April 19, 1966 L. FAERBER 3,246,431

BUILDING WITH ROTATABLE OBSERVATION STRUCTURE

Filed Oct. 17, 1962 4 Sheets-Sheet 1

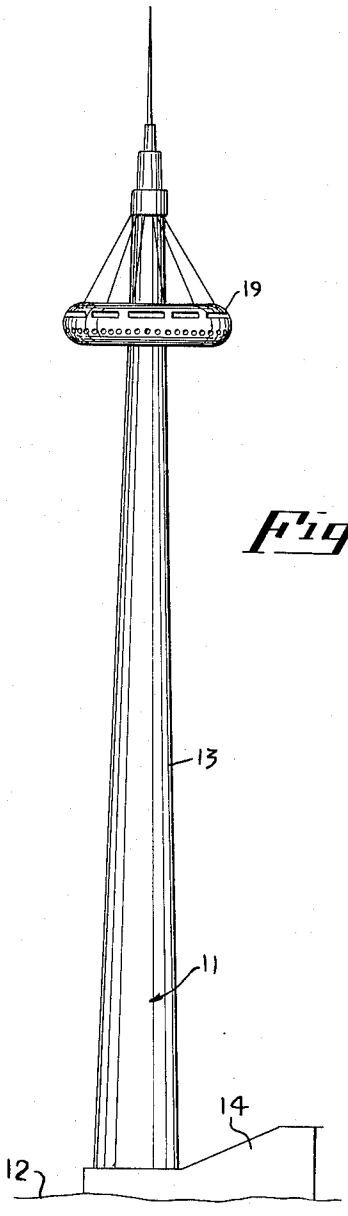


Fig 1

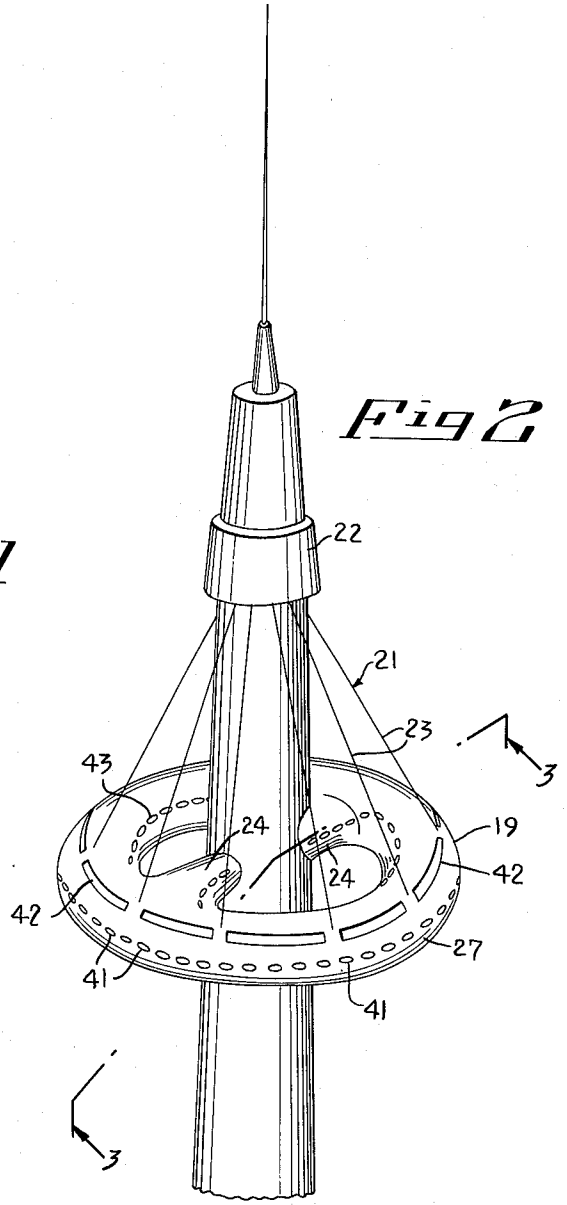


Fig 2

INVENTOR:
LEOPOLD FAERBER,

BY

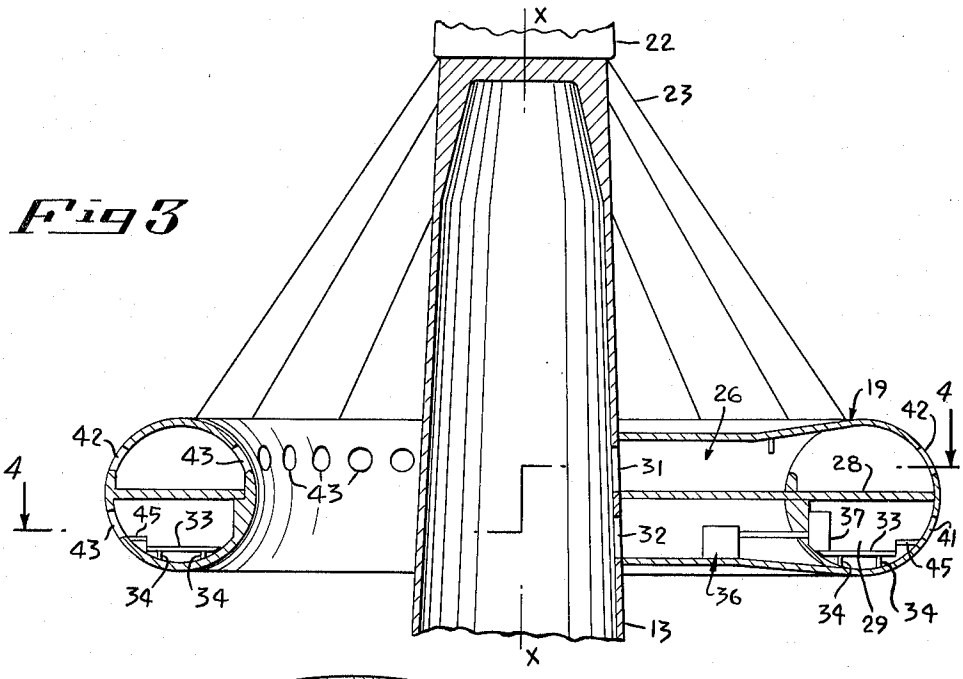
Edward P. Marmorek,
HIS ATTORNEY.

April 19, 1966 L. FAERBER 3,246,431

BUILDING WITH ROTATABLE OBSERVATION STRUCTURE

Filed Oct. 17, 1962 4 Sheets-Sheet 2

Fig 3



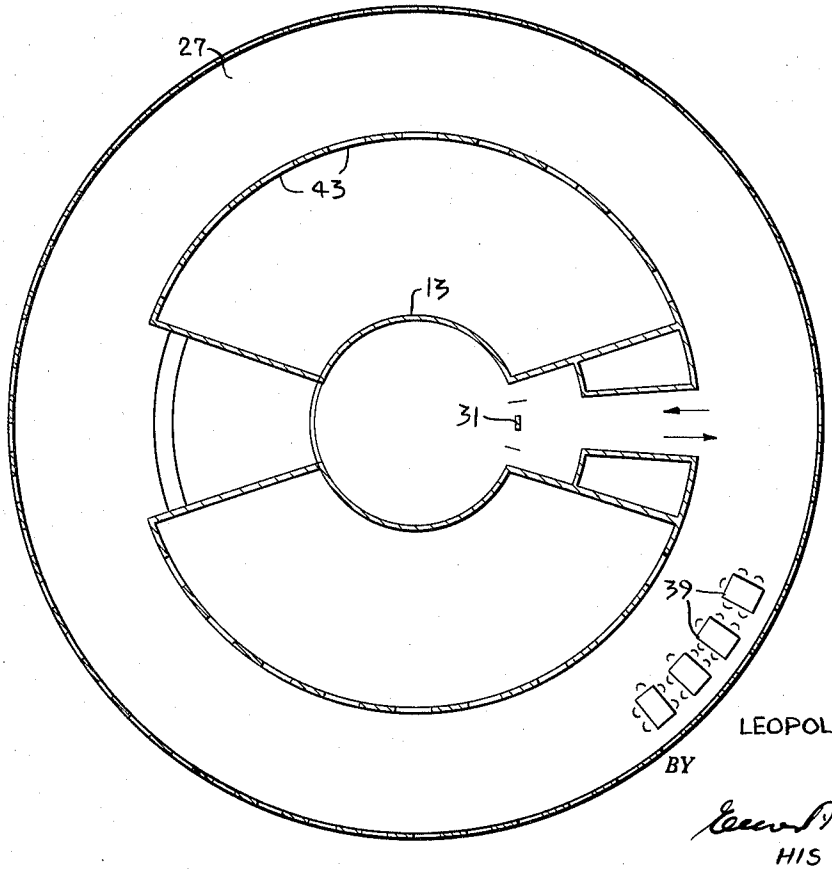


Fig 4

INVENTOR:
LEOPOLD FAERBER,

BY

Edward D. Manwaring,
HIS ATTORNEY.

April 19, 1966 L. FAERBER 3,246,431

BUILDING WITH ROTATABLE OBSERVATION STRUCTURE

Filed Oct. 17, 1962

4 Sheets-Sheet 3

Fig 5

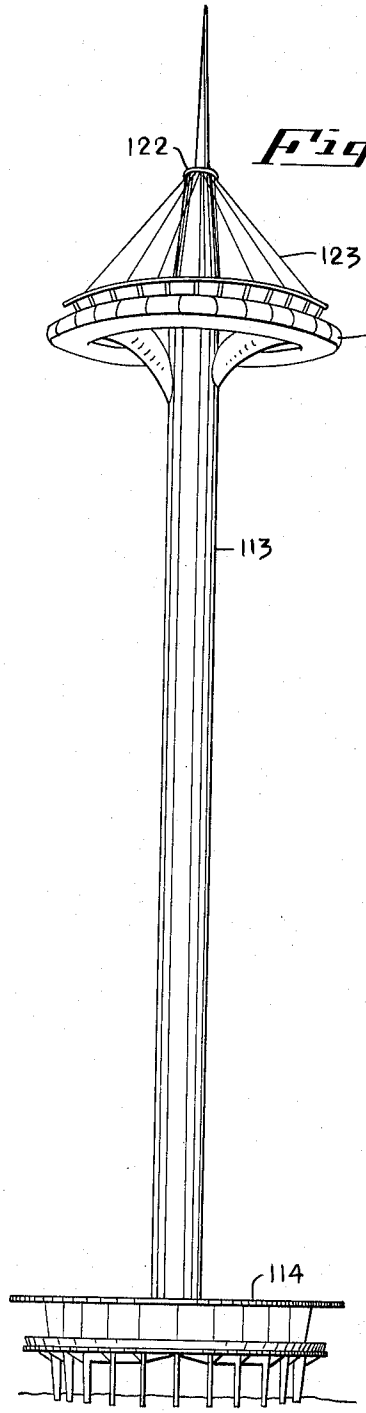
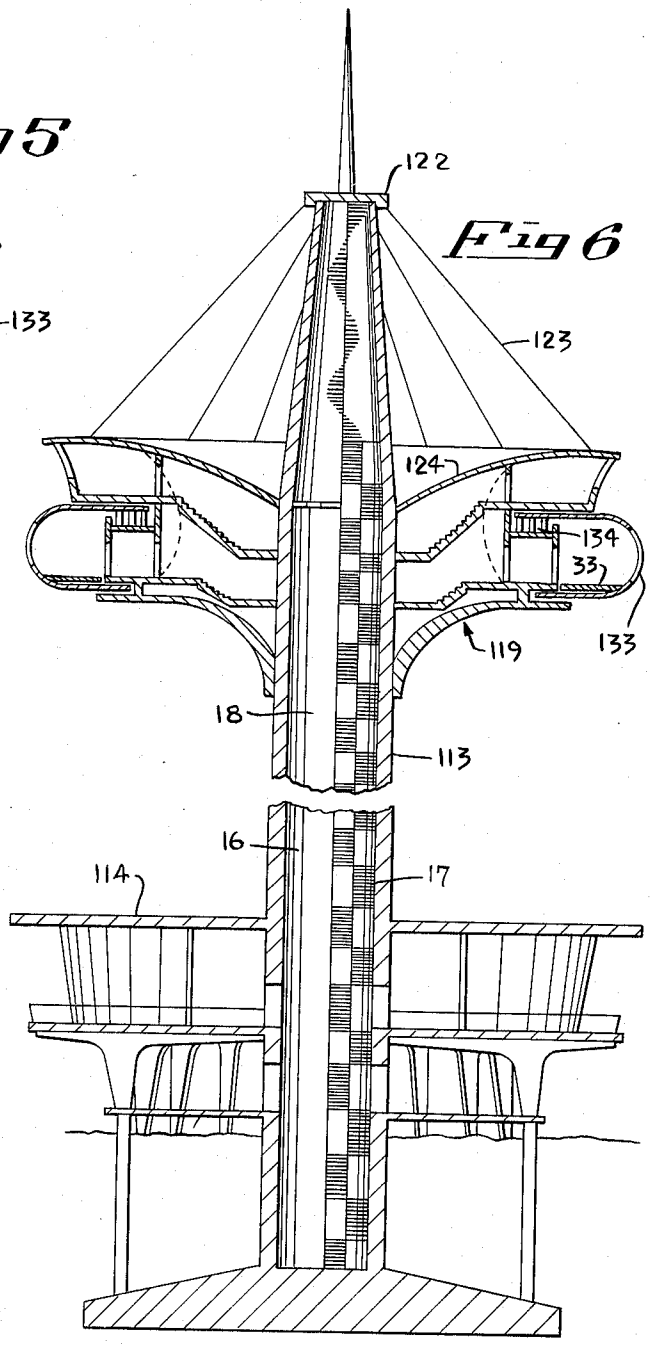


Fig 6



INVENTOR.
LEOPOLD FAERBER

BY

Edmund D. Marmorek,
HIS ATTORNEY.

April 19, 1966 L. FAERBER 3,246,431

BUILDING WITH ROTATABLE OBSERVATION STRUCTURE

Filed Oct. 17, 1962 4 Sheets-Sheet 4

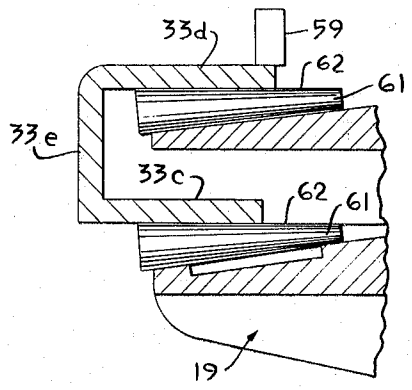


Fig 8

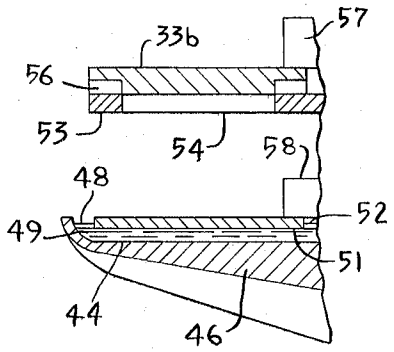


Fig 7

INVENTOR:
LEOPOLD FAERBER,

BY

Ernest D. Marcowitz,
HIS ATTORNEY.

United States Patent Office 3,246,431 Patented Apr. 19, 1966

3,246,431

BUILDING WITH ROTATABLE OBSERVATION STRUCTURE

Leopold Faerber, Schwanenwall 2½, Dortmund, Germany

Filed Oct. 17, 1962, Ser. No. 231,132
8 Claims. (Cl. 52—65)

This is a continuation-in-part of my application Serial No. 787,178, filed January 16, 1959, now Patent No. 3,156,017.

The invention relates to high tower buildings, and relates more particularly to such buildings which have at a considerable height above the ground an observatory that surrounds the shaft and may include a rotating part.

Observation rooms and restaurants have been built in which passengers can walk around, or are carried about the shaft for instance as described in my aforesaid copending application Ser. No. 787,178. The instant improvement, however, provides for an annular structure which is spaced from the exterior wall of the tower shaft, and supported entirely from the shaft.

It is accordingly among the principal objects of the invention to provide for a high tower building that has suspended high above the ground an annular structure which surrounds the shaft and is spaced therefrom and which is entirely supported from the shaft and free from any direct ground support.

It is another object of the invention to provide for such a building in which there is mounted a rotatable member such as a rotatable platform that rotates about the vertical axis of the hollow shaft.

It is still another object of the invention to provide for such a building with anti-friction bearing means, and propelling means, for the rotatable member.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, certain embodiments of the same being illustrated in the accompanying drawings and described in the specification.

In the accompanying drawings,

FIG. 1 is an elevational view of a high tower building in accordance with an embodiment of the invention;

FIG. 2 is a fragmentary perspective view of the building shown in FIG. 1;

FIG. 3 is a large scale fragmentary vertical sectional view taken along the plane 3—3 of FIG. 2;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3;

FIG. 5 is a perspective view of a modified high tower building;

FIG. 6 is a large scale fragmentary vertical sectional view through the modified high tower biulding shown in FIG. 5;

FIG. 7 is a large scale schematic sectional view of a detail; and

FIG. 8 is a sectional view similar to FIG. 7 but embodying a modification.

In carrying the invention into effect in the embodiments which have been selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to FIGS. 1–4, there is provided a high tower building 11 that is erected on the ground 12. The building 11 comprises a high tower shaft 13 which, near its base, may intercommunicate with a ground building 14.

The height of the shaft 13 may be several hundred feet, and may reach above 1,000 feet. As best shown in FIG. 6, the shaft has on its interior an upright passage

16 in which there may be a stairway 17 and an elevator 18 (not shown in detail).

At a considerable height, for instance near the top of the tower shaft 13, there is suspended an annular stationary structure 19, for instance of toroid form, as shown in FIGS. 2 and 3.

Suspension means 21 are provided for holding aloft the structure 19. The suspension means 21 may include a stationary collar 22 that is supported by the shaft 13 above the position of the structure 19. Elongated suspension elements 23 may be provided, such as suspension cables or rods or chains, which may be connected, preferably pivoted, to the collar 22. The elements 23 furthermore are connected to the structure 19; the elements 23 are spaced apart angularly from each other and are positioned along the surface of a truncated cone when the structure 19 is mounted on the shaft 13.

The suspension means 21 furthermore include means for positioning the annular structure 19 about the shaft 13, such as stationary arms 24. In FIGS. 2 and 4 there have been shown two arms 24, as this represents a minimum requirement. These arms 24 are positioned radially of the structure 19. There may, of course, be arranged more than two such radial arms.

The structure 19 is hollow on its interior, and likewise are the arms 24 hollow on the inside. If desired, the arms 24, as indicated in FIG. 2, may be formed integrally with the structure 19. The arms 24 thus are connected to the structure 19, and are also connected to the shaft 13, and each arm 24 establishes a passageway 26 between the interior of the structure 19 and the internal upright passage 16 in the shaft 13.

As best shown in FIG. 3, the structure 19 may on its interior be divided into a stationary compartment, for instance the stationary upper compartment 28, and a moving compartment 29 wherein the people, for instance the patrons of the observation restaurant, are carried about the vertical axis X—X of the shaft. An upper doorway 31 with or without door (not shown) may lead to the upper stationary compartment 28, and similarly a lower doorway 32 to the lower compartment 29. The elevator may, for instance, come to a halt opposite either doorway.

The lower compartment 29 has a rotatable member or element, such as an annular platform 33, and anti-friction bearing means generally indicated at 34 are provided to support the platform 33 rotatably. Driving means 36 for rotating the platform 33 may be provided, for instance a transmission 37 and a motor 38.

The patrons may be seated at tables indicated at 39 (FIG. 4), and look out through windows (FIGS. 2, 4). Means such as a stairway (not shown) may be provided for the movement of people between the upper compartment 28 and the lower compartment 29. The upper compartment 28 may have outer windows 42 and inner windows 43.

If desired, also the upper compartment may have a rotatable platform and bearing means, and the upper platform may either be arranged separately from the lower platform, or be interconnected thereto for rotation together therewith. The former, namely the separation of the upper and lower platforms, is shown in FIG. 7, while the latter, namely the interconnection of the upper and lower platforms, is shown in FIG. 8.

The breast work or sill is indicated at 45.

The lower platform 33*a* may have transverse radial grooves 44. Similarly, the support 46 which forms part of the bearing means 34 of the structure 19 may also have similar transverse grooves 47. The support 46 may, in accordance with a preferred embodiment, form a receptacle 48 for a lubricant 49, such as oil, so that the platform 33*a* will always be disposed in a lubricant

bath. Means are provided (not shown) for feeding continuously lubricant to the receptacle **48**, so that thereby the sliding faces, namely the under-surface **51** of the platform **33***a* and the upper surface **52** of the support **46** will continuously be lubricated. As shown in FIG. 7, the sliding faces will at all times be below the level of the bath of the lubricant **49**.

The support **53** for the upper platform **33***b* may be hollow, as shown at **54**, and the upper platform **33***b* may have transverse lubricating grooves **56**. Lubricant may again be fed in a well known suitable manner (not shown), to keep the sliding faces lubricated at all times.

Separate driving means **57** and **58** may be provided for driving separately the upper platform **33***b* and lower platform **33***a*, respectively.

In FIG. 8 the lower platform **33***c* and upper platform **33***d* are interconnected at **33***e*, to be driven together by driving means **59**.

The bearing means in FIG. 8 include roller bearings with tapered rolling elements, such as conical needles **61**. The uppermost portions **62** of the needles **61** are disposed horizontally, supporting the platforms **33***c* and **33***d*.

Conical thrust bearings of this type are known per se, for instance of the type shown in Patent No. 2,869,943, issued on January 20, 1959.

It will be understood by persons skilled in this and related arts that the constructions shown herein are not limited to the specific bearing means shown therewith; and that any of the constructions hereof may be provided with any suitable bearing means, for instance any of the structures shown herein may be provided with the needle bearings shown in FIG. 8.

In the embodiment of FIG. 6, the upright shaft **113** is connected to a ground building **114** and has an annular structure **119** suspended by suspension elements **123** from a collar **122**.

The rotatable element **133** is of U-shaped cross section and has, for instance, anti-friction bearing means **134**, of any suitable type, for instance of the type shown in FIG. 7 or of the type shown in FIG. 8. The rotatable element **133** includes windows which are unobstructed by the structure **119**, so that the windows rotate along with the observer and permit an unobstructed view. The rotatable element **133** need not be disposed entirely within the structure **119**.

Only the rotatable element **133**, or platform **33**, and the features carried thereby rotate in any of the embodiments. The tower shaft **13, 113**, the suspension means, the structure **19, 119** and the arms **24, 124** are all stationary.

The structure **19, 119** may be assembled at the base of the tower, and be raised by means of the suspension elements **23, 123**. In the correct position, the entrances are firmly connected to the tower shaft **13, 113**.

Where cables form the suspension elements **23, 123** the cables are preferably pre-stressed against an encircling tube (not shown) in order to minimize distortion due to stresses of the structure **19, 119**.

The configuration of the structures **19, 119** may have any desired cross section, such as circular (FIG. 3) or elliptical or polygonal, or the like. This makes for good adaptability to various applicable uses.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. A high tower building, comprising an upright high tower shaft erected on the ground and having an upright passage, an annular stationary hollow structure disposed at considerable height above the ground and surrounding and being spaced from said shaft defining with the exterior surface of the shaft an annular gap, and means

suspending said structure entirely from said shaft, including at least two hollow stationary arms connected to said shaft and to said structure establishing passageways between the interior of said structure and said passage, means enabling passengers to move in said shaft passage to and from the arms, whereby the passengers may move between the shaft and the hollow annular structure, and suspension elements connnected to said shaft above said structure and connected to said structure.

2. In a tower building, as claimed in claim **1**, an annular rotatable element supported by and rotatable with relation to the structure about the axis of the shaft.

3. A high tower building, comprising an upright high tower shaft erected on the ground and having an upright passage, an annular stationary hollow structure disposed at considerable height above the ground and surrounding and being spaced from said shaft defining with the external surface of the shaft an annular gap, means suspending said structure entirely from said shaft including at least two stationary arms connected to said shaft and connected to said structure establishing at least one passageway between the interior of said structure and said passage, means enabling passengers to move in said shaft passage to and from said passageway, whereby the passengers may move between the shaft and the hollow annular structure, and a series of elongated suspension elements connected to said structure and connected with relation to said shaft at a height disposed above said structure, an annular rotatable member supported by said structure, anti-friction bearing means intermediate said structure and said member, and means supported by said structure and operable for rotating said member about the upright axis of the shaft.

4. In a tower building, a claimed in claim **3**, said suspending means further comprising a stationary collar mounted on said shaft above said structure, each suspension element being pivoted to said collar, said elements when the structure is mounted on the tower being positioned along the surface of a truncated cone.

5. In a tower building, as claimed in claim **3**, said anti-friction bearing means having a lower surface defined on said element and an upper surface defined on said structure supporting said lower surface of said member, transverse lubricating grooves defined in at least one of said surfaces, lubricating liquid being continuously fed to said surfaces.

6. A high tower building, as claimed in claim **3**, said anti-friction bearing means including interengaging sliding faces defined on said member and on said structure, respectively, a lubricant bath covering the sliding faces, lubricant being continuously fed to said bath.

7. A high tower building, as claimed in claim **3**, said anti-friction bearing means comprising a roller bearing having tapered rolling elements arranged radially of the rotatable member and having the uppermost portions of the conical rolling elements disposed in a horizontal plane and supporting said member, the taper extending radially outwardly from the upright axis of the tower shaft.

8. In a tower building, as claimed in claim **3**, said rotatable member including windows rotating along with the rotatable member.

References Cited by the Examiner

UNITED STATES PATENTS

906,732	12/1908	McDonagh et al.	104—56
1,039,545	9/1912	Knight.	
1,686,298	10/1928	Uhl	272—7 X

FOREIGN PATENTS

809,398	1951	Germany.
857,443	1952	Germany.
788,086	1957	Great Britain.

FRANK L. ABBOTT, *Primary Examiner.*

JACOB L. NACKENOFF, *Examiner.*