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3,454,259

DOME HOIST

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FIG. 2

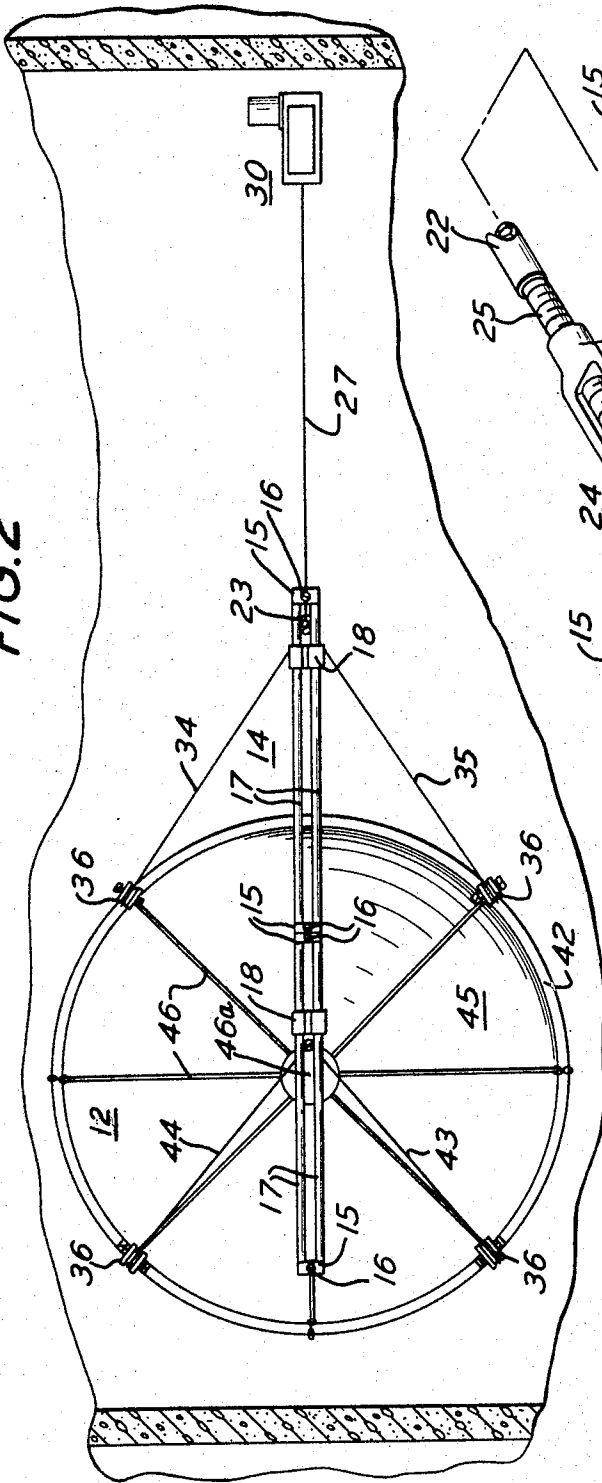
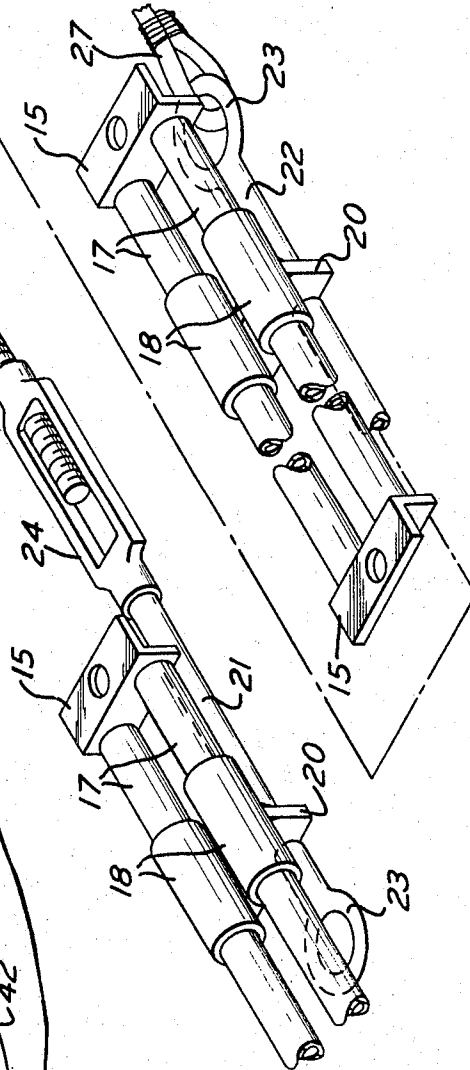


FIG. 3



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DOME HOIST

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9 Claims

ABSTRACT OF THE DISCLOSURE

A dome hoist for planetarium domes wherein the hoisting mechanism consists of a frame attached to the ceiling above the dome which carries cables extending to an annular dome suspending ring and to a winch located some distance from the frame.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a suspension hoist for planetarium domes.

Description of the prior art

The technological advances in the field of electrical circuitry and mechanism minaturization have led to the development of small planetariums for use in high schools, and other locations where they were not previously feasible due to their large size and high cost. Space is usually at a premium and consequently it is desirable if at all possible to have the space available for other uses when the planetarium equipment is not being operated.

A planetarium primarily consists of light projectors on a multi-axis supporting frame which project beams of light onto a dome surface which light beams represent stars, planets and other celestial bodies.

While the light projecting apparatus can readily be made portable the dome onto which it is projected is usually at a fixed location due to its size and weight.

The apparatus of the present invention provides a novel manner of supporting the dome during use and for moving it to an out of use location where it does not interfere with utilization for other purposes of the space it previously occupied.

SUMMARY OF THE INVENTION

The principal object of the present invention is to provide a dome hoist for use with planetarium domes wherein the apparatus will accurately position the dome for use and easily remove it to a non-interfering out-of-use location when desired.

A further object of the present invention is to provide a dome hoist for use with planetarium domes which is suitable for installation in existing structures as well as in new buildings.

A further object of the present invention is to provide a dome hoist for use with planetarium domes wherein the dome can be positioned for use or for storage by a single individual.

A further object of the present invention is to provide a dome hoist for use with planetarium domes which is inexpensive to construct but sturdy and reliable in operation.

A further object of the present invention is to provide a dome hoist with a high degree of stability of the dome, with maintenance of a level condition of the dome and with capability of withstanding the application of external forces thereon.

A further object of the present invention is to provide a dome hoist for use with planetarium domes which can be easily mounted on a ceiling or inner roof structure, as desired.

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Other objects and advantageous features of the invention will be apparent from the description and claim.

BRIEF DESCRIPTION OF THE DRAWING

The nature and characteristics features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part thereof, in which:

FIGURE 1 is a side elevational view of the dome hoist, with the dome in an out of use position, the dome position for use being shown in dotted lines;

FIG. 2 is a horizontal sectional view taken approximately on the line 2-2 of FIGURE 1;

FIG. 3 is a perspective view, enlarged, illustrating the cable harness attachment fittings of the present invention;

FIG. 4 is a perspective view, enlarged, illustrating the manner of attaching the cables to the dome, and

FIG. 5 is a perspective view, enlarged, illustrating the cable part of the cable suspension mechanism.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings, the dome hoist is shown mounted on a ceiling 11 and supporting a planetarium dome 12 of conventional type above a floor 10.

The dome hoist has a top attachment frame 14 which includes a series of L-shaped brackets 15 fastened to the ceiling 11 by bolts 16. The brackets 15 have pairs of rods 17 attached thereto, such as by welding or in other suitable manner, and which secures the brackets 15 and rods 17 together.

The rods 17 have sleeves 18 thereon at spaced intervals which sleeves 18 have vertical plates 20 joined thereto and extending downwardly therefrom. The sleeves 18 and plates 20 slidably mount horizontal rods 21 and 22. The rods 21 and 22 are each provided with an eyelet 23 at one end thereof.

The rod 21 has a turnbuckle 24 fixed thereto at its end opposite to eyelet 23 and the rod 22 has a threaded end 25 opposite to eyelet 23 and which is engaged with the turnbuckle 24 for adjustment to control the distance between rods 21 and 22 and to facilitate assembly.

The eyelet 23 of rod 22 is illustrated in FIGS. 2 and 3 with a cable 27 secured thereto, extending to the right and attached to a motor driven reversible winch 30 also mounted on the ceiling 11.

The winch 30 is of conventional type and preferably provided with a limit switch (not shown) to prevent over travel of the dome hoist. Leads 31 extend from the winch 30 to a switch (not shown) for actuation of the winch 30. Two cables 34 and 35 are engaged in the eyelet 23 of rod 22 and extend to the left over pulleys 36 mounted on shafts 37 in brackets 38. The brackets 38 are rotatably mounted to shafts 40 which are fastened to the ceiling 11 in any suitable manner. The cables 34 and 35 extend downwardly and are connected through turnbuckles 35a to a channel ring 42 around the outside of the planetarium dome 12.

Two additional cables 43 and 44 are engaged in the eyelet 23 of rod 21, extend to the left and over pulley 36 as for cables 34 and 35, and also are connected through turnbuckles 44a to the channel ring 42.

The planetarium dome 12 as illustrated is of eight piece construction with arcuate rib members 46 extending over

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the outside of a shell 45 from a common junction 46a at the top to the bottom of shell 45 where they form a rim 46b.

The channel ring 42 extends around the shell 45 and is of a square configuration in vertical cross section as shown in FIG. 4. The ring 42 has eight chains 47 attached thereto which extend to turnbuckles 48 engaged by brackets 49 fastened to the rim members 44 by bolts 50, for leveling.

The mode of operation will now be pointed out. To position the dome 12 either for storage or for use the winch 30 is activated by the switch (not shown) to either reel in cable 27 or to pay it out depending on whether the dome is to be moved upwardly or downwardly.

The rods 21 and 22 are urged horizontally by cable 27 and through cables 34, 35, 43 and 44, channel ring 42, chains 47 and turnbuckles 48 move the dome 12 as desired.

If adjustment of cables 34 and 35 or 43 and 44 is needed the turnbuckles 35a, 44a and 48 can be adjusted to maintain the dome 12 in level condition and to distribute its weight equally.

It will thus be seen that structure has been provided to attain the objects of the invention.

I claim:

1. An overhead mounted dome hoist for a planetarium dome which comprises

a planetarium dome having an exterior annular ring, adjustable members between said ring and said dome for equalizing the dome weight and leveling said dome,

a plurality of attachment locations on said ring,

a fixedly mounted overhead frame,

members slidably mounted on said overhead frame, first connecting members between said ring and said slidably mounted members respectively connected to said ring at said attachment locations,

a reversible winch, and

a second connecting member between said slidably mounted members and said winch.

2. A dome hoist as defined in claim 1 in which said first connecting members are cables and leveling members are interposed between said cables and said ring.

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3. A dome hoist as defined in claim 1 in which said slidably mounted members have a plurality of locations for cable attachment, and said first connecting members are connected to said slidably mounted members at said cable attachment locations.

4. A dome hoist as defined in claim 3 in which said slidably mounted members include a pair of detachable adjustably connected rods.

5. A dome hoist as defined in claim 4 in which said overhead frame includes at least one pair of parallel fixed rods, said rods being connected by sleeves and supporting a plurality of frame plates.

6. A dome hoist as defined in claim 5 in which said slidably mounted rods are carried by said frame plates.

7. A dome hoist as defined in claim 6 in which said cable attachment locations on said slidably mounted members are provided with eyelets.

8. A dome hoist as defined in claim 1 in which said winch has an actuating electric motor.

9. A dome hoist as defined in claim 2 in which supporting pulleys are provided for said cables between said ring and said slidably mounted members.

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U.S. Cl. X.R.

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