

Easy Open Pull Tab

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PROBLEM

There are many people in the world who bite their fingernails. Health risks and public annoyance aside, this causes a disability in opening food packages with metal pull-tabs, such as soft drink cans. Since about 100 billion soft drink cans are produced in the U.S. every year (about one per person per day), it's obvious that these cans are common in every refrigerator (Kyung-Sun). They should be easy to open, and to many they are. However there is still room for improvement to the design, as nailbiters still find some cans difficult to open. Some soft drink can tabs have been rounded at the end, leaving a tiny space for leverage, but this space is only large enough for a strong fingernail. If the person trying to open the package has no such fingernail, he will have a very difficult time getting to his favorite soft drink.

A recent innovation in canned soup packaging has used pull-tabs to make can openers obsolete. The larger, heavier design of these poses an even more significant challenge to nailbiters than soda cans. The geometry of the pull tab on these larger cans causes the tabs to resist upward force even more strongly than familiar soda cans. The shape of the score that the tab is supposed to break also affects the amount of force necessary to open the can. The score making the opening in soda cans is ovoid or elliptical, while on a soup can it is a wide arc, part of the overall circumference of the can. In addition, the part of the aluminum that needs to bend back to open a soda can is narrow (less than half an inch), while on a soup can it is a chord of the circumference of the can, which is at least an inch and isn't scored at all. This

causes a rounded fold that resists force more than a scored, flat fold like on a soda can. All these geometrical factors add up to make a difficult can to open.

PROPOSED SOLUTION

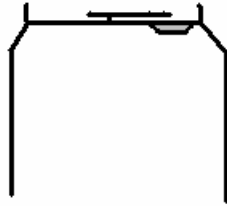
We propose that manufacturers of these cans make a hemispherical indentation in the can top below the end of the pull-tab, allowing room for a fingertip without a nail. This would allow nailbiters, or even people who just want to avoid the discomfort of using a fingernail as a lever, to open these cans easily.

CURRENT MARKET

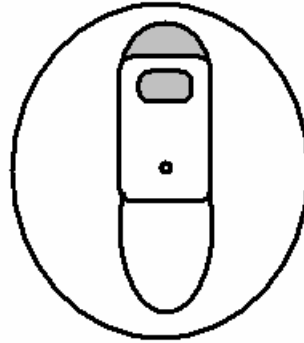
There are gadgets available in the consumer market today that deal with this problem downstream of the manufacturer. (CanCovers.com) These are basically plastic levers, sometimes containing metal fittings at the end, designed to fit under the pull-tab and open the can at least part way without using fingers directly. These probably appeal most to elderly people who lack the strength or dexterity to open a can the usual way, or to women who want to preserve their manicures. They cost a few dollars and take up space in kitchen drawers, negating the whole point of pull-tab cans: tool-free opening. The addition of a gap below the tab would help make tools unnecessary, and accomplish the goal of truly easy-open cans. With this minor design change, the food industry could show that it cares about its consumers enough to spare them from making additional purchases like these gadgets.

Soda Can

Side View Cross Section

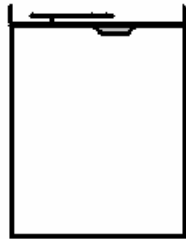


Top View



Soup Can

Side View Cross Section



Top View

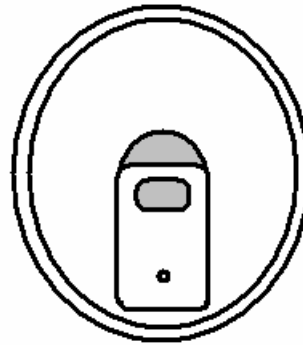


Figure 1: Diagram of the finished packages as we propose.

CURRENT MANUFACTURING

When it comes to use of aluminum beverage cans, Anheuser-Busch is one of the largest consumers. Seventy-five percent of this company's beverage can lids are produced by a company called Metal Container Corporation (MCC). MCC produces twenty-eight billion lids in an average year ("Anheuser-Busch Packaging"). Like most of its competitors, MCC uses a simple, standard process when it comes to producing these lids. Lids are produced separately from the main body and then applied during the fill process.

Typical carbonated soft drink cans are made of two pieces, one making up the sides and bottom, and the lid on top. Lids are commonly made of a different alloy than the aluminum sides and base because the flat shape provides less resistance to pressure than the concave bottom and rounded sides. Therefore its strength must come from the thickness and composition of the metal. Because it contains more magnesium and less manganese than the body, the beverage lid is stronger than the rest of the can (Kyung-Sun).

The first step in the lid-making process is to stamp out the aluminum circles that will become the tops. In the case of most beverage cans, the diameter of the top is 2.1 inches. At the same time as stamping, the lid is formed into its appropriate shape, including the curved lip that will join to the can body, as well as any contours. After the lid is cut from the metal stock, it is then stretched upward slightly and drawn by a machine to form a rivet. This rivet is where the pull-tab attaches. After this rivet is produced the pull-

tab is attached and secured. The lid is then scored to allow for easy opening by the consumer.

When the assembly is finished, final inspections are made to ensure a leak- and defect-free lid, ready to be joined to the can body (Visypak). One process is used to create lid to cans of all shapes and sizes. Some changes may be necessary, such as with soup cans. They do not need to score the same way as they do with beverage cans.

CHANGES TO MANUFACTURING

Our proposal would require a change in only one small step of processing. The basic shape of the lid is created when the lid is initially cut, stamped and stretched. A manufacturer could create a die around which to stretch and fold the lid, allowing for the addition of the small groove. There is no need to add an extra step into the process. Just by adjusting the stretch and punch die a change can be made. The only cost created for a company to use such practice would be the cost of creating a new die. There is no need to purchase more material or a different type of metal for the lid. The change can be made with one simple alteration of an already existing process.

REASONS TO MAKE THIS CHANGE

Because of the difficulty of opening such packages as soup cans or other “easy open” cans, they are less appealing to the elderly population. The makers of Progresso soups do not recommend opening these types of cans with a can opener, so the only option is wrestling with the pull-tab (General Mills, Inc.). Elderly people with weaker fingers might prefer to open a can with an electric can opener, which requires the least strength and dexterity in the fingers. The extra space provided by our suggestion will allow people with weak fingers or fingernails to open these cans more easily and comfortably.

If a manufacturer decided to make this change, its market share could increase. While the change might be difficult to advertise to consumers because of its subtlety, consumers would notice the difference the first time they opened this new type of can. It is a commonly held belief in the food industry that the public will buy anything once, and the job of marketing and design professionals is to use that opportunity to make sure the consumer comes back to that brand. If done correctly, this minor adjustment could make a huge difference in the marketability of any canned product.

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