United States Patent [19]

Briley

[11] **3,821,744**

[45] **June 28, 1974**

[54] **MANUALLY ROTATED ANTENNAE UTILIZING A FLEXIBLE CABLE AND A PIN LOCKING MECHANISM**

[76] Inventor: **Thomas S. Briley,** 5218 Revere Rd., Durham, N.C. 27707

[22] Filed: **Sept. 13, 1971**

[21] Appl. No.: **179,835**

[52] **U.S. Cl.** **343/763,** 74/529

[51] **Int. Cl.** **H01q 3/02,** G05g 5/06

[58] **Field of Search** 343/763, 764, 765, 766, 343/882, 869; 192/15; 74/529; 188/69

[56] **References Cited**

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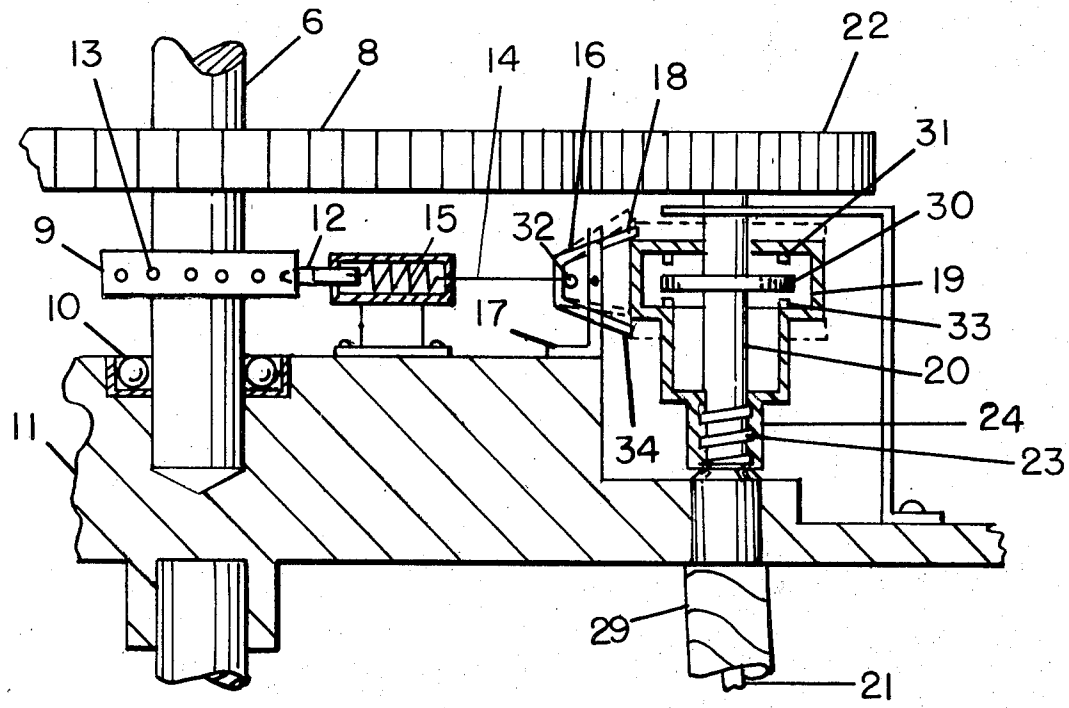
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Primary Examiner—Archie R. Borchelt
Assistant Examiner—Wm. H. Punter
Attorney, Agent, or Firm—Anthony D. Cennamo

[57] **ABSTRACT**

This invention consists of an antenna supported by a vertically disposed shaft. The lower portion of the shaft extends through a hub and bearing that is integrally formed with the apex of the antenna shaft support and mechanism housing. The mechanism that rotates the aforesaid antenna comprises two horizontally disposed gears in mesh with one another. The lower portion of the antenna supporting shaft passes down through and is secured to the center of the largest of the two gears, the shaft being provided with a locking collar that is adapted to spring-loaded mechanism activated by mechanism connected to the upper end of a flexible shaft that terminates in and is secured to the center of the second of the two aforesaid gears, the second gear being smaller in diameter than the first mentioned gear. The lower end of the aforesaid flexible shaft is secured to a hand wheel that rotates the aforesaid antenna by means of this mechanism, as will hereinafter be described.

5 Claims, 3 Drawing Figures



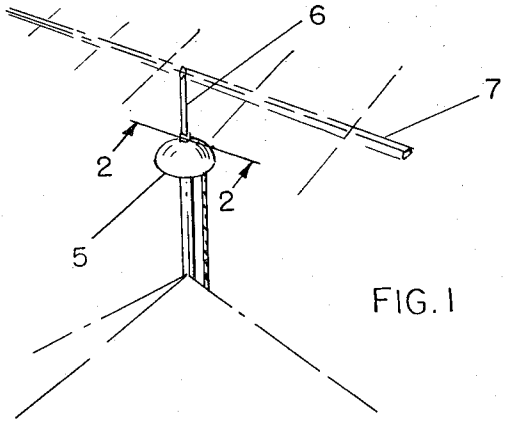


FIG. 1

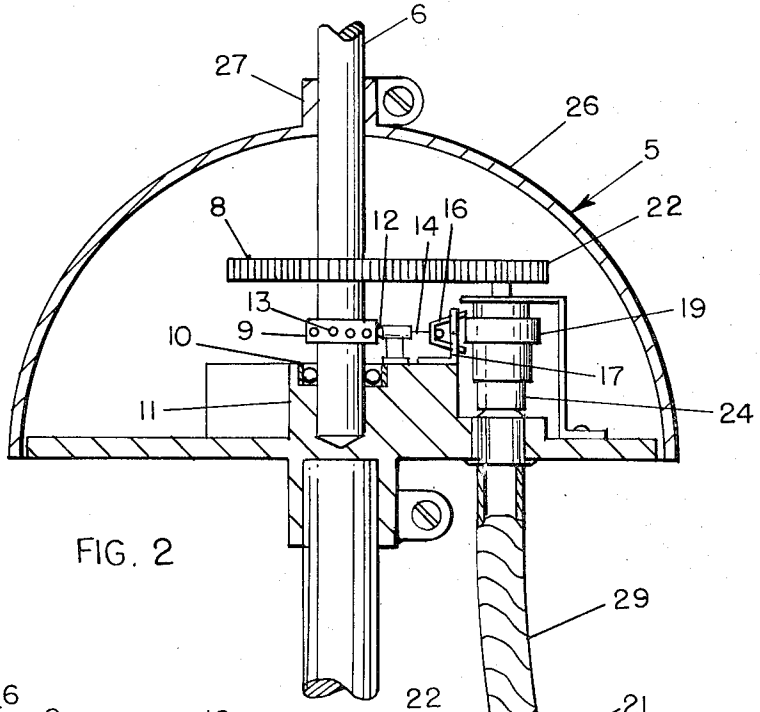


FIG. 2

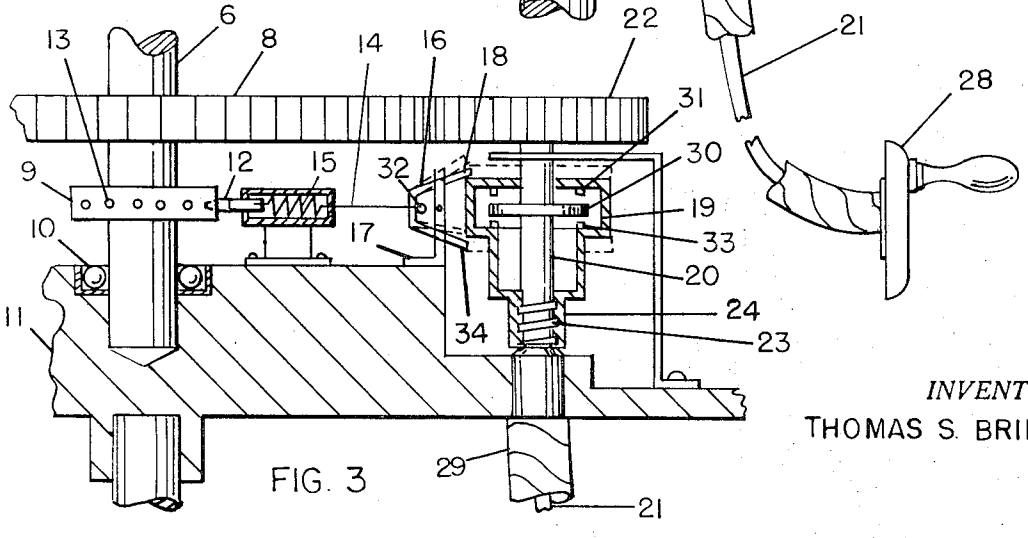


FIG. 3

INVENTOR
THOMAS S. BRILEY

MANUALLY ROTATED ANTENNAE UTILIZING A FLEXIBLE CABLE AND A PIN LOCKING MECHANISM

This invention relates to antennas; more particularly, to rotating antennas that are used for television receiving sets; still more particularly, to antennas that are manually rotated at will.

Although rotating antennas are not new and many different types have been developed over the years, most of the rotating antennas are electrically operated and for this reason have many faults, as is known by those experienced in the art.

It is therefore the principal object of this invention to provide a manually rotated antenna of the character herein described that embodies a minimum number of parts that are foolproof in operation.

Another object of this invention is to provide a manually rotated antenna that can be locked into any desired position.

Still another object of this invention is to provide a manually rotated antenna that can be mounted on the roof of any building or the like in a minimum of time and with a minimum of effort by nearly anyone having some mechanical and/or electrical experience.

Other and further objects and advantages of this invention will no doubt appear as the reading of this specification and its appended claims proceeds and the accompanying drawing is examined in connection therewith.

In the drawing:

FIG. **1** is a pictorial view of this invention mounted on the roof of a building.

FIG. **2** is an enlarged sectional view of this invention, taken substantially along line **2—2** of FIG. **1**, and viewed in the direction indicated by the arrows.

FIG. **3** is an enlarged sectional view of the mechanism of this invention illustrated in FIG. **2** with additional details of the mechanism shown in cross-section.

In the several views of this invention, like parts of the device are indicated by like reference numbers, the reference number **5** indicating this invention in its entirety.

Directing ones attention first to FIG. **3** of the accompanying drawing it will be seen that this invention **5** consists of a vertically disposed rotatable shaft **6** on the top of which is suitably secured the antenna **7** (FIG. **1**).

The lower end of the aforesaid shaft **6** passes through and is secured to the large horizontally disposed gear **8** and on through the locking collar **9** that is likewise secured to the aforesaid shaft **6.** The often mentioned shaft **6** is supported by the ball bearing **10** and its supporting member **11** that also provides support for other parts of the mechanism of this invention. A spring-loaded horizontally disposed locking pin **12** is suitably mounted on the aforesaid supporting member **11** in such a position that the outer end of the locking pin **12** will engage in one of the plurality of radially disposed recesses **13** in the aforesaid locking collar **9** of this invention.

Continuing to look at FIG. **3** of the drawing it will be seen that a horizontally disposed wire **14** has one end connected to the coil spring **15** of the locking pin **12** while the other end of the same wire **14** is suitably adapted to the flat apex of the V-shaped lever **16** that

passes through its supporting bracket **17.** The lip **18** of the aforesaid V-shaped lever **16** is adapted to be in contact with the periphery of the tubular member **19** of this invention. The just mentioned tubular member **19** contains the upper portion of the vertically disposed shaft **20** that is secured to the upper end of the flexible cable **21.** The upper end of the aforesaid shaft **20** projects up out through the top of the aforesaid tubular member **19** to terminate in the center of the small horizontally disposed gear **22** that is suitably secured to the shaft. The lower end of the aforesaid shaft is provided with the screw **23** that is contained in the hub **24** of the often mentioned tubular member **19.** Examination of the already mentioned FIG. **3** of the drawing clearly shows that the threads of the aforesaid screw **23** are in contact with the internal threads of the hub **24.** The upper end of the aforesaid vertically disposed shaft **20** is supported by one end of the Z-shaped support bracket **25** that has its lower end secured to the already mentioned supporting member **11** of this invention. The periphery of the supporting member **11** provides some support for the dome-shaped mechanism cover and antenna shaft support **26** (FIG. **2**) that is provided with an integrally formed adjustable vertically disposed hub and bearing **27** at the apex thereof through which vertically projects the aforesaid rotatable shaft **6.** Although it has not been previously mentioned, the lower end of the aforesaid flexible cable **21,** which can be of any desired length, is provided with a hand wheel **28.** The aforesaid cable **21** is enclosed in a cable housing **29.**

The way in which this novel invention works is quite simple to understand when one makes an examination of FIG. **3** of the accompanying drawing. The first clockwise rotation of the aforesaid cable **21** both lifts and turns the aforesaid tubular member **19** through which the aforesaid shaft **20** passes and is firmly secured. The disc **30** comes into pressure contact with the plurality of downwardly extending projections **31** that are integrally formed inside the top of the aforesaid tubular member **19.** When the just described lifting and turning of the tubular member **19** takes place, the action pushes upper lip **18** of the lever **16** in such a way as to cause the aforesaid wire **14** to pull the locking pin **12** out from the aforesaid locking collar **9,** thus permitting the shaft **6** to rotate. It will be noted for the first time that the one end of the wire **14** is activated by the lever **16** by passing through an opening in its apex and terminating in securement to a ball **32.** Subsequent clockwise turning of the aforesaid cable **20** engages the turning mechanism through the lower projections **33** of the aforesaid tubular member **19** with the lower lip **34** of the lever **16** thus causing the locking pin **12,** which is spring-loaded, to engage the locking collar **9** to hold the shaft **6** in a desired position. The rotating of the aforesaid hand wheel **28** will obviously rotate the aforesaid antenna **7** by means of the two already mentioned gears **8** and **22.**

Although it is not shown in any of the views of the drawing for reasons of clarity, it is obvious that the lever **16** moves longitudinally in its supporting bracket **17** which may or may not be provided with roller or ball bearings for the lever **16** to rest on. It is also obvious to those both experienced and inexperienced in the art that one must push in or pull out the aforesaid hand wheel **28** to lock or unlock the locking mechanism of this invention and merely to turn the hand wheel **28** in

either direction to rotate the antenna 7 of this invention.

The above description of the operation of this invention has been kept to a minimum since the drawing of the device is so clear as to be understood by even the most inexperienced person in the art of reading a mechanical drawing.

This invention is subject to any and all changes in detail design and/or modifications that one may care to make in so long as the changes and/or modifications fall within the scope and intent of the appended claims. For example, the aforesaid hand wheel **28** may be replaced by an electric motor and suitable controls.

What I now claim as new and desire to secure by Letters Patent is:

1. A manually rotated antenna, comprising an antenna mounted on the upper end of a vertically disposed shaft that has its lower end extending down through a supporting housing, structure located in said housing joining said antenna vertically disposed shaft and a flexible rotatable cable in operational engagement with said structure a hand operated wheel located on one other end of said flexible cable to rotate said antenna; said structure comprises a large and a small horizontally disposed gear in mesh, the large gear being secured to said antenna and the small gear being secured to the upper end of the said flexible shaft; and mechanism adapted to lock the said antenna at any desired place of rotation.

2. The invention of claim **1,** wherein the said locking mechanism comprises a locking collar mounted on said shaft below said large gear and a lever in actuating contact with said locking collar and said small gear at the end of said flexible shaft, and means also in contact with said flexible shaft to lock and unlock said collar through said lever.

3. The invention of claim **2,** wherein the mechanism for locking the said antenna consists of a locking collar that is mounted in a horizontal position on the first mentioned shaft below the large gear, the said locking collar having a plurality of equally and radially spaced recesses in the periphery thereof in any one recess of which projects one end of a horizontally disposed spring-loaded locking pin that has its other end secured to a horizontally disposed wire whose other end passes through an opening in the apex of a horizontally disposed V-shaped lever, the end of the said wire being secured to a ball in the said lever which passes through an opening in a supporting bracket, the lips of the said lever being adapted to activating contact with structure encompassing the upper portion of the said flexible cable whose vertical movement both locks and unlocks the rotating mechanism of the said invention.

4. The invention of claim **3,** wherein the said structure that encompasses the said upper end of the said flexible cable consists of a tubular member having a plurality of vertically disposed and integrally formed and vertically spaced projections therein; and a horizontally disposed disc secured to the upper portion of the said flexible cable, the said disc being adapted to press up or down against the said projections by means of the vertical movement of the said tubular member, the action thus causing the periphery of the said tubular member to move the lips of the said horizontally disposed V-shaped lever and thus lock or unlock the said locking pin from the said locking collar of the said antenna.

5. A manually rotated antennae comprising a housing, an antennae, a shaft engaging said antennae and extending downwardly through said housing; a flexible shaft extending its one end also into said housing, a hand wheel in rotational engagement with the other end of said flexible shaft; a first gear mounted on said antennae shaft and a second gear in engagement with said first gear mounted on said one end of said flexible shaft; supporting means maintaining said flexible shaft gear in rotational engagement with said antennae shaft gear; and a locking mechanism for maintaining said gears fixed relative one to another.

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