

April 30, 1946.

A. MERKLE

2,399,241

CONTAINER

Filed Aug. 3, 1940

Fig. 1.

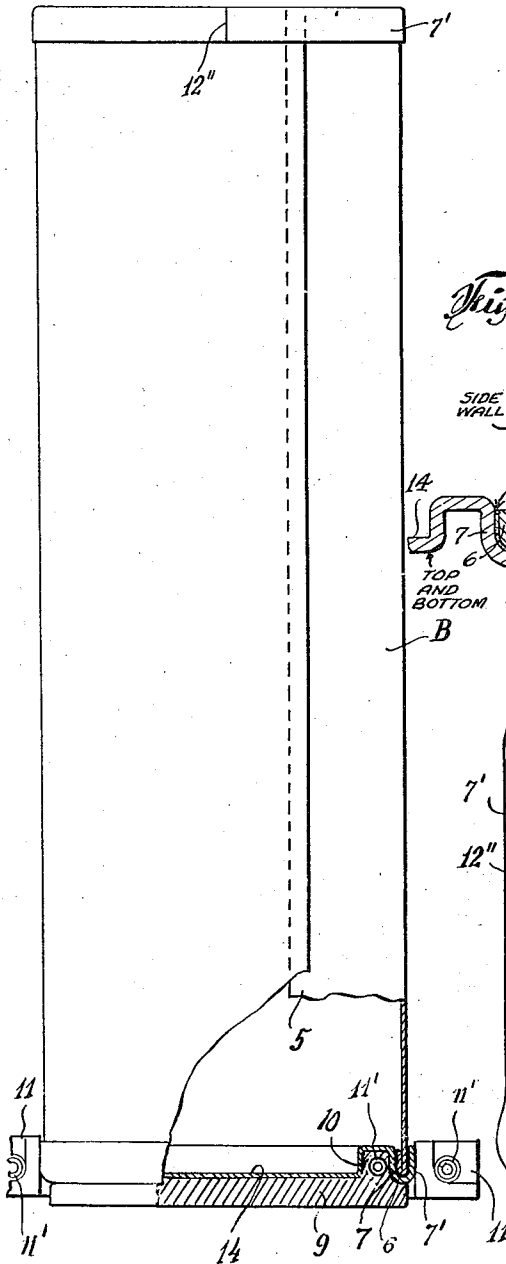


Fig. 2.

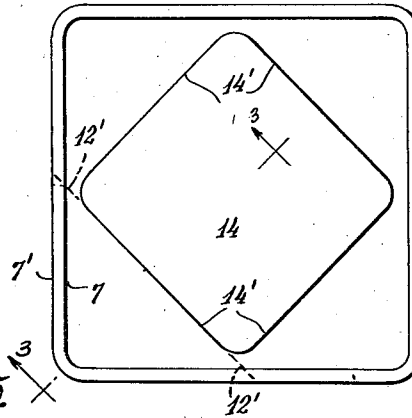


Fig. 5.

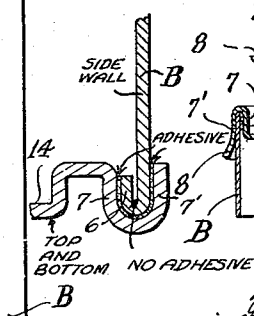


Fig. 3.

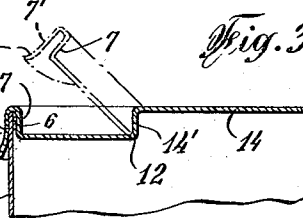
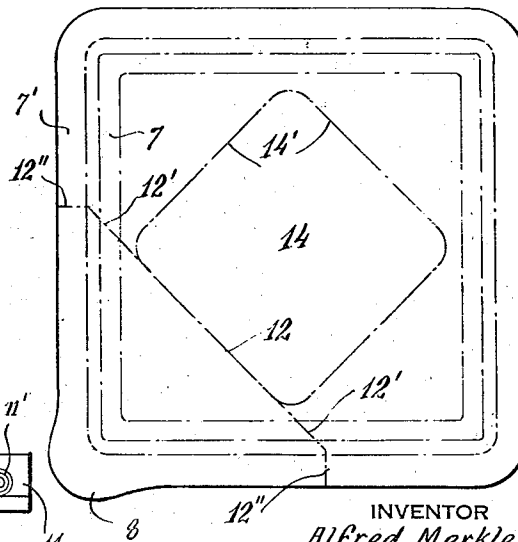


Fig. 4.



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UNITED STATES PATENT OFFICE

2,399,241

CONTAINER

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Application August 3, 1940, Serial No. 350,217

7 Claims. (Cl. 229—5.5)

This invention relates to containers made of fibrous material, such as paper, and adapted for the packaging and distributing of various liquids, such as milk.

It is an object of the invention to provide an improved construction and arrangement of container of this character to render the side walls of the body of the container rigid and to provide reinforced end closures for the body and an improved flexible sealed connection between the end closures and the body of the container.

Containers of this character consist of a body usually formed from a blank and secured at the longitudinal marginal portions and closures are secured in the ends of the body. To pour the contents from the container the body or the end closure is punctured to provide an opening. In some instances an end closure of the container is provided with a pouring opening and a removable closure is provided therefor. In packaging the goods in the container it is necessary to provide a closure and means to seal the closure in said opening during the distribution of the containers, which not only increases the cost of the container but there is a possibility of the closure loosening from the opening and a consequent leakage or contamination of the contents of the container.

It is a further object of the invention to provide an improved construction and arrangement of closure secured and sealed in an end of a container body and arranged whereby a part of the closure is adapted to be readily released from the body and bent upon itself to provide a filling and pouring opening for the container, and said bent portion constituting a closure flap to close said opening after the contents has been filled into the container, or a portion of the contents has been poured from the container, and serve as a protecting cover for the pouring lip during distribution and use of the container.

In the drawing accompanying and forming a part of this application,

Figure 1 is a side elevation of my improved container, partly in section, to show the manner of securing and sealing an end closure in the body of the container.

Figure 2 is a view looking at the top of Figure 1.

Figure 3 is a fragmentary view in section of the upper portion of the container shown in Figure 1, the section being taken on the line 3—3 of Figure 2; and

Figure 4 is a plan view of a blank from which the end closures are formed.

Figure 5 is a sectional view, on an enlarged scale, of the flexible sealed connection between an end closure and the body of the container.

In the embodiment of the invention illustrated in the drawing there is provided a body B of rectangular shape in cross section formed from a blank of pliable though somewhat rigid fibrous material, such as paper, shaped about a mandrel with the longitudinal marginal portions of the blank overlapped and adhesively secured and sealed in said condition, as at 5. The corners of the body are preferably in an arc of a circle to add rigidity to the side wall or body of the container but permitting of slight contracting and expanding movements thereof, and the marginal portions at the ends of the body are folded inwardly upon themselves in contiguous relation to provide a flexible fold at the ends of the container body, as at 6.

A closure is secured in one end of the body to constitute the bottom thereof, and comprises a blank of fibrous material, such as paper, conforming to the cross sectional shape of the body and having upon the surface thereof exposed to the interior of the container, or upon the marginal portion of such surface, a coating of thermoplastic or other adhesive material having a high fusing point and may have the properties of being resistant to oil and grease, including hydrocarbon and mineral oils or greases, as well as moisture resistant. The end closures are preferably preformed to final shape before being applied to the end of the container, for which purpose the peripheral or rim portion of the blank from which it is formed is provided with a flange extending laterally from the surface having the coating of adhesive material, as at 7, and the flange curved or folded outwardly upon itself to substantially U shape in cross section, as shown at 7', with the coating of adhesive material upon the inner surface thereof. In this condition the end closure is inserted into an end of the body with the U shaped peripheral flange or rim portion engaged upon the folded end of the body, when the flange portions are adhesively secured and sealed to the folded end portion and outer side of the body by the coating of adhesive material. This is effected when the adhesive consists of thermoplastic material by subjecting said closure parts to heat and pressure to fuse and cause the thermoplastic material to penetrate the material of the folded end of the body and form an impregnable bond between the closure flange and the folded end and outer side of the body. This may be effected by suitable

means, and as shown in Figure 1 may comprise a head 9 having an annular portion 10 projecting from a face of the head adjacent and within the periphery thereof, the peripheral face of said projecting portion being partly rounded to conform to the outwardly curved portion of the flange. The portion 7' of the flange is pressed to the outwardly extending portion 7 and the interposed folded end of the body against the head projection 10 by a ring member 11 comprising segments movable toward and away from the periphery of the head 9 and the head projection 10. To simultaneously subject said closure parts to heat the head projection 10 and ring 11 are heated as by an electric heating element 11' arranged within and insulated from said parts. The thermoplastic material as it is fused, and particularly so when the inner surface of the closure is coated with such material, will flow over and seal the raw edge of the folded in end of the body. After the material has been filled into the container a similar closure is applied to the filler end of the container, and the exterior of the container may be rendered moisture proof by applying thereto a coating of moisture resistant material, such as paraffin. Should the container be utilized for the packaging and dispensing of liquids, such as milk, only the seam portions of the body blank and the peripheral portion constituting the inner surface of the flange of the end closures are provided with the coating of thermoplastic material and after the bottom closure has been secured in the body the container is rendered moisture proof in a suitable manner, as by immersing the container in a bath of moisture resistant material, such as paraffin, the paraffin penetrating the material of the container and forming a surface coating thereon. Folding the marginal portion of the ends of the body inwardly upon themselves and adhesively uniting the closure flange to the outer side and said folded end portion of the body reinforces and renders the connections of the body with the closures flexible, and should the same be subjected to jars such connections will compensate for any distortion of the container parts and prevent separating of the seam parts. Also by securing the closure flange to the folded-in end portion of the body any outward pressure on the body will spread the folded end portion of the body and will not exert a separating force on the adhesively united seam portions of the closure flanges with said folded ends of the body.

It will be obvious that instead of preforming the end closures with the U-shaped flange, the peripheral portion of the blank may be provided with the outwardly extending flange 7 as the closure is inserted into the end of the body, as by the head 10, and in successive sequence the flange curved or folded outwardly over the end of the container body to the outer side thereof, as by the ring member 11 and the seam parts then subjected to heat and pressure to secure and seal the closure to the folded end portions of the body.

To provide the container with a pouring opening and a closure for said opening the blank of an end closure may be provided with a weakening or scored bending line extending transversely of a corner portion of the blank, as indicated by dot and dash line 12 in Figure 4, said weakening or score line being of a length to extend transversely of the portions of the blank constituting the laterally extending portion 7 of the flange and the curved portion of the flange extending over

the end of the body, as indicated at 12', and the ends terminating in incisions or severed portions 12'' extending transversely of the outwardly folded portion of the flange 7'. The corner of the closure blank relative to which the weakening line extends is preferably arranged in an arc of a circle having a longer radius than the radius from which the other arcuate corner portions of the blank are struck, thus arranging said portion of the flange 7' of increased width relative to the remainder of said flange portion, and said portion of increased width is not adhesively secured to the body and is effected by making the heat and pressure applying means of a thickness equal to the width of the closure flange or the reversely curved portion of the flange and arranging said portion of the flange 7' as a finger engaging tab, as shown at 8 in Figure 3. The flange portion 7' within the severed ends 12'' may be readily released from the container by exerting an upward pull on the tab portion 8 after which the closure may be bent upon the weakening or score line 12, 12' and thus provide an opening at a corner of the container through which to pour the contents from the container. The closure may be secured to the container body and the contents filled into the container through said pouring opening and the opening closed by the closure flap and the flange of the flap secured and sealed to the body. The flange of the closure flap serves as a protecting cover for the pouring lip during distribution and use of the container.

To reinforce the container closures and to provide additional support for the contents of the container the portion of the closures within the flange is depressed outwardly in the direction of the flange, as at 14, and is preferably of a depth slightly less than the extent of the flange whereby the flange or end of the container will project slightly beyond said depressed portion, as clearly shown in Figure 1. The depressed portion is of rectangular form with the side walls 14' arranged to extend diagonally of the corners of the end closures and the container body, as shown in Figures 2 and 4, and the corners at the juncture of the depressed portion may also be rounded or in an arc of a circle. The blank is preferably preformed with the depression 14, arranging the blank substantially to dish form and the rim is then flanged laterally and arranged to U shape in cross section, and the flange when the closure is inserted into the end of the body will engage over the end of the body as set forth. In this arrangement to adapt one closure end to be provided with a pouring opening and a closure flap for said opening, it is not necessary to arrange the closure with the weakening or score line 12, 12', since the bend or corner at the juncture of a side wall, as 14', of the depressed portion with a portion of the closure between the depressed portion and flange 7 will constitute a weakened line on which the closure may be bent. The outwardly folded portion 7' of the closure flange is also provided with the tab portion 8 and may be severed, as at 12'', although it is not absolutely necessary. To facilitate releasing the corner portion having the tab 8 from the container said tab is grasped between the thumb and fingers and an upward force applied thereto while at the same time applying a slight pressure to the depressed portion of the closure. It will be obvious that after a portion of the contents has been poured from the container said portion may be bent reversely to engage it over the opening and thus serve as a closure flap therefor.

It will be obvious that modifications may be made in the construction and arrangement of the parts without departing from the scope of the invention, and that portions may be used with-
out others and come within the scope of the invention.

Having described my invention, I claim:

1. A container, comprising a body having the marginal portions at the opposite ends folded inwardly and free of the inner side of the body, and closures for the ends of the body having the marginal portion flanged laterally and folded outwardly and reversely upon itself substantially to U-shape in cross section, and said closures inserted into the ends of the body with said laterally extending and outwardly and reversely folded portions of the closure flanges engaged over and secured to the inwardly folded end portions and outer side of the body, respectively, providing flexible connections between the end closures and the body of the container.

2. A container of fibrous material, comprising a body having the marginal end portions folded inwardly and free of the inner side of the body, and closures of dish form for the ends of the body having the rim flanged laterally in the direction of and to an extent greater than the depth of the dish portion and folded outwardly and reversely upon itself substantially to U-shape in cross section, and said closures inserted into the ends of the body with the laterally extending portion of the flange engaging and adhesively united to the folded end portions of the body and the outwardly folded portion of the flange engaging and adhesively united to the outer side of the body providing a flexible connection between the body and closures of the container, and the dish portion of the closure disposed within the ends of the body.

3. A container of fibrous material, comprising a body having the marginal portions at the opposite ends folded inwardly and free of the inner side of the body, and end closures for the body formed from a blank having a coating of thermoplastic adhesive material on a surface of the marginal portion thereof, said closures having a centrally depressed reinforcing portion and the marginal portion with the coating of thermoplastic material flanged laterally in the direction of the depressed portion and the flange folded outwardly and reversely substantially to U-shape in cross section with the thermoplastic coating on the inner surface thereof, said closures engaging the ends of the body with the laterally extending portion of the flange engaging the folded end portions of the body and the outwardly folded portion of the flange engaging the outer side of the body and both flange portions adhesively united to the folded end portions and the outer side of the body by the thermoplastic adhesive material by the application of heat and pressure providing reinforced and flexible connections between the body and closures.

4. A container of fibrous material, comprising a body of rectangular form in cross section having the marginal portions at the opposite ends folded inwardly, and closures of rectangular form for the ends of the body having rectangular depressed portions arranged with the side wall portions thereof extending diagonally of the corner portions of the closures and the marginal portion of the closures flanged laterally and folded outwardly upon themselves substantially to U-shape

in cross section, said closures engaging the ends of the body with the flanges embracing and adhesively united to the folded end portions and the outer side of the body providing flexible connections between the body and closures, and the flange of a corner portion of a closure adapted to be released from the body and bent outwardly on a bend of the depressed portion to provide the container with a pouring opening and said bent closure portion adapted to serve as a closure flap for said pouring opening.

5. A container of fibrous material, comprising a blank shaped to form a body of rectangular form in cross section with the longitudinal portions overlapped and adhesively united, and closures for the ends of the body formed from a rectangular blank having the marginal portion flanged laterally and folded outwardly over the ends to the outer side of the body and adhesively united thereto, one of said closures being arranged with a weakened line extending diagonally of a corner portion of the closure and the ends merging with incisions extending transversely of the outwardly folded portion of the flange, the flange within the incisions being adapted to be released from the body and the closure bent on the weakened line to provide the container with a pouring opening and adapted to function as a releasable closure flap for said opening.

6. A container, comprising a body of fibrous material of rectangular form in cross section rounded at the corners and the marginal portions at the opposite ends folded inwardly, and end closures of fibrous material corresponding to the cross sectional shape of the body and one corner portion arranged as a tab, said closures having a depressed portion of rectangular form with the side wall portions extending diagonally of the corners of the closures and the marginal portions of the closures flanged laterally in the direction of the depressed portion and folded outwardly upon itself, and said flange engaging and adhesively united to the inwardly folded end portion and outer side of the body, the tab portion at the one corner of the flange being adapted to be grasped between the thumb and fingers to release the flange at said corner portion from the body and bend said released portion on the bend of the depressed portion extending diagonally of said corner to provide the container with a pouring opening and said bent portion adapted to function as a closure flap for said opening.

7. A container of fibrous material, comprising a body having the marginal portions at the opposite ends folded upon themselves and the folded portions free of the body, and closures inserted into the ends of the body having a peripheral channel, U shaped in cross section, enclosing the folded marginal portion of the body and adhesively united to said folded end portions and the body, one of said closures having a weakened bending line extending transversely thereof at one side of the center merging at the ends with incisions extending transversely of the outer portion of the channel, that portion of the channel lying between the incisions being adapted to be released from the body and the closure bent outwardly on the weakened line to provide the container with a pouring opening and said bent portion of the closure adapted to function as a closure flap for said opening.

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