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[54] **MODULAR HOUSING SYSTEM FOR EMERGENCY VEHICLE ACCESSORY CONTROLS**

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[52] **U.S. Cl.** **312/108,** 312/111, 312/245

[51] **Int. Cl.** **A47b 87/00,** F16b 12/00

[58] **Field of Search** ..... 312/245, 107, 111, 312/198, 140; 220/23.4–25.2, 23.8; 287/20.92 C, 20.92 O; 108/90, 158

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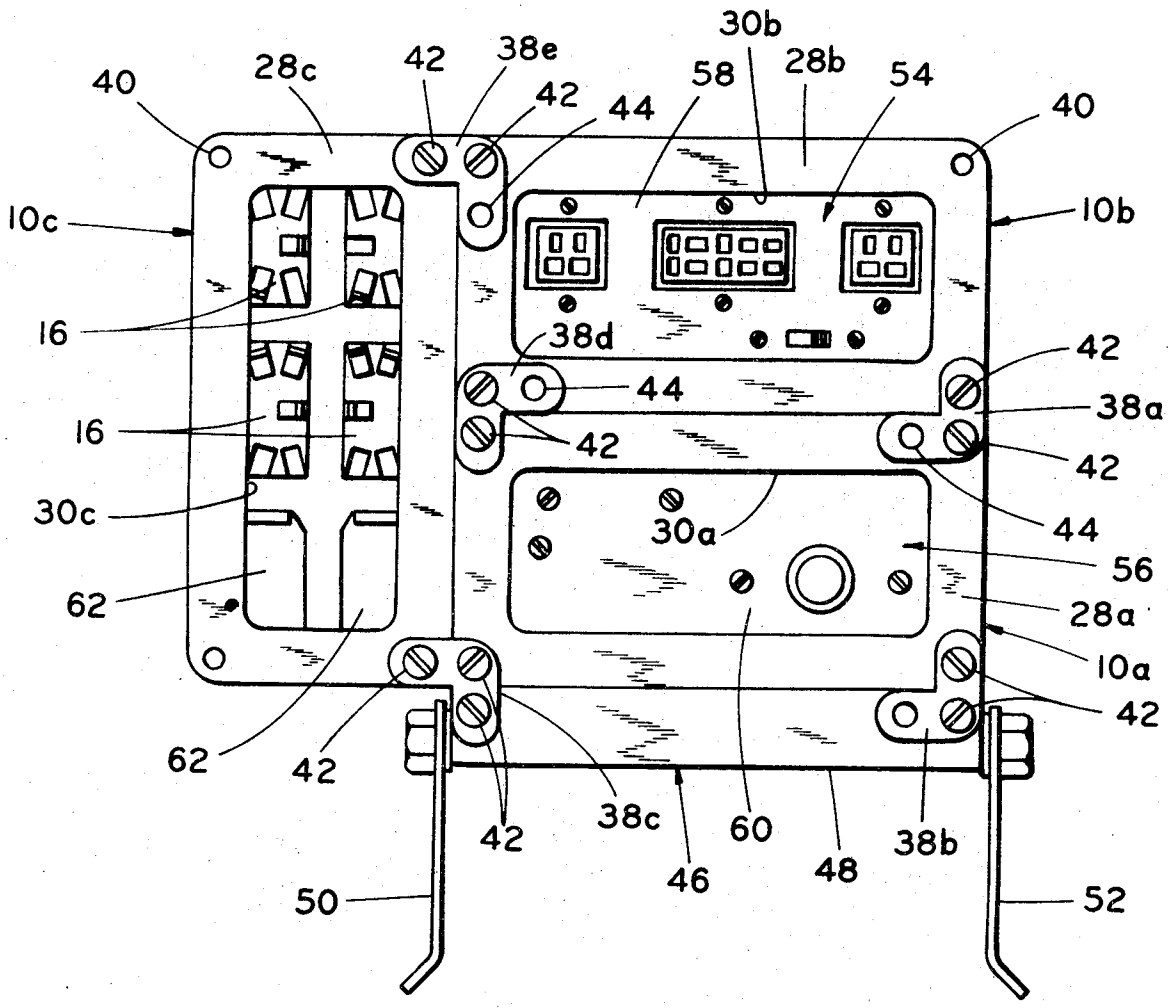
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[57] **ABSTRACT**

A modular housing system for mounting the controls for various accessory equipment used in police and other emergency vehicles comprising a plurality of modular housing members connected to one another in a selected arrangement and designed with removable front panels so that control mechanism can be removed from the front of any selected housing member for repair or replacement without disturbing the control mechanism mounted in any of the other housing members and without the necessity of disconnecting any of the housing members from one another.

7 Claims, 6 Drawing Figures



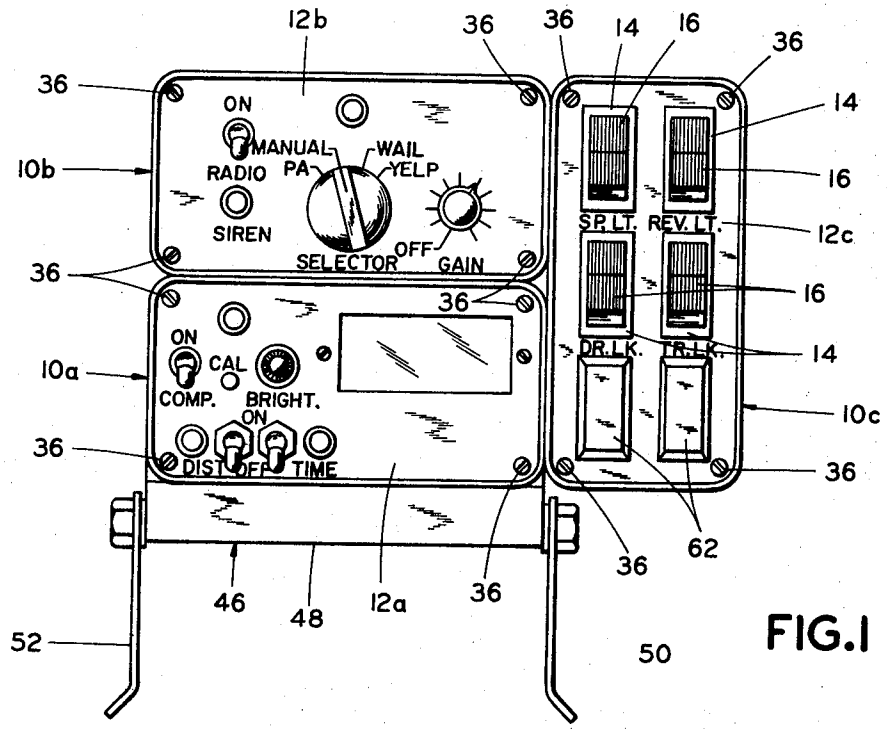


FIG.1

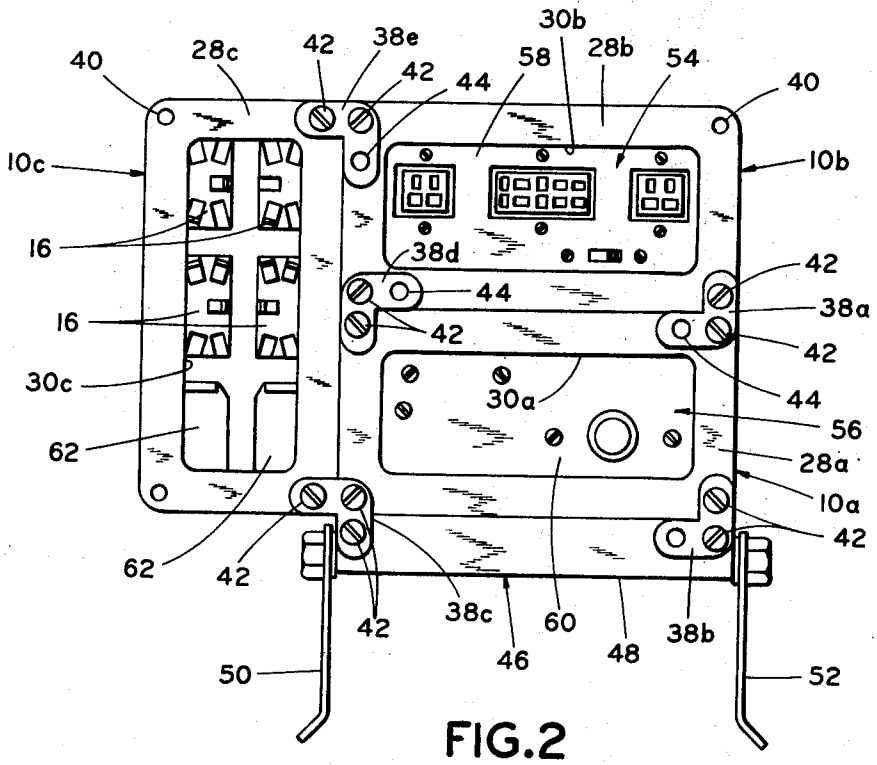


FIG.2

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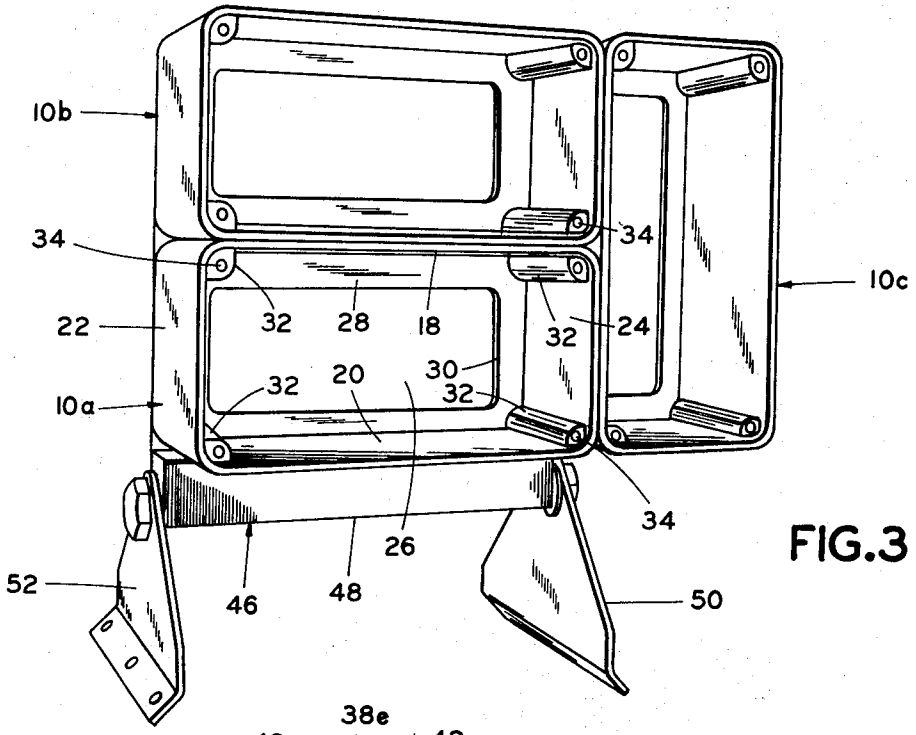


FIG.3

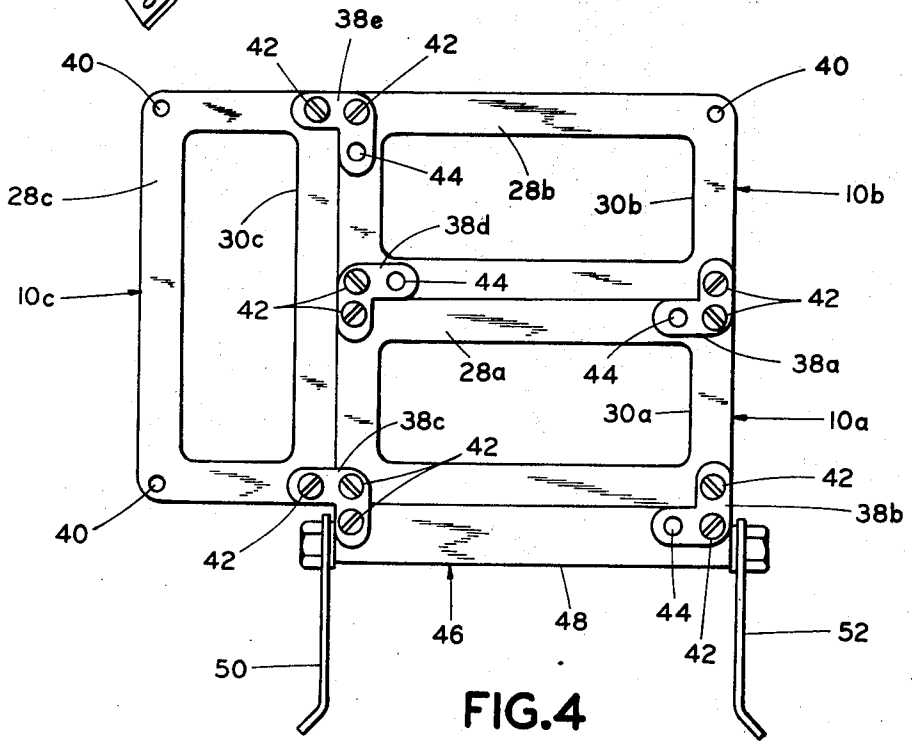


FIG.4

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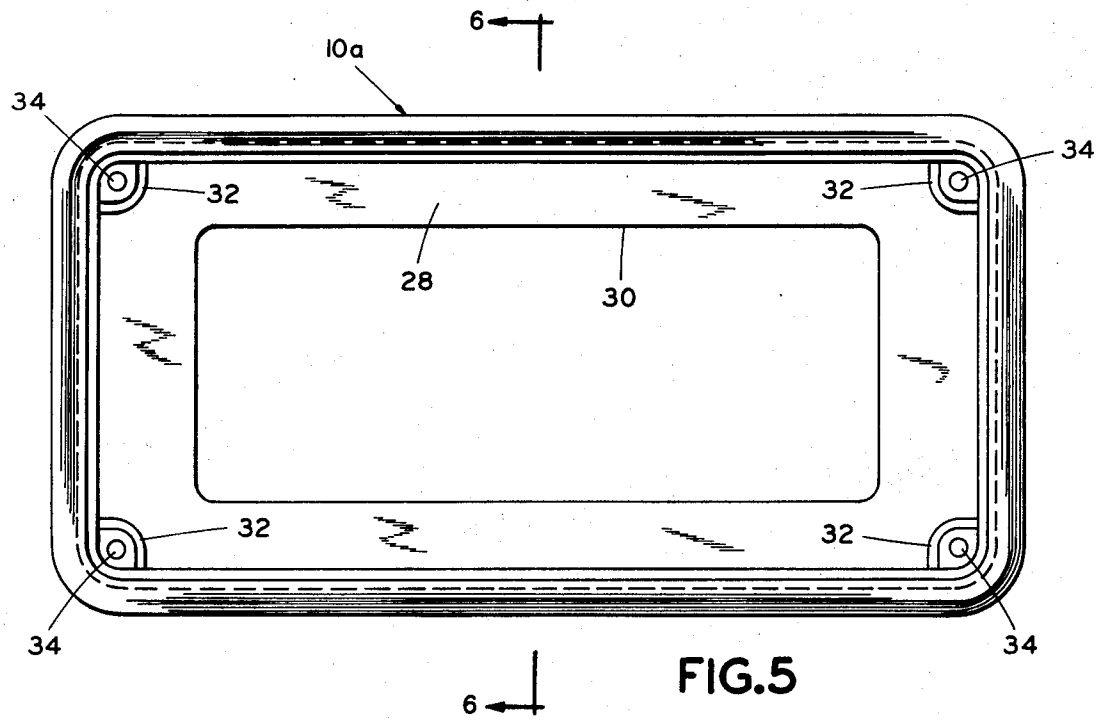


FIG.5

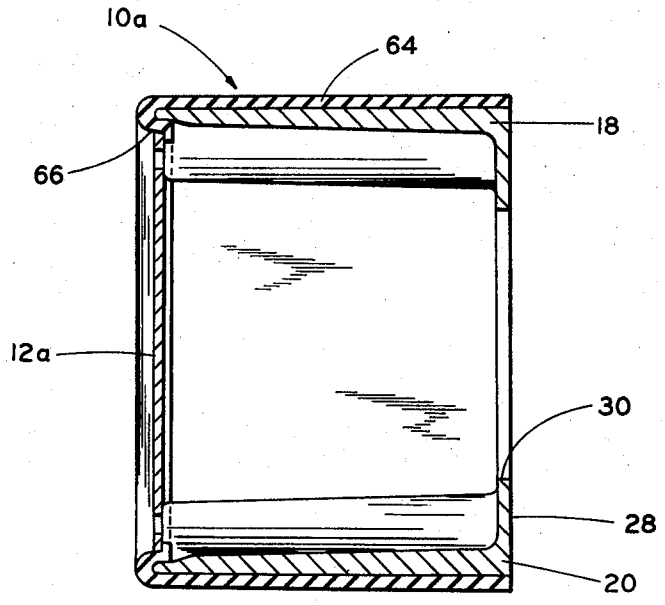


FIG.6

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MODULAR HOUSING SYSTEM FOR EMERGENCY VEHICLE ACCESSORY CONTROLS

BRIEF SUMMARY OF THE INVENTION

Police and other emergency vehicles are often equipped with a large number of accessory components with the result that a serious problem is presented with respect to the mounting of the controls for such components. The space available on or under the dash within the reach of the operator of the vehicle is often insufficient for such purposes, particularly where the controls are not arranged in an efficient and coordinated manner. Moreover, the amount of space available for such purposes and its location varies with different makes and models of vehicles so that a control housing suitable for one vehicle may be unsuitable for many others. The conventional procedure is to mount the controls for the various accessories independently of one another, in virtually any space which can be found for them, but such make-shift arrangements usually result in waste of the available space and inconvenient locating of certain of the controls.

A few attempts have been made to combine certain accessory controls in a single housing member in order to achieve greater efficiency and better utilization of the available space, but the combination control panel heretofore suggested are subject to the serious disadvantage that, if one of the controls needs to be removed for repair, the entire housing must be removed from the vehicle, thereby disabling all of the accessories operated from the common control housing, even though only one of the accessory controls is in need of repair.

It is an object of the present invention to provide a modular housing system for emergency vehicle accessory controls where a plurality of individual housing members are connected together in a selected one of several possible arrangements so as to afford optimum convenience and efficiency depending upon the controls to be mounted and the size and location of the space available therefor.

Another of my objects is to provide a modular housing system as last above-mentioned where the number of individual housing members utilized may be varied in accordance with the number of controls to be mounted whereby the capacity of the housing assembly may be varied in accordance with the needs of a particular vehicle by combining a selected number of modular components.

Still another object of the invention is to provide a modular housing system of the foregoing type where each of the housing members includes a removable front panel which permits the control mechanism mounted within the housing to be removed from the front thereof for repair or replacement without disconnecting any of the housing members from one another and without disturbing the control mechanism mounted in any of the other housings.

The foregoing and other objects and advantages of the invention will be apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of a modular housing system constructed and assembled in accordance with the present invention;

FIG. 2 is a rear elevational view of the apparatus of FIG. 1;

FIG. 3 is a perspective view of the front of a modular housing system of the type shown in FIG. 1 with the front panels and the control mechanism removed from the individual housing members;

FIG. 4 is a rear elevational view of the apparatus shown in FIG. 3;

FIG. 5 is a front elevational detail view of an individual modular housing member constructed in accordance with the present invention; and

FIG. 6 is a sectional view taken substantially along the line 6—6 of FIG. 5.

Now, in order to acquaint those skilled in the art with the manner of making and using my invention, I shall describe, in conjunction with the accompanying drawings, a preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, there is shown in FIG. 1 an assembly comprising three modular housings **10***a*, **10***b* and **10***c* which are identical to one another in size and shape and are connected together in a manner to be described hereinafter to form a unitary cluster of individual housings each for containing control mechanism for corresponding accessory equipment for a police or other emergency vehicle. For example, police vehicles are normally equipped with a two-way radio, an electronic siren, emergency lights and other special equipment, and in recent years speed computer devices have become standard equipment in a great many police vehicles.

In the embodiment shown in FIG. 1, each of the housing members **10** is generally rectangular in its configuration, and with reference to a horizontally disposed housing member such as shown at **10***a* it is of a length equal to two times its height so as to facilitate combining the same in both parallel and perpendicular arrangements. Thus, the housing **10***a* is disposed horizontally and the housing **10***b* is similarly disposed on top of the housing **10***a*, while the third housing **10***c* is vertically disposed at the ends of the two horizontal housings so as to form a combined assembly which is of overall rectangular shape and comprises two horizontal compartments and a vertical compartment each being independent of the other.

By way of example, the housing **10***a* may contain a control head for a speed computer, and there is shown a cover plate **12***a* representing a control panel or front panel for a speed computer. The housing **10***b* may for example contain a control head for an electronic siren, and there is shown a cover plate **12***b* representing a control panel or front panel for such a siren. It will be understood that either of the housings **10***a* or **10***b* could contain instead a radio control head or control mechanism for other accessory equipment of a type utilized by a police or other emergency vehicle. The housing **10***c* is provided with a cover plate **12***c* having six rectangular openings **14** punched therein for receiving six auxiliary switch members **16** which may be snapped into place in the openings provided therefor. Such auxiliary switches may be wired to control various accessories such as a spotlight, revolving light, door lock, trunk lock, etc.

FIG. 3 shows the housing members **10** with the cover plates **12** and control mechanisms removed. Since the several housings are identical to one another, only the

housing **10***a* will be described in detail. The housing **10***a* is a die-cast aluminum member having longitudinal walls **18** and **20** and transverse or vertical walls **22** and **24**, the longitudinal walls being twice the length of the vertical walls. The walls **18, 20, 22** and **24** define a rectangular compartment **26** for housing control mechanism such as the speed computer control mechanism referred to hereinabove. A rear wall **28** is integral with the walls **18, 20, 22** and **24** and has a large rectangular opening **30** formed therein to permit electrical connections to be made therethrough with the control mechanism located within the housing.

Each of the four corners of the compartment **26** has an integral boss **32** formed therein which extends for substantially the full depth of the housing and in which threaded holes **34** are provided so as to permit the front cover plate **12***a* to be secured in position as shown in FIG. **1** by four screws **36.** The bosses **32** are preferably recessed slightly from the front face of the housing **10***a* so as to provide room for the cover plate **12***a* which is designed to mount against the front ends of the bosses and be held in position by the four corner screws **36.**

FIG. **4** shows the manner in which the several modular housing members **10** are interconnected by a plurality of L-shaped clip members **38.** The rear of each of the housings **10** is formed with threaded holes **40** at each of the four corners thereof, such holes preferably being aligned with the threaded holes **34** in the front of the housing so as to extend into the bosses **32.** Consequently, by means of a plurality of screws **42** and the L-shaped clips **38,** the housings may be interconnected at their flat, coplanar rear faces by arranging the clips in a desired fashion and anchoring the same in position with the screws **42.**

Each of the L-shaped clip members **38** is provided with three holes **44,** and it will be seen from FIG. **4** that the clips are oriented depending upon the arrangement of the housings to be interconnected. Thus, with the housing **10***b* superimposed on top of the housing **10***a*, and with no housing to be connected at the right-hand ends thereof as viewed in FIG. **4,** the clips **38***a* and **38***b* are oriented so that their unused leg portions extend inwardly in non-projecting fashion. On the other hand, at the left-hand end of the housings **10***a* and **10***b* as viewed from the rear in FIG. **4,** the latter two housings must be interconnected, and in addition the vertically arranged housing **10***c* must be secured to the ends of the horizontally disposed housing members. Consequently, the clips **38***c* and **38***e* are arranged so that one leg projects outwardly to the left, and such projecting legs are anchored to corresponding ones of the corners of the vertically disposed housing **10***c* for purposes of connecting the latter to the assembly of the two horizontally disposed housing members. On the other hand, the L-shaped clip **38***d* does not function to support the housing **10***c*, and thus it is arranged with the one unused leg extending inwardly to the right in non-projecting fashion.

In the embodiment illustrated in the drawings, the clips **38***b* and **38***c* are utilized to connect the housing assembly to a mounting member **46** comprising a body portion **48** and a pair of trunnion legs **50** and **52.** Thus, the connecting clip **38***b* is arranged to interconnect the housing **10***a* with the mounting member **46,** with the unused leg of the clip extending inwardly in non-projecting fashion. The clip **38***c* is arranged to connect the housing **10***a* with the mounting member **46,** and its second leg extends outwardly to the left for connection with one corner of the vertically disposed housing **10***c*. The mounting member **46** may be utilized to mount the housing assembly on the transmission tunnel of a vehicle floor so as to be readily accessible to the operator, although various other modes of mounting the housing assembly within a vehicle are within the scope of my invention.

FIG. **2** is a view of the rear of the housing assembly similar to FIG. **4** but showing the control mechanism mounted therein. Thus, in accordance with the previously described example, a control head **54** for an electronic siren is mounted within the housing **10***b*, and a control head **56** for a speed computer is mounted within the housing **10***a*. The control heads **54** and **56** are provided with back plates **58** and **60** respectively which protect the mechanism contained within the control heads, and such back plates will abut against the back walls **28** of the corresponding housings, while the relatively large rectangular openings **30** in such back walls will afford ample room for electrical connections to be made with the control heads. In the embodiment shown in FIG. **2,** four auxiliary switches **16** are snapped into position in the front panel **12***c* of the vertically disposed housing **10***c*, the two lower switch openings **14** being closed by plug members **62** which serve to close any of the openings which are not required for the mounting of auxiliary switches.

FIGS. **5** and **6** show the die-cast aluminum housing **10***a* covered by a sheath **64** made of an elastomer such as vinyl or other suitable rubber-like material. The sheath **64** is a unitary member designed to encompass the entire outer surface of the four walls of the housing, and preferably the sheath is formed with a rectangular front lip portion as shown at **66** which is firmly secured in place by the front panel **12***a* when the latter is mounted by means of the corner screws **36.** The sheath **64** serves an important safety function in that it covers the aluminum housings with an elastomer material, and in addition it may be fabricated in simulated leather grains or other designs which enhance the appearance of the modular housing members.

It will be understood from the foregoing that a wide variety of choices are available relative to the number of housings **10** to be assembled together and the manner of arranging them with respect to one another. The number of housings utilized in a given assembly will of course depend upon the number of accessory control heads or the like to be mounted, but the arrangement of the various housings can be varied in accordance with the size and location of the space available within a given vehicle. For example, where ample space in the vertical direction is available in a location readily accessible to the operator, the housings may simply be stacked vertically one over the other, whereas if the available vertical space is limited, the overall assembly may be extended horizontally, thereby reducing the vertical space required. As previously noted, the oblong housing members **10** may be arranged vertically or horizontally, or an assembly may comprise both vertically and horizontally disposed housing members as in the embodiment illustrated in the drawings.

It is important to understand that once the selected number of housings have been interconnected in a desired arrangement and mounted within a vehicle, it is intended that such housings will remain intact within the vehicle even though it may be necessary to remove

certain of the components housed therein for purposes of repair or replacement. For example, the control head **54** for an electronic siren may be mounted in the housing **10***b* by insertion from the front of the housing, after which the front plate **12***b* is secured in position by the four corner screws **36**. Similarly, the front plate **12***b* may be removed and the control mechanism **54** taken out of the housing **10***b* for repair or replacement without disconnecting any of the housings **10** from one another and without disabling any of the mechanism contained within any of the other housing members. The interconnected housing members thus provide a more or less permanent framework affording a cluster of individual compartments for housing a variety of control mechanisms for an emergency vehicle, although obviously the arrangement of the housing members can be changed by removal of the clip members **38** at the rear of the housings.

An assembly of housing members in accordance with the present invention may be mounted within an emergency vehicle in a variety of ways. For example, a mounting member such as shown at **46** may be utilized to mount the housing assembly on the transmission tunnel of the vehicle floor next to the operator. Alternatively, such an assembly may be mounted to the vehicle dash, or if desired it may be mounted to a tray which is simply positioned on the seat immediately next to the operator.

It will be understood that the foregoing system of modular housing members may comprise housings of more than one size, such as a plurality of oblong rectangular housings of the type illustrated in the drawings, together with a plurality of square housings one-half the size of the rectangular housings, and it is contemplated that the present invention may be practiced by using more than one size of housing. However, it is considered simpler and more expedient to utilize housings which are all of the same size, and the preferred shape for such a standard size housing is rectangular with the longitudinal dimension being twice the transverse dimension. With an arrangement of the latter type, it is possible to combine vertically and horizontally disposed housings as shown in FIG. 1 and still provide a housing assembly which is rectangular in its overall configuration, although the latter is not essential in the practice of my invention.

I claim:

1. A modular housing assembly for mounting accessory control units in a police or other emergency vehicle, said assembly comprising, in combination, a plurality of modular housing members identical to one another in size and shape, said modular housing members being generally rectangular in configuration with generally flat outer walls and being selectively arranged in abutting relation in a group or cluster, said outer walls comprising a pair of opposed end walls and a pair of opposed longitudinal walls, each of said housing members having an open front to permit insertion of an accessory control unit within said housing and removal of said unit when desired, said housing members being arranged in said group with their open fronts facing in the same direction and each said housing member also having a large rear opening to permit electrical connection to an accessory control unit mounted therein, a plurality of accessory control units each mounted within a corresponding one of said housings, each of said accessory control units including a front plate attached to said control unit and corresponding in size to the open front of a modular housing member, each said accessory control unit being positioned within a corresponding housing member with its front plate located in the open front of said housing member so as to function as a cover plate closing the latter, a plurality of bracket means for interconnecting said modular housing members at the rear thereof, each of said bracket means being arranged in overlapping relation to exterior rear walls of at least two adjacent housing members and being releasably secured to said rear walls, releasable fastening means securing each of said front plates to its corresponding housing member, and means for mounting said modular housing assembly in an emergency vehicle for operation of said accessory control units by a driver of the vehicle.

2. A modular housing assembly as defined in claim **1** wherein the longitudinal walls of each housing member are twice the length of the end walls thereof.

3. A modular housing assembly as defined in claim **1** wherein said releasable fastening means comprise a plurality of screw fasteners securing said front plates to corresponding ones of said housing members, whereby upon removal of the screw fasteners from one of said front plates the front plate together with the accessory control unit attached thereto may be removed from its housing member without disturbing the remaining control units and without disconnecting any of said housing members.

4. A modular housing assembly as defined in claim **1** where each of said housing members has a generally flat rear wall with said large rear opening being formed in the central portion of said rear wall, and said bracket means comprising a plurality of flat brackets which lie flat against the exterior rear walls of said housing members and are attached to said exterior rear walls for interconnecting said housing members.

5. A modular housing assembly as defined in claim **4** including a plurality of screw fasteners for securing said flat brackets to the rear walls of said housing members.

6. A modular housing assembly as defined in claim **4** where said flat brackets are L-shaped and have three screw openings formed therein.

7. A modular housing assembly as defined in claim **5** where each of said modular housing members comprises a die cast metal body having internal bosses which extend substantially the full depth of the housing and have threaded holes at the front and rear ends thereof, a plurality of screw fasteners engaged in said front threaded holes for attaching a front plate to said housing, and a plurality of screw fasteners engaged in said rear threaded holes for securing said flat brackets to said housing.

* * * * *