United States Patent

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[54] **BLOCK DEVICE**
23 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **40/152**
[51] **Int. Cl.** **G09f 1/12**
[50] **Field of Search** ..... 40/10, 10 D, 152, 152.1, 312; 46/24; 35/69

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ABSTRACT: A block device having transparent outer walls through which there are visible inner walls within the block carrying art work, with the inner walls within the block carrying art work, with the inner walls being centrally bowed inwardly away from the transparent outer walls in a manner giving a unique somewhat three-dimensional appearance to the art work.

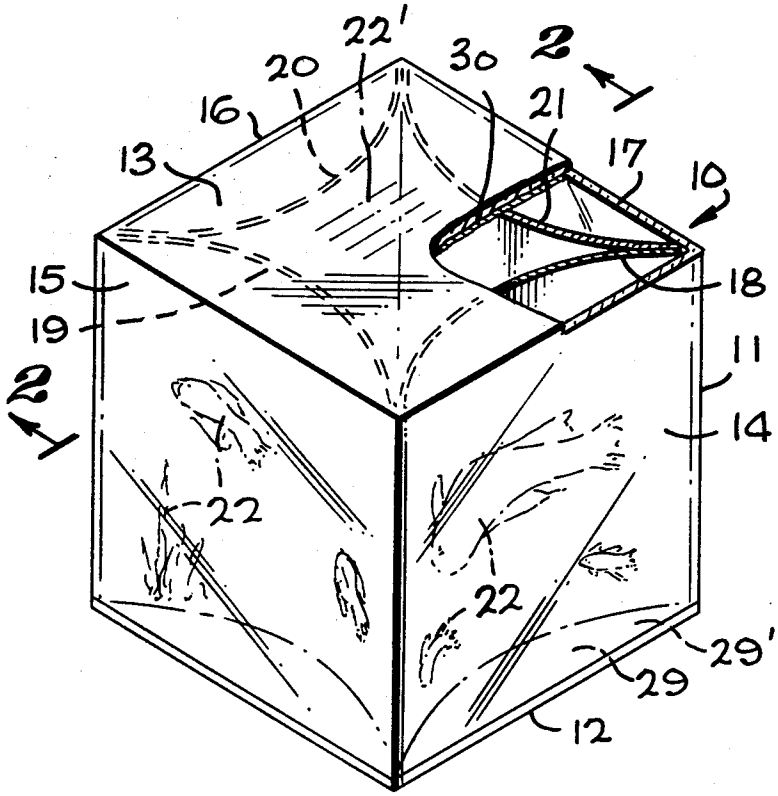


Fig. 1

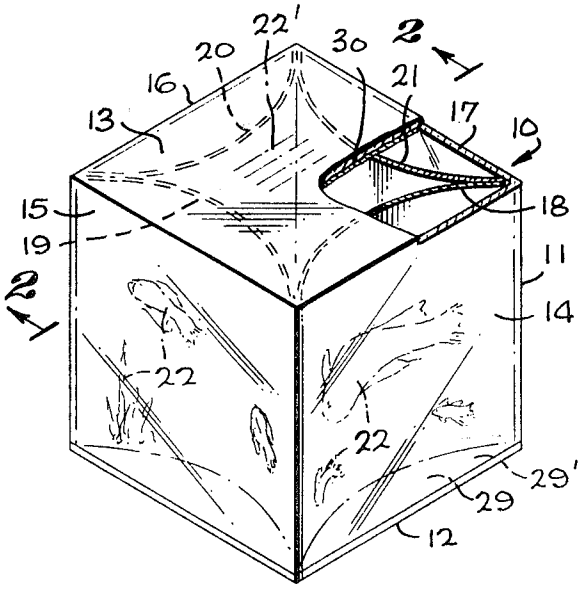


Fig. 2

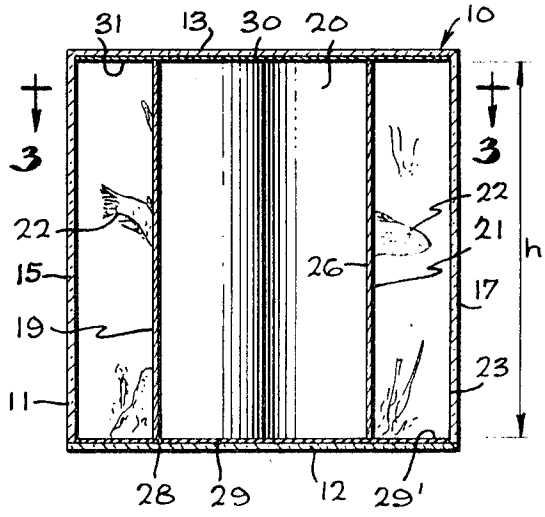


Fig. 3

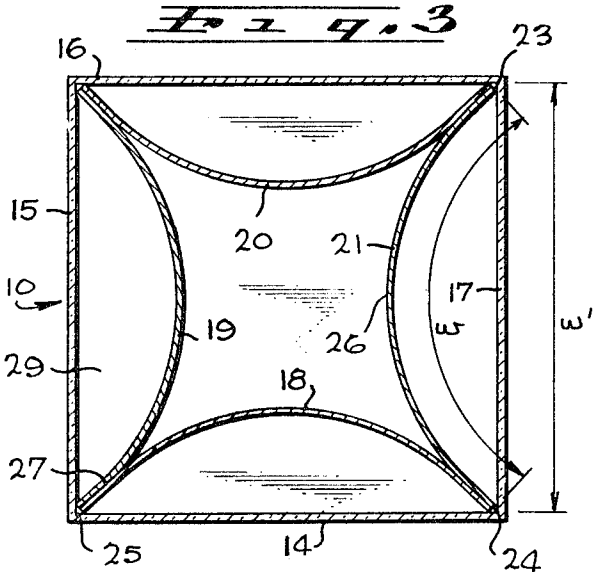


Fig. 6

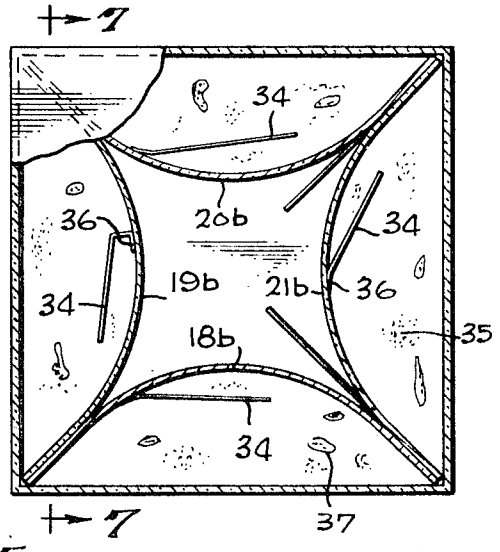


Fig. 4

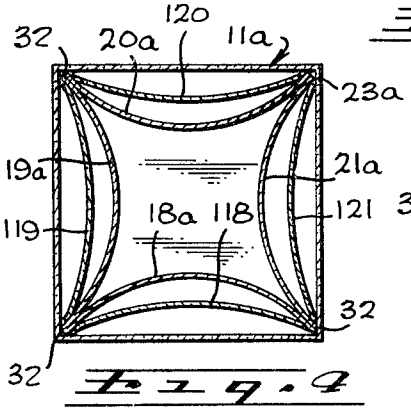


Fig. 5

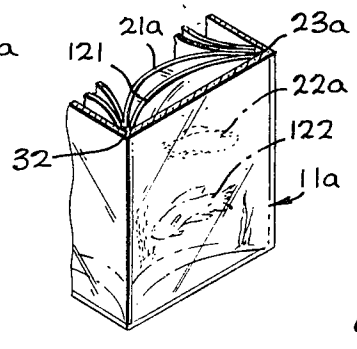
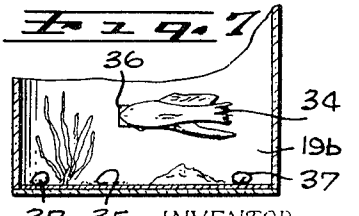


Fig. 7



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BLOCK DEVICE

BACKGROUND OF THE INVENTION

This invention relates to block devices of a type presenting a highly novel appearance, and capable of serving any of numerous different uses, as for instance as an educational item, toy block, baby rattle, greeting card, table setting piece, or the like.

Though attempts have been made in the past to devise improved blocks usable for toy or educational purposes, or the like, and consisting of more than the conventional wooden blocks having letters or other markings on their faces, none of these proposals with which I am familiar have proven as successful commercially as would be desired. This is due in part to the inability of the devices to achieve a sufficiently unique appearance, and partially because of the very substantial increase in cost necessarily entailed in producing most of the previously suggested devices.

SUMMARY OF THE INVENTION

A block formed in accordance with the present invention attains a highly distinctive and eye-catching visual effect, and one which may incorporate a truly artistic appearance, and achieves these results with a unique structure which is entirely unlike any of the prior proposals of which I am aware. Further, this novel structure, though highly distinctive from a visual standpoint, is extremely simple, and of a character enabling production of the block devices at a very low price as compared with the result attained.

More particularly, a block made in accordance with the invention has an outer transparent wall through which there is visible an inner wall which carries art work or other subject matter to be viewed. The inner wall is progressively recessed inwardly away from the outer wall, between two opposite sides of the inner wall, and preferably in a continuously curving bowed configuration, to give to the art work the desired somewhat three-dimensional and extremely unique appearance, as viewed from the outside of the block. Preferably, the block has transparent outer walls and art carrying inner walls of this type at a series of its sides, desirably four successive sides, with the different inner walls projecting into the corners of the block in a relation such that each inner wall is confined and located by the sides or edges of two adjacent inner walls, so that there is no necessity for otherwise cementing or securing the inner walls in their desired positions within the block. In one arrangement, the inner walls are of light-passing transparent or translucent character, so that the art work on one of the inner walls may be viewed through another of the inner walls, but desirably in slightly blurred or softened fashion. Cutouts may be mounted to the inner walls for adding to the overall effect. At the top and bottom of the block, there may be two additional transparent walls, through which planar sheets carrying art work or other information may be viewed, with these latter sheets preferably being held in position by the previously mentioned recessed or bowed inner walls, and still without requiring use of cement or glue for securing the internal parts of the block in position.

BRIEF DESCRIPTION OF THE DRAWING

The above and other features and objects of the invention will be better understood from the following detailed description of the typical embodiments illustrated in the accompanying drawing, in which:

FIG. 1 is a perspective view of a block device formed in accordance with the invention;

FIG. 2 is a vertical section taken on line 2–2 of FIG. 1;

FIG. 3 is a horizontal section taken on line 3–3 of FIG. 2;

FIG. 4 is a reduced view similar to FIG. 3, but showing a variational form of the invention;

FIG. 5 is a fragmentary perspective view of a portion of the device of FIG. 4;

FIG. 6 is another view similar to FIG. 3, and showing still another form of the invention; and

FIG. 7 is a reduced scale view taken on line 7–7 of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 1, I have shown at 10 a block device which is formed in accordance with the invention, and which may typically be utilized as an educational block, having artistically presented pictorial information and some descriptive information visible from its various sides. It is contemplated that the different pieces of information presented by the different sides of a particular block may all be related in some manner, as for instance to represent different types of wildlife, or different varieties of wildlife within a particular category (fish, reptile, mammal, or bird), or any other group of scenes which may have a predetermined relationship in the field of history, science, religion, etc. In the block shown in FIGS. 1 to 3, it is typically assumed that the various sides of the block are being utilized to represent a series of different varieties of fish.

The block 10 desirably takes the form of a cube, and is illustrated in the figures as such a cube, though it is contemplated broadly that some but not all of the advantages of the invention might be attained in devices of other shapes. For example, some advantages of the invention might be attained in a block which, instead of being square in horizontal section, might define a polygon of more or less than four sides in such section.

The body of block 10 may be formed of two sections, including a main hollow cube shaped section 11, and a planar horizontal bottom wall or closure section 12. These two sections are desirably both formed of a transparent material, for best results an appropriate transparent resinous plastic material such as a suitable styrene polymer.

The main section 11 of the block body forms a horizontal planar top wall 13, having four planar vertical sidewalls 14, 15, 16 and 17 projecting downwardly therefrom. As seen in FIG. 3, vertical walls 14 and 16 are parallel to one another, while the two other vertical walls 15 and 17 are parallel to one another but perpendicular to walls 14 and 16, so that internally and externally, the four walls 14, 15, 16 and 17 form together a square in horizontal cross section. The bottom wall 12 is also planar and disposed horizontally and parallel to top wall 13, and is of a square shape identical with that of walls 13, 14, 15, 16 and 17, to form the top of a cube.

Within this hollow transparent cube formed by the two sections 11 and 12 of the block body, there are positioned four vertically extending inner walls 18, 19, 20 and 21, located inwardly opposite and visible through the four vertical transparent sidewalls 14 through 17 respectively. Walls 18 through 21 carry art work on their outer sides representing the different items to be depicted by the particular block in question, and including, in the particular block of FIGS. 1 to 3, representations of different types of fish on the outer surfaces of walls 18, 19, 20 and 21, as indicated at 22 in FIG. 1.

Walls 18 through 21 may be formed of any suitable preferably inexpensive and typically opaque material capable of carrying the desired art work, and also having sufficient stiffness to remain effectively in the recessed and preferably bowed configuration illustrated in FIG. 3. More specifically, walls 18 through 21 may be formed of a suitably stiff paper, an appropriate bristol board, cardboard, a plastic material, or any other similar material. These walls or cards 18 through 21 are rectangular in shape, having a vertical height h (FIG. 2) only very slightly less than the internal vertical height of the transparent cube, between top wall 13 and bottom wall 12. The horizontal width w (FIG. 3) of each wall or sheet 18 through 21 is greater than the height h of that sheet, so that when the parallel vertical edges 23 and 24 of one of the inner walls 18 through 21 are received within two of the vertically extending right angle corners 25 of the transparent cube, that wall will necessarily be bowed inwardly at its center as seen in FIG. 2, so that in extending from one of the edges 23 or 24 to the

other, the wall or sheet 18 or the like will be substantially continuously and arcuately curved, and will first advance progressively away from the plane of the associated outer transparent planar wall 14, 15, 16 or 17, to a central location 26, and then advance progressively back toward the plane of that transparent wall to the second corner of the cube. When all four of the walls or sheets 18, 19, 20 and 21 are positioned in this manner within the cube, as seen in FIG. 3, the edge portions of adjacent ones of these walls abut against one another, as at 27, to retain one another in the illustrated assembled relationship in which all four of the walls or sheets 18 through 21 remain in identically bowed positions of extension into the four corners of the device. Thus, the four vertical inner walls 18 through 21 retain one another in fixed positions without the necessity for any type of adhesive, cement, or the like in the corners, or elsewhere, for securing these walls to the outer body or to one another. To assure best retention of the walls in position in this manner, it is preferred that the horizontal dimension *w* of each of the walls or sheets 18 through 21 (i.e. the width if measured in flat condition) be between about 105 and 125 percent of the straight line horizontal dimension *w'* of the space within which each of the walls 18 through 21 is retained and confined between two opposite sides of the transparent cube.

Beneath the lower horizontal edges 28 (FIGS. 1 and 2) of the four inner walls or sheets 18 through 21, there is retained and confined a horizontal planar bottom sheet or card 29 positioned adjacent and visible through transparent bottom wall 12. Card 29 has a square shape to fit closely within the internal square section defined by sidewalls 14, 15, 16 and 17, and is thus effectively held in fixed position by these sidewalls, and vertically between bottom wall 12 and the bowed inner walls 18 through 21. At its upper side, card 29 preferably has a specularly reflective mirror surface 29', formed as a layer of foil or as a reflective coating or the like. At its underside, card 29 may carry printing giving descriptions or discussions of the various fish or other subjects represented on the vertical walls or cards 18 through 21.

A second square horizontal card 30 similar to bottom card 29 is positioned between top wall 13 and the bowed inner walls 18 through 21, to be confined thereby in the fixed position of FIG. 2, with a specularly reflective mirror surface 30' desirably being provided at the underside of card 30, and with appropriate subject matter 22', related in suitable manner to the other depicted items 22, being printed on the upper surface of card 30.

The transparent bottom wall 12 of the body of the block is cemented peripherally to the lower edges of walls 14 through 17, as by applying to the lower edges of these walls 14 through 17 a suitable solvent capable of dissolving the plastic of those walls, and then placing bottom wall 12 in the position illustrated in the figures to contact the softened plastic and be bonded permanently thereto.

Assembly of the block of FIGS. 1 to 3 is extremely simple, and entails merely first placing card 30 in the top of the hollow cube-shaped main section 11 of the block body (typically with section 11 inverted), then inserting the four vertical cards 18 through 21 in the body in the FIG. 3 bowed and mutually supporting relation, then positioning the bottom card 29 against the edges of cards 18 through 21, and finally cementing bottom wall 12 in place as previously described, to permanently retain all of the cards in their illustrated positions. After such assembly, the block presents a highly distinctive appearance, in which the inwardly bowed curvature of the four inner walls or cards 18 through 21, and the corresponding curvature of the art work 22 carried by those cards, causes an extremely lifelike, somewhat three-dimensional, and unexpectedly attractive overall effect not attained in any prior blocks with which I am familiar. This effect is supplemented and increased by reflection of the art work in the mirrored surfaces of bottom and top sheets 29 and 30. A child or person to whom a number of these blocks may be given for educational purposes may first read the printing at the underside of bottom card 29, to obtain therefrom a description of each of the different fish or other items shown at 22 on the four vertical sides of the block, as well as the related items shown at 22' on the top of the cube. In this way, informational and educational subject matter can be presented in a highly entertaining and attractive manner. Cubes of the type illustrated may also be utilized as tourist souvenirs, for showing various scenes or subjects relating to a particular tourist location, or may be employed for other uses such as Christmas ornaments, greeting card type devices, table decorations, or for any of numerous other purposes in which the attractive visual effect may be of value.

FIGS. 4 and 5 show a variational arrangement including an outer transparent cube 11*a* corresponding to cube 11–12 of FIG. 1, four bowed vertical lower walls 18*a*, 19*a*, 20*a* and 21*a* (corresponding to walls 18—21 of FIGS. 1—3), and also four additional bowed walls 118, 119, 120 and 121. Each of these latter walls 118 through 121 has its edges located and retained within two corners of the block, in engagement with the edges of a corresponding one of the inner walls 18*a*, 19*a*, 20*a* or 21*a*, but is bowed less abruptly than that associated wall 18*a*, 19*a*, 20*a* or 21*a* to be spaced from both that wall and the opposed transparent planar sidewall of the cube. Walls 118 to 121 are transparent, and carry art work such as the representation of a fish at 122 in FIG. 5, while cards or walls 18*a*, 19*a*, 20*a* and 21*a* may be opaque and carry additional art work 22*a*, so that both of the representations 122 and 22*a* are visible simultaneously but at different planes (and with curvature) all in a manner presenting a highly effective three-dimensional appearance.

In the FIGS. 4 and 5 arrangement, the four inner walls or cards 18*a* through 21*a* are typically illustrated as all formed of a single elongated piece of sheet material, rather than four completely separate cards or sheets, with this single sheet being folded vertically at three of the corners, as indicated at 32 in FIG. 4, and with the two edges of the sheet fitting into the fourth corner, as at 23*a*. As in the first form of the invention, the various inner walls, including walls 118 through 121, are all retained in position within the cube by their interfitting relationship and then reception within the corners of the cube, to avoid the necessity for use of any cement or glue to hold the inner walls in place.

FIGS. 6 and 7 show another variational arrangement, which may be considered as identical with FIGS. 1 to 3 except for the differences discussed specifically below. For one thing, in the FIGS. 6 and 7 arrangement, the four vertical cards or walls 18*b*, 19*b*, 20*b* and 21*b* may be assumed to be formed of a light-passing, transparent or translucent, material, rather than the opaque material employed in the first form of the invention. This light-passing material may be a suitable colored and transparent resinous plastic material, with art work (corresponding to that shown at 22 in FIG. 1) being printed on the surface of each of these walls to follow the curved, bowed configuration of the walls in a manner attaining the effect discussed in connection with FIG. 1. The transparent character of each of these walls 18*b* through 21*b* allows viewing through one wall of art work printed onto the inner or outer surface of another of the walls, but with reduced clarity and a colored effect giving great depth to the last mentioned art work. Additionally, there may secured to the walls 18*b* through 21*b* a number of cutouts 34, die cut and printed to represent fish, birds, or other subject matter consistent with that printed onto the surface of walls 18*b* and 21*b*. These cutouts 34 may be formed of a suitable stiff material such as bristol board, and be secured to the walls 18*b* through 21*b* in fixed positions relative thereto, as by cementing or otherwise securing mounting tabs 36 on the cutouts to the walls, with the cutouts being located at or projecting to positions spaced from the walls 18*b* etc. Some of the cutouts may be located at the backs of the vertical bowed walls 18*b* through 21*b*, while others of the cutouts may project forwardly, in any pattern which may result in an optimum three-dimensional appearance for a particular scene or subject being depicted.

It is contemplated that the arrangement of FIGS. 6 and 7 may be especially desirable for use as a toy, and more specifi-

cally as a baby's rattle, in which case there may be positioned within the interior of the hollow transparent cube-shaped body **11***b*, at the outside of walls **18***b* through **21***b*, a number of small loose rocks **37** which will give a rattle effect when the block is shaken. Also, there may be provided in these arcuately shaped spaces at the outside of the walls **18***b* through **21***b*, small amounts of fine sand or the like **35** which may fall to the bottom of the block when in proper vertical position, to give the effect of a beach in an instance in which sea life is depicted by the block, or to give other effects in other situations.

For purposes of manufacture, in order to injection mold the main portion **11** of the transparent cube FIG. **1** (or the corresponding portion of the cube in any other form of the invention), it may be desirable to shape the inner cavity within that body section **11** to taper very slightly upwardly, rather than have a precisely uniform internal horizontal cross section through the entire height of section **11**, in which case it is necessary to correspondingly very slightly taper the vertical bowed cards **18** through **21**, or their equivalent, to properly fit into the slightly tapering corners of the hollow cube, but with the taper of all of these parts desirably being so slight as to maintain substantially the same cubical external appearance shown in FIG. **1**.

While certain specific embodiments of the present invention have been disclosed as typical, the invention is of course not limited to these particular forms, but rather is applicable broadly to all such variations as fall within the scope of the appended claims.

I claim:

1. A block having an essentially transparent outer wall defining a surface of the block, an inner wall positioned behind said transparent outer wall, and subject matter carried by said inner wall at a location for viewing from the outside of the block through said outer wall, said inner wall being recessed progressively away from said outer transparent wall between two opposite sides of the inner wall so that as said inner wall advances from one of said sides thereof to the other side it first advances progressively away from said outer wall and then returns progressively theretoward.

2. A block as recited in claim **1**, in which said outer transparent wall is substantially planar.

3. A block as recited in claim **1**, in which said subject matter carried by said wall includes art work formed on said inner wall and following its progressively recessed contour.

4. A block as recited in claim **1**, in which said subject matter carried by said inner wall includes objects secured to but projecting from said inner wall.

5. A block as recited in claim **1**, in which said inner wall is of bowed progressively curving contour between said opposite sides thereof.

6. A block as recited in claim **1**, in which said inner wall is of light-passing character.

7. A block as recited in claim **1**, in which said inner wall is of light-passing character, said subject matter including art work formed on said inner wall and following its recessed contour.

8. A block as recited in claim **1**, in which said inner wall is of light-passing character, said subject matter including art work formed on said inner wall and following its recessed contour, and there being additional subject matter behind said inner wall and visible therethrough.

9. A block as recited in claim **1**, in which said block has two generally parallel corners formed along opposite sides of said outer wall, said opposite sides of said inner wall being received and retained within said corners respectively.

10. A block as recited in claim **1**, in which said block has two generally parallel corners formed along opposite sides of said outer wall, said opposite sides of said inner wall being received and retained within said corners respectively, there being two additional inner walls within the block with edges thereof projecting into said corners respectively and retaining and locating said two sides of the first mentioned inner wall therein.

11. A block device having a plurality of generally planar outer walls defining together in cross section essentially a polygon with corners formed at the junctures of said walls, a plurality of inner walls inwardly opposite said outer walls respectively and each recessed progressively away from the associated outer wall between two opposite sides of that inner wall, adjacent ones of said inner walls having portions thereof projecting into common ones of said corners in mutually abutting and supporting engagement, at least one of said outer walls being transparent, and the associated inner wall carrying subject matter to be viewed through said transparent outer wall.

12. An essentially cube shaped block having four essentially planar transparent outer walls with four essentially parallel corners at the junctures of said outer walls, four inner walls located inwardly opposite said outer walls respectively and having opposite side portions projecting into said corners respectively, each of said inner walls between its opposite sides being recessed progressively inwardly away from the corresponding outer wall so that as it advances from one side thereof to the other the inner wall first advances progressively away from said outer wall and then returns progressively theretoward, at least one of said outer walls being transparent, and subject matter carried by the associated inner wall and visible through said transparent wall.

13. A block as recited in claim **12**, in which said block has a transparent end wall, and an essentially planar sheet at the inner side of said end wall and retained between it and said four inner walls and having markings visible through said end wall.

14. A block as recited in claim **12**, in which said one inner wall is transparent or translucent, there being subject matter behind said one inner wall and visible therethrough.

15. A block as recited in claim **12**, in which said one inner wall is transparent or translucent, there being subject matter behind said one inner wall and visible therethrough, and carried by another of the inner walls.

16. A block as recited in claim **12**, in which all of said four outer walls are transparent and all of said inner walls carry subject matter visible through the associated outer wall, each of said inner walls being of inwardly bowed progressively curving configuration with said subject matter including art work following the bowed curvature of the inner walls.

17. A block as recited in claim **12**, in which all of said four outer walls are transparent and all of said inner walls carry subject matter visible through the associated outer wall, each of said inner walls being of inwardly bowed progressively curving configuration with said subject matter including art work following the bowed curvature of the inner walls, said block having two transparent top and bottom walls, and sheets at the inner sides of said top and bottom walls and carrying markings visible therethrough and retained thereagainst by said four inner walls.

18. A block as recited in claim **12**, in which all of said four outer walls are transparent and all of said inner walls carry subject matter visible through the associated outer wall, each of said inner walls being of inwardly bowed progressively curving configuration with said subject matter including art work following the bowed curvature of the inner walls, said inner walls being translucent or transparent to enable viewing through one of the inner walls of some of said subject matter carried by another of the inner walls.

19. A block as recited in claim **12**, in which all of said four outer walls are transparent and all of said inner walls carry subject matter visible through the associated outer wall, each of said inner walls being of inwardly bowed progressively curving configuration with said subject matter including art work following the bowed curvature of the inner walls, said inner walls being translucent or transparent to enable viewing through one of the inner walls of some of said subject matter carried by another of the inner walls, said subject matter including objects secured to and projecting from both the front and rear sides of said inner walls.

20. A block as recited in claim 1, including an additional wall located between said inner and outer walls and recessed progressively away from said outer wall between said opposite sides of the inner wall, but not as deeply as said inner wall is recessed, and thereby located rearwardly of the outer wall but forwardly of the inner wall, said additional wall being transparent or translucent to enable viewing therethrough of said subject matter carried by said inner wall, and there being additional subject matter carried by said additional wall and spaced from both the inner and outer walls.

21. A block as recited in claim 1, including a sheet of material extending inwardly from said outer wall in a direction generally perpendicular thereto and at an end of said inner wall and having an inner mirror surface facing toward said inner wall and reflecting said subject matter.

22. A block as recited in claim 12, including four transparent or translucent additional walls each located between an associated one of said outer walls and the opposed inner wall, said additional walls being recessed progressively away from said outer walls, but not as deeply as said inner walls, and therefore being spaced from both the inner and outer walls, said additional walls being transparent or translucent and carrying additional subject matter spaced from both the inner and outer walls.

23. A block as recited in claim 12, in which said block has an end wall, and an essentially planar sheet at the inner side of said end wall and retained between it and said four inner walls, said sheet having an inner mirror surface facing said inner walls for reflecting said subject matter.