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[54] **SIMULATED STAINED GLASS ASSEMBLY AND  
METHOD OF MAKING THE SAME**  
9 Claims, 11 Drawing Figs.

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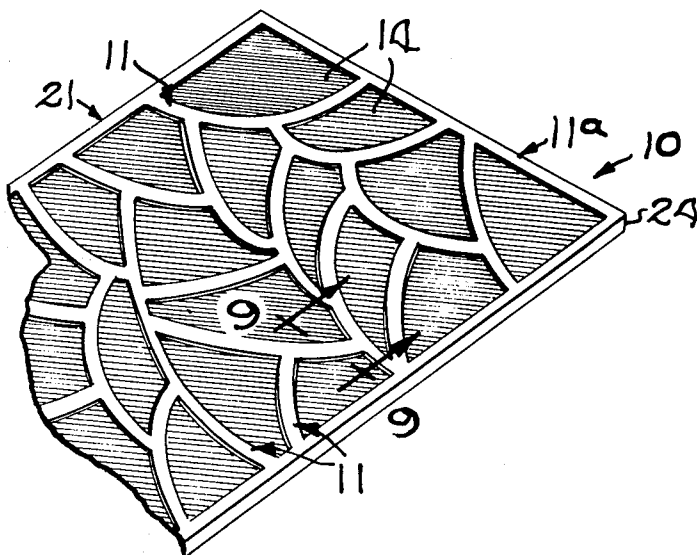
[50] Field of Search..... 156/245,  
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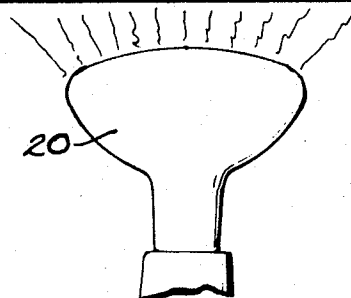
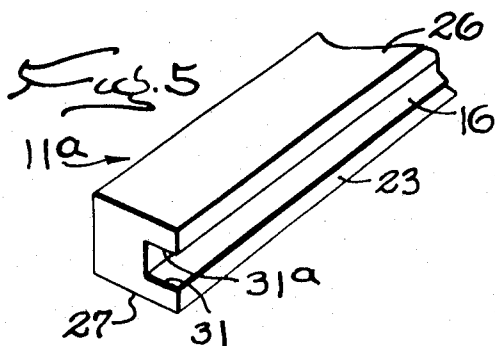
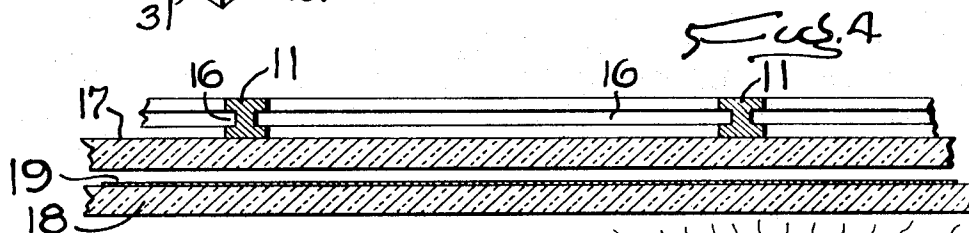
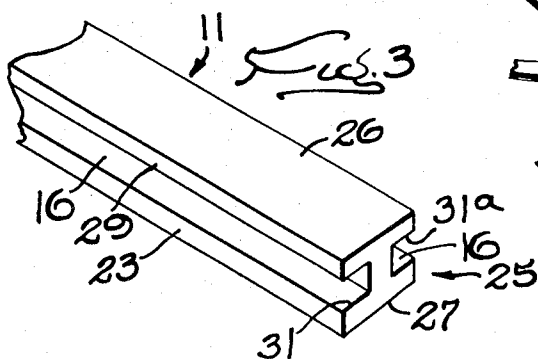
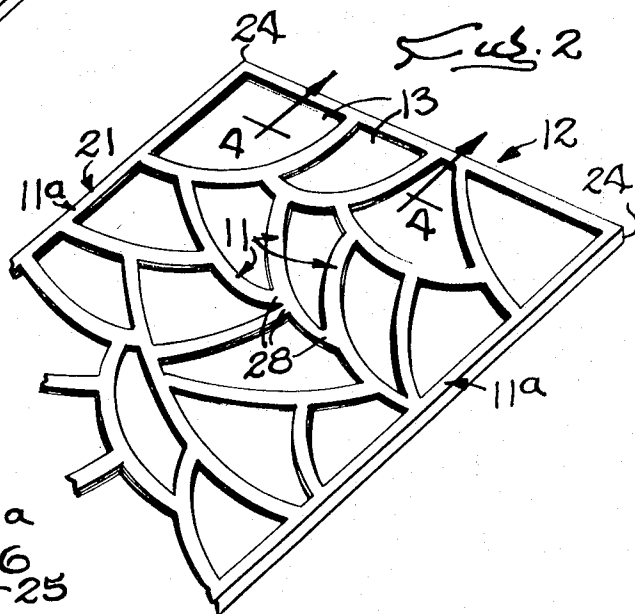
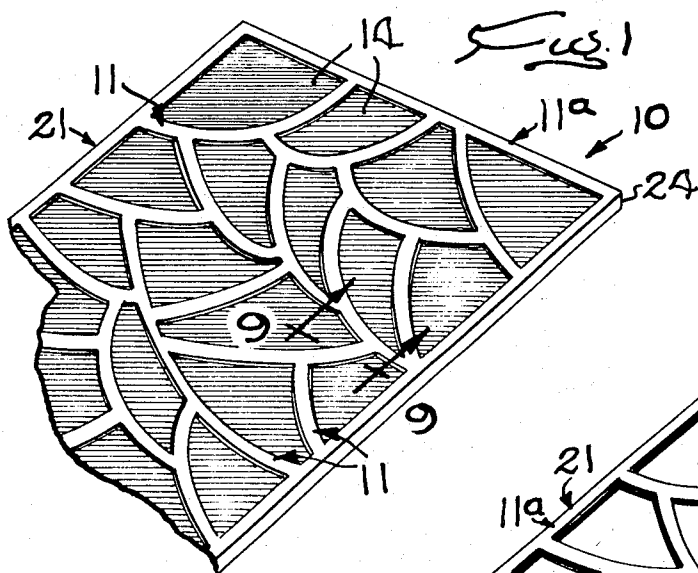
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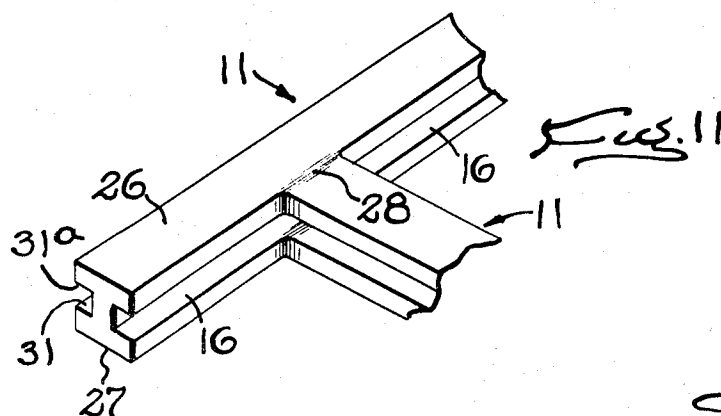
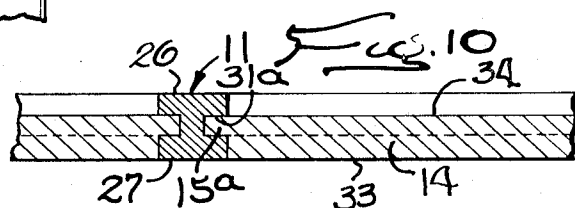
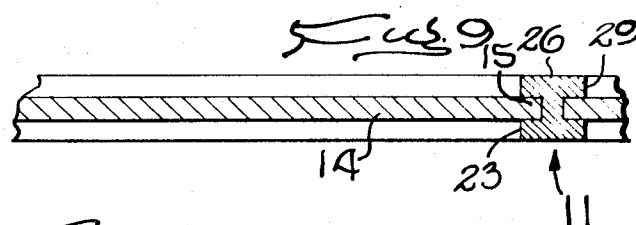
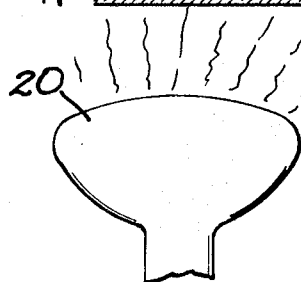
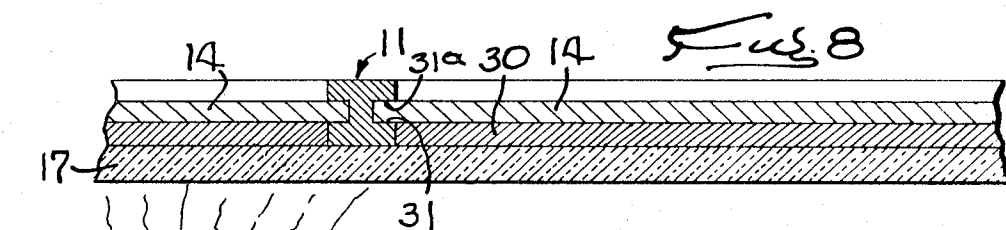
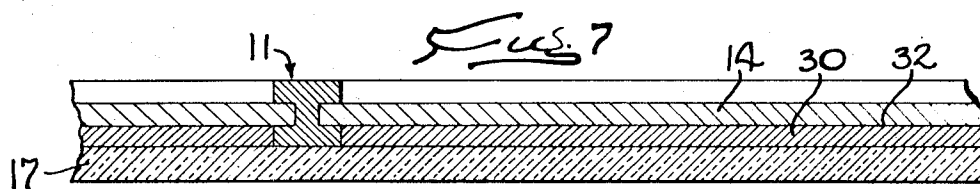
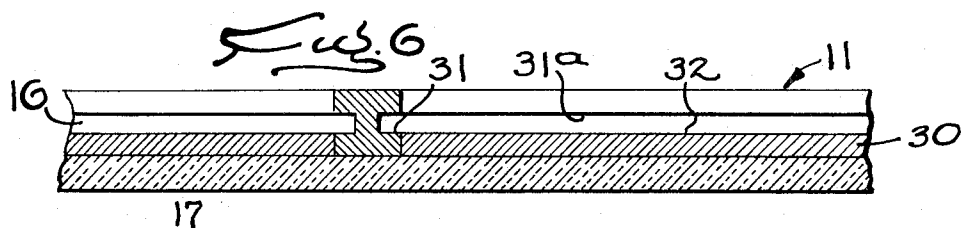
**ABSTRACT:** An assembly made from plastic which appears to be of stained glass set in lead, and the assembly can be made in any design that can be made by stained glass set in lead. The primary method for making the assembly is to arrange horizontally grooved plastic comes on a horizontal surface in the framework of the design desired, then to fill the design with a filler material to the bottom of the grooves, then to place variously colored liquid plastics in the design to fill it to the top of the grooves, next to cure the plastic, and finally to remove the filler material. In one variation of the method, no filler material is used and the liquid plastic fills the design from the bottom of the comes to the top of the grooves. When this variation is used, the resulting assembly appears to be stained glass set in lead only when viewed from one side.





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# **SIMULATED STAINED GLASS ASSEMBLY AND METHOD OF MAKING THE SAME**

## **BACKGROUND OF THE INVENTION**

In traditional stained glass assemblies such as windows, pieces of different colored stained glass are arranged in a desired design. The pieces of glass are mounted in grooved strips of lead called comes, and the comes are fastened together and to a frame to support and stabilize the assembly. Such stained glass assemblies are extremely heavy and, because they are handmade, very expensive. This invention relates to simulated stained glass assemblies made of plastic and to the method of making such assemblies.

## **SUMMARY OF THE INVENTION**

The general object of the present invention is to provide a new and improved method for making a plastic assembly that appears to be stained glass set in lead comes. An object of one aspect of the invention is to provide a new and improved assembly made of plastic and having the appearance of stained glass set in lead comes when viewed from either face of the assembly. An object of a modification of the invention is to provide a new and improved assembly and method for making such an assembly which has the appearance of stained glass set in lead comes only when viewed from one face.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view of the upper portion of an assembly embodying the novel features of the present invention.

FIG. 2 is a view similar to FIG. 1 but showing only the framework of the assembly.

FIG. 3 is an enlarged perspective view of a portion of one of the comes of the framework shown in FIG. 2.

FIG. 4 is a cross section taken substantially along the line 4—4 of FIG. 2 and showing the comes supported on a heatable work surface.

FIG. 5 is an enlarged perspective view of a portion of one of the edge comes making up the framework of FIG. 2.

FIG. 6 is a view similar to FIG. 4 but showing the filler material in place.

FIG. 7 is a view similar to FIG. 6 but showing the liquid plastic after it has been placed on the filler material.

FIG. 8 is a view similar to FIG. 7 but showing the filler material being heated to aid in its removal.

FIG. 9 is a cross section taken substantially along the line 9—9 of FIG. 1.

FIG. 10 is a view similar to FIG. 9 but showing a second embodiment.

FIG. 11 is an enlarged perspective view showing a welded joint which joins two of the comes in the framework of FIG. 2.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

In traditional stained glass assemblies, most commonly windows, pieces of stained glass are arranged by color and shape to make a particular desired design. Once the arrangement of the design is set, the pieces of stained glass are mounted in grooved lead strips called comes which separate the pieces and support them. These comes are fastened together and to an outer frame to form a stable framework in the desired design for the assembly. Such stained glass assemblies are heavy, and because they are handmade, very expensive.

The present invention contemplates a new and improved simulated stained glass assembly 10 (FIG. 1) made of plastic and formed in any desired design. Also contemplated by the present invention is a new and improved method for making such an assembly. For these purposes, grooved, lead appearing, plastic comes 11 and 11a (FIG. 2) are arranged as required to form the framework 12 (FIG. 2) of any desired design. This framework divides the design into a number of open sections 13 (FIG. 2) which are of the size and shape of the various color requirements of the design. These sections

are filled by pieces, herein called panes 14 (FIG. 1), of colored plastic which appear to be stained glass and which fill the sections in the colors required by the design. A peripheral edge portion 15 (FIG. 9) of each pane is mounted in the grooves 16 (FIGS. 3 and 5) of the comes which form the framework around that pane. To accomplish the mounting of the panes 14 in the framework, liquid plastic material of the appropriate color is poured into each section in such a manner that, when the plastic material is cured, the panes are formed with their edge portions in the grooves. With this arrangement, a plastic assembly in any desired design can be made and the assembly will appear to be stained glass set in lead comes. Such an assembly can be made much more easily and at a great deal less expense than a similar stained glass assembly.

As shown in FIG. 1, the assembly 10 is embodied in a window with an abstract design. To make such a window, a transparent horizontal work support 17 (FIG. 4) is used as a working surface to support the assembly as it is being made. Spaced a short distance below the work support is a second horizontal surface 18 so that a pattern 19 for the design of the assembly can be laid on the second surface and viewed through the transparent work support by the person making the assembly. To selectively heat the work surface, a series of heating elements 20 (one being shown in FIGS. 4 and 8) is located below the second surface.

After the design has been chosen and the pattern 19 for the design has been placed on the second surface 18, an outer frame 21 (FIG. 2) for the assembly is formed of edge comes 11a (FIG. 5). In this instance the edge comes are lengths of extruded plastic with a rectangular cross section and a groove 16 along one vertical surface 23. The edge comes are precolored to the appearance of lead and they are made of an appropriate thermoplastic so that they are rigid during the normal range of temperatures the assembly would be subjected to. To make the assembly of FIG. 1, four edge comes of the appropriate length are placed on the work surface 17 over the outer edge lines of the design pattern 19 with the groove 16 extending horizontally and facing inward. The corners 24 (FIG. 2) of the edge comes are then joined by plastic welding to create the four sides of the framework 12. The framework of the assembly is completed by inner comes 11 which, as shown in FIG. 3, are extruded lengths of the same thermoplastic as the edge comes 11a and formed with a rectangular cross section and a longitudinally extending groove 16 positioned at the middle of the vertical surfaces 23 and 25. While the comes 11 and 11a are shown as rectangular in cross section with their upper surfaces 26 and lower surfaces 27 (FIG. 3) being flat, these surfaces can be of any desired configuration, such as curved. The assembly has been described as rectangular but the outer edges need not always be straight. The edge comes 11a may be bent to give the assembly an outer edge that is round, curved or any irregular shape.

The inner comes 11 are placed on the work surface 17, and it is heated to a temperature sufficient to heat the inner comes to the point at which they are pliable enough to be shaped. After being heated, the inner comes are cut and shaped to form the remainder of the framework 12 required by the pattern. This is accomplished by following the pattern 19 seen through the transparent work support to place the inner comes. When the framework is fully formed, the ends 28 of the inner comes contact either another inner come or an edge come 11a. The inner comes are welded at each point of contact to one another or to an edge come (FIG. 11) to form the lead appearing framework 12. After the inner comes cool, the welded framework of inner comes and edge comes forms a rigid, stable framework in the desired design. The placement of the comes in the framework creates open sections 13 (FIG. 2) formed between the comes and completely surrounded by inner comes 11 or a combination of inner comes and edge comes 11a. These sections receive the various colored panes 14 which simulate the stained glass portion of the assembly 10.

To fill the sections 13 with the panes 14 (FIG. 1), a liquid thermoplastic material is poured into the sections while the framework 12 is lying on the work support 17, and the liquid plastic is cured by applying either heat or a catalyst. Herein, a catalyst is preferred. There are a number of liquid plastic materials and catalysts commercially available, and they are well known to those skilled in the art. The catalyst is mixed into the liquid plastic prior to the liquid plastic being placed in the sections 13. The liquid plastic material which is poured into each section 13 is colored appropriately to meet the color requirements of the design. Because of the color requirements of the design, the individual panes may vary in transparency from being completely transparent to being almost opaque. If any intricate or artistic details are required on any pane 14, these details are painted on while the plastic is being cured and is in the stage of curing just before solidity is reached.

When it is desirable for the assembly 10 to have the appearance of stained glass set in lead when viewed from any direction, such as when used as a window, the plastic panes 14 should be of approximately the same thickness as the grooves 16 in the comes so that the vertical surfaces 23 and 25 of the comes will extend beyond the faces of the panes (FIG. 9). To accomplish the above, a filler material 30 (FIG. 6) is placed in the sections 13 before the liquid plastic is placed in the sections. Herein, the filler material is sealing wax but any suitable filler material, such as foundry sand, can be used. With the framework 12 on the work support 17, the wax heated to a liquid state is poured into the sections in sufficient quantity to fill each section from the bottom surface 27 of the comes 11 and 11a to the bottoms 31 of the grooves 16 (FIG. 6). The top surface 32 (FIG. 6) of the wax is finished smooth and flush with the bottoms of the grooves and then the wax is allowed to cool and solidify. If it is necessary to keep the wax liquid for any length of time, such as, to place it properly and to finish the top surface, the heating elements 20 can be used to heat the work support 17.

After the wax 30 has been placed, the liquid plastic is poured into the sections 13 in sufficient quantity to fill each section from the bottoms 31 to the tops 31a (FIGS. 3, 5 and 8) of the grooves 16. In this way, the plastic panes 14 are formed the same thickness as the thickness of the grooves, and the peripheral edge portion 15 (FIG. 9) of each pane is formed in the grooves thus joining the pane to the surrounding comes with a tongue-and-groove type connection. The liquid plastic is cured and, after the curing is complete, the wax 30 is removed. In this instance, the wax is removed by heating the work support 17 to a temperature sufficient to melt the wax and then lifting one end of the assembly 10 to allow the wax to drain out. After the wax is removed, the assembly 10 is finished and ready for use. It is apparent that the framework 12 must be made of a thermoplastic that does not become pliable until heated to a higher temperature than the melting point of the wax.

When the assembly 10 will be seen from only one side, as when used as an illuminated picture or a sign, only one side of the assembly need give the appearance of stained glass set in lead. This is important because from a cost standpoint it is less expensive to make the assembly when only one side appears to be stained glass set in lead. To accomplish this variation, no filler material is used. The same basic method is followed as described above except that no filler material is placed in the sections 13 prior to pouring in the liquid plastic material to form the plastic panes 14. The liquid plastic material is poured into the sections in sufficient quantity to fill each section from the bottom surfaces 27 of the comes which rests on the work support 12 to the tops 31a of the grooves 16 (FIG. 10). In this way even though the overall thickness of the pane is greater than the thickness of the grooves, an edge portion 15a (FIG. 10) of the same thickness as the thickness of the grooves 16 is formed around the periphery of each pane. This edge portion joins each pane to the surrounding comes with a tongue-and-groove type connection. In this variation the lower face 33 (FIG. 10) of each pane is flush with the lower surface 27 of the

comes, and the upper face 34 of the pane is recessed back from the upper surface 26 of the comes to give an appearance of the stained glass set in lead only when viewed from the recessed side.

It will be observed that the plastic assembly 10 is a lightweight, inexpensive substitute for a stained glass set in lead assembly, and the plastic assembly can be made so that it appears to be stained glass set in lead when viewed from any side. When the assembly is to be viewed from only one side, the assembly can be made using a modified method for an even lower cost but with the appearance of stained glass set in lead only when viewed from one side. Likewise, it will be observed that the basic method and its modification provide quick, simple, and inexpensive methods for making the assemblies.

I claim:

1. A method of creating a simulated stained glass assembly including the steps of

- a. forming on a generally horizontal work surface a framework made with thermoplastic members having horizontal grooves by heating the members until the members become pliable and then bending them to form a number of open sections within the outer limits of the framework, the arrangement of said sections conforming to the design of the assembly being created,
- b. placing a sufficient quantity of a colored liquid plastic material in each open section to fill that section to the tops of the grooves, different colored plastic being placed in the respective open sections to form the color scheme of the design,
- c. curing said liquid plastic whereby an assembly is made that has the appearance of stained glass set in lead.

2. A method of creating a simulated stained glass set in lead assembly comprising the steps of:

- a. forming on a generally horizontal work surface a framework made with plastic members having horizontal grooves, said framework being arranged to form a number of open sections within the outer limits of the framework, the arrangement of said sections being in the design of the assembly,
- b. filling said sections substantially to the bottoms of the grooves with a filler material,
- c. placing a sufficient quantity of colored liquid plastic material on the filler material in each section to fill each section substantially to the tops of the grooves, different colored plastic material being placed in the respective open sections to form the color scheme of the design,
- d. curing said liquid plastic whereby panes of colored plastic are formed in each section with the edge portion of each pane mounted in the grooves of the framework surrounding that pane,
- e. removing the filler material so that a plastic assembly is created that has the appearance of a stained glass set in lead assembly when viewed from any direction.

3. The method of claim 2 further characterized by the plastic members being thermoplastic and the framework being formed by heating the members until the members become pliable and then bending them to conform to the design of the assembly being created.

4. The method of claim 2 further characterized by the filler material being wax, by heating the wax before placing it in the sections, pouring it into the open sections, cooling the wax, the plastic members being of a thermoplastic which remains rigid to a higher temperature than the melting temperature of the wax and by heating the assembly to the melting temperature of the wax after curing the liquid plastic material, and then lifting the assembly to allow the wax filler material to drain out of the assembly.

5. The method of claim 2 further characterized by mixing a catalyst in the liquid plastic prior to placing the liquid plastic on the filler material to cure the plastic after it is placed.

6. The method of claim 5 further characterized by painting an artistic design on preselected panes after the catalyst has

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been added to the liquid plastic but before the liquid plastic achieves its final set.

7. The method of claim 2 further characterized by the work support being transparent and by placing a pattern of the design below the work support prior to forming the framework so that the pattern may be used as a guide in making the assembly.

8. The method of claim 3 in which a heating element is as-

sociated with the horizontal work surface to heat the work surface so as to heat the plastic members.

9. The method of claim 4 in which a heating element is associated with the horizontal work surface to heat the work surface and thus to heat the assembly to melt the wax filler material so that the wax can be drained out of the assembly.

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