, plan view of the central portion of the carton illustrating the locking means in position.

The carton comprises parallel side members 10, parallel end members 11, side flaps 12 hinged to the sides 10, and end flaps 13 hinged to the end walls 11.

The preferable method of constructing the carton is to employ heavy cardboard of the type used in the ordinary paper carton, the hinges between the side walls 10 and flaps 12 and end walls 11 and flaps 13 being formed by creasing and bending, the flaps being formed integrally with their respective wall members.

It will be understood, however, that the present invention in its broadest aspect is not limited to the use of cardboard or the forming of the hinges by bending and creasing, but that other materials such as wood might be employed in the carton and the hinges might be formed either in wood or in paper by other equivalent means, such as the use of metal hinges.

Where the carton is used as an egg crate, its length will be exactly double its width and height, and it will be divided into two equal compartments by means of a partition 14 secured to the side walls 10 by means of flaps 15 integrally formed on the partition 14 and separated therefrom by hinges formed as the hinges are formed between the flaps and the walls. (See Figure 4.)

When the carton is folded, the hinges between the partition 14 and the flaps 15 allow the partition 14 to fold to a parallel position between the walls 10 wherein the walls 10 rest flatly against the partition. In this position, the flaps 12 and 13 may be allowed to project in the plane of their respective walls, or may be folded back upon their respective walls.

The flaps 15 are secured to the side walls 10 by any conventional securing means, such as with clinched clips or staples 16.

The flaps 12 are each a trifle less than one-half the width of the end walls 11 and the flaps 13 are each a trifle less than the length of the side walls 10, whereby the respective pairs of flaps will come together at their free edges to form two complete double closures of the carton.

The side flaps 12 are adapted to under-lie

the end flaps 13 and are provided with slots 17 positioned to receive yokes 18 secured to the partition 14 and projecting beyond the edges thereof. It may now be noted that the engagement of the yokes 18 in the slots 17 will secure the partition 14 in a position at right angles to the side walls 10, thereby causing the carton to assume the rectangular shape and bracing the carton in that shape.

The bracing effect thus produced is supplemented by the engagement of the yokes 18 with the locking channels 19 and 20 respectively, secured to the flaps 13.

The construction of these channels is illustrated clearly in the detail view in Figure 3, the partition being too small to show in detail in Figure 2. Figure 3 is thus merely a duplication of those parts which do not show clearly in Figure 2.

Each channel comprises a channel portion 20 or 19 respectively, and a flange 21 secured as at 22 to its respective flap 13. The channels 19, 20 project beyond the edges of the flaps 13 and are depressed so as to lie substantially in the planes of the respective flaps, the channel 20 being of sufficient depth to rest against the upper surface of the flaps 12 when the carton is closed, and the channel 19 being slightly shallower and narrower so as to be receivable in the channel 20 as clearly illustrated in Figure 3.

The channels 19, 20 are provided with registering slots 23, receiving the yokes 18. The yokes are of sufficient height to project above the channel 19 a sufficient distance so that a locking bolt 24 may be inserted beneath the yoke and above the channel 19.

The bolt 24 is provided with a handle 25 to facilitate its manipulation.

It will now be seen that the locking of the channels together, serves a dual purpose, namely;

1. That of supplementing the bracing between the flaps 12 and the partition 14, and

2. That of securely locking the flaps together against separation whereby to brace the end walls of the carton against outward pressure.

The partition member serves to brace the side wall against spreading pressure and this bracing action is supplemented by the locking of the flaps 12 relative to the partition, whereby any spreading pressure exerted against the side walls 10 will be transmitted to the partition through the medium of the yokes 18 as well as to the hinges.

The spreading pressure at the upper and lower extremities of the carton will thus be borne primarily by the yokes 18 instead of by the hinges and the latter need serve to function only in the intermediate regions of the side walls.

Both the upper and lower extremities of the carton are provided with the flap and locking construction just described, in order that the carton may be folded to a flat package. It will be understood however, that my invention embraces in addition to a foldable carton, a carton wherein the novel features of construction just described are confined to the top of the carton and wherein the bottom may be of any conventional construction. This type of carton of course will not be foldable, although it possesses the advantages of bracing the upper region of the carton and of greatly improved durability and ease of handling. It will be understood that equivalent means secured to the flaps 13 for receiving the yokes 18, and equivalent devices for the yokes 18 may be employed without departing from the true spirit of my invention and it is my purpose to cover not only such modifications as have been suggested herein but also other equivalents for the various elements of my invention such as may be embodied within the true spirit and purpose thereof.

I claim as my invention:

1. In a receptacle, parallel side walls, parallel end walls hinged to the side walls, a partition hinged to the side walls and parallel to the end walls, projecting yokes secured to said partition, side flaps hinged to the side walls and perforated to receive said yokes, end flaps hinged to the end walls and provided with overlapping means perforated to receive said yokes, and a locking bolt receivable through the yokes and above said overlapping means.

2. In a collapsible receptacle, parallel side walls, parallel end walls hinged to the side walls, a partition hinged to the side walls and parallel to the end walls, projecting yokes secured to said partition at its upper and lower extremities, side flaps hinged to the upper and lower extremities of the side walls and perforated to receive said yokes, end flaps hinged to the upper and lower extremities of the end walls and provided with overlapping means perforated to receive said yokes, and locking bolts receivable through the yokes and above said overlapping means.

3. In a collapsible receptacle, parallel side walls, parallel end walls hinged to the side walls, a partition hinged to the side walls and parallel to the end walls, projecting yokes secured to the upper and lower extremities of the partition. side flaps hinged to the upper and lower extremities of the side walls and perforated to receive said yokes, and a locking bolt receivable through the yokes above said side flaps.

4. In a collapsible receptacle, parallel side walls, parallel end walls hinged to the side walls, a partition hinged to the side walls and parallel to the end walls, projecting yokes secured to the upper and lower extremities of the partition, end flaps hinged to the upper and lower extremities of the end walls and provided with overlapping means perfo-

rated to receive said yokes, and a locking bolt receivable through the yokes and above said overlapping means.

5. In a collapsible receptacle, parallel side walls, parallel end walls hinged to the side walls, a partition hinged to the side walls and parallel to the end walls, projecting yokes secured to the upper and lower extremities of the partition, end flaps hinged to the upper and lower extremities of the end walls and provided with overlapping channels perforated to receive said yokes, and a locking bolt receivable through the yokes and in said overlapping channels.

6. In a receptacle, side and end walls and a partition dividing the receptacle into two compartments, yokes secured to the partition and projecting thereabove, flaps hinged to opposite walls and perforated to receive said yokes, and a locking bolt receivable through the yokes and above said flaps.

7. In a receptacle, side and end walls, a partition dividing the receptacle into two compartments, yokes secured to the partition and projecting thereabove, end flaps hinged to opposite walls and provided with overlapping members perforated to receive said yokes, and a locking bolt receivable through the yokes and above said overlapping members.

8. In a receptacle, parallel side walls, parallel end walls, a partition dividing the receptacle into two compartments and parallel to the end walls, projecting yokes secured to said partition, side flaps hinged to the side walls and perforated to receive said yokes, end flaps hinged to the end walls and provided with overlapping means perforated to receive said yokes, and a locking bolt receivable through the yokes and above said overlapping means.

Signed at Sioux City, Iowa, this 25th day of March, 1931.

PHILIP R. SMYTHE.