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Automatic Umbrella Dryer

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Abstract

The outbreak of the idea to this product is based on problem that occurred in one of the shopping mall. On a rainy day, people are not allowed to enter the mall by security guards for carrying wet umbrellas. This is because the water dripping from the umbrellas will cause wet, slippery and dirty floors. This study is to design a product that has a drying system for the wet umbrella to dry quickly by the mean time. The automatic umbrella dryer is easy to use by putting the umbrella into the machine, it will dry up in a short time. A little manpower required to hold an umbrella in a mean time of the process. This automatic umbrella dryer machine is compact and practical so that it can be placed at the entrance of the shopping mall and fitted with wheels so that it can be moved to another place. It also can be placed in an office and even at home. The target user of this product is the people who have to drain and dry the umbrella when entering a place as mention before.

Key-word: - Umbrella, umbrella dryer, malls, offices, homes

1. Introduction

The problem that arises before the outbreak of the idea to produce this product is based on an event that occurred in one of the shopping centre. On a rainy day some customers are not allowed to enter the mall by security guards for carrying wet umbrellas. This is because the water dripping from the umbrellas will cause the floor wet and dirty (Yoshinori, 2006). The wet floor will cause a slippery floor and will endanger the customers and likely to fall down. So, here comes the idea to create a machine which can dry a wet umbrella in a short period. Customers or the public can put their wet umbrella into the product to dry out their umbrellas. (Carlo 2008).

This study aims to design a product that can dry the umbrella fast and easy to use. The product is known as Automatic Umbrella Dryer. This product use a powerful fan that serves as a blower to dry the umbrella. It can be used during a rainy day. It also can be placed at the entrance of shopping mall, office or home and fitted with wheels so that it can be moved to another place. This dryer is compact in design and do not need a lot of space. By using this product it can dry up in an umbrella in a short time and environmental friendly which is not harmful to users and does not pollute the environment.

Product analysis (Table 1) was made to obtain product information that was available in the study. According to Table 1, products 1,3,4 and 6 are designed for a place to put an umbrella. While the product 2, 5 and 7 using a motor and a hairdryer. The proposed of new product is Automatic Umbrella Dryers use a blower motor and a dryer to dry the umbrella.

Table 1 Analysis of product.

No.	Citing Patent	Filing date / date	Publication date	Designer	Product Name
1	US7124516 *	June 20, 2003	Oct 24, 2006	Yoshinori Shiraishi	Device for removing water drops from an umbrella and foundation promotion system of the device
2	US7367136	July 14, 2005	May 6, 2008	D Antonio Carlo J	Umbrella and shoe drying device
3	US20110154677 *	Dec 29, 2009	June 30, 2011	Scott Pudalov	Ringed Umbrella Dryer
4	US20100276379 *	July 12, 2010	November 4, 2010	Yen-Tang Yang	Collapsible clothes hanger structure
5	US20120297637 *	Dec 15, 2010	November 29, 2012	Liao Zhifeng	Dewatering machine for umbrella
6	US8910392 *	Dec 15, 2010	Dec 16, 2014	Zhifeng Liao	Dewatering machine for umbrella
PROPOSAL					Automatic Umbrella Dryers

2. Methodology

The concepts are applied in this product is user friendly, focuses on environmental factors, easy to operate, save energy and save time. As this product should be placed at shopping malls, then this product must have a clean design and high aesthetic value. Also these products must be able to dry the umbrella customers quickly so that customers do not waste time waiting for dry umbrellas. This product is also small so that it can be placed at the entrance to the shopping mall, office or home. This product is paired with wheels for easy to move to another place. This product is also easy to use because users just put the umbrella into the dryer and in a few seconds umbrella will be dry.

2.1 Product Design

Rough sketch of the shape of the project is required to be carried out to demonstrate the appearance of the project done. A technical drawings is done by using AutoCAD software for project design. (Wright, 2009). A technical drawings in detail are made along with the dimensions. Selection of an appropriate design is made to ensure and to provide materials according to component design.

2.2 Product Development

The selection of materials should be made according to the selected design. The material selection should be appropriate and reasonable that match with the characteristic of durability and esthetical design. Then the purchase of raw materials, electrical parts and installation of dryer and blower fan. Finally comes the product as shown in Figure 1 below:



Figure 1 The Automatic Umbrella Dryers

3. Data analysis and discussion

3.1 Product Review

Studies done are viewed from the point of time for drying umbrellas when using this product. Also to ensure the product is well received by users, some questionnaires were given to the lecturers and students at the Polytechnic Sultan Salahuddin Abdul Aziz Shah as a consumer product.

3.2 Period

The study starts by taking the time to dry the umbrella without using this product. Then it takes about when using Automatic Umbrella Dryer. Below is a table showing the time used to dry the umbrella.

Table 2 Results of the Test of Time

No. of umbrella	Without Automatic Umbrella Dryer	With Automatic Umbrella Dryer
1	180 sec	15 sec
100 (1 day)	18000 seconds (300 minutes) of 5 hours	150 seconds (25 minutes)

From Table 2, the time tested analysis has found that a person requires 180 seconds to dry the umbrella manually without using the dryer. But by using Automatic Umbrella Dryer, it just takes 15 seconds to dry the umbrella. If a there is 100 of wet umbrellas need to be dry manually for 18000 seconds or equivalent with 5 hours compared to Automatic Umbrella Dryer just need 1500 seconds or 25 minutes. Therefore, using this Automatic Umbrella Dryer, it save time because the customer does not have to wait and it is easy to use.

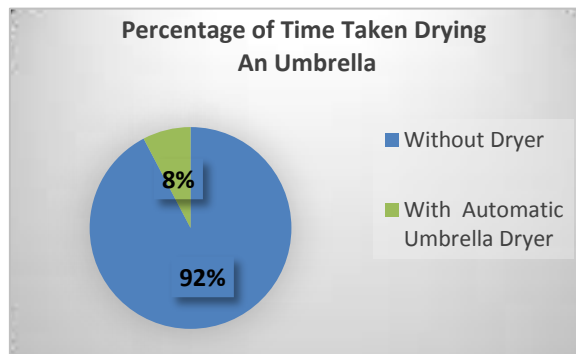


Figure 2 Percentage of Time Taken Drying An Umbrella

3.3 Market Review

A survey questionnaire on the product using the Umbrella Automatic Dryer has been conducted to 40 respondents in the Department of Mechanical Engineering, Polytechnic Sultan Salahuddin Abdul Aziz Shah, Shah Alam, Selangor, which consists of 20 students and 20 lecturers.

Table 3 The survey result of Automatic Umbrella Dryer

NO	ITEM	AGREE (%)	DISAGREE (%)
1	Do Automatic Umbrella Dryer is saving time for drying compared to manual drying?	100	0
2	Do Automatic Umbrella Dryer is save energy?	100	0
3	Do Automatic Umbrella Dryer is easy to use?	100	0
4	Do Automatic Umbrella Dryer use less energy?	15	85
5	Do Automatic Umbrella Dryer is marketable?	20	80
6	Do Automatic Umbrella Dryer is cheap and affordable?	20	80

The results showed that 100% of students and lecturers were agreed that the use of the product using the Automatic Umbrella Dryer is save time, save energy and easy to use. This is because by using this dryer, customers just have to put the umbrella into the hole and the blower fan will dry the umbrella until it completely dry. There are 85% of respondent agreed that it use less energy because of the main component is only a blower fan that attached to the machine. While 80% of the respondents agreed that Automatic Umbrella Dryer is marketability, cheap and affordable according to the function design and material of the product.

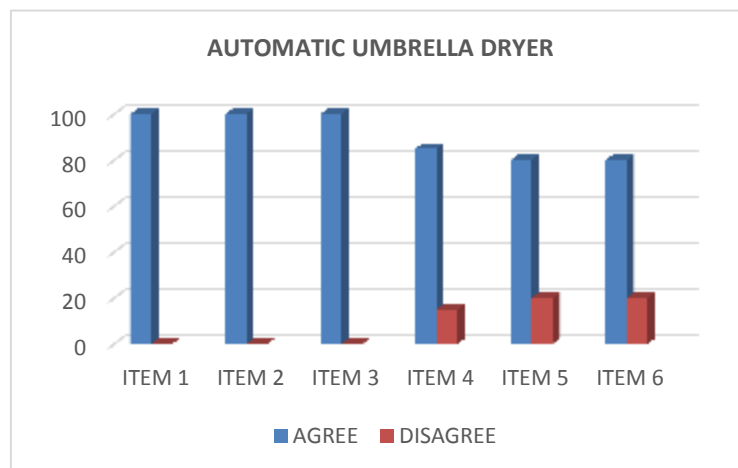


Figure 3 Results of the comparative analysis of the questionnaire

4.0 Conclusion

An Automatic umbrella dryer specially designed in keeping with the ambience of the place and the shopping mall. This product is small, lightweight and fitted with wheels for easy to move to another place. This product can be placed at office, home and shop. This product can be used with little space and do not require high costs and save time and energy during drying. Besides it does not require any skilled labour to operate. It also has a high level of resistance, easier to control compared to the products available in the market nowadays. This dryer is suitable for medium-sized umbrella only.

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