

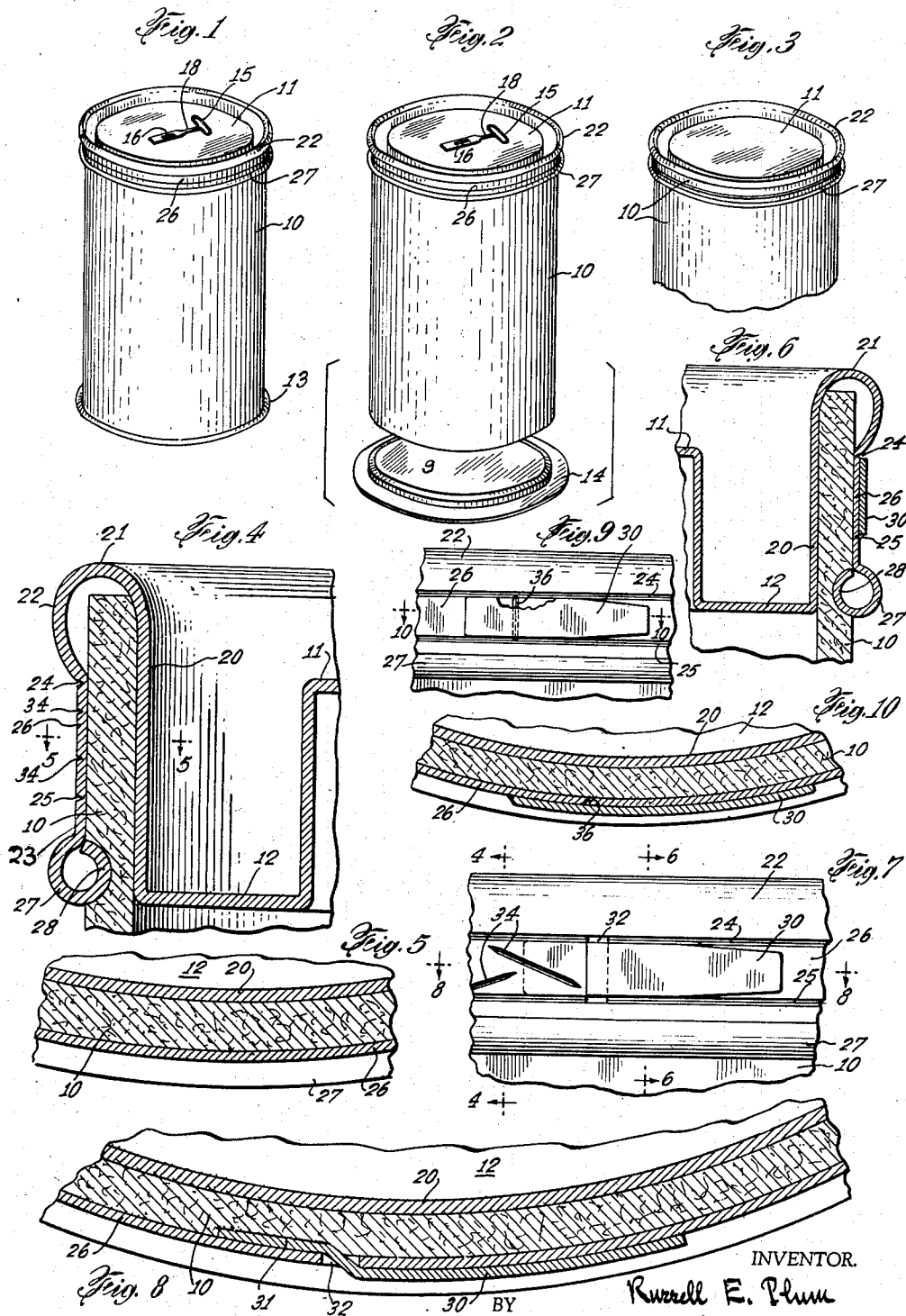
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PAPER CONTAINER

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PAPER CONTAINER

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This invention relates to containers and more especially to so-called paper containers having rigid securing closures at the ends.

A feature of the invention is the provision of an hermetically sealed paper container having metal end closures, one of the closures having a cylindrical overhanging metal rim, which has a fastening seal at the bottom thereof adapted to be impressed in the outer wall of the paper container, the cylindrical metal rim including means for producing a complete peripheral severance of the seal from the corresponding closure of the can, and preferably leaving a removable closure with a circumferential bead over-hanging the outer wall and providing a finger and thumb grip. In a preferred embodiment the means of severance may be a cylindrical ribbon formed in the over-hanging rim and defined by parallel lines of scoring with a tab facily bendable into a position for engagement and operation by a usual slotted can-opener key, which key is usually carried in a countersunk portion of the closure. The key preferably carries a small extension which is soldered to the top of the closure and the extension is separated from the key by a small connecting link which is easily broken when the key is lifted from the wall of the closure. In a preferred embodiment of the invention the closure is the usual two-flange closure applied to a cylindrical paper container and having two parallel walls, one inside, one outside, and connected at the top by a transversely disposed wall which lies on top of the paper container itself and firmly engages the rim of the container to seal it. One of the end closures may be permanently fixed to the paper container in manufacture and the other closure left unsealed or unfastened thereto so that the container may be filled with any desired contents at another place, and the edge of the unsealed closure may be a projecting flange that is easily turned and impressed in the outer wall of the container to form an hermetical seal for the contents of the can.

A double flange at the bottom and a double flange at the top when the container is finally sealed may all terminate in a geometrical cylinder parallel with that of the container so that when they are packed together for shipment the metal flanges on adjacent containers may engage each other and therefore prevent any warping or mutilation of the paper container itself, if this feature is desired. Between the upper flange and the sealing flange the wall of the rim is pressed on the outer surface of the paper container and a severance band may be formed by scoring parallel V-shaped grooves, one adjacent the upper flange and the other adjacent the lower flange. The top line of scoring lies close up to the top flange so that when the ribbon or

band is torn out in severing the top of the closure from the sealing flange any small burs on the lower edge of the remaining cover are inset under the overhanging top flange so that when the finger and thumb grip the top flange to remove the closure, it is impossible for these burs to contact the skin. In manufacturing the closure the vertical walls are drawn to leave the metal thinner than the metal of the rest of the closure so that the severance band is formed in a zone of the material which is thinner than the material of the rest of the closure thereby facilitating the tearing of the band of severance, thereby providing a band more easily torn away than is possible in the body of a tin can.

In forming the V-shaped scoring the inside chuck is gauged with reference to the scoring edge of the rolls so that it is maintained at any desired predetermined distance. In one form of tin plate used in manufacture, the thickness of the material may be .014 inch and in drawing the rim wall this thickness may be reduced approximately one-third.

A tab is provided at the end of the scoring band in the following manner: A vertical slot co-extensive with the band is formed and the end of the tab is inserted under the opposite end of the band of severance, before final rolling. The inserted end of the tab may be first dipped in solder before inserting it and the solder on cooling adheres to the inside edge of the band. The tab may also be soldered on the outside of the band and in lieu of the vertical slot a vertical line of scoring is placed adjacent the solder to provide a tighter hermetical seal for the container if desired. Or after the tab is inserted the vertical slot may be completely sealed with solder to give a tight seal. The contiguous walls of the rim of the closure may be so formed that the tab is held against the inside of the band without solder so that when the tab is turned on the key in opening the can it adheres to the end of the band and rolls the band up together with the tab. The key is held in the vertical position to roll the tab and the band of severance until the latter has been entirely severed from the closure. In normal operation of manufacture if care is used in scoring the edges of the band of severance the tin plate is not mutilated or broken through but completely covers all of the walls of the V-shaped grooves, but in any case if an extra precaution against rusting or corrosion is desired, the grooves may be dipped in a material adapted to prevent corrosion.

Other materials may be used besides metal in forming the closure but the flange seal at the bottom of the closure must be made of metal in order to furnish a strong sealing grip on the wall of the paper container. The term "paper container" is applied to any tubular container which

may be cylindrical, elliptical, or any irregular shape desired, in cross-section. It may be formed of convolutions, it may be laminated, spirally wound, of single or multiple ply, and fibre, Cellophane, or any cellulose-acetate material may be used. It may be lined or unlined and coated or uncoated and any other form or structure known in the art of paper-bodied containers may be used. The containers may be used for liquids, oleaginous substances, powders, hygroscopic or deliquescent material, coffee, food stuff, edible and industrial oils, and so forth. If it is desired to produce an unusually tight hermetical seal the edges of the container and the parts under the closure or elsewhere may be "doped" with any material known in the art of manufacture.

It is clear that the cover after removal has a smooth, protruding finger and thumb gripping circumferential flange and forms a complete unit so that it may be taken off and put back on to provide a dust-proof cover until the contents of the container are completely used.

Within the band of severance the usual supplemental oblique lines of scoring may be used to prevent the tearing of the band when it is rolled on the key. The heavier edges of the flanges adjacent the lines of scoring may also prevent the tearing of the material outside the band adjacent the lines of scoring. It is evident that when the can is sealed, after filling the container with contents, the danger of warping, or bending the can, which would arise from weakening the side walls of the can itself by scoring, is entirely eliminated because the scoring in the present invention is done on the rim wall of the closure where there is no appreciable pressure.

It is now clear that I am the first inventor to produce a paper bodied can, which is tamper-proof, lighter in weight, having a peripheral line of severance, having a line of severance which leaves a cover that may be used to keep out dust from the container and which is easily removed and replaced until the contents of the container are used up, having a means of severance that is key-operated with far less resistance and with less effort than is possible in any safe severing means heretofore known in the art, having the key mounted in a countersink in the closure and soldered, spot-welded, or otherwise attached thereto so that it is easily removed, and all parts of the severing means in such positions that they offer no obstacles or engaging protuberances in the normal handling of the can, having a structure that is strong and durable in handling and shipping and that is easily produced by simple manufacturing methods, and that is of low cost material throughout.

It will be understood that the proportions and the dimensions, or the material may be varied to produce different size containers using any modification within the knowledge of the mechanic skilled in the art.

Referring to the drawing which is hereby made a part of this specification,

Figure 1 is a front view looking down on a completed and filled container.

Figure 2 is a similar view showing the container as delivered by the manufacturer before filling.

Figure 3 is a front view looking down on a can after the severance band has been removed to provide a manually removable cover.

Figure 4 is a vertical section taken at the top of the closure showing only the left side.

Figure 5 is a section on the line 5-5 of Figure 4, looking down.

Figure 6 is a section taken on the line 6-6 of Figure 7 looking in the direction of the arrows.

Figure 7 is a side view of the top of the container showing the location of the tab.

Figure 8 is a section taken on the line 8-8 of Figure 7, looking down.

Figure 9 is a view similar to Figure 7 but showing a modification in which the tab is soldered on the outside.

Figure 10 is a view taken on the line 10-10 of Figure 9, looking down.

The container illustrated in the drawing comprises a cylindrical body member 10 formed of paper which has a metal two-flange top metal closure 11 having a channel 12 and a metal seal closure 9 having an outside sealing flange 13. An upstanding flat top is provided for decorative purposes. Referring to Figure 2, as delivered by the can manufacturer, the bottom closure 9 is left off and shipped separately and is sealed on the bottom of the body member 10 after the container has been filled. As shipped, closure 9 has a flange 14 left protruding straight out from the sides of the closure and after the can is filled it is rolled down into the form shown at 13 in Figure 1. A key 15, provided with a central lengthwise slot 16, is adapted to engage the severing band of the container. The key 15 is soldered or spot-welded on the top face of the closure 11 at 18 in the countersink thereof so that it is normally out of the way, but when it is desired to use the key it is lifted up and torn away.

Referring to Figures 4 and 6, the closure 11 has a flat top which in the secured position is countersunk slightly below the adjacent rim of the body member 10 and at the outer periphery it is bent down at right angles to form a channel 12 and an inner cylindrical vertical wall 20 of the same curvature as the inner wall of the body member 10. A curved outward extension 21 from the top of the wall 20 overlies the rim of the body member 10 and is continued outwardly and downwardly and inwardly to form a convex flange or bead 22. The extension 21 is swaged into a form so that when the band 26 is removed the remaining cover is easily taken off and replaced with the fingers. This flange 22 is so formed that it provides a lateral grip for the fingers and thumb of the hand. The metal forming the flange 22 is continued downwardly to form a cylindrical band zone 23 which presses on the outer wall of the body member 10. The metal forming the zone 23 may be drawn so that it is substantially one-third thinner than the flat top of the closure 11. In the outer surface of the zone 23 two parallel V-shaped lines of scoring 24 and 25 are impressed to define a peripheral band 26. The V-shaped scores are so formed as to leave any desired predetermined thickness of metal in the zone 23 between the inner surface thereof and the bottom of the V. It will be noted that there is no stress in any normal or abnormal use of the can in the zone 23 so that this improved structure permits the safe scoring of the metal to leave a minimum thickness in the zone 23 between the bottom of the lines of scoring and the inner wall thereof, thereby affording a band 26 which may be much more easily severed from the metal of the closure than would be possible if this band 26 were formed in the metal of the body itself of a tin can. At the bottom of the zone 23 the metal is

continued in an outer flange 27 which is bent inwardly at the bottom and curled under to form a sealing edge 28. It will be noted that the curled edge 28 is deeply impressed in the outer wall of the tubular member 10 to form a tight hermetical seal between the flange 27 and the tubular body member 10. As is well known in the art to further augment the hermetical sealing a suitable "dope" may be applied between the body member 10 and the inside engaging parts of the closure 11. If a hermetical seal is not required the flange 27 may be merely a peripheral fastening means to hold the closure 11 on the top of the body member 10.

Referring to Figures 6, 7 and 8 a tab 30 may have a projection 31 passing through a vertical slot 32 which divides the band 26 to form two ends adjacent the tab 30. The projection 31 may be held under the adjacent end of the band 26 by the pressure thereof or before inserting the projection 31 of the tab 30 through the aperture 32, the projection 31 may be dipped in solder so that after it is inserted and the solder cools it is securely held against the end of the band 26 which forms the initial point of severance when the band is torn from the closure. The projection 31 of the tab 30 might also be secured on the outside of the ribbon 26 and in lieu of the slot 32 merely a V-groove 36 substituted where a higher degree of hermetical seal is desired. After prying up the end of the tab 30 which normally lies below the outer edges of the flanges 22 and 27, it is inserted in the slot 32 and the key 15 is held in the vertical position and turned to the right. The band 26 rolls on the key and is simultaneously severed from the closure 11 along the lines of scoring 24 and 25. The tab may be of any desired size or form. Supplemental inclined lines of scoring 34 may be positioned on the band 26 and removed from the lines of scoring 24 and 25 so that if there should be any flaw in the metal of the band 26 which causes the band to tear, the line of tear would be stopped in one of these scores 34. The line of scoring 24 is near the edge of the flange 22 and likewise the line of scoring 25 is near the edge of the flange 27 so that any tearing of the band 26 outside the lines of scoring 24 and 25 is prevented.

Referring to Figures 3, 4 and 6, it will be noted that when the band 26 is torn from the closure 11 any microscopic or minute burs along the line of tear and left on the lower edge of the upper part of zone 23 below the flange 22 are entirely inside and it is impossible for the fingers or thumbs when gripping the flange 22 to lift the severed closure 11 from the top of the body member 10 to engage these burs, if any. It is also clear that after the band 26 is completely removed from the closure 11 there is left a top cover for the container provided with the finger-gripping flange 22, which can be removed and replaced to form a dust-proof cover when the contents of the can are used a part at a time. The flanges 22, 27 and 13 are preferably so designed that they all lie in a geometrical cylinder equidistant from the vertical diameter of the container so that when the containers are packed together side by side the flanges of one container engage and press on the flanges of another container and there is no stress or pressure from one container to another container directly on the paper body members 10 to mutilate the paper.

The method of manufacture involves preparing the tubular body member of any desired ma-

terial and in any desired size and form, then preparing the closures 11 and 12 of suitable form, size and material. The formation of the lines of scoring 24 and 25 and the piercing of the vertical slot 32 or the vertical scoring 36, is followed by inserting a tab 30 which has had its inner end 31 dipped in solder, under or outside the band 26. The final operation is sealing the flange 28 in the outer wall of the body member 10 and rolling the tab 30 into position within the flanges 22, 27.

Having shown and described a preferred modification of my invention and realizing that in view of my disclosure many modifications in structure, material, size and form will readily occur to those skilled in the art, I do not limit myself except as in the appended claims.

I claim:

1. A container comprising a tubular fibre body and a metal closure for one end of said body, said closure comprising a unitary structure composed of a central portion, a smooth cylindrical vertical wall surrounding the central portion and providing a sliding engagement with the inner wall of the container, a connecting part extending from the top of the vertical wall and overlying the rim of the container body and extending downwardly along the outer surface of said body and terminating in an outwardly projecting sealing flange adjacent the lower end of said cylindrical wall, the overlying portion forming an outwardly projecting manipulating flange, a tear strip joining said flanges, and an annular inwardly turned bead forming part of the sealing flange and impressed in the outer wall of the container body, whereby upon removal of the tear strip the seal is broken between the cover and the container body.

2. A container comprising a tubular fibre body and a metal closure for one end of said body, said closure comprising a unitary structure composed of a flat central portion which in the secured position is countersunk slightly below the adjacent rim of the container body and at the outer periphery is bent down at right angles to form a channel having an inner smooth vertical wall of the same curvature and in face-to-face contact with the inner wall of said body, a connecting part extending from the top of the vertical wall and overlying the rim of the container body and extending downwardly along the outer surface of said body and terminating in an outwardly projecting sealing flange adjacent the lower end of said connecting part, an annular inwardly turned bead forming part of the sealing flange and impressed in the outer wall of the container body, a laterally extending peripheral flange formed adjacent the top of the overlying rim portion of said connecting part and constituting manipulating means for the cover when severed from the container body, the lateral extension of said flange being sufficient to prevent the fingers from engaging the severed edge while manipulating the cover formed from severing the closure, means of severing the seal from the remainder of the closure, said means comprising a band formed in but separated from the remainder of the connecting part by parallel lines of scoring in the outer wall of said part, said vertical wall functioning as means for reseating the closure when used as a reclosure for said container body.

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