No. 649,599. **Patented May 15, 1900.**

G. F. DE FORREST.

BLACKBOARD ERASER.

(Application filed Dec. 19, 1898.)

(No Model.)

Fig. 1.

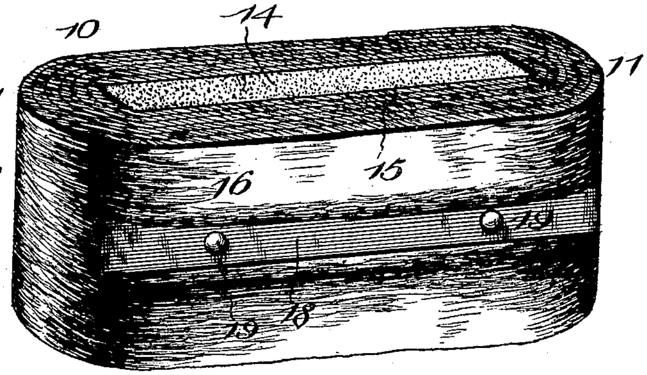


Fig. 2.

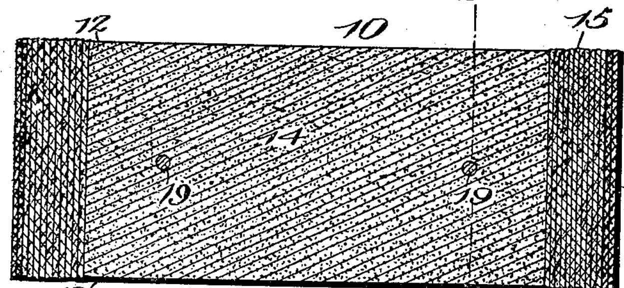
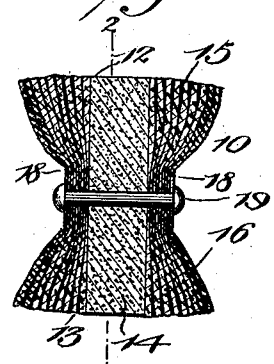


Fig. 3.



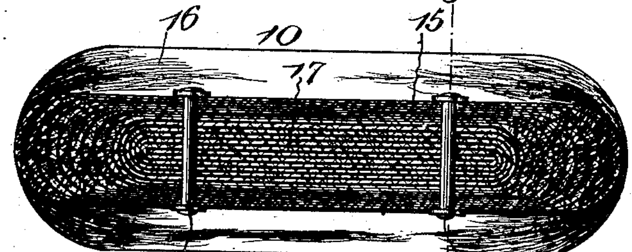
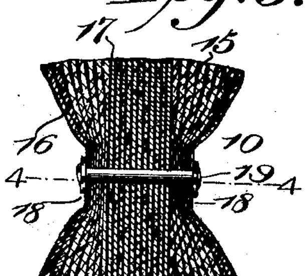


Fig. 4.

Fig. 5.



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GEORGE F. DE FORREST, OF HUNTINGDON, PENNSYLVANIA.

BLACKBOARD-ERASER.

SPECIFICATION forming part of Letters Patent No. 649,599, dated May 15, 1900.

Application filed December 19, 1898. Serial No. 699,731. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. DE FORREST, a citizen of the United States, residing at Huntingdon, in the county of Huntingdon and State of Pennsylvania, have invented a new and useful Blackboard-Eraser, of which the following is a specification.

My invention relates to improvements in blackboard-erasers; and the objects in view are to provide an improved device which is composed entirely of fabric for the purpose of making the device practically noiseless when it falls upon the floor, to secure a double working surface to the implement, which enables it to be used reversibly, and thereby prolongs the life and service thereof, and which provides a secure hand-grasp.

My eraser, being made entirely of fabric, will not make enough noise when it falls on the floor to annoy the teachers or pupils in the school-rooms, and if the implement is used as a missile by an angry or unruly pupil it will not injure the person whom it may strike even if thrown with considerable force. The parts of the eraser are bound or united firmly together to present a solid compact structure, and the fibrous eraser-body, while it serves as an efficient surface for effacing crayon-marks, will not absorb the particles of crayon to such an extent as to render it difficult to cleanse the device.

With these ends in view my invention consists in the construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of the specification, and in which—

Figure 1 is a perspective view of an eraser constructed in accordance with the invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is a vertical cross-section. Fig. 4 is a horizontal sectional view taken longitudinally through another embodiment of the invention. Fig. 5 is a vertical cross-section through an eraser constructed as represented by Fig. 4.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

The eraser of my invention is designated in its entirety by the numeral 10, and, as represented by the drawings, it is substantially oblong in form with rounded blunt ends 11. This eraser is constructed entirely of fabric, as will hereinafter appear, to provide working surfaces 12 13 on the opposite faces of the body, and the implement is furthermore constructed to give the sides thereof a peculiar cross-sectional contour which enables the operator to grasp the implement very firmly in either of the positions of use of the device. The eraser is reversible side for side to bring either of its working faces 12 13 in contact with a blackboard or other surface from which it is desired to efface crayon or chalk marks, and by making the implement with two working surfaces and constructing its body so that it may be grasped in either adjustment the life and service of the device are materially prolonged and it is well adapted for use by the operator.

The eraser consists of a fibrous core 14, a coiled or wrapped fabric body 15, and a case or sheath 16, which is flush with the coiled body to present both of the working surfaces of the implement to view. The core 14 may consist of a single continuous piece of felt or other analogous material of the proper shape and dimensions, around which the strip or length of fabric is wrapped compactly to produce the coiled body 15; but I do not limit myself to the particular type of core shown by Figs. 1 to 3, inclusive, because this core may consist of a coiled piece of fabric, as represented by Figs. 4 and 5. The core 17 in the embodiment of the invention shown by Figs. 4 and 5 is made or composed of a single piece of fabric wrapped upon itself until it attains the desired thickness and contour in longitudinal and transverse section, and around this core 17 is wrapped the fabric which produces the coiled body 15. When the coiled fabric core 17 is employed, I make the core of a number of layers of relatively-stiff fabric, which are united firmly together to present a comparatively-stiff piece of fabric, and the laminations or layers of the fabric are joined by a suitable cementitious substance, such as glue or paste.

In the manufacture of my fabric black-

board-eraser the core 14 or 17 is first produced, either by cutting the core from a single piece of felt or by wrapping a piece of fabric upon itself and uniting the laminations by an adhesive substance. The fabric from which the coiled body 15 is to be produced corresponds in width to the core, and the length of the fabric is such as to give the desired width to the implement. This fabric is of a soft nature as compared with the core, and the fabric is coiled or wrapped the desired number of times around the core until the body attains the desired width. The edges of the fabric forming the coiled body are flush with the edges of the core, and the case or sheath 16 is now applied for its edges to be flush with the core and the coiled body. In applying the fabric around the core to produce the wrapped or coiled body I may cement the laminations or layers of the fabric one to the other in order to secure compactness and firmness; but the edges of the fabric body should not be cemented solidly together in order that the layers of the coiled body may yield or flex when the eraser is frictionally brushed across the surface of a blackboard. After the sheath or casing has been wrapped one or more times around the coiled body I subject the implement in its embryo condition to considerable pressure along the median line and on opposite sides in order to produce therein the longitudinal grooves 18 and to give the body a cross-sectional contour, which enables it to be firmly grasped in the hand in either position of use of the implement. It may be necessary to subject the fibrous implement to considerable pressure along its median line for the production of the grooves 18 in the opposite faces of the tool, and by this step in the process of manufacturing the eraser the laminations or layers of the fabric are compacted solidly and rigidly along the central line of said eraser, thereby leaving the edges of the fabric forming the coiled body comparatively free and yieldable. The compacted layers of the body along the central line of the eraser are prevented from expanding or returning to their normal condition by means of transverse fasteners 19, which are inserted through the grooved pressed portions of the eraser. These fasteners may consist of rivets having separate plates or washers confined between headed ends of the rivets and the compressed central part of the implement, as shown by Figs. 4 and 5; but the form of the rivets is not material, as fasteners headed at both ends may be used, as represented by Figs. 1 to 3, inclusive.

In my eraser the core and the fibrous web are essentially distinct elements one from the other; but they are so combined in a single article as to contribute mutually to effacing the crayon and collecting the dust. The core, while made of fibrous material, is essentially non-yieldable, so as to present a relatively-hard fibrous surface adapted under the greatest pressure that may be applied to the eraser not to give or be pressed away from the blackboard-surface, thus making the core serve efficiently in effacing the chalk-marks. On the other hand, the coiled web is free or unconfined at both edges thereof, while the middle part of the web is compressed along the line of the major axis thereof. This web is thus arranged to leave relatively-small spaces between its laminations for the collection of the dust, and at the same time the edges of the web are flush with the exposed edges of the relatively-hard core, so as to coact therewith in effacing the chalk-marks. In the eraser using a one-piece core of Figs. 1 to 3, inclusive, a piece of compressed felt is employed, while in the eraser of Figs. 4 and 5 the core is produced by tightly winding a fabric strip and cementing the layers thereof together, so as to produce the relatively-hard non-yieldable fibrous core. The eraser of Figs. 4 and 5 may thus be made economically of one kind of material. It is therefore to be understood that my eraser has its elements confined to thoroughly efface the chalk-marks to the best advantage and to collect the loose dust.

The fabric used to form the case or sheath 16 is of a tough non-absorbent nature, such as canvas or duck, in order to make the device wear to the best advantage and to prevent absorption or saturation by the crayon or chalk; but the particular material used for the sheath is not important.

By making the eraser entirely of fabric it is practically noiseless in service and will not annoy the occupants of a school-room when it drops on the floor. By pressing the fabric eraser along its median line the edges of the fabric body are left free or unconfined except as to the extent afforded by the case or sheath in order that the edges of the soft fabric may serve as efficient erasive surfaces, and at the same time the body is constructed with a solid central portion and is given a cross-sectional contour which enables the implement to be firmly grasped, the sides of the body being deflected or flared outwardly from the compressed central portion. The body is prevented from getting out of shape by the fasteners applied to the compressed portion thereof. The implement is constructed to prevent the penetration of the crayon or chalk into the compacted core, and the eraser may be cleansed from the accumulated chalk with facility. The device may be manufactured and sold at a low figure, and it is simple and durable in construction.

Although the sheath 16 of the body is of tough material, the layers or laminations of fabric forming the coiled body prevent absorbent surfaces and edges adapted to take up and hold the chalk-dust and prevent it from floating in the air of the school-room. The laminations of the coiled body are relatively free at their edges and said laminations, as well as the core, to absorb the chalk-dust; but as the body is compacted under pressure along its transverse median line the

dust does not penetrate clear through the eraser, thus enabling the implement to be cleansed with greater facility.

I am aware that prior to my invention a blackboard-eraser has been provided consisting of a plurality of flat layers arranged in overlapping order for the edges of all the layers to lie flush with each other, fabric bindings supplied to the faces of the outside layers, and rows of stitches which pass through the bindings and the layers on lines adjacent to and parallel with the side and end edges of the layers and the bindings. I am also aware that it is not new to make the body of a blackboard-eraser entirely of fabric which is coiled upon itself and to combine with such fabric a flexible packing which provides for the attachment of a spring-handle. I am also aware that a two-part blackboard-rubber has been provided with a narrow working face, which is coiled around one member of the eraser and is adjustable therewith in relation to the other member of the eraser for the purpose of projecting the working face more or less according to the wear thereon; but all these prior constructions are hereby disclaimed. In my implement a fibrous core is employed. A web of fibrous material is wrapped continuously around this core for its edges to lie flush with the edges of the core to coöperate therewith in forming working surfaces on opposite faces of the eraser, and the core and wrapped web are united by rivets, which are disposed centrally with relation to the article and which tend to compact the web, so as to closely draw the layers thereof together and around the fibrous core. This construction and arrangement of parts provides grooves in the opposite sides of the eraser for the purpose of forming a convenient handhold in using either face of the article as the rubbing surface, and a further advantage resides in the fact that the edges of the coiled web are left free or unconfined, so as to yield or flex in the operation of the device for the purpose of forming a comparatively-soft rubbing surface and of leaving spaces between the individual layers, which spaces collect the crayon in the operation of the device.

Having thus described the invention, what I claim is—

1. A blackboard-eraser comprising a relatively-hard, non-yieldable fibrous core, a fibrous web coiled continuously around the core and having both edges flush therewith, forming the duplicate working faces one on each side of the eraser, and fasteners passing through the core and the web in the plane of the longitudinal center of the eraser and compressing the middle portion of the web and core tightly together, the edges of the web being unconfined and free to flex or yield laterally on both surfaces of the eraser, substantially as and for the purposes described.

2. The blackboard-eraser herein shown and described comprising an elongated relatively-hard, non-yieldable fibrous core having layers coiled upon themselves, a relatively-soft absorbent fibrous web coiled or wrapped continuously around the sides and ends of the fibrous core and having both edges thereof flush with the edges of the layers of said core, forming duplicate working faces one on each side of the eraser, a wrapper of non-absorbent fabric inclosing the web, and transverse fasteners lying in the same plane and passing through the middle portion of the eraser, said fasteners compressing the web tightly at the longitudinal center of the body and the edges of the web being free to flex or play laterally on both working surfaces of the eraser, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEO. F. DE FORREST.

Witnesses:
JAMES G. SPANGLER,
L. E. EDWARDS.