March 18, 1969 TOYO ISHIDA 3,432,944

BLACKBOARD

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FIG. 1

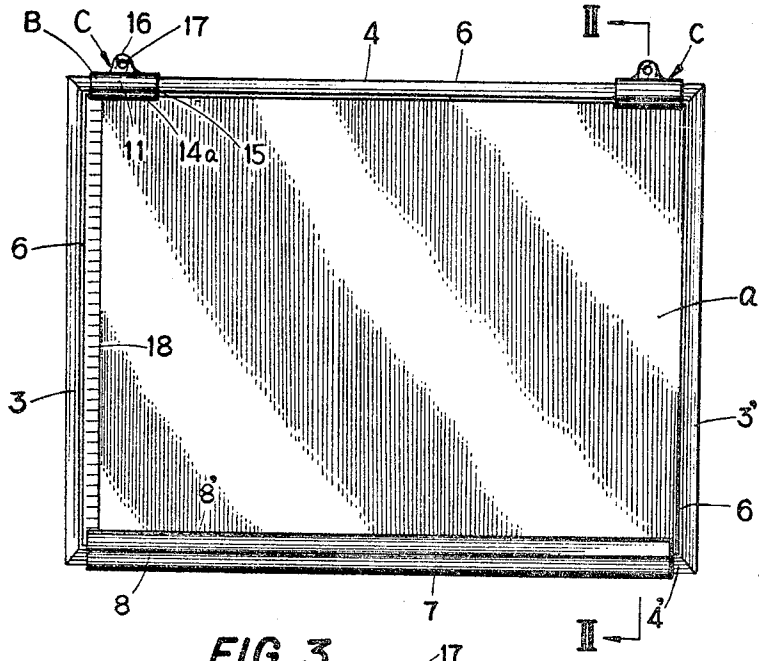


FIG. 2

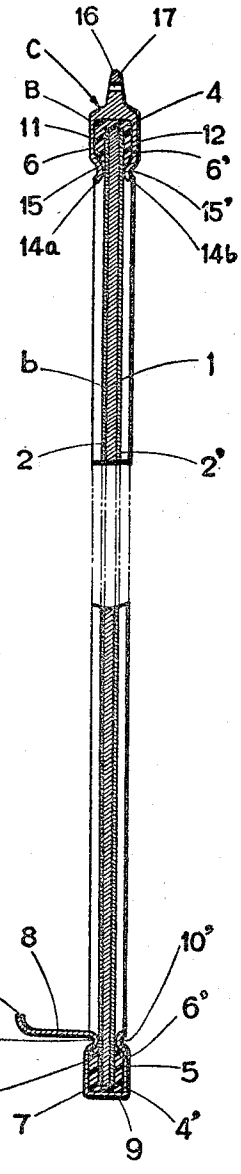


FIG. 3

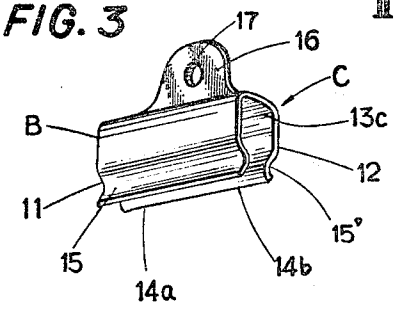
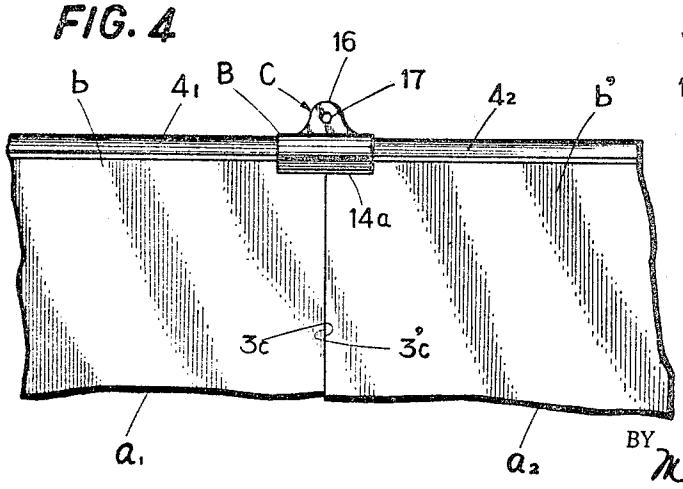


FIG. 4



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BLACKBOARD

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FIG. 7

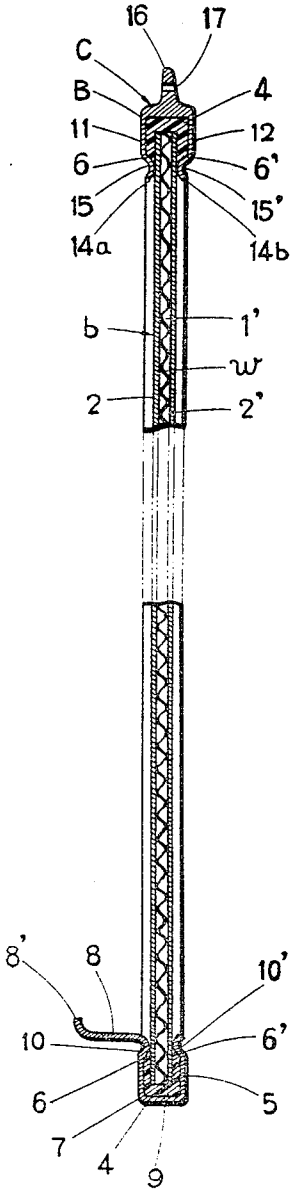


FIG. 5

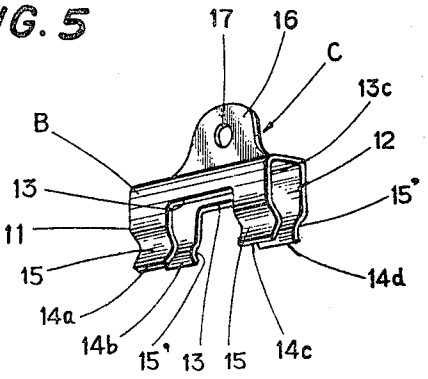
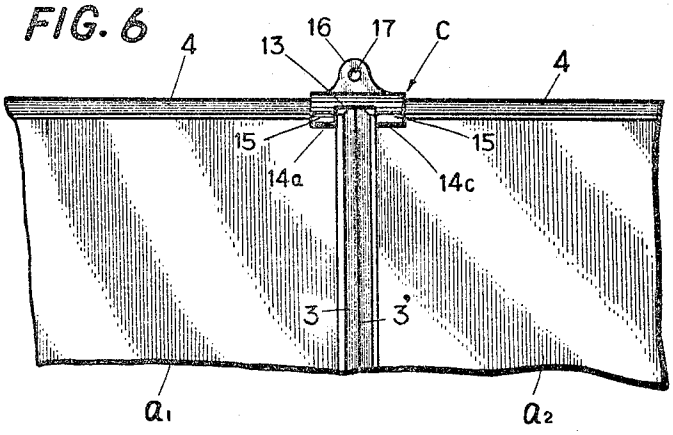


FIG. 6



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United States Patent Office 3,432,944
Patented Mar. 18, 1969

3,432,944

BLACKBOARD

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Filed Sept. 1, 1965, Ser. No. 484,215
U.S. Cl. 35—66 5 Claims
Int. Cl. B43l 1/04, 1/10

ABSTRACT OF THE DISCLOSURE

An inexpensive lightweight blackboard includes a substantially rectangular backing sheet which may be of an inexpensive metal construction or a corrugated board construction. A facing sheet of a material such as cardboard is secured over the complete area of the backing sheet preferably by means of a pressure-sensitive adhesive to permit its removal and replacement when desired. The surrounding frame of the blackboard is made by channel members of substantially U-shaped configuration which include leg portions which extend inwardly from each side of the blackboard against the underlying facing sheet of each side of the blackboard. At least the top and the two sides of the frame are provided with members of this character and the bottom of the frame is advantageously formed by a combination frame member and chalk receptable which includes a U-shaped portion with legs which are resiliently biased against the respective underlying sheets and which also includes a substantially horizontal portion which extends outwardly from one side of the blackboard for receiving chalk or other materials thereon.

The blackboard may be suspended by means of clip elements which include U-shaped portions which fit over the frame elements and resiliently engage the blackboard and which carry upwardly extending portions defining eyelets for receiving securing screws and the like. Similar clip members are also formed with a cutout portion arranged to bridge two frame elements of adjacent blackboards which may be held together by such clip elements.

This invention relates to an improvement in the construction of a blackboard, more particularly to a blackboard that is light in weight and can be easily hung, replaced, connected to other blackboard units to obtain a wide dimensioned blackboard and which is provided with a removable chalk receptacle which extends outwardly from the lower end of said blackboard.

Most of the known blackboards are made of wood and heavy in weight. Relatively lightweight plywood blackboards have the disadvantage that they tend to become warped due to the changes of humidity, and are not easy to hang, replace or relocate. A heavy and large blackboard has been used commonly for its durability, however it is much too expensive in price, and they usually have an undesirable reflective coating surface so that sometimes chalk characters are illegible. They require a strong support for sustaining their weight or a specially prepared hanger. Also it is impossible to extend or reduce the surface on which the characters are written.

According to this invention, the whole construction of the blackboard is extremely light in weight, and the area may be increased or reduced by adding a desired number of blackboard units with a novel blackboard hanging device, and also the chalk receptacle of the blackboard can be easily removed for cleaning.

Accordingly, the main object of this invention is to provide a novel and economical lightweight blackboard, comprising a core made of thin metal plate or corrugated cardboard, both surfaces of which have a removable facing made of a material like cardboard.

Another object of this invention is to provide a blackboard which is easy to manufacture, and can be repaired when the facing portion on which the characters are written in chalk are worn merely by recovering the facing.

The inventive blackboard can be hung with a specific hanger device which may be slidably fixed to an upper frame member. Also a number of the blackboard units can be connected to each other with the hanger device without using any linking means, such as a screw or bolt.

It is, therefore, another object of this invention to provide a novel hanger device for the blackboard.

When a wide dimensioned blackboard is to be constructed by connecting several of the above-described blackboard units horizontally, it is convenient to remove the longitudinal frame members from both sides of the blackboard to permit the alignment of several units side-by-side which are held together by hanger devices.

The drain-like chalk receptacle has a clip portion of generally U-shaped form which is removably inserted into the vertical lower side of the blackboard unit of this invention.

It is another object of this invention to provide a blackboard which is composed of a plurality of interconnected blackboard units and which carries a removable chalk receptacle.

A facing of the blackboard of this invention uses economical and lightweight material such as cardboard so that it is advantageous to manufacture the blackboard at a low cost. Further, the facing of this invention is provided with a suitable color coating and said facing can be easily recovered to make the characters written in a chalk on the facing clearly visible.

Other objects and features of novelty of this invention will be more clearly pointed out in the following description, claimed in the claims and illustrated in the accompanying drawings. In the drawings:

FIG. 1 is a front view of one embodiment of this invention showing one unit of the blackboard with a hanger device.

FIG. 2 is a longitudinal sectional view taken on line II—II of FIG. 1 showing one embodiment of the invention, in which thin metal plate is used as the core.

FIG. 3 is an enlarged perspective view of a hanger device.

FIG. 4 is a partial front view showing two units of the blackboards connected by the hanger device shown in FIG. 3.

FIG. 5 is an enlarged perspective view of another embodiment of the hanger device.

FIG. 6 is a partial front view showing two units of the blackboards connected by the hanger device .

FIG. 7 is a longitudinal sectional view showing another embodiment of this invention in which corrugated cardboard is used as the core.

Referring now to the drawings in more detail in FIG. 1 and FIG. 2 the blackboard unit A as shown in FIG. 2 is constituted by multiple plate member *b* including a core 1 made of thin metal plate such as steel, both surfaces of which are covered by adhered cardboard facings 2 and 2'. The plate *b* is substantially square, and frame

members 3, 3', 4 and 4' are inserted onto both of the longitudinal and vertical sides of the plate.

The facings 2 and 2' are adhered to both surfaces of the core plate by a suitable adhesive such as a pressure-sensitive adhesive, and they can be stripped off and exchanged in accordance with requirements.

The frame members are composed of wood or other material and are rectangular in cross section. Along its longitudinal direction, each frame has a U-shaped recess to permit it to be inserted onto the four sides of the multiple or layer plate *b*.

Each end edge of the frame members is cut diagonally to form mitre edges 6 and 6' for the good appearance of the blackboard unit A.

The chalk receptacle member 7 which is made of a pressed thin metal plate or a plastic molding is substantially the same length as the horizontal length of the blackboard unit. U-shaped channel 9 of the members is inserted over the lower edge of frame member 4' and a shelf-like receiver 8 extends outwardly from one side of the channel 9.

The upper parts of the channel 9 converge to form two projecting stripes 10 and 10'. The space between the stripes is narrower than that of the frame member 4' so that the channel portion 9 of the chalk receptacle member 7 is firmly secured to the lower side of the frame 4' by the clipping action or elastic force of the channel portion.

The receiver 8 of the chalk receptacle 7, as shown in the cross section, is a horizontal shelf which extends outwardly from the lower side of the blackboard unit and is formed as an extension of the one side of projecting stripe 10. Its terminating edge 8' is slightly bent upward to prevent any chalk dust from falling down.

The chalk receptacle 7 is advantageously a relatively elastic plate, made of a material such as polyvinyl chloride or other elastic synthetic resins.

The receptacle is elastically and firmly secured to the lower side of the blackboard by the U-shaped clip-like channel portion 9 instead of providing additional securing means such as nail or bolt.

A hanger device shown in FIG. 3 may be made by pressing a thin metal plate or by molding of a synthetic resin to form an inverted U-shaped channel like body B having a pair of tongues or jaw portions 11 and 12 which extend from the respective sides of the body and form a channel-like clipping portion 13*c*. The terminal edges 14*a* and 14*b* of the opening tongues 11 and 12 are respectively bent outwardly. The tongues 11 and 12 are provided with respective inward projections 15 and 15' preferably at their lower ends. The width between said projections is narrower than that of the channel 13*c* and the width of the channel portion 13*c* is substantially the same thickness as the above described frame member 4.

A suitable number of the hanger devices C are secured to the upper frame member 4 of the blackboard A to hang it on a hook or nail which may extend through a hole 17 positioned at the hanging portion 16.

FIG. 4 shows a manner to make a blackboard of wide dimensioned by connecting two blackboard units A_1 and A_2 with the use of the hanger device C shown in FIG. 3. To accomplish the interconnection, the corresponding side frame 3 and 3' of each blackboard A_1 and A_2 are removed and side margins 3*e* and 3*e'* are arranged side-by-side.

A hanger C is then positioned over the marginal areas of each blackboard adjacent the top edge and the chalk receptacle 7 is positioned to bridge both blackboards along the bottom margin.

FIG. 5 shows an improvement in the hanger device shown in FIG. 3. In this embodiment, recesses 13 and 13' which are twice as large as the longitudinal frame members 3 and 3' are provided between the tongue or jaw portions 11 and 12, and said terminating ends of jaw portions 11 and 12 are divided into four leg portions.

These recesses 13 and 13' are convenient to connect two or more blackboard units without removing its side frame members 3 and 3' as shown in FIGURE 6.

The terminating edges 14*a*, 14*b*, 14*c* and 14*d* of each tongue portions 11 and 12 form projections or expanded portions 15 and 15' respectively extending into the inside of the hanger device, the gap or space between projections is narrower than the thickness of frame member 4. When the hanger device according to this invention is applied the frame member 4 fits into the channel portions 15 and 15' and are well fitted to the inclined surface 6 and 6'.

The top of the body of this hanger device provides flat ear portion 16 having a nail receiving hole 17 on it.

As described above, this hanger device C' is not fixed to the frame member 4 with a nail or bolt but engaged by its channel portion 13*c* which can be moved along the longitudinal direction of the frame member 4. Two blackboards A_1 and A_2 can be connected by the hanger C without removing the frame members 3 and 3' as shown in FIG. 6.

The blackboard in this invention is very light in weight because it is constructed of lightweight material such as cardboard. In addition, the blackboard units are of comparatively small size.

According to this invention, the scale, the date section and similar written information 18 may be provided at a suitable position of the facings 2 and 2' as shown in FIG. 1.

In the embodiment of FIG. 7, a corrugated cardboard *w* is used as a backing or a core 1' which also is covered by facings 2 and 2' and forms substantially rectangular plywood-like board *b*, having four sides with frame members 3, 3', 4 and 4'.

What I claim is:

1. A blackboard comprising a substantially rectangular backing sheet having top, bottom and two side edges, a facing sheet for receiving writing thereon secured to at least one side of said backing sheet over substantially the entire area thereof, a substantially U-shaped channel frame member engaged over at least the top and two side edges of said backing sheet and extending along a major portion of each edge, said frame member having two inwardly directed leg portions overlying and engaged against respective opposite surfaces of said blackboard with at least one leg portion overlying the periphery of said facing sheet, and a chalk receptacle member having a substantially U-shaped portion engaged over the bottom edge of said backing sheet and having two resilient inwardly directed leg portions overlying and resiliently engaged against respective opposite surfaces of said blackboard with at least one leg portion overlying the peripheral edge of said facing sheet and including an outwardly extending substantially horizontal portion for supporting chalk and similar implements.

2. A blackboard according to claim 1, wherein said backing sheet is of a metal material.

3. A blackboard according to claim 1, wherein said backing sheet is a sheet of corrugated material.

4. A blackboard according to claim 1, including a supporting member secured to said blackboard over said top frame member comprising a U-shaped portion adapted to engage over said frame member and with legs extending inwardly and engaging over said facing sheet on each side of said board and having an upstanding portion having an eyelet for receiving a securing screw and the like.

5. A blackboard according to claim 1, including a removable facing sheet on each side of said backing sheet, and a clipped member for securing said board to an adjacent board having a U-shaped portion engaging said board adjacent a corner thereof and having a portion extending outwardly therefrom and forming a U-shaped portion adapted to be secured to another board and an upstanding portion having an eyelet opening therefor for receiving a securing bolt.

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