Dec. 8, 1942. J. FITCH 2,304,684

END CONSTRUCTION FOR PAPER CONTAINERS

Filed April 1, 1941

Fig. 1.

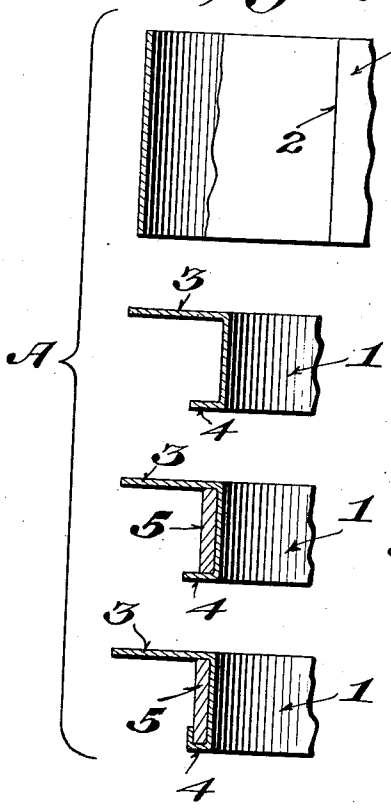


Fig. 2.

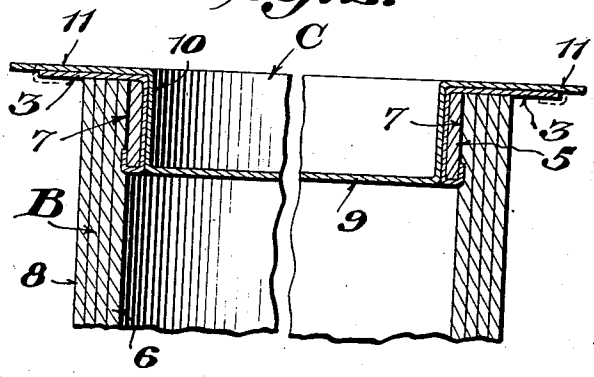


Fig. 3.

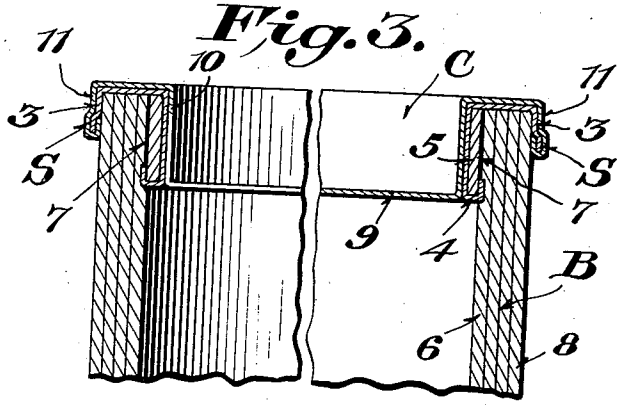


Fig. 4.

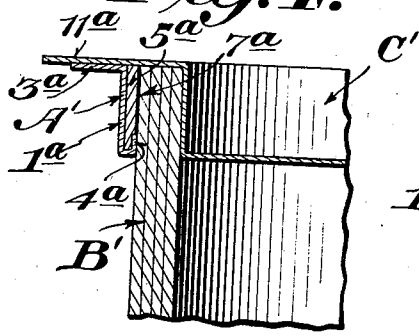
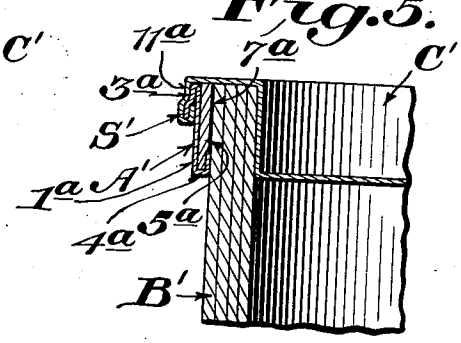


Fig. 5.



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END CONSTRUCTION FOR PAPER CONTAINERS

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Application April 1, 1941, Serial No. 386,357

2 Claims. (Cl. 229—5.7)

This invention relates to paper containers and more particularly to an improvement in containers of the type used as paper cans for the packaging of dry or liquid stock, including stock packed under gaseous pressure.

A primary object of the invention is to provide a simple, practical and reliable construction for securely sealing the end of the container and holding the end cap forming the top or bottom thereof against axial displacement likely to be caused by severe handling or due to pressure of gas within the container. In that connection the invention contemplates a construction wherein the anchoring means for the end cap is secured to either an inner or outer wall of the container and held against displacement by an annular abutment, thereby not only providing a firm base for securing the end cap to the container, but at the same time avoiding the development of weakness in the wall of the container itself.

A further object of the invention is to provide a construction which lends itself to expeditious manufacturing procedure. For example, the tubular paper stock from which the container is to be made may be manufactured in relatively long tubular sections and readily cut into the desired container lengths while the anchoring ring may be expeditiously made as a unit, coated on one face with adhesive, and placed in the container, or alternatively assembled with the end cap itself and placed in the container, so that the thus partially completed end construction may be readily placed in a seaming machine to not only provide a double seam between the metal parts of the assembly, but also to assure the firm engagement of the anchoring ring to the container wall.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing, in which:

Figure 1 diagrammatically illustrates the several steps in the formation of the anchoring ring.

Fig. 2 is a vertical sectional view of one end of a container showing the anchoring ring and end cap assembled therein prior to subjecting the metallic flanges of the parts to a double seaming operation.

Fig. 3 is a view similar to Fig. 2 showing the completed double seamed assembly at one end of a container.

Fig. 4 is a detail vertical sectional view illustrating a modification of the invention wherein the anchoring ring is applied to the outside wall of the container, the parts being shown at an intermediate stage of assembly.

Fig. 5 is a detail sectional view similar to Fig. 4 showing the complete seal resulting from the construction shown in Fig. 4.

Similar reference characters designate corresponding parts throughout the several figures of the drawing.

While many different forms of construction have been heretofore proposed for effectively sealing the end of a paper can, or the like, and many of them have been satisfactory for the intended purpose, nevertheless, the industry has been constantly striving to provide paper containers with metal end portions which would not only hold greater pressures but at the same time be leak proof, and also of a rugged and sturdy construction.

One type of practice now in vogue is to be embed a metal strip between the laminations of the paper tube or cylinder. However, this practice requires making each container of the particular length desired and embedding the anchoring strip in the laminations of paper body during the process of manufacture. In the completed can the anchoring strip therefore has a tendency to slip out from between the laminations under high pressure or rough handling, especially where the laminations are impregnated with waterproofing materials which may afford more or less lubrication to the sides of the embedded strip, even though the strip is to a certain degree, mechanically anchored in the stock.

According to the present invention, pre-formed standard tube stock of convolute or spiral form, merely cut to proper length, may be used since it is proposed to eliminate the procedure of embedding the anchoring strip or ring within the walls of the container itself. That is to say, stock of the nature described may be fitted with a composite paper and metal anchoring ring which may be made up as a pre-formed unit, including a paper strip whose exposed face may be directly cemented, glued, or otherwise adhesively affixed to either the inner or outer wall of the container, thereby making a paper to paper bond or seal which thereafter provides an annular shoulder or abutment for holding the ring against displacement.

Referring to the drawing, Fig. 1 illustrates the procedure involved in providing the pre-formed composite anchoring unit designated generally as A. This unit preferably consists of a metal band or ring 1 which is made on a suitable forming machine and soldered or otherwise connected, as indicated at 2. After the strip has been made into ring formation, it is then operated upon by suitable instrumentalities which provide the radially disposed flanges 3 and 4, the former being of greater radial length than the latter, as will be apparent from the second view in Fig. 1. When the anchoring ring is in this form, a paper strip 5 is fitted between the flanges 3 and 4, and then the unit in this form is subjected to a further operation whereby the relatively short flange 4 is turned back upon itself for a relatively short distance to secure and hold the paper strip 5 in place, as will be apparent from the last view in Fig. 1.

The composite anchoring ring A may then be assembled within the open end of a laminated container B, as shown in Fig. 2. At the time of assembly, either the outer face of the paper strip 5 or the inner face of the inner wall 6 of the container body may be provided with a suitable adhesive or cement 7. When the anchoring ring unit is assembled in the open end of the container body B the relatively long flange 3 extends over and across the laminations at the exposed end of the container to have a substantial projection beyond the outer wall 8 of the container.

After the anchoring ring unit A has been placed in one end of the tubular container, it may be fitted with a suitable end cap C. Or, alternatively, the anchoring ring unit A and the end cap, or end wall forming member C, may be assembled prior to fitting both into an open end of the container. In either event, of course, the exposed face of the paper strip 5 of the anchoring ring unit is intended to be adhesively connected with a wall of the container.

The end cap or end wall forming member C preferably is provided with a central annular cup-like portion including a wall 9, forming the top or bottom of the container, and a side wall 10 which snugly telescopes within the body of the metal ring 4 of the anchoring ring unit. It will, of course, be understood that the wall 10 may or may not be coextensive with the depth of the adjacent wall of the anchoring ring. Outwardly of the wall 9 the end cap member is provided with a laterally extending flange 11 which flushly engages and overlies the flange 3 of the anchoring ring assembly. If the said anchoring ring unit A and the end cap C are to be assembled before placing in the open end of the container, the peripheral edge of the flange 11 which extends beyond the edge of the flange 3 may be bent or folded over into interlocking engagement therewith.

After the anchoring ring unit and the end cap have been assembled relative to the open end of the container body B, as shown for example in Fig. 2, the flanges 3 and 11 which extend beyond the outer wall 8 of the container may be subjected to a rolling operation to provide the double seam S shown in Fig. 3. During the double seaming operation the rolling pressure which forms the seam further firmly presses the paper strip 5 of the anchoring ring unit against the inner wall 6 of the container so that the adhesive 7 bonds the paper strip 5 to the container wall. It will thus be apparent that the paper strip 5 provides in effect a substantial and solid abutment for the anchoring ring unit A so that after the construction is complete and the cement or adhesive has firmly set, the entire end structure for the container is firmly anchored against outward displacement axially of the container.

According to the form of the invention shown in Figs. 1 to 3 inclusive, the abutment for the end structure is placed on the inner wall of the container. However, as illustrating the further range of application of the idea of providing an abutment on a wall of the container, which abutment is preferably of the same, or substantially the same, material as the container itself, reference may be made to Figs. 4 and 5 of the drawing, wherein the anchoring ring unit A' is fitted to an external wall of the container. The construction of the anchoring ring unit A' is in all essential particulars the same as the unit A, except that the flanges 3^a and 4^a are formed in opposite directions relative to the wall 1^a, whereas in Figs. 1 to 3 the flanges extend to the same side of the body of the metal ring. The paper abutment strip 5^a is held in position during assembly by the flange 4^a, and is intended to be adhesively connected to the outer wall of the container by the application of a suitable cement or adhesive 7^a to the contacting surfaces. The flange 11^a of the end cap C' may be double seamed with the flange 3^a of the anchoring ring assembly to form the double seamed joint S', shown in Fig. 5. It will thus be apparent that the anchoring ring unit A' and the end cap C' may be assembled to the container body B' by the same procedure as described in connection with Figs. 1, 2 and 3.

According to both forms of the invention, the end structure is firmly anchored against axial displacement relative to the tubular container because of the presence of the annular anchoring abutment which is secured directly to the wall of the container in such a way as to become a part thereof and provide in effect a definite shoulder for holding the entire assembly in place and enabling it to withstand internal pressures up to approximately 250 pounds per square inch. Likewise, the construction involved provides a maximum of insurance against opening or springing of the end of the container during handling in service. That is to say, since the end cap construction is anchored or secured to the paper body through abutment means which does not require embedment in the material of the container body itself, it will be apparent that the full strength of the container wall is not impaired in applying or attaching the end structure in final position. This factor also contributes to the general strength and rigidity of the completed structure.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. In a fibrous container, a tubular paper body presenting inner and outer walls, an annular paper abutment adhesively secured to an inner wall of the container body, an end cap anchoring ring having means at one edge for engaging with the said abutment to prevent displacement thereof axially outward of the tubular paper member, and also having a seaming flange at the

other edge extending across the end of the tubular paper member, and an end cap having a centrally cupped portion and a peripheral flange double-seamed to said seaming flange of the anchoring ring.

2. In a container, a tubular body of paper, cardboard or the like, a metal anchoring ring unit having a portion adapted to lie parallel with a wall of said tubular body and having a relatively long outwardly and radially disposed seaming flange at one side and a hook-like flange at the other side, a paper strip arranged between said flanges and adhesively connected to the inner face of the tubular body to anchor the ring against axial displacement of the tube, and a cup-like end cap having a wall portion lying parallel to and engaging the rear face of the ring and also having a flange adapted to engage and overlie the seaming flange of the anchoring ring, said flanges of the cap and ring being rolled into a double seam.

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