CONVENTION APPLICATION FOR A PATENT

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SWEDEN

hereby apply for the grant of a Patent for an invention entitled:

"CONTAINER HAVING INDENTED LINING TOP"

which is described in the accompanying complete specification. This application is a Convention application and is based on the application(s) numbered:

77 00806-8 and 77 02899-1

for a patent or similar protection made in SWEDEN on 26th January, 1977 and 15th MARCH, 1977.

My address for service is Messrs. Edwd. Waters & Sons, Patent Attorneys, 50 Queen Street, Melbourne, Victoria, Australia.

DATED this, 24th day of JANUARY, 1978

OD WIKAR CHRISTENSSON

by: J. A. Barnes

Reg'd Patent Attorney

To:

THE COMMISSIONER OF PATENTS.
COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1962

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

32709/78

In support of the Convention Application made by (1) OD WIKAR CHRISTENSSON

for a patent...for an invention entitled: (1) "CONTAINER HAVING INDENTED LINING TOP"

(1) OD WIKAR CHRISTENSSON

of Veddestavagen 7-9, S-175 62 JARFALLA, SWEDEN

do solemnly and sincerely declare as follows:

1. I am the applicant for the patent.

2. The basic application as defined by Section 141 of the Act were made on the 25th day of JANUARY 1977, by OD WIKAR CHRISTENSSON

3. I am the actual inventor of the invention referred to in the basic application.

4. The basic application referred to in paragraph 2 of this Declaration were the first application made in a Convention country in respect of the invention the subject of the application.

DECLARED at JARFALLA this...day of JANUARY...1978

(?) Signature of Applicant or Applicants.
1. Container comprising an outer container of cardboard or similar material and a lining of plastics or any other easily formable material which is arranged within the outer container and which at one end of the container exposes a preferably even, openable lining side, and which lining is fed from and closed at the opposite end thereof, characterized in that the lining at the said one end thereof intended to be opened is somewhat pressed down into itself thereby providing a projecting rib of two layers of lining material extending there around, and in that the outer container is formed with flaps extending from one free end edge thereof, which flaps are folded in and attached to the projecting rib of lining material so that the lining at the said one end is thereby secured in the outer container with the lining at said one end arranged somewhat inwardly from the said one free edge of the outer container.
8. Method of manufacturing a container according to any of the preceding claims comprising an outer container of cardboard or similar stiff material and a lining of plastics or any other easily formable material, which is provided in the said outer container and which at one end of the container exposes an openable lining side, and which is intended to be filled and closed at the opposite end, whereby a tubular outer container blank is provided having bottom close flaps the combined surface of which is at least as large as the bottom surface of the container and top flaps the total surface of which is substantially less than the cross sectional area of the container, and separately a lining blank is provided in the form of an open lining bag, characterized in that the lining bag is introduced into the outer container blank so that the upper side thereof is positioned at or adjacent the upper edge of the outer container, whereupon the lining from the opening side is pressed back some distance into itself to provide a lining rib extending round the opening side, whereupon the lining is secured in the outer container in that the top flaps of the outer container are fold in and are secured to the said lining rib (12).
The following statement is a full description of this invention, including the best method of performing it known to me:

"CONTAINER HAVING INDENTED LINING TOP"
The present invention relates to a container comprising an outer container of cardboard or similar stiff material and a lining of plastic or other easily formable and preferably gas-sealing material which lining is provided in the said outer container and which at the side of the container to be opened exposes an even single layer of lining material, and which is filled from and closed at the opposite end thereof.

The container according to the invention can be used for packing of any types of goods, but it is in particular suited for packing of compressed and/or evacuated goods of the type which is to be packed hermetically sealed. It is however to be understood that the container can as well be used for packing of any other solid or liquid product.

Containers are previously known, which at the side thereof to be opened expose an even surface of lining material without joints, welds and other means which can make the opening of the container lining difficult.
The opening generally takes place in that the lining is cut open by a knife or it is opened by a special tear tongue or similar means.

The said previously known containers are formed so that the lining with the side thereof to be opened extend substantially on plane with the upper edge of the outer container. The containers are filled from bottom and are sealed at the bottom, and since the packed goods can usually not be made to completely fill the volume of the outer container some empty space is obtained at the bottom of the container. If the containers are handled carelessly or if they are subjected to shaking or vibrating during transport or similar actions it may happen that the lining is unstuck from the outer container what may give the container a less attractive appearance at the same time as it can make the opening of the container difficult.

When the container is opened in that the opening side of the lining is cut or teared open it may happen that some portion of the packed goods penetrates from the lining and tend to drop out aside of the container. Also the packed goods may tend to penetrate into the space between the lining and the outer container, what in turn further increases the risk that the lining is unstuck from the outer container. Especially at such types of containers which are used as distribution containers for instance for coffee, flour, grain and similar products there is a great risk of spilling some product when picking some portion of the packed goods up since the packed goods is located as high in the container as substantially at the level of the upper edge of the outer container.

Basis of the invention therefore is the problem to provide a container of the above mentioned type which at the opening side exposes an even single layer of lining material and in which the lining is secured to the outer container especially adjacent the upper edge of the container, and in which the lining and the outer container are formed and connected so that the opening side of the container is somewhat lowered from the upper edge of the outer container.

According to the invention the lining is somewhat emerged in itself at the opening side of the container so as to provide around the upwards directed opening side a projecting edge of doubled lining material, and the outer container is formed with top flaps extending from the upper edge
thereof which flaps are fold in and attached to the projecting edge of lining material so that the lining is thereby secured in the outer container with the opening side thereof somewhat lowered from the upper edge of the container.

The invention also relates to a method and an apparatus for manufacturing of containers according to the invention and according to the method the outer container and the lining are manufactured separately whereby the lining is manufactured by folding a strip of lining material doubled and welding the free edges thereof, expanding the lining at the same time as the lining is pushed into the outer container and pressing the lining somewhat into itself at the even opening end by means of a piston so as to provide a projecting edge of double lining material extending round the opening side of the lining, whereupon the lining is secured in the outer container in that top flaps of the outer container are fold down and are attached to the projecting edge of the lining. Thereafter the container is filled and sealed in a way known per se from the end of the container which is to become the bottom thereof.

According to a modified embodiment of the container the lining is manufactured in a conventional way, whereby a joint rib extends over the opening side of the container, and the invention includes any types of linings having an even opening side and being adapted for being sealed at the opposite end thereof.

Further characteristics of the invention will be evident from the following detailed specification in which reference will be made to the accompanying drawings.

In the drawings figure 1 is a perspective view of a partly prepared container before being filled and sealed. Figure 2 is a cross section along line II-II of the container according to figure 1. Figure 2 is a perspective view showing the appearance of the lining separately before said lining is secured in the outer container. Figure 4 shows diagrammatically and in a vertical cross section the method for forming the lining rib extending round the opening side of the lining, and figure 5 is a sequence of pictures which diagrammatically illustrate the method of manufacturing the container according to the invention. Figure 6 diagrammatically illustrates a step
in the manufacture of the container according to the invention. Figure 7 shows, partly in an axial cross section, an apparatus for executing the method seen along line VII-VII of figure 8 and figure 8 is a cross section along line VIII-VIII of figure 7. Figure 9 diagrammatically illustrates in five different views a-e the method for manufacture of a container according to the invention.

It is to be understood that the following specification and the embodiments shown in the drawings are only illustrating examples and that different modifications may be presented within the scope of the appended claims.

The container shown in figures 1-3 generally comprises an outer container 1 of cardboard or similar stiff material and a lining 2 of an evenly foldable and preferably liquid and gas sealing material like plastic, a plastic-aluminium laminate or similar, which lining is provided in the outer container 1.

The outer container 1 may have any cross section form like square, rectangular, circular, elliptic etc. The outer container is made from a plane punched blank comprising sides 3, bottom close flaps 4 and top close flaps 5. Before the lining 2 is introduced in the outer container said outer container is fold together to tubular form, whereby the joint 6 is preferably placed adjacent a corner. The bottom close flaps 4 are formed large enough to provide a closing of the bottom of the outer container by overlapping of at least two opposite flaps. The top flaps 5 are relatively narrow and the width thereof is defined by the intended depth of the opening side 8 of the lining under the upper edge 7 of the container. When the upper side of the container is ready the top flaps 5 are fold in and enclose between themselves and the outer container sides 3 at least some part of the lining 2.

The lining is made of a plane path of lining material which is fold double whereupon the two side edges are welded together to provide two side joints 9, whereby the lining appears to be a flat sack. The lining is fold up to intended form preferably by means of a mandrel the form of which corresponds to the form of the outer container and which is slightly less than the inner surface of the outer container. When folding the
lining up to the four edge form which is shown in figures 1-3 two opposite lining ears 10 are formed at two opposite upper edges which ears are fold down along the sides 11 of the lining. After the lining is fold up to its intended form it is pushed into the outer container and it is formed in a way which will be closer described in the following so that the opening side 8 of the lining is pushed back some distance into the lining so as to provide a lining rib 12 extending around the opening side 8 which rib except for the lining ears comprises two ears of lining material. The two layers may be secured in relation to each other by point welds or rib welds 13 which connect the two layers of lining material with each other. The upper edge 14 of the lining rib 12 may be provided adjacent the upper edge 7 of the outer container, but preferably the lining edge 14 is located at a slightly lower level than the edge 7 of the outer container in order to make the double folded outer container edge as smooth and thin as possible and to facilitate the attachment of the top flaps 7 by connection cardboard to cardboard at the space 15 between the upper edges 7 and 14 of the outer container and the lining respectively.

The container lining 2 is filled and closed at the bottom in a way known per se, and the bottom close flaps 4 of the outer container provides the composite bottom of the container.

The method of manufacturing the container according to the invention includes a series of subsequent manufacturing steps which are to be described in the following:

1. An outer container blank is manufactured by being punched, creased and fold together to tubular form by a plane blank of cardboard or similar stiff material, and concurrently herewith a lining blank is manufactured by folding a plane lining material blank 2 together and folding the side edges of said double folded blank together at 9 to provide a flat lining bag.

2. The lining bag 2 is opened in any suitable way like by means of suction devices 16 to enable the introduction of a formation tool into the remaining open end of the lining.

3. For forming the lining a mandrel can be used, for instance an expandable mandrel 17 which in its non-expanded state can easily be
introduced into the lining bag and which by being expanded gives the lining bag its intended form, whereby the projecting lining ears 10 are formed.

4. During the expansion of the mandrel 17 the lining is successively introduced into the opened outer container tube 1, whereby the lining ears 10 are fold back towards the sides 11 of the lining. The lining is introduced into the outer container with the upper side of the lining adjacent the upper edge 7 of the outer container, but the upper side of the lining may optionally be located above or underneath the said upper edge 7.

5. When the lining is located in the intended position in the outer container blank the mandrel 17 is contracted and is pulled out of the lining.

6. Now a fixed mandrel 18 is introduced in the lining which mandrel is best shown in figure 4. The said fixed mandrel 18 has at the upper end thereof a projecting narrow rib 19 over which the lining rib 12 is intended to be formed. Depending on the intended height of the lining rib 12 the mandrel 18 is introduced to a level at or preferably some distance under the upper side 20 of the lining. For co-operation with the edge rib 19 of the mandrel 18 there is a piston 21 the outer dimensions of which substantially correspond to or are slightly less than the inner surface of the rib 19.

7. The outer container blank 1 with the lining 2 and the mandrel 18, 19 is provided in a cartridge so that the said three parts are kept in an intended position in relation to each other.

8. If wanted the lining may be pre-secured in the outer container by means of glue points so that the lining is not moved in the outer container during the subsequent operation.

9. For forming the lining rib 12 the piston 21 is pressed down into the area inside the rib 19 of the mandrel 18, whereby some part of the upper side 20 of the lining is pressed down at the same time, which part is the intended opening side 8 of the lining. As mentioned previously the height of the lining rib 12 and the distance thereof from the upper edge 7 of the outer container may be adapted to circumstances, and if a high rib is wanted the edge rib 19 of the mandrel 18 is made correspondingly high and the mandrel is placed at a corresponding long distance under the upper side
20 of the lining blank. If a narrow lining rib is wanted the rib 19 of the mandrel 18 need not be higher than the intended lining rib. If for some reason it is wanted to locate the upper edge 14 of the lining rib on line with the upper edge 7 of the outer container the lining blank is introduced in the above described step 4 so that the upper side 20 thereof is located above the upper edge 7 of the outer container a distance corresponding to the movement downwards and the edge formation which is provided by pressing the piston 21 down.

10. Except for the lining ears 10 the lining rib 12 is composed by two layers of lining material, and to prevent a mutual movement between the said two layers of lining material during the subsequent treatment the layers are connected by being welded together at 13 by points, rib portions or a weld rib extending around the entire lining rib. At least two opposite edges of the lining rib 12 ought to be connected as mentioned and the said two edges preferably are the edges which have no lining ears.

11. The projecting top flaps 5 of the outer container are now supplied with glue 22 like hot-melt or any other type of glue. The application of glue can be made in that the top flaps are fold fully outwards to the outsides of the outer container and the outer container blank is dipped down into a glue bath whereby glue sticks both to the top flaps 5 and to the space 15 between the upper edge 14 of the lining and the upper edge 7 of the outer container and it may also to some degree stick to the inner surface of the lining rib 12.

12. Now the top flaps 5 are fold in to enclose the lining rib 12 between the said top flaps 5 and the sides 3 of the outer container. It is to be understood that the height of the top flap substantially should correspond to the distance between the opening side 8 of the lining and the upper edge 7 of the outer container so that the top flaps 5 are positioned in contact or close to the opening side 3 of the lining.

13. After the upper side of the container is completed as described above the container is turned upside down and is filled and closed from the bottom which is still open. The filling, the closing and the sealing is made in a way known per se. The filling step may also include compressing of the goods to be packed, evacuation of the air content etc.
Since the opening side 8 of the lining is located some distance under the upper edge 7 of the outer container the top flaps 5 act as a non-spill edge for packed goods which may come up from the container at the same time as they safely attach the lining to the outer container adjacent the upper edge thereof. The container is easily opened in that the opening side 8 of the lining is cut open or in that the said side of the lining is formed with a strip off indication or similar means. With the above container there is no risk that the packed goods penetrates into the space between the lining and the outer container thereby tending to release the lining from the outer container. Also the risk that the lining is released from the outer container depending on jarring, vibration or careless handling is substantially completely eliminated even if there should be any space between the lining and the bottom of the outer container after the lining is filled and closed.

In a modified method of manufacturing a container according to the invention illustrated in connection to figure 9 of the drawings an outer container sleeve 1 and a lining bag 2 are manufactured independently of each other, whereupon a fixed mandrel 18 which to form and size substantially corresponds to the intended form of lining is introduced in the lining and under the action of the said mandrel the lining is introduced as far in the outer container sleeve that the even end surface of the lining is located a short distance under the upper edge 7 of the outer container. The lining ears 10 are fold down along the sides of the lining when the lining bag is introduced into the outer container sleeve. An exhauster 23 holds the lining and the fixed mandrel 18 is pulled out and is substituted by an expandable mandrel 24 having a spring actuated bottom plate 25, which is introduced into the lining bag. The mandrel 24 is expanded in that the corners thereof are moved outwards until the lining gets correct form, the exhauster 23 is removed, and co-operating with the spring actuated bottom plate 25 at the inside of the lining a piston 21 acting from outside forces the lining from the outside down into itself. During said operation the lining keeps its position in the outer container sleeve. The expandable mandrel 24 is retracted some distance in the lining at the same time as it regains its contracted position. This is illustrated in figure 9b.

In figure 9c is illustrated how the two layers of lining material are
welded together at the lining rib 12 what is made by means of weld jaws 26 which from inside are moved out to the lining rib thereby welding the two layers of lining material together at points or at rib portions or completely co-operating with counter jaws 27 acting from outside.

In figure 9d is illustrated how the top flaps 5 of the outer container are fold out and the outer container with the lining is moved down through a glue mold 28 and down into a glue bath 29 while the top flaps 5 by the glue mold 28 are fold up along the sides of the outer container. When moving the outer container down into the glue bath 29 a string of glue 22 is obtained at and adjacent the upper edge of the outer container as illustrated in figure 6.

After glue is applied the outer container with the lining is pulled up on the glue mold 28 and the top flaps 5 are fold in and are compressed thereby enclosing the lining rib 12 what is made by means of an inner mandrel 30 and an outer counter tool 31.

For pressing down the lining top to provide the lining rib 12 an apparatus is used which includes an expandable mandrel of the type which is illustrated in figures 7 and 8. The expandable mandrel comprises a supporting shaft 32 which is movable in the vertical direction and on which a mandrel arm holder 33 is axially movable a limited distance. The mandrel arm holder 33 rotatably supports four mandrel arms 35 about pins 34 each mandrel arm providing a right-angled corner. The mandrel arms 35 are rotatably radially outwards from the center of the shaft 32, and at the lower end they are formed with a thin corner rib 36 over which the lining rib is to be formed. On the shaft 32 a cam means 37 is fixed mounted, and for co-operation with the said cam each mandrel arm is formed with a guide roller 38. Between the cam means 37 and the mandrel arm 33 a compression spring 39 is mounted. The cam means 37 is widened in the direction downwards so that the mandrel arms 35 are expanded when the mandrel arm holder 33 is moved downwards in relation to the supporting shaft 32. The compression spring 39 tends to keep the mandrel arms in their raised and non-expanded position. Contraction springs 40 contribute to a retraction of the mandrel arms to the said non-expanded position. A pressure plate 41 is mounted axially movable at the bottom of the supporting shaft 32 and the
said pressure plate 41 is pressed downwards by a spring 42. For the sake of clearness figure 7 shows the pressure plate 41 raised some distance from the bottom (top) of the lining but it is to be understood that the pressure plate 41 contacts the bottom of the lining bag when the mandrel arms 35 are fully moved down in the lining bag. In order to keep the lining bag in an open position a holder arm 43 is mounted at each corner or each side of the lining bag. The said holder arms 43 can be stationary mounted and spring biased so that they are rotated down to their positions shown in figure 7 when the expandable mandrel is introduced in the bag.

As mentioned previously there is a piston 21 which co-operates with the apparatus for forming the lining, which piston is axially movable and which against the action of the spring loaded pressure plate 41 can press back the even opening side of the lining to give a lining rib 12 extending round the side of the lining which is intended to be opened.

The apparatus acts as follows: When moving the lining forming means down into the lining bag 2 the mandrel arms 35 are in their upper non-expanded position, but when the apparatus has been moved down to intended position in the lining bag the mandrel arm holder 37 is moved downwards in relation to the supporting shaft 32 whereby the mandrel arms 35 by co-operation of the cam means 37 and the guide rollers 38 are moved outwards while the lining is pressed outwards at its corners. The spring loaded press plate 41 thereby contacts the bottom of the lining. Thereafter the piston 21 is moved upwards so that the side 6 of the lining to be opened is pressed back into the lining thereby providing a lining rib 12 extending round the lining. With kept co-operation between the piston 21 and the spring loaded press plate 41 the mandrel arms 35 are pulled up some distance so that the corner ribs 36 thereof are pulled out of the two layer lining lists thereby provided and so that the mandrel arms 35 regain their non-expanded position, whereupon the expandable mandrel including the spring loaded press plate 41 is pulled out of the lining bag. Thereafter the two layers of the lining material at the lining rib 12 are welded together as mentioned above and the container is filled, sealed and closed likewise as mentioned above.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Container comprising an outer container of cardboard or similar material and a lining of plastics or any other easily formable material which is arranged within the outer container and which at one end of the container exposes a preferably even, openable lining side, and which lining is fed from and closed at the opposite end thereof, characterized in that the lining at the said one end thereof intended to be opened is somewhat pressed down into itself thereby providing a projecting rib of two layers of lining material extending there around, and in that the outer container is formed with flaps extending from one free end edge thereof, which flaps are folded in and attached to the projecting rib of lining material so that the lining at the said one end is thereby secured in the outer container with the lining at said one end arranged somewhat inwardly from the said one free edge of the outer container.

2. Container according to claim 1 characterized in that the free edge of the projecting rib of lining material is positioned spaced slightly under the adjacent free edge of the outer container.

3. Container according to claim 1 or 2, characterized in that the two layers of lining material of the lining rib are welded together at spaced points at rib portions or along a continuous weld string.

4. Container according to any of the preceding claims, characterized in that the lining rib is secured between the flaps and adjacent sides of the outer container.

5. Container according to claim 4, characterized in that the lining rib is secured to the flaps of the outer container.
by a glue joint.

6. Container according to any one of the preceding claims, characterized in that the lining is secured in the outer container by points at one or more levels along the height thereof.

7. Container according to any one of the preceding claims, characterized in that the flaps of the outer container are of substantially the same width as the distance between the force edge of the outer container and the said one end of the lining.

8. Method of manufacturing a container according to any of the preceding claims comprising an outer container of cardboard or similar stiff material and a lining of plastics or any other easily formable material, which is provided in the said outer container and which at one end of the container exposes an openable lining side, and which is intended to be filled and closed at the opposite end, whereby a tubular outer container blank is provided having bottom close flaps the combined surface of which is at least as large as the bottom surface of the container and top flaps the total surface of which is substantially less than the cross sectional area of the container, and separately a lining blank is provided in the form of an open lining bag, characterized in that the lining bag is introduced into the outer container blank so that the upper side thereof is positioned at or adjacent the upper edge of the outer container, whereupon the lining from the opening side is pressed back some distance into itself to provide a lining rib extending round the opening side, whereupon the lining is secured in the outer container in that the top flaps of the outer container are fold in and are
secured to the said lining rib (12).

9. Method according to claim 8, characterized in that the lining blank is opened to intended form by means of an expandable mandrel whereby triangular lining ears are formed which are fold back along the sides of the lining blank as the lining is introduced in the outer container tube and after the lining is introduced in the outer container blank the expandable mandrel is removed from the lining blank and the outer container blank with the lining blank is mounted in a cartridge for holding the container during the continued handling thereof.

10. Method according to claim 8 or 9, characterized in that the formation of the lining rib is made by introducing a mandrel in the lining blank, which mandrel is formed with a projecting rib extending round the upper end of the mandrel, and the lining rib is formed about the said mandrel rib in that the lining material is pressed down into the space inside the mandrel rib from outside.

12. Method according to any one of claims 8-11, characterized in that the lining rib is secured in the outer container between the top flaps and the sides of said outer container.

13. Method according to claim 12, characterized in that the lining rib is secured in the outer container by means of a glue joint.

14. Method according to any one of claims 8-13, characterized in that the lining blank is introduced so far in the outer container blank and that the opening side of the lining blank is pressed down so far into the lining itself that the upper edge of the lining rib is positioned some
15. Method according to any one of claims 8-14, characterized in that the lining blank is introduced so far in the outer container blank, distance below the upper edge of the outer container blank.

16. Method according to any one of claims 10-15, characterized in that the mandrel for forming the lining rib is introduced in the lining to a level somewhat under the upper side of the lining blank, whereby the lining is stretched about the mandrel rib thereby providing the lining rib when the opening side of the lining is pressed down into the space inside the mandrel rib.

17. Method according to any one of the preceding claims, characterized in that the lining rib is positioned at or under the upper edge of the outer container blank.

18. Method according to any one of claims 8-16, characterized in that the two layers of lining material forming the opening side of the lining are welded together at points, rib portions or by a continuous string before the top flaps of the outer container blank are fold down and are secured to the top flaps of the outer container blank by dots at one or more points before the opening side of the lining is pressed back.

19. Method according to any one of claims 8-18, characterized in that the lining bag is introduced in the outer container blank by means of a fixed mandrel, and the lining bag is kept in its position in the outer container blank, whereby the opening side of the lining blank is kept in its position in the outer container blank, and the lining bag is kept in its position in the outer container blank by means of the expandable mandrel.
is introduced in the lining bag and the said expandable mandrel is expanded after it is completely introduced in the lining bag, and after the opening side of the lining is pressed back into the lining itself the expandable mandrel is pulled up some distance of the lining bag while being retracted to its non-expanded position, whereupon the mandrel is completely withdrawn from the lining bag.

20. Method according to claim 19, characterized in that the opening side of the lining bag is kept stretched between an inner spring actuated press plate and a piston acting from outside during the first stage of the withdrawal and de-expansion of the expandable mandrel after the lining rib is formed.

21. Method according to claim 19 or 20, characterized in that the lining bag is kept in an expanded position by means of a number of holder arms engaging the upper edge of the lining bag during the action of the expandable mandrel in the lining bag.

22. Method according to claim 19, 20 or 21, characterized in that the top flaps of the outer container are fold out along the sides of the outer container after the opening side of the lining bag is pressed back into the lining itself and while the outer container is moved through a glue mold and down into a glue bath so that a string of glue is applied along and on both sides of the upper edge of the outer container, whereupon the top flaps are fold in thereby enclosing the lining rib between the top flaps and the sides of the outer container.

23. Apparatus for executing the method according to any one of the claims 8-22 in manufacture of a container compris-
ing an outer container of cardboard or similar stiff material and a lining of synthetic resin or any other easily formable material which is applied in the outer container and which at one end of the container exposes an openable lining side and which is adapted to be filled and closed at the opposite end, and in which the lining bag at the opening side thereof is somewhat pressed into itself thereby providing a projecting lining rib extending round the openable lining side and in which the lining rib is kept enclosed between top flaps and sides of the outer container, characterized in that the apparatus comprises an expandable mandrel including a number of rotatably mounted mandrel arms which at the lower ends thereof are formed with a thin corner rib, which mandrel arms are rotatable in direction out towards the corners of the container, whereby an expansion of the mandrel arms provides a pressing outwards of the corners of the lining bag.

24. Apparatus according to claim 23, characterized in that the mandrel arms are mounted axially movable on a supporting shaft and in that the mandrel arms co-operate with a cam means which is fixed mounted on the supporting shaft, so that the mandrel arms are expanded when being moved down in relation to the supporting shaft.

25. Apparatus according to claim 24, characterized in that the supporting shaft at the lower end thereof carries a press plate which is spring biassed in the direction downwards and which co-operates with a piston acting from outside the lining for pressing the opening side of the lining back into the lining itself, and which is withdrawn from the opening side of the lining after the mandrel arms have been moved up some distance from the lining blank.
26. Apparatus according to claim 24 or 25, characterized in that the mandrel arms are mounted in a mandrel arm holder which is axially movable on the supporting shaft, and in that a pressure spring between the fixed cam means and the mandrel arm holder tends to move the mandrel arm holder in the direction away from the cam means, whereby the mandrel arms take their non-expanded positions.

DATED this 24th day of January, 1978

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FIG. 9