

Sept. 3, 1968

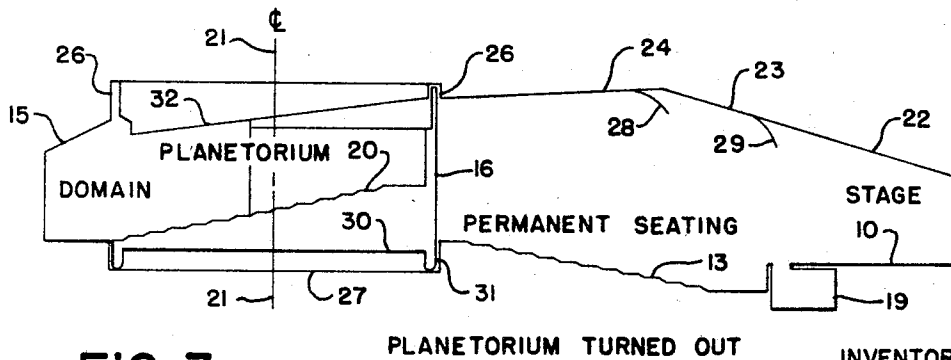
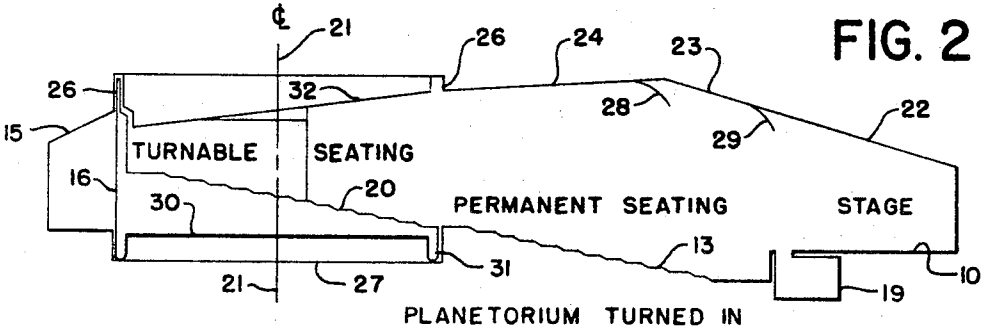
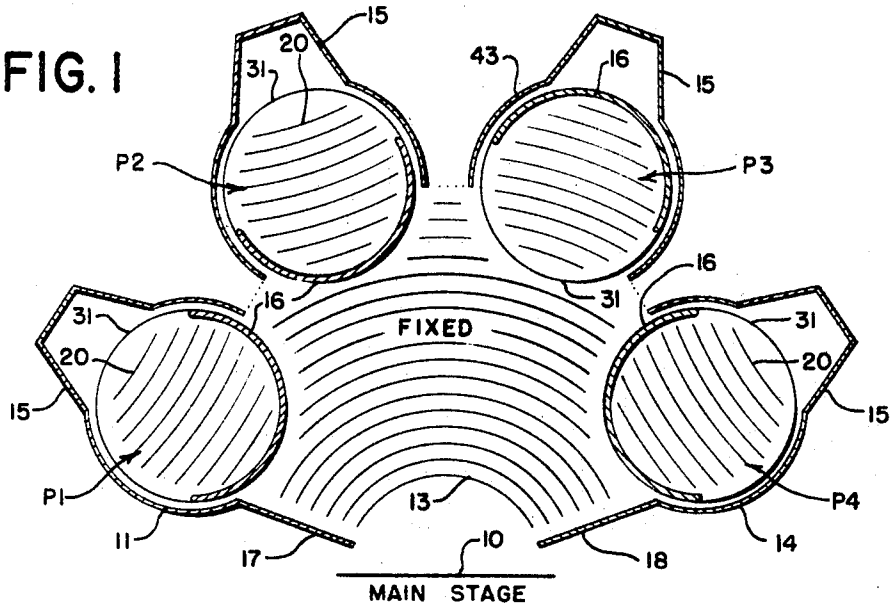
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3,399,501

AUDITORIUM INSTALLATIONS

Filed Nov. 7, 1967

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

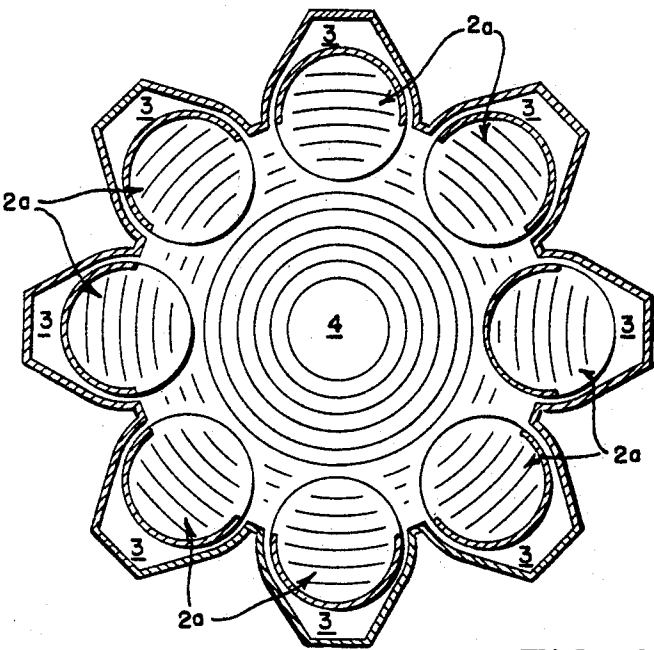


FIG. 4

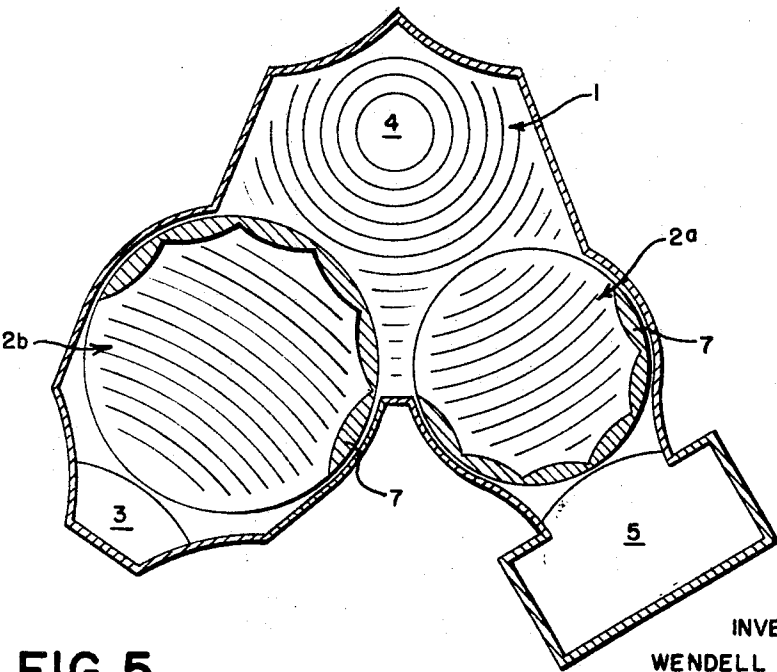


FIG. 5

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1

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AUDITORIUM INSTALLATIONS
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No. 681,177

16 Claims. (Cl. 52—10)

ABSTRACT OF THE DISCLOSURE

An auditorium installation wherein one auditorium may optionally be used either simultaneously with or separately from the seats of a second auditorium. This auditorium installation has an inner stage which is at least partly surrounded by a circumferentially extending fixed seating means which has an inner area adjacent to the inner stage and an outer area distant therefrom, and this inner stage may be considered as a main stage of the installation. Situated outwardly beyond the outer area of the fixed seating means is an outer platform or stage, and between this outer stage and the fixed seating means there is located, at the outer area of the latter, a rotary seating means which can be rotated either to an inwardly directed position facing the inner stage or an outwardly directed position facing the outer stage. A partition means coacts with the rotary seating means to close the latter and outer stage off from the fixed seating means when the rotary seating means is outwardly directed toward the outer stage, while this partition means provides full viewing of the inner stage when the rotary seating means is inwardly directed toward the latter, and in this latter position of the rotary seating means it forms an extension of the fixed seating means.

Reference to related application

This application is a continuation-in-part of copending application Ser. No. 477,518, filed Aug. 5, 1965, now abandoned, and entitled Auditorium With Peripheral Rotatable Lecture Areas.

Background of the invention

This invention relates to a multiuse learning or entertainment center and the structures for providing the same. More specifically this invention relates to an auditorium having an adjustable seating capacity for providing one large auditorium or a plurality of individually sectioned small auditoriums or lecture areas.

In auditoriums presently used by entertainment installations, schools, and other institutions of learning, it has been found advantageous to be able to divide the seating arrangement in the auditorium to permit more than one presentation to be given simultaneously. In most auditoriums having large seating arrangements it has been found that many of the functions which utilize the auditorium do not require the large seating capacity. Moreover, in scheduling the use of the auditorium, it has been found that conflicts in time exist where different groups require the use of the auditorium facilities simultaneously. Therefore, in any entertainment facility, educational system or school facility, there is a need to provide at least one large auditorium facility and plurality of smaller auditoriums or lecture areas to accommodate the needs of smaller groups.

Due to the limited budget of most educational building programs, it is not economically feasible to provide teaching facilities with more than one large auditorium unit. Attempts to section off portions of the auditorium with soundproof screens, so as to permit its use by more than one group simultaneously, have proved ineffective because of the adverse acoustical properties of the auditorium and the lack of adequate stage facilities for the partitioned areas. It has therefore been desirable to provide a means

2

for partitioning a large auditorium area into a plurality of individual lecture halls or planetariums each of which can be isolated from one another and each of which may operate autonomously within itself and yet may be readily transformed back into one large auditorium area.

Summary of the invention

The present invention, as outlined hereinbelow, overcomes many of the disadvantages inherent in conventional techniques for partitioning large auditorium areas into smaller areas by providing an auditorium facility having both a fixed permanent seating means or arrangement as well as a plurality of smaller lecture halls located along the outer periphery of the main seating arrangement. The smaller lecture hall areas may be readily adapted to connect with the fixed seating arrangement of the main inner platform or staging area or to be completely isolated therefrom. The seating arrangements for each of the separate lecture areas are designed to be continuous with the fixed seating arrangement of the main auditorium area when the individual staging areas are connected to the main area. However, by revolving the rotary seating means or arrangement of each of the individual areas, it is possible to provide a partition which acoustically isolates the individual outer platform or lecture area from the main auditorium area and permits the seats to be outwardly directed toward a smaller domain stage or lecture platform. This type of construction of auditorium therefore provides a main auditorium area having a seating capacity which may be varied from 10% to 100% of its full seating capacity and permits the remaining seating capacity, not used in the main auditorium area, to be employed independently and simultaneously for other purposes.

It is, therefore, an object according to the present invention to provide an auditorium having a variable seating capacity that is capable of being partitioned into two or more individual areas for simultaneous use thereof.

It is another object of the present invention to provide an auditorium that may be partitioned into a plurality of smaller hall areas each of which is acoustically isolated from one another and from the main auditorium area.

It is a further object of the present invention to provide an auditorium having a variable seating capacity that is capable of being partitioned into two or more individual hall areas wherein the acoustical properties of the main, as well as the individual areas, substantially remain unaltered.

It is a further object according to the present invention to provide an auditorium capable of being partitioned into two or more individual hall areas having a cost of construction substantially less than that of providing individual facilities having the same capacity as those being partitioned.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings which disclose the embodiment of the present invention. It should be understood however that the drawings are designed for purposes of illustration only and not as a definition of the limits of the invention as to which reference should be made to the appended claims.

Brief description of the drawings

In the drawings, wherein similar reference character references denote similar elements throughout the several views:

FIG. 1 is a plan view of the auditorium facility embodying the principles of the present invention;

FIG. 2 is a sectional illustration taken through the main auditorium area and one of the individual areas that has been adapted to face in toward the main auditorium area;

FIG. 3 is a sectional illustration through the main

auditorium area of the auditorium of FIG. 1 and a hall area turned away from the main auditorium area and individually isolated therefrom;

FIG. 4 is a schematic plan view of a further embodiment of an auditorium installation of the invention; and

FIG. 5 is a schematic plan view of yet another embodiment of an auditorium installation of the invention.

Description of preferred embodiments

The auditorium, constructed in accordance with the principles of the present invention, may be described as follows.

Referring to the figures, there is shown the auditorium having a main or inner stage 10 which faces out upon a fixed seating means or arrangement 13 comprised of a plurality of rows of seats which concentrically surround the main stage area in a nearly semi-circular configuration. Arranged around the fixed seating arrangement 13 are a plurality of individual hall units P1, P2, P3, and P4 which respectively contain rotary seating means or arrangements 20 each of which has a smaller seating capacity than fixed arrangement 13. Lecture unit P1, P2, and P4 are shown with their seating arrangements 20 directed away from the fixed seating arrangement 13 and directed toward their own outer stages or lecture platforms 15. The above mentioned lecture areas also contain partition means including a cylindrical partition 16 which may enclose the individual lecture areas within their own cylindrical walls 11, 12 and 14 to acoustically isolate them from the auditorium.

A fourth individual lecture area P3 having cylindrical side walls 43 is shown with its seating arrangement 20 directed toward main stage 10. The cylindrical partition 16 of stage area P3 is shown immediately behind the staging area and effectively isolates or cuts off its own stage 15 from the seating arrangement 20.

In one preferred embodiment of the invention which may be used with a high school, fixed seating arrangement 13 has a capacity of 600 persons, whereas each of the individual seating arrangements 20 has a capacity of 200. This places the total seating capacity of the auditorium at 1400 persons. The operation of the auditorium according to the invention is as follows:

The seating arrangement 20 of each of the individual lecture hall areas P1, P2, P3, and P4 is mounted on a large turntable 30 which is set within a circular well or recess 27 and is capable of being rotated around axis 21 so that seats 20 may either face permanent seating arrangement 13 or face their lecture platforms 15. Suitably connected to the turntable and toward the back of the individual seats 20 is cylindrical partition 16 which rotates with the turntable sufficiently to either acoustically isolate the seats 20 from the fixed seating arrangement 13 or provide an acoustical background for the seats when they face into the main auditorium area 13. As shown in FIG. 2, when the individual seating area 20 faces the main auditorium area 10, seats 20 are designed to continue the upslanting profile of the permanent seating arrangement 13 without interruption.

In designing the lecture areas, it is obvious that by dividing the auditorium by known methods into a number of individual lecture areas, wedge-shaped spaces are produced which do not readily provide a full view of the main stage 10 from all seats. To overcome this difficulty, it becomes necessary to increase the angle of wedge-shaped spaces or reduce the depth of the seating arrangements.

In the preferred embodiment of the present invention, the seating areas 20 are shown arranged in an inverted fan-shaped pattern in order to facilitate a full view of the main stage from all seats within the areas 20 when the seats face the main stage 10.

On the other hand, if seating arrangement 20 is turned around so that substantially all of the seats face outer lecture platforms 15, the profiles of the seats 20 then

slant slightly upward from lecture platforms 15. Moreover, cylindrical wall 16 which constitutes a soundproof partition moves around with the seating arrangement through depending circular channels 26 and 31 which are contained in the ceiling and the floor of the lecture areas respectively. Together with the sound proof material, which partition 16 is constructed of, these grooves provide an effective sound barrier to isolate each of the individual lecture areas from the main auditorium area.

It has been found that the open air gap between sound-absorbent walls of the main lecture area and the cylindrical partition 16 of the individual areas P1, P2, P3 and P4, creates an acoustical seal between the areas without the need for acoustical insulation. A fiberglass mat of about 3 inch thickness on the selected surfaces defines the gap performing the acoustic sealing function.

The sound entering the air gap is reflected off the curved surfaces of the wall and is dissipated within the curves and corners of the air gap. A substantial and effective sound loss is produced between the various lecture areas resulting in adequate acoustic isolation between these areas without the use of expensive insulating material. Inexpensive fiber glass matting may be utilized.

In addition, cylindrical partition 16 sufficiently overlaps the mating cylindrical walls 11, 12, 43, and 14 of the individual outer areas. This overlap, which is of a predetermined length and lined on both faces thereof with sound-absorbing blankets provides an acoustic seal. No mechanical or pneumatic means are necessary to close the air gap. All turntable components are suitably spaced, preferably 3 inches, from adjacent surfaces for jam-free operation.

The rotation of seats 20 in the individual lecture areas may be performed either manually by rotation of turntable 30 or preferably by any conventional electric motor drive means which may be controlled by an electric switch conveniently located near the lecture room areas. In addition, suitable entrance and exit ways may be provided to the individual areas P1, P2, P3, and P4 through the walls of the area 15, and preferably in that portion adjacent to the cylindrical side walls of the individual areas.

The main or inner stage area 10 is constructed employing the latest conventional acoustical design techniques, having an upwardly sloping ceiling 22 and 23 which is continuous with a horizontally displaced ceiling 24 which extends over the remaining portion of the fixed seating 13 and is joined to circular recesses 26 to which partitions 16 are contained. Additionally, ceiling portion 23 contains acoustical reflector 29 and ceiling portion 24 contains acoustical reflector 28 which compensate for acoustical reflections of the main auditorium area. Main stage 10 also includes an orchestra pit 19 recessed below the floor of the stage. Each of the smaller outer units also contains a ceiling 32 which, when open into the main auditorium area, converges downwardly toward the up-sloping seats 20 so as to concentrate the sound coming from the stage 10 to those seated within the individual staging units. The ceiling 32 remains contiguous with the construction of the building containing the auditorium so that when the seating arrangement 20 is rotated so that the seats face the smaller lecture area 15, ceiling 32 then extends approximately parallel to the profile of the seats 20 and thus maintains the acoustical balance within the smaller lecture area. Acoustical reflectors 28 and 29, located within the ceiling of the main auditorium area, also provide a shield for stage lights (not shown) which may be secured behind the reflectors and directed upon various parts of the stage. The auditorium also includes side wings 17 and 18 which form part of the front partition of the auditorium and are continuous with cylindrical walls 11 and 14 of lecture areas P1 and P4 respectively. Between each of the individual areas at the rear of the fixed seating area may be placed partitions 33 which may be made connective to the adjacent cylindrical side walls

of the individual lecture areas so as to completely enclose the auditorium on all sides.

In one form of the preferred embodiment where the fixed seating capacity is 600 and each of the individual lecture areas has a capacity of 200, it may be appreciated that the capacity of the main auditorium area may be varied from 600 to 1400 by steps of 200 persons, by selectively opening the individual outer areas into the main auditorium area. It is also obvious that five different lectures or programs may be conducted simultaneously with the auditorium facility according to the invention, by closing off all of the individual areas from the main auditorium area.

FIG. 4 shows a circular auditorium installation of the area type where there is an inner central stage 4. Circumferentially arranged all the way around this central stage is the fixed seating means formed by the circular rows of seats 1, and a plurality of rotary seating means 2a and 2b are arranged around the fixed seating means at the outer area thereof distant from the inner stage 4. The plurality of rotary seating means 2a and 2b, of which there are eight in the illustrated example, are situated between the fixed seating means and eight outer platforms or stages 3. The rotary seating means 2b is shown in its outwardly directed position facing its outer stage or platform 3 and closed off from the fixed seating means and inner stage 4 by the partition means, as schematically illustrated at the right of FIG. 4. The remaining plurality of rotary seating means 2a are shown in their inwardly directed positions where they face the inner stage 4 and form extensions of the fixed seating means at the outer area thereof, and it will be noted that the plurality of partition means which respectively coact with the rotary seating means 2a do not in any way close them off from viewing of the inner stage 4 when the plurality of rotary seating means are in their inwardly directed positions, so that in this way when in the latter positions the rotary seating means respectively have full views of the inner stage 4. Thus, this embodiment of FIG. 4 has a structure similar to that of FIG. 1 and capable of accomplishing the same result except that the FIG. 4 the installation extends along a complete circle.

In the embodiment of FIG. 5 there is an asymmetric auditorium installation which has a very large number of seats. In the illustrated example there are three individual auditoriums serving different purposes. When the pair of rotary seating means 2a and 2b are in their inwardly directed positions facing the inner stage 4, as shown for the rotary seating means 2a in FIG. 5, one very large auditorium will be provided to serve primarily for large spectator performances. Thus, in this case also there is a fixed seating means 1 extending circumferentially around the inner stage 4 with the outer rotary pair of seating means being respectively turnable to inwardly directed positions where they form extensions of the fixed seating means and have a full view of the inner stage 4. The rotary seating means 2a has its own theater stage 5 which can function as a theater. The rotary seating means 2b is shown in FIG. 5 in its outwardly directed position facing its own stage 3 and closed off by its partition means 7 from the fixed seating means and inner stage 4. It will be noted that the partition means 7 of the rotary seating means 2a does not close the latter off from the stage 4 when this seating means is in its inwardly directed position shown in FIG. 5. The stage 3 is large enough to accommodate a full symphony orchestra. Thus, in the example of FIG. 5 the pair of rotary seating means 2a and 2b have substantial seating capacities. The semi-cylindrical back walls of the partition means are arranged into partial areas so as to provide for proper acoustic diffusion.

It is obvious that one of the main advantages of this auditorium, according to the invention, necessarily lies in its economic cost of construction with respect to the construction of comparable facilities employing non-integrated staging areas having a comparable seating capacity.

Estimates on the cost of construction have indicated that the auditorium facility, according to the invention, may be erected for approximately 50% of the cost of erecting a comparable standard facility. The estimates included the cost of the turntables, which run approximately \$15 per square foot, as well as the ceiling and soundproof structures that would be required to acoustically isolate the individual staging areas.

Aside from the economic advantages inherent in the facility according to the invention, it can be appreciated that it is now possible to conduct presentations or lectures to a relatively large audience and then follow the lectures up with individual recitation sessions taking place with smaller group levels by merely revolving the seating of the individual lecture areas toward their own outer platforms immediately after the main lecture has terminated without requiring the audience or student body to disassemble and regroup in another area.

It will be understood that many changes and modifications may be made without departing from the spirit of the invention, as defined by the appended claims.

What is claimed is:

1. An auditorium installation comprising, an inner stage, fixed seating means extending at least partly around said inner stage and having an inner area adjacent said inner stage and an outer area distant therefrom, at least one outer stage situated outwardly beyond said outer area of said fixed seating means, and rotary seating means situated between said outer stage and said fixed seating means at said outer area thereof for rotary movement between an inwardly directed position, facing said inner stage and forming an extension of said fixed seating means at said outer area thereof, and an outwardly directed position facing said outer stage.

2. The combination of claim 1 and wherein a partition means coacts with said outer stage and rotary seating means to close the latter off from said fixed seating means while enclosing said rotary seating means with said outer stage in an individual room providing an individual auditorium when said rotary seating means is in said outwardly directed position thereof, said partition means closing said rotary seating means off from said outer stage and providing for said rotary seating means a full view of said inner stage when said rotary seating means is in said inwardly directed position thereof.

3. The combination of claim 2 and wherein said partition means includes a stationary wall structure extending along said outer stage and from the latter to a pair of opposed lateral portions of said rotary seating means and a rotary wall structure of semi-cylindrical configuration connected to said rotary seating means for rotary movement therewith, enclosed within said stationary wall structure when said rotary seating means is in said inwardly directed position and forming a substantial continuation of said stationary wall structure to enclose said room therewith when said rotary seating means is in said outwardly directed position thereof.

4. The combination of claim 1 and wherein a rotary turntable is operatively connected with and forms a part of said rotary seating means for providing for rotary movement thereof.

5. The combination of claim 1 and wherein a plurality of said outer stages are circumferentially arranged outwardly beyond said fixed seating means and wherein a plurality of said rotary seating means are respectively situated at said outer area of said fixed seating means respectively between said plurality of outer stages and said fixed seating means at said outer area of the latter for respective individual rotary movement between said outwardly directed positions respectively facing said outer stages and said inwardly directed positions facing said inner stage.

6. The combination of claim 5 and wherein said fixed seating means extends along a complete circle around said inner stage and said plurality of outer stages and

plurality of rotary seating means also being arranged along complete circles around said fixed seating means at said outer area thereof.

7. The combination of claim 1 and wherein a pair of rotary seating means are respectively situated at said outer area of said fixed seating means one beside the other and wherein a pair of said outer stages are respectively situated outwardly beyond said pair of rotary seating means so that the latter can be turned either to said outwardly directed positions respectively facing said outer stages or said inwardly directed positions respectively facing said inner stage, and at least one of said outer stages being a theatrical stage, each of said rotary seating means having a substantial seating capacity which approaches that of said fixed seating means.

8. An auditorium facility having a variable seating arrangement for providing one or more lecture areas acoustically isolated from one another comprising: a main stage, a plurality of fixed seats concentrically disposed adjacent and facing said main stage, a plurality of individual lecture areas disposed along the periphery of said fixed stage area each having an individual seating arrangement adapted to either face or turn away from said main stage, a cylindrical room enclosing each of said individual seating arrangements, said room including stationary walls having a movable portion adjacent to said fixed seating arrangement adapted to become parted to make said room continuous with said fixed seating arrangement, and turntable means comprising the floor of each of said individual rooms for supporting the individual seating arrangements and the movable portion of the cylindrical wall adjacent to said fixed seating arrangement.

9. The facility as recited in claim 8 wherein said turntable additionally comprises annular slots coaligned in the floor and ceiling of said auditorium facility within said room, for receiving and containing the top and bottom edges of said movable wall portion and permitting full arcuate rotation therethrough.

10. The auditorium facility as recited in claim 8 wherein said individual seating arrangement has a continuous slope and profile as said fixed seating arrangement when said individual seats face said main stage area.

11. The auditorium facility as recited in claim 10

wherein said movable cylindrical wall portion is positioned across the parted portion of said stationary cylindrical wall portion of said room when said individual seating arrangement is directed toward the lecture area.

12. The auditorium facility as recited in claim 10 wherein said cylindrical movable wall portion comprises a sound-proof partition having a thickness sufficient to acoustically isolate each of the individual lecture hall areas from said main auditorium area when closed across said stationary cylindrical wall portion.

13. An auditorium facility comprising: a main lecture area, a main seating arrangement having a variable seating capacity disposed partially around said main lecture area, individual lecture platforms located along the periphery of said main seating arrangement, and a plurality of rotatable individual seating areas disposed along the periphery of said main seating arrangement and adapted to face either upon said main lecture area or face upon their individual lecture platforms.

14. The facility as recited in claim 13 wherein each of said individual seating areas comprises: a room having a cylindrical wall a portion of which is movable and adapted to open up upon said auditorium, and an individual seating arrangement contained within said room adapted to face either said individual lecture area or said main lecture area.

15. The auditorium as recited in claim 14 wherein said individual seating arrangement is mounted on a turntable within said room adapted to rotate the seats to either face said individual lecture area or said main lecture area.

16. The facility as recited in claim 15 wherein said movable portion of said cylindrical walls is secured to said turntable and adapted to open or close said room to the main lecture area responsive to the rotation of the turntable.

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