United States Patent

[11] **3,610,810**

[72] Inventor **Charles W. Fribley, Jr.**
Canada Road, Painted Post, N.Y. 14870

[21] Appl. No. **47,365**
[22] Filed **June 18, 1970**
[45] Patented **Oct. 5, 1971**

[54] **TERMINAL BOX AND SERVICE CABLE INVENTORY SYSTEMS FOR CABLE TELEVISION SERVICE AND THE LIKE**
12 Claims, 14 Drawing Figs.

[52] **U.S. Cl.** ..... **174/59,** 317/118, 339/113 B
[51] **Int. Cl.** **H02g 3/16**
[50] **Field of Search** ..... 174/44, 52 R, 59, 60; 317/118, 119, 120, 122; 339/113 B, 150 T, 198 R, 198 J

[56] **References Cited**

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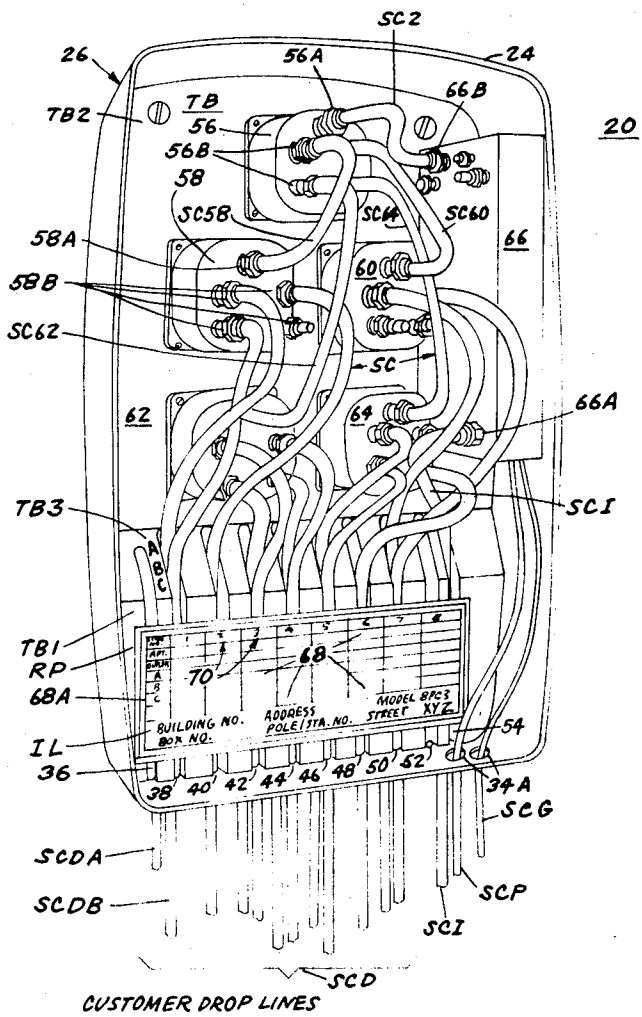
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Primary Examiner—Laramie E. Askin
Attorney—Birch and Birch

ABSTRACT: A terminal box is provided for orderly distribution of TV coaxial cable with coupling connectors to multiple output cable connectors known in the art as splitters which are each connectable and disconnectable for different locations, such as to serve positively designated apartments in large or small buildings. The splitters are mounted in a terminal box on a suitable terminal board in predetermined spaced positions and each service cable lead to and from such splitters is positively identified for each apartment and for each location in each apartment when one or more service outlets are desired for an apartment. The terminal box is marked and formed with openings for each cable to aid in the in-field inventory and installation of the respective service cable drops and is uniquely adapted to be placed in readily accessible locations known to the installer, effecting substantial savings in time and labor.



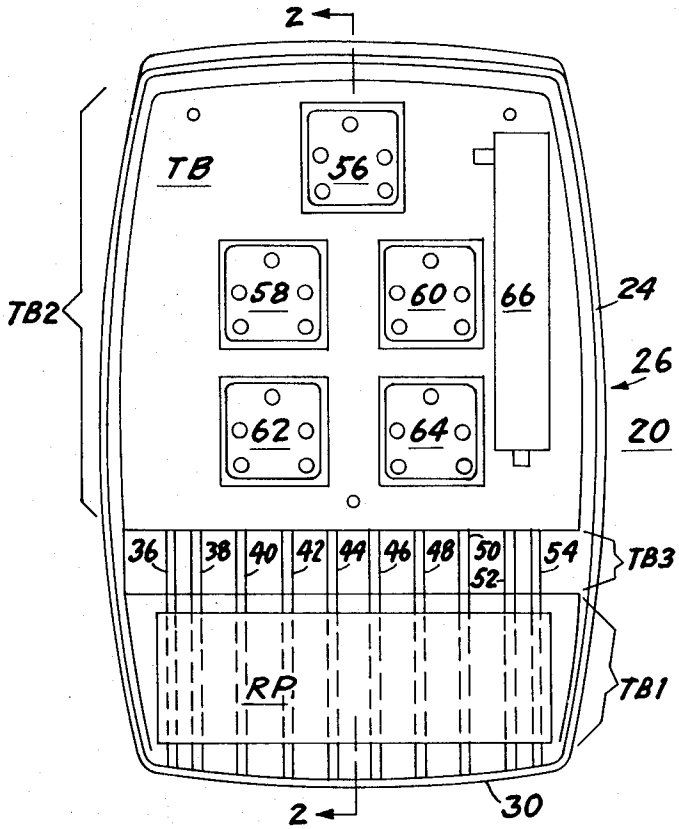


Fig. 1

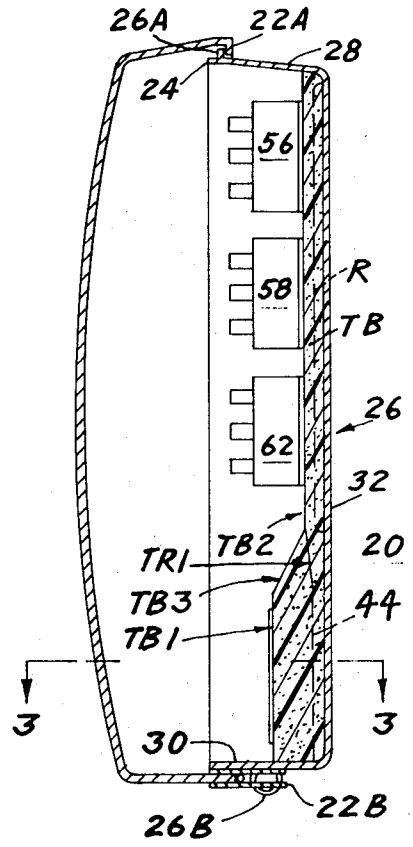


Fig. 2

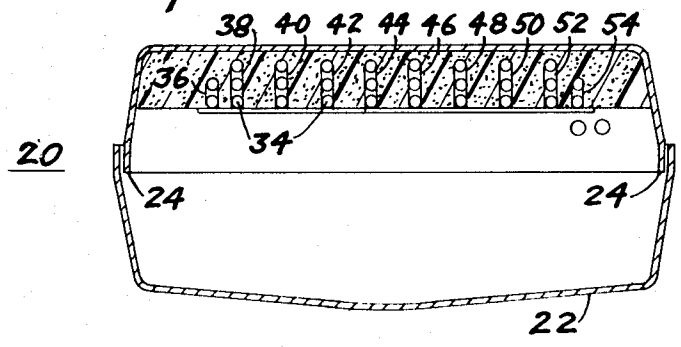


Fig. 3

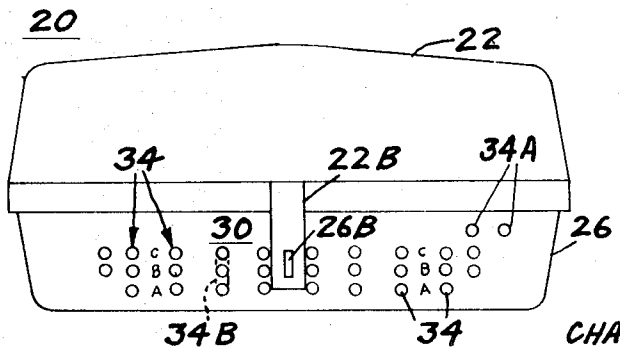


Fig. 4

INVENTOR

CHARLES WARREN FRIBLEY, JR.

BY

Birch & Birch

ATTORNEY

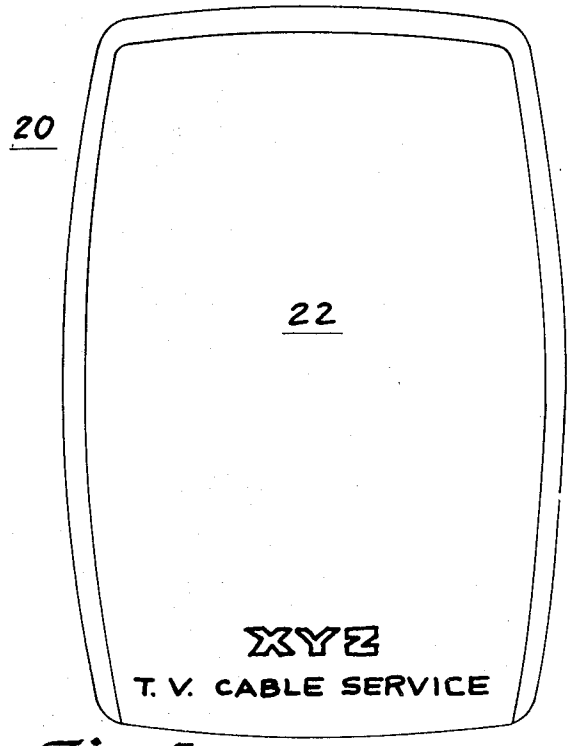


Fig. 5

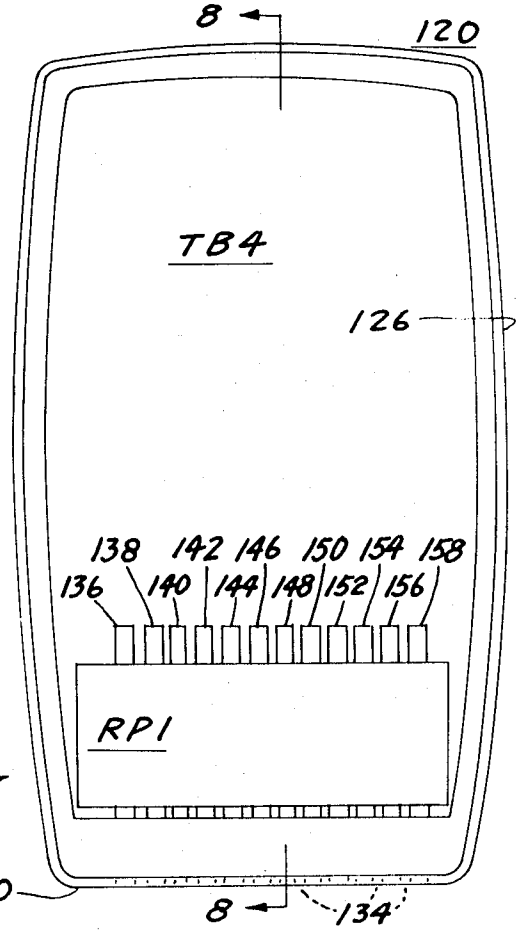


Fig. 7

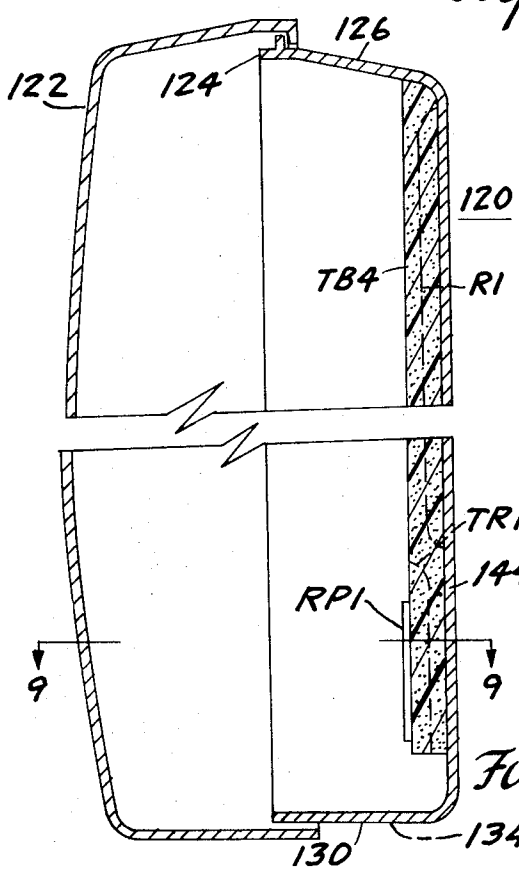


Fig. 8

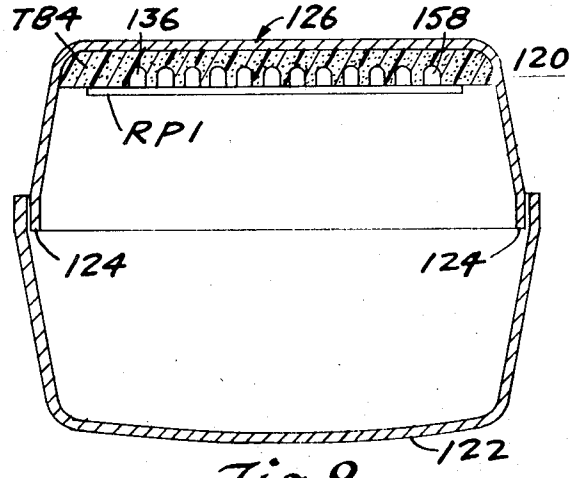


Fig. 9

INVENTOR
CHARLES WARREN FRIBLEY, JR

BY Birch & Birch
ATTORNEY

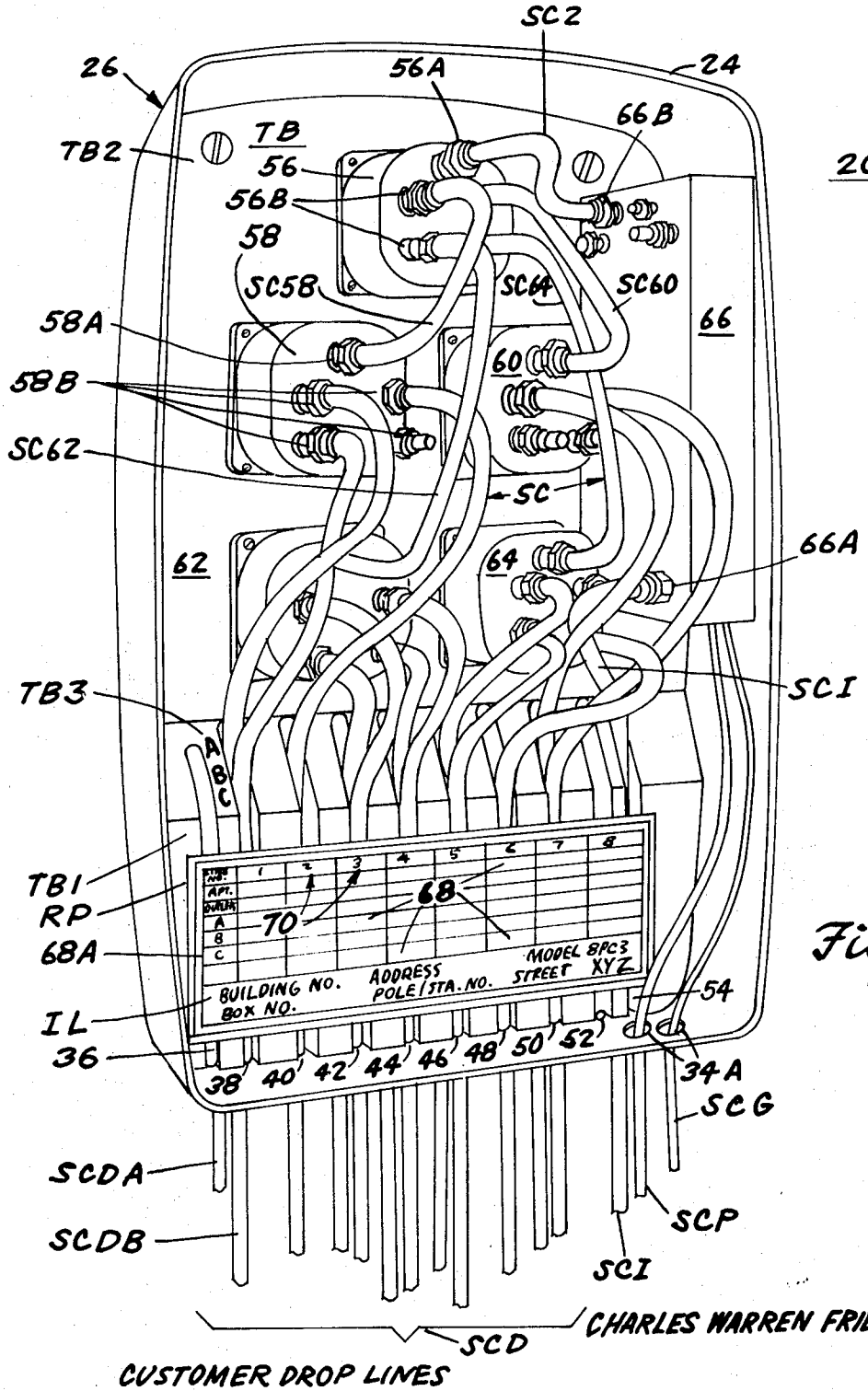


Fig. 6

INVENTOR
CHARLES WARREN FRIBLEY, JR.

BY Birch & Birch
ATTORNEY

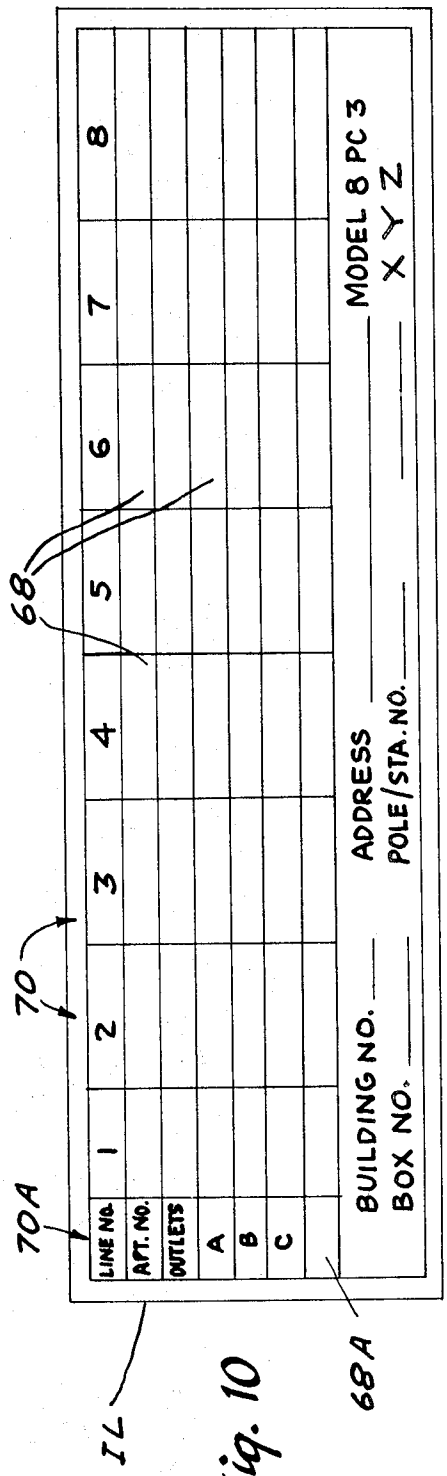


Fig. 10

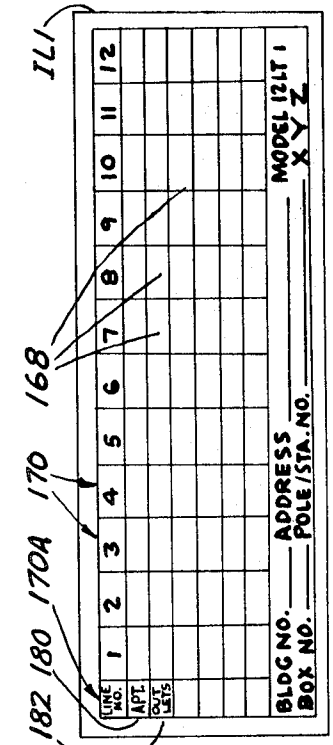


Fig. 12

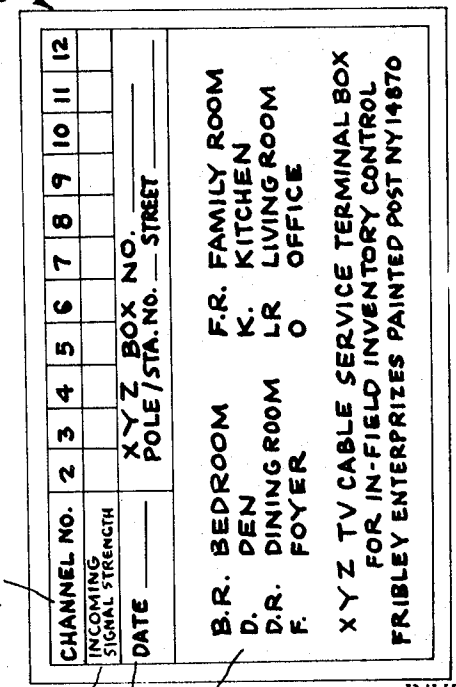
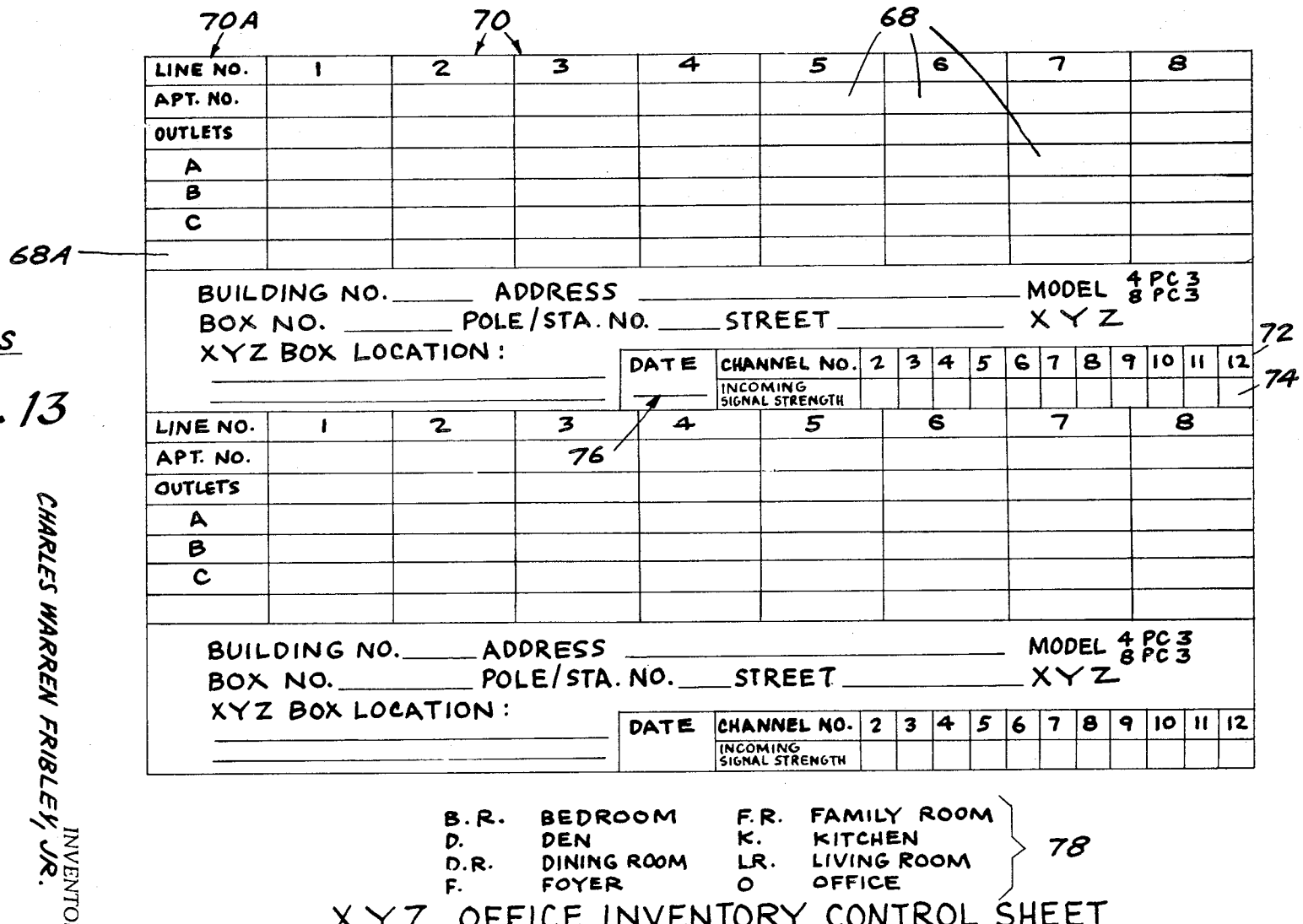


Fig. 11

INVENTOR
CHARLES WARREN FRIBLEY, JR.

BY Birch & Birch
ATTORNEY



XYZ OFFICE INVENTORY CONTROL SHEET

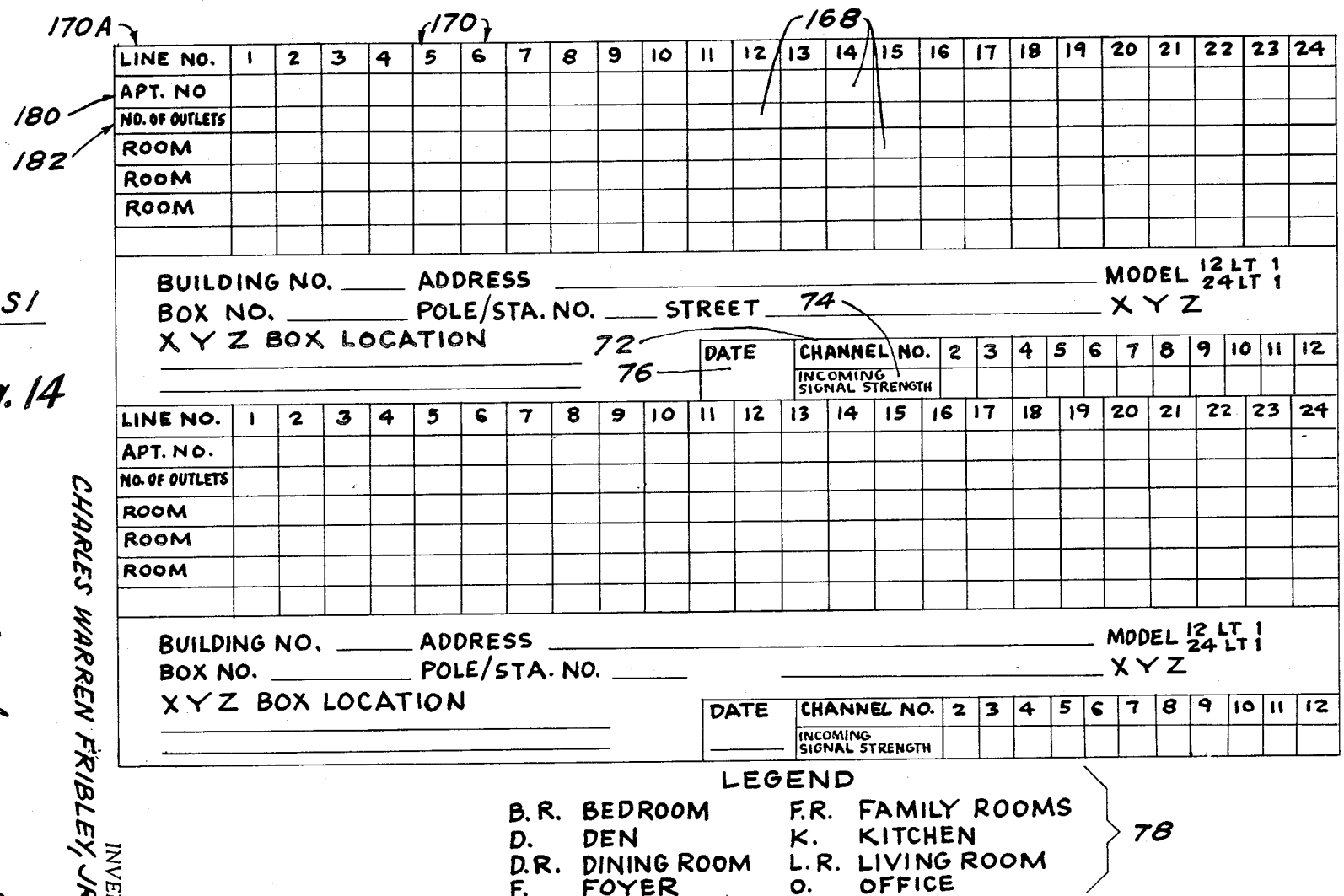
ICS

Fig. 13

BY

Bird & Bird
ATTORNEY

CHARLES WARREN FRIBLEY, JR.
INVENTOR



ICS1

Fig. 14

X Y Z OFFICE INVENTORY CONTROL SHEET

INVENTOR
CHARLES WARREN FRIBLEY, JR.

BY
Birch & Birch
ATTORNEY

TERMINAL BOX AND SERVICE CABLE INVENTORY SYSTEMS FOR CABLE TELEVISION SERVICE AND THE LIKE

With the advent of coaxial cable television service and particularly in apartment developments, the need for neat and orderly arrangements of the subscriber service cables has been long felt in the art. This is particularly important when a subscriber may want only one outlet at his first order for service, but may later request additional service connections to different locations within his residence.

Accordingly, an important object of the present invention is to provide a novel terminal box system with each service drop identified, whereby when an apartment or the like is prewired for a first single outlet installation the service drop can be immediately identified at the terminal box location to facilitate the installation of additional service drops and outlets, as the customer requests such service, with a minimum of time and labor.

Another object is to provide a terminal box formed with rear, side, top and bottom walls in which is conformably mounted a terminal board of suitable material, such as plastic formed with character identified cable slots or grooves therein, the latter coacting with apertures formed in rows in the bottom wall to identify the service drops to the various locations within an apartment building.

Yet another object is to provide means for accommodation of at least another cable outlet for each department by forming the spaced respective rows of apertures into an elongated slot for such additional cable when needed.

Still another object is to provide for saving in space and cable jumbling by providing each apartment unit with loop through terminal boards, where use in apartment houses involving extreme congestion in wiring makes it more feasible to bring back only one cable from each apartment to the terminal box rather than providing a plurality of cables for respective ones of a like plurality of individual outlets in one apartment.

A more general object is to provide a terminal box of waterproof construction with a pivoted cover and security lock means for simplified in-the-field connections with readily visible identifications for each and every service drop to each and every apartment.

Yet another object is to provide a novel system of record control for cable TV service terminal boxes and the like for apartment buildings by providing records and legends in such terminal boxes to indicate room locations in individual apartments for in-field inventory control and by providing related reference records in the main office of an apartment building and of the cable TV service organization.

Other objects and advantages will become apparent in the course of the following detailed description, taken in connection with the accompany drawings wherein:

FIG. 1 is a front view of the present invention with the front cover removed showing the terminal board therein, the location of the cable splitter devices on the terminal board and the identified openings, grooves and mounting areas for the service outlet cables from the splitter devices.

FIG. 2 is a side vertical cross section view of FIG. 1 taken on line 2—2;

FIG. 3 is a transverse horizontal cross section view on line 3—3 of FIG. 2;

FIG. 4 is a bottom view of the terminal box in elevation with the cover applied and latched to the bottom wall of the box;

FIG. 5 is a front view of the terminal box cover;

FIG. 6 is a perspective with the cover removed of a terminal box of the present invention with illustrative wiring as used in actual practice;

FIG. 7 is a front view of a terminal box of the present invention, with cover removed and splitters removed, for a loop-through arrangement wherein only a single service drop or cable is connected with each service area;

FIG. 8 is a vertical section view taken along line 8—8 of FIG. 7, but with the cover in place;

FIG. 9 is a cross-sectional view of the terminal box of FIG. 8;

FIG. 10 shows a plan view of a terminal board cover plate label for designating the splitter cable connection for eight positive control apartment outlets including designations for multiple room outlets;

FIG. 11 is an inside cover label showing legends for various rooms in apartments and the like for use with terminal board cover plate labels such as that shown in FIG. 6;

FIG. 12 shows a terminal board cover plate label for a 12 outlet loop-through cable distribution inventory;

FIG. 13 shows an office inventory control sheet coordinated with the multiple service drop cover plate label of FIG. 10; and

FIG. 14 shows an office inventory control sheet coordinated with the loop-through service drop cover plate label of FIG. 12.

Referring in detail to the drawings and first with reference to FIGS. 1–5, the terminal box 20 of the present invention comprises a cover 22 lapped over the rim 24 of a terminal board retainer tray 26 formed of side and top walls 28 and a bottom wall 30 surrounding a base wall 32. The bottom wall 30 is formed with a plurality of indicia marked cable ports 34 arranged in rows for containing and identifying service cables to each apartment as hereinafter described.

The cable ports 34 may be in spaced rows and identified by letters A, B, C, as shown in FIG. 4, to indicate cable service drop connections from the terminal box to service outlets for each apartment unit to be serviced from the terminal box 20.

An additional pair of cable ports 34A are provided to receive a main signal input lead and a ground lead as will be hereinafter more fully described.

In the base of the retaining tray, coextensive with the base wall 32 thereof, is a terminal board TB of plastic foam or the like having a raised flat portion TB1 extending from the bottom end wall 30 to a demarcation line approximately one-third of the distance to the top end wall 28, a lower flat support area TB2 extending the majority of the remaining distance from the upper end wall 28 to a point of demarcation adjacent the raised flat portion TB1 thereof, and a ramp portion TB3 joining the raised flat portion TB1 with the lower flat portion TB2.

The rear face of the lower flat portion TB2 is fluted as defined by a plurality of longitudinal parallel ribs R, generally shown in FIG. 2, to conserve the needed amount of foam insulation without loss of strength in that portion of the terminal board TB.

The terminal board TB is solid in cross section over the ramp portion TB3 and raised flat portion TB1.

In this solid cross section, in alignment with the respective rows of cable ports 34, one for each such row, grooves or cable guide slots 36–38–40–42–44–46–48–50–52–54 are cut or otherwise formed, the guide slot 44 being shown in dotted lines in FIG. 2 and all of the guide slots 36–54 being shown in FIG. 3.

A plurality of cable splitter means 56–58–60–62–64 are mounted on the obverse face of the lower flat portion TB2 of the terminal board TB. The splitters 56–64 are shown in a Christmas tree configuration in the embodiment of FIGS. 1–5, but may be in any suitable arrangement depending upon the number of output service drops to be effected from the input service cable to the terminal box 20.

It should be noted at this point, that the cable guide slots 36–54, as best shown by the configuration of the guide slot 44 shown in FIG. 2, extend through the transitional and raised flat portions TB3 and TB1 of the terminal board TB to a plane lower than the obverse surface of the lower flat portion TB2. However, the guide slot 44 is not abruptly stepped down from the obverse surface of the lower flat portion TB2. It includes a transitional ramp TR1 extending from said obverse surface to the lowermost surface of the guide slot 44 see FIG. 2 to permit a smooth feed of service cables (not shown) from the cable splitters 56–64 into the guide slots 36–54, as will be hereinafter more fully described. Such a transitional ramp TR1 is included in each of the guide slots 36–54.

The raised flat portion TB1 of the terminal board TB is substantially covered over by a flat reference plate RP which is glued or otherwise affixed to the terminal board TB for the twofold purpose of closing the major portion of the cable guide slots 36–54 and for receiving field inventory labels to be hereinafter more fully described.

An amplifier module 66 is also mounted within the tray 26 on the obverse surface of lower terminal board portion TB2.

The terminal box cover 22 is made to overlap and enclose the rim 24 of the terminal board retaining tray 26 and includes a top flange member 22A (see FIG. 2) that laps over and engages a cooperating rib 26A on the adjacent overlapped surface of the tray 26 to function as a transverse hinge 22A–26A about which the cover 22 may be pivoted vertically to remove same from the retaining tray 26. The lower end wall of the cover 22 carries a lock means, such as a hasp 22B which engages over a hasp loop 26B on the retainer tray 26. This inhibits unauthorized use of the terminal box and terminal board connections, cable splitters and associated components by securely retaining the cover 22 in place on the terminal box 20.

Referring now to FIG. 6, a terminal box 20 of the type previously described with reference to FIGS. 1–5 is shown with the cover removed and a plurality of service drops or cables SC therein connected between the terminals of the amplifier module 66, the signal splitters 56–64, and out through the cable guide slots 36–54.

Specifically, a main power input cable SCP and a ground wire SCG are shown entering the input cable ports 34A and being connected to the lower end (input) of the amplifier module 66. A main signal input cable SCI extends through the cable guide slot 54 into connection with the input terminal 66A of the amplifier 66.

The output terminal 66B of the amplifier module 66 is connected by an output cable SC2 to the input terminal 56A of the first stage signal splitter 56. There are four output terminals 56B–64B and an input terminal 56A–64A on each of the splitters 56–64 shown in this configuration, as most clearly shown on the splitter 58A, one of the second stage splitters 58–64 as 58A and 58B.

The four first stage output service cables from the first stage splitter 56 are designated SC58, SC60, SC62 and SC64, respectively, designating those second stage splitters 58–64 to the input terminals 58A–64A of which these first stage output service cables are connected.

All of the remaining cables are designated as customer service drops SCD, extending from various selected output terminals 58B–64B through the cable guide slots 38–54 and thence to various apartments or rooms of subscribing customers in the building in which the terminal box 20 is located.

As an example of the indexing provided for service and maintenance men by the present invention, the two left-hand customer service drops SCDA and SCDB are shown in stacked configuration in the cable guide slot 38.

The cable guide slot 38 is code keyed to the cable ports 34 with line A (SCDA) being the bottom service cable therein and line B (SCDB) being the next highest service cable therein stacked on line A (SCDA). Provision is made for a third line C to be stacked on top of the line B (SCDB) beneath the reference plate RP in the guide slot 38.

Each cable guide slot 36–54 represents the ultimate available number of service drops for a given service area such as an apartment unit within a building serviced by the terminal box 20.

Referring jointly to FIGS. 6 and 10, in order to provide, at a glance, a complete inventory, in the field, of the cable service effected by a given terminal box 20, an inventory label IL is symmetrically positioned on the reference plate RP, such that a plurality of ledger spaces are available in vertical rows 70, the latter being of like number to the cable guide slots 36–54 in registry therewith.

Thus, each service cable drop SCD in a given guide slot 36–54 is completely identified by line number, apartment number, and subdesignation A, B and/or C for that apartment. Provision is also made for identifying at a glance the authorized (subscribed) number of outlets in any given apartment.

Referring for the moment to FIG. 4, in addition to FIGS. 6 and 10, it should be noted that the cable ports 34 may be cut through to form a single elongated slot 34B, shown in dotted lines in FIG. 4, whereby one additional service drop is made available for each apartment unit if desired.

The lowermost ledger space 68A in the master column 70A (leftmost column) on the inventory label IL is provided such that a line D may be designated where needed and those apartments having a like plurality of service drops SCD readily identified at a glance.

Furthermore, the lowermost portion of the inventory label IL provides such pertinent information to service personnel as the Building Number, Address, Model Number, Box Number, Pole/Station Number, Street and the service mark, trademark or trade name XYZ of the service company or terminal box manufacturer involved.

Thus, the inventory label IL and terminal box 20 of the present invention provide a complete in-field inventory of all service subscribed to at any given terminal box.

This permits instant verification against tampering or spurious service drop connections by unauthorized persons as well as enhancing the ability of the service man in the field to locate specific problems of subscribers by having an instant in-field inventory and identification of each and every customer service drop SCD.

This inventory control is completed by the provision of an inside cover label CL, see FIG. 11, and an office inventory control sheet ICS, see FIG. 13.

Referring first to FIG. 11, the cover label CL is shown as including compatible local address information to the inventory labels IL (FIGS. 6 and 10) as well as television channel identification 72; relative signal strengths 74 for these channels, columnated in registry with the channel identification 72; provision for dates of inspection 76; and a glossary of symbols 78 for terms to be used in identifying the locations of various service outlets in a given apartment or subscriber module.

Referring to FIG. 13, it can now be seen that the office inventory control sheet ICS, maintained at the central office of a cable television service company or the like, contains the same information as the two in-field inventory labels (inventory label IL and cover label CL) at each individual terminal box, in a multiple terminal box format.

While shown as a control sheet for tow terminal boxes, this need not be the limiting number on any given office control sheet ICS. The number may be determined by the requirements of the particular service company utilizing the system of the present invention.

The Loop-Through Terminal Box System

The foregoing system and terminal box 20 are adapted primarily for cable service systems in which more than one direct service cable drop SCD is anticipated for each apartment or service module.

There are many instances, however, where it is more feasible and often necessary to connect only one service cable drop SCD to such service modules and then use a loop-through technique within that module. This technique comprises the utilization of a single service drop to drive more than one service outlet in the service module.

Accordingly, other embodiments of the terminal box 20, inventory label IL and office inventory control sheet ICS are contemplated which comprise a loop-through cable service system under the present invention.

Referring to FIGS. 7, 8 and 9, a terminal box 120 is shown as having an overlapping cover structure 122 mounted over and enclosing the rim 124 of a terminal board retaining tray

126 in substantially identical manner to the embodiments of FIGS. 1–6.

The tray 126 includes a coextensive terminal board TB4 having a ribbed portion R1 over the major portion of the rear face thereof adjacent the bottom wall of the retainer tray 126 in substantially the identical manner as the lower flat portion TB2 of the terminal board TB of FIGS. 1–6.

The obverse face of the terminal board TB4 is all in the same plane, however, and cable guide slots 136–138–140–142–144–NP–148–150–152–154–156–158 are provided in the obverse face thereof as shown in the lowermost portions of FIGS. 7 and 8, the guide slot 144 being shown, by dashed lines, in side elevation in FIG. 8.

Since only one service cable drop is to be passed through each of the guide slots 136–158, the said slots may be made with a more abrupt transitional step or ramp TR1 than in the previous embodiments.

A reference plate RP1 is fixedly mounted over the cable guide slots 136–158 and the lowermost wall 130 of the retainer tray 126 is provided with a plurality of cable ports 134 in registry with the respective guide slots 136–158 in similar manner to the cable ports 34 of the previous embodiments.

The same hinge and hasp structure are to be provided in this embodiment for the terminal box 120 as were previously described with reference to FIGS. 1–5.

The in-field inventory of the present invention is accomplished by the inventory label IL1 of FIG. 12, the inside cover label CL of FIG. 11 and the office inventory control sheet ICS1 of FIG. 14.

Thus, the inside cover label CL is identical for both embodiments.

Referring to FIG. 12, the inventory label IL1 is shown as including service cable drop identifying columns 170, master column 170A and ledger spaced 168 as in he previous inventory label IL. A line 180 for identifying the service module (apartment no.) is also provided for with another space 182 for indicating the number of outlets present in each loop-through service drop.

There are a multiplicity of ledger spaces 168 below the line 182 designating the number of outlets so that the location of each outlet may be indicated by the key code on the inside cover label CL.

The remaining information on the lower portion of the inventory label IL1 is identical to that on he previously described inventory label IL.

Referring to FIG. 14, the office inventory control sheet ICS1 is shown as including the same information as a plurality of associated pairs of in-field inventory labels IL1 and inside cover labels CL, in similar format to the previously described office inventory control sheet ICS of FIG. 14. This information bears like designations to that previously designated in FIGS. 11 and 12.

Thus there is provided a foolproof time and work saving arrangement for cable television service to buildings, such as apartment houses, wherein an equal and balanced distribution of signal is made to every apartment outlet and which provides an orderly and easily visible inventory, in the field, of the one or more service cable drops to each and every apartment or service module.

Also, because the service terminal box is located in accessible locations, the installer may make connections or disconnections without the necessity to climb poles or to electrically trace out drops at the splice box.

Without further description it is believed that the advantages of the present invention over prior cable splicing systems are readily apparent.

What is claimed is:

1. For use in cable television service and the like, terminal box means providing optimum organization and inventory of multiple cable service drops effected through signal splitters from a signal input cable, comprising:

a terminal board of insulating material;

a tray-shaped receptacle for said terminal board retaining said board in the bottom thereof and having upstanding side portions surrounding said terminal board;

a plurality of substantially parallel cable guide slots formed in one end of said terminal board for receiving at least a like plurality of service cables therein;

a like plurality of cable ports defined in one end wall of said receptacle adjacent to and in registry with respective ones of said guide slots providing passage of service cables in and out of said receptacle;

a cover plate secured to said terminal board over a substantial portion of all of said guide slots and having a substantially smooth obverse surface; and

an inventory label secured to said obverse surface of said cover plate identifying each guide slot and the destination of each service cable confined therein and passing through the cable port corresponding thereto.

2. The invention defined in claim 1, wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end.

3. The invention defined in claim 1, wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end; and a code legend and signal strength information label mounted internally of said cover member, said code legend being keyed to said destination identification on said inventory label.

4. The invention defined in claim 1, wherein said terminal board is of stepped cross section with said guide slots form coterminately in the raised portion of said cross section;

wherein said guide slots are shaped and proportioned to receive a plurality of service cables in a stacked configuration; and

wherein said cable ports are arranged such that a like plurality of such ports are oriented in a like stacked configuration in registry with each said guide slot.

5. The invention defined in claim 1, wherein said terminal board is of stepped cross section with said guide slots form coterminately in the raised portion of said cross section;

wherein said guide slots are shaped and proportioned to receive a plurality of service cables in a stacked configuration;

wherein said cable ports are arranged such that a like plurality of such ports are oriented in a like stacked configuration in registry with each said guide slot; and

wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end.

6. The invention defined in claim 1, wherein said terminal board is of stepped cross section with said guide slots form coterminately in the raised portion of said cross section;

wherein said guide slots are shaped and proportioned to receive a plurality of service cables in a stacked configuration;

wherein said cable ports are arranged such that a like plurality of such ports are oriented in a like stacked configuration in registry with each said guide slot;

wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end; and

a code legend and signal strength information label mounted internally of said cover member, said code legend being keyed to said destination identification on said inventory label.

7. Terminal means providing optimum organization and inventory of multiple service drop cable television service and the like comprising;

a terminal board of insulating material;

a tray-shaped receptacle for said terminal board retaining said board in the bottom thereof and having upstanding side portions surrounding said terminal board;

a plurality of substantially parallel cable guide slots formed in one end of said terminal board for receiving at least a like plurality of service cables therein;

a like plurality of cable ports defined in one end wall of said receptacle adjacent to and in registry with respective ones of said guide slots providing passage of service cables in and out of said receptacle;

a cover plate secured to said terminal board over a substantial portion of all of said guide slots and having a substantially smooth obverse surface;

an inventory label secured to said obverse surface of said cover plate identifying each guide slot and the destination of each service cable confined therein and passing through the cable port corresponding thereto;

a main input signal cable extending through one of said cable ports into said receptacle;

at least one signal splitter means having an input terminal, connected to the end of said main signal cable, and a plurality of output terminals;

said signal splitter being mounted on the obverse surface of said terminal board adjacent said cable guide slots; and

a plurality of service cable drops connected at one end to respective output terminals of said signal splitter means and passing through said guide slots and said cable ports, beneath said cover plate and inventory label to the service destination indicated on said inventory label.

8. The invention defined in claim **7**, wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end.

9. The invention defined in claim **7**, wherein said terminal box further includes an overlapping cover member hinged at one end to said receptacle and latched thereto at its other end; and a code legend and signal strength information label mounted internally of said cover member, said code legend being keyed to said destination identification on said inventory label.

10. The invention defined in claim **7**, wherein said terminal board is of stepped cross section with said guide slots form coterminately in the raised portion of said cross section;

wherein said guide slots are shaped and proportioned to receive a plurality of service cables in stacked configuration; and

wherein said cable ports are arranged such that a like plurality of such ports are oriented in a like stacked configuration in registry with each said guide slot.

11. The invention defined in claim **10**, wherein said terminal board includes a ramp surface between the stepped portions, said surface bearing indicia coordinated with other indicia on said cable ports designating the order in which cables stacked in said guide slots are emitted through said cable ports.

12. The invention defined in claim **10**, wherein said terminal board includes a ramp surface between the stepped portions, said surface bearing indicia coordinated with other indicia on said cable ports designating the order in which cables stacked in said guide slots are emitted through said cable ports; and

wherein said guide slots are formed with the lowermost wall thereof lower than either obverse surface of said terminal board and include a transitional ramp surface leading from said lowermost wall to the next highest portion of said obverse surface, the latter supporting said signal splitter means;

whereby a smooth transitional feed of said service cable drops is effected from said splitter means into said guide slots.