

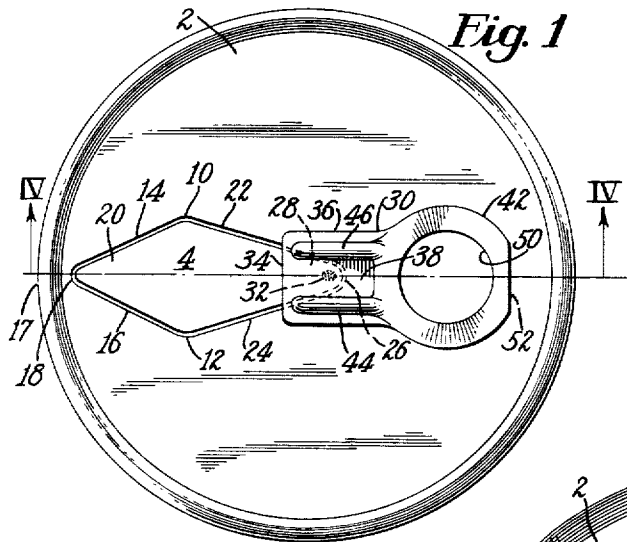
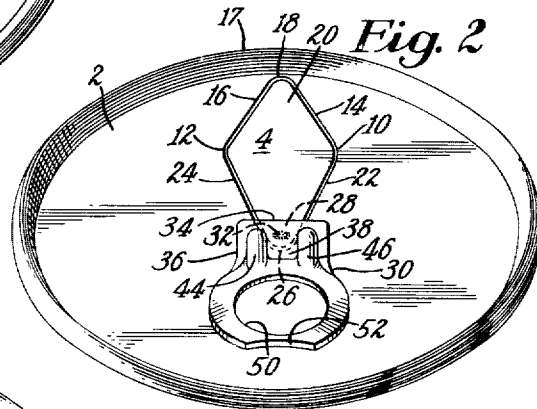
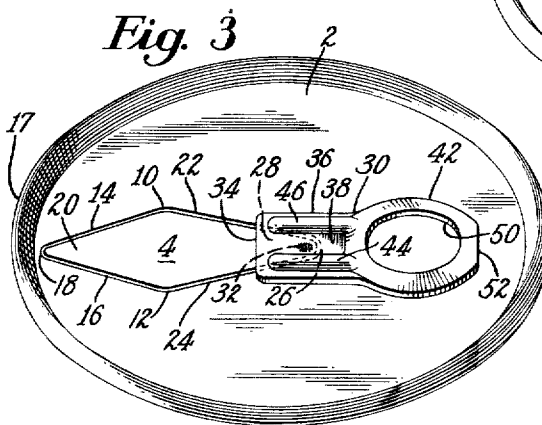
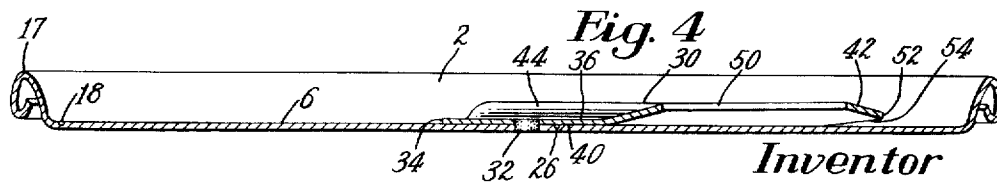
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CONTAINER COVERS WITH POURING SPOUTS

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CONTAINER COVERS WITH POURING SPOUTS
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This invention relates to container covers and more particularly to covers which have prescored areas designed to form pouring spouts when the areas are removed. The invention has particular merit when embodied in covers for cans intended to hold liquid contents, such as carbonated or malt beverages and the like. A conventional way of opening such cans to pour out the liquid contents is by the use of a puncturing tool which is often supplied when the cans are purchased. However, if no puncturing tool is available, the cans must be opened by conventional can openers which remove substantially all of the cover by cutting it from the can body just inwardly of its periphery. This results in a large opening being formed which is awkward to pour from and not only difficult but also dangerous to drink from because of the sharp edges and excessive size.

A successful pouring spout must be large enough to admit air to the container concurrently with pouring to replace the fluid being poured in order not to create a vacuum, otherwise a second opening is required. However, it must not be so large, particularly at the periphery of the cover as to be awkward to use. Secondly, the spout must be shaped to produce a stream of liquid that pours without splashing or spilling and which will not create excessive turbulence in order that the liquid, if carbonated, will not release its gas prematurely. Furthermore, a pouring spout for cans intended to contain beverages must be located near enough to the periphery and shaped to permit the popular practice of drinking the contents directly from the can.

It is, therefore, one of the objects of this invention to provide a cover for a container for liquids having a removable pouring area in its surface and means permanently attached to the cover for removing the area.

Another object of this invention is to provide a cover for a container for liquids having a removable pouring area which is shaped for pouring the contents from the container without spilling or for drinking the contents directly from the container.

In accordance with the above objects and as a feature of this invention, there is provided a metallic cover for a container having a single removable pouring area prescored in its surface and including permanently attached means for removing it to create a pouring spout, the spout being shaped and positioned on the cover to produce a continuous stream of liquid which will not unduly splash or waiver as the can is tipped and which will permit air to enter the can to replace the liquid being poured without the necessity of punching additional holes in the cover.

In United States Patent No. 2,978,140, issued April 4, 1961, I have disclosed a container cover which has a removable area prescored in its surface and a lever permanently secured to the removable area, said lever being rigid and employed as a lever of the second class to apply a prying force to the cover to break out a starting portion of the prescored area and initiate its being torn from the cover. While the said lever is easy to use, readily secured to the container and inexpensive to manufacture, it has its greatest utility on can tops which are made of light to average gage metal. However, containers which are intended for liquid contents, such as carbonated or malt beverages, are generally made of relatively heavy

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gage, high tensile metal to withstand high internal gas pressures caused by sterilization or by heating or shaking the contents. These covers being thicker and/or stiffer, a greater amount of force is required to break out and remove the spout from the cover surfaces.

Accordingly, as a feature of this invention, the portion of the pouring spout area which is to be initially broken out of or ruptured from the cover surface, being the location where the greatest stress must be applied, is defined by score lines converging inwardly and joined together in a relatively small apex or radius of curvature. An opening lever is secured to the spout close to the converging score lines. After the inner or starting area of the removable portion has been broken open instantaneously by lifting the free end of the lever and utilizing its full mechanical advantage to pull up the inner end of the spout in the manner taught in my above-identified patent, tension applied to the lever will cause the cover to tear along the score line in a direction toward the periphery. If the score lines were joined at the periphery of the cover along a straight line or a curve of large radius, tearing would be inhibited and the last remaining portion of the tear spout would have to be pulled or jerked from the cover rather than torn. This could cause inadvertent spilling or splashing of the contents.

Accordingly, as another feature of this invention the score lines which define the outer portion of the pouring spout again converge and are joined together near the periphery in a small apex or radius of curvature. This permits the removable portion to be torn by uniform force out to the periphery of the container and reduces the chance of spilling or splashing.

As stated above, containers which are intended to be used for carbonated or malt beverages are made of heavier stock to withstand the internal pressures and require stronger levers to open them.

Accordingly, another feature of this invention is the provision of a lever of the second class which may be inexpensively made from flat stock by stamping or the like but which is appropriately reinforced at the areas of greatest stress concentration for added strength. The lever has a lifting portion, the cross section of which is contoured to provide resistance to bending and which is shaped and located relatively to the cover to facilitate gripping it.

In accordance therefore with these later objects there is provided a second class lever with longitudinal reinforcement in the area of greatest stress concentration and a lifting portion comprising an annular upwardly contoured continuation of the reinforcement, the end of the lifting portion being spaced from the surface of the cover to facilitate its being raised.

The above and other features of the invention, including various novel details of construction and combinations of parts will now be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be understood that the particular cover embodying the invention is shown by way of illustration only and not as a limitation of the invention. The principles and features of this invention may be employed in varied and numerous embodiments without departing from the scope of the invention.

In the drawings,

FIG. 1 is a top plan view of a container cover having a pouring spout and an opening lever embodying the invention;

FIG. 2 is a perspective view thereof;

FIG. 3 is a perspective view at right angles to FIG. 2; and

FIG. 4 is a sectional view on enlarged scale taken on the line IV—IV of FIG. 1.

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This invention is herein illustrated as embodied in a circular metallic cover or can top 2 adapted to be secured by double seaming or any other convenient means to the body of a container. A removable area 4 is defined in the upper surface 6 (FIG. 4) of the cover 2 by score lines 10 and 12 and when removed, forms a pouring spout. Outer portions 14 and 16 of the score lines 10 and 12, respectively, converge toward and are joined together near the periphery 17 of the cover in an apex or rounded junction 18 formed by a curve of small radius. The area 20 of the pouring spout 4 defined by the score line portions 14 and 16 is hereinafter sometimes referred to as the outer or pouring area of the spout.

Portions 22 and 24, of the score lines 10 and 12, respectively, converge in a direction inwardly of the periphery and are joined together in an apex or rounded junction 26 also having a small radius of curvature. The junction 26 defines the inner extent of the pouring spout 4. The portion 28 of the spout 4 which is defined by the score line portions 22, 24 will hereinafter sometimes be referred to as the inner area, or air admitting area of the spout. The entire spout 4 has the general configuration of an elongated diamond extending from the periphery in a direction inwardly of the cover. The junction 26 between the score line portions 22, 24 is preferably located more than half way across the surface of the cover and the inner portion 28 of the spout includes the center of the cover. It will be appreciated that the score lines 10 and 12 form essentially a single continuous score line defining the area to be removed which need not be diamond shaped nor need the score line junction have to be rounded or pointed but may assume other shapes or configurations and be within the scope of this invention.

A rigid class two lever 30 is permanently secured to the inner portion 28 of the spout 4 by a spot weld 32, or other convenient means. The lever has, at one end, a fulcrum 34 which, when the lever is positioned on the surface of the cover as herein shown, is wider than and extends transversely of the score line portions 22, 24 and bears on the cover surface laterally of the score lines. The lever includes an intermediate portion 36, an interior portion 38 of which is flat so that its lower surface 40 (FIG. 4) will engage firmly the cover surface 6 to be held thereto by the spot weld 32. The lever also includes a lifting portion 42 at the end opposite the fulcrum which will be described in more detail hereinafter. Extending longitudinally through the intermediate portion 36 is a pair of reinforcing ribs 44, 46 located laterally of the flat interior portion 38. The reinforcing ribs 44, 46 may, if the lever is of flat stock, be formed by stamping or by appropriate machining, if the lever is not stamped. The greatest stress is applied to the intermediate portion of the lever along a line parallel to the flucrum 34 through the point wherein it is secured to the cover by the spot weld 32. Therefore, the reinforcing portions are arranged longitudinally of the lever to add rigidity transversely of the line of maximum stress.

The lifting portion of the lever 42 is generally circular in form having a central aperture 50 through which a finger may be inserted after the lever has been initially raised. The lifting portion 42 is generally conical in cross section, as seen in FIG. 4, being contoured upwardly from the lower surface 40 of the lever. This configuration adds rigidity, offers resistance to bending and facilitates the lever being lifted and pulled. The lifting portion extends as an annular continuation of the longitudinal ribs 44, 46. The cutoff end 52 opposite the fulcrum is to create an arcuate conical section on the lifting portion 42 to permit a fingernail to be inserted to initiate lifting. It will also be seen in FIG. 4, that the lifting end adjacent the cutoff portion 52 is elevated, as shown in 54, slightly from the surface 8 of the cover also to facilitate being initially grasped.

To remove the area 4 and create the pouring spout, the

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end 52 of the lever is initially raised from the surface of the cover. The lever being of the second class, causes upward lifting force to be applied to the spot weld 32 as the flucrum 34 simultaneously bears on the cover surface. Since the fulcrum is wider than and extends laterally of the score line portions 22, 24 defining the inner area 28 of the spout 4, pressure is distributed across the spout area so that the lever or the spout area will not be depressed into the container. The junction 26 being a generally pointed apex or curve of small radius causes stress to be concentrated at this point and the spout area breaks open instantaneously. Upon continued pulling of the lever the area 4 tears toward the periphery 17 along the outwardly diverging score line portions 22, 24. Upon reaching the converging portions 14 and 16 of the score lines, the tear continues until it reaches the junction 18 whereupon without additional jerking, the spout is clearly torn from the cover 2. Because the lines 14 and 16 are joined along a generally pointed apex or a small radius of curvature 18, only a small amount of resistance is offered and the contents will be spilled or splashed.

Removal of the spout area 4 leaves a substantially diamond shaped pour out opening in the cover surface. When the can is tilted a uniform stream of liquid will pour from the outer portion 20 of the spout. Because the inner end or air admitting area 28 of the spout extends more than half way across the cover and since the area 28 includes the center of the cover, when the can is tilted only slightly, the normal air space within the can shifts to the higher side and additional air can enter the container to replace the liquid being poured. This alleviates the necessity of puncturing the can in a second place as is frequently the practice with cans containing liquids, particularly the non-carbonated types. By tilting the can still further, a greater flow of liquid comes from the opening, but because of the shape of the spout, the stream is not interrupted but still is completely within the control of the person doing the pouring. It will also be noted that the spout is designed so that the contents may be drunk directly from the can without causing spilling.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A metallic cover for a container having an elongated area prescored for removal from its surface to provide a pouring spout, said prescored area comprising less than half the area of the cover and including an outer pouring area defined by score lines joined near the periphery of the cover and an air admitting area defined by portions of said score lines extending in a direction inwardly of the periphery and joined at a central area of the cover, a rigid second class lever located on the cover, said lever having one end which is forcibly engageable with the cover when the opposite end is lifted, means permanently securing the lever to only the removable portion of the cover, said securing means being spaced a slight distance from the cover engaging end of the lever and a substantially greater distance from said opposite end to gain a mechanical advantage, said securing means joining the lever to the cover only at a single location which is within the score lines in close proximity to where they are joined at the central area of the cover, whereby when said opposite end of the lever is raised the mechanical advantage of the lever causes the permanent securing means to apply concentrated lifting force to the removable area and initiate its being torn from the cover to provide said pouring spout.

2. A metallic cover for a container having an elongated substantially diamond shaped, area prescored for removal from its surface to provide an air admitting pouring spout, said prescored area comprising less than half the area of the cover, the major axis of the removable area extending substantially radially of the cover, said removable area including an outer tapered pouring area defined by score lines converging toward and joined at

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an outer apex near the periphery of the cover and an inner area including the center of the cover defined by portions of said score lines which converge and join at an inner apex located more than half way across the cover to form an area for the admission of air to the container simultaneously with its contents being poured from said pouring area, a rigid second class lever located on the cover in alignment with said axes, said lever having one end which is forcibly engageable with the cover when the opposite end is lifted, means permanently securing the lever to only the removable portion of the cover, said securing means being spaced a slight distance from the cover engaging end of the lever and a substantially greater distance from said opposite end to gain a mechanical advantage, said securing means joining the lever to the cover only at a single location which is within the score lines in close proximity to where they are joined at the inner area of the cover, whereby when said opposite end of the lever is raised the mechanical advantage of the lever causes the permanent securing means to apply concentrated lifting force to said removable area to initiate its being torn from the cover to provide the pouring spout.

3. A metallic cover for a container having score lines defining an area for removal from its surface, a rigid second class lever on the cover adapted to break open instantaneously the removable area, said lever having a substantially flat area centrally located near one of its ends, which end is forcibly engageable with the cover when the opposite end is lifted, means in the flat area permanently securing the lever to only the removable portion of the cover, said securing means being spaced a slight distance from the cover engaging end of the lever and a substantially greater distance from said opposite end to gain a mechanical advantage, said securing means joining the lever to the cover only at a single location which is within the score lines defining the removable area of the cover and in close proximity to said lines, reinforcing ribs formed longitudinally of the lever through its intermediate portion and extending toward said cover engaging end on both sides of said centrally located flat area at least as far as and laterally of said permanent securing means, whereby when said opposite end is raised the mechanical advantage of the lever causes concentrated lifting force to be applied through said permanent securing means to pull up on the removable area and to initiate its being torn from the cover and with said reinforcing ribs tending to resist bending of the lever particularly at the flat area where said permanent securing means is located.

4. A metallic cover for a container having score lines defining an area for removal from its surface, a rigid second class lever on the cover adapted to break open instantaneously the removable area, said lever having a substantially flat area centrally located near one of its ends, which end is forcibly engageable with the cover when the opposite end is lifted, means in the flat area permanently securing the lever to only the removable portion of the cover, said securing means being spaced a slight distance from the cover engaging end of the lever and a substan-

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tially greater distance from said opposite end to gain a mechanical advantage, said securing means joining the lever to the cover only at a single location which is within the score lines defining the removable area of the cover and in close proximity to said lines, said lever having lateral elongated portions contoured upwardly relative to said flat centrally located area and extending generally lengthwise of the lever on both sides of said flat area and said permanent securing means, whereby when said opposite end of the lever is raised the cover engaging end bears downwardly on the cover using the full mechanical advantage of the lever to apply lifting force through the permanent securing means to initiate the removable area being torn from the cover surface with said lateral elongated contoured portions of the lever offering resistance to the lever bending between the lifting portion and particularly through the flat area where said permanent securing means is located.

5. A metallic cover for a container having an elongated area prescored for removal from its surface to provide a pouring spout, said prescored area comprising less than half the area of the cover and including an outer pouring area defined by score lines joined near the periphery of the cover and an inner air admitting area defined by portions of said score lines extending in a direction inwardly of the periphery and joined at an interior area of the cover including its center, a rigid second class lever on the cover adapted to break open instantaneously the removable area, said lever having a substantially flat area centrally located near one of its ends, which end is forcibly engageable with the cover when the opposite end is lifted, means in the flat area permanently securing the lever to only the removable portion of the cover, said securing means being spaced a slight distance from the cover engaging end of the lever and a substantially greater distance from said opposite end to gain a mechanical advantage, said securing means joining the lever to the cover only at a single location which is within the score lines in close proximity to where they are joined at the interior area of the cover, reinforcing ribs formed longitudinally of the lever through its intermediate portion and extending toward said cover engaging end at least as far as and laterally of said permanent securing means, a lifting portion on said opposite end of the lever which, when raised, causes the force of the full mechanical advantage of the lever to be concentrated at said permanent securing means to pull up the removable area and initiate its being torn from the cover to provide said pouring spout and with the reinforcing ribs tending to resist bending of the lever particularly through the flat area where the permanent securing means is located.

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