

May 30, 1939.

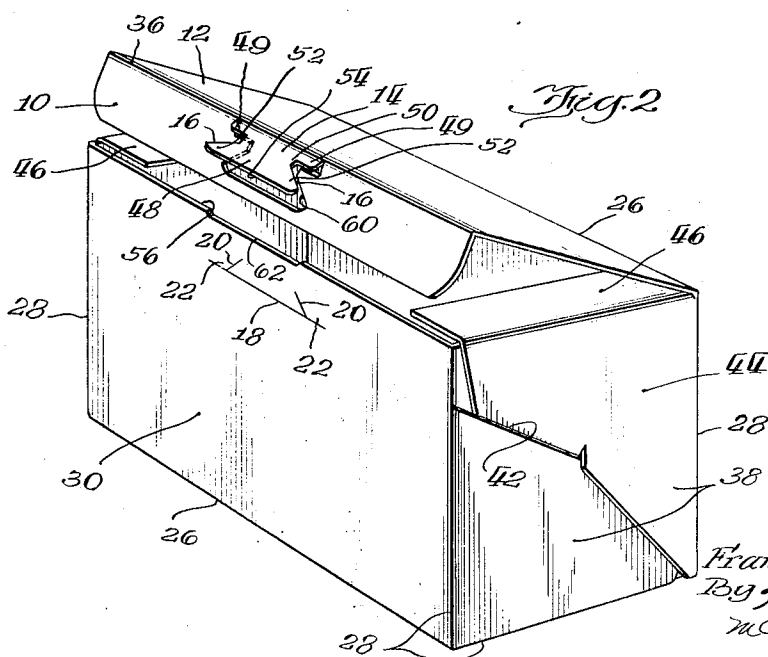
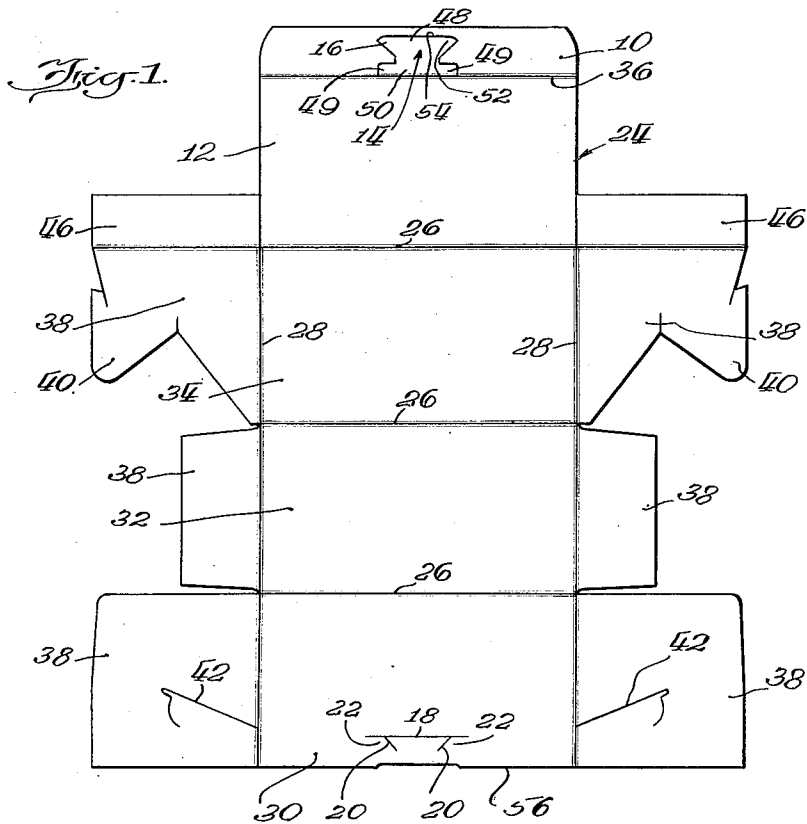
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2,160,164

CONTAINER

Filed Sept. 22, 1937

2 Sheets-Sheet 1



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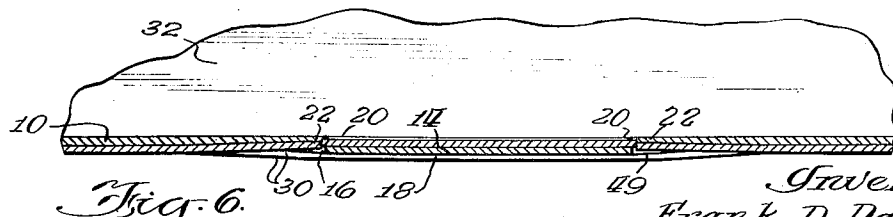
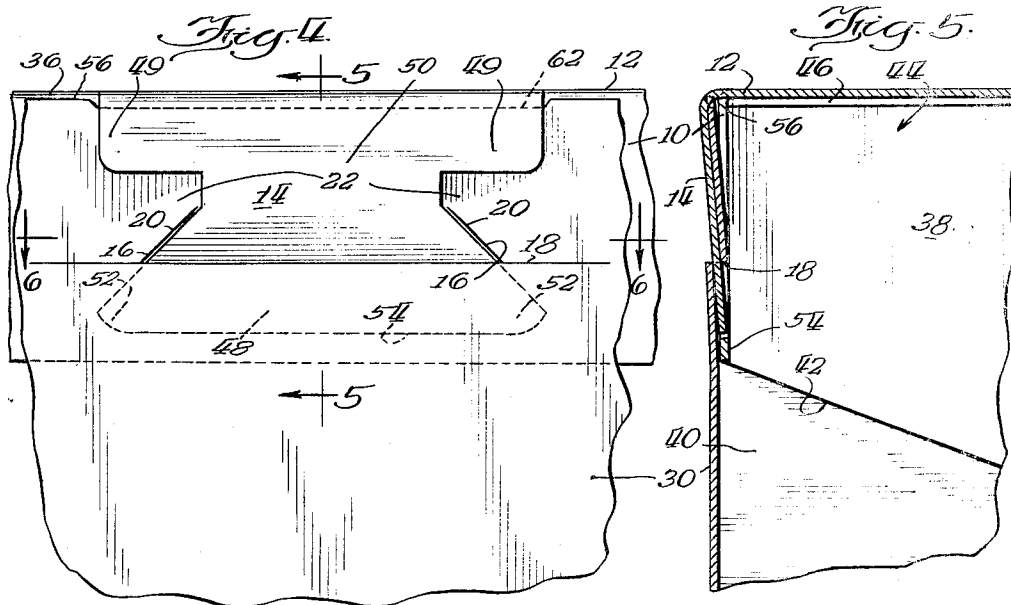
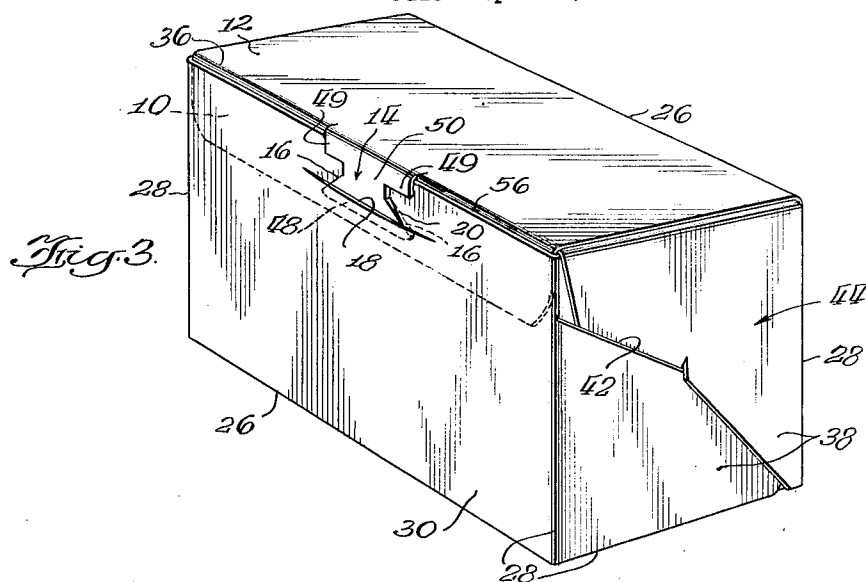
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,160,164

CONTAINER

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Application September 22, 1937, Serial No. 164,999

2 Claims. (Cl. 229—45)

The invention relates to containers and more particularly to closure fasteners for cardboard boxes and folded cartons or the like.

Much difficulty has been experienced with lid fasteners heretofore provided for cardboard containers since the fastening members were either hard to bring into engagement, or difficult to release without injuring the container and rendering it practically worthless for further use. In addition to this, those fasteners which were designed to be easily released, frequently would become unfastened when the container was handled or carried, with the result that the contents of the container would be spilled or become contaminated.

Hence, one of the objects of the invention is to provide an improved fastener for the lids or closures of folded cartons or other containers.

Another object of the invention is to provide a fastening means for securing two flat elements together wherein the engagement between the members is an edgewise abutment distributing the strains over a considerable area.

Another object of the invention is to provide a fastening relationship between two flat elements which may be easily established, either by hand or by machine, and released without distortion and without undesirably affecting the internal strength and rigidity of the elements.

Another object of the invention is to provide a fastening means for two flat members which is engaged in a single operation or released and separated in a single operation.

Another object of the invention is to provide an improved container, characterized by novel lid fastening means, which is simple in construction and operation, effective in use and inexpensive to manufacture and assemble.

These being among the objects of the invention, other and further objects will become apparent from the drawings, the description relating thereto, and the appended claims.

Referring now to the drawings:

Fig. 1 is a top plan view of a blank cut from a sheet of cardboard and illustrating a preferred form of the invention.

Fig. 2 is an enlarged perspective of the blank shown in Fig. 1 when folded into the form of a container with the closure or lid left open.

Fig. 3 is a perspective view similar to that of Fig. 2 with the closure fastened shut.

Fig. 4 is a magnified side elevation of the fastener for said container.

Fig. 5 is a section taken upon the line 5—5 in Fig. 4.

Fig. 6 is a section taken upon the line 6—6 of Fig. 4.

Referring now to the drawings in greater detail, a better understanding of the invention will be had when it is observed generally, that one of the members to be fastened is provided with a headed tongue portion adapted for insertion through a cut in a second member and provided with diverging straight sides that slip into releasable engagement with mating shoulders provided on the second member by branches of the above cut when the members are brought into a predetermined relationship.

More particularly the headed tongue portion mentioned is cut from the flap portion 10 of the lid 12 which forms the top side of the container made of the blank shown in Fig. 1 when folded. The tongue is indicated by the numeral 14, and the diverging edges thereof by the numeral 16 throughout the several views. The cut in the other member comprises a rectilinear slot 18 having two branch slots 20 that correspond in dimension and juxtaposition with those portions of the diverging edges 16 of the tongue which do not enter the slot 18.

With this short description of certain characteristics of the fastening means a better understanding of the invention will be had by turning now to a brief description of the container illustrated, the general construction of which comprises a blank 24 cut to the form shown in Fig. 1 from a flat layer of fibrous material and crimped for folding along two sets of parallel lines, namely 26 and 28, which intersect each other at right angles. The crimping lines 26 and 28 define portions of the blank 24 which provide the several sides of the container when folded, which are hereinafter referred to and identified by their descriptive names. Those rectangular portions disposed between the two parallel crimped lines 26 form the front side 30, the bottom side 32, the back side 34, and the top side, or lid 12. Those portions 38 of the blank 24 outside of the crimp lines 28 form the ends 44 of the container when folded to a vertical plane, i. e., a plane perpendicular to the sides, where the end portions are locked together by means of the catch tabs 40 engaging in the slit 42.

The flap 10 is integrally secured to the free edge of the lid 12 along the crimp line 36, and folded flaps 46 carried by one of the end members along the top edge thereof are adapted to support the free marginal edges of the lid 12 when it is shut. In this way, it will be observed that a container is provided with all edges com-

prising folded edges to give the container strength and to seal the contents against contamination.

Referring again to the fastening means, the tongue 14 is struck from the flap 10 along a curvilinear cut terminating at spaced points on the fold 36. In addition to the edges 16 which diverge towards the free end of the tongue and have already been described, the contour of the line of cut is such that the tongue 14 is similar to an hour glass in shape. This provides several structural characteristics of particular advantage. Firstly, the tongue 14 is adequately supported at the fold 36 over a substantial distance thereof to minimize a tearing loose or a weakening of the tongue. Secondly, the wide portion at the base 50 is continued out upon the tongue 14 a short distance to provide tips 49 which, when the lid 12 is closed, extend to points proximate to and above the tabs 22 for a purpose to be further discussed later. Thirdly, the free end affords a head 48 adapted to be inserted into the slot 18 and furnishes adequate support for the edges 16. Fourthly, it having already been indicated that the edges 16 are straight, the contour of the edges 16 permits the fastener strain to be distributed along the length of the abutment established between the edges 16 and the tabs 22, and fifthly, the character of diverging sides 15 accomplishes a self centering of the fastening relation. Otherwise the head 48 has its corners 52 rounded and is provided with a leading edge 54 which is approximately straight.

The slots 18 and 20, already mentioned, are cut in the front side 30 of the container, with the slot 18 parallel to the upper edge 56 thereof, and sufficiently close thereto to receive a goodly portion of the head 48 therethrough when the top or lid 12 is closed. The branch slots 20 intersect the slots 18 at points intermediate its ends and provide tabs 22 between the branch slot and the outer ends of the slot 18, and the overall length of the slot 18 is substantially greater than the width of the head 48 so that the insertion of the head therethrough is easily accomplished, either manually or otherwise.

In addition to this, the portions of the slot 18 which extend beyond the slots 20 provide a resiliency for the tabs 22. This resiliency permits the tabs to give readily out of their normal plane when the head 48 is inserted into the slot 18 to permit the ready passage of the head 48 therethrough until such time as the edges 16 pass below the slots 20, whereupon the tabs 22 resume their normal plane and spring into edge to edge abutment with the edges 16. Not only this, but the resiliency provided permits the tabs 22 to be depressed easily out of their normal plane to permit a release of the edges 16. Withdrawal of the tongue 14 from the slot 18 may then be readily accomplished and the lid 12 raised.

However, it should be noted that the resiliency present in the tabs 22 in no way affects the strength of their securement relative to the head 48. Whatever strains and stresses are brought to bear upon the head 48 to open it without depressing the tabs 22, are borne approximately upwardly and distributed throughout the body portion of the front side 30 without any localization of stress at any given point which might distort the associated members and weaken them, or otherwise render them ineffective.

Consequently, it will be seen that the slot 18 in no way bears or sustains any fastening strains. It merely serves to guide and to preserve the in-

terengagement of those parts which are specially designed to bear such strains. In this way, it will be seen that a splitting of the slot 18 under strain which has been one of the disadvantages of fasteners heretofore employed, is minimized and the strains are carried by portions designed to bear them.

Another feature of the invention resides in the fact that the fastener automatically sustains and strengthens its holding relationship under heavier strains. This will be appreciated when it is observed that the tabs 22 at the upper ends of the slots 20 are integral and coplanar with the front side 30 of the container, and their lower sides are free from the offsetting pressure the head portion 48 imposes upon other portions of the front side 30, including that immediately below the slot 18. Once the head 48 has passed the tabs 22, the tabs resume their natural position as already mentioned. The internal rigidity of the portion of the front side 30 immediately below the slot 18 will draw the head 48 slightly inwardly so that the tabs 22 and those portions of the front face 30 immediately therebelow and beyond the slot 18 will tend to assume a coplanar relationship.

Now, with the neck portion 50 of the tongue 14 against the outer face of the front side 30, the head 48 disposed in back of the front side 30 and the lower portion of the tabs 22 approaching coplanar relationship with the front side 30, the tabs 22 will begin to engage the edges 16 from behind at a point adjacent the top of the slots 20 and from there extend across the edges 16 to a point somewhat in front of the edge 16 proximate the slot 18, as best shown in Fig. 6.

Then when heavy strains are brought to bear upon the parts which are engaged as described, the tongue 14 will have the tendency to straighten itself. But when it does, the tabs 22 are drawn farther forward toward a coplanar relationship with the front side 30 immediately below the slot 18 in such a way as to place the line of stress in the plane of the front side 30 and to create a further block to the removal of the head 48 from the slot 18.

A further object of the invention is obtained through the fact, as more particularly shown in Fig. 5, that the tongue 14 is offset appreciably upwardly relative to the flap 10 out of which it is cut, due to the fact that at the fold 36 the base 50 is foreshortened as it is bent or passes over the top edges 56 of the front face 30. This permits the edges 60 upon the flap 10 which are created by the head 48 being cut therefrom, to drop below the slots 20 to serve as a spanner between the edges 16 and tabs 22 whereby rearward movement of the head 48 is inhibited so that the edge to edge abutting relationship existing between the edges 16 and the tabs 22 is maintained at a maximum degree.

It will be observed that much of the downward pressure normally supported on the top 12 when the container is in use, is borne by the flaps 46 upon the end 44, so that with the flap 10 inserted downwardly on the inside of the front face 30 and with the tongue 14 the only portion extending over the top of the edge 56, much of the weight strains borne by the top 12 will be supported exclusive of the contact between the base 50 of the tongue 14, and the top edge 56 of the front face 30.

In order to accentuate this freedom from weight for the tongue 14, and also to provide room for other than a sharp bending of the tongue 14 at

the fold 36, a notch 62 may be provided in the top edge 56 of the front face 30 coextensive with the width of the base 50 of the tongue 14.

In operation, when the lid 12 of the container 5 is being closed, the flap 10 is inserted behind the front side 30, and in front of the forward edges of the flaps 46. The tongue 14 is kept on the outside of the front face 30 and is inserted through the slot 18 to pass behind that portion 10 of the front face 30 immediately below the slot 18. This flexes the tabs 22 to permit the easy admission of the head 48 through the slot 18, and when the head 48 has reached its lowermost extremity, the tabs 22 rebound to bring about the edge to edge abutting relationship between the edges 16 and tabs 22 already described. Thereafter, release of the head 48 is accomplished by pressing the tabs 22 inwardly a slight degree sufficient to release the edges 16 from their abutment with the edges 20 and preferably simultaneously thumbing the tips 49 to raise the head 48 an appreciable distance past the slots 20. However, release of the head 48 may be also accomplished without thumbing the tips 49 if the contents of the container happen to be soft or yielding. In this event, opening of the container may be accomplished by heavily pressing upon the tabs 22 to create a camming or squeezing effect upon the flap 10 where it is positioned behind the tabs 22. This will cause the flap 10 to move outwardly as carried by the lid 12 when the lid pivots about its fold line along one of the creases 26. In either case the fastening means is released in a single operation and thereafter the top 12 35 may be moved upwardly and opened free of any restraint.

This enables the container to be used time and time again without the fastening device becoming disrupted, distorted, or destroyed. The life

of the container is thereby lengthened and its usefulness subsequently extended to carry sundry contents other than those initially placed therein.

Consequently, although the invention has been 5 described in connection with a specific embodiment, the principles involved are susceptible of numerous and other applications, and it will be apparent to those skilled in the art that various and further uses, modifications and changes may 10 be made without departing from the spirit and substance of the invention, the scope of which is commensurate with the appended claims.

What is claimed is:

1. In a container of the class described having 15 a top and a side wall, a headed tongue carried by said top and provided with terminally diverging rectilinear sides, a portion of said wall bearing a slot substantially longer than the width of said head for receiving said head quite easily 20 therethrough, and means having slots divergently intersecting said slot intermediate its ends and having a contour mating with said edges for engaging said edges in abutting relationship for retaining said head in said first slot against re- 25 moval therefrom.

2. A container of the class described, comprising a side and a lid having a flap thereon, a tongue cut from said flap and having a head portion with outwardly diverging edges, and a 30 slotted keeper on said side having a dimensional contour and diverging edges corresponding to said head over a portion thereof which includes said diverging edges, the slot in said keeper being substantially longer than said head is wide for 35 receiving said head therethrough, said edges engaging each other in an abutting relationship.

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