ELECTRONIC BLACKBOARD ERASER

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ABSTRACT
An electronic blackboard eraser consists of an erasing unit, a control unit having a driving element and an air fan set, and a filter unit located between the erasing unit and the control unit. The erasing unit has an erasing surface mounted with a plurality of erasing elements formed in strips for erasing blackboards. In addition to erasing the blackboards, this invention can also collect dust and powder.
ELECTRONIC BLACKBOARD ERASER

FIELD OF THE INVENTION

The present invention relates to an electronic blackboard eraser and particularly an electronic eraser equipped with dust collecting function and operating with reduced noise.

BACKGROUND OF THE INVENTION

There are generally two types of blackboard erasers now being commonly used, i.e. traditional ones and electronic ones. Traditional blackboard erasers incur dust during use and threaten people's health. People who have their hands smeared by dust for a prolonged period of time are concerned about suffering from skin cancer. People expose to the dust for a long period of time also could result in serious suffering from respiratory system. Moreover, traditional blackboard erasers are not very effective. The eraser surface has to be cleared and cleaned frequently.

To remedy aforesaid problems, there are electronic blackboard erasers being developed and marketed. However the erasing and dust collecting effects of those electronic blackboard erasers are still not satisfactory. Their erasing units usually have erasing elements located around an erasing plane and the erasing plane has only one dust suction opening. The erasing result is not desirable. A lot of dust will be generated during erasing and dust collection effect is also not satisfactory. Moreover, conventional electronic blackboard erasers do not have noise isolation features. As a result, a lot of noise is generated during use. In view of the contemporary product design trends of focusing on lower pollution and lower noise, the blackboard erasers now available on the market are mostly not conforming to environmental protection requirements.

SUMMARY OF THE INVENTION

The primary object of the invention is to resolve the foregoing disadvantages. The invention aims to provide an electronic blackboard eraser that includes an erasing unit, a control unit having a driving element and an air fan set, and a filter unit located between the erasing unit and the control unit. The erasing unit has a compartment containing a first dust suction member, and an erasing surface equipped with a plurality of erasing elements formed in strips. There are a plurality of suction inlets located at the periphery of the erasing surface and between the erasing strips. The filter unit includes a housing chamber for holding the air fan set and two holding spaces located at two sides of the housing chamber for respectively holding a second dust suction member. The driving element of the control unit is surrounded by a noise isolation cotton for reducing the noise generated during operation. The interfaces between various units have snap latches for coupling the elements together. A strap is provided to fasten all the units together securely and to save assembly time.

The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the invention.

FIG. 2 is an exploded view of the invention.

FIG. 3 is a perspective view of an erasing unit of the invention.

FIG. 4 is a schematic view of the invention in use for sucking dust.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1, 2, and 3, the invention consists of an erasing unit 1, a control unit 2 and a filter unit 5 located between the erasing unit 1 and the control unit 2.

The erasing unit 1 has a compartment 11 containing a first dust suction member 12, and an erasing surface 13 with a plurality of erasing elements 14 mounted thereon. There are a plurality of suction inlets 131, 131' located between the erasing elements 14 and at the peripheral rim of the erasing surface 13. The erasing elements 14 may be arranged in different configurations desired, such as strips, circular, rectangular, saw patterns, or undulated patterns (not shown in the drawings). The peripheral sides of the compartment 11 have snap latches 15 (such as tenons or latch notches) formed thereon. There are also two latch lugs 16 located on the outside wall of the erasing unit 1 which may engage with straps 17 for fastening the control unit 2 and the filter unit 5 tightly with the erasing unit 1.

The control unit 2 has a housing space 21 for holding a driving element 3 (may be a DC motor) and an air fan set 4 (such as a centrifugal fan or axial flow fan) mounted below the driving element 3. The driving element 3 includes a power supply 31 (may be a storage battery or dry battery) and a switch 32 located on an upper cap 22. The driving element 3 is surrounded by a noise isolation cotton 33 which may reduce noise and damp vibration for effectively decreasing the noise generated by the driving element 3 during operation. The peripheral sides of the control unit 2 have snap latches 23 (such as tenons or latch notches) formed thereon.

The filter unit 5 includes a housing chamber 51 for holding the air fan set 4 and two housing spaces 52 located at two sides of the housing chamber 51 for respectively holding a second dust suction member 53. The peripheral sides of the filter unit 5 have two rows of snap latches 54, 55 (such as tenons or latch notches) formed thereon to engage with the snap latches 15, 23 of the erasing unit 1 and control unit 2.

The first and second dust suction member 12, 53 are made of washable and reusable materials such as sponge and may be cleaned and reused to conform to environmental protection requirements. The suction inlets 131, 131' may be formed in grid or grate shapes.

The electronic blackboard eraser thus constructed is easy to assemble, and provides dual effect for erasing and dust collecting, and may be operated at a low noise level. It also is constructed and fastened securely without the risk of falling apart when hit incidentally.

Referring to FIG. 4, when in use for erasing, the erasing elements 14 of the erasing unit 1 wipe and scrape the chalk writing on the blackboard 6 to become dust and powder 7. As there is an elevation difference between the erasing elements 14 and the blackboard 7, the dust and powder 7 suspending between the erasing elements 14 and
the blackboard 7 will be drawn by the air fan set 4 and sucked through the suction inlets 131 formed between the erasing elements 14, and adsorbed to the first dust suction member 12 located in the erasing unit 1. The dust and powder 7 that have not been drawn to the suction inlets 131 will be drawn again by the air fan set 4 and sucked through the suction inlets 131 around the erasing surface 13 and also adsorbed to the first dust suction member 12, thus forming a double dust suction and collection effect. The dust and powder 7 that escape the first dust suction member 12 will be drawn and adsorbed by the second dust suction members 53 located at both sides of the air fan set 4 of the filter unit 5.

[0017] By means of the construction set forth above, the electronic blackboard eraser of the invention can effectively absorb and collect dust and powder incurred during erasing the blackboard and prevent the dust and powder from dispersing in the air to protect people’s health. Moreover, the invention may be operated with reduced noise.

What is claimed is:

1. An electronic blackboard eraser for erasing blackboards and collecting dust and powder, comprising:
   an erasing unit having a compartment containing a first dust suction member, and an erasing surface mounted with a plurality of erasing elements, the erasing elements having a plurality of suction inlets formed therebetween;
   a control unit having a housing space for holding a driving element and an air fan set mounted below the driving element; and
   a filter unit located between the erasing unit and the control unit including a housing chamber for holding the air fan set.

2. The electronic blackboard eraser of claim 1, wherein the driving element is a DC motor.

3. The electronic blackboard eraser of claim 1, wherein the air fan set is a centrifugal fan.

4. The electronic blackboard eraser of claim 1, wherein the air fan set is an axial flow fan.

5. The electronic blackboard eraser of claim 1, wherein power supply for the driving element is a storage battery.

6. The electronic blackboard eraser of claim 1, wherein power supply for the driving element is a dry battery.

7. The electronic blackboard eraser of claim 1, wherein the periphery of the driving element is surrounded by an isolation cotton for reducing noise generated by the driving element during operation.

8. The electronic blackboard eraser of claim 1, wherein the filter unit further has two holding spaces located at two sides of the housing chamber for holding respectively a second dust suction member for adsorbing dust and powder escaping the first dust suction member of the erasing unit.

9. The electronic blackboard eraser of claim 1, wherein the erasing elements on the erasing surface are selectively configured in the form of strips, circular, rectangular, saw patterns, or undulated patterns.

10. The electronic blackboard eraser of claim 1, wherein the periphery of the erasing surface has a plurality of suction inlets.

11. The electronic blackboard eraser of claim 1, wherein the first and the second dust suction member are made of washable and reusable materials including sponge.

12. The electronic blackboard eraser of claim 1, wherein the suction inlets are formed in grid or grate shapes.

13. The electronic blackboard eraser of claim 1, wherein the peripheral sides of the erasing unit has a plurality of latch lugs and straps for fastening the control unit and the filter unit and the erasing unit securely.

14. The electronic blackboard eraser of claim 1, wherein the peripheral sides of the erasing unit, the control unit, and the filter unit have respectively snap latches for engaging the erasing unit, the control unit and the filter unit together.

15. The electronic blackboard eraser of claim 14, wherein the snap latches are matching tenons and latch notches.

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