How to design an attractive disinfectant dispenser for children that stimulates them to use it properly?

Figure 1. The Bunfly

A children-centred disinfectant dispenser is designed commissioned by Menno Brok and Erik Molendijk. Menno is the owner of the metal company Bromedo and Erik from StormyB, a firm in the optimalisation of applications and websites. Both wanted to bring a new dispenser to the market including children 4-till-12-years old instead of adults as most dispensers do, to solve the problem of having only boring dispensers.
To achieve this, research is done to create a mechanism and outer shape of the dispenser, which is created by Galina Veldkamp, a student of Industrial Design Engineering at the University of Twente in Enschede, the Netherlands. The research is split into three main questions, What are the qualities of a good dispenser?, How to attract children and stimulate proper use? and How to design the dispenser?

The qualities of a good dispenser covers the need of a dispenser, location for a dispenser and various types of disinfectant. These subjects are covered based on desk research, visual research for which stores and supermarkets are visited, and a survey for the children and their parents. Based on this information it is concluded to create two foot-pedal dispensers, which are both similar in appearance but smaller compared to the current dispensers and they should be appealing with the use of colours, a different shape, being informative and playful. To emphasize the usage, it is advised to provide an advice about the location to the customer, which is already created and can be found in the thesis. On top of that, the disinfectant should be approved before it can be used because some ingredients are harmful and non-alcoholic disinfectants can prevent stinging hands.

Secondly, how to attracted and stimulate children contains children their interests, preferences in colours, shapes and existing dispensers for children. Children their interests are gathered from themes in books, favourite games, toys and television shows. Both the preferences in colours and shapes are based on desk research about colour psychology and children's interest. The existing dispensers cover normal soap pumps, automatic soap/ small disinfectant dispensers and normal disinfectant dispensers. Based on all information it is decided to proceed with a character shaped animal or curved shape. Most colours can be used and a colour advice is created in the thesis. On top of that, an app will be added to attract children, be informative and entertaining.

How to design the dispenser focuses on the requirements, ideation phases and finalization of the prototype in SolidWorks. The requirements are base on functions, what should the dispenser do, provide, show, etc. Base on these requirements the ideation is started and next to my sketches a small co-design session is done with 6 children. However, before finishing the outer shape, the focus is set on the inner mechanism.
After the inner mechanism is fished the outer shape ideation is continued also looking at production possibilities. Finally, the inner and outer shapes are combined for a final product. Figure 2 shows the combination of the mechanism and shape and figure 3 explains all the parts of the mechanism.

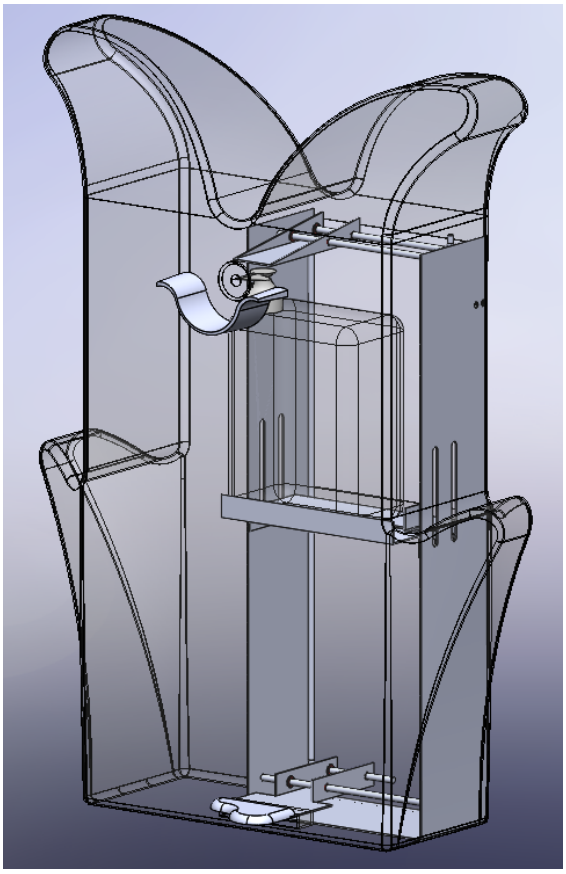

Figure 2. Combination of the Inner and outer shape

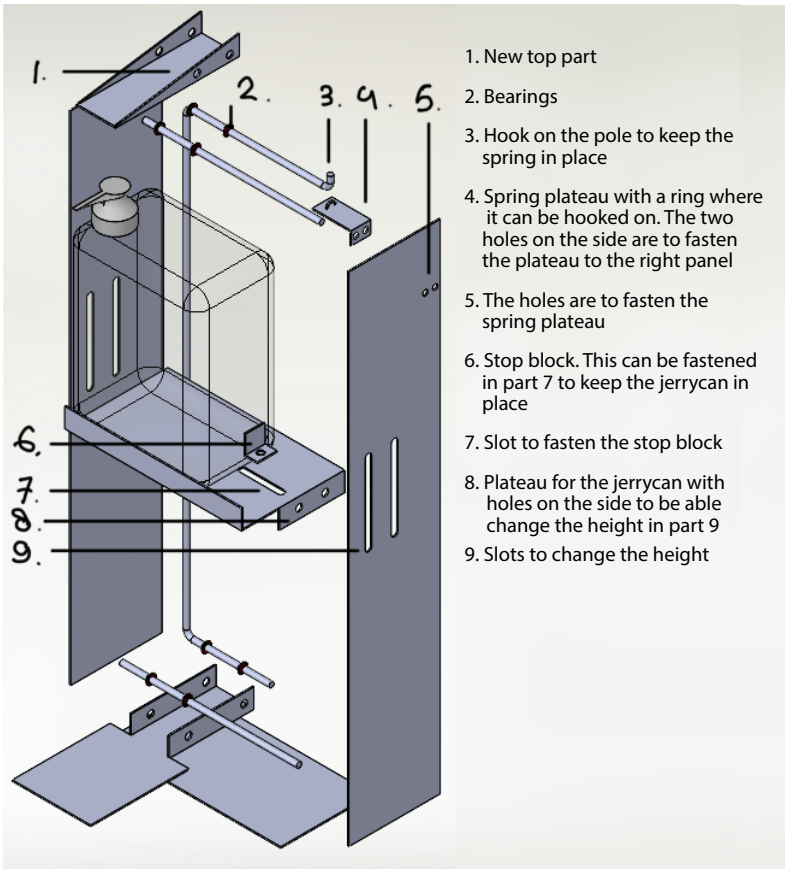

Figure 3. Explanation of the inner mechanism parts

To conclude, two out of the three questions are fully satisfied. The qualities of a good dispenser are investigated and applied in the final design and how to stimulate and attract children as well. However, how to design the dispenser is not finished. The inner and outer shapes are designed and also made in SolidWorks, but a prototype still has to be made. Figure 4, shows the final design with its features, but some are not finished yet. At first, the application has to be made and decided if it will be added with a Bluetooth module or NFC chip. Secondly, the production technique has to be chosen from vacuum forming or deep drawing. Thirdly, the door at the back to refill the disinfectant jerrycan has to be worked out, as can be seen in figure 5. One should ask, how will the door be connected to the body, how to make the transparent part to see the current amount of disinfectant, etc. Finally, the features drip tray, foot pedal and nozzle have to be looked into closer. However, it can be said that the main objective is achieved. Only the recommendations have to be worked out.

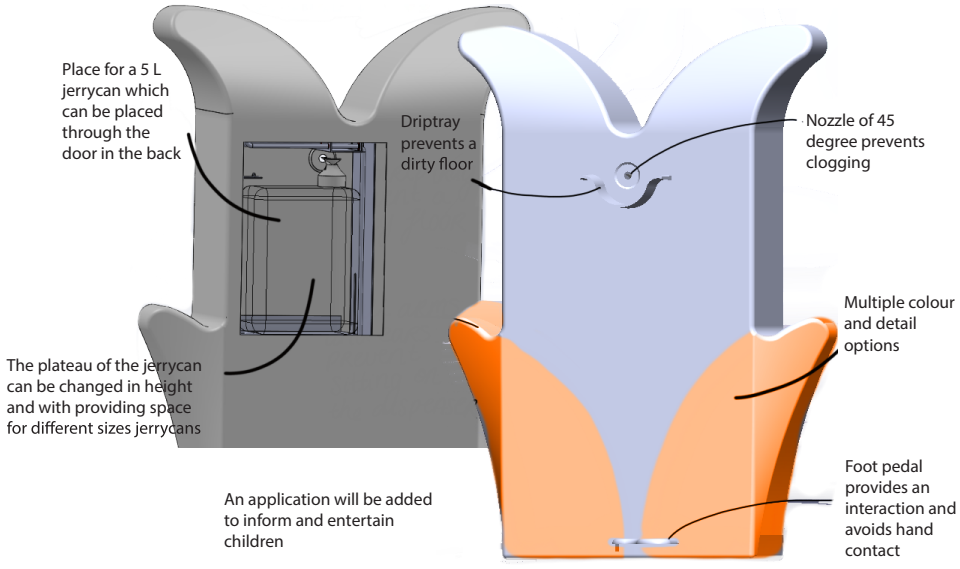

Figure 4. Final design with all features

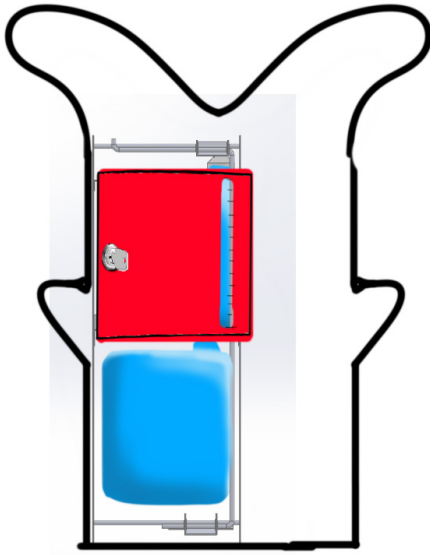

Figure 5. Door to the disinfectant jerrycan