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ERASER

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Fig. 1.

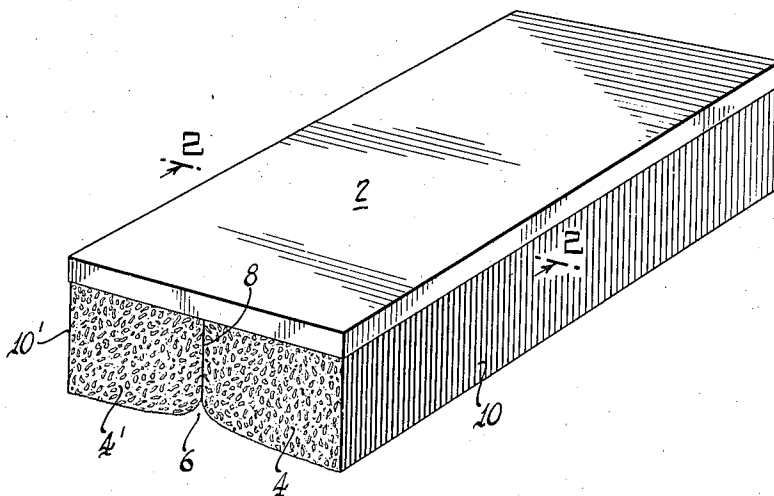
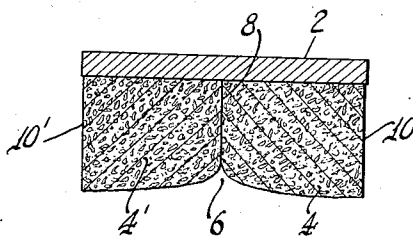


Fig. 2.



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ERASER

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2 Claims. (Cl. 15—244)

This invention relates to devices for cleaning flat surfaces and more particularly to erasers made of permeable rubber sponge material, especially sponge of the type now commonly used for mattresses, upholstery, etc., e. g., as made by direct vulcanization of a concentrated or freshly coagulated latex, which are adapted to remove the chalk marks from chalkboards, and particularly glass chalkboards.

The above-mentioned type of sponge-rubber, which is known commercially under the trade name "Airfoam," is characterized by numerous internal cavities or thin-walled cells, each connected with the exterior, directly or through intermediate cavities or cells, by smaller, naturally occurring, and therefore smoothly-formed openings in the walls thereof. It is these openings which distinguish this type of sponge-rubber from the older type made by milling into the rubber particles of ammonium carbonate or other "blowing agent, each of which particles during vulcanization decomposes to produce a small bubble with sealed walls of rubber. In this specification I shall designate the first mentioned type by the word "fistulary," by which I mean to emphasize that its cavities are essentially connected with the exterior by naturally occurring, smoothly formed, small openings as distinct from artificial punctures or tears in a cellular body which is not naturally permeable.

It has been known to the art in the past to use rubber sponge cemented onto a composition back as a chalkboard cleaner; but the problem of preventing a great amount of chalk dust from emanating into the air as an eraser is moved back and forth over the chalkboard has not been solved thereby.

It is an object of the present invention to materially reduce the amount of chalk dust which escapes from such an eraser, and it is a further object of this invention to avoid blowing out of dust by any pumping action which would normally be expected to occur when an eraser is moved backward and forward over the chalkboard. This pumping action results from a compression of the leading edge and a trailing with a relaxation of pressure in the opposite edge, which conditions are reversed when the direction of movement is reversed and thus causes air to pass from one part of the eraser to another, and in so doing tends to blow particles of the chalk dust out of the crevices in the sponge or other absorbent material. According to my invention, I provide the sides of an eraser and cells within the eraser with substantially

permeable but foraminous dust-restraining surfaces which, while in no way interfering with the ability of the eraser itself to absorb chalk dust, reduces the amount of chalk dust which can escape through the sides and into the air.

Advantageously, I also provide such an eraser with at least one impervious barrier transverse to the wiping surface by which the "pumping" action mentioned above can be reduced.

Other objects of this invention will be apparent from the following description and the accompanying drawing.

Referring first to the drawing:

Fig. 1 shows a perspective view of an eraser constructed according to my invention; and

Fig. 2 shows a cross section through such an eraser.

Referring first to Fig. 1, the back 2 may be made of leather, press board or one of the formed plastic materials, and forms a rigid member which is easily held in the hand. Attached to this rigid backing member 2 is the fistulary sponge erasing material 4, in which erasing material is a groove 5 running the length of the eraser. At the center of this groove is a substantially impervious section 8 which runs through to the back and holds the center of the sponge compressed to form the groove and prevents pumping action between the part of the eraser 4 and the part 4' as the eraser is moved back and forth over the board.

In order to further prevent the escape of chalk dust from the eraser, the sides 10, 10' are also made of relatively chalk impervious rubber, these outer surfaces, however, in the preferred form, are permeable to air having numerous minute pores so that it acts as a filter. This relatively chalk-impervious foraminous rubber section 10, 10' restrains the chalk dust from being pumped from the sponge rubber sections 4 and 4' out through the edges 10 and 10' into the air surrounding the eraser, particularly through the edge of the eraser in compression, e. g., the trailing edge. It may also be advantageous to make the other ends of the eraser 4 and 4' on Figs. 1 and 2, chalk-impervious in the same manner as the edges 10 and 10'. However, since the eraser will generally be wiped centrally over the chalk-marks, the dust will have to pass through the many foraminous surfaces of the cell walls before it could pass out through the smaller ends of the eraser; and thus it is in practice not so important to have the foraminous "skin" at these smaller ends.

The groove down the center of the eraser also

serves this purpose of reducing the "pumping" of chalk dust as well as other purposes. As the eraser is moved back and forth over the chalkboard a quantity of the chalk dust is held in the groove and this gives the erasing material time to absorb more of the chalk dust than would otherwise be possible.

A third purpose served by this center barrier is that of mechanically preventing the entire eraser from acting as a unit. If the entire eraser acts as a unit, the surface touching the chalkboard is entirely in compression, the pores being closed by an overlaying action similar to that which occurs in a brush when its bristles overlies one another as it is drawn across a surface, and the interstices in the rubber thus are all partly closed, reducing its ability to remove and absorb the chalk. The center barrier, however, causes the trailing half of the eraser to act with its surface in tension, and the interstices are thus stretched fully open, which action greatly increases the ability of the eraser to absorb the chalk dust.

A further purpose of the center barrier and groove is to reduce the force necessary to push the eraser over the chalkboard surface. The reduction of the surface in compression and the presence of the separating space results in this lowering of the force.

The use of a rubber eraser is particularly advantageous on glass chalkboards, since the glass is an abrasive surface and rubber is better able to withstand the abrasive action than other erasing materials.

The preferred method of making the eraser, as shown in the figures and described above, is to make strips or sheets of the fistulary sponge rubber of thickness half the width of the finished eraser, and with its two sides retaining the finely pervious natural "skin" formed at the mold surfaces during vulcanization of the rubber. Strips are then cut to the length of the desired eraser and width equal to the thickness desired in the eraser, thus exposing at the wiping surface the more open sponge structure of the interior. Two of these pieces are then cemented side by side onto the rigid backing piece, and also the two pieces of rubber are cemented together and dried or vulcanized with a compression force applied between the back and the erasing surfaces. This results in the central barrier consisting of the

two side "skins" cemented together, and the cement film in this barrier being shorter than the normal width of the adjacent skins and with a greater tensile stiffness, which results in the eraser being permanently depressed along this line at the center when the compressive force is removed.

By "cutting" the strips in the above description it is also intended to include grinding or otherwise removing the sides of a block of rubber molded to somewhat over proper size to produce the porous chalk absorbing surfaces.

It may be advantageous to have more than one groove down the length of the eraser. For example, the eraser may be divided into three or even more parts with groove between each one and a chalk impervious membrane or barrier in between each one. On the other hand one may have the groove without the chalk impervious barrier.

What I claim is:

1. A fistulary sponge eraser for chalkboards and the like which comprises two blocks of fistulary sponge rubber material, the external side surface of each block retaining its natural foraminous skin, and the inner side surface of each of said blocks being cemented to the adjacent side surface of the other of said blocks by an impervious cementing film, the said blocks being compressed adjacent said cemented surfaces and being held by said cementing film to a thickness less than the thickness of uncompressed portions of the block, and the erasing surfaces of both blocks being pitted by exposure of the cavities of said sponge structure without such natural skin.

2. The method of making a chalkboard eraser which comprises cutting two blocks of fistulary sponge rubber substantially to the same length and with the natural foraminous skin allowed to remain on two opposite sides of each, cementing and pressing together said skins on one of said sides of each block, cementing a rigid back to said blocks, and compressing said blocks toward the back while the cement is setting, whereby a cementing film at the surface where the two blocks are cemented together is formed narrower in its relaxed width than the normal released width of said adjacent skins before cementing and the cemented skins are thereby held compressed after the eraser is complete.

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