

June 27, 1939.

E. G. ELLSTROM

2,164,055

CONTAINER

Filed Oct. 7, 1935

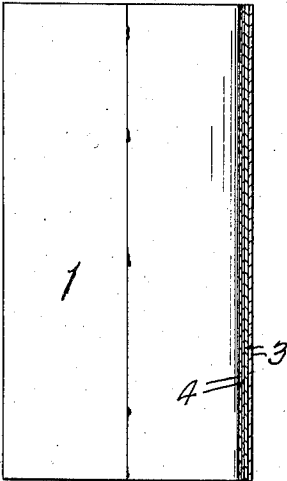


Fig. 1.

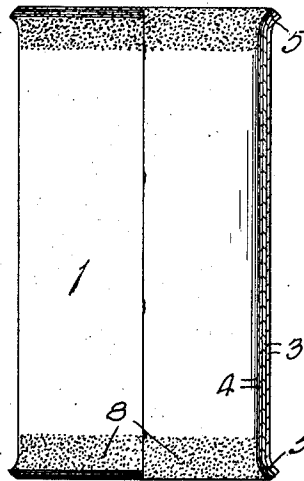


Fig. 2.

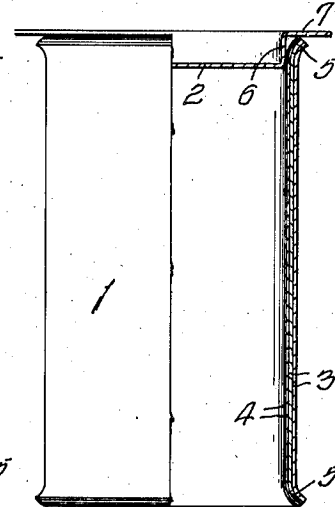


Fig. 3.

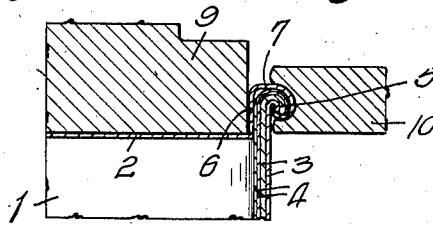


Fig. 4.

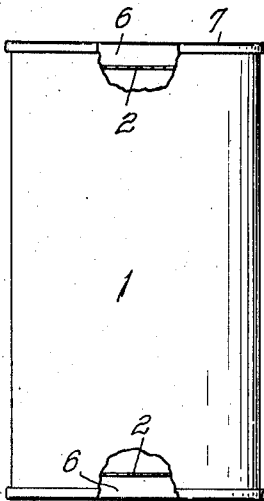


Fig. 6.

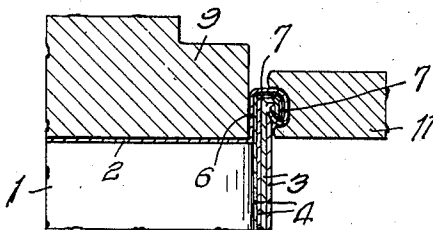


Fig. 5.

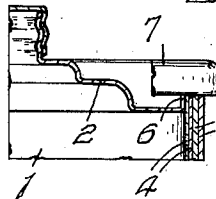


Fig. 7.

INVENTOR.
Elmer G. Ellstrom.
BY
Frederick J. Harrison
ATTORNEY.

UNITED STATES PATENT OFFICE

2,164,055

CONTAINER

Elmer G. Ellstrom, Webster Groves, Mo.

Application October 7, 1935, Serial No. 43,862

4 Claims. (Cl. 229-5.6)

My present invention relates to improvements in containers, and, more particularly to paper, or fibrous cans with suitable metallic end closures attached thereto.

Paper, or fibrous cans, I am aware, have been extensively and successfully used for packing certain dry products, and, I am also aware that considerable difficulty has been encountered in attempts to improve such containers for packing fluids and liquids, and to my knowledge such attempts have resulted in failures, and, it is, therefore, the primary object of my invention to provide a paper can with metal end closures attached thereto that will be leak-proof as to fluids and liquids, as well as to dry products having oily contents which produce gases, especially at the joints where the closures are seamed to the can body, and thereby provide a can which is a distinct and practical improvement to overcome certain practical objections to, and defects in the construction of the present well known types of paper or fibrous containers having metal end closures attached thereto.

An object of my invention is to provide a paper, or fibrous can body, either convolutely or helically wound, with outstanding flanges formed on the ends thereof.

A further object of the invention is to roll metal flanges on end closure members into interlocking engagement with initially outstanding flanges on the ends of paper or fibrous can bodies, and, in so doing, fold the body flanges relative to the can body and beyond the outer face thereof, and compress the folded body flanges into the form of head-like gaskets circumferentially of the can body ends.

A further object of the invention is to fold the can body flanges so that the end faces thereof will be disposed facing each other when the outstanding flanges on the metal end closure members have been forced into interlocked engagement with the can body flanges so that fluid or liquid contents of a container cannot, due to joint resistance, gain access to the end faces of the body flanges and then by capillary attraction saturate the inner body fibres to weaken the body structure and finally cause leakage.

A still further object of the invention is the provision of a container which possesses advantages in points of simplicity and efficiency, and, at the same time proves itself comparatively inexpensive in cost of manufacture.

With the above and other objects in view, the invention consists in the novel features of construction, arrangement and combination of parts

hereinafter more fully described and finally pointed out in the claims hereto appended.

Referring to the accompanying drawing forming a part of this specification, wherein like characters of reference denote similar parts throughout the several views:

Fig. 1 is a view partly in side elevation and partly in sectional elevation of one embodiment of a can body.

Fig. 2 is a view similar to Fig. 1 after the ends of the body have been outwardly flanged.

Fig. 3 is a view similar to Fig. 2 showing a one-piece end closure member seated in and on one of the flanged ends thereof before being secured thereto.

Fig. 4 is a detail of one end of a can body showing the first operation of rolling a closure member flange into interlocking engagement with one of the can body flanges and in such operation folding the body flange relative to the body.

Fig. 5 is a view similar to Fig. 4 showing a follow-up operation of rolling the closure member flange into interlocking engagement with the body flange and compressing the body flange material to provide a head-like gasket circumferentially of the body.

Fig. 6 is a side elevation of a fibre can body provided with one form of metal end closures.

Fig. 7 is a detail showing a can end closure formed of two pieces of metal.

In order that there may be no possible chance of leakage at the joints where the peripheral edge portion of suitable metal end closures are secured to the ends of the fibrous body of the can, such edge portions of the end closures are rolled into interlocked engagement with paper body flanges by a seaming operation which folds the paper body flanges relative to the body so that the end faces of the body flanges face each other beyond the outer face of the body.

Referring to the drawing showing one embodiment of the invention, the reference character 1 designates, generally, a tubular paper, or fibrous can body, and the reference character 2 designates, generally, suitable metal end closures on opposite ends of the body. The end closures may be of one-piece construction, as shown in Fig. 6, or one closure, preferably the top closure, may be of a construction made up of two or more metal pieces, such, for instance, as a dome-shaped closure member with a screw-threaded cap, or a ring or collar member with a removable closure member attached thereto. All of which constructions are well known in the paper can art.

The can body can be either of convolutely

wound construction with the desired number of paper or fibrous plies, or of helical wound construction with the desired number of plies.

- In the one embodiment of the can body construction, as shown, there may be associated with the paper, or fibrous body material 3, a suitable leak-proofing material 4 to provide a leak-proof body construction. In lieu of the leak-proofing material 4, as shown, the body may be coated inside and outside with a suitable leak-proofing material which may be sprayed, or otherwise applied thereto. The type of can body, as well as the types of end closures may be varied, as desired; but, I do want to stress the point that the securing of the peripheral edge portions of the end closure members to initially outstanding flanges on the ends of the can body, is an essential feature of my invention, whether the end closures are made of one, or more pieces of metal.
- After the can body has been formed, the ends of the body are provided with outstanding flanges 5, preferably, although not necessarily, arcuately shaped by suitable means for such purpose, and such flanges are clearly shown in Fig. 2.
- Suitable metal end closures 2 of any type, as is well known in the paper can art, may be employed, as long as they embody a member having a vertical wall portion 6 and an outstanding continuous flange portion 7.
- The can is formed first with only one closure member secured to the body by seaming roll operations, and after the can has been filled with the desired contents, dry, fluid or liquid, the other end closure is secured to the other end of the can body.

- After the can body 1 has been formed, either before or after the ends thereof have been flanged, as desired, the end portions of the can, or the entire can body, may be coated with a suitable leak-proof coating material 8 such, for instance, as a mixture of rosin and paraffin, high grade bees-wax, or other suitable leak-proofing material. This material forms a coating on the inner and outer wall and to a degree serves as a seal for the more or less loose fibres at the end faces of the body flanges 5.

- The next step in the forming of the can is the application of a closure member designated 2 having the vertical wall 6 and the flange 7 to the one end of the fibrous can body 1. The closure member is seated in such end of the body 1 with the outstanding flange 7 thereon resting upon and projecting the desired distance beyond the edge of the body flange 5. The closure member is engaged by a suitable tool 9 which also engages the inner faces of the side wall 6 of such member. A suitable seaming roll 10 is then brought into contact with the flange 7 which rolls the flange downwardly, inwardly and slightly upwardly into interlocking engagement with the body flange, and, in so doing, folds the body flange downwardly relative to the body 1 so that the end face of the body flange faces the opposite end of the body and with the metal flange encasing the body flange.

- A second, or follow-up seaming roll 11 is then brought into action and the flange 7 is flattened out somewhat, thereby compressing the fibrous body flange material so as to form a continuous bead-like gasket designated 7', as shown in Fig. 6. The flange 7 being rolled into interlocking engagement with the body flange renders it impossible for leaks to become established in the joint between the metal flange 7 and the body flange, which body flange, when

folded, in reality, serves as a gasket at the end of the body and circumferentially thereof. This type of joint which is irregularly shaped and relatively long, sets up sufficient resistance to fluids and liquids to prevent same finding its way by creepage to the end faces of the body flanges, and, thereby prevents fluids and liquids finding access to the end faces of the fibrous body flanges, which prevents any possible chance of the fluids or liquids entering the fibrous body material from the end faces thereof, and thereafter by capillary attraction and saturation or soaking the fibrous body material from within to weaken the structure. This prevents loss of capacity of can contents by what I call a wicking process and also thereby prevents contents of the can leaking therefrom.

After the can has been filled with the desired contents, another metal end closure member 2 if of one-piece construction, is applied to the can in the same manner as the other end closure member was attached or secured thereto, and if such other closure member is of two-piece construction, the one member of the closure can be attached to the body before the can is filled.

Where there is no leak-proofing material, such as 4, co-acting with the body material 3, a can body made only of paper or fibrous material 3 may be coated with any suitable leak-proofing solution to make it leak-proof, as is manifest.

From the foregoing description, it is apparent that I provide a fluid and liquid tight can, of the combination fibre body and metal end type construction, which is practical for oils, paints, lard, cotton seed oil products, alcohol, coffee and many other oily and greasy products, whereas with the present construction of paper or fibre cans having no folded-over end flange encased in a metal covering, all leak by wicking the contents of the can.

The many advantages of the herein described invention will readily suggest themselves to those skilled in the art to which it appertains.

From the foregoing description, it is evident that a simple device for this purpose has been disclosed, but it is to be understood that I do not desire to restrict, or limit myself to the very details of the construction shown and described, which is merely illustrative, it being obvious that changes, not involving the exercise of invention, may be made without conflicting or departing from the spirit of the invention within the scope of the appended claims.

What I claim is:

1. In a can construction, in combination, a fibrous body having a leak-proof lining, said body having outward end folds lying parallel with the body, metal end closures for the ends of the body, flanges on the metal end closures in interlocking engagement with the body folds to provide leak-tight joints therebetween and substantially compress the end portions of the body folds to prevent wicking of the can contents through the ends of the body folds.

2. A can comprising a fibrous body, outward folds formed on the ends of the body, sheet metal closures seated on the ends of the body, flanges on the closures seamed to the body folds in such fashion as to inwardly fold the ends of the closure flanges to be disposed in inclined positions between the body and the body folds to seal the body folds to prevent contents of the can finding access to the ends of the body folds and to the inner fibres of the body by wicking.

3. The process of making leak-proof cans to

hold fluids and liquids as well as dry products in a sealed condition, which is characterized by forming a tubular body of paper material having its interior wall impervious to fluids and liquids, 5 forming outwardly curved flanges on the ends of the body, seating metal end closures into the ends of the body and contacting flanges on the closures with the curved body flanges, and rolling the metal closure flanges toward each other to 10 fold the body flanges, then toward the body into inclined positions in interlocked engagement with the body flanges to compress the ends of the

folded body flanges to tightly seal the ends of the body flanges by encasing same with the closure flanges to prevent wicking of can contents through the ends of the body flanges.

4. In a can construction for lubricating oil and the like, a fibrous body having a leak-proof lining, outer folds on the end of the body, and metal end closures having flanges encasing the body folds in such fashion as to compress the ends of the body folds to positively seal the ends of the 10 body folds against wicking contents of the can.

ELMER G. ELLSTROM.