

[54] **PORTABLE STUDY CARREL**

[72] Inventor: **Thomas J. Sutton**, Livonia, Mich.

[73] Assignee: **Oakland Community College**,
Bloomfield Hill, Mich.

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[51] **Int. Cl.**.....**A47b 41/00**

[58] **Field of Search**.....**35/8 R, 8 A, 60, 22 A, 35 C;**
108/60, 27, 150; 312/195, 196, 197, 257 A,
258, 140.4; D33/11; 353/74, 79, 80, 82

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Primary Examiner—Wm. H. Grieb

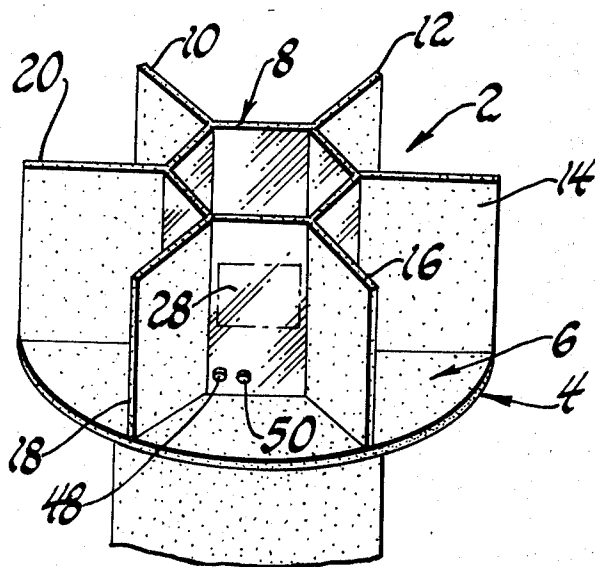
Attorney—McGlynn, Reising, Milton & Ethington

[57]

ABSTRACT

A study carrel including a horizontal work surface with a hollow core unit projecting upwardly from the work surface and a plurality of vertical side panels extending outwardly from the peripheral surface of the core member toward the peripheral edge of the work surface to define a plurality of work stations. Each of the work stations is enclosed by an adjacent pair of side panel surfaces, the portion of the outer surface of the core unit that extends between the adjacent pair of side panel surfaces, and the corresponding portion of the horizontal work surface that extends between the adjacent pair of side panel surfaces.

3 Claims, 10 Drawing Figures



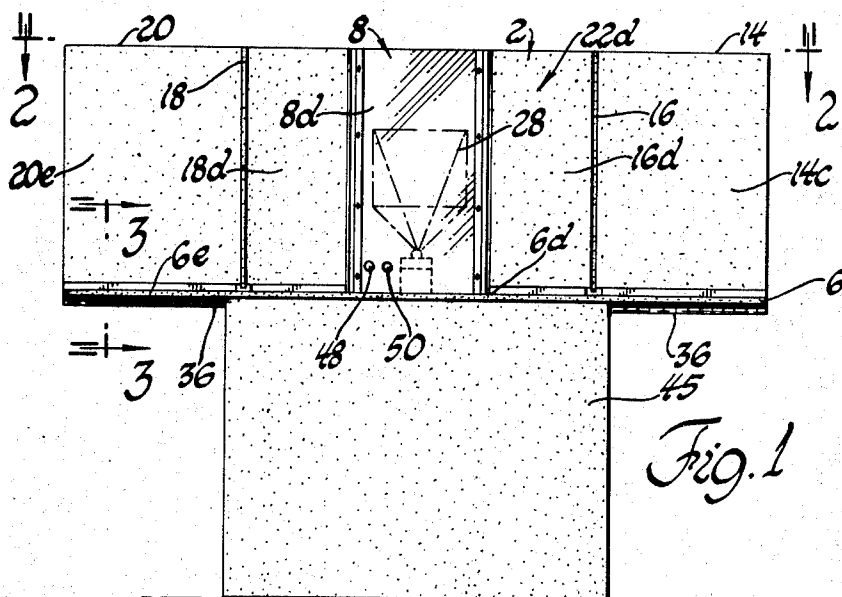


Fig. 1

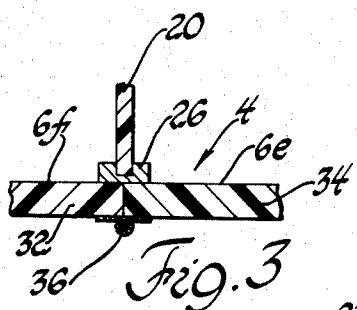


Fig. 3

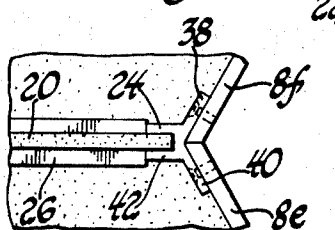


Fig. 4

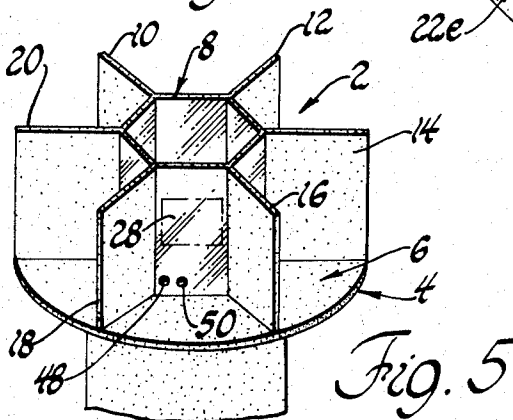


Fig. 5

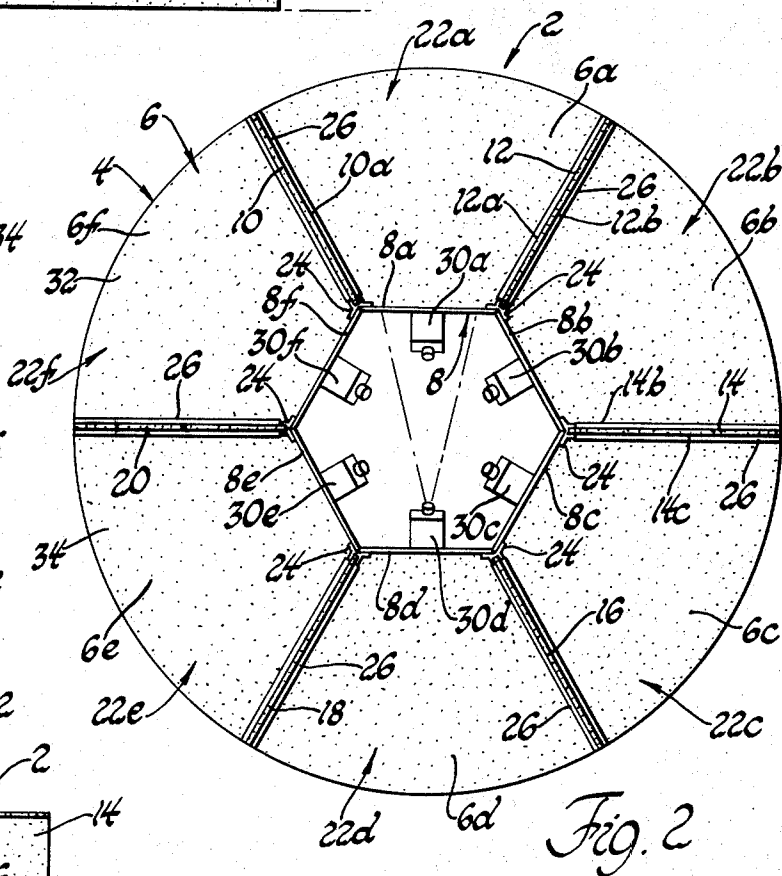


Fig. 2

INVENTOR.
Thomas J. Sutton
 BY
Barnard, McElvyn & Reising
 ATTORNEYS

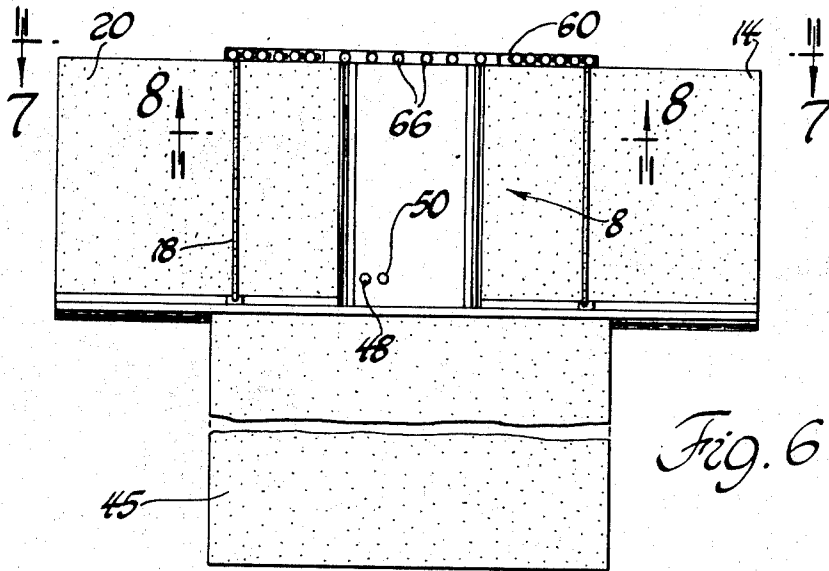


Fig. 6

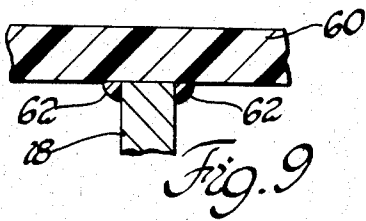


Fig. 9

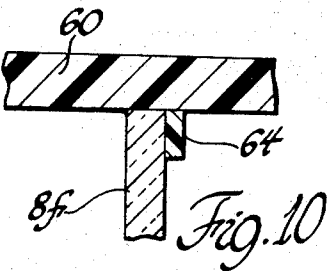


Fig. 10

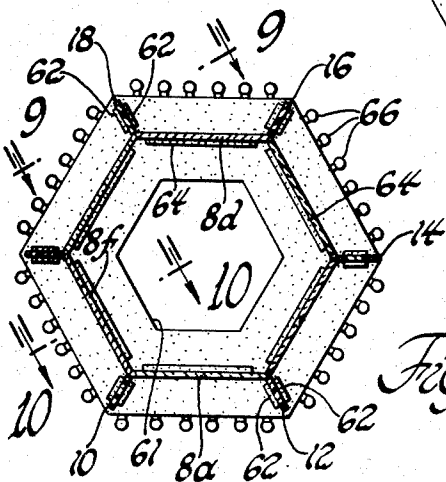


Fig. 8

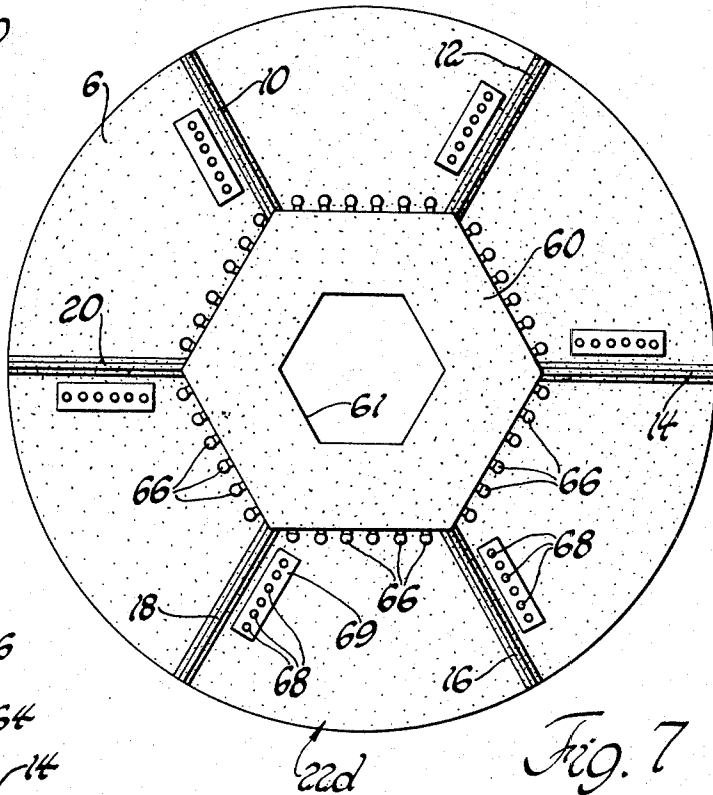


Fig. 7

INVENTOR.
Thomas J. Sutton
 BY
Barnard, McElynn & Reising
 ATTORNEYS

PORTABLE STUDY CARREL

This invention relates generally to study carrels and more particularly to a study carrel that can be used by several students simultaneously, and wherein each student can receive individual instruction and utilize different audio-visual equipment without disturbing the other students using the carrel, and which can be easily disassembled and removed to a storage area when not in use, and which can be easily reassembled when desired.

In the field of education, it is becoming increasingly necessary to develop methods and equipment for obtaining the maximum use of teaching skills, building space and teaching equipment such as film projectors and other audio-visual equipment. Ideally, for optimum use of building space, desks and other equipment should be of the construction that can be easily installed in and removed from a classroom, and that can be easily stored. For example, there are times when it is necessary or desirable to use a room for lecturing a large group of students, and there are other times when it is desirable for the room to be equipped for individual study by students, with the students individually utilizing different audio-visual equipment such as projectors and recordings. Self-teaching devices are available that project both sound and visual images for instructional purposes wherein the sound can be transmitted to an individual student over earphones so that other nearby students are not disturbed. The heat generated by the operation of projectors and similar audio-visual equipment can be satisfactorily dissipated only if there is adequate circulation of air around the equipment. For comfort of the students, it is also necessary to afford maximum air circulation in the area occupied by the students.

An object of this invention is to provide a study carrel that can be used simultaneously by several students and wherein each student can receive individual instruction, or utilize separate audio-visual equipment, without disturbing other students using the carrel.

A further object of the invention is to provide a multiple station study carrel that can be constructed of lightweight material and can be easily assembled and disassembled so that it can be installed in a room and disassembled and removed therefrom for storage as desired.

A further object is to provide a study carrel capable of being used simultaneously by several students wherein the carrel has a shape to afford maximum air circulation for student comfort while at the same time providing individual privacy for each student.

Another object is to provide a multiple station study carrel wherein a plurality of students can use the carrel simultaneously in combination with several pieces of audio-visual equipment of the type that generates a large amount of heat during operation wherein the heat generated by such equipment can be quickly dissipated, and wherein the students are not in direct communication with the space occupied by the equipment so as to be out of direct contact with the heated ambient atmosphere of the equipment.

Still another object is to provide a multiple station study carrel including a hollow core unit for enclosing audio-visual equipment such as projectors for use by students viewing or listening to the equipment on the outside of the hollow core unit so that heat generated

by the equipment is dissipated upwardly out of the top of the core unit.

The foregoing, and other objects, are achieved by the provision of a study carrel having a horizontal work surface with a hollow core unit projecting upwardly from the work surface. A plurality of vertical side panels extend outwardly from the outer surface of the core member toward the peripheral edge of the work surface and cooperate to define a plurality of work stations, or individual carrels. Each of the work stations is enclosed by an adjacent pair of side panel surfaces, the portion of the outer surface of the core unit that extends between the adjacent pair of side panel surfaces, and the corresponding portion of the work surface that extends between the adjacent pair of side panel surfaces.

The core unit may enclose projectors or other audio-visual equipment disposed to project images onto the surface of the core unit that are visible to students occupying each work station, and the core unit operates as a vent for heat generated by the equipment. Grooved track members or molding strips are provided on the work surface and core unit so that the core unit can be placed on the work surface and the side panels installed by inserting the edges of the side panels in the grooves on the core unit and the corresponding grooves radiating from the core unit on the work surface. The work surface is provided by a multiple section table top having sections which are hinged together so that it can be folded and unfolded. When removed from storage, the carrel can be assembled by unfolding the table top and placing it on a support above the floor, placing the core unit in the center of the unfolded table top, and installing the side panels to interlock the core unit with the table top. The core unit is made from translucent material, or has translucent areas at each work station to serve as a screen for the projectors. Consequently, projectors can be mounted on the inner surface of the core unit to project images onto the opposite inner surface of the core unit which image can be viewed from the outside by a student seated at the adjacent work station.

In one embodiment of the invention, a set of lights can be provided at each work station with a switch at each work station for each light of the particular set located so as to be accessible to a student at the work station. The lights may be provided on the surface of the core unit extending between the panels of the associated work station, or the lights may be provided on a cover member overlying the upper edge of the core unit and interlocked with the upper edges of the side panels for bracing the side panels. The lights can assist in testing a group of students, for example, by projecting test problems or questions onto each screen with multiple choice answers and the student indicating his answer by illuminating a particular light. An instructor can thus record the student's answer simply by determining which light is illuminated by the student.

Other objects, advantages and features of the invention will become apparent from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of a study carrel according to the present invention;

FIG. 2 is a plan view taken on line 2—2 of FIG. 1; FIG. 3 is a sectional detailed view taken on lines 3—3 of FIG. 1;

FIG. 4 is an enlarged detailed view;

FIG. 5 is a perspective view of the carrel of FIGS. 1 and 2;

FIG. 6 is an elevational view of a study carrel similar to the study carrel of FIG. 1 with a cover member mounted on the core unit and interlocked with the upper edges of the side panels;

FIG. 7 is a plan view taken on line 7—7 of FIG. 6;

FIG. 8 is a bottom view of the cover member taken on line 8—8 of FIG. 6; and

FIGS. 9 and 10 are sectional views taken on lines 9—9 and 10—10, respectively, of FIG. 8.

In the drawings, reference numeral 2 collectively designates a multiple station study carrel according to the present invention comprising means in the form of a table top 4 defining a planar, horizontal work surface 6; a hollow core unit 8 projecting upwardly from the work surface 6; and a plurality of vertical side panels 10, 12, 14, 16, 18 and 20 extending outwardly from the outer surface of core unit 8 toward the peripheral edge of the work surface 6 to define a plurality of work stations or compartments 22a, 22b, 22c, 22d, 22e and 22f. The work station or compartment 22a is enclosed by (1) the adjacent pair of side panel surfaces 10a and 12a, (2) the portion 8a of the outer surface of the core unit 8 that extends between the side panel surfaces 10a and 12a, and (3) The corresponding portion 6a of the work surface 6 that extends between the adjacent pair of side panel surfaces 10a and 12a. Similarly, work station 22b is enclosed by the adjacent pair of side panel surfaces 12b and 14b, portion 8b of the core unit 8 and portion 6b of the work surface 6, and so forth.

A plurality of vertical track members 24 are spaced from each other on the outer surface of the core unit 8, each of the vertical track members 24 slidably receiving the inner, vertical edge of one of the side panels 10, 12, 14, 16, 18, or 20. A plurality of horizontal track members 26 are spaced from each other on the horizontal work surface 6 and each slidably receives the bottom edge of one of the side panels.

A projector screen 28 for each work station is defined on the portion of the core unit that extends between the adjacent pair of side panel surfaces for each work station. For example, a projector screen 28 is defined on portion 8d of the core unit 8 that extends between the side panels 16 and 18 for work station 22d. The core unit 8 may be made entirely of translucent plastic or fiberglass material all of which can serve as a screen for projectors 30, or the screens can be defined at only a portion of the surface of the portions 8a, b, c, d, e and f for the individual work stations. A projector 30 for each of the work stations is mounted on the inner surface of the core unit in a position to project an image onto one of the projector screens or surfaces 28. Projectors 30 can be mounted on the core unit by conventional means such as dovetail brackets of the type having mating parts with one part mounted on the core unit and the other mounted on the projector. The projector 30d in the drawings is mounted on the inner surface of portion 8d of the core unit and projects an image onto the screen portion of portion 8a of the work station 22a to be viewed by a person at the work station

22a. The projectors 30a—f are mounted on the respective portions 8a—f of the inner surface of the core unit 8 that extends between the side panels for each work station, and are located at a vertically spaced location with respect to the screen portions of portions 8a—f so as to project the image across the space surrounded by the core unit 8 to the screen portion of the opposite work station. In the illustrated embodiment, the projectors 30 are mounted adjacent the lower edge of the core unit 8 and project an image upwardly onto the surface of the core unit opposite the projector.

The work surface 6 is defined by a table top 4 having a pair of foldable sections 32 and 34 (FIG. 3) which are hinged together by conventional piano hinges 36. Accordingly, the table top can be folded for storage.

In the illustrated embodiment, six work stations are defined on the carrel, and the hollow core unit 8 is hexagonal such that a flat end panel 8a—f is defined for each work station 22a—f. The axially, vertically extending track members 24 are mounted on each corner of the hexagonal core unit 8, each of the grooves of the track units 24 receiving the inner, vertical edge of one of the side panels 10—20.

As shown in FIG. 4, each of the track members 24 may comprise an aluminum extrusion having a pair of mounting flanges 38 and 40 which can be secured by screws or other conventional fasteners to the adjacent panels of the core unit 8. As shown in FIG. 4, the mounting flange 38 is secured to the end panel or portion 8f of the core unit 8, and the mounting flange 40 is secured to the end panel or portion 8e. Projecting outwardly between the mounting flanges 38 and 40 is a channel portion 42 formed with a vertical groove for receiving the inner edge of one of the side panels. In FIG. 4, the channel portion 42 of track member 24 receives the inner edge of panel 20 located between work stations 22e and 22f.

The track members 26 defining the horizontal grooves for receiving the bottom edges of the panels each extend radially from a location near the outer surface of the core unit 8 to the outer periphery of the table top 4, and are in the form of channel members having a groove for receiving the panels. In FIG. 3, the track member 26 may be secured to either of the table top portions 34 or 32 so as not to interfere with the action of the hinge 36.

The illustrated study carrel 2 therefore includes a table top 4 defining a planar work surface 6 with a hollow core unit 8 supportable in perpendicular relationship with respect to the work surface 6; means 26 defining a plurality of spaced, radially extending grooves on the work surface 6, means 24 defining an equal number of spaced, axially extending grooves on the outer surface of the hollow core unit 8 wherein the spacing of the grooves is such that the core unit can be oriented with respect to the work surface whereby a line along the axially extending grooves of members 24 intersects a line along each of the radially extending grooves of track members 26. Accordingly, a panel can be mounted with its inner axially extending edge in an axially extending groove of member 24 with its radially extending bottom edge engageable with the associated radially extending groove on the work surface 6 to interlock the core unit 8 and the work surface to define the plurality of compartments or work stations 22

between adjacent pairs of the panels. The assembled table top 4, core unit 8 and side panels 10-20 can be mounted on any type of support or pedestal 45, the nature or construction of the pedestal forming no part of the present invention. The table top 4 may be cut out at its center so that the core unit 8 can have its lower edge mounted in the opening of the table top and supported on the upper surface of the pedestal member 45, or the table top portion can be continuous throughout with the core unit supported directly on the upper surface of the central portion of the table top.

As shown in FIGS. 1 and 5, an earphone jack indicated by reference numeral 48 and a volume control indicated by reference numeral 50 is provided at each work station so that a student can control the projectors or audio devices mounted in or enclosed by the core unit. When the carrel assembly 2 is not in use, or is to be transported to another location, the side panels 10-20 can be disengaged from the track members 24 and 26, and the core unit 8 removed from the table top. The table top can be folded about the hinges 36 for storage. The core unit may be stored in its assembled form, or, if desired, the molding strips or track members 24 can be removed from at least one of the associated side panels to disassemble the core unit 8.

The side panels may be made of translucent plastic, fiberglass or other lightweight material, and can be multi-colored if desired. The core unit 8 serves as a vent for the heat generated by the projectors or audio-visual equipment 30 to dissipate the heat without directly impinging on the work stations 22. If desired, a ventilated top with louvers may be provided for the core unit 8 for permitting the heat to be dissipated through the top of the core unit. The conical shape of the work stations or study areas 22a-f in the illustrated embodiment provides optimum acoustic quality.

The illustrated study carrel thus comprises an open-ended tubular core member 8 having an endless wall 8a, 8b, 8c, 8d, 8e, and 8f of lightweight material enclosing a space for the projectors and audio-visual equipment 30, with means defining a plurality of translucent screen areas 28 spaced around the wall 8a-f for receiving images projected from the space enclosed by the wall 8a-f. The core member 8 is polygonal with the endless wall defined by flat panels 8a-f each defining one side of the polygon, a screen area 28 being defined on each panel 8a-f. Side panels 10, 12, 14, 16, 18 and 20 project radially from each corner of the polygonal core member 8, the panels 10-20 lying in radial planes with respect to the axis of the core member 8. The planar work surface 6 extends outwardly from the core member 8 and is perpendicular to the axis of the core member and to the side panels 10-20 with one radially extending edge of each of the panels 10-20 engaged with the work surface 6 through members 26.

The study carrel illustrated in FIGS. 6 through 10 is identical with the study carrel of FIGS. 1 through 5 and in addition includes a cover member designated by reference numeral 60. The cover member 60 projects outwardly from the core unit 8 so as to overlie a portion of the upper edges of the side panels 10-20. A plurality of pairs of spaced molding strips 62 are secured to the lower surface of the cover member as illustrated in FIGS. 8 and 9, and serve as means for interlocking the cover member with the upper edges of the side panels

10-20. With reference to FIG. 9, the molding strips 62 are spaced from each other to define a groove for receiving the upper edge of one of the panels, the groove defined by the spaced strips 62 in FIG. 9 receiving the upper edge of panel 18. The engagement of the panels with the grooves defined by the strips 62 serve to brace the upper edges of the panels and thereby lend additional rigidity to the structure.

Transverse movement of the cover member 60 with respect to the core unit 8 is prevented by locating means 64 on the lower surface of the cover member 60. The locating means 64 in the illustrated embodiment includes an elongated strip of wood nailed or otherwise secured to the lower surface of cover member 60 to define a depending shoulder engageable with the core unit to prevent transverse movement of the cover member with respect to the core unit. In the illustrated embodiment, the shoulder defined by the locating member 64 engages the inner surface of the panels 8a-8f of the core unit. In the illustrated embodiment of FIG. 8, a locating strip is provided for each of the panels 8a-8f.

The cover member 60 is formed with an opening 61 for venting hot air from the core unit. The opening 61 in the illustrated embodiment is of hexagonal configuration; however, the vent opening obviously could take other forms. For example, the venting could be provided by one or a plurality of openings of various configurations rather than the single hexagonal opening. Opening 61 may be covered by a screen or the like to prevent trash and debris from falling into the core unit without at the same time interfering with the flow of air for venting.

A set of lights 66 is mounted on the cover member 60 within each work station. Each set of lights 66 consists of the same number of lights as the other sets, and a series of switches 68 is mounted on the horizontal work surface within each work station providing a switch for each light for that particular work station. For example, as shown in FIG. 7, the set of switches 68 includes a switch for each of the lights 66 at work station 22d. The switches may be of the push-button type and may be numbered consecutively so that a student may indicate his choice of an answer projected onto the screen at the work station by actuating the appropriate switch having a number corresponding to the desired answer. The answer selected by the student will thus be indicated by the position of the illuminated light 66 with respect to the remainder of the lights in its set. The switches may be housed in a console which in turn can be supported on top of the table top 6.

The supporting pedestal 45 in both embodiments of the invention may consist of a container for the components of the carrel. For example, when the carrel is not in use, or is to be transported to another location, the side panels, central core unit and cover member 60 can be placed in the rectangular container forming the pedestal 45. The container and the folded table top 6 can then easily be transported to the desired location.

While a specific form of the invention has been illustrated and described in the foregoing specification and accompanying drawings, it should be understood that the invention is not limited to the exact construction shown, but that various alternatives in the construction and arrangement of parts, all falling within the scope

and spirit of the invention, will be apparent to those skilled in the art.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A lightweight, portable knock-down, multiple station study carrel comprising: a circular table top defining a horizontal work surface and including at least a pair of sections hinged together for folding and unfolding; a hollow, polygonal core unit projecting upwardly from said work surface, each side of said polygonal core unit being defined by a flat panel; a plurality of vertical track members on said core unit corresponding in number to the corners of said core unit, each of said vertical track members being located on a corner of said core unit; a plurality of horizontal track members on said work surface each extending in a radial direction from a corner of said core unit to the periphery of said work surface; a plurality of vertical side panels corresponding in number to the corners of said core unit, each of said side panels having an inner vertical edge slidably received in one of said vertical track members and a lower horizontal edge slidably received in the associated horizontal track member; said side panels cooperating with said core unit and horizontal work surface to define a plurality of work stations each of which is enclosed by an adjacent pair of side panel surfaces, the flat panel defining the side of said core unit between said adjacent pair of side panel surfaces, and the corresponding portion of said horizontal work surface that extends between said ad-

jacent pair of side panel surfaces, said flat panels including translucent areas defining screens for projected images.

2. A multiple station study carrel comprising: means defining a planar, horizontal work surface; a hollow core unit projecting upwardly from said work surface; a plurality of vertical side panels extending outwardly from the outer surface of said core unit toward the peripheral edge of said work surface to define a plurality of work stations each of which is enclosed by an adjacent pair of side panel surfaces, the portion of the outer surface of said core unit that extends between said adjacent pair of side panel surfaces, and the corresponding portion of said horizontal work surface that extends between said adjacent pair of side panel surfaces; means defining a projector screen for each work station on the portion of the core unit that extends between the adjacent pair of side panel surfaces for said work station; a projector for each work station, each projector being mounted within the core unit in a position to project an image onto one of the projector screens, each projector being mounted on the portion of the inner surface of the core unit that extends between the adjacent pair of side panels for a work station and at a vertically spaced location with respect to the screens and operable to project an image across the space surrounded in the core unit to the screen of the opposite work station.

3. A multiple station study carrel as claimed in claim 2 wherein said side panels are translucent.

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