

"Blackboard duster"

This invention relates to an improved form of blackboard duster.

5 A known form of blackboard duster, used in schools and the like to remove chalk powder from blackboards, generally consists of a cleaning member fixedly attached to a hand grip. The cleaning member of such a duster is made of a suitable material which will remove dust from
10 a blackboard when a user moves the duster across the surface of the blackboard. This type of duster has a number of disadvantages. For example in use the cleaning member tends to become clogged with dust and therefore ceases to function properly. As a result
15 of the clogging of the cleaning member dust removed from the blackboard will be spread into the atmosphere creating an unpleasant health hazard. Thus it is an object of the invention to provide a blackboard duster which can prevent or at least reduce the spreading of stray dust
20 into the atmosphere.

The cleaning members of known board dusters also require frequent cleaning at which time further substantial amounts of dust are spread into the atmosphere, and it is, therefore, a further object of the invention
25 to provide a blackboard duster which can be cleaned substantially without this disadvantage.

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According to the invention there is provided a blackboard duster comprising a dusting member having an endless dusting surface mounted for endless movement and passing through an enclosed container for dust, means
5 engaging the said dusting surface in said container for removing dust therefrom, and further means for at least impeding endless movement of said dusting member in one direction.

In use a blackboard duster according to the present
10 invention will collect dust from a blackboard and retain it in the enclosed container, and since dust on the dusting surface will be removed in a substantially continuous fashion by the further means inside the container the dusting surface will be better able to collect dust
15 from the blackboard. To permit proper operation of a blackboard duster according to the invention it is only necessary that the endless movement of the dusting member is sufficiently impeded in one direction to ensure that it moves relative to the blackboard surface when drawn
20 across it, and freely allowed in the contrary direction so that it can move past the further means in the container to enable such means to remove dust from the dusting surface. In a preferred embodiment said further means prevents movement of said dusting member
25 in said one direction and freely allows movement thereof in the contrary direction. The said further means preferably comprises a form of pawl and ratchet mechanism.

The dusting member preferably comprises an endless dusting belt which passes around guide means including at least one roller.

A number of preferred embodiments of the invention will now be described by way of example and with reference to the accompanying drawings wherein:-

Fig. 1 is a front perspective view of a blackboard duster according to the invention showing partial hidden detail;

Fig. 2 is a side view of the Figure 1 embodiment of the invention;

Fig. 3 is a view taken along lines 3-3 of Figure 1;

Fig. 4 is a view of a pawl and ratchet mechanism of the Fig. 1 embodiment;

Fig. 5 is a perspective view of another blackboard duster according to the invention showing partial hidden detail;

Fig. 6 is a perspective view of another blackboard duster according to the invention showing partial hidden detail;

Fig. 7 is a side view of yet another blackboard duster according to the invention; and

Fig. 8 is a front perspective view of the Fig. 7 embodiment of the invention, the dusting member having been omitted for clarity and partial hidden detail being shown.

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Referring in particular to Figures 1,2,3 and 4 of the drawings a blackboard duster 10 generally comprises a container in the form of box 1 having two rollers 4 rotatably mounted therein and projecting laterally through an aperture in the box wall, a dusting member in the form of an endless belt 5 passing round the rollers and engaging a fixedly mounted brush 9, inside the box, and spring pawls 7 arranged to engage with ratchet teeth 103 on the rollers 4.

10 The box 1 is open ended and provided with a closed housing 2 at one end and an open receptacle 3 at the other end. Housing 2 is held in releasable engagement with box 1 by clips 11, one wall of housing 2 effectively forming an end wall for box 1. Receptacle 3 is releasably held on
15 the other end of box 1 by interlocking convex projections 13 and 14 on the inner surface of receptacle 3 and outer surface of box 1 respectively. Receptacle 3 effectively seals this open end of box 1.

 The rollers 4 have shafts 101 at each end and these
20 rotate in holes in the wall of housing 2 forming the end wall of box 1, at one end, and in a partition 6 at the other end. The partition 6 extends only part way across the box 1. A projection 8 extends from the partition 6 to the wall of housing 2, between the rollers 4. The
25 projection 8 serves as a cushion support for the belt 5 and is constructed so that its thickness is slightly less than the diameter of the rollers. The projection 8 therefore does not extend through the aperture in box 1 as far as do the rollers.

The belt 5 is made from any suitable material which can erase and collect chalk dust from the surface of a blackboard, and the inner surface of belt 5 is rough in nature to increase the frictional interaction with the rollers 4. The rollers 4 are provided with corrugations other surface discontinuities to further increase the frictional interaction with the belt 5.

The spring pawls 7 are mounted in housing 5 and extend through the wall of the housing to be proximate the ends of the rollers 4. These ends of the rollers 4 are provided with ratchet teeth 103 which cooperate with the spring pawls 7.

Fixed on the sides of the box 1 adjacent the belt 5 are blocks 12 of woven cloth or sponge material.

When the duster 10 is to be used to clean a blackboard it is moved across the surface of the board in a direction which will cause the spring pawls 7 to engage the ratchet teeth 103, and thus prevent rotation of the rollers 4. The belt 5 will therefore be held against endless movement and the surface thereof will collect dust from the blackboard. If the duster is then moved in the contrary direction the rollers 4 will rotate and the belt will move with them. When an area of the belt which has collected dust passes the brush 9 the dust will be substantially removed and retained in box 1. In this way the blackboard duster can intermittently present a cleaned dusting surface to the board, the effects of clogging are

reduced, and less dust is spread into the atmosphere.

The provision of the releasable receptacle 3 allows for the periodic emptying of the duster. By shaking the duster with receptacle 3 lowermost, dust in the box 1 can fall
5 into the receptacle 3 and this can then be detached and the dust disposed of.

Although brush 9 is provided to clean the belt 5, the belt will require further intermittent cleaning. Housing 2, which carries one end of the rollers, can be
10 released from engagement with box 1 allowing the removal of the rollers 4 and belt 5 so that they may be cleaned.

Referring particularly to Figures 5 and 6, in other preferred embodiments only one roller 4 is provided. The projection 8 may then be extended to define the path of
15 belt 5, as in Fig. 5, or the roller may be mounted centrally as in Fig. 6 and two projections 8a and 8b provided to defined the path of belt 5 and the effective dusting area of the duster.

Figures 7 and 8 show another embodiment of the invention
20 in which alternative means for emptying the duster are provided. In this embodiment the housing 2 is 'open', that is the wall that closed the end of box 1 is no longer provided. Instead the rollers 4 have their shafts 101 received in holes in a partition 17. The partition
25 17 extends part of the way across the box 1, and also contains the spring pawls 7. Swing doors 15 and 16 are hinged on the outer surfaces partitions 6 and 17 respectively. Sliding panels 18, 19, 20 are provided

in the end faces of housing 2 and receptacle 3, and the back face of box 1 respectively.

5 In use if the duster is in a vertical position as shown in Fig. 7 swing door 15 will open under gravity and door 16 will close. In this situation, with the sliding panels closed, dust removed from a blackboard will pass into receptacle 3. If the duster is then inverted so that door 15 closes and door 16 opens, the dust in receptacle 3 will be retained, while dust
10 subsequently collected by the duster will fall into housing 2. In this manner the spreading of collected dust back into the atmosphere is further reduced.

The sliding panels 18 and 19 allow access to housing 2 and receptacle 3 respectively, so that they can be
15 easily emptied. The sliding panel 20 allows access to either housing 2 or receptacle 3 depending which way it is moved, and again the two containers can easily be emptied. Although in the embodiment shown both separate panels 18 and 19 and the single panel 20 are provided
20 it will be clearly understood that either both the former panels or the latter panel will provide sufficient access for emptying the boxes 2 and 3.



Claims:

1. A blackboard duster comprising a dusting member having an endless dusting surface mounted for endless movement and passing through an enclosed container for dust, means engaging the said dusting surface in said container for removing dust therefrom, and further means for at least impeding endless movement of said dusting member in one direction.
2. A blackboard duster as claimed in claim 1 wherein said further means prevents movement of said dusting member in said one direction and freely allows movement thereof in the contrary direction.
3. A blackboard duster as claimed in claim 1 or 2 wherein said further means comprises a pawl and ratchet mechanism.
4. A blackboard duster as claimed in any one of claims 1, 2 or 3 wherein the dusting member comprises an endless dusting belt which passes around guide means including at least one roller.
5. A blackboard duster according to claims 3 and 4 wherein the pawl engages ratchet teeth on the at least one roller.
6. A blackboard duster as claimed in claim 4 or 5 wherein the guide means includes a guide member for the belt.
7. A blackboard duster as claimed in claim 6 wherein one roller and two guide members are provided.



8. A blackboard duster as claimed in any of claims 4, 5 or 6 wherein two rollers are provided.
9. A blackboard duster according to any preceding claim wherein said container is provided with detachable means for allowing the emptying of dust from the container.
10. A blackboard duster as claimed in claim 9 wherein the detachable means is in the form of a detachable section of the container.
11. A blackboard duster as claimed in claims 9 or 10 wherein the detachable means are slidably detachable from the container.
12. A blackboard duster as claimed in claims 9 or 10 wherein the detachable means is a detachable clip-fit with the container.
13. A blackboard duster as claimed in claims 9 or 10 wherein the detachable means are releasably attached to the container by clips.
14. A blackboard duster according to any preceding claim wherein the means for removing the dust from the dusting surface is a brush.
15. A blackboard duster as claimed in any preceding claim wherein the container is subdivided into a plurality of sub-containers interconnected by swing doors.
16. A blackboard duster substantially as herein described with reference to the accompanying drawings.
17. A blackboard duster substantially as herein described



with reference to Figures 1, 2 and 3, or 5, or 6, or
7 and 8 of the accompanying drawings.
