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DESIGN AND FRABRACATION OF AUTOMATIC WALL DUST CLEANER MACHINE

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ABSTRACT

Wall dust cleaning project is the new invention in the field of cleaning the wall in this field the process of cleaning wall is too difficult and Messi here we present the the simplest form of wall dust cleaner. In this project we cover automatic dust cleaning we have automatic vibration mode for the the best cleaner it is completely e portable because it having the battery backup in it this is electrical based charging wall having various Heights that's why it is totally adjustable in height some of the point of wall contain slabs in 90 degree Bending that's why it has the angle change adjustment it is completely lightly in weight and very useful for the wall cleaning process We are using DC motor for the the cleaning of wall we are using plastic broom for the cleaning of all, we are using a 12 volt battery charger for the charging the battery that we used in it, we have another one additional improvement in this project and that is sucking the dust in a dust container that is called as dust sucking mechanism and it is useful for the the project to enhance its capability and importance, we have a following all project data that include in this project abstract.

Keywords: Dust Cleaning, Wall Cleaning, Portable Project, Wall Dust Sucking Mechanism, 90 Degree Bending Cleaner.

I. INTRODUCTION

Wall dust cleaning project Contain Cleaning on the basis of electrical and mechanical adjustment which includes automatic dust cleaning by DC motor and plastic broom which is connected to the upper side of the project. We have a vibration mode setup which gives better cleaning of dust on the wall. It is just because of the motor shaft and broom arrangement without alignment that's making small vibration in it to clean the form perfectly. Then we have a battery in it for the better use of it, just because of battery we done this project in portable format and that battery is totally based on electrical charger setup we have 4 hours of battery backup to clean the wall in the one time charging we can use the broom to clean the wall up to 4 hours And that is ok for the whole cleaning for purse in domestic format .This project has the length and adjustment with the help of PVC plastic pipe that is useful for the use of short height person for and the long length of wall and that is just One screw tight and it becomes a length adjustment. and it having the the angle building position up to 90 degree which is useful for the cleaning of slaps which comes in home for the storage purpose, this project is completely Ee in lightly weight does because of that all the member of home can used it very clearly we have a major in improvement in this project that is the dust sucking mechanism which use for the Collection of dust in a cloth packet we use there A1 DC motor which is is connected with the fan propeller in exhaust format which contain the dust and collect it in cloth packet The project of cleaning the wall is completely based on the the perfect cleaning and perfect sucking the dust from the wall and we done it in clearly In our project .

II. METHODOLOGY

In this project first of all we taken the parts of project that is a DC motor for the cleaning purpose of broom battery 4 volt 3 packages PVC pipe for the the length of the broom sucking container made up of plastic holding clips for the tension screw nut bolts for The Adjustment button keys for start and stop the project fan for the sucking mechanism Hinges for bending purpose of the 90 degree international plastic broom for cleaning purpose connecting wires for or doing inclination toward the the needed small DC Motor High speed for sucking mechanism this all we comes together and made a project that names wall cleaning machine let's see how we process it the following is the step by step methodology

1. First we take plastic PVC Pipe and attach it with the t section on the both side for the bending purpose and add one inch there to make it movement then we have remaining part of the PVC pipe attached with the second more dimensional PVC pipe that's go inside the pipe and it makes arrangement of height adjustment

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2. Then we go for the broom making mechanism we taken a DC motor add attach a broom with not alignment to make it vibrate mode so that it it screw properly with the help of screwdriver to the shaft of the motor then we felt that motor in the PVC pipe for holding it properly
3. Then we make the switch arrangement in the end of the hand holder pipe which is more in dimension that makes on of the project which DC motor run properly and use the supply to the downward battery bank
4. Then we go for the wedding mechanism and we arrange the one string To Move It Back automatically and the manual pulling mechanism can bend it as for the needle angle we have The spring is just to to take the the position band of groom adjustment
5. Then we do the wiring of all our project which connected to the two switches One For The Brew start and S for the sucking mechanism start
6. We done sucking mechanism with the help of fan and a plastic container that contain the dust in it and throw back in a cloth pocket which is really useful for collection of the dust
7. Then we finished the product and the project color it and we are taking the the result which is come properly with the building a Canada with the height adjustment and the angle bending and sucking mechanism properly and attach one charging socket at the end of the project

III. MODELING AND ANALYSIS

1. Dust sucking setup mechanism

This is the the election of of dust mechanism which use a plastic container part and the DC motor with the high speed

2. Broom set up mechanism

The broom setup is made of PVC plastic broom and DC motor attached with gear high speed with high torque

3. Building angle mechanism

The angle mechanism which is used for the bending of broom 90 degree

4. Power Bank setup

Three batteries combined together and make one 12 volt power bank which is charge can be with the help of 12 volt dc charger

5. Two switches set up

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Two switches for the on off of main room and sucking mechanism with the power of 12 volt battery attached in IT serial

IV. RESULT AND DISCUSSION

We have to find the Torque of motor to clean the dust from the wall We know-

Speed of Motor is given which is 300 RPM

Power of Battery is 12 V 4 amp

POWER = Vx I

=12 x 4

=48 W

=0.048KW

Torque (N.m) = 9.5488 x Power (kW) / Speed (RPM)

=9.5488 x 0.048 x 300

= 137.5 Nm

As per the result of cleaning the wall we need 125 Newton meter torque for the broom to clean the the wall dost clearly=Power output is 130 7.5 Newton meter which is larger than 125 Nm

Speed of fan for Collecting the Dust is 1000 rpm Air volume and wind pressure calculation formula Air volume calculation air volume (Q): The so-called air volume (also known as volume flow rate) refers to the flow rate of the airflow through the cross-sectional area of the air duct, which is generally expressed by the following formula:

Q=48VA

Q (air volume) = m3 / min

V (wind speed) = m / sec

A (cross-sectional area) = m2

Pressure common conversion formula 1Pa=0.102mmAq

1mbar=10.197mmAq

1mmHg=13.6mmAq

1psi=703mmAq

1Torr=133.3pa

1 Torr = 1.333 mbar

Common unit conversion table - air volume 1m3 / min (CMM) = 1000 l / min = 35.31 ft3 / min (CFM)

Commonly used nouns (1) Standard state: 20 ° C, absolute pressure 760 mmHg, relative humidity 65%. This state is abbreviated as STP, and generally the air weight of 1 m3 is 1.2 kg in this state.

(2) Absolute pressure of air: the sum of the atmospheric pressure displayed by the local atmospheric pressure gauge plus the gauge pressure, generally expressed in kgf/m2 or mmaq.

(3) Reference state: 0 ° C, absolute pressure 760 mmHg, relative humidity 0%. This state is abbreviated as NTP, and the air weight of 1 m3 is generally 1.293 kg in this state.

Pressure (1) Static pressure (Ps): The so-called static pressure is the force that the fluid is applied to the surface of the appliance and perpendicular to the surface. Generally, it is caused by gravity and the push of the fan in the fan. It is often used in kgf/m2 or mmaq. To indicate, and can be directly obtained through measurement. In the air duct of the fan, the static pressure value in any direction is constant and there are positive and negative points. If the static pressure value is positive, the air duct is currently being inflated, and if the static pressure value is negative, the air duct is It is currently being squeezed.

(2) Dynamic pressure (Pv): The so-called dynamic pressure is the pressure formed by the velocity of the fluid flowing in the air duct. It is often expressed in kgf/m2 or mmaq.

(3) Full pressure (PT): The so-called full pressure is the sum of static pressure and dynamic pressure, and is often expressed in kgf/m2 or mmaq. The total pressure value in the fan is fixed and will not change due to the

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shrinkage of the duct.

Wind pressure and temperature changes affect the density of the air. Therefore, under other conditions, when the temperature changes, the wind pressure must be corrected according to the following relationship to obtain the wind pressure value under standard conditions:

$P = P'[(273 + t)/293]$ (mm Aq)

Similarly, when the air density changes, the wind pressure value can be corrected as follows:

$P = P'(1.2/\gamma)$

(mm Aq)

In the formula, the values on the right side of the equal sign are the measured pressure, temperature and air density of P', t, γ, and the like. The pressure between the pressure and the speed is fixed.

V. CONCLUSION

1. As per the result we conclude that we have a proper combination of dust cleaning mechanisms of this projecwall cleaning in short time and without dropping any dust on the flower so that it it is useful for the the futut.
2. We will get the best output of dust collecting mechanism for the dust collecting purpose of our project
3. We are getting re cleaning mechanism in wall
4. The bending angle working properly for the result of cleaning the lower in 90 degree format which is very difficult to clean by traditional way
5. A we have a proper battery backup in the the portable format of this project which is 12 volt for a battery

VI. REFERENCES

[1] Bell, S. J. (1998). Weaning them from the Web: Teaching online to the MBA internet genera-

[2] Brophy, P. Fisher, & H. Booth. (2003). Formative evaluation of the distributed national elec- tronic resources: Analysis of student citations (EDNER Deliverable A1). Manchester:

[3] CERLIM. Retrieved October 1, 2006, from http://www.cerlim.ac.uk/edner/dissem/a1.doc

[4] Carley, K. (1993). Coding choices for textual analysis:\ A comparison of content analysis and map analysis. In P. Marsden (Ed.), Sociological methodology (pp. 75-126). Oxford: Blackwell.

[5] Davis, Philip M. (2002). The effect of the Web on undergraduate citation behavior: A 2000.