Feb. 6, 1968 C. L. NOREEN 3,367,049

SIGN ELEMENT

Filed Nov. 22, 1965

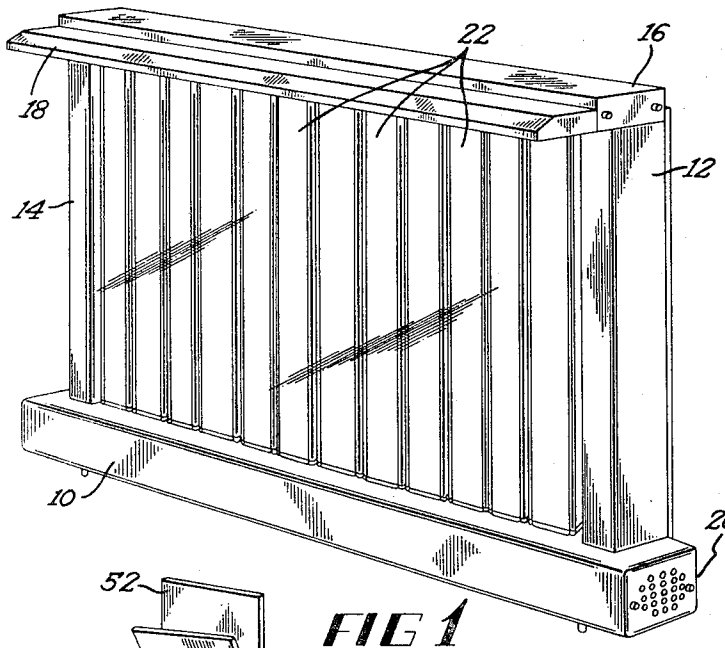


FIG 1

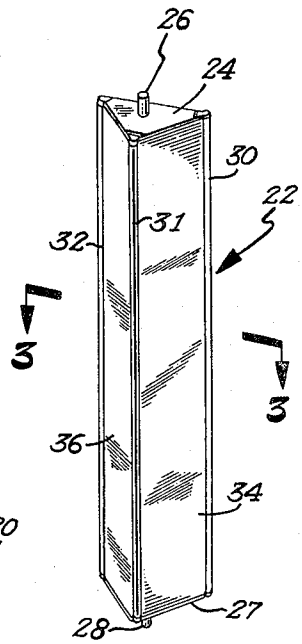


FIG 2

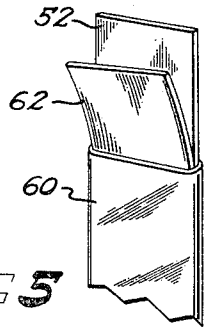


FIG 5

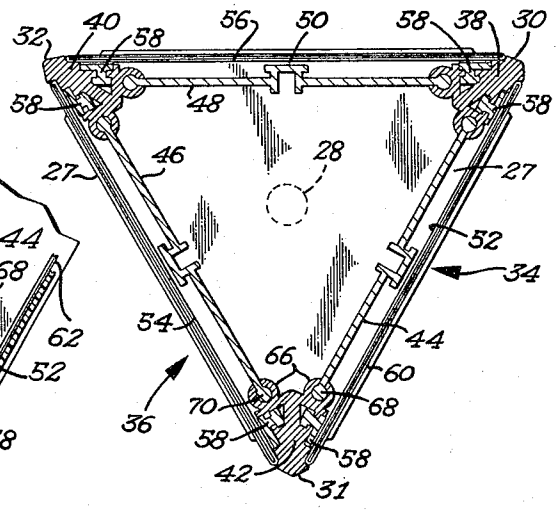


FIG 3

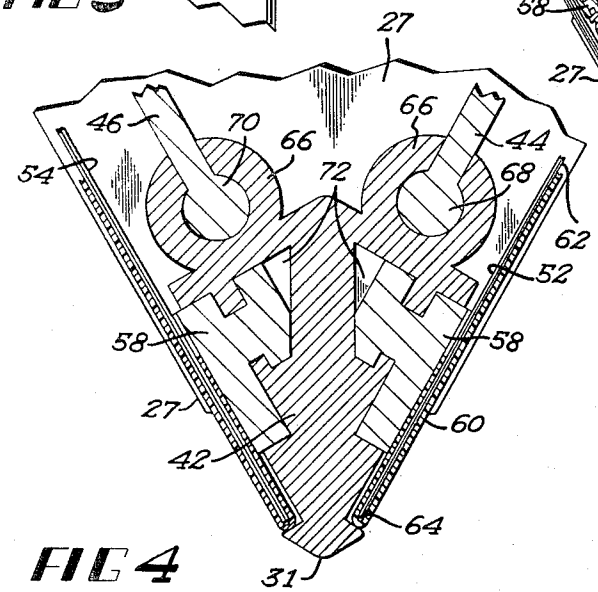


FIG 4

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SIGN ELEMENT

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ABSTRACT OF THE DISCLOSURE

A sign element having a combination of a non-magnetic frame, magnetic strips along the sides of the frame, a magnetizable display panel held to the frame by the magnets, and transparent panel means specially formed to slide over the magnetizable panel.

This invention is a sign and an element for it in which a basic message supporting panel of magnetically responsive material is magnetically held to a separate frame. The panel may be removed by simply pulling it off. If a separate message carrying sheet of paper or the like is secured to the panel, it is trapped between a transparent cover member and the panel. This construction minimizes distortion resulting from different rates of expansion and contraction as well as providing ease in sign changes. The frame of the element is formed from a magnetically inactive substance but holds magnets so that the magnetically active message carrying panel is the main conductor for the lines of force from the magnets. Another feature of this invention is the precision construction of the frame which is important in signs having a plurality of rotating elements which present a consecutive, repeating series of images, because minimum tolerances between elements can be used enhancing the continuity of appearance of the message on a sign made up of several elements side by side.

The drawings are briefly described as follows:

FIGURE 1 is a perspective view from the right front of a sign board using elements of this invention;

FIGURE 2 is an enlarged perspective of a single element;

FIGURE 3 is a further enlarged cross section taken on the line and in the direction of the arrows 3—3 of FIGURE 2 with broken lines illustrating hidden parts;

FIGURE 4 is a still further enlarged fragment illustrating the construction of the element; and

FIGURE 5 is a fragmentary view drawn to a slightly larger scale than FIGURE 2, but a smaller scale than FIGURE 3 of one of the element panels and sign sheets together with the transparent cover for the element panel. The element and the sign made possible by use of the element will now be described and identifying numbers, consistent in all views, assigned to the parts.

In FIGURE 1, a sign board of the type that can most effectively use the element structure of this invention is shown as having a base 10 supporting columnar end pieces 12 and 14. A top member 16 secures two end pieces together above and completes the frame for the sign board structure generally. At 18 is illustrated a lighting fixture if the sign is displayed in an area requiring artificial light. Base 10 includes a driving means for rotating the elements periodically as will be described in more detail below and which structure is not a part of this invention as such. Number 20 identifies a perforated air intake means for admititng air to the driving mechanism. A plurality of elements, generally designated 22, are mounted side by side within the frame work 10, 12, 14 and 16.

As shown in FIGURE 2, an element comprises a pair of triangular bulk heads 24 and 27 which are the top and bottom of the element. At the center of the triangular

bulk head 24 is a stub axle 26 and corresponding stub axle 28 for the bottom bulk head as barely may be seen in FIGURE 2. Plate aligning members 30, 31 and 32 for the three frame corner or edge members may be seen. They keep the panels generally designated 34 and 36, and a corresponding third panel, not shown in FIGURE 2, from misalignment. Each of the elements 22 has a frame work the nature of which can be observed clearly in FIGURES 3 and 4.

In those figures, the framework is seen to include the edge or corner members 38, 40 and 42 formed as to be consistent in cross section along their vertical lengths. The frame members are formed by dies that produce the desired configuration as the selected material passes through them as in rolling or, in the case of the example shown here, preferably by extrusion.

Interconnecting the frame edge members are the side plates or members 44, 46 and 48. The side plates are similarly formed to be consistent along their longitudinal length, and the structures actually shown here as preferable again are extrusions. All frame members are made from a material that is here called active magnetically meaning that it is not a good conductor for magnetic lines of force and hence attracted by a magnet cannot be given magnetic characteristics so as to make it a permanent magnet. Examples of such materials are aluminum, magnesium and any of the resinous plastics that become at least form retaining after curing. The sides 44, 46 and 48 may be provided with a longitudinal vertical expending supporting rib, and an example is shown at 50 on the side 48. Similar ribs on the sides 44 and 46 are not separately numbered, but are substantially identical structure.

Each of the three sides of the element is provided with a panel and these are separately numbered 52, 54 and 56. The side panels are of a magnetically active material such as sheet steel and therefore are capable of being attracted and held by magnetic force. Each of the corner pieces 38, 40 and 42 is provided with recesses or channels for receiving strips of magnetic material 58 shown in section with respect to the corner member 38. Similar material is found in all of the corner frame members and may extend more or less continuously the length of the corner member. Panels 52, 54 and 56 are wide enough to extend from one of the magnetic members in one corner to the magnetic member in the other corner so as to bridge between the two and provide a path for the flow of magnetic lines of force. The panels 52, 54 and 56 may be lithographed, silk screened or otherwise provided with, at least, a portion of a message or the message may be reproduced on a separate sheet that can be secured to the side sheets 52, 54 and 56 by suitable means.

It has been discovered that transparent covers like 60 in FIGURE 5, secured to the plates 52 shown by way of example in that figure, provide a particularly good way to secure to the panels or cardboard sheets carrying the message material by trapping it between the cover 60 and the plate. The message can be seen through the transparent cover 60 while leaving the fiberous material free to expand or contract at a different rate than the plate and without distortion which occurred frequently with adhered sheets. Since the plates 52, 54 and 56 are only magnetically held to the frame of the elements 22, the plates can be pulled away from the frame by exerting sufficient force. When the plates have been removed, the covers 60 can be removed in turn and sheet 62 changed. If the cover 60 is slidably secured on the plate, only one end of the plate need be pulled free of the frame. Cover 60 can then be moved to expose a portion of the paper or cardboard sign member 62 so that it can be easily pulled out from between the plate and cover. Once removed, sheet 62 can either be reversed, if there is an alternative message on the opposite side, or replaced with

an entirely different sign sheet. Also, since plate **52** and companion plates **54** and **56** are secured on the frame only by magnetic force, they may be given an overall finish on both sides of a contrasting nature so that the background material for a stencil type cutout sign message or the like can be used to produce interesting effects.

By comparing FIGURES 4 and 5, the presently preferred method of slidably securing the transparent cover sheet **60** to the plate **52** is observed. A portion of the cover along each edge is bent back upon itself so that a pair of opposed channels such as the one shown at **64** in FIGURE 4 embrace the edges of the side panel **52**. Similar structure may be seen for the side panel **54** in FIGURE 4.

It also can be seen quite clearly, by reference to FIGURE 4, that the frame corner member **42** has the female portions **66** formed on it which can receive, by relative movement between the side and corner members in a longitudinal direction, the cooperating interlocking male portions **68** and **70** of sides **44** and **46** respectively. Corner member **42** also has the recesses **72** formed in it to receive the magnetic material **58**. Magnetic material **58** is formed with a portion that engages the recess **72** and is secured by interlocking as can be seen in that enlarged cross sectional view. Because all of the frame members are formed in a longitudinally consistent manner, the frame members are all substantially identical being merely cut to length from the longitudinally formed raw materials. When these longitudinally consistent elements are interconnected by engaging the interlocking portions of the side members with the corresponding interacting portions of the corner members, a precise, equilateral, triangular tube is formed. This precision is critical when the element is used in the multiple element sign illustrated in FIGURE 1.

In order for a series of panels on the elements **22** to present what appears to be a substantially coherent message, the various corner members **30**, **31** and **32** of any one of the panels must be precisely spaced from the stub axels **26** and **28** so that a minimum of clearance is present between these edges of each element with respect to adjacent elements.

As seen in FIGURE 3 and emphasized in the enlargement in FIGURE 4, the aligning members **30**, **31** and **32** engage the marginal edges of the cover channels, or the plates themselves if used without covers, to keep them from becoming misaligned with respect to the element when held only by the magnetic force. The magnetic force resists substantially any movement away from the magnet in a direction normal to the element side, but would have to be incredibly strong to prevent displacement by lateral sliding. For this reason, positive means such as the plate aligning means **30**, **31** or **32** are provided. Also, as the plates **52**, **54** and **56** are held to the frame by magnetic force at their edges, any substantial bowing at the middle, as by pressure from curious persons observing the sign, could lever the edges away from the magnets and cause the sheets to be released from the magnetic force. To prevent any such accidental occurrence is the main purpose of the support rib **50** with respect to side **48** and similar ribs in the sides **44** and **46**.

What is claimed is:

1. A sign element comprising: a frame of material that is magnetically inactive; means for generating magnetic force secured to said frame in spaced relation; and a panel of magnetically attracted material at least bridging the space between said spaced magnetic force generating means; whereby one major surface of said panel is held against said frame and the other major surface of said panel faces away from said frame; said frame including a plurality of frame edge members and at least one side plate interconnecting said edge members; each of said frame elements being consistently formed with respect to a longitudinal axis and portions of said edge members engaged with and secured to portions of said plate member to form a frame for receiving one panel; said edge members having portions receiving said means for generating magnetic force; and panel aligning members at the extremities of said edge members.

2. The sign element of claim **1** in which there are three of each of said edge and plate members; said portions secured to each other comprising cooperating interlocking members that can be interlocked by a relative movement of said edge and plate members; said edge and plate members, when said cooperating interlocking members are engaged, forming a hollow, triangular, equilateral tube; said edge members having recesses for receiving said means for generating magnetic force, and said panel aligning means being at the corners of the hollow, triangular, equilateral tube.

3. A plurality of the elements of claim **2** each element being rotatably supported about a vertical axis parallel to all the others; means secured to said elements for rotating them 120° periodically and simultaneously; whereby each of the three sides on each triangular, equilateral tube is periodically presented for view as a portion of a sign message conveying area together with a corresponding side of each of the other elements.

4. The element of claim **1** in which said frame members are extruded and said engaged portions comprise: cooperating interlocking portions that are engaged by relative movement between said plate and edge members; there being three each of said plate and edge members which, when said cooperating interlocking portions are engaged, form a hollow, triangular, equilateral tube; and said panel aligning members are at the corners of said triangular tube.

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