

[54] **ARTICULATED TV PLATFORM**

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[51] Int. Cl. **H01r 39/10**

[58] Field of Search **339/5, 7, 8, 119; 248/425, 248/430**

[56] **References Cited**

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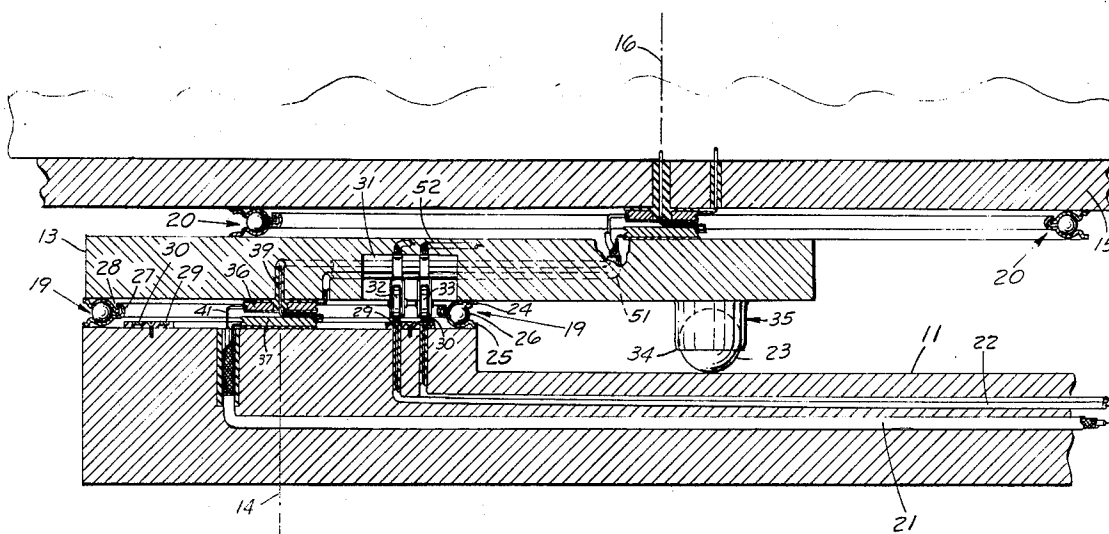
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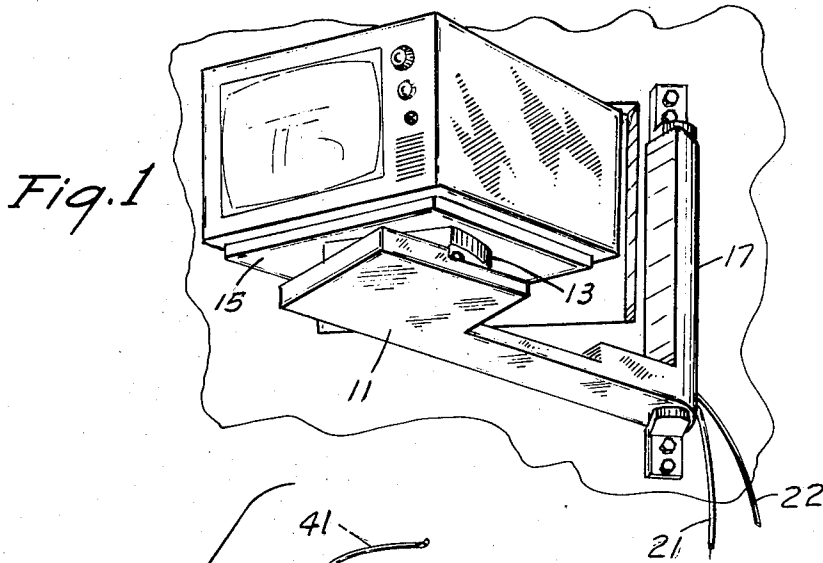
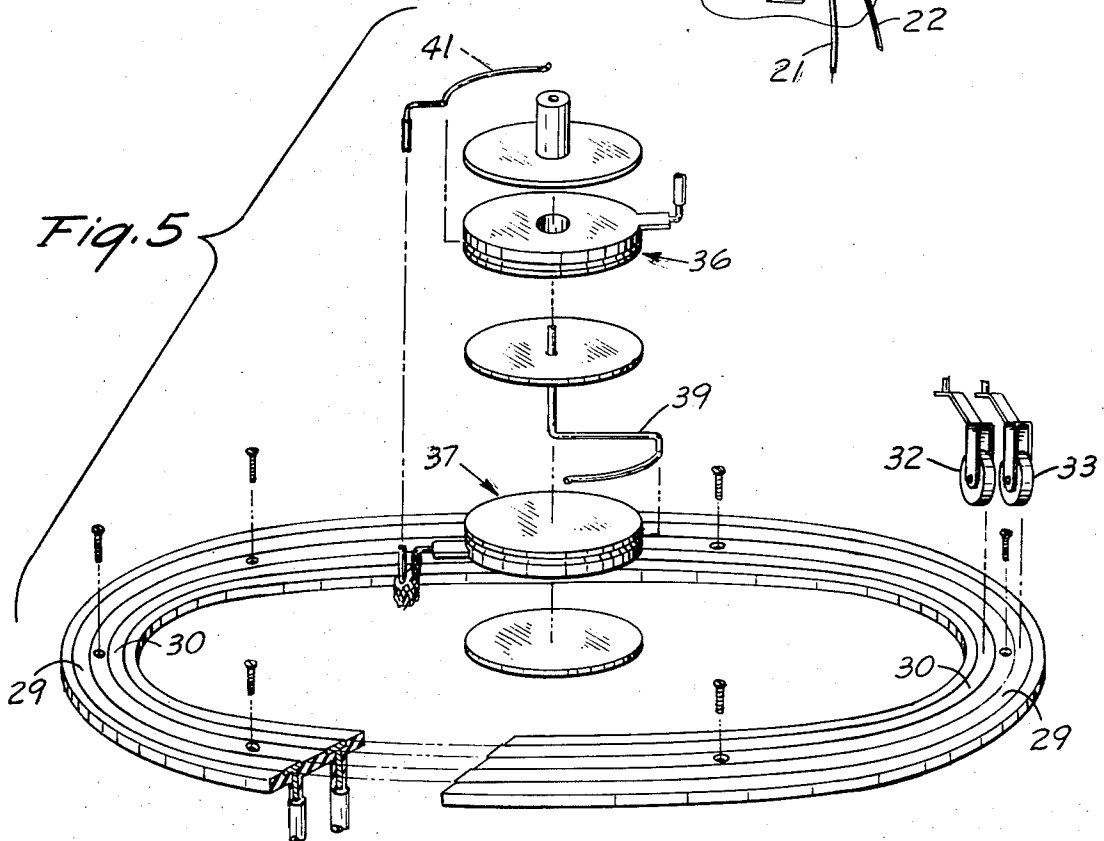
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ABSTRACT

Articulated platform means for allowing adjustable uniplanar orientation of electrical apparatus mounted thereon, while avoiding cable wrap-up and the like. A first and second arm are mutually hinged at a first extremity thereof for rotation about a first axis, the first arm being longer than the second and being hingeable at a second extremity thereof about a second axis parallel to and displaced from the first. A platform is rotatably mounted upon the second arm for rotation about a third axis of rotation parallel to and intermediate the said first and second axes of rotation. Slip ring means, at a respective one of the second and third axes and mutually intercabled, allow interconnecting of an electrical power source and a coaxial antenna feedline with a TV set mounted on the platform.

7 Claims, 3 Drawing Figures





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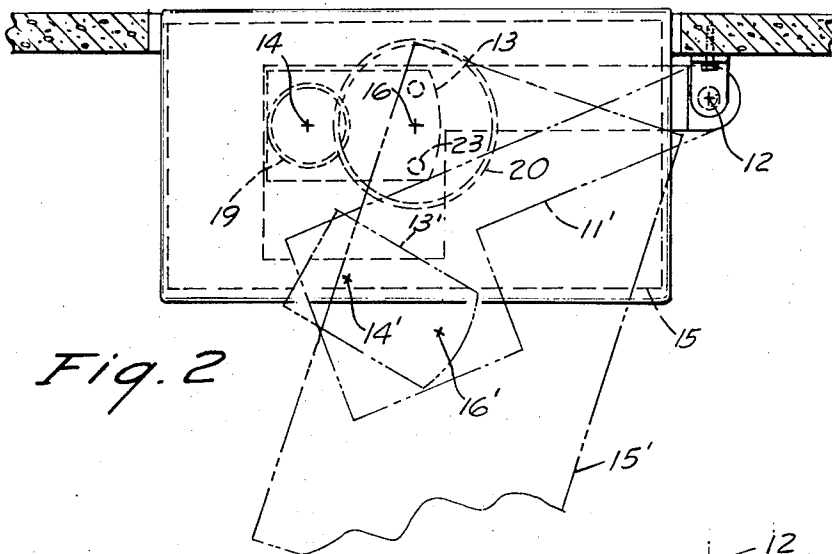


Fig. 2

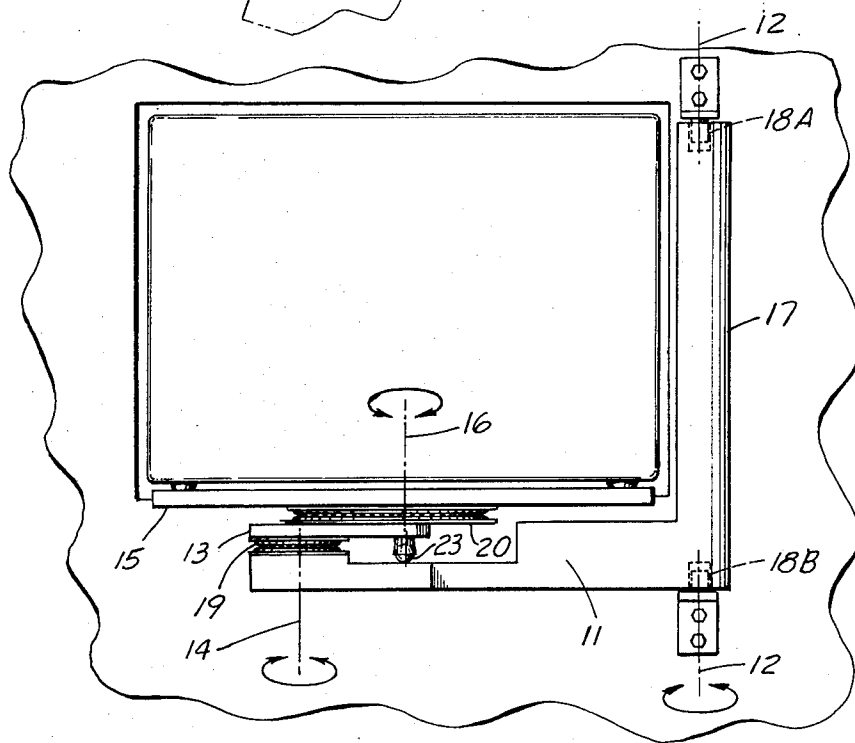


Fig. 3

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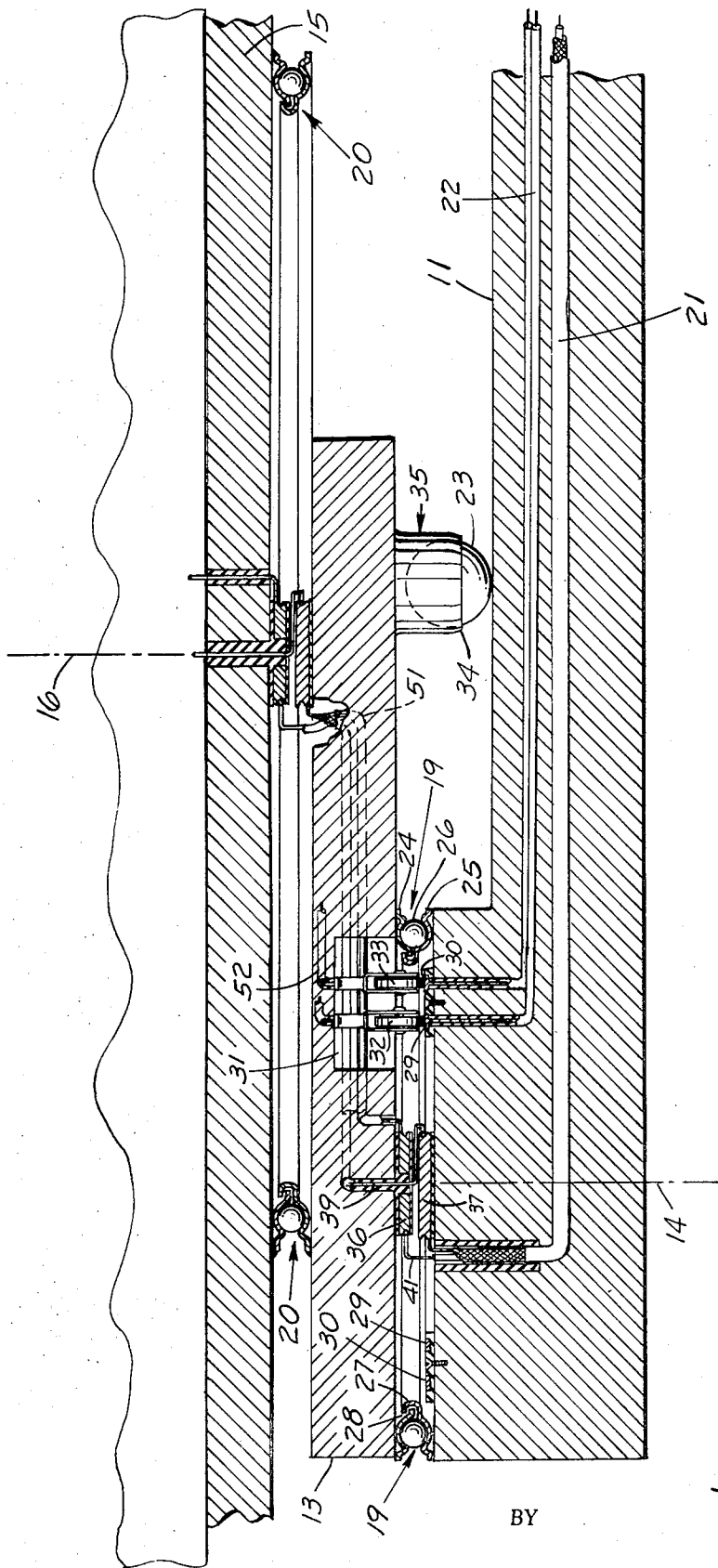


Fig. 4

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ARTICULATED TV PLATFORM

BACKGROUND OF THE INVENTION

In the current social era of affluence, hotel and motel accommodations are expected to include appointments of convenience for the enjoyment of the transient population catered-to. Such accommodations and appointments may include television sets and, in areas of difficult TV reception, may also include cable television (CATV) coaxial feedlines.

The convenient use of such equipment for maximum viewing pleasure and enjoyment involves movement of the TV set about the room and changing the angular orientation of the set so as to face the viewer from a position in which he desires to view it. Such movement, however, may inadvertently result in damage to the coaxial feedline. Also, the mobile requirement of the TV set requires the use of a TV dolly. Further, such mobile character of the TV set (and dolly) lends itself to misappropriation or theft from the premises.

SUMMARY OF THE INVENTION

By means of the concept of the subject invention, there is provided platform means for allowing adjustable uniplanar orientation of electrical apparatus mounted thereon, while avoiding cable wrap-up and the like. In a preferred embodiment thereof there is provided a first platform adapted to be rotatably mounted at an edge thereof for rotation about a first axis perpendicular to the plane of the platform. A second platform, shorter than the first, is rotatably mounted upon and parallel to the first platform for rotation about a second axis parallel to the first and spaced apart therefrom. A third platform is rotatably mounted upon and parallel to the second platform for rotation about a third axis parallel to the first and second axes of rotation.

There is also provided at least one plurality of mutually concentric electrical slip ring means, concentric with one of the second and third axes of rotation, for providing a plurality of electrical circuit connections between the two mutually rotatable platforms associated with such one axis of rotation.

By means of such arrangement, the coaxial antenna feedline of a television set mounted thereon may be led out by an internally concentric slip ring pair of said plurality of slip ring means and a two-wire power cable may be connected to the television set by means of an externally concentric second slip ring pair without imposing limits on the uniplanar positioning and orientation of the television set.

Accordingly, an object of the subject invention is to provide articulated platform means for adjustable uniplanar orientation of electrical apparatus.

Another object is to provide rotatable platform means for mounting electrical apparatus while avoiding cable wrap-up.

A further object is to provide means for conveniently adjusting both the position and orientation of electrically powered display apparatus.

These and other objects of the invention will become apparent from the following description, taken together with the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the device of the invention, having a television set mounted thereon in an exemplary application thereof.

FIG. 2 is a plan view of the device of the invention showing a first orientation thereof (in solid line) and a second orientation (in phantom);

FIG. 3 is a view in elevation of one of the orientations of FIG. 2;

FIG. 4 is a view in elevation and in partial section, showing in greater detail electromechanical design features of the arrangement of FIG. 3; and

FIG. 5 is a view in perspective, and partially exploded, showing in further detail the arrangement of the mutually concentric slip ring means of FIG. 4.

In the drawings, like reference characters refer to like parts.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, there is illustrated in perspective a view of the device of the invention and having a television receiving set mounted thereon in one exemplary application thereof. There is provided a first and lower platform 11 in horizontal orientation and hinged or otherwise adapted at one extremity thereof for rotation about a vertical axis 12. Such hinged arrangement may be mounted upon a wall or other vertical surface of suitable structural integrity and strength. A second and upper intermediate horizontal platform 13, shorter than the first, is rotatably mounted upon and parallel to first platform 11 for rotation about a second vertical axis 14 on first platform 11 and spaced apart from first axis 12, as is more clearly shown in FIGS. 2 and 3. There is also included in FIG. 1 an upper or third horizontal platform 15 rotatably mounted upon and parallel to second platform 13 for rotation about a third vertical axis 16 on second platform 13.

Suitable bearing means are included at each of the rotatable mountings on axes 12, 14 and 16. As shown in FIG. 3, hinged means 17 includes bearings 18A and 18B for rotation about axis 12; annular bearing assembly 19 providing rotation of element 13 about axis 14 relative to element 11; and annular bearing assembly 20 providing rotation of element 15 about axis 16 relative to element 13. Also included in FIG. 3 are an emergent or terminal section of a coaxial cable 21 from platform 11 for interconnecting an antenna terminal of a television receiver (to be installed on third platform 15) and a cable antenna or the like, and a power cable 22 for interconnecting the power terminals of the television receiver and a conventional house current supply or other specified power source. Such emergent positions of cables 21 and 22 are preferably as near radially of axis 12 as is convenient.

The plan view of FIG. 2 shows two exemplary coplanar (horizon plans) positions of adjustment of the device of FIG. 1, one position and orientation shown in solid line and the other shown in phantom line. The solid line plan view, the corresponding elevation view for which is shown in FIG. 3, is adapted to locating a television set within an accommodating aperture cut out in a wall, which television set may be rotated (by means of rotatable third platform 15) as to allowing

viewing thereof from a selected angle of view in either of two rooms on opposite sides of the wall which includes such aperture. Additionally, first platform 11 may be swung out from the wall and second platform 13 rotated relative to platform 11 to provide a selected one of a variety of positions within a room, the orientation of the TV set in such position being selected by rotation of platform 15 (as indicated by the arrangement in phantom line in FIG. 2).

Because upper platform 15 is substantially centrally mounted for rotation about axis 16, the peripheral loading about bearing 20 is somewhat even or equal. However, intermediate platform 13 is mounted near one end thereof (or non-centrally) for rotation about axis 14 in order to effect enhanced translation of axis 16 relative to axis 14. Such off-center mounted (particularly under the load of a television set or other high density equipment mounted on upper platform 15) exerts a considerable unevenness in the peripheral load distribution about bearing 19, as to warrant the addition of a ball bearing 23 near the opposite end of intermediate platform 13 and resting upon lower platform 11.

The mutually concentric slip ring means, located centrally of at least one of the annular bearing structures 19 and 20 for interconnecting cables 21 and 22 with a television set mounted on rotatable platform 15, are shown more particularly in FIG. 4.

Referring now to FIG. 4, there is illustrated in vertical section and in fuller detail the bearing arrangement and slip ring means of the device of FIG. 3. Each of bearings 19 and 20 is similarly constructed and therefore a description of only bearing 19 will suffice for an understanding of the construction of both. As shown, bearing 19 is an annular arrangement, externally concentric of axis 14 and comprised of an upper shell 24 and lower shell 25 fastened to a respective upper and lower platform 13 and 11, respectively, and contoured to enclose a race of ball bearings 26. A radially internal lip 27 of annular shell 25 is folded around a lesser internal lip 28 of upper shell 24, as to restrain the bearing components in assembly, checking relative motion radially or axially between shells 24 and 25.

Internally concentrically of annular bearing assembly 19 is a pair of mutually concentric slip rings 29 and 30, insulatingly mounted upon platform 11 and insulated from each other. Connected in electric circuit with each of slip rings 29 and 30 is a respective conductor of insulated power cable 22, which is preferably strung internally of hinged platform or arm 11. Mechanically mounted on intermediate platform 13 and extending through an aperture 31 therein are two rollers 32 and 33, each of which is adapted to be electrically connected to a respective power terminal of a two-terminal power input of the television set, as well as being electrically insulated from each other and from platform 13. Each of rollers 32 and 33 rests upon a respective one of slip rings 29 and 30 and in electrical contact therewith, whereby electrical power transfer may be made between mutually rotating platforms 11 and 13 without danger of cable wrap-up and the like.

Auxiliary bearing assembly 23 is seen, from FIG. 4, to comprise a large ball bearing 34 restrained by a bearing cap 35 extending from platform 13 (above ball bearing 34) to and girdling a lesser zone below the equatorial zone of ball bearing 34.

Arranged concentrically internally of bearing 19 and slip rings 29 and 30 in FIG. 4 is coaxial slip ring means (shown more clearly in FIG. 5) and comprising substantially mutually concentric, axially spaced-apart first and second disc assemblies 36 and 37. Each of upper disc 36 and lower disc 37 includes an outer metallic rim 38 having an annular groove 39 in the circumferential edge thereof, and upper disc 36 further has an electrical center post 39 which is electrically insulated from outer metallic rim 38 of disc 36. A first slip ring 40 is in electrical contact with the annular groove of lower disc 37 and electrically and mechanically coupled to center post 39 of upper disc 36. A circuit post 41, fixedly mechanically mounted upon and insulated from lower platform 11, is mechanically and electrically coupled to a second slip ring 42 which is arranged in electrical circuit with the annular groove of upper disc 36. A first metal tab 43 on an upper edge of the metallic rim of upper disc 36 and center post 39 form a first pair of terminals of the four terminal rotating joint, while post 41 and a second metal tab 44 on a lower edge of the metallic rim of lower disc 37 form a second pair of terminals of the four terminal (two wire) rotating joint. Thus, the two disc assemblies employing discs 36 and 37 comprise a rotating joint suitable as a transfer point for a coaxial cable.

Accordingly, the arrangement of FIG. 5 is seen to comprise a four-line rotating transfer joint or junction box for accommodating a coaxial cable 21 and a two-wire electrical power line 22. Although such arrangement has been described in terms of an installation about axis 14 for intercabling between lower platform 11 and intermediate platform 13, it is to be distinctly understood that a substantially like arrangement may be made about axis 16 for intercabling between intermediate platform 13 and upper platform 15, and a coax line 51 and a two terminal power line 52 employed in platform 13 to interconnect the corresponding coax and power terminals of the rotating joint of intermediate platform 13 for axis 14 with the corresponding coax and power terminals of the rotating joint of intermediate platform 13 for axis 16. The coax and power terminals of the rotating joint of upper platform 15 for axis 16 may then be directly connected to the television set to be serviced, thereby forming a direct circuit connection to the terminus of lines 21 and 22 of FIG. 3.

In normal use of the above-described arrangement, rotation of either or both of platforms 15 and 13, relative to the other and relative to platform 11, will not interfere with the external electrical power or antenna circuit connections of a television set installed atop upper platform 15, nor allow cable wrap-up of such external wiring as a result of such rotation. However, such combinations of rotations may be used to change the position and orientation of such equipment.

Although the device of the invention has been described in terms of its applicability to television receiver viewing, it is to be understood that it is not so limited and that such inventive concept is equally applicable to use with television cameras as in a monitored surveillance system.

Although the invention has been described and illustrated in detail, it is to be clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the appended claims.

I claim:

1. Articulated platform means for allowing adjustable uniplanar angular and positional orientation of electrical apparatus mounted thereon while avoiding cable wrap-up and the like, comprising

a first platform rotatably mounted at an edge thereof for rotation about a first axis perpendicular to the plane of said platform;

a second platform rotatably mounted upon and parallel to said first platform for rotation about a second axis parallel to said first axis and spaced apart therefrom;

a third platform rotatably mounted upon and parallel to said second platform for rotation about a third axis parallel to said first and second axes of rotation;

at least one plurality of mutually concentric electrical slip ring means, concentric with one of said second and third axes of rotation for providing a plurality of electrical circuit connections between the two mutually rotatable platforms associated with said axis of rotation.

2. The device of claim 1 in which said third axis of rotation is spaced apart from said second axis.

3. The device of claim 1 in which said third axis is spaced apart from said second axis by an amount less than the spacing between said first and second axes.

4. The device of claim 1 in which said plurality of mutually concentric slip ring means comprises a first pair of slip ring connections for a coaxial cable circuit, and

a second pair of mutually concentric slip ring connections externally concentric of said first pair for a two-wire power cable circuit.

5. The device of claim 4 in which said first pair of slip ring connections comprises

a first and second mutually concentric and axially spaced disc assembly, a respective one fixedly mounted on each of said two mutually rotatable platforms,

each said disc assembly including an outer metallic rim having an annular groove in the circumferential edge thereof and at least one of them has a metallic center post electrically isolated from said outer metallic rim,

a first slip ring in electrical circuit with the annular groove of a first one of said disc assemblies and electrically and mechanically connected to the center post of said second disc assembly,

a circuit post fixedly mechanically mounted upon that platform to which said first one of said two disc assemblies is fixedly mounted, and

a second slip ring in electric circuit with the annular groove in said second disc assembly and electrically and mechanically fastened to said circuit post.

6. The device of claim 1 in which there is provided a like plurality of mutually concentric electrical slip ring means for each of said second and third axis of rotation, said pluralities being interconnected in electrical circuit.

7. Articulated platform means for mounting electrical equipment and comprising

first and second platforms, mutually parallel and pivotally joined near first extremities thereof, about a first axis,

said second platform being shorter than said first platform, said first platform being adapted to be hingedly mounted at a second extremity thereof about a second axis parallel to and displaced from said first axis;

a platform rotatably mounted upon said second platform upon a third axis of rotation parallel to and intermediate of said first two axes of rotation,

first and second slip ring means at a respective one each of said first and third axes and intercabled in electrical circuit for allowing intercabling of an electrical power source and a coaxial antenna feedline with a TV set mounted on said third platform.

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