

Dec. 10, 1968

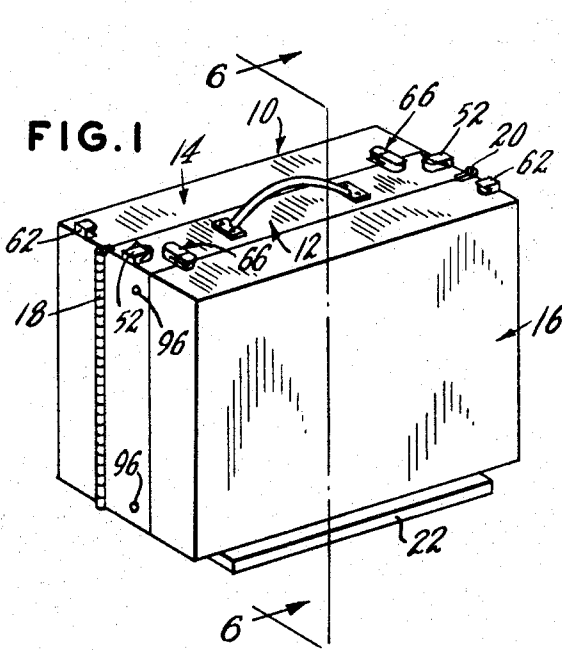
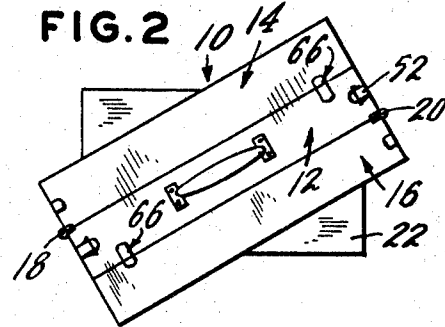
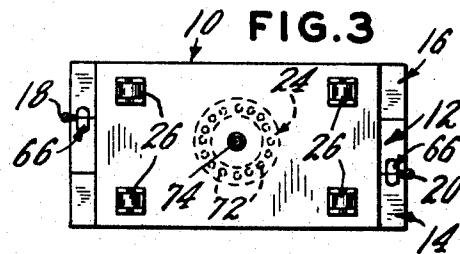
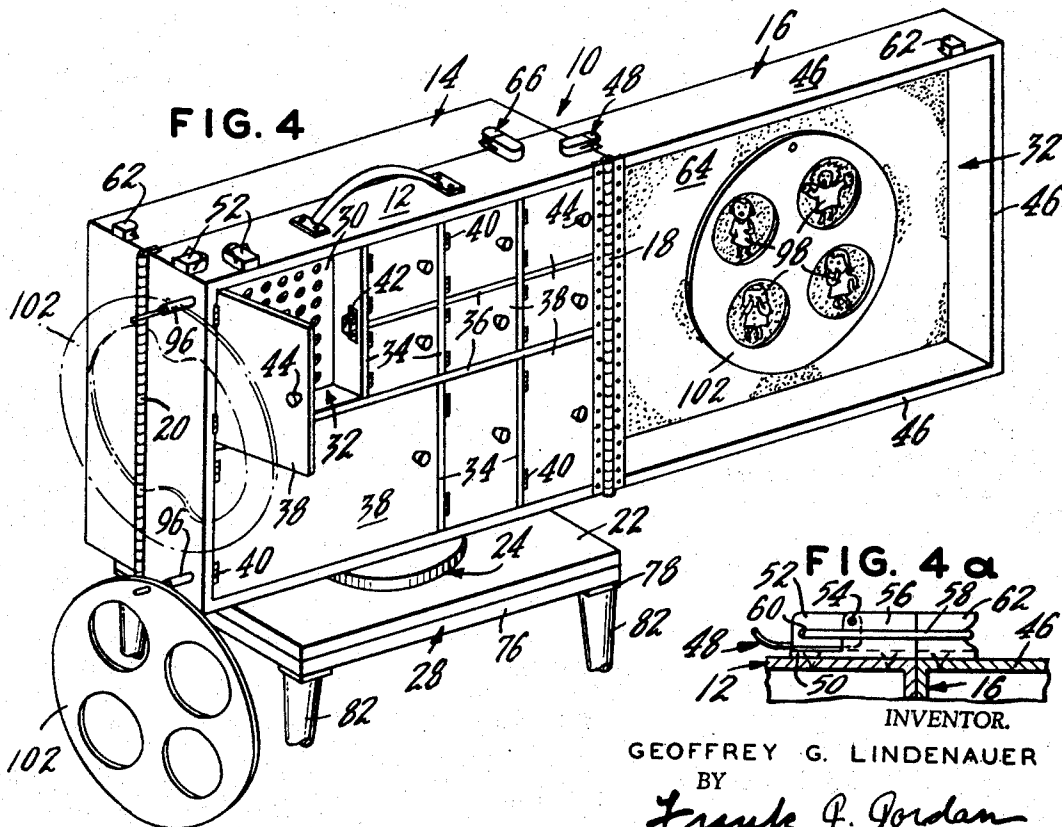
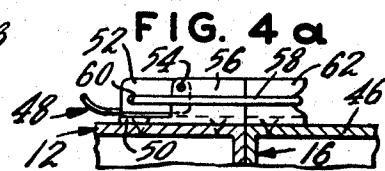
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3,414,987

VISUAL DISPLAY DEVICE

Filed April 6, 1967

2 Sheets-Sheet 1



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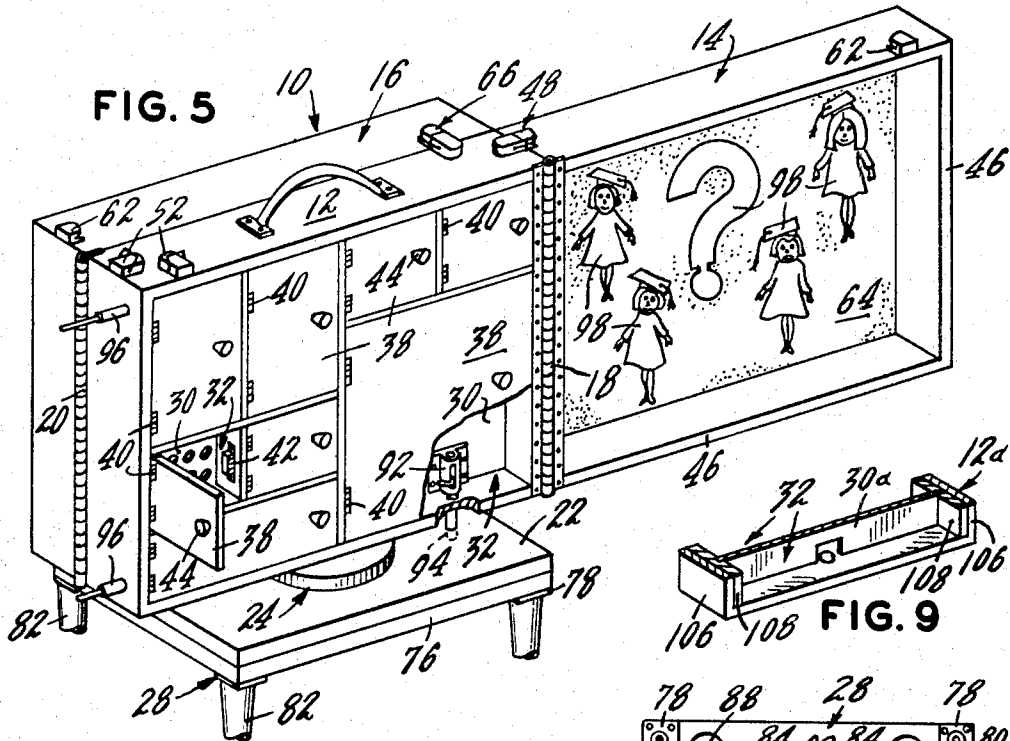
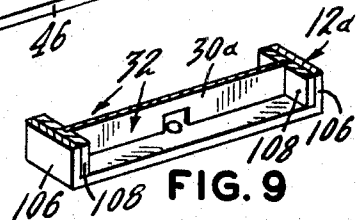
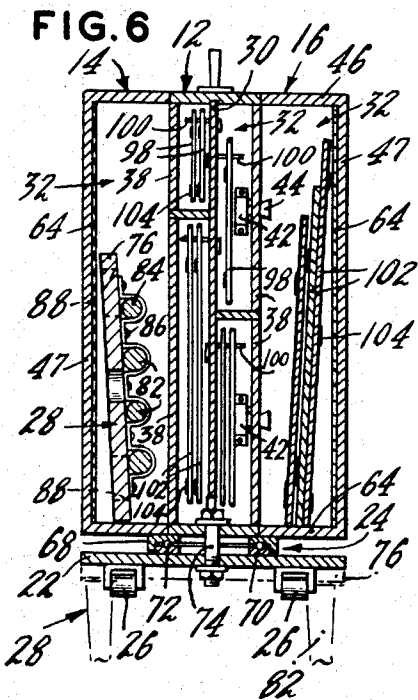
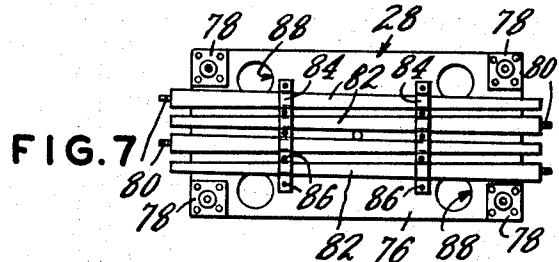
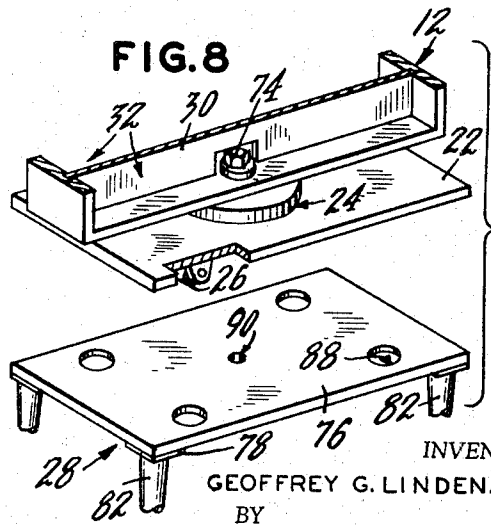
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VISUAL DISPLAY DEVICE

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2 Sheets-Sheet 2



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1

3,414,987
VISUAL DISPLAY DEVICE
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ABSTRACT OF THE DISCLOSURE

A rotatable mounted central frame has a first and second set of compartments on opposite sides of a central frame wall member and hingedly mounts first and second pivot structures, each carrying a display panel whereby in one rotatable position of the central frame, the first set of compartments and the first pivotal structure define one operational visual display and in another rotatable position, a second set of compartments and a second pivotal structure define another operational visual display.

Background of the invention

Heretofore, visual display devices have been limited as to their flexibility and versatility in that they were not readily portable or if they were, the design was such that the visual affect and the impact created thereby was limited. According to the present invention, a complete, self-contained, portable, visual display device is provided in that it can be completely enclosed and rolled from place to place on casters, and yet it is compact and functional in that during use, the unit need only be rotated between two different positions to provide two operational visual displays. Provisions are made for utilizing both large and small display pieces adapted to be supported on, and easily removed from, a panel by means of nondestructive and reusable fabric type adhesive means. The structural features are such that pivotal closures are adapted to be closed to define, in part, a portable case and to be opened and secured in extended and cantilevered display positions without cumbersome end supports. To facilitate its use, a knock-down table may be included in the self-contained unit to support the latter at an elevated position when in use.

Summary of the invention

A visual display device having a central frame with means thereon defining a first set of compartments on one side of a central frame wall member and a second set of compartments on the opposite side of the wall member. The compartments are adaptable to house visual display pieces. A first and second pivotal structure are hingedly mounted on opposite sides of the central frame respectively and the central frame and pivotal structures have co-operable means for securing each of the pivotal structures in closed and in open positions. When in the closed position, the device is readily adapted to be portable. Each pivotal structure has means defining a panel on which the display pieces are adaptable to be temporarily mounted, and means are provided for rotatably mounting the central frame on a base means whereby in one rotatable position, the first set of compartments and the first pivotal structure when in its open position define an operational visual display so that the display pieces may be readily transferred from said compartments to the display panel for visual affect and thereafter returned to said compartments, and whereby in another rotatable position, the second set of compartments and the second pivotal structure when in its open position define another operation visual display.

2

Description of the drawings

FIG. 1 is a perspective view of a visual aid training device constructed according to one embodiment of the invention.

FIG. 2 is a plan view of the device in FIG. 1 but show the case in a position wherein it has been rotated relative to the base.

FIG. 3 is a bottom view of FIG. 1.

FIG. 4 is a perspective view of the training device as it might appear during actual use.

FIG. 4a is an elevational view of a suitcase type latch

FIG. 5 is a perspective view similar to FIG. 4 but showing another half of the device after it has been rotated 180 degrees.

FIG. 6 is a sectional view looking along the line 6—6 of FIG. 1.

FIG. 7 is a bottom view of the table dismantled and ready for storage in the case.

FIG. 8 is an exploded, fragmentary view of the bottom of the case and the base.

FIG. 9 is a fragmentary, perspective view of an alternate arrangement for the central frame.

Description of the preferred embodiments

An exemplary embodiment of the invention shown in the drawing consists of a complete, self-contained, portable box or case 10 which is adapted to be transported to a classroom or other location where it is to be used as a visual aid. FIG. 1 shows the complete, self-contained case 10 in its portable condition ready to be taken to a lecture hall, classroom, or other location where it will be used.

The case 10 comprises a central frame 12 to which there are pivotally mounted two pivotal structures or door closures 14 and 16 by means of the hinges 18 and 20, respectively. The central frame 12 is rotatably mounted on a base 22 by means of the bearing mounting generally indicated at 24. The base 22 has casters 26 mounted on the bottom thereof to facilitate mobility and transporting of the unit as may be desired. As will be further described hereinafter, the base 22 is adapted to be mounted on a table or support structure, indicated generally at 28, the latter being adapted to be assembled and disassembled and to be carried within one of the door closures 14 or 16 when disassembled and not in use.

Turning to more detailed constructional features, the central frame 12 comprises an outer box-like frame within which is mounted a wall or central panel 30. The panel 30 is mounted in the central frame 12 intermediate the ends of the latter as best shown in FIG. 6 thereby to divide the central frame 12 into two halves. Within the central frame 12 and on both sides of the panel 30 are a plurality of compartments 32 which may be made by the vertical and transverse dividers 34 and 36, respectively. The dividers 34, 36 may be arranged and suitably secured (e.g., by fastening members or adhesive) to the outer frame 12, to the central panel 30, and to each other to define various size compartments 32 as desired. Each compartment 32 has a door 38 suitably hinged either to the outer parts of the frame 12 or to the vertical dividers 34 as shown in the drawings. The hinging may be effected by hinges 40 as shown in the drawings, or alternately, by a fabric type hinge (not shown) having one longitudinal half secured by adhesive to the edge of the door 38 and the other half secured to the adjoining vertical frame member or vertical divider 34. Suitable catches (e.g., of the magnetic type) as indicated at 42 and handles 44 may be provided to keep the door 38 closed when not in use and to facilitate its use.

There are two sets of compartments 32 in the central

rame 12, one set on either side of the central panel 30. Thus, FIG. 4 shows one side of the central panel 30 with an compartments 32 while FIG. 5, which depicts the unit rotated 180 degrees from the FIG. 4, position, shows the other set having eight compartments 32. Each compartment 32 includes a door 38, a magnetic catch 42, and a handle 44 as previously indicated.

As shown in FIG. 4, the door closure 16 is hingedly mounted to the central frame 12 by the elongated or piano type hinge 20 whereby the door closure 16 may be pivoted from the FIG. 1 closed position to an open position shown in FIG. 4. The door closure 16 comprises a box-like structure having four walls 46 and a back or display panel 47 (FIG. 6). In order to firmly secure and hold either of the door closures 14 and 16 in the open position of FIGS.

3 and 4, respectively, suitcase type latches indicated generally at 48, may be provided to hold the inner side wall 6 of each door closure 14 and 16 firmly against the corresponding side wall of the central frame 12. These suitcase latches 48 are per se of the conventional type and comprise a base 50 (FIG. 4a) suitably secured to the upper wall of the central frame 12, a handle 52 pivoted to 54 to an upstanding part 56 of the base 50, a U-shaped hook-like part 58 pivotally mounted on the handle 52 and 60 and a hook receiving part 62 suitably secured to the top wall 46 of the door closure 16. In the FIG. 4a position the latch 48 is locked closed because of the relative over-center positions of the pivots 54 and 60. However, the handle 52 may be rotated clockwise about pivot 4 to release the hook-like part 58 from its receiving part 2 on the door closure 16. The arrangement is such that each latch 48 may be readily made and released with a simple manual manipulation thereof. Further, when each latch 48 is locked or closed, it tends to force the door closure 14 or 16 against the side wall of the central frame 2. Although only two top latches 48 are shown, there are also two at the bottom so that there are two for each door closure 14 and 16. With this arrangement, it will be apparent that for each door closure 14 and 16, the elongated hinges 18, 20 and the abutting relationship between the side walls of the central frame 12 and the respective door closure side walls effects a rigid cantilever type support for the door closures in the open positions shown in FIGS. 4 and 5.

The door closure 16 has a layer 64 of "Velcro" fixed to the back display panel 47. As is well-known to those skilled in the art, "Velcro" comprises a fabric like material having hooks and another fabric type material having loops whereby when the two materials are pressed together, they automatically adhere to one another but they may be separated merely by pulling them apart. The materials are such that they may be repeatedly separated and adhered without impairing their adhesion properties.

As will be further described hereinafter, the sheet of "Velcro" 64 mounted on the display panel 47 is adapted to support various display figures and other demonstration units which are carried in the compartments 32 previously described.

Although one door closure 16 has been described in detail it will be understood that the other door closure 14 as the same type of construction including a "Velcro" layer 64, and accordingly, will not be described in detail.

Both door closures 14, 16 are firmly held in their open, antilevered positions shown in FIGS. 4 and 5 with the latches 48 and hinges 18, 20 as previously described. In their closed position (FIG. 1) the door closures 14, 16 are firmly held closed by similar suitcase type latches 66. Although only two top latches 66 are shown in the drawing, there are two more at the bottom one for each door closure 14, 16.

As previously mentioned, the central frame 12 is pivotally mounted to a base 22. This pivotal mounting 24 may comprise a bearing having an upper race 68 suitably secured to the bottom wall of the central frame 12 and

a lower race 70 suitably secured to the base 22. Ball type bearings 72 are included between the two races 68, 70 as is conventional. Although the bearing comprising the upper and lower races 68 and 70, along with the ball elements 72 therebetween is conventional, additional means are provided to insure that the case 10 remains on the base 22 at all times. To this end, a central bolt 74 (FIG. 6) extending through a central opening in the bearing 24 secures the base 22 to the central frame while still permitting relatively rotary movement about the bearing 24. It will be apparent that the base 22 remains with the case 10 at all times and serves as a support therefor, thereby facilitating its transport, the base 22 mounting the casters 26 enabling the case 10 to be rolled to various places as may be desired.

Since the case 10 is to be used as a visual aid and demonstration device, it is desirable that it be mounted at an elevated position during use. To this end the dismantable table 28, previously mentioned, comprises a panel or top 76 having mounting plates 78 adapted to threadedly receive the threaded shanks 80 included in the ends of the four legs 82. Accordingly, the legs 82 may be assembled and disassembled on the table top 76 by simply unscrewing them off or screwing them on as desired. To provide compactness and secure stowage, a means, such as the heavy elastic elements 84, may be looped on the bottom of the table top 76 and permanently secured by fastening members 86 whereby the legs 82 may be slid longitudinally along the aligned elastic loops as may be desired. Thus, FIGS. 6 and 7 show the disassembled table 28 with the legs 82 arranged on the table top 76 while FIG. 8 shows the assembled table 26 ready to receive the case 10. The table top 76 has four openings 88 adapted to accommodate the casters 26 mounted on the underside of the base 22 so that there will be a flush mounting between the base 22 and the table top 76. The base 22 also has an opening 90 (FIG. 8) to accommodate the protruding bolt 74.

In order to secure the case 10 in the position shown in FIGS. 4 and 5, a conventional latch bolt 92 (FIG. 5) may be secured to the central frame 12, for example to the central wall 30 as shown in FIG. 5, and adapted to be extended through an opening in the bottom wall of the central frame 12 into an opening 94 in the base 22. The bolt 92 insures that the case 10 will be held securely in the FIG. 5 rotatable position. Although not shown, a similar latch bolt and aligned openings may be provided on the opposite end of the central wall 30 to secure the case in the FIG. 4 position.

Although a knock-down table 28 has been shown and described in detail, in some cases it may not be necessary to use this table 28, for example when a standard table or other support structure of the proper elevation is available in the room in which the demonstration device is to be used. In such an event the dismantled table 28 as shown in FIG. 7 may be put aside and not used, and the base 22 and case 10 placed directly on the foresaid standard table and still be used efficiently.

Included within the central frame 12 are four telescoping type support elements 96 projecting from the central frame side walls. These telescoping elements 96 are adapted to be telescoped flush with or completely within the central frame 12 so as not to interfere with the door closures 14 and 16 when the latter are locked in their open positions as shown in FIGURES 4 and 5, respectively. However, when one door closure is open, the telescoping elements 96 on the opposite central frame side wall may be extended to serve as a means for holding display pieces during the visual demonstration.

The visual aid demonstration device functions to visually demonstrate and teach any subject as may be desired. Thus, the particular subject will determine the nature of the display pieces to be included in the various compartments 32. These display pieces or figures (e.g., 98) preferably have a hole in an upper portion so that

they may be held in position in the compartments 32 on the hooks 100. To provide flexibility of arrangement, the central panel 30 may be in the form of a pegboard so that the conventional hook elements 100 may be located and placed on the pegboard in any desirable position. Also, as previously indicated, various shapes and sizes of compartments 32 may be provided to accommodate the different size display pieces. Larger type display pieces (e.g., 102) may be stowed in the large compartment defined by either of the door closures 14 or 16 while the other door closures 16 or 14 may be used for receiving additional figures and/or for carrying the disassembled table 28 (see FIG. 6).

Each display piece (e.g., 98, 102) has one or more patches 104 of "Velcro" adhesively secured (e.g., by cement) to the back thereof. Accordingly, each display piece (e.g., 98, 102) may be placed on the piece of "Velcro" 64 on the door closure panel 47 in any desirable position and held there by the engagement of the hooks and loops of the mating "Velcro" material.

Some of the larger display pieces 102, as shown in FIG. 4 for example, may have openings therein to expose the "Velcro" 64 on the display panel 47 thereby permitting smaller pieces 98, to be placed on the "Velcro" 64 on the area bounded by said openings. During use, the larger pieces 102 may be temporarily hung on the telescoping elements until ready for use. The display pieces may be made of cardboard, plastic, or other material.

In a typical example, the case 10 may be used in connection with a training program directed to improving personal relations within a business organization. As part of the training, the students may be taught a new approach to understanding the world of emotions whereby various display pieces in the form of figures may be placed on the display panel 47 signifying expressions depicting particular emotions (e.g., happiness, anger, fear, etc.) so that as the instructor is talking, he can place these figures on the panel 47 to assist the students in learning and at the same time provide a visual demonstration relating thereto.

As apparent from the above description, there are two door closures 14 and 16 and two sets of compartments 32 thereby making two halves to the case 10. Thus, after the instructor is finished with one half he may rotate the case, 180 degrees and start on the other half. With this arrangement, a maximum number of display pieces are made available in a minimal space. This increases the compactness of the unit without destroying its flexibility and portability.

It will be apparent from the above description that upon transporting the unit to a new location, it is a simple matter to open the door closure (e.g., 16), take out the disassembled table 28, and assemble it while the main part of the case is still supported on the casters 26. After the table 28 is assembled, it is a simple matter to lift the case 10 with base 22 and place it on the assembled table 28. It has been found that this is a much simpler and easy method than attempting to raise the case 10 and maintain it in an elevated position while trying to assemble the legs in position.

FIG. 9 shows an alternate embodiment wherein the central frame 12a has a U-shaped outer shell 106 which is adapted to slidably receive an insert structure 108 made up of a central wall 30a and two sets of compartments of the type shown in the main embodiment at 32. With this arrangement, different insert structures 108 may be inserted in the shell 106 containing different size compartments and/or different display pieces depending on the particular subject to be demonstrated, thereby increasing its flexibility and adaptability for many subjects and uses.

The invention hereinabove described may be varied in construction within the scope of the claims, for the particular devices selected to illustrate the invention are but several of many possible embodiments of the same. The

invention, therefore, is not to be restricted to the precise details of the structure shown and described.

I claim:

1. A visual display device comprising, a central frame defining a first set of compartments on one side of said wall member and a second set of compartments on the opposite side of said wall member, said compartments being adaptable to house visual display pieces, a first and second pivotal structure hingedly mounted on opposite sides of said central frame respectively, said central frame and pivotal structures having cooperable means for securing each of the pivotal structures is closed and in open positions whereby when in said closed position, the device is readily adapted to be portable, said pivotal structure each having means defining a panel on which said display pieces are adaptable to be temporarily mounted, and means for rotatably mounting said central frame on a base member whereby in one rotatable position, the first set of compartments and said first pivotal structure when in its open position define an operational visual display so that the display pieces may be readily transferred from said compartments to the display panel for visual affect and there after returned to said compartments, and whereby in another rotatable position, the second set of compartment and said second pivotal structure when in its open position define another operational visual display.

2. A visual display device according to claim 1 wherein said base means comprises a base support on which the central frame is rotatably mounted and a table having a table top on legs for supporting the device in an elevated position.

3. A visual display device according to claim 2 wherein said base support mounts casters, and said table top has openings for receiving said casters.

4. A visual display device according to claim 1 wherein each of said pivot structures is comprised of wall members arranged to define a five sided box-like door closure, one of said door closures being adapted to house display pieces which are too large for any of the said first or second set of compartments.

5. A visual display device according to claim 4 wherein the other of said door closure is adapted to house a dismantled table which in its assembled condition is adaptable to mount said base means in an elevated position.

6. A visual display device according to claim 1 wherein said pivot structures are supported on hinges secured to the central frame side walls and to pivot structure side walls, said means for securing said pivotal structures in open position comprising a latch having a part on the central frame and another part on the pivotal structure said latch being positioned and arranged to obtain and secure an abutting relationship between respective central frame and pivotal structure side walls, thereby to facilitate cantilever support for the pivotal structures in their open position.

7. A visual display device according to claim 6 wherein said hinges extend uninterruptedly the height of said central frame and pivot structures thereby to provide maximum cantilever support for said pivot structures in their opened positions.

8. A visual display device according to claim 6 further comprising extensible telescoping means mounted on said central frame adapted to be extended from the central frame side wall to support large display pieces and to be contracted when said central frame side wall abuts the associated pivot structure side wall, thereby to facilitate said cantilever support for the pivot structure.

9. A visual display device according to claim 1 further comprising means associated with said central frame and said base means for releasably locking said central frame in said one and said other rotatable positions.

10. A visual display device according to claim 1 wherein said central frame comprises an outer shell and an in-

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ert structure made up of said wall member with said
rst and second set of compartments on either side there-
f, said insert structure being replaceable within said
uter shell.

8

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U.S. Cl. X.R.

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