

# AUTOMATIC CHALK DUSTER ACCUMULATOR FOR CLASSROOMS.

**Abstract**-Our common scenario takes us to the world of pollution and every corner, the pollution caused by chalk dust in the classroom was a real menace. White specks of dust settled in every corner of the classroom and on the students face. The duster containing chalk dust causes allergic reaction in many children. so we could add that ,duster that erases chalk from the blackboard and absorbs it into the system. Advanced technology offer some hope to avoid these to some extent.The project involves the use of microvibrator mechanism which is used to get rid of the chalk dust. When the dust full duster is kept on the net, the microvibrator gets on and all the dust get accumulate at the bottom. 'It doesn't replace the Duster.'

**Keywords**-Chalkdust, Microvibrator, Accumulate ,Blackboard

## I. INTRODUCTION

Chalkdusters are used to erase a chalk markings on black boards and slats. These are designed ergonomically using felt strips and also cloth materials. It is attached to a handle for easy use. The shape of the handle is cuboid. During the earlier time dusters were in the form of cloth which was filled with cotton, rags and get rid of chalk markings.

An automatic chalk duster makes you to use the duster Automatically which helps you to save your time and energy. This also reduce you the pollution and also reduces the tapping of dust, when it get accumulates. This appertains to new and useful improvements and more particularly to an apparatus whereby blackboards can be cleaned in an easy and convenient manner. This mainly aims for the teaching aid. The earlier blackboards doesnt have the automatic cleaning function. The teacher always write and erase, after that a huge dust powder accumulates inside it ,leads to tapping of the duster. The prior blackboard has no automatic cleaning function, a teacher wastes time in writing and erasing, and the use is not ideal.

## II. LITERATURE REVIEW

**Mr. Tumpala Uma Santhosh and etal.** proposes "Design and Fabrication of an Automatic Black Board Cleaner". The report put forwards that a kind of mechanism design scheme, the mechanism can automatically detect the blackboard chalk stains, and erase the font, keep the blackboard clean. The duster includes a track structure to permit reciprocation of the duster laterally of an elongate blackboard frame. The chain which is connected to duster includes a drive motor to effect rotation of a drive duster positioned above the blackboard frame.

**Gaurav Gangurde and etal.** proposes "A Review of Blackboard Cleaning System". This method says that a device for automatically erasing a blackboard wherein a duster is mounted for longitudinal movement on the blackboard and has a motor mounted thereon that is mechanically interconnected to a drive assembly for

producing the movement of the duster in an erasing operation. It will use the rack and pinion mechanism to convert the rotary motion of motor into linear motion of pinion.

**Vivek D Ugale and etal.** proposes "Automatic Blackboard Eraser". The report says that it is a simple duster attached on vertical shaft. The movement is done using two DC motors and they can be controlled via switches given. The duster can be placed in the midsection so as to reduce time to move towards any side of the board easily. The teachers will be able to reduce 50% of the board easily.

From concluding all these reviews we could say that, all the systems designed are been quite complex.

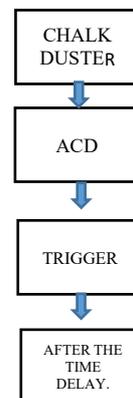
## III. PARTS USED IN AUTOMATIC DUSTER MECHANISM

- Microvibrator
- Mesh Net
- Battery

## IV. PROPOSED METHOD

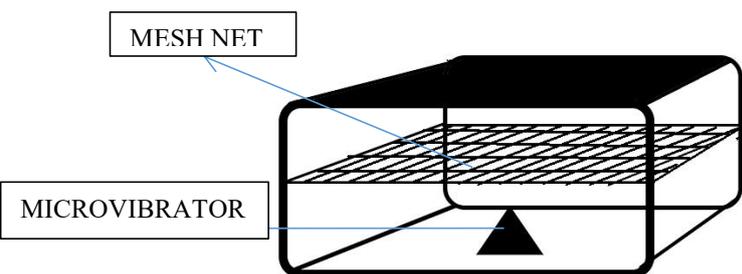
Our main problem, is we have no good method to remove the chalk dust that is collected inside the cavities of the ordinary dusters. The dusters with wool & foam material are very good chalk dust absorber. But the problem is after several use the efficiency of the duster decreases rapidly because of the unsystematic cleaning.

The aim of our project is to retain the efficiency of the duster through its life time.



The mechanism consist of a wooden container with a vibrating top portion. After wiping the board the duster is placed on the top of the container were the vibrating part placed. The vibration generated by the microvibrator absorbs the dusts that are accumulated on the duster with the help of metal nets. Metal nets are provided for to spread the vibration throughout the duster (that are in contact with the net). The vibration makes the chalk dust to separate from the duster and it get settle down at the bottom of the container. At the end we can clean the container.

### DESIGNED MODEL



### V.COMPARISON WITH EXISTING METHOD

The existing method takes us to power driven erasing apparatus. The principal object of the present automatic blackboard duster is to provide an attachment for blackboards in the form of a power driven erasing apparatus which can be set in operation by the throw of a switch, thus eliminating the drudgery of manually cleaning blackboards. Another important object of the invention is to provide an automatic apparatus of the character described, which is positive-acting in operation, and wherein the erasing elements can be conveniently replaced and the other details of the mechanism easily repaired in the event of the development of defects. The utility model relates to teaching aid.

The disadvantage of this system is that, at first the system is more complex in its structure. The dc motor used in it could not consume more power.

The method that we use will not make the system complex ie it doesnt add anything to board. It also uses mainly small components that reduces the cost.

### VI.COMPONENTS REQUIRED

(A) *MICROVIBRATOR* In electronics before the development of switch-mode power supplies and the introduction of semiconductor devices operating off low voltage, there was a requirement to generate voltages of about 50 to 250 V DC from vehicle batteries. Electromechanical components known as vibrators were used in a circuit similar to modern solid state inverter circuits to provide a pulsating DC which could be converted to a higher voltage with a transformer, rectified, and filtered to create higher-voltage DC. This "vibrator" is essentially a relay using normally closed contacts to supply power to the relay coil, thus immediately breaking the connection, only to be reconnected very quickly through the normally closed contacts. It happens so rapidly it vibrates, and sounds like a buzzer.

### V.ADVANTAGES

- Easy to use
- Removes all dust and reduce pollution
- Cost Effective
- High degree of accuracy.
- Problem of dust can be reduce
- Maintenance cost is less
- Simple in construction and operating

### VII.APPLICATIONS/SOCIO-ECONOMIC IMPORTANCE

- Chances of pollution are minimized to a large extent.

Using this could reduce the pollution to a major extent which occur from the chalk dust. This could reduce diseases like asthma, Breathing problems and other lungs affected ones.

Here are two different points buried in the dust safety question. In one sense, the main ingredients of this dust are considered to be non-toxic, which simply means that they do not create a risk of inclusion. In one sense, this substance can accumulate in the human respiratory system, which means it can cause long-term health problems due to over-exposure. In short, swallowing a piece of white chalkboard will not kill anyone, but breathing in the dust for years can cause respiratory problems. Therefore, it is important that there be provision for automatic cleaning of the blackboard and also for collecting dust to allow it to fly in the school room air. This multi-enhanced eraser structure is made possible, but this upgrade is not the solution to the problem and is very expensive and difficult to diffuse.

### VIII..FUTURESCOPE

In the new age of technology, Humans need all things automated. They want each and everything in their life looks more sophisticated. So to help the mankind we could develop it to more advanced one.

The features that could be added to future could be:

(a) **GLASS CLEANING:** It can be developed to clean the glass for people working in high buildings

(b) **OPERATE IN SCHEDULE:** It can be used to operate in schedule or for certain time limit.

### IX.CONCLUSION

In the new age of technology, Humans need everything new in their lives. They want every single job as easy to them. The smart eraser has a simple structure, easy to operate, easy to obtain raw materials, manufacturing equipment simple process. Its Control functions, and less susceptible to interference, high reliability, ease of use, can make products with high performance. Learned ways to automatically remove the default board and performed automatic deletion. Provides a better solution for health problems, time constraints in the classrooms. We learned basic things to use DC motors to trigger the movement of the shaft and microcontroller to control the movement.

Comparing with the others Automatic Chalk Duster is simple in its structure and the cost is also very less. The major part is that we are not anything in board and also we are not replacing the duster.

## VII.REFERENCES

1. Design and Fabrication of an AUTOMATIC BLACK BOARD CLEANER Mr. Tumpala Uma Santhosh, Ch. Venkata anvesh, R Art Babu, A Vinutha,International Journal of Latest Research in Engineering and Technology (IJLRET) ISSN: 2454-5031
2. A Review of Automatic Blackboard Cleaning System Gaurav Gangurde<sup>1</sup> , Sandeep Patil<sup>2</sup> , Pratik Ugale<sup>3</sup> , Sudarshan Wagh<sup>4</sup> , Ashwin Mahindraka.  
International Journal of Engineering Technology, Management and Applied Sciences February 2016, Volume 4, Issue 2, ISSN 2349-4476.
3. Automatic Blackbosrd Duster.  
VivekDUGale,Aishwarya Marathe,International Journal of advanced Research in Electronics and Communication Engineering.(IJARECE)
4. Microcontroller Bsed Handy free duster for classrooms.  
M.Agalya Devi,R.Aruna,M.Arithi,-AJAST