Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: The Advanced Can Opener
Group Name: 3-15
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1. Problem Finding

(The beginning…)

Identify a problem you would like to solve. You may want brainstorm for problems using different approaches eg thematic, survey or general brainstorming etc.

1 A Document a list of problems you have identified. Your documentation should show clearly how your group came up with the problems.

We decided to focus on people face in their daily lives. The first problem we have identified is that it will be inconvenient and frustrating when the tab breaks off when drinking from soda cans. **(General Brainstorming)** The second problem we identified is the fact that students find it hard to do homework and sometimes need help. **(General Brainstorming)** The third problem we have identified is the fact that there are long queues and consumers have to wait for quite a long period of time in order to pay for their food. **(Survey)** The last problem is the fact that in some shops, items on the shelves are unorganised and shoppers take forever to find what they need. **(Survey)**

1 B You should have selected a problem based on some considerations. Identify and justify these considerations.

The considerations behind the problems are **the number of people that are affected by the problem, the consequences brought about by the problem** and **the feasibility of the problem.** We want to focus on some daily problems that we can solve and then we found out this problem which the tab on soda cans breaks easily and it becomes hard to open the can. Drinking from soda cans is a daily thing that most people will do but the tab which is used to open the soda can is not very secure and may fall off before the can was opened. Thus, it becomes very hard for the person to drink from the can. This can cause a lot of frustration as the person can not drink from the can.

1 C List some problems your group would like to solve. List also the considerations for selection of problem in the evaluation grid below. Score the considerations, against the problems, with points 1 (least significant) to 4 (most significant). Sum up the total points for each problem. Identify that problem you would like to solve.

Problem Evaluation Grid

*add more columns and rows where necessary

Considerations for Selection	Problems			
	#1. It is hard to drink from cans when the tab breaks off	#2.Long Queues	#3.Items on shelves are unorganised	#4. Student find it hard to do their homework
Consideration 1: Number of people affected	4	3	1	2
Consideration 2: Consequences brought about by problem	2	3	1	4
Consideration 3: Feasibility of problem	4	2	3	1
Total Score	10	8	5	7

Problem: It is hard to drink from cans when the tab breaks off

2. Define the Problem

(This is one…)

Now that the problem has been identified. It is important to gather information on the extent of the problem and/or evaluate the usefulness of existing solutions based on *some criteria*. You may need to conduct surveys and research on existing solutions.

2 A Extent of problem (Research and discuss the problem and write down the problem statement)

The problem that we have identified is the fact that it is very frustrating and annoying when you buy the drink but you can not drink from it. When we try to open the can, the tab on the can might break off as it is not securely placed on top of the can, which can cause the tab to break off easily. This makes opening the can without a tab hard and it can cause frustration as the person can not drink the liquid from the can. The person usually would throw away the can as they couldn't open it and drink, wasting a can of drinks and money.

2 B Compare and contrast the existing or similar solutions.

One of the currently existing solutions that is similar to our invention is using a can opener and slicing open the top of the whole can and then pour the liquid into a cup to drink. This however, has great disadvantage as the edges are jagged and might injure one's lips when drinking directly from it. There might also be people outside who don't have cups and only drink directly. Another problem is that the can opener is so big that most people do not carry it around and makes it hard to open the can in the first place. It is also very inconvenient for people to bring it around and it is very tedious for people to bring a cup wherever they go just for a drink.

Another solution to this problem that is similar to our invention is using a screwdriver or something sharp to poke a hole on the top of the can and then pry the little piece of aluminium off to drink. However, its disadvantage is that the edges are jagged and will injure one's lips when drinking from it. This causes great frustration to those who are drinking this outside and do not have a cup. Also, not a lot of people will bring a screwdriver wherever they go.This sharp item is also not child-friendly , younger children may not be able to bring something sharp around wherever they go and it may hurt themselves.

3. Your BIG IDEA#

(Developing the idea….)

Write down your proposed invention and why you want to do it. State also how you think your proposed invention is better.

3 A Describe your proposed invention.

Our proposed invention is like a C shape where it is shorter on the ends and can be bent. It can also be stretched or shortened depending on the height of the can. It also has a sharp tip to penetrate the thin sheet of aluminium on top of the can.

3 B Explain the purpose of your proposed invention and the potential benefits to users.

The purpose of our proposed invention is that it can help to open the can when the tab falls off before the can is open. Our proposed invention is to make it easier for the users to open can tabs and need not fear that the can tabs are going to fall off and cannot open the can. For the people who do not have a table or any platform to put their canned drinks could also use this as like a holder to prevent their hands from being chilled by the cold metal can.

3 C In what ways would your proposed invention be different and/or better than existing solutions, if any?

Our proposed invention is better than both of the current existing solutions as the existing solutions The can opener is big and inconvenient to carry around. Both the can opener and screwdriver makes the can opening jagged and can cause harm to a person's lips when he drinks from it.Some of these can openers are also difficult to use and need a lot of strength to open the can. Our invention however would not cause the can to have a jagged edge and allows the person to drink directly from the can and not hurt his lips. It is also smaller and lighter than the can opener which makes it easier to carry around. It is also multifunctional such that it can open a can no matter with can tab or no tab and at the same time it can become a can holder preventing your hands from being chilled

3 D What are some problems you expect in the course of your proposed invention?

We expect some problems when constructing the prototype, as we wanted to use metal to build the opener, but it is more difficult to craft the object. Another problem we expect to face is determining how long our cup holder is going to be, as it will have to fit all the cans.

3 E What and when are the major milestone (project timeline) in your invention?

We would start thinking on how to improve our invention. Then, we hope that by mid-June, we would be done modelling our design and would start building. By the end of July, we would have gotten our prototype ready and we would be filling up the logbook along the way.

#***must be able to be constructed based on current / emerging technologies, must not violate the laws of Science or go against the laws of nature.***

4. Construction or Modelling Process*

(This first… then that…)

You are now onto the fabrication of your prototype/ product. You need to select material and understand how to put them together so that your prototype/ product can perform its function.

4 A Explain how and why the materials were chosen for the prototype/ product of your invention

4 B Explore these considerations that may guide the construction of your prototype/ product.

4 C Document the prototype/ product development stages. You may use drawings, photographs or videos.

OR

If construction of the prototype is not possible, then you have to create an animation / as a proof of concept that it can be applied in a bigger scale.

4A Explain why construction of a prototype is not possible and the proof of concept is needed in your case.

Due to Covid-19, we did not have enough time to construct the prototype as we cannot meet up, so we have resolved to create a video.

4B Briefly explain how the video / animation can effectively show how your invention will work and the different considerations.

In our video, we will explain how our prototype will work and what it will look like. It will be on paper and it will be drawn as the actual dimensions of the prototype. Though we do not have an actual prototype, we will try and make the blueprint version of our prototype as detailed as possible.

Warning:

- *Video / animated simulation only if prototyping is absolutely no possible.*
- *Video / animated simulation must be logical and convincing that the invention works.*
- *Constraints must be clearly included in the logbook or the project will be heavily penalized.*

5. Modification and Evaluation

Upon the completion of your prototype/ product, you would need to see if it is working the way you want it to work. Check if your product has met the identified purpose and the user's need**;** and implement necessary modifications and improvements. This process may take several rounds.

5 A Write down your prototype/ product test criteria and check against it if it works. Identify areas of weakness for modification. Indicate the test iteration and date of test.

Test Iteration:	Tick			Remarks
Test Date:	Pass	Fail	Potential Failure	
Test Criteria 1				
Test Criteria 2				
Test Criteria 3				

** Repeat table for next test iteration

OR if you are creating an animation / video to show how your invention will work, write down the different possibilities / outcomes [success or failure) if a full-scale prototype is to be constructed.

If a full-scale prototype is to be constructed, there might be a construction problem where we do not know how to construct the prototype, as it is a mixture of metal and plastic. Another

problem we might face is that we do not know if our invention will actually be able to hold the can as the can might slip out when the invention does not fit tightly. We also do not know whether it is easy to poke a hole in the can to drink.

6. References

Read http://www.bibme.org/citation-guide/apa/ on how to cite references.

6 A Cite the references you have used for your project work. Your source of reference should come from different types (eg books, magazine, websites, journal articles, interview, photographs, product brochure, reviews etc.)

https://www.awesomeinventions.com/everyday-problems/

70 Everyday Problems That We All Know And Hate. (2019, March 04). Retrieved June 13, 2020, from https://www.awesomeinventions.com/everyday-problems/

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