A. W. WILKINSON.

CONTAINER.

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1,341,403.

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Fig. 1.

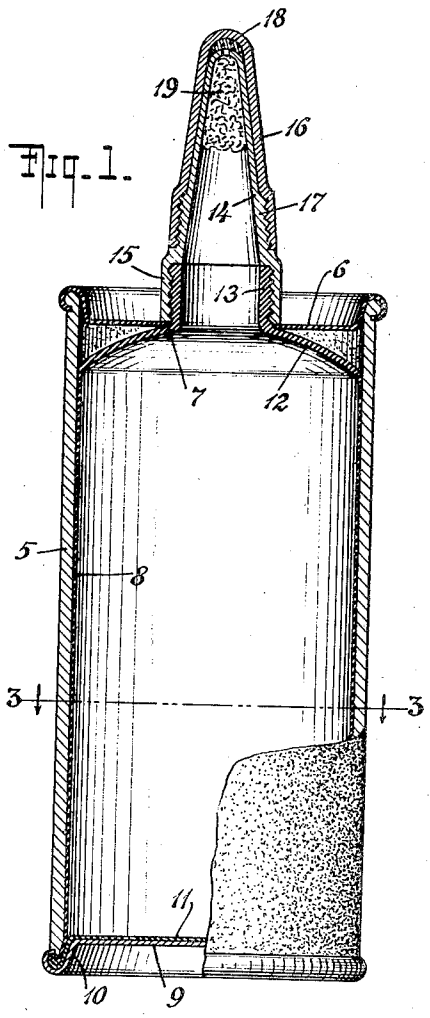


Fig. 2.

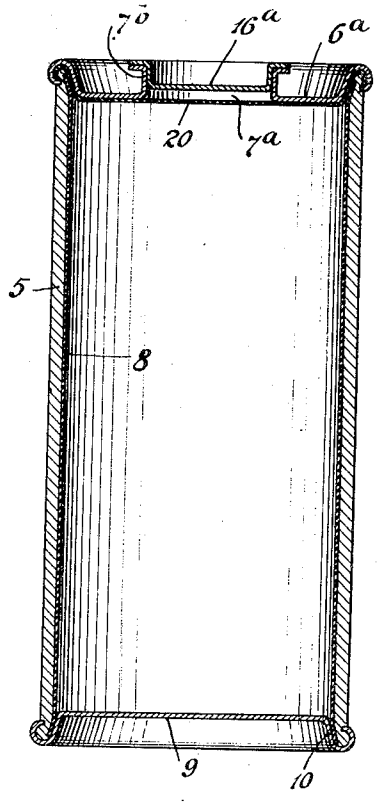


Fig. 3.

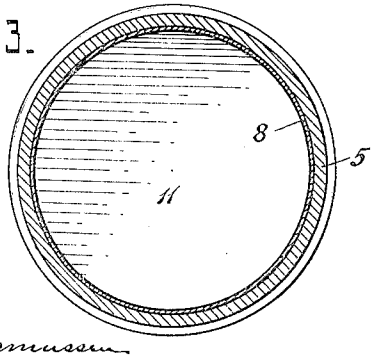
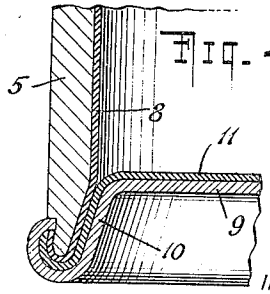


Fig. 4.



WITNESSES

G. V. Rasmussen

INVENTOR

Arthur W. Wilkinson

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

ARTHUR W. WILKINSON, OF EASTON, PENNSYLVANIA, ASSIGNOR TO STERLING PRODUCTS COMPANY, INC., OF EASTON, PENNSYLVANIA, A CORPORATION OF NEW YORK.

CONTAINER.

1,341,403. Specification of Letters Patent. Patented May 25, 1920.

Application filed June 25, 1919. Serial No. 306,542.

To all whom it may concern:

Be it known that I, ARTHUR W. WILKINSON, a citizen of the United States, and a resident of Easton, county of Northampton, and State of Pennsylvania, have invented certain new and useful Improvements in Containers, of which the following is a specification.

My invention relates to containers and has for its object to provide a container constructed in a novel manner to constitute an efficient package specially adapted for storing, shipping, mailing and otherwise transmitting merchandise, especially such as comes in liquid form, particularly chemicals. A further object of my invention is to provide a package of maximum strength and minimum dead weight and including a novel combination of materials whereby efficient liquid and air tight joints are secured. My invention will be fully described hereinafter, and the novel features thereof will be pointed out in the appended claims.

In the accompanying drawings which, for illustrative and descriptive purposes show examples of my invention, Figures 1 and 2 are longitudinal sections; Fig. 3 is a cross-section on the line 3—3 of Fig. 1 and Fig. 4 is an enlarged detail illustrating the bottom construction.

As shown in Fig. 1 of the drawings, the container comprises an outer tube 5 of compressible pasteboard, paper, or other fibrous material, said tube being capable of resisting forces or strains tending to collapse it inwardly or in axial directions. At its one end the tube 5 is provided with a permanent plate 6 of relatively stiff metal such as steel or the like, which is connected throughout its periphery with said tube 5, for instance by crimping or the like. As shown in Fig. 1, the closure 6 is formed with a central opening 7 for purposes described hereafter.

The container comprises further an inner tube 8 of tin, lead or other relatively soft metal, said inner tube being relatively thin and of such inherent weakness, as to require support against collapsing. In practice, the thinness of the inner tube 8 ranges from 5 one thousandths or 10 one thousandths of an inch upward. This inner tube 8 fits snugly within the outer tube 5, and constitutes a metallic lining therefor, the paper outer tube 5 in turn, supplying the support necessary to maintain the inner tube 8 against collapse, and giving to the package the necessary rigidity. A bottom of relatively stiff metal such as steel closes the lower end of the finished package and preferably comprises a disk 9 located at a distance inwardly from said lower end, and a peripheral flange 10 depending from said disk, as shown in Fig. 1, the edge of the flange being spun or crimped into the paper tube. In some cases a lining 11 of thin, relatively soft metal, preferably corresponding to that of the inner tube 8, is located upon the inner surface of the bottom disk 9 as shown in Fig. 1. The inner tube 8 and the lining 11, if used, extend between the flange 10 and the outer tube 5, and are crimped upon said tube 5 together with the bottom 9; if the lining 11 is omitted, the inner tube 8 alone will extend between the flange 10 and the paper tube 5, and is crimped upon the same with the bottom in the same manner as shown in Fig. 2. In either case it is preferable that the liner 8 shall be longer than the paper tube, so as to cover the lower lower edge thereof when the cap 9 is in place (as shown in Fig. 1) although even with a shorter inner tube, such as is shown in Fig. 2, a good package for many purposes, may be obtained.

At its upper end the inner tube 8 converges inwardly, as indicated at 12, toward a neck 13, which is preferably externally screw-threaded and projects in an axial direction through the opening 7 of the cap 6 and outwardly beyond the same. The inwardly converging portion 12 and the neck 13 are made relatively thicker than the remainder of the tube 8, and consequently possess some inherent rigidity of their own. The form shown in Fig. 1 includes a spout 14 which is provided with a collar 15, fitted over the neck 13 and preferably internally screw-threaded for connection therewith. The collar 15, by being screwed upon the neck 13 into engagement with the closure 6, serves to rigidly connect the neck 13 and the inner tube 8 therewith, and at the same time serves to firmly secure the spout 14 in position; in order to make the connection permanent and to prevent the spout 14 from being unintentionally disconnected from the neck 13, the joint between the collar 15 and closure 6 is preferably fused, for instance, by means of an electric iron. Nor-

mally, the spout 14 is closed by means of a cap 16 which screws upon a screw-threaded portion 17, provided upon the spout 14 for the accommodation of said cap; if desired, a plug 18 of cork, rubber or other suitable material, may be located in the cap 16, to seal the end of the spout 13 when the cap 16 is in position thereon.

In cases where it is desired to expel the contents of the package in drops, it is desirable, since the tube 8 is not manually compressible, to locate what may be termed a wick 19 in the spout 14 at its exit end, said wick comprising a section of felt or other suitable material. This wick 19 prevents the liquid contents from issuing in a stream from the spout and by blocking the outflow of and becoming saturated with said liquid, insures it ejection from the package in the form of successive drops.

Referring now more particularly to the form shown in Fig. 2, a lining or disk 20 of soft metal preferably similar to that of the inner tube 8, is located contiguous to the closure 6^a and so as to extend beneath and across the central opening 7^a thereof on the inside. The lining or disk 20 extends between the closure 6^a and the outer tube 5 of paper, and is crimped thereon with said closure; the inner tube 8 in this instance may also be crimped upon the outer tube 5 at this end, together with the closure 6^a. In this form, the opening 7^a may be provided with an upright peripheral flange 7^b arranged to frictionally engage and hold a cap 16^a, whereby said central opening 7^a is normally closed. Otherwise this form of my improvement may be the same as the one shown in Fig. 1.

With my improved construction, a package of light weight and maximum strength is produced, in which the outer tube or shell of compressible paper supplies the required rigidly to an inner metallic shell or tube, which serves as a lining for said paper shell and is of such a character as to require support against collapse. As a result, the inner tube may be of extreme thinness with the consequent saving in material and economy of production, without in any way impairing the efficiency of the package as a fluid-tight, non-frangible container, specially adapted to contain chemical and other liquids. The paper outer tube insures a desirable pliancy at the joints whereby the union between the soft and the hard metal surfaces is placed under constant compression and thus secures an absolutely tight connection.

By having the soft metal 8 extend between the relatively stiff metal of the flange 10 of the bottom 9, and by crimping the two together upon an outer tube of compressible material, a perfect contact between two metals of different degrees of stiffness or hardness is secured, which provides an adequate and efficient seal against leakage at the joints while the package as a whole is at all times stiff and rigid. If the inner lining 11 of soft metal is used in connection with the bottom of stiff metal, two soft metals, namely that of the tube 8 and that of the lining 11, are pressed or crimped together between the paper tube 5 and the bottom of stiff metal, and thus still further increase the efficiency of the joint as a seal against leakage and consequently the use of the lining 11 is preferred. If, in practice, the nature of the contents make it desirable or for any other reason it may be advisable, the interior of the container tube 8 may be coated, for instance, with paraffin or the like which in such cases will form an additional safety seal for the joint.

The converging portion 12 of the tube 8 shown in Fig. 1, which slopes toward the spout 13, serves to guide the contents toward the latter, and insures the complete removal of the entire contents through said spout. This special form is of advantage in adapting the package for filling with a filling machine, since it allows for accommodation of and resistance against pressure.

It is obvious that if, in the form shown in Fig. 2, after removal of the cap 16^a, the metal lining or disk 20 is found unimpaired, this will indicate that the package has not been opened or tampered with and that the original contents are contained therein. When access to said contents is desired, the soft metal disk 20 is simply punctured, whereby said contents may be removed wholly or in part from the package in any convenient manner.

It will be understood that the containers may be filled in any convenient manner, and that, if desired, the normal upper ends of the package may be completed in finished form and the contents introduced through the bottom end, the bottom in such case being combined with the package after the filling has taken place. The relatively large area of the bottom end makes the introduction of the contents, in this manner, a rapid and simple operation easily performed, either manually or by means of suitable machinery.

My container provides an ideal package for transmitting fluids and particularly fluid chemicals, by mail, or otherwise, since, by placing the package in an ordinary mailing tube or package, there is no danger of breakage, as would be the case if glass were employed. The new package thus does away with the necessity for the special and cumbersome packing with sawdust or the like which is now officially required in many localities, as leakage of the contents or fracturing of the package under the usual conditions of transmission, is obviated. My improved container, in addition to its efficiency

as a package, is cheap and economical to produce, and is readily and quickly filled.

Various changes in the specific forms shown and described may be made within the scope of the claims without departing from the spirit of my invention.

I claim:

1. A container comprising an inner tube of relatively soft metal of inherent weakness, a stiff outer tube of compressible material surrounding said inner tube and protecting the same against collapse and perforation, and a stiff metal closure for said container attached to one end thereof and extending into the same, said closure clamping said soft metal between its inwardly extending portion and a compressed part of said outer tube to form a fluid-tight joint.

2. A container comprising an inner tube of relatively thin metal of inherent weakness, a stiff outer tube of compressible fibrous structure surrounding said inner tube and protecting the same against collapse and perforation, a closure of relatively stiff metal for one end of said container and a thin lining of soft metal in surface engagement with the end surface of the soft metal tube and with the inner surface of said stiff metal closure, the latter being crimped upon said outer tube and clamping said soft metal tube and soft metal lining together between itself and a compressed part of the said fibrous tube to form a fluid-tight joint.

3. A container comprising an inner container of relatively thin metal, an outer tube of pasteboard surrounding said inner container and protecting same against collapse and perforation, a relatively stiff steel top crimped upon said outer tube at one end and engaging a part of the inner container, and a relatively stiff steel bottom located within said inner container at the other end and having a peripheral flange crimped upon said outer tube and holding together under compression the lower edge of said inner thin metal container and the lower edge of said pasteboard tube.

4. A container comprising a readily collapsible inner tube, an outer relatively stiff tube of compressible material surrounding said inner tube and protecting the same against collapse, a relatively stiff bottom located within said inner tube and a peripheral flange on said bottom engaging the inner tube from the inside to form a fluid-tight joint, said flange being crimped upon said outer tube and holding together under compression the edge of said inner tube and the edge of the outer tube.

5. A container comprising a readily collapsible inner tube, an outer relatively stiff tube of compressible material surrounding all but a short projecting edge of the inner tube and protecting the same against collapse, the projecting edge of the inner tube being folded over the edge of the outer tube, and a relatively stiff bottom crimped upon said outer tube and holding together under compression the edge of said inner tube and the edge of said outer tube.

6. A container comprising an outer tube of pasteboard, a top of relatively stiff metal crimped upon one end of said outer tube and having an opening, an inner relatively thin tube of soft metal within said outer tube and protected thereby against collapse, said inner tube, at its upper end, converging toward the axis of the package, a tubular neck forming a continuation of said inner tube at the converging end, and extending through the opening of said top, a spout connected with said neck externally of said top, a cap detachably connected with said spout, and means constituting the bottom of said container and connected with the other end of said outer tube of pasteboard, and clamping said soft metal tube between itself and said pasteboard tube.

7. A container comprising an outer tube of pasteboard, a top of relatively stiff metal crimped upon one end of said outer tube and having an opening, an inner relatively thin tube of soft metal within said outer tube and protected thereby against collapse, a tubular neck forming a continuation of said inner tube and extending through the opening of said top, a spout connected with said neck, a felt wick in said spout, whereby the contents of the package are expelled in the form of drops, a cap detachably connected with said spout, a bottom of relatively stiff metal and a lining of soft metal in surface engagement with the inner surface of said bottom, the latter being crimped upon said pasteboard tube and clamping said soft metal tube and soft metal lining together between itself and said pasteboard tube.

In testimony whereof I have hereunto set my hand.

ARTHUR W. WILKINSON.