United States Patent [19]

Tax

[11] 3,827,199

[45] Aug. 6, 1974

[54] **PARTLY REVERSIBLE AUDITORIUM**

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[22] Filed: **Nov. 28, 1972**

[21] Appl. No.: **310,139**

[30] **Foreign Application Priority Data**

Jan. 10, 1972 Germany 2200963

[52] **U.S. Cl.** **52/10,** 52/65

[51] **Int. Cl.** **E04h 3/12**

[58] **Field of Search** 52/64, 65, 6–10; 104/35

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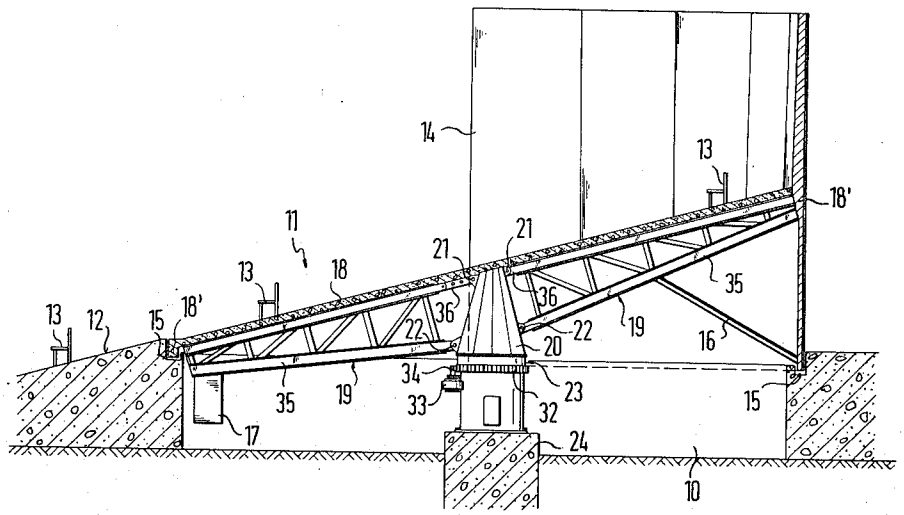
[57] **ABSTRACT**

A large auditorium is partly formed by a floor plate obliquely inclined relative to the horizontal and centrally mounted for rotation about a vertical axis on a base by means of a hub from which lattice girders radiate toward the periphery of the floor plate. Rows of seats on the floor plate face toward the lowermost part of the periphery while a wall approximately semicylindrical about the axis of rotation rises from the uppermost part of the floor plate periphery. The floor plate may be turned 180° into a position in which it is separated from the stationary remainder of the large auditorium by the semicylindrical wall and constitutes a smaller auditorium of its own.

3 Claims, 6 Drawing Figures



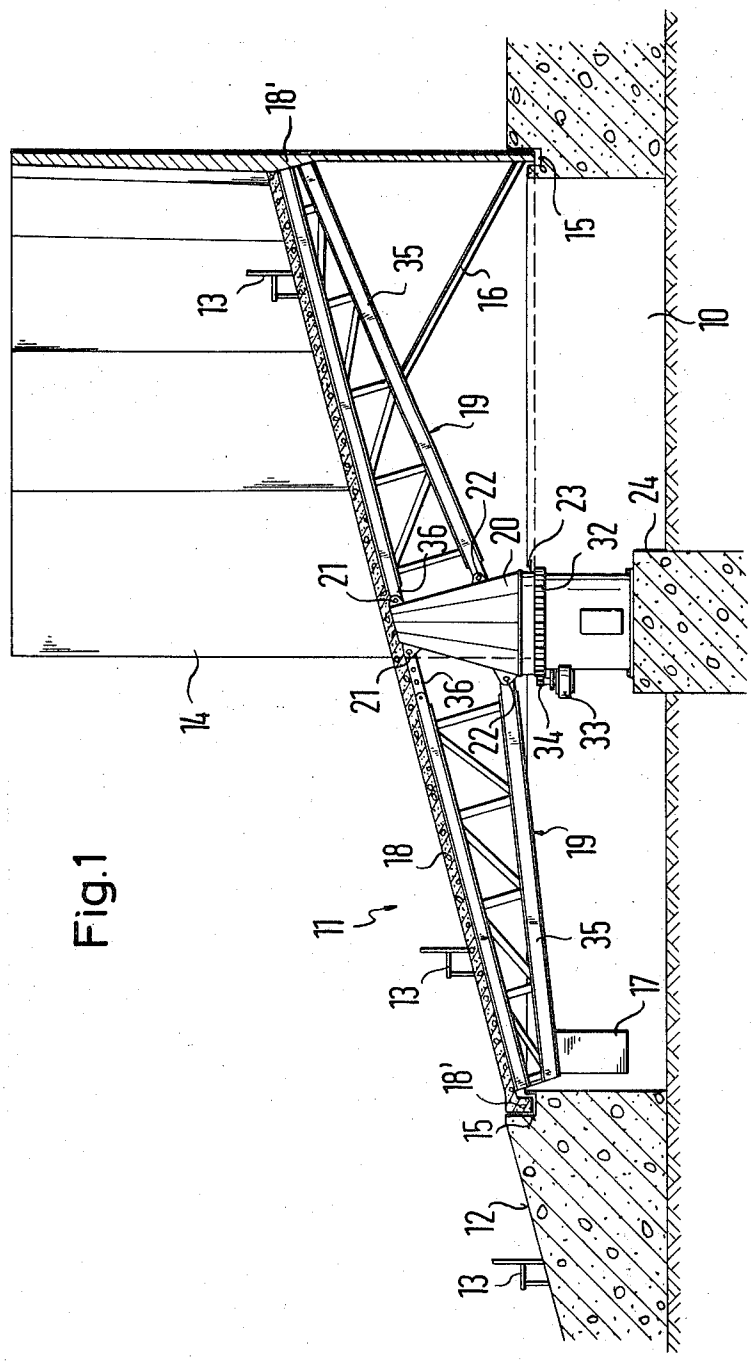


Fig.1

Fig. 2

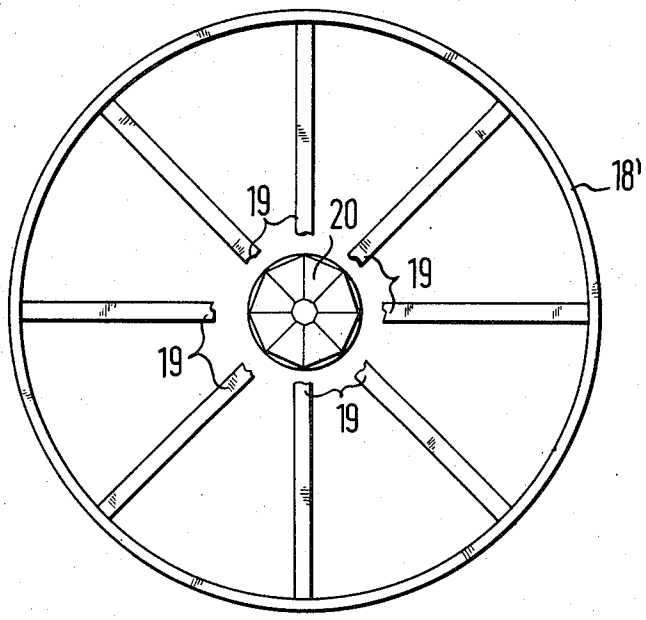
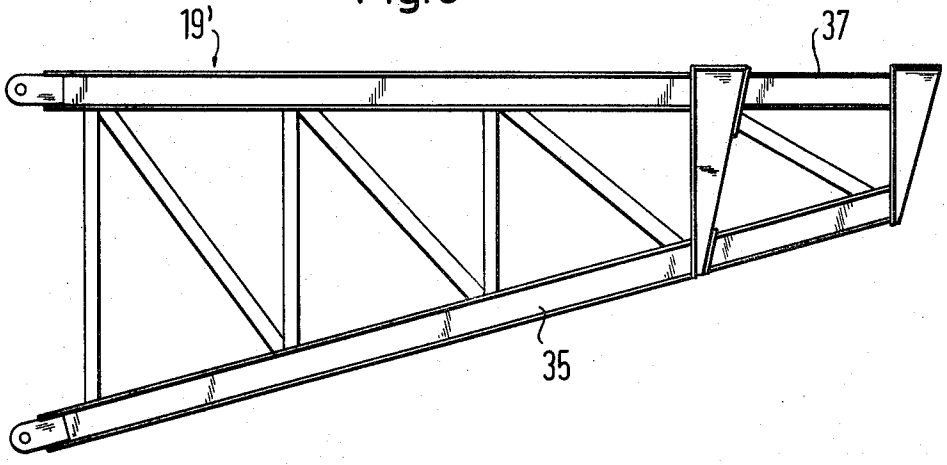


Fig. 3



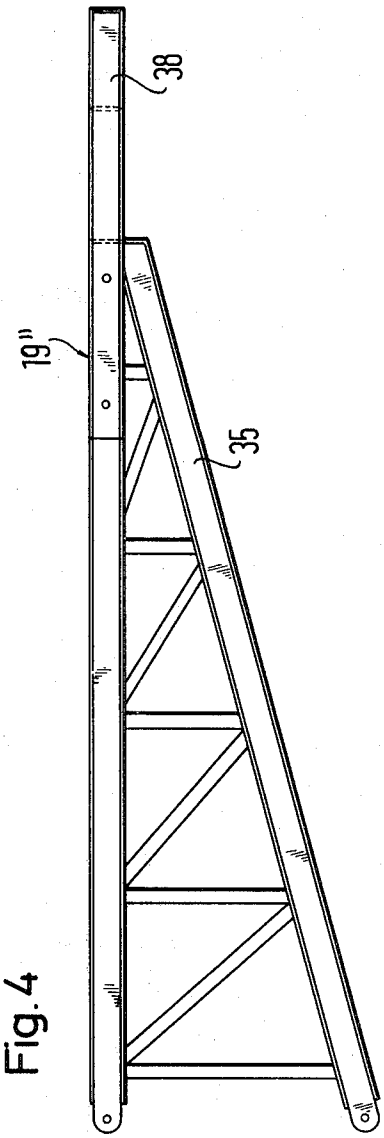


Fig. 4

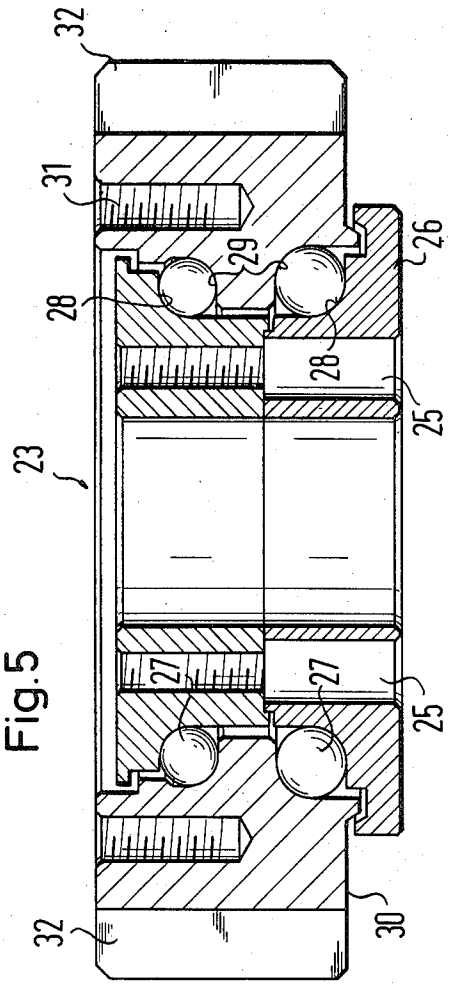


Fig. 5

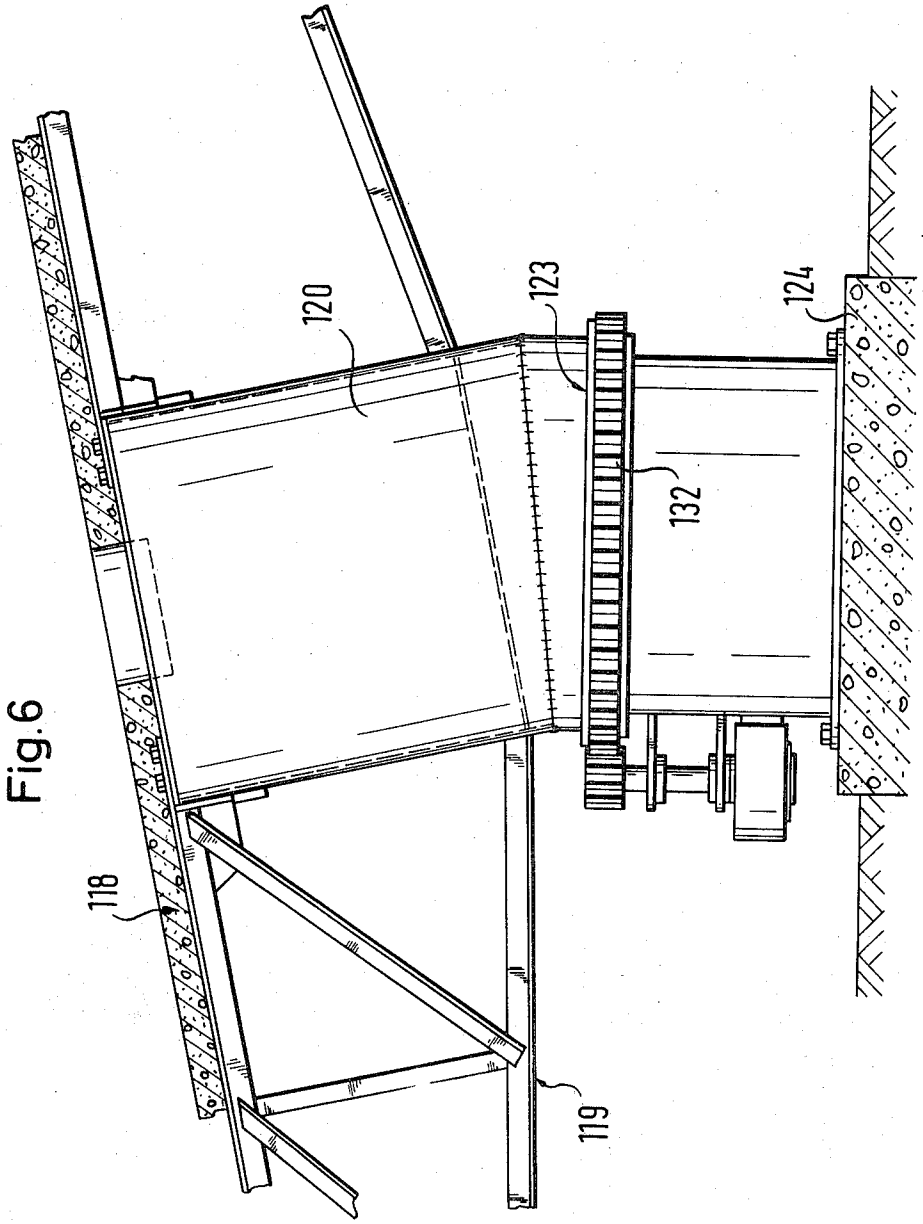


Fig.6

PARTLY REVERSIBLE AUDITORIUM

This invention relates to an auditorium of variable capacity, and particularly to a large auditorium, a portion of which can be moved in such a manner as to separate it from the remainder of the large auditorium and to constitute a smaller auditorium.

It is known to divide a large auditorium by partitions in order to create a smaller auditorium. It is also known to move portions of an auditorium in such a manner that a hall of smaller capacity is formed, but the known moving mechanisms are complex and costly to build and occupy much space that could be used more productively.

It is an object of the invention to provide an auditorium of variable capacity which is simpler and less expensive in its construction, obstructs less usable space than the known devices, yet is reliable in its operation.

With this object and others in view, as will hereinafter become apparent, the invention provides a turntable including a hub portion rotatable on a base about a vertical axis, a floor plate having a central portion near the axis of rotation and a peripheral portion radially remote from the hub portion, and a plurality of carriers fastened to the hub portion and elongated radially outward from the hub portion in angularly offset relationship. The carriers extend to the peripheral portion of the floor plate and support the latter. An upright wall mounted on the turntable extends upward from the peripheral portion of the floor plate approximately about the axis of rotation and defines an opening directed radially away from the axis. Rows of seats on the floor plate face away from the wall.

Other features and many of the attendant advantages of this invention will readily be appreciated as the invention becomes better understood from the following detailed description of a preferred embodiment and of modifications thereof, when considered in connection with the appended drawing in which:

FIG. 1 shows an auditorium of the invention in fragmentary elevational section;

FIG. 2 is a fragmentary top plan view of supporting elements of the auditorium of FIG. 1;

FIG. 3 shows a modified detail of a lattice girder in the apparatus of FIG. 1 on a larger scale;

FIG. 4 shows yet another modification of the same girder;

FIG. 5 shows the turntable bearing and associated elements of the apparatus of FIG. 1 in elevational axial section on a larger scale; and

FIG. 6 shows a modified base and hub for a turntable in the auditorium of FIG. 1 in a corresponding view on a larger scale.

Referring now to the drawing in detail, and initially to FIG. 1, there is seen a turntable 11 set into a conforming pit 10 in the fixed floor 12 of an auditorium which slopes obliquely downward toward a non-illustrated stage.

A base 24 is arranged in the center of the circular pit 10, and an annular ball bearing track 23 on the base carries the hub portion 20 of the turntable 11, a polygonal pyramid whose top is cut off at an approximate angle of 15° to the horizontal. Lugs 21, 22 arranged about the circumference of the hub portion 20 near the ball bearing track 23 and the top of the hub portion respectively attach the top and bottom beams of eight

cantilevered lattice girders 19 to the hub portion 20. The top beams extend in a plane parallel to the oblique top surface of the hub portion 20 and support a floor plate 18 of reinforced concrete.

The floor plate 18 is of uniform thickness over most of its length and width and is elliptical in shape, the ratio of the major and minor axes of the ellipse being such that their orthogonal projections into a horizontal plane are of equal length. A depending, peripheral rim 18′ of the floor plate 18 thus appears as a circle in the view of FIG. 2, and the girders 19 appear to be of equal length in the same view. They are attached to the hub portion 20 equiangularly relative to the axis of rotation and taper transverse to their direction of elongation in respective vertical planes as the top and bottom beams of each girder approach each other in a direction toward the peripheral portion of the floor plate 18.

A wall 14, semicylindrical about the axis of rotation of the turntable 11, is attached to the rim 18′ at the uppermost portion of the floor plate periphery. The bottom of the wall 14 is movably received in a horizontal groove 15 of the fixed floor 12 which circles the pit 10. The same groove also receives the lowermost part of the rim 18′. The wall 14 is held in its upright position by braces 16 connecting its bottom to several girders 19, only one brace being shown in FIG. 1. The weight of the wall 14 is balanced by a counterweight 17 attached to the lowermost peripheral part of the floor plate 18, more specifically, to a girder supporting the lowermost part of the floor plate 18.

The wall 14 laterally bounds an opening directed toward the lowermost part of the floor plate 18 and the non-illustrated stage. Rows of seats 13, only partly indicated in FIG. 1 in order not to crowd the drawing, are arranged on the floor plate 18 and face the lowermost peripheral portion of the turntable and away from the wall 14.

As is shown in greater detail in FIG. 5, the ball bearing track 23 has a two-part inner ring 26 provided with partly threaded vertical bores 25 normally receiving non-illustrated heavy screws that fasten the two parts of the ring 26 to each other and to the base 24. The two parts of the ring 26 provide annular races 28 for two vertically offset groups of bearing balls 27. An outer ring 30 provides corresponding annular races 29 for the two sets of bearing balls and is axially secured by the balls on the base 24, not itself seen in FIG. 5. Bolts normally received in threaded bores 31 of the outer ring 30 fasten the hub portion 20 to the outer ring. The outer circumference of the ring 30 carries an integral gear rim 32.

Reverting to FIG. 1, there is seen an electric motor 33 mounted on the base 24 and having a pinion 34 coaxially mounted on its output shaft. The pinion 34 meshes with the gear rim 32 fixedly fastened to the hub portion 20, and the motor 33, when energized, turns the entire turntable assembly into a non-illustrated position in which the wall 14 separates the floor plate 18 and the seats 13 thereof from the seats on the stationary auditorium floor 12 and the non-illustrated stage mentioned above. In the alternative position of the turntable 11, the seats 13 on the floor plate 18 face toward the right, as viewed in FIG. 1, and toward another stage or the like that may be provided there, the size of the smaller auditorium so created being equal to the top face of the plate 18.

Because of the elliptic shape of the floor plate **18**, the several girders **19** must differ in length in order to reach to the rim **18'**. It has been found advantageous to assemble all girders from a major longitudinal portion identical in each girder, and constituting the entire shortest girder, and longitudinal extension pieces attached to the several identical major portions.

In the turntable illustrated in FIG. **1**, the two illustrated lattice girders **19** consist each of a major longitudinal portion **35** of uniform size and shape, and of an extension piece **36** welded to the girder portion **35** and connecting the same to an upper lug **21** on the hub portion **20**. In the modified girder **19'** seen in FIG. **3**, the basic girder portion **35** is supplemented by an extension piece **37** at its narrow, radially outer end which provides greater length to the top and bottom beams of the girder **19'** and includes cross members connecting the added longitudinal members. In the girder **19''** shown in FIG. **4**, an extension piece **38** increases only the length of the top beam.

Girders **119** more similar to each other in shape and size may be employed in the turntable arrangement partly illustrated in FIG. **6**. The hub portion **120** of the turntable consists of two cylindrical portions of equal diameter welded to each other in such a manner that their axes intersect at the angle at which the floor plate **118** is inclined relative to the horizontal. The girders **119** which carry the plate **118** radiate from the upper part of the hub portion **120** while the lower part is attached to an annular ball bearing track **123** not significantly different from that shown in FIG. **5** and equipped with an external gear rim **132** as described with reference to FIGS. **1** and **5**.

As is evident from FIG. **1**, the diameter of the track **23** is but a small fraction of the length or width of the floor plate **18** so that the support **24**, the hub portion **20**, and the counterweight **17** occupy relatively little of the pit **10**. The pit is accessible through a door in the portion of the structure cut away in the view of FIG. **1** and may serve as a storage space or for other purposes.

While the invention has found a particularly advantageous application in an auditorium having an inclined floor, as illustrated, it is also used to advantage in an auditorium having a horizontal floor. In such a modified arrangement, the floor plate on the turntable may be circular, but may be of different shape. It will also be obvious, that the floor plate **8** need not be elliptical to achieve the advantages of this invention.

It should be understood, therefore, that the foregoing disclosure relates only to preferred embodiments of the invention, and that it is intended to cover all changes and modifications in the examples of the invention herein chosen for the purpose of the disclosure which do not constitute departures from the scope and spirit of the appended claims.

What is claimed is:

1. An auditorium comprising:

a. a base;

b. a turntable including

1. a hub portion,

2. a floor plate having a central portion near said hub portion and a peripheral portion remote from said hub portion,

3. an annular ball bearing arrangement having a vertical axis, said arrangement being interposed between said base and said hub portion,

i. said arrangement including two annular groups of bearing balls, and inner and outer ring means secured on said base and said hub portion respectively.

ii. said ring means defining a pair of inner bearing races and a pair of outer bearing races centered in said axis,

iii. the races of each pair being offset in the direction of said axis,

iv. said groups of bearing balls being retained in respective inner and outer races in axially spaced relationship,

v. said floor plate being obliquely inclined relative to said axis, whereby respective parts of said peripheral portion offset from said axis in opposite directions are uppermost and lowermost,

4. a plurality of carriers cantilevered to said hub portion and elongated radially outward from said hub portion in angularly offset relationship, said carriers extending to said peripheral portion and supporting said floor plate;

c. an upright wall mounted on said turntable and extending upward from said peripheral portion substantially about said axis, said wall defining an opening directed radially away from said axis; and

d. a plurality of rows of seats on said floor plate facing away from said wall and toward said lowermost part.

2. An auditorium as set forth in claim **1**, further comprising a motor mounted on said base having an output shaft, a pinion mounted on said shaft, and a gear rim on said hub portion meshing with said pinion.

3. An auditorium as set forth in claim **1**, further comprising a counterweight mounted on the underside of said lowermost peripheral portion of said floor plate.

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