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Screwdriver redesign

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Abstract

In the world of the industry you have sought the best ways to get the customer a good product without it being affected, as in the case of bottles closed by crown caps, with the intention that the product arrives intact to the consumer, the desire to achieve this objective has been shelved several times ergonomic design. What we thought is to do a redesign of the screw-on cap in the area that the consumer takes to rotate the same, with the redesign what is sought is that anyone who wants to open a bottle it succeeds regardless of whether it is a person with problems joint caused by diseases, old age, even healthy people who are difficult to apply enough force. The elliptical shape allows a better grip without the need to completely close the hand to exert force facilitating everyone who can open a bottle with screw-on cap. Provide people with hands to open a bottle with screw-on cap is closed. By using everyday materials for the prototype. You want to significantly improve the speed with which a bottle or container that has a screw-on cap, due to ergonomic design that allows better support in hand is uncovered. People with little force because of their age can not achieve unclog independently a bottle with screw-on cap or people with hand problems due to diseases such as rheumatoid arthritis that affects 90% of the cases at hand, they lose strength in hands, is why we thinking about redesigning the screw-on cap to apply less force needed to rotate, focusing on the support points of the index and ring fingers. It has added an extension to the design of the screw-on cap elliptically to achieve redesign resulting in an uncovered more quickly and with less effort, allowing older adults and children open a bottle in a short time and with less effort.

Screw cap, ergonomics, polypropylene, bottles, arthritis

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Introduction

With the creation of the PET bottle and the creation of various bottles containing beverages or medicines, the need for a lid to keep the contents in the container was created, the cap was designed which was made of polypropylene, a plastic more resistant than PET , Which allowed the bottle to be opened by just turning, the problem arose when some people could not turn it on due to their advanced age or problems caused by diseases such as rheumatoid arthritis, which in most cases affects the Hands, this makes people need help to open a bottle or jar that has a screwdriver integrated, depending on someone to help.

We have redesigned the cap to be considered as an option that integrates the bottles, because its design will allow people with problems in the hands, whether of little or great gravity, can easily open a bottle while maintaining its independence (Stellman). A comparison of the conventional corkscrew make your design in circular which causes it to slip into the hands.

The design of the circular cap should be respected to maintain optimum sealing of the bottle and prevent the liquid from being spilled, adding two extensions at both ends in the form of a half-inch ellipse and the same polypropylene material. Due to the current circular design of the cap, people with little strength in the hands cannot turn it and therefore cannot open the bottle quickly and with little effort, in Mexico the number of people with joint problems increase each Year, diseases such as rheumatoid arthritis increase in adults as people in their juvenile stage, considering this has been proposed the redesign of the cap to make it easier to open a bottle that has integrated one of this, even in jars that have integrated taparrosca To keep the contents closed in a hermetic manner.

Considering that the number of people with hand problems increases each year, the need for a redesign of the caparrosca is expected, this proposal is expected to be considered by some bottlers in the country.

Development of sections and sections of the article with subsequent numbering

Need to redesign the screw cap

A person who cannot easily open a bottle that is closed by a screwdriver is a daily problem for thousands of people, due to their young age or advanced adulthood.

A worrying problem in Mexico is the number of people who have their hands affected due to diseases such as rheumatoid arthritis, which affects in most cases the hands of the patient, in 2015 alone the numbers of people affected by this disease was Of one million six hundred thousand people that the ages go of the 20 to 50 years.

"Rheumatoid arthritis, considered a systematic inflammatory disease, results in other serious conditions that even cause death and more than 80 percent of patients show depression and anxiety, which is detrimental to their recovery" (González, 2015)

Clogs used in daily life

The large production of PET bottles has also required a large number of screwdrivers to be able to keep the bottle closed and its contents intact (PLASTIMAR, 2009), the conventional screw cap is made of polypropylene, Heat has a circular shape and what allows it to fit with the PET bottle is the screw that has both the cap and the bottle as shown in figure 2.

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They were designed with the main purpose of keeping their contents intact until the bottle was opened, but its circular design only makes it difficult to open a bottle not only to people with problems in their hands but also to healthy people too.

Redesign of the screwdriver

It was observed the need to redesign the conventional cork that is in most bottles containing beverages to perform this.

The design was carried out to carry out the prototype of the modified corkscrew, focusing on the points of support of the hand where It could be made to rotate in a natural way and with the least possible effort, the prototype was added extensions in the original cap to achieve a figure close to an ellipse as seen in figure 3.

In this way lengthening the size of the cap The gripping point is greater by rotating it in two ways, placing it between the index finger and annular or in a conventional manner with the simple force of the fingers without having to close them to form a fist, since many people do not have the capacity to Flexing them for joint problems, with this the proposed design can be achieved an ergonomic plug that keeps the consumer in a more comfortable state when using a bottle with corkscrew

Inclusion of Graphs, Figures and Tables-Editable

Figure 1 Screw caps used in PET bottles

Figure 2 Taparrosca redesigned to achieve its ergonomics

Results

We obtained a screwdriver that allowed us to open the bottles with less effort however the material with which the prototype was made was not very resistant because it was made with plasticine hardened with lacquer, with the correct material that would be polypropylene would have been more resistant achieving The objective and in addition to reducing its fragility.

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Conclusions

The result with the redesign of the cap was favorable because it allows to facilitate uncovering a bottle, the uses of this design can be adapted to bottles or containers that contain corkscrew, in this way more people who have problems in the articulations of the hands can Performing such a simple task as uncovering a bottle or bottle, could be improved using recycled polypropylene materials because this would reduce the environmental impact, a slimmer design and performed with the proper procedure would give us a more cosmetic tap without leaving aside The purpose of the redesign.

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