Oct. 10, 1967 D. J. SIEBOLD 3,346,863

TELEVISION ANTENNA AND CONNECTOR APPARATUS

Filed Dec. 17, 1964

FIG.1

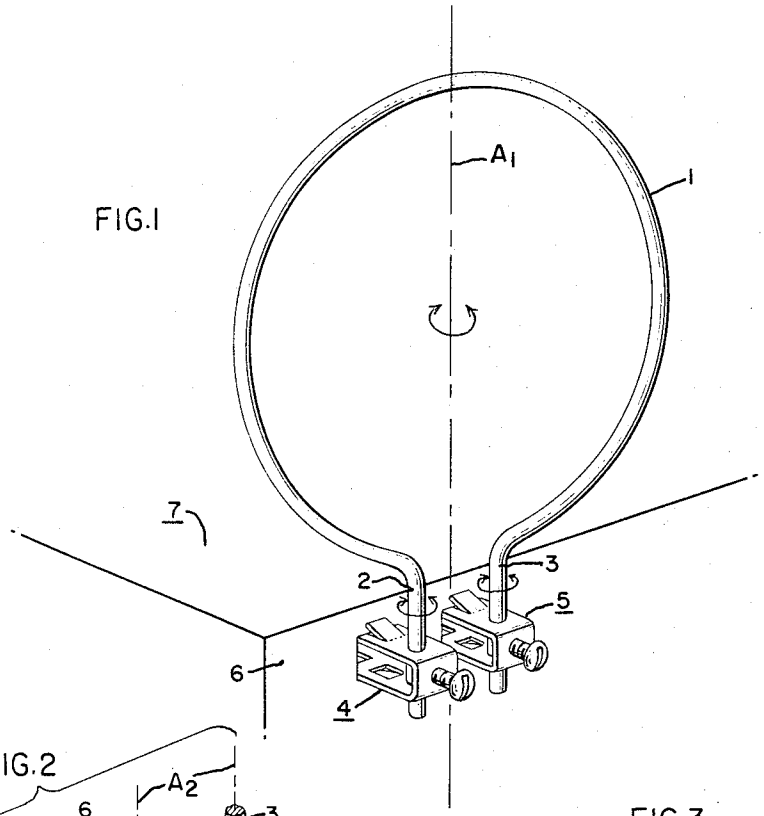


FIG.2

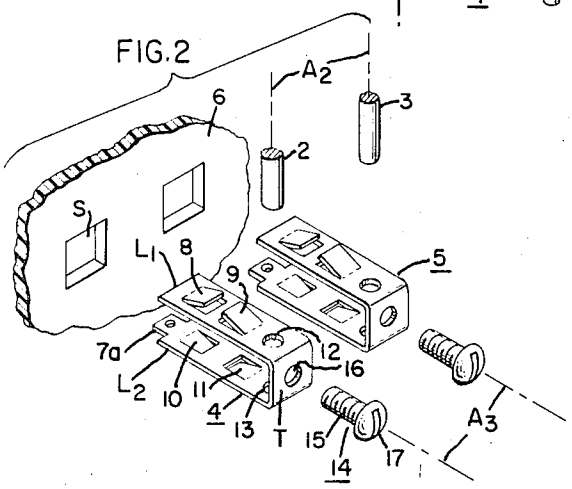


FIG.3

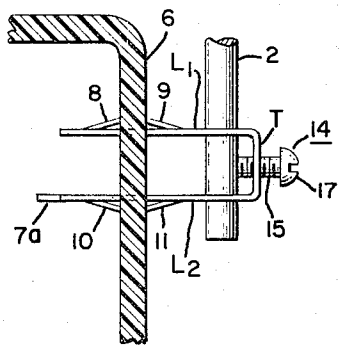
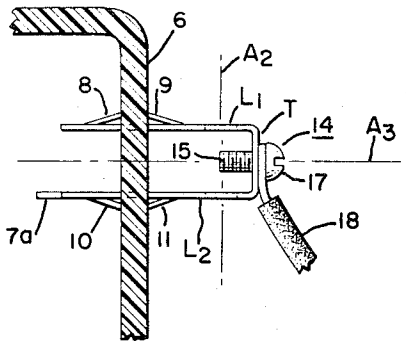


FIG.4



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TELEVISION ANTENNA AND CONNECTOR APPARATUS

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This invention concerns a television antenna and connector apparatus and, more particularly, apparatus for facilitating orientation of an indoor antenna and for selectively mounting and connecting indoor antenna and outdoor antenna leads to a television receiver.

Depending upon the strength of television channel signals and the distance of the television receiver from the source of each signal, an indoor antenna may be sufficient for receiving some channel signals whereas an outdoor antenna may be required for clear reception of other signals. With the expanding use of portable television receivers, there is an added demand for quick and easy antenna connector apparatus since outdoor antenna leads may not be available in every room where the receiver may be carried.

Hence, it is incumbent upon the person operating the receiver to be able to connect and disconnect various antennas to enjoy optimum reception, and it is incumbent upon the manufacturer to produce a connector apparatus which facilitates antenna connection and which insures that an inexperienced operator will not impair reception by simultaneously connecting both antennas to the receiver.

It is therefore an object of this invention to provide an indoor antenna and connector apparatus for alternately connecting indoor antenna and outdoor antenna leads.

Another object of this invention is to provide an indoor antenna connector apparatus which facilitates orientation of the indoor antenna.

Still another object is to provide an antenna and connector apparatus which insures that only one antenna will be connected to the receiver at any one particular time.

Further objects and advantages will become apparent as the following description proceeds and the invention itself is set forth in the claims annexed to and forming part of the specification.

In carrying out this invention in one form thereof, a pair of U-shaped bracket elements having outwardly directed locking tabs on each leg are inserted through adjacent holes in the back wall of a television receiver and are secured therein by the locking tabs. The transverse portion of each U-shaped bracket has a threaded aperture through which a threaded locking member is advanced. A loop-shaped indoor antenna is mounted in the bracket elements for rotation about an axis passing through the center of the loop. The threaded locking member frictionally maintains the antenna element in any position to which it is oriented. The position of the antenna may be selectively changed by manually rotating the antenna element against the frictional force exerted by the locking members. To engage the outdoor antenna leads, each locking member is disengaged, the antenna element is withdrawn from the bracket elements, and each locking element is advanced inwardly so as to frictionally engage clips on the outdoor lead wires when the clips are inserted between a portion of the bracket and an enlarged head on the threaded locking member.

For a better understanding of this invention, reference is made to the accompanying drawings in which:

FIGURE 1 is a perspective view of the indoor antenna element and the connector apparatus mounted on a wall of a television receiver.

FIGURE 2 is an exploded perspective view of the

bracket elements in relation to a wall of a television receiver.

FIGURE 3 is a sectional view of one of the bracket elements illustrated in FIGURE 2 when mounted on the receiver wall and while supporting the indoor antenna element.

FIGURE 4 is a sectional view similar to FIGURE 3 after the indoor antenna element has been withdrawn from the bracket elements and the outdoor antenna leads are secured thereto.

Referring to FIGURE 1, an indoor antenna element **1** is illustrated having a loop-shaped wire structure. The antenna element has first and second indoor antenna lead members **2** and **3** adjacently positioned in substantially parallel arrangement to an axis A_1 passing through the center of the loop and between the two lead members. Each of the indoor lead members **2** and **3** is secured in a separate bracket element **4** and **5**, respectively. The bracket elements are, in turn, fixedly secured in a wall **6** of a television receiver **7** (shown only in part). The bracket elements are illustrated in more detail in FIGURE 2. Since each bracket element **4** and **5** has an identical construction, only the construction of bracket element **4** will be discussed.

The bracket element **4** is comprised of two parallel, adjacently disposed leg portions L_1 and L_2 with a transverse portion T formed integrally with adjacent ends of the leg portions L_1 and L_2. The leg portion L_2 is provided with a terminal **7***a* at its extremity to which is soldered or otherwise connected the appropriate lead within the receiver. The leg portions together with the ransverse portion forms a generally U-shaped structure. The outer surface of each leg portion L_1 and L_2 has a pair of spaced locking tabs **8** and **9**, and **10** and **11**, respectively, formed by a portion of the leg which has been cut and bent outwardly. Each of the leg portions L_1 and L_2 has a pair of indoor leads receiving apertures **12** and **13**, respectively. A common axis A_2 through the center of each indoor lead receiving aperture **12** and **13** is substantially parallel to the transverse portion T of the bracket element **4** as illustrated in FIGURES 2, 3 and 4. The apertures **12** and **13** allow insertion of the indoor lead member into the bracket element **4**.

A locking slot S, having a width substantially equal to the distance between the parallel leg portions on the bracket element, is provided in the television receiver wall **6** into which the bracket element is inserted for mounting on the wall.

Due to the resiliency of the U-shaped bracket element, the ends of the leg portions may be bent toward each other in response to pinching pressure applied thereto in order to allow the locking tabs to clear the locking slot upon insertion of the bracket element into the slot. After the element has been inserted so that the wall portion is disposed within the space between the locking tabs, release of the pressure exerted on the bracket element enables the leg portions to return to a parallel position, thus enabling the locking tabs to engage both sides of the receiver wall **6** for securing the bracket element thereto.

It will be appreciated that various other methods of securing the brackets **4** and **5** to the receiver wall **6** might be employed within the spirit and scope of the invention. For example, other locking tab arrangements might be employed or the brackets might be staked or heat sealed to the receiver.

The antenna element **1** is supported by the adjacent disposed bracket elements **4** and **5** so that the antenna element may pivot, in response to manual force applied thereto, about the axis A_1. Since rotation of the antenna element **1** causes stresses within its structure which tend to restore the antenna to its initial position, a locking member **14** is employed to frictionally engage the surface

of the indoor lead members **2** and **3** so as to prevent rotation of the antenna element **1** in response to stresses created therein. The locking element **14**, which may have the form of a screw, has a threaded shank portion **15** which is threaded into a threaded aperture **16** through the transverse portion T of the bracket element **4**. The axis A_3 of the threaded aperture is substantially perpendicular to the common axis A_2 of the indoor lead receiving apertures **12** and **13**, as illustrated in FIGURES 2, 3 and 4. When the locking member **14** is advanced through the threaded aperture **16** so that the tip of the shank engages the surface of the indoor lead member **2** as illustrated in FIGURE 3, the friction force created thereby is sufficient to resist rotation of the antenna element in response to stresses within the wire structure, but the friction force is overcome when a manual force is applied to the antenna element for orienting the same. Consequently, the antenna element will remain in any desired position to which it is manually rotated.

The locking element **14** has an enlarged head portion **17** which, when the indoor antenna element **1** has been withdraw from the bracket elements **4** and **5**, is engageable with an outdoor lead member **18** as illustrated in FIGURE 4. When the indoor antenna element **1** has been withdrawn from the bracket and, hence, the indoor lead members **2** and **3** no longer are positioned in the indoor lead receiving apertures, only then can the locking element **14** be advanced through the threaded aperture **16** so as to frictionally engage an outdoor lead element **18** between the enlarged head portion **17** of the locking element **14** and the transverse portion T of the bracket element, as indicated in FIGURE 4. Similarly, when the outdoor lead element is engaged by the locking element **14** the insertion of the indoor lead members **2** and **3** into the bracket is prevented. Thus, simultaneous connection of both antennas is avoided.

From the foregoing discussion, it will be apparent that the antenna and connector apparatus facilitates orientation of an indoor antenna, and allows selective engagement and disengagement of indoor and outdoor antenna lead elements to a television receiver while insuring that at all times only one antenna is connected to the receiver.

While a specific embodiment of this invention has been shown and described, it is not intended that the invention be limited to the particular structure and it is intended by the appended claims to cover all modifications within the spirit and scope of this invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An antenna and connector apparatus for selectively connecting an indoor antenna and an outdoor antenna to a television receiver comprising:

(A) an indoor antenna element having a wire structure with first and second parallel, adjacently disposed indoor lead members projecting therefrom,

(B) bracket means attached to the television receiver for engaging said indoor lead members and for supporting said indoor antenna element,

(C) adjustable locking means on said bracket means, said adjustable locking means having a first portion for frictionally engaging said parallel, adjacently disposed indoor lead members to frictionally maintain said antenna element in a set position after being manually oriented thereto, and

(D) said adjustable locking means having a second portion for frictionally engaging outdoor lead members when said indoor lead members are disengaged from said bracket.

2. An antenna and connector apparatus for selectively connecting an indoor antenna and an outdoor antenna to a television receiver comprising:

(A) an indoor antenna element having a wire structure with first and second parallel, adjacently disposed indoor lead members projecting therefrom,

(B) a first and a second bracket element attached to the television receiver for engaging said first and second indoor lead members and for supporting said indoor antenna element, said first and second bracket elements alternately receiving a first and a second outdoor antenna lead member,

(C) adjustable locking means on each of said first and second bracket elements, each of said locking means having a first portion for frictionally engaging one of said parallel, adjacently disposed indoor lead members and for supporting said indoor antenna element, said locking means enabling said indoor antenna element to rotate about an axis parallel to and midway between said parallel indoor lead members, and

(D) each of said locking means having a second portion for frictionally engaging one of said outdoor lead members when said indoor lead members are disengaged from said bracket elements.

3. An antenna and connector apparatus as recited in claim **2** wherein each of said first and second bracket elements comprises:

(A) first and second substantially parallel leg portions with a transverse portion formed integrally with adjacent ends of said first and second leg portions,

(B) a plurality of locking tabs on each of said leg portions for engaging both sides of a wall defining a locking slot on the television receiver for securing said bracket element to the television set when said leg portions are inserted into said locking slot, and

(C) an indoor lead receiving aperture through each of said leg portions for receiving one of said indoor lead members on said indoor antenna element whereby said first and second bracket elements support said indoor antenna element on the television receiver for rotation about an axis passing between said bracket elements when said indoor lead members are inserted into said lead receiving apertures in each of said bracket elements.

4. An antenna and connector apparatus as recited in claim **3** wherein said adjustable engagement means on each of said first and second bracket elements comprises:

(A) a threaded aperture through said transverse portion having an axis substantially perpendicular to the common axis of said indoor lead receiving apertures and

(B) a locking member having an extended threaded shank portion for threading through said threaded aperture and an enlarged head portion whereby the tip of said shank portion is frictionally engageable with one of said indoor lead members when said indoor antenna element is mounted in said bracket element, and said enlarged head portion is frictionally engageable with one of said outdoor lead members only when said indoor antenna element is withdrawn from said bracket element.

No references cited.

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