

[72] Inventors Eric Winston  
Melrose Park;  
Donald H. Rogers, Ivyland; Joseph  
Oprysko, Philadelphia, all of Pa.  
[21] Appl. No. 36,359  
[22] Filed May 11, 1970  
[45] Patented Nov. 23, 1971  
[73] Assignee Jerrold Electronics Corporation  
Hatboro, Pa.

1,818,352 8/1931 Randles..... 339/122  
Primary Examiner—Richard E. Moore  
Attorney—Sandoe, Hopgood and Calimafde

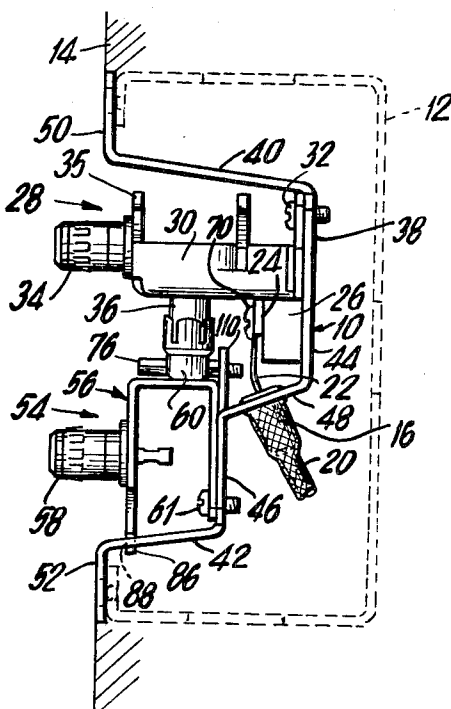
[54] **MULTIPURPOSE RF WALL TAP**  
8 Claims, 10 Drawing Figs.

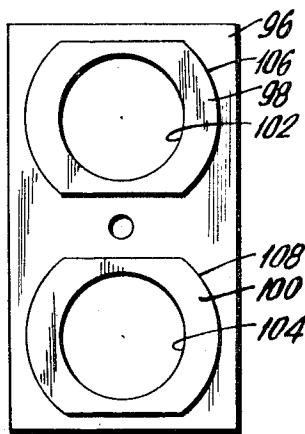
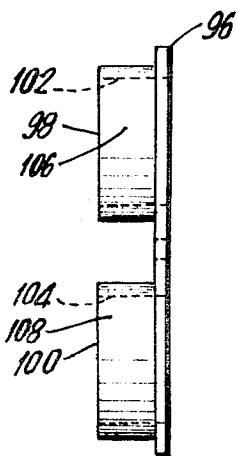
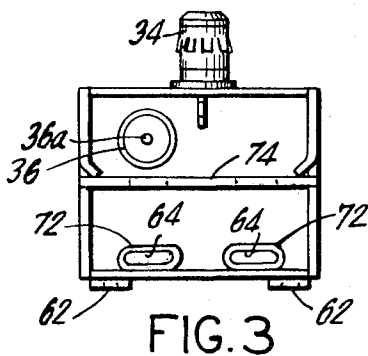
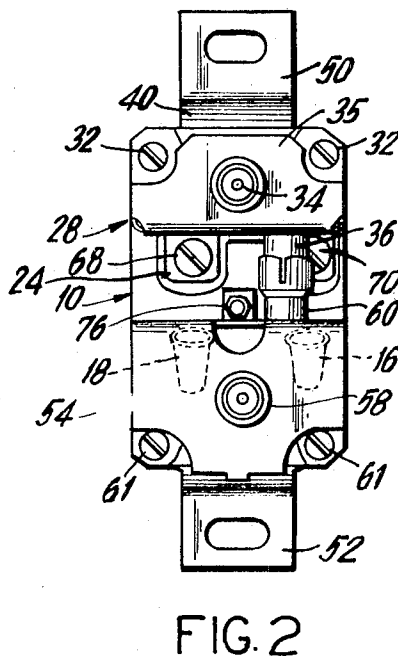
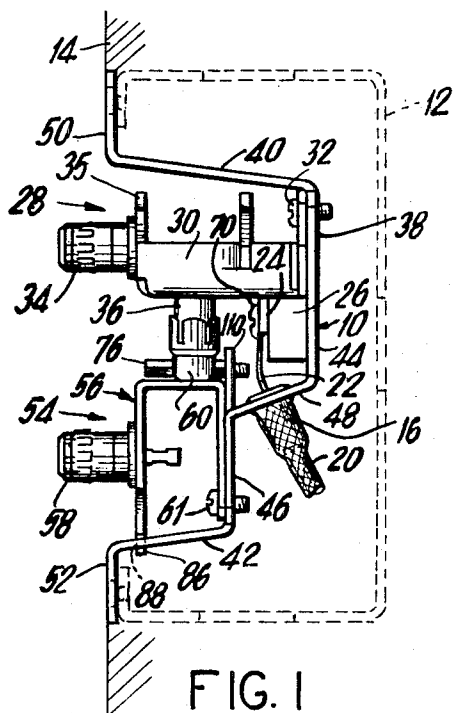
[52] U.S. Cl..... 339/121,  
339/122, 339/177  
[51] Int. Cl..... H01r 13/60  
[50] Field of Search..... 339/121,  
122, 147, 177, 99

[56] **References Cited**  
**UNITED STATES PATENTS**

2,003,948 6/1935 Mess ..... 339/177 E X

**ABSTRACT:** A multipurpose wall tap for use with CATV and MATV installations or the like, having a mounting frame which fits into a standard electrical outlet box. Affixed to the frame is a primary television signal module, including the required circuitry to receive the television signal from the lead-in cable, and a coaxial jack for connection to a television set antenna lead. One or more of a plurality of different auxiliary modules may be selectively installed on the mounting frame and connected to the primary TV module. Circuitry within these auxiliary modules converts the cable signal for application to a variety of equipments and associated leads, such as a coaxial TV antenna lead, a twin wire TV antenna lead, or a single wire FM antenna lead. A cover plate protects the jacks and terminals extending from the modules, and provides the entire assembly with the appearance of a conventional electrical outlet.

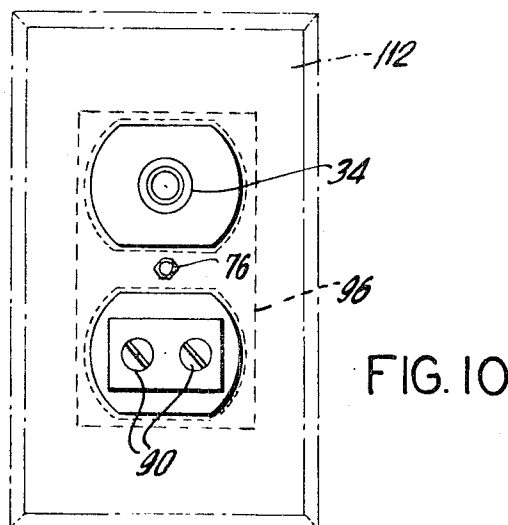
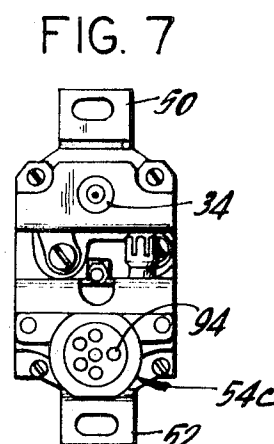
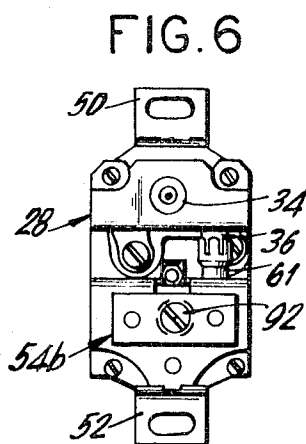
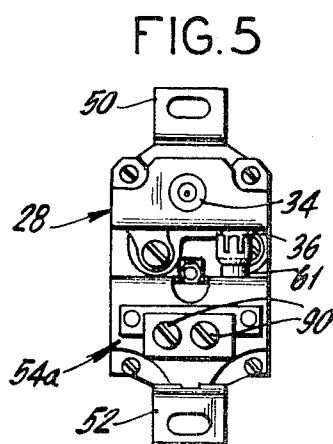
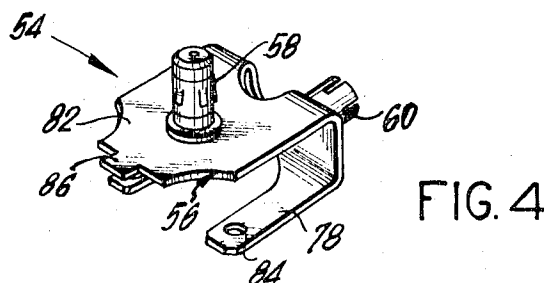




INVENTORS  
ERIC WINSTON  
DONALD H. ROGERS  
JOSEPH OPRYSKO

BY

*Sandoz, Hopgood & Calmicheff*  
ATTORNEYS



INVENTORS  
ERIC WINSTON  
DONALD H. ROGERS  
BY JOSEPH OPRYSKO  
*Sandoz, Hoppwood & Celinafide*  
ATTORNEYS

## MULTIPURPOSE RF WALL TAP

This invention relates to apparatus for adapting a standard household electrical wall outlet box to provide a convenient terminus for receiving community antenna television (CATV) input signals.

In many areas located remote from a commercial television transmitter CATV systems have been provided to bring television into the homes of residents in those areas who would otherwise not be able to receive satisfactory reception of television signals. Since the development of CATV there has long been a need for a convenient and reliable unit for installation in the home for connection to the CATV system lead-in conductor. Such a unit for optimum utility is preferably easy to install, and should also be adaptable for use with other types of input signal conductors such as FM leads, and twin wire as opposed to coaxial TV leads.

It is an objective of this invention to provide a multipurpose RF wall tap that will fit into a standard electrical outlet.

It is another objective of this invention to provide a housing and a variety of signal adapting modules which fit therein, which modules are adapted for connection to signal-carrying leads of a variety of receiving equipment.

Another objective of this invention is to provide a multipurpose tap housing that can be installed by an electrician.

The invention is comprised of a mounting frame or bracket, adapted for installation within a standard electrical outlet box. Cone-shaped bushings extend from the mounting frame, for coaxial fit between the outer conductor and the dielectric of a signal-carrying cable, to engage and ground the outer conductor of the cable to the bracket. The bushing can be easily expanded to accommodate the larger-sized cable.

Modular components attach to the mounting frame. Each such component includes a tap or contact to which a particular type of receiver antenna lead can be connected, along with the necessary impedance-matching circuitry to couple the desired signal from the feeder line to the tap. A primary TV module connects directly to the center conductor of the feeder line and provides a primary TV tap; and includes a socket connector to which auxiliary modules may be connected. Auxiliary modules are provided with various kinds of outlet taps, for example, to enable the selective use of coaxial or twin lead TV antenna lead, FM antenna lead, or an audio jack.

In the design of the specific embodiment described herein, a two-module assembly is provided wherein the primary module is connected to the center conductor of the incoming coaxial cable and includes both a socket connector to which the secondary or auxiliary module is connected and a wall outlet tap preferably designed to receive a coaxial cable. The secondary module provides a second wall tap which can be designed with various configurations to provide connection to various of antenna leads.

An insulating saddle is placed over the assembly to mask the components thereof, exposing only the outlet contacts. Its outer face is configured to receive the cover for a standard two-plug electrical wall outlet.

The invention has the advantage of offering to the installing contractor a single standard bracket which can be adapted for connection to a variety of TV and radio antenna leads, and which can be easily installed in an ordinary electrical outlet box without being first connected to the feeder cable.

Another advantage of the invention is that the desired modules can be installed at any time after the initial installation of the mounting bracket. The modules can, of course, be changed at any time thus making it a simple matter for a user to convert, for example, from a 300-ohm twin-wire TV tap to a 75-ohm quick-disconnect coaxial tap, or to install one of the other auxiliary modules. All this can be accomplished without disturbing the feeder lines.

The wall tap frame can be installed during the construction of the building, thereby saving time and expense of later installation. Installation errors may be quickly and easily corrected, and customer options which may arise at a later date are easily accommodated.

Other objectives, advantages, and various further features of novelty and invention will be pointed out or will occur to those skilled in the art from a reading of the following specification in conjunction with the accompanying drawings.

FIG. 1 is a side view of an assembled RF wall tap of the invention, including a primary module and an auxiliary module;

FIG. 2 is a front view of the wall tap of FIG. 1;

FIG. 3 is an interior view of the primary module of the wall tap of FIG. 1;

FIG. 4 is a perspective view of the secondary module of the wall tap of FIG. 1;

FIG. 5, 6 and 7 are views similar to FIG. 2, illustrating outlet configurations for different secondary modules for use in the wall tap of the invention;

FIGS. 8 and 9 are side and front views respectively of a cover designed to surround the wall tap and simulate the configuration of a standard two-plug outlet; and

FIG. 10 is a front view of the assembled multipurpose wall tap with the outlet cover in place.

FIGURES 1 and 2 illustrate one embodiment of the RF wall tap according to the invention as installed. The entire assembly comprising the tap is mounted upon a bracket 10 which is of such size that it may be mounted within a standard electrical outlet box 12, set in a wall 14. Conical bushings 16 and 18 (FIG. 2) extend outwardly from bracket 10 and securely engage a coaxial feeder cable 20.

The center conductor 22 of coaxial cable 20 is connected to an insulated screw-type terminal 24 insulated from bracket 10 by means of an insulator block 26. Bushing 16 penetrates coaxial cable 20 between its outer conductor, or sheath, and the dielectric to thereby connect the sheath to ground at bracket 10.

A primary TV module generally designated 28 including a housing 30 is secured to bracket 10 such as by screws 32. The electrical circuitry of the primary TV module 28 is not shown but is contained within housing 30 and is connected to the center conductor 22 of feeder cable 20 at terminal 24. A coaxial jack 34 extends outwardly from the outer wall 35 of primary TV module 28 and beyond the plane of wall 14 into which the tap is installed. Jack 34 provides a convenient coaxial terminal for connection to a TV set or other appropriate end use apparatus.

Extending downwardly from housing 30 is a coaxial fitting 36, to which various different auxiliary modules may be selectively connected as will hereinafter be described.

Mounting bracket 10 is preferably constructed from a single piece of conductive material formed into a central section 38, an upper section 40 and a lower section 42. Section 100 is in turn stepped, to define two parallel platforms 44 and 46 connected by a sloping section 48 which forms a slightly obtuse angle with said platforms. The two conical bushings 16 and 18 are mounted on section 48. The orientation of section 48 causes bushings 16 and 18 to angle slightly away from section 38 to facilitate attachment of the feeder cable thereto. Feet 50 and 52 extend respectively from end sections 40 and 42 to provide means for securing bracket 10 to outlet box 12.

An auxiliary module generally designated 54 is mounted on bracket and electrically connected to the primary module 28. Module 54 comprises a mounting frame 56 upon which are mounted a coaxial outlet tap 58 and a coaxial auxiliary tap 60 which receives the coaxial fitting 36 of module 28. In this manner coaxial tap 58 is connected to fitting 36 and thus to feeder cable 20. The tap of the invention thus provides two different coaxial taps 34 and 58 available for use with external equipment. Frame 56 is secured to bracket 10 such as by fasteners 61.

FIGURE 3 is an interior view of the primary TV module 28.

Two feet 62 extend from the bottom of the housing and are engaged by screws 32 (see FIGURE 1) which thread into bracket 10. Two apertures 64 and 66 in the back of housing 30 provide access for the circuitry therein to contacts 68 and 70 of terminal 24. Tubular plastic insulating inserts 72 extend through apertures 64 and 66 to protect the circuitry from

grounding to housing 30. An RF shield 74 in the form of a metallic shelf is disposed across the center section of housing 30. Radio Frequency shield 74 functions in connection with the circuitry contained within housing 30 which is not the subject of this application, and will thus not be further discussed herein. Coaxial jack 34 has its outer housing grounded to modular housing 30, with its central contact extending into the module housing for connection to the circuitry therein.

The outer conductor of female section of fitting 36 is grounded to the modular housing, and its inner center contact 36a extends into module 28 for connection to the circuitry therein. Fitting 36 is offset to one side of the center of modular housing 30 to avoid interference with a connecting post 76 which functions to retain a plastic cover over the wall tap as will be described below.

FIGURE 4 is a perspective of a typical auxiliary module such as 54 in FIG. 1. The auxiliary module has a substantially U-shaped frame 56 of conductive material, which includes a base 78. The frame 56 is secured to bracket 10 by screws 60 which pass through holes 84 in base 78; and by a tab 86 which extends from the end of platform 82 and fits into slot 88 in end piece 42 (see FIGURE 1).

The male section of jack 60 is attached to wall 80 in position to engage female fitting 36 when frame 56 is mounted. The outer housing of jack 60 is securely attached and grounded to wall 80. The inner probe contact of jack 60 (not shown) extends through frame 56 and is connected to the circuitry of the auxiliary module disposed therein. The outlet connection, jack, or tap 58 of the auxiliary module 54 is mounted upon platform 56, and is electrically connected to module circuitry (not shown) mounted within the module frame.

FIGURES 5, 6 and 7 are front views of three alternate configurations of the tap of the invention illustrating different auxiliary modules which may be installed in the above-described tap at the option of the user. In each figure, the auxiliary module is connected electrically to primary module 12 as previously described.

In FIGURE 5 the auxiliary module 54a is configured to accept a 300-ohm twin-wire TV antenna lead. In this embodiment twin screw contacts 90 for connection to a 300-ohm antenna wire are mounted upon the outer face of the auxiliary module and appropriate circuitry is mounted therein to deliver the TV signal received at feed cable 20 to contacts 90.

In FIGURE 6 the auxiliary module 54b is configured to provide a tap for an AM or FM radio antenna lead. In this instance a single screw contact 92 is mounted upon the outer face of the auxiliary module for connection to a single-wire antenna lead.

In FIGURE 7 auxiliary module 54c is configured to accept a plug 94 associated with circuitry to supply audio signals exclusively to the external equipment.

Connectors 90, 92 and 94 respectively illustrated in the typical auxiliary module of 5, 6 and 7 are of types well known to the art and therefore are not discussed in detail.

FIGS. 8 and 9 show a specially constructed plastic piece 96 which is adopted to surround the primary and secondary outlet jacks or taps and also provides a configuration similar to a standard two-plug electrical wall outlet so that a standard outlet cover plate may be used with the wall tap of the invention. The insulating piece 96 is shown to have raised shoulder portions 98 and 100 with openings formed therein. The inner peripheries 102 and 104 of these openings respectively closely surround the primary and secondary outlet taps which protrude through the openings in the assembly. The outer peripheries 106 and 108 of the raised shoulder portions are formed to coincide with the shape of the typical two-plug wall socket so that the standard outlet box cover plate fits snugly

over the assembly. Insulating piece 96 is preferably held in place by screws which pass into the connecting post 76, mounted on a lug 110 projecting from bracket 10 (FIG. 1).

FIG. 10 shows the entire assembly with a cover plate 112 in position over the insulating piece 98. FIG. 10 also illustrates the view a user would have when looking at the assembled wall tap of the invention. In the embodiment shown a coaxial outlet 34 and a twin lead secondary outlet 90 as in FIG. 5 are provided for the convenience of the user.

In practice, the bracket absent all modules may be installed in a standard electrical outlet box within a building by non-technical personnel, and distribution cable installed during construction of the building. At some later time, a technician can connect the feeder cable to the wall tap and insert the desired combination of modular adapters.

While the principles of the invention have been described in connection with the above specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention.

We claim:

1. A multipurpose modular wall tap to facilitate connection between a cable feeder line of a community antenna system or the like and receiver antenna leads, said wall tap comprising a mounting bracket shaped to fit within a common household electrical outlet box, terminal means attached to said bracket to receive the end of said feeder line, primary module means mounted upon said bracket including a housing primary and auxiliary outlet connectors mounted on said housing, and first electrical circuit means within said housing for coupling said terminal means to said outlet connectors; and secondary module means mounted upon said bracket, said secondary module means including a frame, a secondary outlet connector and an auxiliary input connector mounted on said frame, said secondary module being connected to said primary module by a mating engagement of said auxiliary outlet and input connectors, and second electrical circuit means in said frame for coupling said secondary outlet connector to said input auxiliary connector, said primary and secondary outlet connectors being located within their respective modules so as to extend outwardly from the outlet box through the vertical plane of the wall.

2. The wall tap of claim 1, further comprising insulating means surrounding said primary and secondary outlet connectors mounted upon said bracket, and having a raised portion periphery shaped in the form of household electrical two-plug wall socket to provide a configuration simulating the socket.

3. The wall tap of claim 1, in which said secondary outlet connector is a coaxial connector.

4. The wall tap of claim 1, in which said secondary outlet connector comprises twin screw-type contacts for transmitting TV or FM signals.

5. The wall tap of claim 1, in which said secondary module outlet connector comprises a single screw-type contact for transmitting AM or FM radio signals.

6. The wall tap of claim 1, in which said secondary outlet connector comprises a socket for supplying audio signals.

7. The wall tap of claim 1, in which said primary and secondary auxiliary connectors are coaxial connectors, and said primary outlet connector is also a coaxial connector.

8. The wall tap of claim 7, in which said mounting bracket comprises a first section carrying said primary module means, a second section displaced from and substantially parallel to said first section and carrying said secondary module means, means for coupling to the feeder line, and a third sloping section extending between said first and second sections and carrying said feeder line coupling means.

\* \* \* \* \*