

Nov. 18, 1952

J. S. DONNELL

2,618,110

ART OF PACKAGING

Filed April 30, 1949

3 Sheets-Sheet 1

Fig. 1

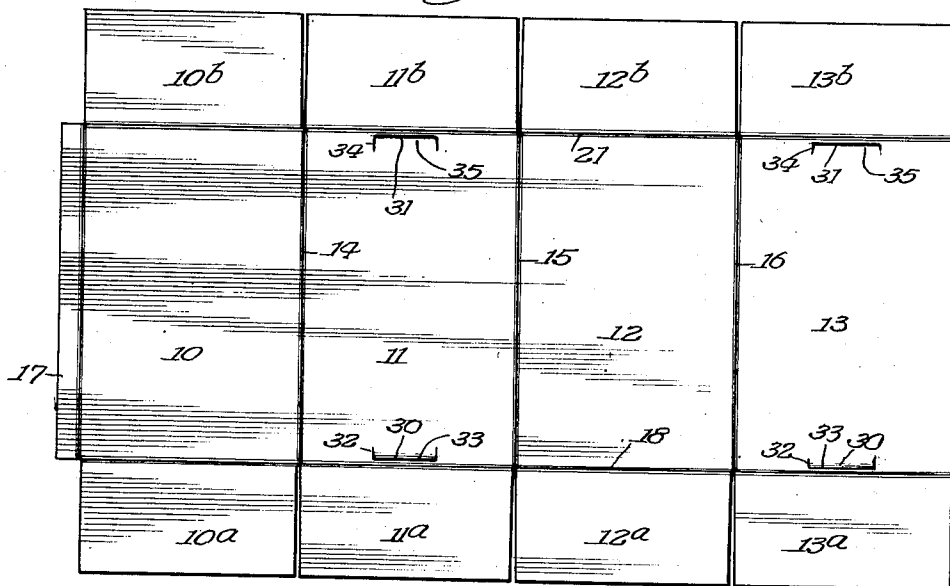


Fig. 2

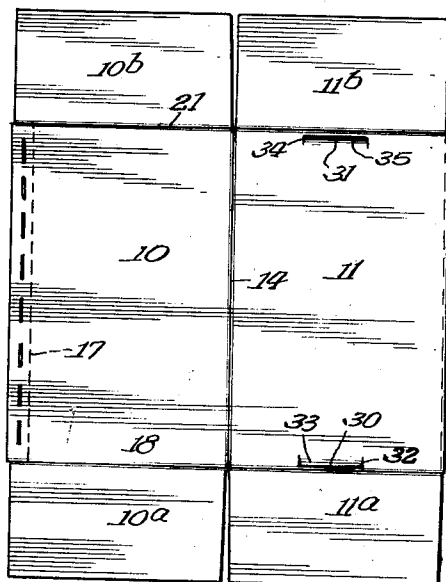


Fig. 3

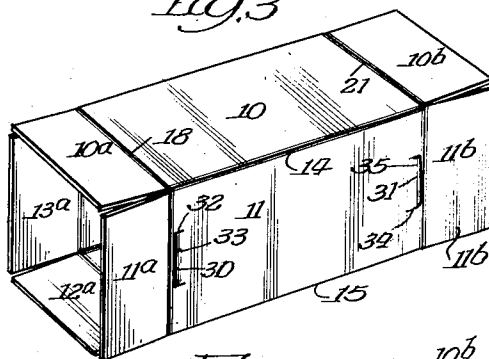
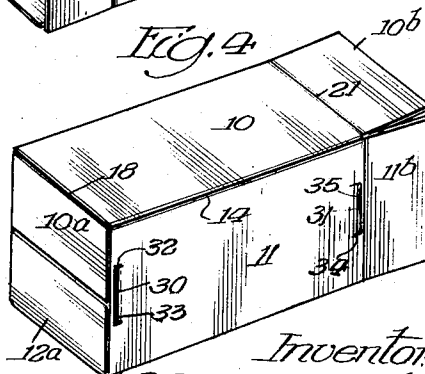


Fig. 4



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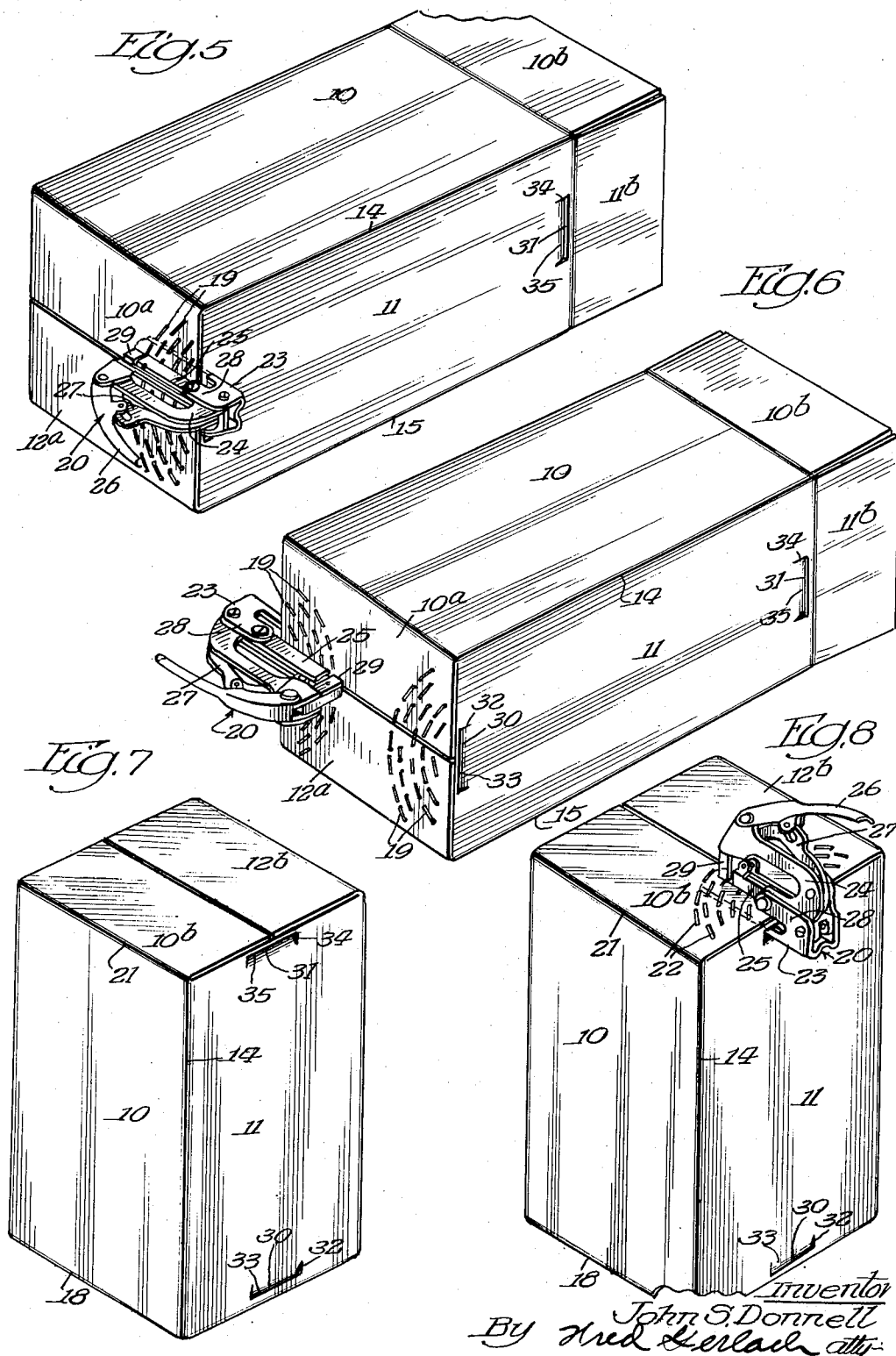
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3 Sheets-Sheet 2



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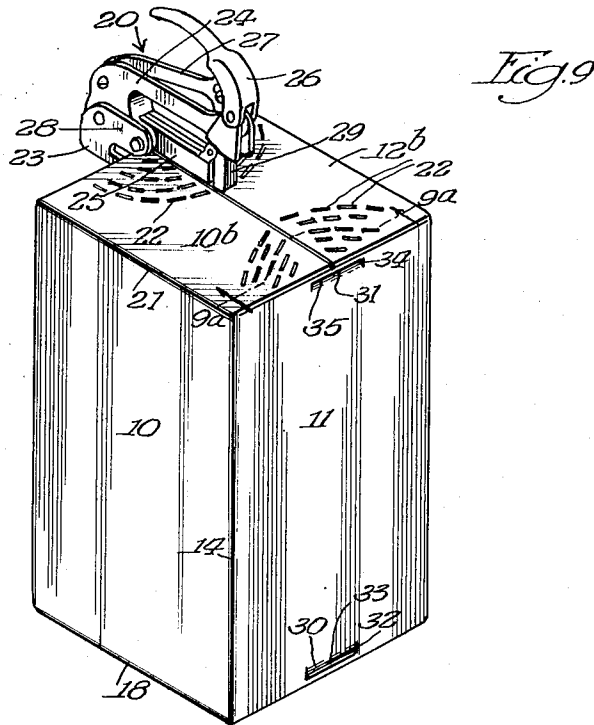
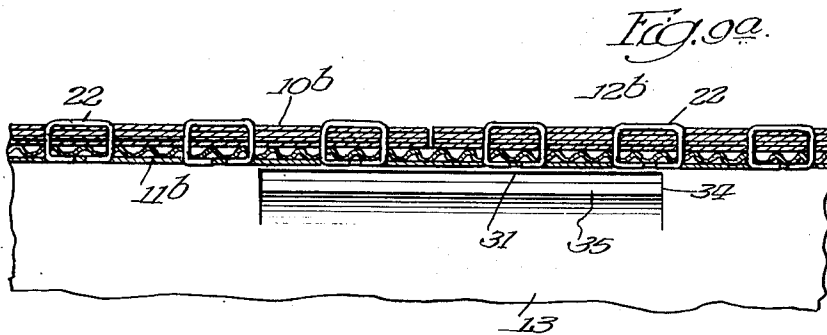
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J. S. DONNELL
ART OF PACKAGING

2,618,110

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,618,110

ART OF PACKAGING

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Application April 30, 1949, Serial No. 90,577

2 Claims. (Cl. 53—16)

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The present invention pertains to the art of packaging.

It is now common practice in packaging cut flowers and other articles preparatory to shipment to employ a rectangular container of the type that is formed from a one-piece pre-cut corrugated board blank, is ordinarily maintained in a collapsed or flattened condition until it is desired for use, and consists of four rectangular sides which are connected or joined together at the side margins thereof and have on their bottom margins hinged rectangular bottom forming flaps and on the top margins thereof hinged rectangular top forming flaps. In utilizing a container of this type the blank is first opened by manipulating the sides so that they are in right angled relation. Thereafter two opposed bottom forming flaps are swung inwards into coplanar relation and the other two opposed bottom forming flaps are swung inwards into underlying relation and are secured to the first mentioned flaps by an adhesive coating or are secured together by way of strips of gummed tape. After formation of the bottom the articles to be shipped are inserted or packed into the container and the container top is formed by swinging inwards into coplanar relation two opposed top forming flaps and then swinging inwards the other two opposed top forming flaps so that they overlie the previously swung subjacent flaps. The top of the container is completed by either connecting the two overlying top forming flaps to the two underlying top forming flaps by an adhesive coating or by securing the overlying top forming flaps together by way of strips of gummed tape. In practice it has been found that a container of the aforementioned type and character is subject to certain objections. In the first place, formation of the container entails considerable time and effort because of the necessity of either adhesively connecting the flaps or taping together the underlying bottom forming flaps and taping together the overlying top forming flaps. Another objection to a container of the character under consideration is that the flap formed bottom and the flap formed top are essentially weak and, in addition, are subject to accidental opening, especially if the articles which are packed in the container are moist or the atmosphere in which the container encounters is humid. In either case the encountered moisture generally so softens the adhesive coatings or the gum coatings on the tape that such coatings lose their bonding properties or characteristics and hence do not fulfill their intended purpose. An attempt has been made to overcome the inherent objections to a container wherein the bottom and top forming flaps are secured in place by adhesive coatings or strips of gummed tape by stapling together the bottom forming flaps and

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stapling together the top forming flaps. Such attempt has not met with success because of the fact that the stapling operation cannot be carried out with a standard or conventional stapling device.

The principal object of this invention is the provision of a simple and efficient method whereby the bottom and top forming flaps of a container of the aforementioned character may be quickly and readily stapled by a conventional or standard stapling device of the type that comprises an elongated blade-like platen, an elongated arm which overlies, and extends lengthwise of, the platen and has its inner end fixedly connected to the inner end of the platen, a channel-like guide chute which is disposed between, and extends lengthwise of, the platen and arm, is pivoted at its inner end so that its outer end is capable of swinging back and forth between the outer ends of the platen and arm, is adapted to contain a series of U-shaped staples and have the staples urged forwards by spring means, and has at its outer end a stapling head, a lever which overlies, and is pivotally connected to the outer end of, the arm, and an operating connection whereby when the lever is swung downwards the chute is first caused to swing downwards and then the head is energized so that it severs the outermost staple from the series and causes inward bending of the free ends of the legs of such staple. In general the subject method includes as steps thereof forming longitudinally extending platen receiving slots in the central portions of the bottom margins of the two opposed container sides to which the first folded bottom forming flaps are hinged and forming longitudinally extending platen receiving slots in the central portions of the top margins of the two opposed container sides to which the first folded top forming flaps are hinged. In connection with a packaging operation the container forming blank which is used in the operation is unfolded by arranging the four sides thereof in squared or right angled relation. Thereafter the two opposed bottom forming flaps which are hinged to the container sides having the longitudinal slots in the central portions of their bottom margins are swung inwards into place and then the other two opposed bottom forming flaps are swung into underlying or lapped relation with the two first folded flaps. After these steps the conventional stapling device is manipulated into such position that the platen extends through one of the bottom slots into lapped relation with the adjacent first folded bottom forming flap and the arm of the device is disposed outwardly of the adjacent corners of the last folded bottom forming flaps. After proper manipulation of the stapling device the actuating lever is swung towards the arm of the device in order to effect application of a staple,

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Thereafter the device is slid sidewise or lengthwise into different positions and is actuated at each position until staples in sufficient number are applied to cause the adjacent corners of the underlying or outer bottom forming flaps to be securely stapled in place. As soon as this is accomplished the stapling device is removed from the one slot and then manipulated so as to cause its platen to extend through the other bottom slot. The device is then operated so as to effect stapling of adjacent corners of the two second folded underlying or outer bottom forming flaps to the other first folded inner bottom forming flap. At the conclusion of the two stapling operations the container that is to be used for packaging purposes has a strong rigid bottom which is not likely to open when the container is subjected to moisture or rough handling. After formation of the bottom the articles to be shipped or transported are packed into the container and the top forming flaps which are hinged to the sides having the slots in the central portions of their upper margins are swung inwards into place. This step is followed by swinging the other two opposed top forming flaps over the first folded top forming flaps. Thereafter the top forming flaps are stapled together by first manipulating the stapling device so as to insert the platen thereof through one of the top slots and operating the device and then manipulating the device so as to cause the platen thereof to be inserted through the other top slot and operating the device. After proper manipulation of the stapling device so far as the top forming flaps are concerned the container is effectively sealed and possesses a rigid top which, like the bottom, is not subject to opening due to moisture or rough handling of the container.

Another object of the invention is the provision of a packaging method which involves the use of a rectangular or box-like container of the aforementioned type and contemplates, in connection with formation of the longitudinal platen receiving slots, forming at the ends of the slots inwardly extending slits which extend substantially at right angles to the slots and define therewith tongues which swing inwards when the platen of the stapling device is slid into position through the slots and thus laterally enlarge the slots for ease of positioning of the stapling device and upon removal of the platen of the stapling device swing back into place and thus substantially close the slots.

Other objects of the invention and the various advantages and characteristics of the present packaging method will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawings which accompany and form a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a plan view of a one-piece blank for forming a container of the type or character involving the present invention, the blank being shown before connection or securing together of the free side margins of certain of the sides;

Figure 2 is a plan view showing the blank after connection of such margins and in the collapsed position that it assumes before use;

Figure 3 is a perspective showing the blank after it has been opened to form the container

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with the four sides thereof in squared or right angled relation but before inward swinging or folding into place of the bottom forming flaps and the top forming flaps;

Figure 4 is a perspective showing the container after the bottom forming flaps have been folded into place;

Figure 5 is a perspective showing a conventional stapling device inserted into one of the bottom slots and illustrating the manner in which the device is operated to staple the adjacent free corners of the outer bottom forming flaps to the adjacent inner bottom forming flap;

Figure 6 is a perspective showing the stapling device inserted into the other bottom slot and illustrating the manner in which it is operated to staple the other free corners of the outer bottom forming flaps to the other inner bottom forming flap in order to complete the bottom of the container;

Figure 7 is a perspective showing the container after the top forming flaps have been folded into place preparatory to stapling;

Figure 8 is a perspective showing the stapling device with the platen thereof inserted into one of the top slots and illustrating the manner in which the device is operated to effect stapling of the adjacent corners of the outer top forming flaps to the adjacent inner top forming flap;

Figure 9 is a perspective showing the stapling device with its platen inserted into the other top slot and illustrating the manner in which it is operated to staple the other corners of the outer top forming flaps to the other inner top forming flap in order to effect completion of the top of the container; and

Figure 9a is a section on the line 9a—9a of Figure 9.

The invention involves a container like that shown in the drawings and also the particular manner in which such container is, after being packed with articles, sealed or closed preparatory to shipment or transportation. The container is formed from a one-piece blank like that shown in Figure 1 of the drawings and consists of four rectangular sides 10, 11, 12 and 13, four bottom forming flaps 10a, 11a, 12a and 13a and four top forming flaps 10b, 11b, 12b and 13b. The four sides are preferably, although not necessarily, the same in size and shape and when the container is in use are arranged in so-called squared or right angled relation (see Figures 3 to 9, inclusive). The adjacent side margins of the sides 10 and 11 are formed integrally with one another and have between them a fold line 14 whereby the sides 10 and 11 may be folded or bent at right angles to one another. The adjacent side margins of the sides 11 and 12 are formed integrally with one another and have between them a fold line 15 whereby the sides 11 and 12 may be folded or bent at right angles to one another. The adjacent side margins of the sides 12 and 13 are formed integrally with one another and have between them a fold line 16 whereby the sides 12 and 13 may be folded or bent at right angles to one another. The outer free side margin of the side 10 is provided with a longitudinally extending flap 17 and this is stapled or otherwise suitably connected to the outer side margin of the side 13 in order to connect together the outer side margins of the sides 10 and 13. The bottom forming flaps 10a, 11a, 12a and 13a are hinged by fold lines 18 to the bottom margins of the sides 10, 11, 12 and 13, respectively. They are the same in size and shape and their length is approximately one-

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half the width of the sides. The bottom forming flaps 11a and 13a are designed to be folded inwards at right angles to their respective sides and the bottom forming flaps 10a and 12a are designed to be folded inwards into underlying relation with the flaps 11a and 13a and to form therewith the bottom of the container. After inward folding of the four bottom forming flaps the free corners of the flaps 10a and 12a are connected to the central portions of the flaps 11a and 13a by staples 19 in order that the container bottom is rigid and serves as a secure closure for the bottom of the container. The stapling is effected by a conventional stapling device 20 as described in detail hereafter. The top forming flaps 10b, 11b, 12b and 13b are hinged by fold lines 21 to the top margins of the sides 10, 11, 12 and 13, respectively. They are the same in size and shape and their length is approximately one-half the width of the sides. The top forming flaps 11b and 13b are designed to be folded inwards at right angles to their respective sides and the top forming flaps 10b and 12b are designed to be folded inwards into overlying relation with the flaps 11b and 13b and to form therewith the top of the container. After proper inward folding of the four top forming flaps the free corners of the flaps 10b and 12b are connected to the central portions of the flaps 11b and 13b by staples 22 in order that the container top is rigid and serves as a secure closure for the top of the container. The stapling is effected by the stapling device 20. After attachment or connection of the flap 17 of the side 10 to the outer or free margin of the side 13 the blank from which the container is ultimately formed is folded into the position that is shown in Figure 2 of the drawings. The blank is retained in such position until it is desired to use the blank and at such time the blank is opened up into the position shown in Figure 3. In the last mentioned position the four sides are arranged in squared relation and the bottom and top forming flaps are in readiness to be folded inwards and stapled together.

The stapling device 20 which is employed to apply the staples 19 and 22 may be of any standard or conventional design or construction. It is like that forming the subject matter of United States Patent No. 2,095,659, dated October 12, 1937, and comprises an elongated blade-like platen 23, an elongated arm 24, a channel-like guide chute 25, a lever 26 and an operating connection 27. The platen 23 of the device is flat throughout the most part of its length and has a rounded or pointed outer end in order that it may be inserted into place. At its inner end the platen embodies a pair of spaced apart upstanding ears 28. The arm 24 overlies, and extends lengthwise of, the platen 23 and has its inner end disposed between and fixedly connected to the ears 28 on the inner end of the platen. The channel-like guide chute 25 is disposed between, and extends lengthwise of, the platen and arm and has its inner end pivotally connected to the ears 28 in order that its outer end is capable of swinging back and forth between the outer ends of the platen and arm. It is adapted to contain a series of inverted U-shaped staples and has at its outer end a fixed stapling head 29. The staples in the chute 25 are urged towards the head 29 by suitable spring means (not shown). The lever 26 overlies the arm 24 and has its outer end pivotally connected to the outer end of the arm to the end that the lever as a whole is capable of swinging to and from the arm. The

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operating connection 27 embodies an end part which is pivotally connected to the inner end of the arm, an intermediate part which is connected to the central portion of the lever 26 by a pin and slot connection, and an end part which is in operative relation with the stapling head 29 on the outer end of the channel-like guide chute 25. It is so designed and constructed that when the lever 26 is swung towards the arm 24 it operates first to swing the chute 25 toward the platen 23 and then to actuate the head 29 so that the outermost staple is forced or shifted downwards to the end that the free ends of the side legs thereof, upon engagement with the outer end of the platen, are bent inwards.

In order to permit the stapling device 20 to apply the staples 19 for securing together the four bottom forming flaps 10a, 11a, 12a and 13a and to apply the staples 22 for securing together the four top forming flaps 10b, 11b, 12b and 13b the container sides 11 and 13 have formed in the central portions of their bottom margins longitudinal platen receiving slots 30, and have formed in the central portions of their top margins longitudinal platen receiving slots 31. The slots 30 are formed in the bottom margins of the container sides 11 and 13 directly above the fold lines 18 between the bottom forming flaps 11a and 13a and said two sides. They are of greater length than the platen 23 of the stapling device 22 is wide and serve in connection with application of the staples 19 to receive the platen, as shown in Figures 5 and 6. Upwardly extending slits 32 are formed in the sides 11 and 13 at the ends of the slots 30. These slits extend at approximately right angles to the slots 30 and define therewith depending tongues 33 which swing inwards when the platen of the stapling device 20 is slid through the slots 30 and thus laterally enlarge the slots and upon removal of the platen swing back into place and thus substantially close the slots. The slots 31 are formed in the top margins of the container sides 11 and 13 directly beneath the fold lines 21 between the top forming flaps 11b and 13b and said two sides. They are preferably the same in length as the slots 30 and serve in connection with application of the staples 22 to receive the platen as shown in Figures 8 and 9. Downwardly extending slits 34 are formed in the sides 11 and 13 at the ends of the slots 31. These slots extend at approximately right angles to the slots 31 and define therewith upwardly extending tongues 35. The latter, like the tongues 33, are adapted to swing inwards when the platen of the stapling device is slide through the slots 31 and thus laterally enlarge the slots and upon removal of the platen to swing back into place and thus substantially close such slots.

When it is desired to utilize the container for packing and shipping purposes the blank, as shown in Figure 2, is opened as heretofore described. Thereafter the bottom forming flaps 11a and 13a are swung inwards into coplanar relation and the bottom forming flaps 10a and 12a are swung or folded into lapped relation with the two first folded flaps. As soon as the four bottom forming flaps are in proper folded position the stapling device 20 is manipulated or shifted so as to cause the platen 23 to extend through one of the slots 30 and the arm 24 of the device to be positioned outwards of the adjacent free corners of the outer bottom forming flaps 10a and 12a, as shown in Figure 5. As soon as the device is properly positioned the actuating lever

26 is swung towards the arm 24 in order to effect application of a staple. By shifting or swinging the device laterally or shifting it lengthwise into different positions and actuating the device at each position a sufficient number of staples are applied to cause the adjacent free corners of the outer bottom forming flaps to be firmly attached to the central portion of the inner bottom forming flap that is in abutment with the platen of the stapling device. After the first stapling operation the device is removed and then manipulated or shifted so as to cause the platen thereof to extend through the other slot 30. As soon as the device is positioned it is operated while in different positions in order to complete the stapling of the outer bottom forming flaps 10a and 12a to the central portions of the inner bottom forming flaps 11a and 13a. Upon completion of the two stapling operations the four flaps 10a, 11a, 12a and 13a are rigidly connected together and form, as previously pointed out, a strong bottom for the container. Stapling of the flaps 10a and 12a to the flaps 11a and 13a is accomplished while the container rests on one side thereof, as shown in Figures 5 and 6, or while the container is in an inverted position (not shown). In connection with insertion of the platen 23 of the stapling device through the slots 30 the depending tongues 33 swing inwards. When the platen is withdrawn from such slots the tongues swing outwards as previously pointed out and serve substantially to close the slots. After formation of the container bottom the container is placed on its bottom and the articles to be packaged are placed within the container. Thereafter the top forming flaps 10b, 11b, 12b and 13b are swung inwards. As soon as such flaps are properly disposed with the flaps 10b and 12b in overlying relation with the flaps 11b and 13b the stapling device 20 is utilized to apply the staples 22 which, as shown in Figure 9a, serve rigidly to connect the free corners of the flaps 10b and 12b to the central portions of the inner top forming flaps 11b and 13b. Application of the staples 22 is effected by shifting the platen of the stapling device, first through one of the slots 31 and then through the other slot 31, as shown in Figures 8 and 9. When the device is positioned with its platen through either of the slots it is operated while in different positions as hereinbefore described. After application of the staples 22 the top forming flaps form a rigid and extremely strong top for the container.

The herein described method of packaging is essentially simple and may be carried out with great facility. It results in the articles to be shipped being adequately retained without likelihood of accidental opening of the bottom and top forming flaps.

Whereas the packaging method has been specifically described as involving stapling together of the four bottom forming flaps and the four top forming flaps it is to be understood that it also involves stapling together of only the bottom forming flaps or the top forming flaps of the container. It is also to be understood that the invention is not to be restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. That improvement in the art of packaging which comprises taking a container of the type

that has four rectangularly arranged sides and closure forming flaps hinged to certain adjacent end margins of all four sides and forming straight longitudinal slots in the central portions of the flap carrying end margins of two opposed sides at locations immediately adjoining the hinges for the two flaps that are hinged to said two opposed sides, then folding said two flaps inwards into right angle relation to said two opposed sides, then folding inwards into overlapped relation with the two previously folded flaps the two flaps that are hinged to the other two opposed sides, then manipulating a portable platen equipped stapling device so that the platen thereof extends through one of the slots and its other parts are outwards of the two last folded flaps and operating the device while in different laterally and longitudinally shifted positions in order to staple the adjacent free corner portions of the two last folded flaps to the central portion of the first folded flap that is adjacent the one slot, and then manipulating the stapling device so that the platen thereof extends through the other slot and its other parts are outwards of the two last folded flaps and operating the device while in different laterally and longitudinally shifted positions in order to staple the adjacent free corner portions of said last two folded flaps to the central portion of the first folded flap that is adjacent said other slot.

2. That improvement in the art of packaging which comprises taking a container of the type that embodies four like sized rectangularly arranged rectangular sides having hinged to certain adjacent end margins thereof four rectangular closure forming flaps that are approximately half as long as the sides are wide, and forming longitudinal slots in the central portions of the flap carrying end margins of two opposed sides at locations immediately adjoining the hinges for the two flaps that are hinged to said two opposed sides, then folding said two flaps inwards into coplanar relation, then folding inwards into lapped relation with the two previously folded flaps the two flaps that are hinged to the other two opposed sides, then manipulating a portable platen equipped stapling device so that the platen thereof extends through one of the slots and its other parts are outwards of the two last folded flaps and operating the device while in different laterally and longitudinally shifted positions in order to staple the adjacent free corners of the two last folded flaps to the central portion of the first folded flap that is adjacent the one slot, and then manipulating the stapling device so that the platen thereof extends through the other slot and its other parts are outwards of the two last folded flaps and operating the device while in different laterally and longitudinally shifted positions in order to staple the adjacent free corners of the two last folded flaps to the central portion of the first folded flap that is adjacent said other slot.

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